

BULLETIN

FROM THE

LABORATORIES OF NATURAL HISTORY

OF THE

STATE UNIVERSITY OF IOWA.

*I. REPORT ON THE ACTINIARIA COLLECTED
BY THE BAHAMA EXPEDITION OF THE
STATE UNIVERSITY OF IOWA, 1893, . . .*

J. PLAYFAIR McMURRICH

*II. THE BRACHYURA OF THE BIOLOGICAL EX-
PEDITION TO THE FLORIDA KEYS AND
THE BAHAMAS IN 1893,*

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III. THE BEETLES OF SOUTHERN ARIZONA, .

H. F. WICKHAM

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Secretary WM. J. HADDOCK:

We take pleasure in submitting herewith Bulletin No. 3, of Volume IV, from the Laboratories of Natural History, of the State University of Iowa.

THE EDITORS.

THE BRACHYURA OF THE BIOLOGICAL EXPEDITION
TO THE FLORIDA KEYS AND THE
BAHAMAS IN 1893.

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SECOND ASSISTANT CURATOR, DEPARTMENT OF MARINE
INVERTEBRATES, U. S. NATIONAL MUSEUM.

THE first series of deep-sea dredgings off the coast of Florida by the United States Coast Survey, from 1867 to 1869, in which Count L. F. de Pourtales took charge of the dredging operations, yielded a large number of Brachyura which were described by Dr. William Stimpson in 1871.¹ The types were destroyed in the Chicago fire. A number of the species have not yet been rediscovered.

A preliminary report upon the Crustacea collected in the Gulf of Mexico and Caribbean Sea by the Coast Survey Steamer "Blake" (1877-1879), was made by Prof. A. Milne Edwards in 1880.² Full descriptions of all the West Indian maioid and cancroïd crabs, with many illustrations, are given in "Études sur les Crustacés Podophthalmaires de la Région Mexicaine" which was published in Paris and issued in parts between 1873 and 1880.

Subsequently a number of species have been described by myself in the Proceedings of the United States National Museum since 1891, and the Proceedings of the Biological Society of Washington, 1897. Other recent papers dealing with the Brachyura dredged in this region are those by Mr. J. E. Ives in the Proceedings of the Academy of Natural

¹ *Bull. Mus. Comp. Zool.*, 11, No. 2, pp. 109-160.

² *Bull. Mus. Comp. Zool.*, VIII, No. 1, pp. 1-67.

Sciences of Philadelphia, 1891, by Dr. W. C. Kendall in the Bulletin of the United States Fish Commission, ix, 1891, and by Dr. Walter Faxon in the Bulletin of the Museum of Comparative Zoölogy, xxx, No. 3, 1896.

In the works above cited will be found references to the literature pertaining to the shore and shallow-water forms included in the following list.

The collection made by the Biological Expedition of the State University of Iowa in 1893 is notable not only for the number of species obtained, but for the careful preservation of the specimens. A number of species are here recorded for the first time since the original description. Six new species represented in the University collection are described; also eleven West Indian species in the National Museum collection, ten of which were obtained by the United States Fish Commission Steamer "Albatross" and one species (*Pilumnus andrewsii*) by Dr. E. A. Andrews at the Bahamas. These last are published by permission of the Secretary of the Smithsonian Institution. The species of the University collection are numbered from 1 to 128.

MAIIDÆ.

1. STENORYNCHUS SAGITTARIUS (*Fabricius*) (=LEPTOPODIA SAGITTARIA *Leach*).

Tortugas.

2. PODOCHELA RIISEI *Stimpson*.

Station 68, off Little Cat Island, Bahamas, on the submerged bank connecting it with Eleuthera, 3 to 13 fathoms; Bahía Honda, Cuba, on wharf.

3. PODOCHELA HYPOGLYPHA (*Stimpson*) (=P. SPATULIFRONS *A. Milne Edwards*).

Tortugas.

A variable species.

4. PODOCHELA LAMELLIGERA (*Stimpson*).

Station 24, off Key West, 60 fathoms.

5. PODOCHELA MACRODERA *Stimpson*.

Station 46, off Key West, shallow water; Sand Key Light, Florida, in rocks, sponges, etc.; Bahama Banks; Harbor Island, Bahamas.

6. PODOCHELA GRACILIPES *Stimpson*.

Stations 24, 27 and 39, off Key West, 20 to 60 fathoms.

7. EUCINETOPS BLAKIANA *Rathbun*.

Bahama Banks.

8. COLLODES DEPRESSUS *A. Milne Edwards*.

Station 24, off Key West, 60 fathoms.

9. COLLODES ARMATUS sp. nov. Pl. II, Fig. I.

Off Havana.

Carapace smooth and unarmed above. Rostrum short, subtruncate. Ambulatory legs spinous beneath.

This species approaches nearer to *Collodes* than to any other known genus, although it differs in some respects from typical members of that genus. The unique specimen, a female, was captured in the tangles and was so thoroughly wrapped in the hemp fibres that in removing them many of the hairs of the appendages have been torn off.

The dorsal surface of the carapace is smooth and shining, without granulation or median spines. It is also nearly naked, but doubtless some hairs have been rubbed off. The carapace is narrower than in the other species of *Collodes*; the cardiac, branchial and gastric regions are much swollen. The hepatic region is depressed and bears on the margin a spinule and in advance one or more granules. The pterygostomial region is beset with ten or more sharp spines. Front subtruncate, not advanced beyond the antennular fossæ, with a deep median sulcus terminating in the interantennular partition which projects slightly forward as a median tooth not

visible in a dorsal view. Postorbital tooth triangular, shorter than the eye-stalks. Abdomen of the female with two median tubercles on the coalesced segment; surface covered with curved hairs. Basal antennal joint with an acute tooth at the antero-external angle; outer margin with four irregular lobes; inner margin with a shallow sinus, its anterior angle rounded. Maxillipeds spinulous.

The chelipeds as usual in the female are slender; the margins are spinous, the largest spines on the outer margin of the merus and the inner margin of the carpus. The manus is slender, unarmed distally; the fingers are nearly as long as the palm and are in contact. The ambulatory legs are long, slender and of nearly equal length. They are margined with long straight bristles set in short, stout, cylindrical sockets, which remain as hard, bead-like projections when the bristles are removed. There are also a few curved hairs, and the first two pairs of legs are furnished underneath with sharp spines.

Dimensions.—Length of carapace, 9 mm.; width, 6.8; approximate length of ambulatory legs, as follows: first, 20.4; second, 21; third, 21; fourth, 20 mm.

10. *EUPROGNATHA RASTELLIFERA Stimpson.*

Stations 27, 35, 47 and 48, off Key West, 50 to 90 fathoms; stations 28, 29, 33, 41 and 42, off Sand Key, 15 to 116 fathoms; stations 51 and 62, off American Shoal, 70 to about 100 fathoms; station 56, Pourtales Plateau, about 200 fathoms; off Havana.

These specimens are the form which I described in 1894 as a subspecies, *Euprognatha rastellifera spinosa*, but as most of them were obtained from the same locality as Stimpson's types, it is probable that this is the typical form of *E. rastellifera*.

11. *EUPROGNATHA GRACILIPES A. Milne Edwards.*

Off Havana.

12. *ARACHNOPSIS FILIPES Stimpson.*

Stations 24, 27, 29, 39, 41, off Key West and Sand Key, 15 to 116 fathoms.

13. *ÆPINUS SEPTEMSPINOSUS* (*A. Milne Edwards*) (= *APOCREMNUS SEPTEMSPINOSUS A. Milne Edwards.*)

Bahama Banks.

14. *ANASIMUS LATUS* *Rathbun.* Pl. II, Figs. 2-5.

Stations 26 and 47, off Key West, 60 to 80 fathoms.

15. *ANAMATHIA CRASSA* (*A. Milne Edwards*). Pl. 1.

Station 33, off Sand Key, about 105 fathoms; stations 52, 62 and 63, off American Shoal, 70 to 110 fathoms; station 56, Pourtales Plateau, about 200 fathoms.

The specimen figured, from station 62, is the largest ever collected. It is covered with stalked cirripeds and exhibits an extraordinary development of the chelipeds. The length of the carapace measured to the base of the rostral horns is 95 mm.; width of carapace, 79.5 mm.; length of cheliped extended, about 39.4 cm. or 15½ inches; entire width of crab with chelipeds extended, about 83.6 cm. or 33 inches; length of merus of cheliped, 17.5 cm.; length of propodus of cheliped, measured on upper margin, 16.2 cm.; length of same, measured on lower margin, 20.6 cm.

16. *ANAMATHIA HYSTRIX* (*Stimpson*).

Station 56, Pourtales Plateau, about 200 fathoms.

17. *ANAMATHIA TANNERI* *Smith.*

Station 35, off Key West, 90 fathoms; station 62, off American Shoal, 70 to 80 fathoms.

18. *DORYNCHUS THOMSONI* *Norman* (= *LISPOGNATHUS FURCILLATUS A. Milne Edwards*).

Station 56, Pourtales Plateau, about 200 fathoms.

19. *CHORINUS HEROS* (*Herbst*).

Sand Key Light, rocks, sponges, etc.

20. *ANOMALOTHIR FURCILLATUS* (*Stimpson*).

Station 34, off Sand Key, about 120 fathoms; station 51, off American Shoal, about 100 fathoms.

21. *EPIALTUS BITUBERCULATUS* *Milne Edwards.*

Harbor Island, Bahamas.

22. *ACANTHONYX PETIVERII* *Milne Edwards.*

Harbor Island, Bahamas.

23. *PYROMAIA CUSPIDATA* *Stimpson.*

Station 27, off Key West, 50 to 60 fathoms; station 56, Pourtales Plateau, lat. $24^{\circ} 16'$ N., long. $81^{\circ} 22'$ W., about 200 fathoms.

24. *TYCHE EMARGINATA* (*White*).

Station 46, off Key West, shallow water; station 68, off Little Cat Island, Bahamas, on the submerged bank connecting it with Eleuthera, 3 to 13 fathoms.

25. *PELIA MUTICA* (*Gibbes*).

Station 44, off Key West, $5\frac{1}{4}$ fathoms; off Havana.

The male from off Havana is large, 16 mm. long, with strongly developed chelipeds. In both male and female the carapace is marked with patches of bright red, the ambulatory legs are banded with the same color, and the chelipeds are spotted with a lighter shade. The rostral horns are contiguous for one-half their length, divergent for their distal half. Basal antennal joint without a spine.

26. *TEMNONOTUS SIMPLEX* *A. Milne Edwards.*

Off Havana; one male.

The carapace is that of typical *simplex*; the basal antennal joint bears two long spines. The species is perhaps identical with *T. granulatus* A. Milne Edwards.

27. *LISSA BICARINATA* *Aurivillius.* Kongl. Sv. Vet. Akad. Hand., Bd. 23, No. 4, 54, 1889.

Bahama Banks.

Lissa bicarinata was very briefly described from the island of St. Bartholomew.

The following description of an ovigerous female taken by

the University Expedition has been compared with the type in the Museum at Stockholm by Dr. Aurivillius who assures me of their identity.

Carapace with two rounded median prominences, one gastric and one cardiac, the former much larger and higher. From the gastric prominence two ridges run divergently backward to the postero-lateral angles of the carapace. Both the median prominences and the ridges are indistinctly tuberculate. The posterior outline is arcuate and is separated from the blunt postero-lateral angles by a broad rounded sinus. The sides of the branchial and gastric regions are steep. Outer margin of the branchial region with a broad and shallow tooth at its middle. Outer margins of the hepatic regions almost parallel. Rostrum proportionally larger than in *L. chiragra*, deflexed, subtruncate, widening at the extremity which is four-lobed, the median lobes rounded and separated by a narrow U-shaped fissure; outer lobes smaller, blunt, slightly less advanced than the median. Upper surface of rostrum slightly concave in a longitudinal direction. There is a short, acuminate præorbital spine directed obliquely upward. The legs are furnished with triangular laminate crests of quite different appearance from the knobby protuberances of *L. chiragra*.

Dimensions.—Length, 8.8 mm.; width, 8; length of rostrum from base of præorbital sinus, 2.3.

28. STENOCIONOPS FURCATA CÆLATA (*A. Milne Edwards*)
(=PERICERA CÆLATA *A. Milne Edwards*.)

Stations 24, 44, 45 and 46, off Key West, shallow water to 60 fathoms; Tortugas.

29. STENOCIONOPS SPINOSISSIMA (*Saussure*). Type examined
(=PERICERA ATLANTICA *Rathbun*).

Station 24, off Key West, 60 fathoms; station 28, off Sand Key, 116 fathoms; station 39, off Key West, 20 fathoms.

30. MACROCELOMA TRISPINOSUM (*Latreille*).

Station 45, off Key West, shallow water; Dry Tortugas; Bahia Honda, Cuba; Bahama Banks; Egg Island, Bahamas.

31. *MACROCÆLOMA CAMPTOCERUM* (*Stimpson*).

Stations 44 and 46, off Key West, 5¼ fathoms.

One male has unusually long rostral horns, over one-third the entire length of the carapace.

32. *MACROCÆLOMA DIPLACANTHUM* (*Stimpson*).

Station 68, off Little Cat Island, Bahamas, on the submerged bank connecting it with Eleuthera, 3 to 13 fathoms.

33. *MACROCÆLOMA SEPTEMSPINOSUM* (*Stimpson*).

Stations 24 and 27, off Key West, 50 to 60 fathoms; station 28, off Sand Key, 116 fathoms; Bahama Banks.

34. *MACROCÆLOMA EUTHECA* (*Stimpson*).

Station 24, off Key West, 60 fathoms; one male; off Havana, one young male; Bahama Banks. one male, one young female.

