Measurements.—Male (Puerto Harris), length of carapace 26.2, width of same 29.3 mm.

Range.—From Talcahuano, Chile, to the Falkland Islands.

Material examined.—

CHILE.—Talcahuano: 1 male, 2 young (M.C.Z.). January 15, 1927; W. L. Schmitt; 2 males, 1 female, 3 young (61995).

Corral; January 20, 1927; W. L. Schmitt; 2 males, 2 females, 6 1927; young (61992).

San Carlos, Chiloe Island; 1 female (M.C.Z.).

Port Otway (now Port Barroso); February 9–10, 1888; *Albatross*; 3 males (1 is holotype), 11 females (21589).

Eden Harbor, Smith Canal: 30 males and females (M.C.Z.). Paessler collector; 1 female (43316), received from Munich Mus.

Latitude Cove; February 6, 1888; *Albatross*; 4 males, 1 female (22053).

Mayne Harbor; 3 males (M.C.Z.).

Puerto Harris, Dawson Island; February, 1921; Exped. Facult. Ciencias; 4 males, 2 females; lent by Buenos Aires Mus. (12710).

FALKLAND ISLANDS.—Teal Inlet; April 2–4, 1927; W. L. Schmitt; 1 young female (61996).

Port Stanley; April 16, 1927; W. L. Schmitt; 2 males, 2 females (60841).

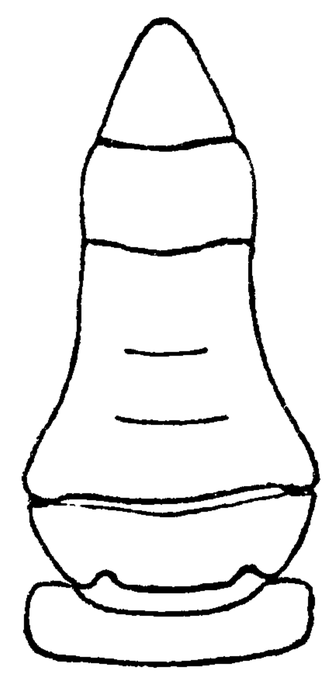

FIGURE 28.—ACANTHOCYCLUS HASSLERI, MALE ABDOMEN, ×2

ACANTHOCYCLUS HASSLERI Rathbun

Plate 76, Figure 1

Acanthocyclus hassleri RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 599, pl. 43, fig. 1 (abdomen) (type-locality, Valparaiso; holotype, Cat. No. 4889, M.C.Z.).—LENZ, Zool. Jahrb., suppl. 5, vol. 2, 1902, p. 754; Cavancha.

Description.—See page 171. In small specimens the rim of the median frontal tooth has a tendency to divide in the middle.

Measurements.—Male holotype, length of carapace 16, width of same 18.6 mm. Male (3265), length 12, width 13.9 mm. Male (Cavancha), length 22, width 25 mm. (Lenz).

Range.—Panama to Valparaiso, Chile.

Material examined.—Panama; John M. Dow; 2 males, 1 female (3265). Valparaiso; *Hassler* Exped.; 1 male holotype (4889, M.C.Z.).

Genus CORYSTOIDES Milne Edwards and Lucas

Corystoides MILNE EDWARDS and LUCAS, d'Orbigny's Voy. l'Amér. Mérid., vol. 6, pt. 1, 1844, p. 31; type, *C. chilensis* Milne Edwards and Lucas.—A. MILNE EDWARDS and BOUVIER, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 307.

Carapace longer than broad, convex, dentate on the sides and rounded posteriorly, somewhat truncate anteriorly. Front little

advanced, tridentate. Ocular peduncles elongate, slender, stout at base, situated in small orbits. The second or basal article of the antenna is soldered to the infero-external surface of the frontal tooth along with the two last peduncular articles; at the end of the peduncle may be seen a rudimentary flagellum formed of two or three extremely short and narrow articles which are soldered to the peduncle and to each other and which seem also to be glued to the same surface of the frontal tooth. Buccal area longer than broad, narrowed forward; outer maxillipeds elongate, obliquely placed. Legs narrow, of moderate length. Male abdomen narrow, third, fourth, and fifth segments fused.

Contains only one species.