These specimens I believe to be Stimpson's *Pericera cuthcca*. In the largest male, from station 24, the rostral horns are slender, parallel for one-half their length, with a U-shaped interspace, tips slightly divergent. The orbital sheath is prolonged far beyond the outer spine of the basal antennal joint, and is tipped with three spines, one antero-superior, one postero-inferior, the other postero-superior and situated just in front of the superior closed sinus; in the "Albatross" specimens (Proc. U. S. Nat. Mus., 1892, 251), the sheath is shorter, projecting but little beyond the outer antennal spine, and exclusive of the latter, is armed with four spines, one antero-superior, one postero-inferior, one inferior, and the fourth superior and behind the closed sinus. The carapace is very narrow behind the orbits. The gastric, cardiac, and intestinal prominences are spines. There is a spinule at the summit of the branchial region and one strong spine at the lateral margin which is inserted in a transverse line with the cardiac spine.

Dimensions.—Entire length, 27; length from between rostral horns, 24; greatest width at orbits, 15.2; greatest branchial width, 23; branchial width, without spines, 18; antero-lateral width at narrowest point, 10 mm.

A specimen about one-half the size of the above was dredged on the Bahama Banks. The horns are more nearly parallel throughout their length, The orbital width equals the branchial width exclusive of spines. Branchial spines more slender than in the above.

These specimens are specifically distinct from those which I referred in 1872 provisionally to *M. eutheca*. These last are possibly a variety of *M. concavum* Miers.

35. MICROPHRYS BICORNUTUS (*Latreille*).

Stations 45 and 46, off Key West, shallow water; Dry Tortugas, Harbor Island, Egg Island and Spanish Wells, Bahamas; Bahama Banks.

36. PITHO ACULEATA (*Gibbes*) (=OTHONIA ACULEATA of authors).

Tortugas, shallow water in gulf weed; Spanish Wells, Bahamas.

37. PITHO ANISODON (*von Martens*) (=OTHONIA LHERMINIERI *Rathbun* not *Schramm*).

Station 44, off Key West, 5¼ fathoms.

38. PITHO LHERMINIERI (*Schramm*) (=OTHONIA CAROLINENSIS *Rathbun*).

Station 46, off Key West, shallow water; Bahama Banks.

39. PITHO MIRABILIS (*Herbst*).

Bahama Banks.

Among the Herbstian types in the Berlin Museum are three carapaces labeled "*Cancer mirabilis*" by Herbst. They are not, however, all the same species, the larger being nearly smooth with five large, entire, acute and widely divergent teeth, the two smaller having a granulated carapace and five subacute teeth with denticulated margins and diminishing in size from the anterior to the posterior. The first of these species was described in 1875 by A. Milne Edwards under the name *Othonia laevigata* from the Antilles; the second by myself in 1892 as *O. rotunda*, from Key West, Florida. The name *mirabilis*

belongs properly to the latter of the two species, not only by the law of elimination but for the reason that Herbst figured a specimen of this species, as denoted by the granulated carapace and somewhat appressed teeth. His description too is more applicable to this species; although founded on both, for he says that the teeth are sometimes sharply pointed, sometimes more rounded. The types of *Cancer mirabilis* were assumed by Gerstæcker in 1856 to be all the same species, of which *O. sexdentata* Bell and *O. quinquedentata* Bell were supposed to be synonyms.

40. MITHRAX (NEMAUSA) ACUTICORNIS (*Stimpson*) (=NEMAUSA ROSTRATA *A. Milne Edwards*; types examined).
Station 24, off Key West, 60 fathoms; off Havana.
41. MITHRAX SPINOSISSIMUS (*Lamarck*).
Bahama Banks.
42. MITHRAX VERRUCOSUS *Milne Edwards*, variety (=M. ACULEATUS *Rathbun* not *Herbst* nor *Milne Edwards*).
Dry Tortugas.
43. MITHRAX HISPIDUS (*Herbst*).
Stations 44, 45 and 46, off Key West, shallow water; Tortugas.
44. MITHRAX HOLDERI *Stimpson*. Bull. Mus. Comp. Zoöl., II, 117, 1871. Pl. III, Fig. 2.
Tortugas; 7 fathoms.

The specimens of this species known to Stimpson are not extant. I refer to it a single ovigerous female taken off Havana.

Carapace oblong, covered with unequal, prominent tubercles, and with large crowded punctæ. Frontal horns depressed, short, acute, nearly horizontal. Basal antennal joint with three spines, the antero-external long, nearly as advanced as the rostrum, and directed obliquely upward and outward; posterior spine small; a third spine or sharp tooth is at the base of the flagellum. Orbital teeth and spines five, exclusive of the antennal; præorbital longest and curved inward. Antero-

lateral margin with two prominent spines, one hepatic, and the other at the branchial angle; between them are two clusters of tubercles; in front of and behind the branchial spine there is a small spine or spinule. Inferior regions of the carapace covered with tubercles which become spinulose on the sub-hepatic region. Chelipeds with meri armed with stout blunt spines above; hands unarmed. Ambulatory legs flattened above and hairy; meral and carpal joints armed with two rows of spines.

Dimensions.—Entire length of carapace, 21.5; length to base of rostral horns, 20; entire width, 21.2; width without spines, 18.4; exorbital width, 12.3 mm.

Specimens agreeing with the above and taken at St. Croix and St. John, West Indies, are in the Museum at Copenhagen. One immature female has been presented to the United States National Museum.

45. MITHRAX FORCEPS (*A. Milne Edwards*).

Stations 45 and 46, off Key West, shallow water; Tortugas; Spanish Wells; Bahama Banks.

46. MITHRAX SCULPTUS (*Lamarck*).

Tortugas, shallow water; Harbor Island and Spanish Wells, Bahamas.

47. MITHRAX CORONATUS (*Herbst*).

Sand Key Light, in rocks, sponges, etc.; Tortugas; Egg Island and Harbor Island, Bahamas.

One male from the Tortugas is of unusual size, measuring in length 21.3 mm.; width, 27.7; length of propodus of cheliped, 22.8; depth of same, 11; thickness, 6.7 mm.

48. THOE PUELLA *Stimpson*.

Tortugas.

PARTHENOPIDÆ.

49. LAMBRUS POURTALESII *Stimpson*.

Stations 24 and 47, off Key West, 60 to 80 fathoms; stations

41 and 42, off Sand Key, 15 fathoms; Pourtales Plateau; off Havana.

50. *LAMBRUS FRATERCULUS Stimpson.*

Stations 24 and 26, off Key West, 60 fathoms.

51. *LAMBRUS AGONUS Stimpson.*

Stations 24 and 26, off Key West, 60 fathoms.

52. *LAMBRUS CRISTATIPES (A. Milne Edwards) (=MESORHŒA CRISTATIPES A. Milne Edwards).*

Station 56. Pourtales Plateau, lat. $24^{\circ} 16' N.$, long. $81^{\circ} 22' W.$, about 200 fathoms.

53. *PLATYLAMBRUS SERRATUS (Milne Edwards).*

Stations 45, 66 and 67, off Key West, shallow water; Tortugas; Bahia Honda, Cuba.

54. *SOLENLAMBRUS TYPICUS Stimpson.*

Stations 27 and 47, off Key West, 50 to 80 fathoms.

55. *SOLENLAMBRUS TENELLUS Stimpson (=PISOLAMBRUS NITIDUS A. Milne Edwards).*

Stations 24 and 27, off Key West, 50 to 60 fathoms.

56. *CRYPTOPODIA CONCAVA Stimpson.*

Station 39, off Key West, 20 fathoms; Bahama Banks.

57. *THYROLAMBRUS ASTROIDES Rathbun.*

Thyrolambrus astroides Rathbun, Proc. U. S. Nat. Mus. xvii, No. 986, 83, 1894. Nutting, Bull. Labor. Nat. Hist. State Univ. Iowa, III, 77, Pl. facing p. 76, Fig. 2 (δ), 1895.

Parthenope (Parthenomerus) efflorescens Alcock, Jour. Asiatic Soc. Bengal, LXIV, pt. II, No. 2, 281, 1895.

Parthenope efflorescens Alcock, Illus. Zoöl. "Investigator," Crustacea, Part IV, Pl. xxii, Figs. 5, 5a (♀), 1896.

This species was founded on three specimens, a male and two females, dredged by the "Albatross" off Havana in 67 and 189 fathoms. In the United States National Museum there is a male from Mauritius which differs only in its greater size from

the West Indian form, and confirms the belief that the species is identical with *Parthenope* (*Parthenomerus*) *efflorescens* Alcock, from the Andaman Sea, 36 fathoms. Two males were taken by the University Expedition, off Havana.

CANCRIDÆ.

58. *CARPILIUS CORALLINUS* (*Herbst*).
Spanish Wells, Bahamas.
59. *LIOMERA LONGIMANUS* *A. Milne Edwards*.
Tortugas.
60. *ACTÆA SETIGERA* (*Milne Edwards*).
Tortugas.

ACTÆA BIFRONS sp. nov. Pl. IV, Figs 3 and 4.

Allied to A. setigera; front double; fingers smooth.

Carapace narrower and flatter than in *setigera*; areolations similar, granulation finer, marginal lobes more angular. Front (Fig. 3), with a double edge, the inferior slightly in advance of the superior, but scarcely noticeable in a dorsal view; the two lobes of the superior margin are slightly arcuate, margin denticulate or granulate; the lower margin viewed from in front is sinuous; surface between the two margins, concave. The epigastric region is coarsely granulate. Eyes larger than in *setigera*; inferior orbital margin with a prominent tooth at the inner angle. The chelipeds differ from those of *setigera* in having the fingers longer in proportion to the palm, more strongly bent downward, the pollex wider at base than the dactylus. The fingers are horn-color and are almost smooth, being marked with lines of shallow pits; in *setigera*, on the contrary, the grooves on the fingers are very deep and the intervening ridges are narrow and armed with conical tubercles. The hairs which cover the surface are dark-brown; in *setigera*, yellow.

Dimensions.—Male, length 5.5, width 8 mm.

Type locality.—Off Aspinwall, lat. $9^{\circ} 32' 20''$ N., long. $79^{\circ} 54' 45''$ W., 34 fathoms, station 2147, United States Fish Commission Steamer "Albatross" (U. S. Nat. Mus. No. 7803).

61. *ACTÆA RUFOPUNCTATA NODOSA* (*Stimpson*.)

Tortugas.

62. *ACTÆA PALMERI* *Rathbun*.

Bahama Banks.

63. *CARPOPORUS PAPULOSUS* *Stimpson*.

Station 24, off Key West, 60 fathoms.

64. *PILUMNOIDES NUDIFRONS* (*Stimpson*).

Station 29, off Sand Key, about 116 fathoms; station 30, off Key West, about 100 fathoms; station 62, off American Shoal, 70 to 80 fathoms.

The male from station 30 is considerably larger than the type, measuring 14.8 mm. long, and 17.4 mm. wide.

Genus *PILUMNUS* *Leach*.SYNOPSIS OF AMERICAN SPECIES.¹

- A. Carapace for the most part concealed by a short thick pubescence, which when removed discloses tubercles on the gastric and hepatic regions.
- B. Frontal lobes concave, entire. *reticulatus* Stimpson
=*tessellatus* A. Milne Edwards
- B'. Frontal lobes convex, granulate or denticulate.
- C. Entire outer surface of palms tuberculate.
- D. Lower margin of orbit granulate, with no teeth excepting at the inner angle. *gemmatus* Stimpson
- D'. Lower margin of orbit with three or four irregular granulated teeth. *limosus* Smith
- C'. Outer surface of palms partially smooth and naked.
- D. Antero-lateral projections, after the pubescence is removed, spiniform, curved, sharp. *pannosus* Rathbun
=*gemmatus* A. Milne Edwards
- D'. Antero-lateral projections, after the pubescence is removed, dentiform, short, obtuse. *holosericus* Rathbun
- A'. Carapace, when covered by a short thick pubescence, not having the gastric region tuberculate.
- B. Superior orbital border with one or few long spines.
- C. Outer surface of larger hand partially smooth and naked.

¹ *Pilumnus nudifrons* Stimpson is a *Pilumnoides*; see No. 64.

- D. No subhepatic spine. *spinosissimus* Rathbun
- D'. A subhepatic spine.
- E. Superhepatic region unarmed. *spinohirsutus* Lockington
- E'. Superhepatic region armed with spines or spinules.
- F. Front and orbits with a few long spines. *sayi* Rathbun
=*aculeatus* (Say)
- F'. Front and orbits spinulous but without long spines.
caribæus Desbonne & Schramm
- C'. Outer surface of larger hand all over spinulous.
- D. Carapace covered with long, fine, silky hair. *diomedæ* Rathbun
- D'. Carapace not covered with long, fine, silky hair.
gracilipes A. Milne Edwards
- B'. Superior orbital border either entire or armed with denticles or spinules.
- C. Outer surface of larger hand entirely smooth and naked.
andrewsii Rathbun
- C'. Outer surface of larger hand not entirely smooth and naked.
- D. Outer surface of larger hand only partially covered with tubercles or spines.
- E. Outer surface of smaller hand only partially covered with tubercles or spines.
- F. Carapace and chelipeds furnished with mushroom-like tubercles.
fragosus A. Milne Edwards
- F'. Carapace and chelipeds not furnished with mushroom-like tubercles.
- G. Antero-lateral spines or teeth 5, including orbital.
spinipes (A. Milne Edwards as *Micropanope*)
- G'. Antero-lateral spines or teeth 4, including orbital.
lacteus Stimpson
- E'. Outer surface of smaller hand entirely covered with tubercles or spines.
- F. Carapace covered with hair.
- G. Frontal lobes separated from remainder of carapace by a fringe of hair.
floridanus Stimpson
=*lacteus* A. Milne Edwards
- G'. Frontal lobes not separated from remainder of carapace.
- H. Carapace rough on the hepatic region.
gonzalensis Rathbun
- H. Carapace smooth.
- J. Antero-lateral spines 4 including postorbital.
quoyi Milne Edwards
- J. Antero-lateral spines 5, including postorbital.
miersii A. Milne Edwards

- F'. Carapace naked on posterior half.
- G. Second lateral tooth simple. *dasypodus* Kingsley
= *vinaceus* A. Milne Edwards
- G'. Second lateral tooth bifid. *depressus* Stimpson
- D'. Outer surface of larger hand entirely covered with tubercles or spines.
- E. Hands armed with blunt tubercles or granules, and no spines.
stimpsonii Miers
= *marginatus* Stimpson
- E'. Hands armed with sharp spines.
- F. Spines of hands arranged in longitudinal rows.
brasiliensis Miers
- F'. Spines of hands not in rows.
- G. Ambulatory legs spinous. *urinator* A. Milne Edwards
- G'. Ambulatory legs unarmed. *xantusii* Stimpson

65. *PILUMNUS SAYI* Rathbun (= *P. ACULEATUS* (Say)).

Tortugas; Egg Island, Bahamas.

66. *PILUMNUS CARIBÆUS* Desbonne and Schramm.

Egg Island; Bahama Banks, from millepores.

67. *PILUMNUS FLORIDANUS* Stimpson (= *P. LACTEUS* A. Milne Edwards, types examined; not Stimpson.)

Bahama Banks.

68. *PILUMNUS URINATOR* A. Milne Edwards?

Station 48, off Key West, about 80 fathoms. One male.

I have not seen the type of *P. urinator*. The above specimen agrees with the description and figure of that species excepting that the carapace is somewhat wider, and the front instead of being unarmed is finely denticulate. Specimens with the same characters were collected by the "Albatross" in the Caribbean Sea at station 2131, lat. $19^{\circ} 56' 44''$ N., long. $75^{\circ} 50' 49''$ W., 202 fathoms, and station 2135, lat. $19^{\circ} 55' 58''$ N., long. $75^{\circ} 47' 07''$ W., 250 fathoms. Length of male, station 2131, 7 mm., width 10 mm.; length of male, station 48, 6.3 mm., width 8.5 mm.

69. *PILUMNUS SPINOSISSIMUS* sp. nov. Pl. v, Fig. 3.

Station 44, off Key West, $5\frac{1}{4}$ fathoms.

One male.

Long hairy; frontal lobes oblique; orbits spinous; lateral spines four; chelipeds spinous.

Carapace covered on its anterior half with spiniform granules and a few long hairs; posterior half almost smooth. Front bilobed; lobes separated by a broad U-shaped sinus; each lobe has an oblique margin armed at either end with a short spine; next the inner spine there is a short, shallow sinus, armed with minute spinules; remainder of the front unarmed. Superior orbital margin armed with four long spines, the two innermost curving toward each other. Lateral margin with three long spines besides the orbital, the posterior spine being a little shorter. Lower orbital margin armed with ten small irregular spines. The outermost is separated from the post-orbital spine by a deep sinus; the two innermost are situated at the extremity of a prominent suborbital process; the next two are among the largest; the remaining five are very short spines or spiniform teeth.

Chelipeds of the male unequal; merus with two long curved spines at the distal end of the upper margin; carpus armed with about 20 sharp spines curved toward the manus. Larger manus with about seven irregular rows of spines which cover about two-thirds of the outer surface; they are large above and gradually diminish in size downward. On the smaller manus, the spines cover the outer surface,

Dactyli spinulous on the proximal half. Ambulatory legs long and hairy; meri spinulous above; carpi and propodi armed with long spines.

Dimensions.—Length, 8.3 mm.; width, 11.6; width without spines, 10.5.

The character of the front and orbits sufficiently distinguishes this species from all others.

70. PILUMNUS LACTEUS *Stimpson*, not *A. Milne Edwards*.

Tortugas.

PILUMNUS ANDREWSII sp. nov. Pl. v, Fig. 2.

Slightly hairy; front and orbits not spinous; lateral spines and teeth five; outer surface of hands smooth and naked.

Carapace broad; slightly hairy, but not enough to obscure the regions of the carapace; granulate, especially anteriorly and laterally. Frontal lobes subtruncate, sloping slightly backward toward the orbit, separated by a broad notch, margin minutely denticulate. Upper and lower margins of orbit denticulate; at the inner lower angle there is a prominent tooth in line with the frontal lobes. Outer angle of orbit dentiform. There are four additional lateral prominences. The one next the orbit or the second tooth proper is small and dentiform. The third, fourth and fifth are larger, spini-form, with long acuminate tips, that of the third tooth pointing inward, of the fifth pointing outward, and the fourth directed nearly forward. Sub-hepatic tooth present. Inferior surface of carapace granulate and pubescent

The merus of the chelipeds is armed with spines on the upper and inner margins; upper part of outer surface granulate, distal margin of lower surface spinulose. Carpus covered with acute granules or tubercles; two sharp spines at the inner angle, one below the other. Merus and carpus slightly hairy. Manus of larger cheliped wholly smooth and naked on the outer surface; at the proximal end of the superior inner face, along the line of the carpus when the cheliped is bent, there is an irregular line of granules. Dactylus with a large basal tooth. Fingers light horn-color, the color on the pollex running from the middle of the dactylic tooth in a line nearly at right angles with the inferior margin of the manus. Fingers not gaping. Smaller manus smooth and naked except for a few granules at its proximal end, and pointed tubercles along the bicristate upper margin, and on the superior inner surface. Ambulatory legs long and narrow; margins with long, fine hairs, meral joints armed above with slender spines.

Dimensions.—Female, length 8.9, width including spines 12.8 mm.

Type locality.—Green Turtle Cay, Bahamas; Dr. E. A. Andrews collector, 1897; two females (U. S. Nat. Mus. No. 20,508).

71. *PILUMNUS GEMMATUS* Stimpson.

Dry Tortugas.

72. *PILUMNUS PANNOSUS* Rathbun = *P. GEMMATUS* A. Milne Edwards not Stimpson.

Bahama Banks, from millepores.

73. *PILUMNUS HOLOSERICUS* Rathbun sp. nov. Pl. v, Fig. 1.

Egg Island, Bahamas; one male.

Densely pubescent; carapace tuberculate; lateral teeth obtuse; large hand partially bare outside.

Allied to *P. gemmatus* Stimpson and *P. pannosus* Rathbun. Carapace more oval than in those species. Surface covered with a short, smooth velvety pubescence which does not conceal the boundaries of the areolations. On either side of the gastric region there is a tuft of long hairs. Antero-lateral teeth shorter than in *gemmatus* or *pannosus* and blunt, even when the pubescence is removed. Tubercles of the carapace and chelipeds smaller and more numerous than in the allied species. Larger hand with the lower and distal portion of the outer surface bare and unarmed, but this space is smaller than in *pannosus*. Fingers shorter than in that species. Smaller hand with entire outer surface pubescent and hairy. Ambulatory legs pubescent and fringed with long hairs.

Dimensions.—Length of male, 6.1; width 8.3 mm.

Distribution.—Type locality, St. Thomas, one male received from the Copenhagen Museum (U. S. Nat. Mus. No. 19,705). A smaller specimen, also a male, was taken at St. Thomas by the "Albatross." A larger specimen, a male, 6.8 mm. long and 9.1 wide, was collected at Egg Island, Bahamas, by the University Expedition. Several specimens are in the Museum at Copenhagen, including one from St. John, West Indies.

This species need not be confused with *pannosus* which has a much more ragged appearance; nor with *gemmatus* which is a considerably longer species and has the entire outer surface of both hands tuberculate.

74. LOBOPILUMNUS AGASSIZII (*Stimpson*) = LOBOPILUMNUS PULCHELLUS *A. Milne Edwards*.

Stations 45 and 46, off Key West, shallow water; Tortugas, dredged.

Of the two forms described by A. Milne Edwards as *L. agassizii* and *L. pulchellus*, it is evident that the first cannot be the one described by Stimpson as *Pilumnus agassizii*, because it has not the "anterior and antero-lateral areolets naked and thickly granulated," and the "penult and antepenult joints [of the ambulatory feet] armed with minute spines above." Several lots of *L. agassizii* (Stimpson = *L. pulchellus* *A. Milne Edwards*) were dredged by the "Albatross" in the Gulf of Mexico and Caribbean Sea, while a large series of *L. agassizii* *A. Milne Edwards* was collected in Bermuda by Dr. G. Brown Goode in 1876-77. Some of the specimens of the University Expedition are intermediate between the two forms. I propose the name *L. agassizii bermudensis* for the subspecies from Bermuda.

75. HETERACTÆA CERATOPUS (*Stimpson*).

Tortugas.

76. PHYMODIUS MACULATUS *Stimpson*.

Dry Tortugas; Spanish Wells, Bahamas.

REMARKS ON EURYPANOPEUS AND ALLIED GENERA.

If the species already included in the genus *Eurypanopeus* *A. Milne Edwards* (= *Panopeus* *Milne Edwards*, name pre-occupied) be retained in it, the genus will embrace not only species hitherto referred to *Panopeus*, *Eurytium* and *Eurypanopeus*, but others now included in *Micropanope*, *Neopanope* and *Xanthias* (= *Xanthodes*), which last is closely connected with *Xantho* and *Lophoxanthus* on the one hand and *Leptodius* and *Xanthodius* on the other. It is obvious that no good purpose will be subserved by uniting all these diverse forms. It is not possible to separate any of these genera from all the others by a single character, such as the shape of the finger

tips, the presence or absence of a sternal canal for the sexual appendages, or the development of the ridge on the palate.

The modification of the palatal ridge is an important factor in Dr. Ortmann's division of his section B. of the Xanthini. In this section the family Xanthidæ is said to differ from the family Oziidæ only in lacking a ridge on the palate, which in the Oziidæ is either distinct or indistinct. The fact is, that typical species of *Xantho*, such as *X. hydrophilus* Herbst (= *X. incisus* Leach) have a rudimentary ridge on the palate posteriorly developed as in *Eurypanopeus*. In the three species of *Eurypanopeus* so-called, *herbstii*, *occidentalis*, and *americanus* (species so much alike in general appearance that they are not acknowledged by Dr. Ortmann to be distinct), the palatal ridge is stronger than in *Xantho*; it is longest in *herbstii*, of about equal length in *occidentalis* and *americanus*, but better developed in the latter than in *occidentalis*. In *E. texanus* (family Oziidæ Ortmann) the ridge is less developed than in *Xantho hydrophilus*.

For the value of spoon-shaped fingers as a generic character, compare *Eurypanopeus depressus* with *E. abbreviatus*.

In order to express the relationships of the various Xantho-Panopean species I believe it is best to divide them according to their form and general appearance into a number of genera, including the ten above mentioned to which I have assigned in nearly every case different limits from those before ascribed to them. The collection of the University Expedition contains six of these closely related genera of which three are new.

Genus LEPTODIUS *A. Milne Edwards.*

Carapace suboval, wider than in *Xantho*; antero-lateral margin very long, with five well-developed teeth; front and orbits wider than in *Xantho*; frontal and antero-lateral margins not thickened; palatal ridge absent in typical species; ambulatory legs narrower than in *Xantho*. Type, *L. exaratus* (Milne Edwards).

77. LEPTODIUS FLORIDANUS (*Gibbes*).

Tortugas, in gulf weed.

Genus *XANTHIAS* Rathbun, 1897.

(=*XANTHODES* Dana, preoccupied).

Carapace oval or suboval, narrower than in *Leptodius*, areolate, granulate, convex in an antero-posterior direction; front and orbits as wide as in *Leptodius*; basal antennal joint barely touching the projection from the front; lateral teeth usually four (sometimes three) besides the orbital angle, small, subequal. Chelipeds more or less granulate; carpus with a groove next the manus; palms thick; fingers bent down, little or not gaping; ambulatory legs granulate or denticulate above. Type, *X. lamarckii* (Milne Edwards). Here belong of American species *X. taylori* (Stimpson), *sulcatus* (Faxon), *politus* Rathbun (as *Micropanope*), *granulimanus* (Stimpson as *Pilumnus*), and probably also *xantusii* and *insculptus* (Stimpson) and *latus* (Faxon as *Panopeus*).

78. *XANTHIAS NUTTINGI* Rathbun sp. nov. Pl. IV, Fig. I.

Bahama Banks, from millepores; numerous. Station 46, off Key West, shallow water.

Carapace suboval, convex in an antero-posterior direction, nearly flat in a transverse direction; anterior half rough with scaly granules; regions distinct. Front convex, with two lobes with granulate margins, separated by a V-shaped sinus. Antero-lateral margin with three sharp-pointed teeth besides the orbital, which is obliquely truncate and not prominent; the posterior tooth is the smallest. Margin of orbit and lateral teeth granulate. The outer fissure of the orbit is broad and V-shaped.

Chelipeds heavy, unequal; meri spinulose on upper edge; carpi covered with bead-like tubercles, with a deep anterior groove and a small inner tooth terminating in a spinule. Manus of larger cheliped in male with the upper and about two-thirds the outer surface ornamented with bead tubercles; lower one-third and distal extremity smooth and shining; fingers broad, not gaping, brown with light tips; dactylus with a large basal tooth; color of pollex not running back on the manus, but forming a line with the articulation of the dactylus. Manus

of smaller cheliped almost entirely covered with tubercles which grow smaller toward the distal and lower margins; upper margin with a longitudinal groove; fingers deeply grooved. Upper margins of ambulatory legs tuberculate or granulate. The females differ in having the whole outer surface of the larger as well as of the smaller hand tuberculate.

Dimensions.—Length of carapace of male 3.6, width 4.7, length of larger propodus 4, width 2.3 mm.