CORYSTOIDES CHILENSIS Milne Edwards and Lucas

Plate 78

Corystoides chilensis MILNE EDWARDS and LUCAS, d'Orbigny's Voy. l'Amér. Mérid., vol. 6, pt. 1, 1844, p. 32; atlas, vol. 9, 1847, pl. 16, figs. 1–1*e* (type-locality, coasts of Valparaiso; type in Paris Museum).—NICOLET, in Gay, Hist. Chile, Zool., vol. 3, Crust., 1849, p. 179.—PORTER, Revista Chilena Hist. Nat., vol. 22, 1918, p. 52.

Corystoides abbreviatus A. MILNE EDWARDS, Bull. Mus. Comp. Zoöl., vol. 8, 1880, p. 20 (type-locality, Rio de la Plata, below Montevideo; cotypes in M.C.Z., Paris Mus., and U.S.N.M.).—BOUVIER, in A. MILNE EDWARDS and BOUVIER, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 309, pl. 2, fig. 7; pl. 4, fig. 6; pl. 5, fig. 1.

Diagnosis.—Anterior half of carapace wider than posterior half and bearing conspicuous raised bead granules. Pterygostomian region not advanced beyond the line of the front. Dactyli of legs slender.

Description.—Carapace irregularly granulate anteriorly and at the sides, posteriorly almost smooth; some depressions in the median line. Antero-lateral borders armed with six teeth on each side, third and fourth most pronounced, second and sixth reduced; these teeth and those which form the front are finely granulate on the upper edge, with a large bead granule at the tip of each tooth, except the median rostral tooth which has two beads side by side. Antennules ciliated. Pterygostomian region very prominent and granulated. Outer maxillipeds finely punctate, ischium with a longitudinal groove. Chelipeds finely granulate except the first three articles which are smooth; fingers long, curved, strongly denticulate on inner margin. Legs smooth, ciliated. Sternum finely punctate.

Color.—Yellowish white (Milne Edwards and Lucas). Bright red, in life (Porter).

Measurements.—Length of carapace 27, width of same 22 mm. (Milne Edwards and Lucas). Male, length 18, width 16 mm. (Bouvier for *chilensis*). Male, length 20, width 18 mm. (Milne Edwards and Bouvier for *abbreviatus*).

Range.—Chile: Valparaiso (Milne Edwards and Lucas); Curanipe, province of Maule (Porter). Uruguay.

Material examined.—

PATAGONIA.—Dr. Wilson; 1 male (Phila. Acad. Nat. Sci.), labeled "type."

URUGUAY.—Rio de la Plata, below Montevideo; lat. 35° 12′ S., long. 55° 30′ W.; 7 fathoms; February 29, 1872; station 25, *Hassler* expedition; 3 males, 3 females, cotypes (18509), received from Mus. Comp. Zoöl.; 12 male and female (3961, M.C.Z.).

Genus BELLIA Milne Edwards

Bellia MILNE EDWARDS, Ann. Sci. Nat., ser. 3, Zool., vol. 9, 1848, p. 192; type, *B. picta* Milne Edwards.—DANA, U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 403; part 2, 1853, p. 1428.—BOUVIER, in A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zoöl., vol. 47, 1923, pp. 308 and 309.

Carapace elongate, oblong, high, anteriorly dentate. Ocular peduncles short. Pterygostomian region prominent, well advanced beyond the margin of the front and forming below the orbit a thin plate which underlaps the infero-orbital tooth. Between this tooth and the outer frontal tooth there is wedged a smaller triangular tooth which represents the basal article of the antenna. From the posterior half of the upper surface of the latter springs the movable part of the peduncle which is free, directed obliquely forward and consists of a stout article followed by a more slender one, on the end of which there is a minute lump, the rudiment of a flagellum. Outer maxillipeds similar to those of *Corystoides* except that the merus is not notched at the antero-internal angle. Legs stout, dactyli dilated. Male abdomen subtriangular, short and broad.

Contains only one species.

BELLIA PICTA Milne Edwards

Plate 79

Bellia picta MILNE EDWARDS, Ann. Sci. Nat., ser. 3, Zool., vol. 9, 1848, p. 192 (type-locality, Bay of Saint Nicolas, Peru; type in Paris Mus.).—PORTER, Revista Chilena Hist. Nat., vol. 22, 1918, p. 52; Antofagasta.

Diagnosis.—Anterior half of carapace not wider than posterior half; no conspicuous granules. Pterygostomian region advanced beyond the line of the front. Dactyli of legs enlarged.