Color.—Specimens in alcohol are speckled with dark blue, with larger patches on the anterior part of the gastric region and on the cardiac region.

Type locality.—Bahama Banks (University Collection and U. S. Nat. Mus. No. 19975).

Distribution.—Besides having been taken off Key West, this species had previously been dredged by the "Albatross" in the Gulf of Mexico and Caribbean Sea at stations 2362, 2363, 2365 and 2413, in 21 to 25 fathoms, and at Old Providence.

Genus LOPHOPANOPEUS nov.

Carapace hexagonal, convex, areolate; lateral teeth N, T and S (in the language of Dana) subequal, prominent; E present, but reduced and coalesced with D to a greater or less extent; front narrow, lobes sinuous; orbits transverse. Carpus of chelipeds longer than wide; lower margin of propodus concave distally; ambulatory legs more or less cristate. In *Lophoxanthus* A. Milne Edwards (type *Xantho lamellipes* Stimpson) the carapace is flat, the orbits small and circular, the chelipeds heavy.

Type of *Lophopanopeus*, *Xantho bellus* Stimpson. To this genus belong also the species *leucomanus* (Lockington as *Xanthodes*), *japonicus* nom. nov. (= *Lophozozymus* (*Lophoxanthus*), *bellus* var. *leucomanus* Miers), *frontalis* Rathbun (as *Lophozozymus* (*Lophoxanthus*)), *lobipes* (A. Milne Edwards as *Neopanope*), two undescribed species from Western America, and *distinctus*, nom. nov. (= *Micropanope sculptipes* A. Milne Edwards not Stimpson) which is included somewhat doubtfully.

79. LOPHOPANOPEUS LOBIPES (*A. Milne Edwards*).

Bahama Banks: station 46. off Key West, shallow water.

Genus EUPANOPEUS nom. nov.

(=PANOPEUS *Milne Edwards*, part.)

Carapace of moderate width, anteriorly subquadrate, crossed by broken transverse lines; frontal lobes sinuous; five distinct lateral teeth; N, T, S prominent; E usually prominent.

Type, *E. herbstii* (*Milne Edwards*). Includes *occidentalis* (*Saussure*), *americanus* (*Saussure*) (= *arcolutus* *Benedict* and *Rathbun*), *serratus* (*Saussure*), *chilensis* (*Milne Edwards* and *Lucas*) (= *validus* *Smith*), *rugosus* (*A. Milne Edwards*), *crassus* (*A. Milne Edwards*), *purpureus* (*Lockington*), *bermudensis* (*Benedict* and *Rathbun*) (= *wurdemannii* *Benedict* and *Rathbun*, not *Gibbes*), *convexus* (*A. Milne Edwards*), *africanus* (*A. Milne Edwards*), *bradleyi* (*Smith*) and *harttii* (*Smith*).

The species *texanus* (*Stimpson*) (including *texanus sayi*¹ (*Smith*)) and *packardii* (*Kingsley* as *Panopeus*, = *Neopanope pourtalesii* *A. Milne Edwards*) are united under *Neopanope* *A. Milne Edwards*.

A new genus, HEXAPANOPEUS, is proposed for the narrow, hexagonal species of *Panopeus* with rapidly converging postero-lateral margins. Here belong *angustifrons* (*B. & R.*, type), *hemphillii* (*B. & R.*) and *caribæus* (*Stimpson* as *Micropanope*).

The species *Panopeus harrisii* (*Gould*) (= *wurdemannii* *Gibbes* not *B. & R.*) is made the type of a distinct genus RHITHROPANOPEUS ('*ῥιθρον*, a river or stream). It is narrow, approaching the Carcinoplacinae in form, the dorsal ridges are prominent, and the third abdominal segment does not touch the coxæ of the fifth pair of feet.

80. EUPANOPEUS HERBSTII (*Milne Edwards*).

Bahama Banks.

¹ A series of forms intermediate between *texanus* and *sayi* were collected by the United States Fish Commission at Indian River, Florida, in 1896; the latter form is therefore a geographical variation of the former.

81. EUPANOPEUS OCCIDENTALIS (*Saussure*)?

Tortugas. Two young.

Genus MICROPANOPE *Stimpson*.

Carapace of moderate width, panopeiform; usually granulous or spinulous. Of the antero-lateral teeth, E is reduced or wanting, S is much reduced; antero-lateral margin spinulous; ambulatory legs spinulous on superior or anterior margin in typical species.

Type, *M. sculptipes* Stimpson. To this genus I refer *xanthiformis* (A. Milne Edwards as *Panopeus*), *lobifrons* A. Milne Edwards, *truncatifrons*, sp. nov., an undescribed species from the Pacific coast, and *latimanus* and *crisimanus* Stimpson which I have not seen.

82. MICROPANOPE XANTHIFORMIS (*A. Milne Edwards*).

Station 41, off Sand Key, 15 fathoms; one male.

MICROPANOPE TRUNCATIFRONS sp. nov. Pl. IV, Fig. 2.

Coarsely granulate; frontal lobes truncate.

Carapace moderately convex; antero-lateral teeth horizontal. Surface granulate, granules large and conspicuous anteriorly, diminishing toward the posterior margin. Regions well defined. On each protogastric region there is a short, oblique ridge; a longer ridge on each hepatic region; a transversely arcuate elevation on the anterior part of the branchial region. Outer orbital tooth very small and well separated from the second tooth which is small and tuberculiform. Third, fourth and fifth teeth dentiform, the third directed forward, the fourth and fifth outward, the fifth smaller than the two preceding. Margin of teeth denticulate. Front truncate; margin thin, finely crenulate; lobes under the lens slightly sinuous; a row of coarse granules behind and above the margin giving the front the appearance of having a double edge. Orbital margin granulate; two superior fissures little marked, inferior margin with two subequal teeth and a broad outer V-shaped fissure. Inferior surface of the carapace granulate.

Chelipeds unequal in the female, tuberculate. Merus short

and broad, triangulate, armed with rather sharp tubercles, larger on the margins. Tubercles of the carpus forming irregular masses and ridges; two inner spines of which the inferior posterior is the smaller. Manus with a superior groove and double crest; tubercles of the outer face diminishing in size towards the lower margin; those of the inner face very large near the upper margin, diminishing toward the lower and distal margins. Larger hand stout, palmar portion convex above and below; smaller hand with margins subparallel. Fingers brown, deeply grooved, finely granulate, not gaping when closed; dactylus of larger hand with larger basal tooth. Ambulatory legs very slender, granulate: meri armed with small spines anteriorly; carpal and propodal joints with spinules.

Dimensions.—Length 7. width 10.4. exorbital width 6.5, width of front 3.5 mm.

Type locality.—Off Havana, Cuba, lat. $23^{\circ} 11' 45''$ N., long. $82^{\circ} 18' 54''$ W., 194 fathoms, station 2326, one female (U. S. Nat. Mus. No. 9497).

Additional localities.—Off Havana, lat. $23^{\circ} 10' 40''$ N., long. $82^{\circ} 20' 15''$ W., 182 fathoms, station 2349, one small male. Off Arrowsmith Bank, Yucatan, lat. $20^{\circ} 59' 30''$ N., long. $86^{\circ} 23' 45''$ W., 130 fathoms, station 2354, one female.

83. MICROPANOPE LOBIFRONS *A. Milne Edwards*.

Off Havana, one female.

Genus TETRAXANTHUS nov.

Carapace quadrate, very convex, not areolate; orbit as wide as half the front; lateral teeth four including the orbital angle; teeth little projecting; first and second small, separated by a shallow sinus; third and fourth somewhat dentiform, obtuse; palate with a ridge. Chelipeds with merus extending considerably beyond the carapace; propodus very concave on lower margin; ambulatory legs long and slender. Type, *T. bidentatus* (*A. Milne Edwards* as *Xanthodes*).

84. TETRAXANTHUS BIDENTATUS (*A. Milne Edwards*).

Station 42, off Sand Key, 15 fathoms.

85. *ERIPHIA GONAGRA* (*Fabricius*).
Spanish Wells and Harbor Island, Bahamas.
86. *DOMECIA HISPIDA* *Souleyet* (= *PILUMNUS MELANACANTHUS* *Kingsley* = *EUPILUMNUS WEBSTERI* *Kingsley*).
Sand Key Light, among sponges and rocks.

PORTUNIDÆ.

87. *PORTUNUS SAYI* (*Gibbes*).
Tortugas, in gulf weed.
88. *PORTUNUS (ACHELOUS) SPINIMANUS* (*Latreille*).
Stations 44 and 46, off Key West, shallow water; Tortugas, in gulf weed; Bahama Banks.
89. *PORTUNUS (ACHELOUS) DEPRESSIFRONS* (*Stimpson*).
Station 46, off Key West; Tortugas, dredged; Spanish Wells, Bahamas; Bahama Banks, from millepores.
90. *PORTUNUS (ACHELOUS) ORDWAYI* *Stimpson*.
Tortugas, gulf weed; Bahama Banks. Two young.
91. *PORTUNUS (ACHELOUS) SPINICARPUS* *Stimpson*.
Station 24, off Key West, 60 fathoms; station 46, off Key West, shallow water; Tortugas, dredged.
92. *CALLINECTES DANÆ* *Smith*.
Bahia Honda, Cuba.
One large male. This locality extended the northern limit of the species. The United States Fish Commission has, however, since (in 1896) taken it at Indian River Inlet, Florida.
93. *BATHYNECTES SUPERBA* (*Costa*) (= *B. LONGISPINA* *Stimpson*, fide Norman, Ann. Mag. N. H. March, 1891, 272).
Stations 30 and 35, off Key West, 90 and 100 fathoms.

CORYSTIDÆ.

HYPOPELTARIUM DENTRUM sp. nov. Pl. VI, Fig. 2.

Carapace oval; median tooth of front longer than the lateral; chelipeds very unequal; seven abdominal segments in the male distinct.

This species resembles *H. spinulosum* in the shape of the carapace and lateral lobes, the character of the rostrum, orbits, antennæ and maxillipeds. It differs from it in its very unequal chelipeds and in the separation of the seven abdominal segments. In these points it resembles *Trichopeltarion*.

Carapace narrow, oval, broader anteriorly than posteriorly, very convex, strongly deflexed anteriorly. Surface ornamented with numerous small, white, bead-like tubercles which posteriorly become subacute or spiniform. The surface between the tubercles is covered with very short light-colored setæ. Branchio-cardiac sutures very deep. Front horizontal, tridentate, median tooth twice as long as the lateral, each tooth tipped with a sharp spine, and with two or more smaller spines near the tip. Orbit four-toothed as in *H. spinulosum*, the teeth margined with small spines. Eye-stalks slender, curved, capable of being concealed within the orbits. Eyes imperfectly developed, light brown. About one-third the distance from the tip on the anterior surface there is a small slender spine.

On the lateral margins of the carapace, three shallow teeth or lobes can be made out, two of which are antero-lateral and one postero-lateral; they are bordered by small spines. Inferior surface of the carapace spinulous. The sutures between the abdominal segments are distinct. The terminal segment is not deeply inserted in the preceding segment as in *H. spinulosum*, and is considerably broader than long. The median third of the abdomen is spinulous, the spinules diminishing in size from the first to the sixth segment. Sternum granulate. Antenna with basal joint stout, spinulous, partially movable, and attaining the end of the subocular tooth, second and third joints successively much more slender. The maxillipeds

are very similar to those of *H. spinulosum*. Surface partially granulate. The ischium at its distal extremity is wider than the merus; its antero-lateral angle is produced. The merus is narrow at base, its outer margin is arcuate, antero-internal margin oblique; inner angle spinulous.

The chelipeds are very unequal, the right the larger; surface finely granulate. Merus very thick, trigonal, spinulous on upper and outer margins and toward distal end. Carpus with outer surface tuberculous, inner margin thick, armed with sharp spinules; inner angle prominent, quadrate. Manus very deep distally; upper surface spinulous and tuberculous; pollex short, triangular, edged with eight small rounded teeth. Dactylus wide, upper margin arcuate, spinulous; inner edge with five crenate teeth larger than those on the pollex. The fingers are gaping and resemble the beak of a parrot. The smaller cheliped is very spinulous, the upper margin spinous, the fingers proportionally longer and more slender, gaping slightly at base. Ambulatory legs with merus joints spinous on upper margin and in last pair spinulous on outer surface. Carpal joints spinulous in first three pairs. Dactyli very long and slender. The ambulatory legs are fringed with long silky hair, also the upper margin of smaller cheliped, the lower margin of the carapace, the margins of abdomen, sternum and maxillipeds.

Dimensions.—Length 42.5, width 36.5, length of cheliped 72, greatest depth of manus 22, length of lower margin of manus 36, length of smaller cheliped 37.5, length of dactylus of first ambulatory leg on left side 14.5, same on right side 15.7 mm.

Type locality.—Off Cozumel, Yucatan, 231 fathoms, station 2359, steamer "Albatross," one male (U. S. Nat. Mus. No. 9558).

TRACHYCARCINUS SPINULIFER sp. nov. Pl. VI, Fig. 1.

Protuberances of the carapace small and spinulous; chelipeds subequal; outer surface of hands rough.

Shape of the carapace much as in *T. corallinus*; antero-lateral margins more convex. Surface covered with a light-

colored pubescence, finer and less dense than in *T. corallinus*. Regions of the carapace well-marked. Elevations smaller, more numerous and less striking than in *T. corallinus*, and covered with small conical tubercles, many of which are spiniform. Slender spinules are scattered on the carapace, especially on the posterior half and near the lateral margins. Lateral spines longer and more slender than in *T. corallinus*, and armed with spinules. Antero-lateral spines three, the third the longest. Postero-lateral spines two. Posterior margin armed with small spines. Front with three slender spines of equal width at base, directed forward, tips broken off. Orbital spines very slender, spinuliferous, the preocular having a small spine at its base on the outer side. The segments of the abdomen in the male are all distinct; the first and second have a few small spines or spinules.