Description.—Regions fairly well indicated. Surface finely and densely granulated. Antero-lateral margin cut into six very irregular blunt teeth of which the first (or orbital) and second are distant and the third and sixth are reduced. Behind the teeth a raised granulate line is continued along the margin of the middle third of the carapace and is punctuated by several elongate tubercles. Lower side margins of carapace fringed with hair. Teeth of front subequal, the median slightly surpassing the lateral. Eyes small, well protected by the

orbits. Upper orbital suture short but deep. Antennules heavily ciliated as is also the pterygostomian ridge, which is visible in dorsal view below and outside the antero-lateral dentation. Chelipeds unarmed; surface similar to that of carapace; merus and carpus ciliated; prehensile edge of fingers closely and evenly dentate. Dactyli of legs of first three pairs broad especially at middle, midrib thick; dactylus of last pair flat, broad-lanceolate, natatory. The last propodus also short and broad; dactylus fringed below, next three articles fringed on both margins.

Color.—Generally yellowish, with a multitude of irregular and confluent red spots.

Measurements.—Male (22066), length of carapace 53.3, width of same 49, fronto-orbital width 16.8, front between tips of outer teeth 6.1 mm.

Range.—Peru and Chile.

Material examined.—

PERU.—Independencia Bay; 1919; Robert Cushman Murphy; 1 female (54211) received from Brooklyn Museum; 1 male (Brooklyn Mus.).

CHILE.—Lota; 1888; *Albatross;* 7 males, 2 females, 26 young (22066).

Family CANCRIDAE

Cancridae ALCOCK (part: *Cancrinae+Pirimelinae*), Journ. Asiat. Soc. Bengal, vol. 68, 1899, p. 94.

Carapace broadly oval, front with several teeth, one of which is median. Antennules folded lengthwise. Antennal flagella present, short, more or less hairy. Third maxillipeds usually overlapping endostome.

Genus CANCER Linnaeus

Cancer LINNAEUS, Sys. Nat., ed. 10, vol. 1, 1758, p. 625; type, *C. pagurus* Linnaeus.

Alpheus WEBER, Nomenclator Entomologicus, 1795, p. 91; type, *A. pagurus* (Linnaeus). Not *Alpheus* Fabricius, Suppl. Entom. Syst., 1798, p. 380.

Pagurus BERTHOLD, Latreille's Natürliche Familien des Thierreichs, 1827, p. 255; type, *P. pagurus* (Linnaeus). Not *Pagurus* Fabricius, Syst. Entom., 1775, p. 410.

Trichocera DE HAAN, Fauna Japon., Crust., 1833, pp. 4 and 16; type *T. gibbosula* (de Haan). Not *Trichocera* Meigen, Illig. Mag., vol. 2, 1803.

Platycarcinus MILNE EDWARDS, Hist. Nat. Crust., vol. 1, 1834, p. 412; type, *P. pagurus* (Linnaeus).

Romaleon GISTEL, Natur. des Thierreichs, 1848, p. 11. Substituted for *Trichocera.*

Metacarcinus A. MILNE EDWARDS, Ann. Sci. Nat., Zool., ser. 4, vol. 18, 1862, p. 33; type, *M. magister* (Dana).

Trichocarcinus MIERS, Proc. Zool. Soc. London, 1879, p. 34; type, *T. gibbosula* (de Haan). Substituted for *Trichocera.*

Carapace transversely subelliptical, often indistinctly areolated. Front narrow, cut into five teeth or lobes, those of the outer pair form-

ing the inner angles of the orbit. Eyestalks short; orbits small, with two fissures in both upper and lower margins. Basal article of antenna usually somewhat enlarged and united with the front, thus excluding the flagellum from the orbit.

KEY TO THE AMERICAN SPECIES OF THE GENUS CANCER

A¹. Antero-lateral and postero-lateral margins meeting at a distinct angle. Lateral teeth 9, 10 or 11; carapace widest at ninth or tenth (sometimes eighth) tooth.

B¹. Branchial regions not nearly meeting on median line.

C¹. Front between the eyes markedly produced beyond outer orbital angles and formed of 5 subequal teeth. Fingers of chelipeds dark-tipped.....**productus**, p. 203.

C². Front between the eyes not markedly produced beyond outer orbital angles and formed of 5 unequal teeth.