Chelipeds small and nearly equal, the right the larger; covered with slender setæ like those on the carapace. Merus not exceeding the carapace; lower and outer margin spinulous. Outer surface of carpus and manus spinulous, with larger spines at the inner angle of the carpus and along the superior margin of the manus. Ambulatory legs longer and more slender than in *T. corallinus*, pubescent; all the joints excepting the dactyli bear spinules.

Dimensions.—Male, length to base of rostral spines 26, width including spines 34, width excluding spines 23.3 mm. A broken carapace from station 2395 is considerably larger than the type. It measures 40.6 mm. in length to the base of the rostral spines and 38.6 in width exclusive of spines.

Habitat.—Gulf of Mexico, 324 and 347 fathoms, stations 2376 and 2395, steamer "Albatross."

Type locality.—Station 2376, off the Delta of the Mississippi, 324 fathoms (U. S. Nat. Mus. No. 9639).

This species differs from the type of the genus in the same manner that the two species of *Hypopeltarium* differ from each other, that is, in the relative size of the chelipeds and in the distinctness of the seven abdominal segments in the male.

GECARCINIDÆ.

94. GECARCINUS LATERALIS (*Fréminville*).
Tortugas.
95. CARDISOMA GUANHUMI *Latreille*.
Spanish Wells, Bahamas.

PALICIDÆ.

96. PALICUS DENTATUS (*A. Milne Edwards*).
Station 41, off Sand Key, 15 fathoms.
97. PALICUS BAHAMENSIS *Rathbun*. Pl. IX, Fig. 2.
Bahama Banks.

The specimens collected by the University Expedition differ from the type in the shorter and blunt lateral teeth, in the less prominent posterior ridge, in the coarser and more even granulation of the carapace, and the thicker and blunter denticles of the anterior margin of the meral joints of the legs. These denticles, however, have a tendency to become sharp and curved at the tip in some specimens. In spite of these differences I refer these specimens to *bahamensis* on account of the similarity in general characters, the shape of the front and orbits, the arrangement of abdominal and sternal plates, the shape of the chelipeds and ambulatory legs. Chelipeds of small specimens agree with those of the type which is similar in size. In large specimens the chelipeds of the male are more unequal; manus very deep, coarsely granulate, upper surface tuberculate, lower margin nearly straight. Pollex longer and dactylus less deflexed than in the first form of the male of *P. alternatus*. Left cheliped very weak, fingers slender, deflexed. Chelipeds of female similar to the left cheliped in the male. A female of the form above described was taken by the "Blake" off Barbados.

Dimensions.—Male, length of carapace 8, width 9, length of second ambulatory leg 18, length of merus of same 5.2, carpus 3.2, propodus 4.3, dactylus 4.3. Female, length of carapace 7.5, width 8.8 mm. Small specimens are proportionally wider than large.

98. *PALICUS ALTERNATUS Rathbun.*

Station 24, off Key West, 60 fathoms.

99. *PALICUS SICA (A. Milne Edwards).*

Station 41, off Sand Key, 15 fathoms.

OCYPODIDÆ.

100. *SPEOCARCINUS CAROLINENSIS Stimpson.*

Tortugas, dredged.

Three small males. Described by Stimpson from the harbor at Charleston, South Carolina. It has not since been recorded.

101. *PRIONOPLAX ATLANTICUS Kendall.*

Tortugas, dredged.

One ovigerous female, 9 mm. long, 13.5 wide. Only the male of this species was known hitherto. In the type, male, the third, fourth and fifth segments of the abdomen are completely anchylosed.

102. *EUCRATOPSIS ELATA (A. Milne Edwards)?*

Eucratoplax elata A. Milne Edwards, Bull. Mus. Comp. Zoöl., VIII, 18, 1880.

Station 27, off Sand Key, 50 to 60 fathoms.

The typical species of *Eucratoplax* A. Milne Edwards, *E. guttata*, is identical with *Eucratopsis crassimanus* (Dana); therefore *Eucratoplax* becomes a synonym of *Eucratopsis*. The specimens in hand are, I think, referable to the second species of Milne Edwards, *Eucratoplax elata*, which is here assigned only provisionally to the genus *Eucratopsis*, as it differs from the type species of the genus in having the third segment of the abdomen of the male extend to the coxæ of the fifth pair of feet.

Eucratopsis elata is known only from a brief diagnosis of the female. Following is a description of specimens of both sexes in the United States National Museum:

Male.—Carapace subquadrate, convex, punctate, granulate

on the branchial, hepatic and intestinal regions; regions well marked. Front deflexed, about two-fifths the width of the carapace; margin thin, divided into two very slightly convex, entire lobes. Orbit nearly as wide as half the front, with two short, closed fissures above and a large outer notch; edge granulate; outer angle obtuse, not prominent; upper margin nearly transverse. Antero-lateral margin shorter than the postero-lateral. Lateral teeth four besides the orbital; the first small, triangular; the second, the broadest; the third the longest and most prominent, acuminate; the fourth postero-lateral, minute. Second segment of abdomen much narrower than the first and third, exposing the sternum; third segment with angular margins; third, fourth and fifth segments coalesced; terminal segment with extremity rounded; proximal margin concave. Surface of abdomen smooth, of sternum granulate.

Chelipeds unequal; granulate; merus trigonal, thick, upper margin with a spine one-third the distance from the proximal end. Carpus with an anterior groove, and sharp inner spine. Granulation of the smaller propodus coarser than that of the larger; in both there is a tendency to form longitudinal ridges. There is a broad truncate tooth on the propodus at the base of the dactylus in both chelæ; in the larger, the dactylus has a large basal tooth; both fingers deeply grooved; pollex with a granulate ridge above the lower margin; dactylus with proximal portion of upper surface granulate. The brown color of the dactylus does not extend quite to the manus; the color of the pollex is even less extensive. Fingers not gaping. Ambulatory legs slender; superior margin of meral, carpal and propodal joints minutely spinulous.

One male was dredged at station 2644, steamer "Albatross," off Cape Florida, lat. $25^{\circ} 40'$ N., long. 80° W., 193 fathoms (U. S. Nat. Mus. No. 11407).

Female.—At stations 2400 and 2401, southwest of Cape San Blas, Florida, 142 and 169 fathoms, were taken one female each, which I refer provisionally to the same species as the above. They differ from the male as follows: The postero-lateral margins are less convergent, and the lateral teeth are

three in number, besides the postorbital. The tooth corresponding to the first one of the male is obsolete: the next two are large and less divergent from the carapace than in the male. The last tooth is larger in the female than in the male. The inequality in the chelipeds is less in the female than in the male.

Young.—The young of this or of a closely allied species was taken at station 2402, "Albatross," south of Cape San Blas, 111 fathoms, and by the University Expedition off Sand Key. In these young specimens, only two lateral teeth are evident on the carapace; they are sharp and subequal. There is a denticulated elevation on the merus in place of the single spine of the adult.

Dimensions.—Male, length 7.6, width 10.5, width of front 4.1 mm. Female, station 2401, length 8.1, width 10.2; station 2400, length 6.1, width 7.8 mm.

103. PILUMNOPLAX AMERICANUS sp. nov. Pl. VII, Figs. 1 and 2.

Station 28, off Sand Key, 116 fathoms; stations 51, 52, 62, off American Shoal, 70 to 110 fathoms: station 56, Pourtales Plateau, lat. $24^{\circ} 16' N.$, long. $81^{\circ} 22' W.$, about 200 fathoms.

Surface granulate(?) *lateral teeth five; front sulcate*.

Carapace finely granulate under the lens; gastro-cardiac sulcus distinct; anterior mesogastric region faintly outlined. Front abruptly deflexed; upper margin with a slight median emargination, from which the two truncate lobes incline slightly backward; surface of front transversely sulcate; lower margin projecting a little beyond the upper, emarginate. Front deepest just outside the median emargination; margins granulate. Superior margin of orbit with a deep and narrow notch near the middle, and a deep rounded sinus near the outer angle. The outer orbital tooth is prominent and blunt, and is coalesced by a shallow sinus with the first broad lobe-form tooth of the lateral margin. In addition there are three lateral teeth, of which the first two are acute, the first espe-

cially prominent; last tooth very small, indicated only by a feeble emargination. The abdomen covers the sternum at its base. Chelipeds very unequal, everywhere granulated, the granulation of the smaller being coarser than that of the larger. Carpus with two spines at the inner angle.

This species is closely allied to *P. heterochir* (Studer) but differs in the more advanced front and orbital angles, in the additional tooth or lobe of the lateral margin, and in the extensive granulation of the carapace and chelipeds.

Dimensions.—Male, length 7.7, width 9.7 mm. A male from station 62, measures 11 mm. long and 14.2 wide.

Distribution.—The type specimen was taken by the "Albatross" at station 2415, off Georgia, 440 fathoms (U. S. Nat. Mus. No. 19652); also taken by the University Expedition at five stations off the Florida Keys, in from 70 to about 200 fathoms.

Genus CHASMOCARCINUS nov.

(Χάσμα, a gaping; καρκίνος, crab.)

Allied to *Scalopidia* Stimpson. Carapace thick, broadest posteriorly, tapering anteriorly, without antero-lateral angles, the lateral margins forming a curve continuous with the anterior margin. Front narrow, bifid. Orbits marginal, oblong; eyes movable. Pterygostomian region with a horizontal suture as in *Scalopidia*. Antennula with basal joint very large and hemispherical. Epistome nearly perpendicular, its margin projecting below the maxillipeds. Maxillipeds widely separated throughout their length, being placed longitudinally instead of obliquely as in *Scalopidia*; merus suboval, the palpus articulating at the antero-internal angle. Abdomen much narrower at base than the sternum; third, fourth and fifth segments coalesced in the male. The sexual appendages pass to the coxæ through ducts visible between the sternal segments. Abdominal segments distinct in the female. Chelipeds with merus trigonal, carpus quadrate, manus short and broad, fingers long and slender. Ambulatory legs slender, subcylindrical, the third pair the longest, the second next, the fourth the shortest. Dactylus of last pair recurved.

The genus differs from *Scalopidia* chiefly in the form of the merus of the maxillipeds, which is quadrate in that genus, in the character of the epistome which in *Scalopidia* is not sharply separated from the buccal cavity, in the movable eyes which are not concealed beneath the carapace, in the swollen basal joint of the antennula and the cylindrical ambulatory legs.

CHASMOCARCINUS TYPICUS sp. nov. Pl. VII, Figs. 3-5.

Orbits transverse; sternum and abdomen granulate.

Length of carapace a little more than three-fourths of the posterior width. Front and orbits about one-half the width of the carapace. The upper surface is convex and rounds gradually downward into the lateral surfaces which are almost perpendicular. Anterior third strongly deflexed. Lateral margin as seen from above, convex and slightly emarginate at its middle; at this point a deep sulcus arises and extends obliquely downward and forward, joining the inferior horizontal suture. The anterior half of the lateral margin is defined by a slight ridge of fine granules; the posterior half is not defined. The cardiac region is well marked, also the posterior part of the mesogastric. Surface finely granulate. Front with a short and shallow median sulcus; margin transverse, faintly bilobed. Orbit about two-thirds the width of the front; upper margin transverse. Eye fitting closely in the orbit, and much thicker at the base than at the cornea. Below the orbit there is an oblique ridge subparallel to the inferior margin. The margin of the epistome is notched in the middle, on either side of the middle, and again above the summit of the endognath of the maxillipeds. The maxillipeds are separated by a hiatus equal in breadth to the maxilliped. The ischium of the endognath has subparallel sides. The outer margin of the merus is semicircular, the inner margin slightly convex; at its base about half the width of the ischium. The sternum is finely granulate, the abdomen sparsely so. In the male the widest part of the abdomen is at the suture between the third and fourth segments; outline of fourth to seventh segments inclusive, triangular. In the female, the

lateral outline of each of the segments from the second to the sixth inclusive, is convex; the general outline from the third to the tip is triangular.

Chelipeds punctate; merus sparsely granulate, longer than wide. In the male the carpus has a tooth at the inner angle, blunt in the larger or right cheliped, acute in the smaller. Palms short and broad, lower margin very convex; fingers very long and slender, strongly bent downward; tips acute and bent toward each other. Dactylus of larger cheliped shorter than the pollex and very thick at base, as seen from above; prehensile margin tuberculate and very hairy. Prehensile margin of pollex denticulate and with a sinus at its base forming a slight gape. Fingers of smaller cheliped slightly bent, not at all gaping, prehensile edges very finely denticulate, with a larger tooth at the base of the dactylus. The chelipeds of the female differ from those of the male in being more nearly equal, the right or larger resembling the left in character, the carpus having a sharp spine, and the fingers very slightly bent and not gaping. Ambulatory legs slightly flattened, hairy; dactyli with a fringe of hair on opposite sides, superior and inferior.

Dimensions.—Male, length 7.5, width 9.8, length of propodus of cheliped 10.5, width of same 4.2, length of pollex along prehensile margin 7, of dactylus along superior margin 7.8 mm.

Type locality.—North of Trinidad, 31 to 34 fathoms. stations 2121 and 2122, U. S. Fish Commission steamer "Albatross" (U. S. Nat. Mus. No. 6901).

CHASMOCARCINUS OBLIQUUS sp. nov. Pl. VII, Fig. 6.

(*Obliquus*, in allusion to the slanting eyes).

Orbits oblique; sternum and abdomen smooth.