D¹. Antero-lateral teeth 10, carapace widest at tenth tooth. Postero-lateral margin of carapace unbroken, entire. Fingers without dark color.....**magister**, p. 222.

D². Antero-lateral teeth 9, carapace widest at ninth (sometimes eighth) tooth. Postero-lateral margin of carapace with one, two or three small teeth or notches.

E¹. Antero-lateral margin of merus of outer maxilliped arcuate. First 8 antero-lateral teeth of carapace projecting less than one-third the width of base, not spiny-pointed. Fingers without dark color.....**gracilis**, p. 219.

E². Anterior and outer margins of merus of outer maxilliped nearly straight and meeting at a blunt angle. (Maxilliped of *luederwaldti* not known.)

F¹. Fingers wholly light colored. Carapace coarsely granulate.

G¹. Edge of antero-lateral teeth entire. Chelipeds granulate, not denticulate.....**irroratus**, p. 180.

G². Edge of antero-lateral teeth denticulate. Upper margin of palm denticulate.....**borealis**, p. 182.

F². Fingers partially or almost entirely dark colored.

G¹. Antero-lateral teeth dentiform, more or less projecting.

H¹. Antero-lateral teeth not prominent, projecting at the utmost scarcely more than half the width at base.

J¹. Carapace slightly uneven. Edges of lateral teeth denticulate. Median tooth of front very narrow, subacute. **anthonyi**, p. 218.

J². Carapace very uneven especially in female. Edges of lateral teeth entire. Median tooth of front blunt or subtruncate. **amphioetus**, p. 205.

H². Antero-lateral teeth prominent, projecting from a half to two-thirds or more of the width at base; teeth sharp-pointed, hooked forward, posterior margins convex, anterior concave.

J¹. A postero-lateral spine, not projecting sideways beyond the carapace margin. A strong tooth at middle of supraorbital margin_____**branneri**, p. 211.

J². No superimposed spine on posterior margin of carapace.

K¹. A strong tooth at middle of supraorbital margin. Carapace widest at eighth tooth. Lateral teeth denticulate on anterior margin. A single tooth or spine on wrist. **antennarius**, p. 210.

K². No strong tooth but a shallow lobe at middle of supraorbital margin. Carapace widest at ninth tooth.

L¹. Movable finger spinous above. Lateral teeth with spinous margins. Carapace and legs coarsely hairy_____**polyodon**, p. 202.

L². Movable finger granulate above. Lateral teeth with granulate margins and a slender spine at tip. Downy-hairy. Size small. **jordani**, p. 215.

G². Antero-lateral teeth truncate or subtruncate.

H¹. Edge of antero-lateral teeth denticulate or lobulate; first tooth narrower than the others.

J¹. Outer orbital tooth not dentiform. Carapace very convex. Basal article of antenna twice as long as broad. **edwardsii**, p. 193.

J². Outer orbital (half of the first antero-lateral) tooth small, triangular, acute. Carapace moderately convex. Basal article of antenna about two-thirds as broad as long_____**plebejus**, p. 198.

H². Edge of antero-lateral teeth entire; first tooth as wide as any of the next five; closed sinuses deep, more than half as long as width of teeth. Basal article of antenna more than twice as long as wide. **luederwaldti**, p. 200.

B². Branchial regions nearly meeting on median line. First antero-lateral (orbital) tooth wider than any of the next 7 teeth_____**porteri**, p. 199.

A². Antero-lateral and postero-lateral margins not meeting at a distinct angle. Lateral teeth 12 or 13; carapace widest at seventh or eighth tooth. Dark color of fingers reaching nearly to their bases_____**oregonensis**, p. 226.

ANALOGOUS SPECIES OF CANCER ON OPPOSITE SIDES OF THE CONTINENT

Atlantic	Pacific
borealis	*edwardsii*
luederwaldti	*porteri*, *plebejus*

INDETERMINABLE SPECIES

Cancer amoenus HERBST, Naturg. Krabben u. Krebse, vol. 3, 1799, p. 64, pl. 49, fig. 3 (type-locality unknown; type not extant).

NOMEN NUDUM

Pirimela chilensis PHILIPPI, Zool. Anzeiger, vol. 16, 1894, p. 264. Probably a young *Cancer*.

KEY TO THE AMERICAN SPECIMENS OF CANCER 20 MM. AND LESS IN WIDTH [23]

A[1]. Antero-lateral and postero-lateral margins meeting at a distinct angle. Carapace widest at ninth or tenth antero-lateral tooth.

B[1]. Carapace widest at tenth and last antero-lateral tooth; postero-lateral margin unbroken, entire. Carpus of cheliped with a single spine above, at distal angle; fingers light colored..... **magister**, p. 222.

B[2]. Carapace widest at ninth antero-lateral tooth.

C[1]. Branchial regions not nearly meeting on median line.

D[1]. First postero-lateral tooth prominent.

E[1]. First postero-lateral tooth usually spiny pointed, never broadly rounded.

F[1]. Carpus of cheliped with two prominent spines (not counting that at articulation), one spine above at distal end and the second below it at inner angle.

G[1]. First postero-lateral tooth projecting laterally beyond carapace as seen from above. Carapace comparatively smooth, without pubescence. Fingers without dark color..... **gracilis**, p. 219.

G[2]. First postero-lateral tooth projecting dorsally, not reaching beyond outline as seen from above; carapace hairy, rough; antero-lateral teeth spiny pointed. Fingers with color across middle, tips light.

H[1]. Antero-lateral teeth conspicuously alternating large and small. A tooth at middle of supra-orbital margin. Outer maxillipeds fitting in buccal cavity... **branneri**, p. 211.

H[2]. Antero-lateral teeth very long, denticulate, slightly alternating in size. A rounded lobe at middle of supra-orbital margin Outer maxillipeds overreaching epistome. **polyodon**, p. 202.

F[2]. Carpus of cheliped with only one prominent spine on inner side that at distal end.

G[1]. A tooth at middle of supra-orbital margin. Antero-lateral teeth prominent, curved forward. Sometimes an inconspicuous spine present at inner angle of carpus. Fingers mostly dark, tips light..... **antennarius**, p. 210.

G[2]. Middle of supra-orbital margin truncate. Antero-lateral teeth shallow. Distal half of fingers light brown except tips which are whitish. **borealis**, p. 182.

E[2]. First postero-lateral tooth broadly rounded, never spiniform, a second tooth usually present.

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[23] Young of *C. luederwaldti* not known.

F¹. Second postero-lateral tooth absent. Ninth lateral tooth strongly produced. Middle of supra-orbital margin truncate.....**irroratus**, p. 180.

F². Second postero-lateral tooth present.

G¹. Antero-lateral teeth simple, not denticulate nor lobulate; seventh tooth enlarged and prominent; width of carapace nearly or quite as great at seventh as at ninth tooth. Carapace very uneven, lumpy.....**amphioetus**, p. 205.

G². Antero-lateral teeth denticulate or lobulate and subtruncate.

H¹. Antero-lateral teeth 1 to 8 bidenticulate, the denticles alternating large and small. Median tooth of front very small, not advanced beyond adjacent pair. Middle projection of supra-orbital border a shallow tooth or lobe. **edwardsii**, p. 193.

H². Antero-lateral teeth multidenticulate. Median tooth of front well advanced beyond adjacent pair. Middle portion of supra-orbital border truncate.....**plebejus**, p. 198.

D². First postero-lateral tooth absent or represented by a rudiment.

E¹. Hairy all over. Antero-lateral teeth alternately large and small, more or less narrowly triangular, spiny pointed. Middle portion of supra-orbital margin a shallow lobe. **jordani**, p. 215.

E². Dorsal surface naked or nearly so. Antero-lateral teeth not regularly alternating (except in *anthonyi* 5 mm. wide or less).

F¹. Carapace naked, nearly smooth. Interocular frontal teeth united in a flat, produced lamina with arcuate edge, the teeth indicated by closed fissures. Antero-lateral teeth never spiny-pointed. Middle of supra-orbital margin subtruncate.....**productus**, p. 203.

F². Carapace uneven, lumpy. Frontal teeth thick, subacute. Antero-lateral teeth broadly triangular becoming quite blunt anteriorly. Middle of supra-orbital margin a shallow tooth or lobe.**anthonyi**, p. 218.

C². Branchial regions nearly meeting on median line. Interocular front well advanced beyond outer orbital angle, and divided into 5 very shallow lobes. Edge of middle of supra-orbital margin concave. **porteri**, p. 199.

A². Antero-lateral and postero-lateral margins not meeting at a distinct angle. Lateral teeth 12 or 13; carapace widest at seventh or eighth tooth. Three middle teeth of front truncate. Fingers almost wholly dark colored. **oregonensis**, p. 226.