Carapace narrower than in *typicus*, without distinct lateral margin. Surface smooth, finely and obscurely punctate. Median notch of front shallow, but more distinct than in *typicus*. Superior margin of orbit oblique. Eyes shorter and less tapering than in *typicus*. Ridge below the orbit less prominent than in *typicus*. Maxillipeds similar. Sternum and abdomen

smooth. Abdomen narrower across the third segment than in *typicus*; sixth segment narrower than in that species, and with parallel sides.

Merus of chelipeds with the lower margin spinous; carpus with a long slender spine. Chelipeds nearly equal, in the immature male, fingers slightly deflexed as in the left hand of *typicus*, not gaping, prehensile margins finely denticulate; dactylus of the right cheliped with a basal tooth. Ambulatory legs more slender, less flattened than in *typicus*. The legs are detached. The last two joints have a fringe of long hair.

Dimensions.—Male, length 5.3, width 5.9 mm.

Type locality.—Southeast of Andros Island, Bahamas, in Tongue of Ocean, 97 fathoms, station 2651, "Albatross," one immature male (U. S. Nat. Mus. No. 20509).

104. *OCYPODE ARENARIA* Say.

Tortugas; Loggerhead Key; Egg Island, Bahamas.

105. *FREVILLEA BARBATA* A. Milne Edwards?

Off Havana.

One young male, soft shell, mutilated, about 3 mm. long and 4 wide, is perhaps referable to this species, of which I have seen no examples. The sides of the carapace converge posteriorly. The post-orbital angle is marked by a slender curved spine; behind the spine is one feebly marked tooth. The front is about $1\frac{1}{2}$ mm. wide and is faintly bilobed. Superior orbital margin sinuous, directed obliquely backward to the orbital spine. Eyes very large, as in young *Ocy-pode*, extending laterally beyond the carapace. The single cheliped (with fingers broken off) is smooth. The carpus has a short inner spine.

FREVILLEA QUADRIDENTATA sp. nov. Pl. VIII, Fig. 1.

Lateral teeth four; sides converging posteriorly.

Carapace very thick, smooth, very finely punctate; sides converging posteriorly, regions well marked. Front deflexed, in a dorsal view seeming faintly bilobed. Lateral margin

with four teeth, diminishing in size from the anterior or orbital to the posterior. Orbital margin sinuous, sloping obliquely backward and outward, a tooth near the inner angle below.

Chelipeds in the female equal, granulate, especially toward the margins. Merus with a spine on the superior margin. Carpus longer than wide, with a slender forward-pointing spine at the inner angle. Propodus with a granulated ridge on its upper and lower margins; lower margin concave. Fingers as long as the palmar portion. Dactylus with two granulated ridges on its upper surface; light brown color extending nearly to the articulation. Color of pollex extending only half its length. Teeth irregular and shallow. Tips curved, acuminate, crossing each other. Gape slight. Upper surface of carpus, propodus and dactylus sparsely hairy. Lower surface of last two joints of ambulatory legs fringed with very fine hairs.

Dimensions.—Length 4.7, anterior width 5.9, width of front 2.2 mm.

Type locality.—Curaçao, steamer "Albatross," one female (U. S. Nat. Mus. No. 19974).

GRAPSIDÆ.

106. *GONIOPSIS CRUENTATUS* (*Latreille*).

Spanish Wells, Bahamas.

107. *GRAPSUS GRAPSUS* (*Linnaeus*).

Bahia Honda, Cuba, on wharves; Egg Island and Spanish Wells, Bahamas.

108. *PACHYGRAPSUS TRANSVERSUS* *Gibbes*.

Dry Tortugas.

109. *PLANES MINUTUS* (*Linnaeus*).

Tortugas, in gulf weed; lat. $31^{\circ} 30' N.$, long. $75^{\circ} 11' W.$

110. *SESARMA (HOLOMETOPUS) MIERSII* *Rathbun*.

Egg Island, Bahamas.

111. *ARATUS PISONII* *Milne Edwards*.

Bahia Honda, Cuba.

112. PLAGUSIA DEPRESSA (*Fabricius*).

Spanish Wells, Bahamas.

113. LEIOLOPHUS PLANISSIMUS (*Herbst*).

Egg Island, Bahamas.

CALAPPIDÆ.

114. CALAPPA FLAMMEA (*Herbst*).

Tortugas.

CALAPPA SULCATA sp. nov. Pl. IX, Figs. 3 and 4.

Teeth of posterior margin produced; manus with a smooth sulcus.

This species is closely related to *C. flammea* (*Herbst*). The two specimens collected by the "Albatross" are not mature, but I have compared them with specimens of *flammea* equally small. The proportions of the carapace are similar to those of *flammea*; so also are the larger tubercles which ornament the longitudinal elevations, the smaller intervening tubercles are, however, much flatter and less conspicuous than in *flammea*. The posterior two-fifths of the carapace is very finely granulate, the granules barely visible to the naked eye, while in *flammea* they are always evident. The most striking difference in the carapace of the two species is the great length and slenderness of the median pair of teeth of the posterior border and also the spiniform teeth at the postero-lateral angle. In *flammea* there is a small tooth just outside the median pair; this tooth is absent in *sulcata*. The margin of the orbit is subentire; in *flammea*, incised with tuberculiform teeth.

The chelipeds differ as follows from those of *flammea*. Above the inferior margin of the palm (Fig. 4) there is an oblique row of four or more large granulated tubercles; above this row there is a broad and deep sulcus having a smooth surface, and continued in a direction subparallel to the distal margin of the palm. In *flammea*, the area above the inferior margin is granulate and has one or two small tubercles; above

this there is a depression corresponding to that in *sulcata*, but shallow and granulate.

Dimensions.—Female, length, median 13.7; entire length 14.6; greatest width, across postero-lateral angles, 17.5 mm.

Range.—Type locality, off the Delta of the Mississippi, station 2388, lat. $29^{\circ} 24' 30''$ N., long. $88^{\circ} 01' W.$, 35 fathoms, one female (U. S. Nat. Mus. No. 14941). One additional female was taken off Cape Hatteras, N. C., station 2296, lat. $35^{\circ} 35' 20''$ N., long. $74^{\circ} 58' 45''$ W., 27 fathoms (U. S. Nat. Mus. No. 8817).

115. CALAPPA ANGUSTA *A. Milne Edwards*.

Stations 24, 26 and 47, off Key West, 60 to 80 fathoms.

116. CALAPPA GALLUS (*Herbst*) (=C. GALLOIDES *Stimpson*.)

Tortugas.

117. CYCLOES BAIRDII *Stimpson*.

Spanish Wells, Bahamas, 6 fathoms. One female, which differs from the types from Cape St. Lucas only in its rougher and more uneven surface.

118. OSACHILA TUBEROSA *Stimpson*.

Station 24, off Key West, 60 fathoms; off Havana.

LEUCOSIIDÆ.

119. SPELÆOPHORUS ELEVATUS sp. nov. Pl. III, Fig 1.

Station 46, off Key West, shallow water; one female.

Carapace very high; four large branchial openings; antero-lateral and lateral margins subequal; two posterior marginal lobes reduced.

Allied to *S. triangulus* A. Milne Edwards, but the carapace is narrower and much higher. In *triangulus* the highest point of the dorsal surface is at the anterior end of the ridge which defines the inner and posterior boundary of each branchial region; in *elevatus* the highest point is at the middle of this ridge. Hepatic region convex; subhepatic tooth

prominent, blunt. Branchial margin with three lobes, one of which is antero-lateral. The lobe at the postero-lateral angle is much the largest and most produced. The branchial hollows are much larger than in the other species of the genus; the posterior openings are each nearly as large as the cardiac lobe; the anterior openings are each about one-half as large as the posterior, and separated from them by narrow bridges. The surface between the anterior openings is much depressed. The two lobes of the posterior margin are small and subtriangular. The outer surface of the merus of the chelipeds has three blunt thickened lobes or teeth. The palm is much swollen; its anterior or outer margin has a bilobed crest. The upper surface of the crab is covered with depressed granules so crowded as to present a honey-comb structure. The more elevated portions are in addition tuberculated. On the lower surface, there are many more tubercles, which are large and bead-like, and tend to form on the abdomen reticulating lines. The tubercles margining the ambulatory legs are large and acorn-shaped.

Dimensions.—Length 9.7, width at postero-lateral angles 12, width at median lateral lobe of the branchial region 11.4, height 5, greatest diameter of posterior opening 3.1, least diameter 2 mm.

120. ILIACANTHA SUBGLOBOSA *Stimpson*.

Stations 25 and 26, off Key West, 60 fathoms; station 41, off Sand Key, 15 fathoms.

ILIACANTHA LIODACTYLUS sp. nov. Pl. VIII, Fig. 2.

Three posterior acute spines; fingers longer than palm; dactyli of ambulatory legs not grooved.

The shape of the carapace is broadly oval, as in *subglobosa*. The granules are visible to the naked eye but are not large as in *sparsa* and *intermedia*; they are distant from one another and the intervening space is covered with minute punctæ. The lateral margin is bluntly angulate on the hepatic region and again on the branchial region about half way back on the carapace; the margin is indicated by a definite line of crowded

acute granules. The three posterior protuberances are acute, conical spines, upturned at the tips, the lateral pair two-thirds the length of the median. The front is not prominent, is slightly inclined upward and divided into two blunt, finely granulated teeth separated by a shallow sinus. It is wider proportionally than in *subglobosa*. The pterygostomial channel projects only slightly beyond the orbital margin and does not exceed the front; of the two notches at its extremity, the outer is broad, deep and U-shaped, the inner is very shallow. The outer maxillipeds are similar to those of *subglobosa*; the exognath reaches nearer the end of the upper margin of the pterygostomial channel than in that species. In the abdomen of the male, the third, fourth and fifth segments are coalesced, and the sixth is partially soldered to these, the dividing line being visible. The sutures between the first, second and third segments are not as clearly marked as in *subglobosa*. The abdomen for the greater part of its length is narrower than in *subglobosa*.

Chelipeds about twice the length of the carapace. Merus a little shorter than the carapace, exclusive of posterior spine, slender, cylindrical, not tapering, coarsely and rather densely granulate, with a blunt tooth at the posterior proximal end, as in *subglobosa*. Carpus and manus finely granulate. Palm narrowing distally, a little more than three times as long on its outer margin as its greatest width. Dactylus about one-fourth longer than the palm; armature similar to that of *subglobosa*, that is, there are about eight longer, slender spines at tolerably regular intervals, the interspaces with from nine to twelve small irregular spines. The ambulatory legs are slender; propodi less compressed than in *subglobosa*; dactyli smooth and furnished with a fringe of hair on opposite sides (superior and inferior margins); this fringe is longer and more noticeable than in *subglobosa* where the two lines are near together, on the upper and posterior surfaces, and the dactyli are deeply grooved.

Dimensions.—Immature male, length to tip of median spine 17, length exclusive of spine, 14.5, width 13.6, length of

merus of cheliped, on posterior margin 13.9, length of manus, along posterior or outer margin 6.5, length of dactylus 8.6 mm.

Range.—Type locality, north of Trinidad, 31 to 34 fathoms, stations 2121 and 2122, steamer "Albatross" (U. S. Nat. Mus. No. 20327). Taken also at St. John one of the Danish West Indies by Ærsted; one immature female (Copenhagen Museum).

121. *EBALIA STIMPSONII* A. Milne Edwards.

Bahama Banks, from millepores.

122. *LITHADIA CADAVEROSA* Stimpson.

Bahama Banks.

DORIPPIDÆ.

123. *ETHUSA MASCARONE AMERICANA* A. Milne Edwards.

Station 45, off Key West, shallow water.

124. *ETHUSA TENUIPES* Rathbun.

Stations 27, 39, 41 and 47, off Key West and Sand Key, 15 to 80 fathoms.

125. *CYMOPOLUS ASPER* A. Milne Edwards.

Stations 28, 30, 33, 35, 51, 52, 56, 62, 63, 64, off Key West, Sand Key and American Shoal, 70 to 200 fathoms.

126. *CYCLODORIPPE NITIDA* A. Milne Edwards.

Stations 27, 30, 51 and 52, off Key West and American Shoal, 50 to 110 fathoms. Abundant at stations 30 and 51.

127. *CYCLODORIPPE ANTENNARIA* A. Milne Edwards.

Station 27, off Sand Key, 50 to 60 fathoms; off Havana.

CYCLODORIPPE GRANULATA sp. nov. Pl. IX, Fig. 1.

Coarsely granulate. Posterior greater than anterior width.

Superior and inferior surfaces closely and coarsely granulate. Carapace broader than long; posterior greater than exorbital width; very convex in a transverse direction, slightly so in a longitudinal direction. Branchio-cardiac grooves deep; mesogastric region partly outlined by converging grooves;

protogastric lobes with faint longitudinal impressed lines. Lateral margin with a small sharp spine about the middle of its length; margin behind the spine tuberculous. Front with a median tooth, elevated, blunt, smooth at the tip, having a median sulcus, concave beneath, forming the roof of the buccal cavity; on either side is a depressed and inconspicuous tooth. Preorbital tooth large, subacute, not quite so advanced as the front. Postorbital tooth acute, directed obliquely forward. Endognath of maxillipeds longitudinally grooved. The left cheliped, the only one with the specimen, is very slender and coarsely granulate; the fingers as long as the palm.