CANCER IRRORATUS Say

ROCK CRAB

Plate 85, Figure 1

Cancer irroratus SAY (part, male), Journ. Acad. Nat. Sci. Philadelphia, vol. 1, 1817, p. 59, pl. 4, fig. 2 (type-locality, "inhabits the ocean"; type not extant). —SMITH, Rept. U. S. Commr. Fisheries, vol. 1, for 1871 and 1872 (1873), pp. 312 [18], 530 [236], 546 [252].—R. RATHBUN, Fisheries and Fishery

Industries of U. S., sec. 1, 1884, p. 766, pl. 260, figs. 1–3.—SUMNER, Bull. Bur. Fisheries, vol. 31, 1911, part 2, 1913, p. 671.—HAY and SHORE, Bull. Bur. Fisheries, vol. 35, 1915–16 (1918), p. 435, pl. 35, fig. 1.

Platycarcinus irroratus MILNE EDWARDS, Hist. Nat. Crust., vol. 1, 1834, p. 414.—DEKAY, Nat. Hist. New York, pt. 6, Crust., 1844, pl. 2, fig. 2.

Cancer sayi GOULD, Rept. Invert. Massachusetts, ed. 1, 1841, p. 323 (type-localities, Cape Ann, Nahant, etc.; types not located).

Platycarcinus sayi DEKAY, Nat. Hist. New York, pt. 6, Crust., 1844, p. 7.

Cancer borealis PACKARD, Mem. Boston Soc. Nat. Hist., vol. 1, 1867, pl 303; not *C. borealis* Stimpson.

Cancer amoenus CONNOLLY, Contrib. Canad. Biol., n. s., vol. 1, 1923, p. 337, text-figs. 1 and 2, pls. 1–4. Not *Cancer amoenus* Herbst, 1799.

Diagnosis.—Nine antero-lateral and two postero-lateral teeth, the last one obscure; edges entire. Chelipeds granulate, not denticulate.