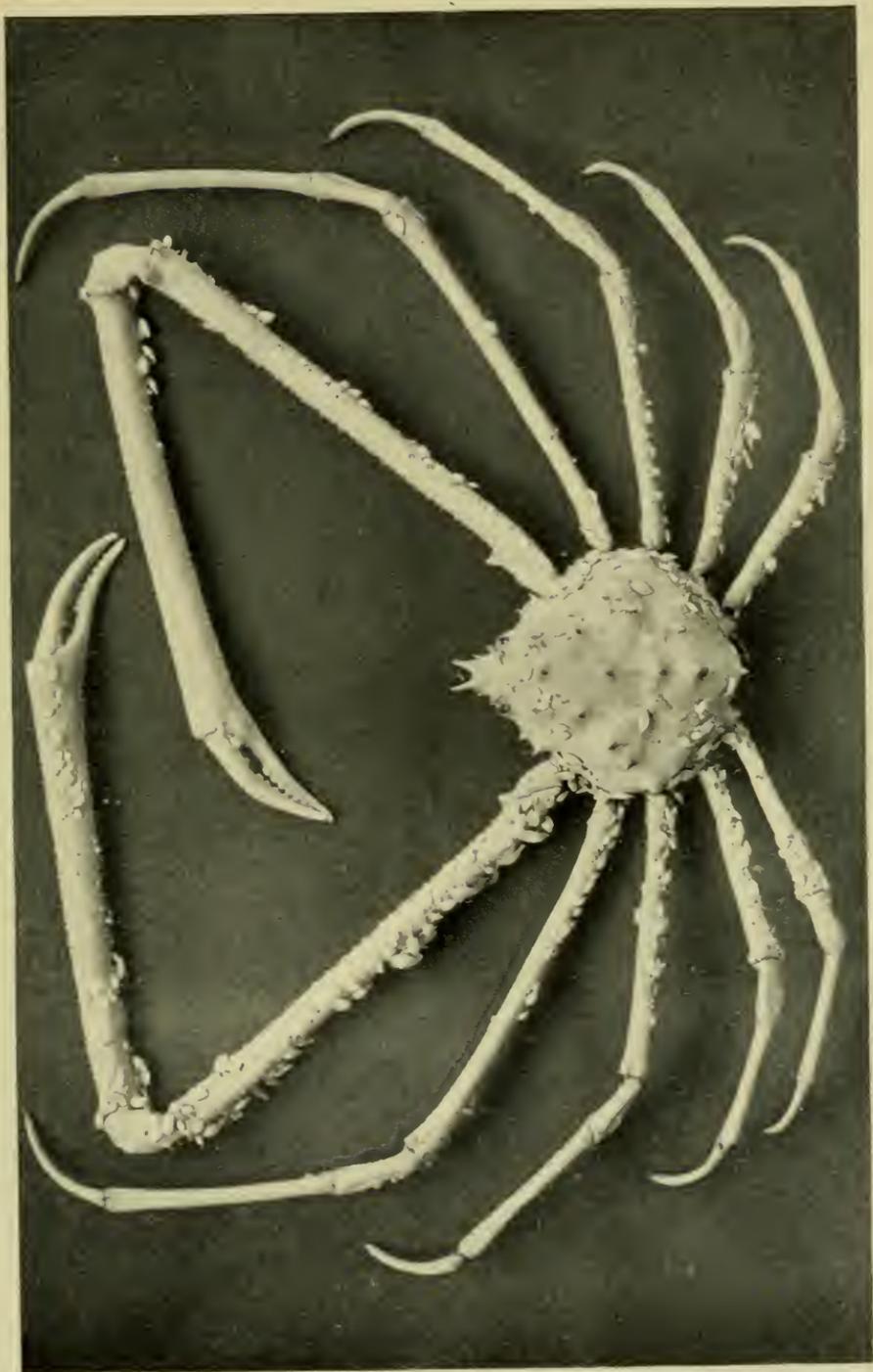
Dimensions.—Female, length 2.8, width 3 mm.

Type locality.—Off Trinidad, lat. $11^{\circ} 07' N.$, long. $62^{\circ} 14' 30'' W.$, 73 fathoms, station 2120, one female (U. S. Nat. Mus. No. 20510).

EXPLANATION OF PLATE I.

Anamathia crassa, ♂, $\times \frac{3}{8}$.

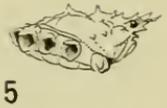
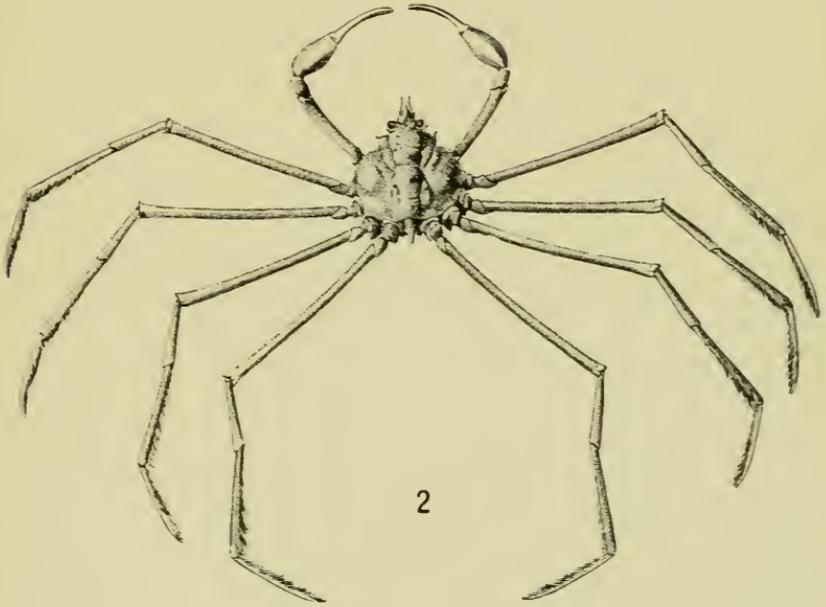
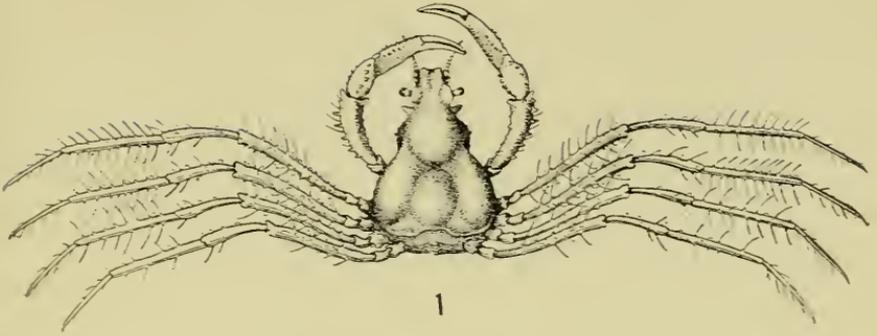
PLATE I.



EXPLANATION OF PLATE II.

- Fig. 1. *Collodes armatus*, ♀, $\times 2$.
Fig. 2. *Anasimus latus*, ♂, $\times \frac{1}{2}$.
Fig. 3. *Anasimus latus*, outer maxilliped, $\times 2$.
Fig. 4. *Anasimus latus*, ♂, ventral view, $\times \frac{1}{2}$.
Fig. 5. *Anasimus latus*, ♂, profile, $\times \frac{1}{2}$.

PLATE II.

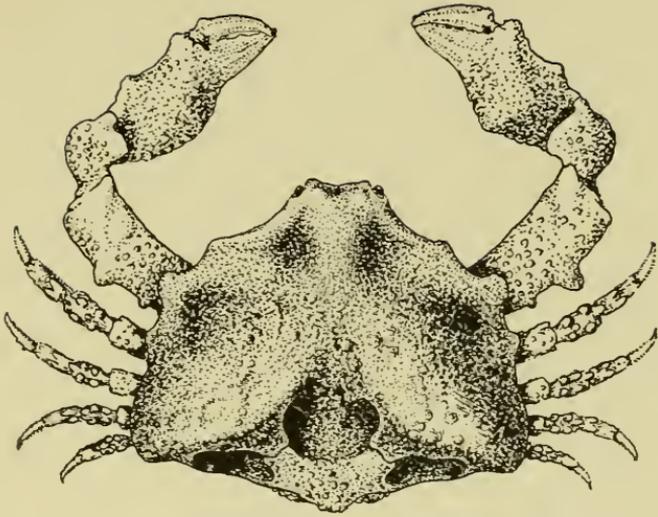


EXPLANATION OF PLATE III.

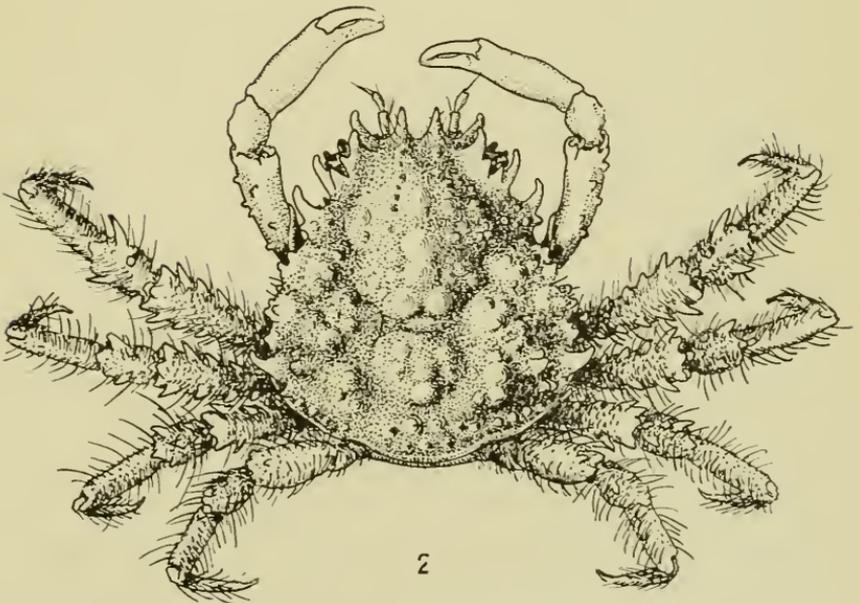
Fig. 1. *Spelaeophorus elevatus* ♀, $\times 3\frac{1}{2}$.

Fig. 2. *Mithrax holderi*, ♀, $\times 1\frac{2}{3}$.

PLATE III.



1



2

EXPLANATION OF PLATE IV.

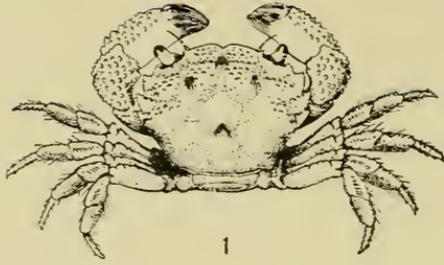
Fig. 1. *Xanthias nuttingi*, ♂, $\times 4\frac{1}{2}$.

Fig. 2. *Micropanope truncatifrons*, ♀, $\times 3\frac{1}{2}$.

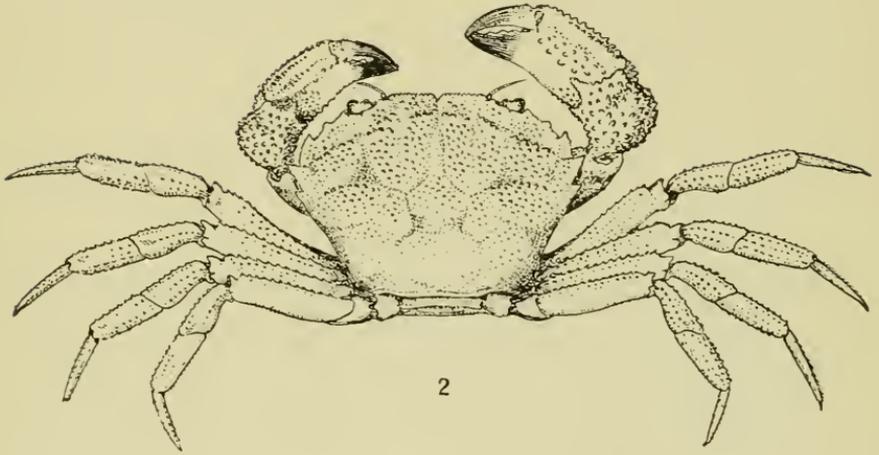
Fig. 3. *Actæa bifrons*, ♂, front, $\times 6\frac{2}{3}$.

Fig. 4. *Actæa bifrons*, ♂, $\times 3\frac{1}{2}$.

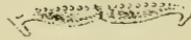
PLATE IV.



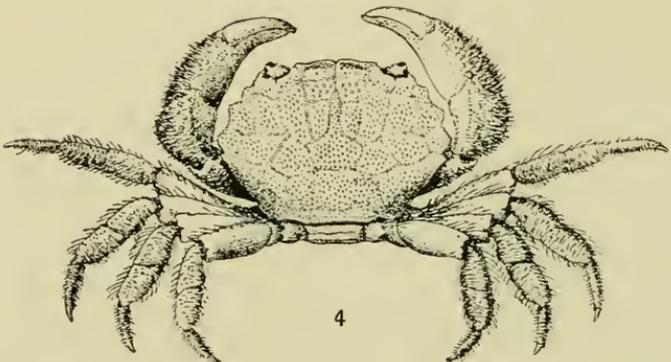
1



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3



4

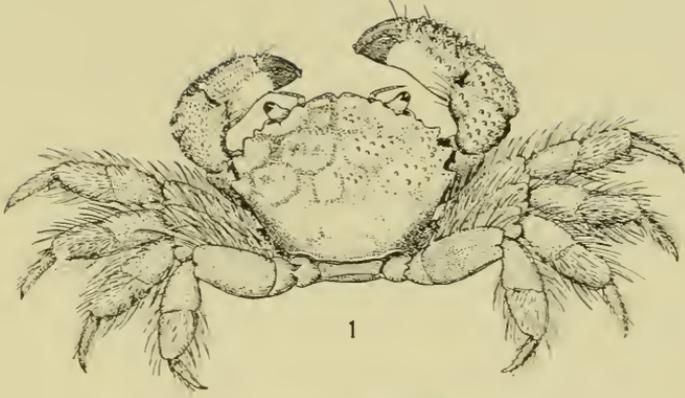
EXPLANATION OF PLATE V.