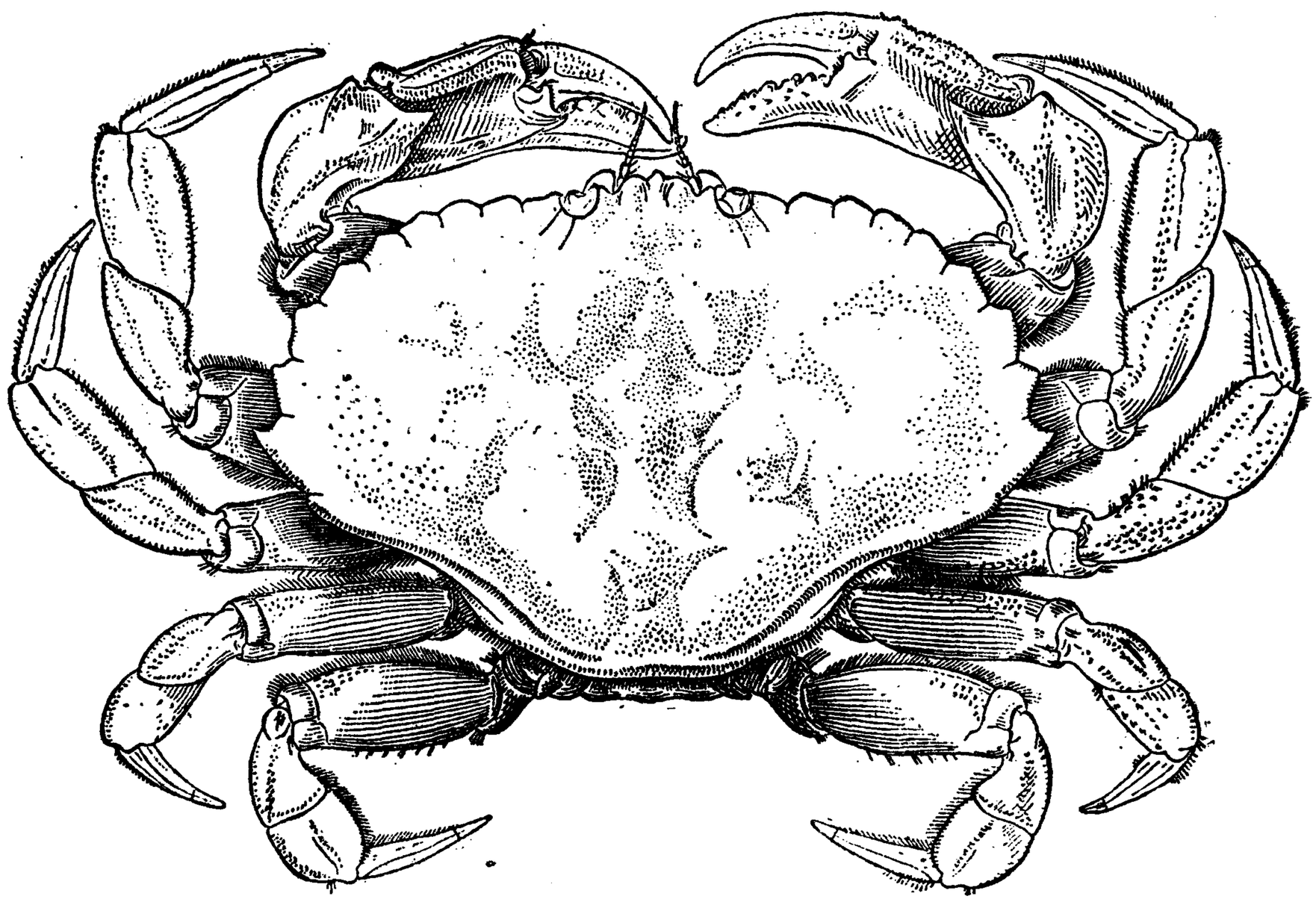

FIGURE 29.—CANCER IRRORATUS, MALE, DORSAL VIEW, REDUCED. AFTER R. RATHBUN

Description.—Carapace convex, uneven, finely granulate. Antero-lateral teeth 9, the first one broad and in part produced to form the orbital tooth; teeth shallow, edge granulate, the notches between them continued on the carapace as short, closed fissures giving a pentagonal aspect to the teeth. Postero-lateral margin a raised granulate carina furnished with two teeth, the one nearest the lateral angle small, the other obscure. The median tooth of the front is the most advanced and depressed.

Chelipeds shorter than first pair of legs, granulate; upper margin of merus ending in a short, subdistal tooth; carpus with granulated ridges and a sharp pyramidal inner tooth; manus with 6 longitudinal costae, the two lower ones continued on the finger, the upper one cristate. Legs rather long, compressed; merus of first and second pairs extending well beyond carapace. Side margins of 5th–6th abdominal segment in male converging distally.

Color.—Ground white or yellowish, covered with small, irregular, purplish or crimson spots formed by minute rings; color darkest on the nodules. Lower half of chelipeds white. Legs sparingly purplish above, darker at distal end of the merus. Some specimens have a great deal of yellow in the ground color, especially on the legs.

Measurements.—Male (14822), length of carapace 87.2, width of same 135.5, fronto-obrital width 32, width of front between antennae 12 mm.

Range.—Labrador to South Carolina. Under stones, low water, to 314 fathoms.

Material examined.—See table, pages 183–192.