Fig. 1. *Pilumnus holosericus*, ♂, showing tubercles on right half, × 3.

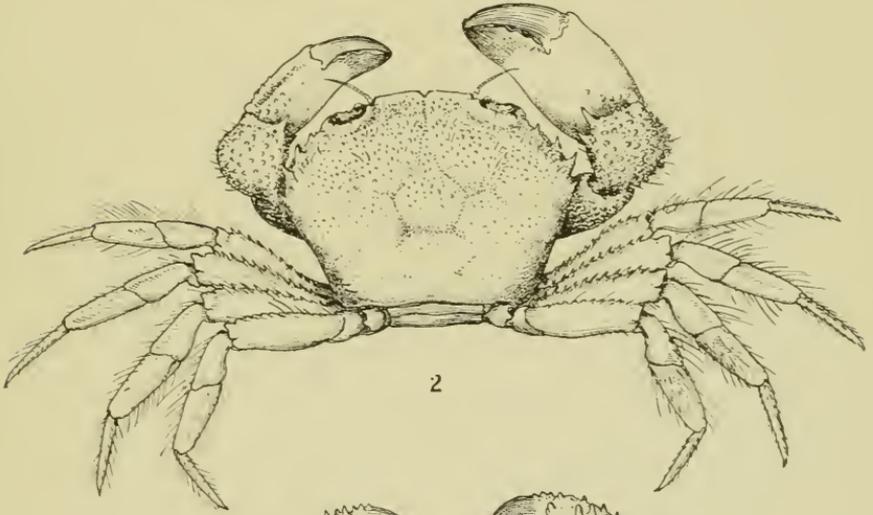
Fig. 2. *Pilumnus andrewsii*, ♀, × 3.

Fig. 3. *Pilumnus spinosissimus*, ♂, × 3.

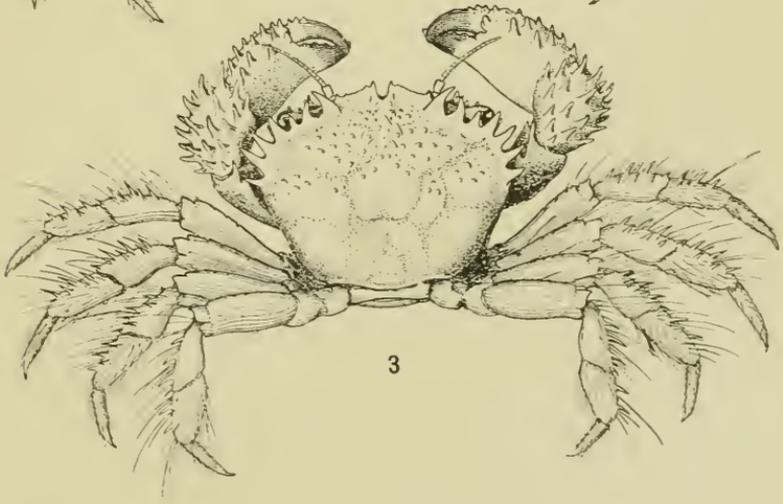
PLATE V.



1



2



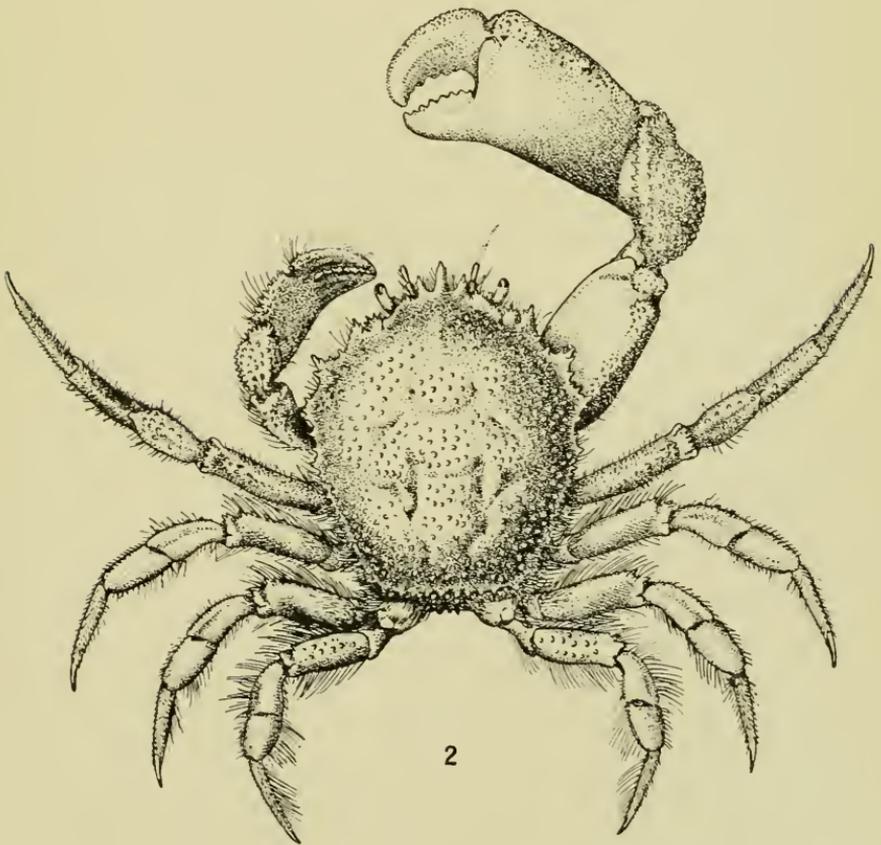
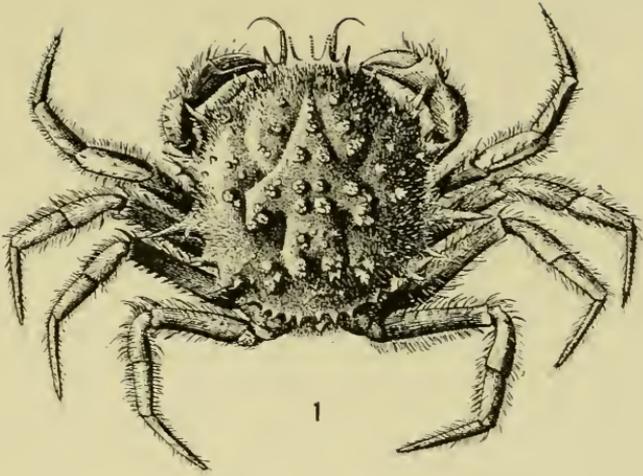
3

EXPLANATION OF PLATE VI.

Fig. 1. *Trachycarcinus spinulifer*, ♂, $\times 1\frac{1}{8}$.

Fig. 2. *Hypopeltarium dextrum*, ♂, $\times 1\frac{5}{8}$.

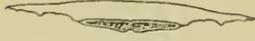
PLATE VI.



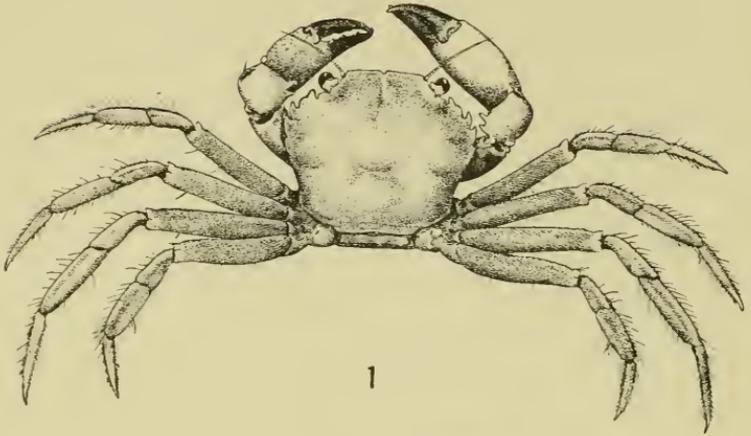
EXPLANATION OF PLATE VII.

- Fig. 1. *Pilumnoplax americanus*, ♂, $\times 1\frac{1}{2}$.
Fig. 2. *Pilumnoplax americanus*, ♂, front, $\times 2$.
Fig. 3. *Chasmocarcinus typicus*, ♂, $\times 2$.
Fig. 4. *Chasmocarcinus typicus*, ♂, abdomen and sternum, flattened, $\times 2$.
Fig. 5. *Chasmocarcinus typicus*, ♂, outer maxillipeds, $\times 2$.
Fig. 6. *Chasmocarcinus obliquus*, carapace of ♂, $\times 2$.

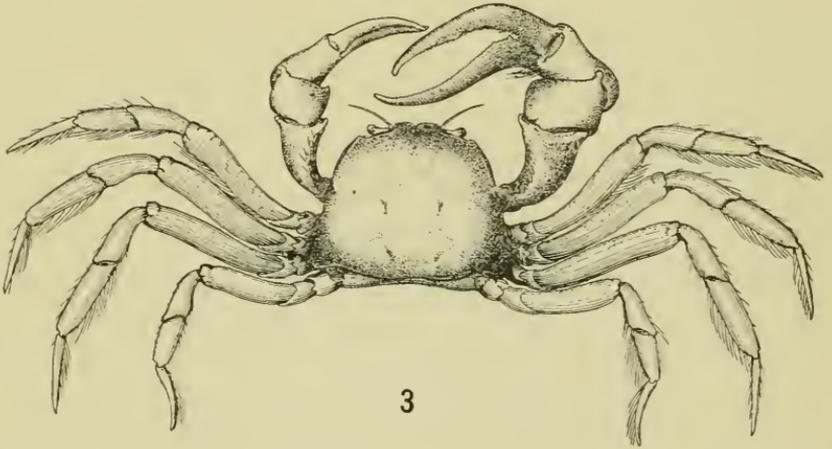
PLATE VII.



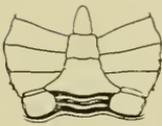
2



1



3



4



6



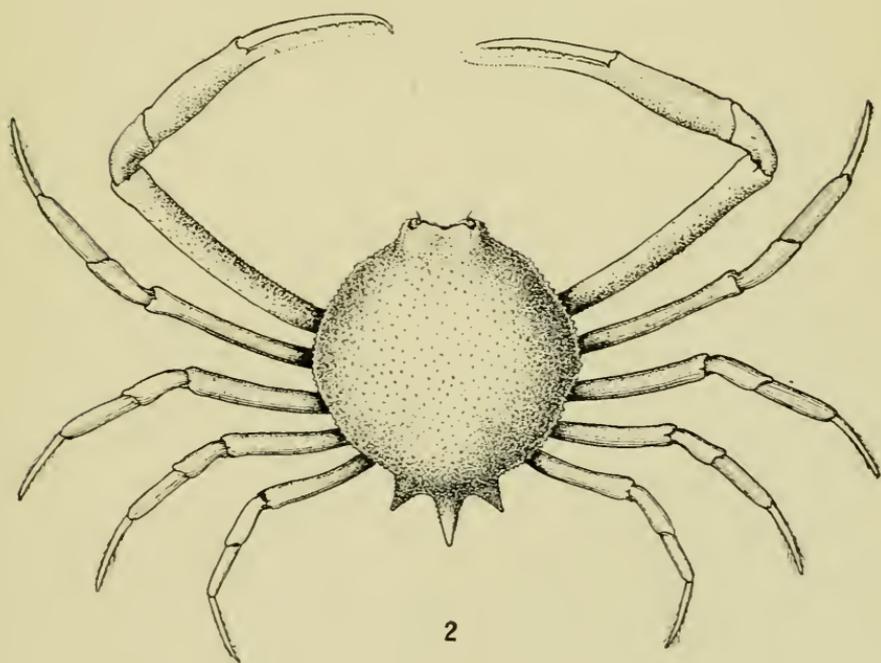
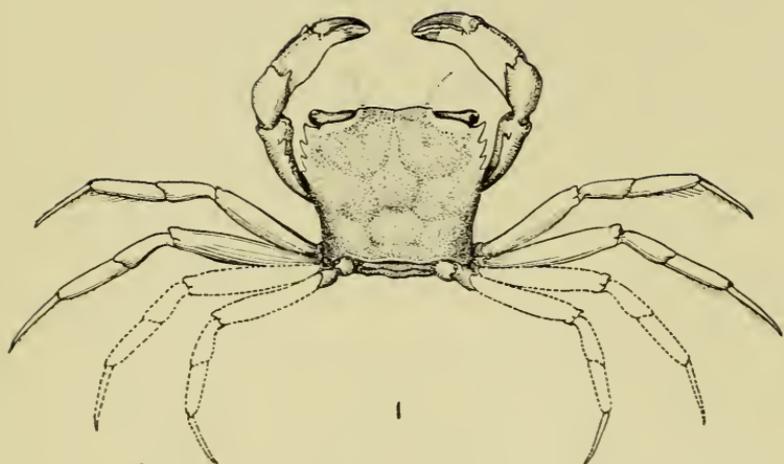
5

EXPLANATION OF PLATE VIII.

Fig. 1. *Frevillea quadridentata*, ♀, $\times 3\frac{3}{4}$.

Fig. 2. *Iliacantha liodactylis*, ♂, $\times 2\frac{1}{4}$.

PLATE VIII



EXPLANATION OF PLATE IX.

- Fig. 1. *Cyclodorippe granulata*, ♀, $\times 6\frac{3}{4}$.
Fig. 2. *Palicus bahamensis*, ♂, $\times 3$.
Fig. 3. *Calappa sulcata*, ♀, $\times 2\frac{1}{4}$.
Fig. 4. *Calappa sulcata*, ♀, left hand, $\times 2\frac{1}{4}$.

PLATE IX.