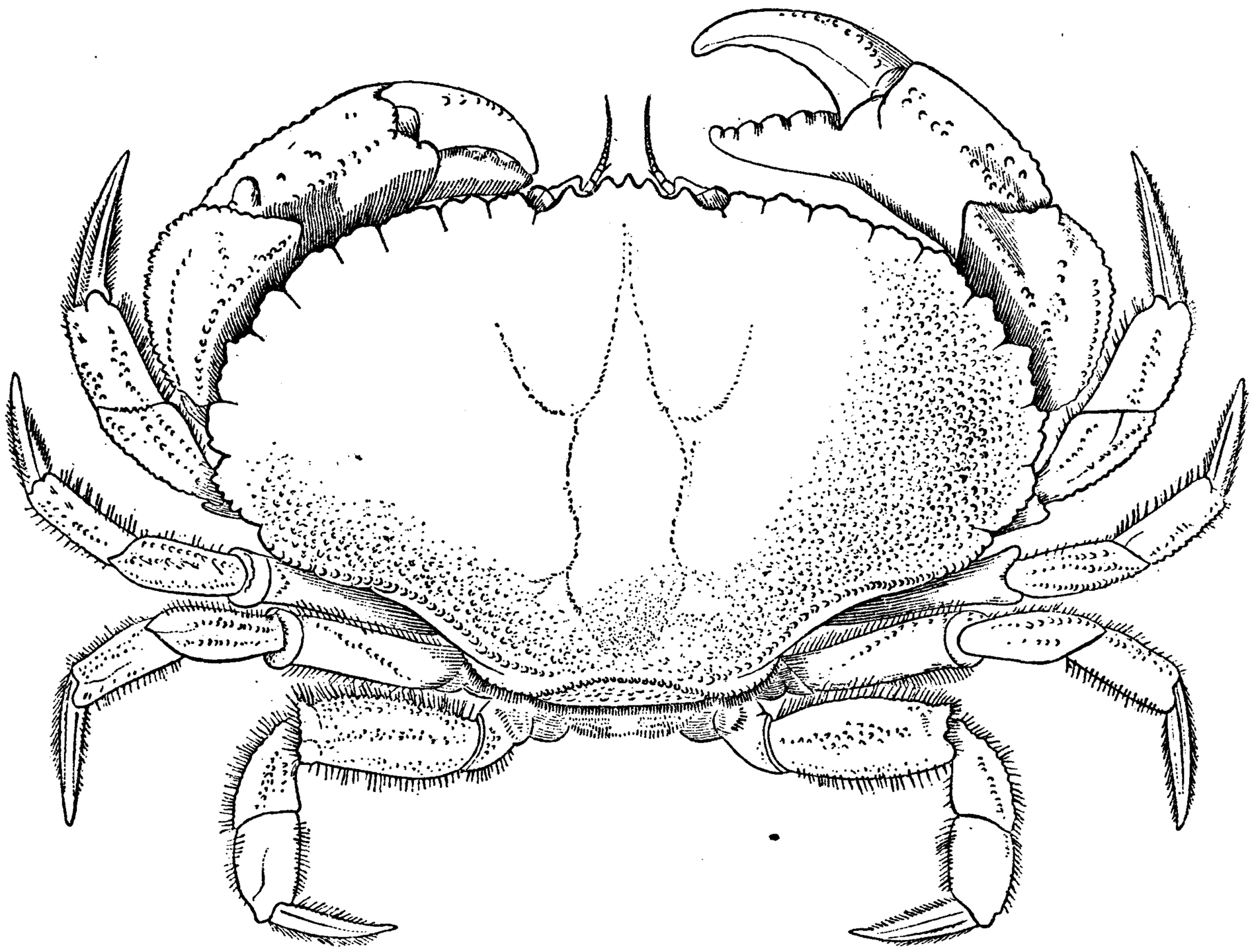

FIGURE 30.—CANCER BOREALIS, MALE, CASCO BAY, DORSAL VIEW, REDUCED. AFTER S. I. SMITH

CANCER BOREALIS Stimpson

JONAH CRAB

Cancer irroratus SAY (part, ♀), Journ. Acad. Nat. Sci., Philadelphia, vol. 1, 1817, p. 60.—GOULD, Rept. Invert. Massachusetts, ed. 1, 1841, p. 322.

Platycarcinus irroratus GIBBES, Proc. Amer. Assoc. Adv. Sci., vol. 3, 1850, p. 176 [12].

Cancer borealis STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1859, p. 50 (locality, Nova Scotia to Cape Cod; types not extant).—R. RATHBUN, Fisheries and Fishery Industries of U. S., sec. 1, 1884, p. 769, pl. 260, figs. 4–6.—SUMNER, Bull. Bur. Fisheries, vol. 31, 1911, pt. 2, 1913, p. 672.—HAY and SHORE, Bull. Bur. Fisheries, vol. 35, 1915–16 (1918), p. 434, pl. 35, fig. 2, and synonymy.

Diagnosis.—Teeth of lateral margins with denticulate edges. Carapace very rough with irregular granules.

Material examined of Cancer irroratus

Locality	Bearings		Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″	*Meters*		° *C.*						
Newfoundland:											
Exact locality unknown.								Thedore Gill	3♂ 1♀	3215	
Do								J. W. Jones	4♂ 6♀	5119	
Quebec, Province of:											
Matemek River						Summer, 1927		Amory-Bowman Exped.	1♀ 6 y	61368	
North side Matemek River.						do		do	4♂	61827	
Anticosti								J. Schmitt	1♂	26196	
Pleasant Bay, Magdalen Ids.						July 9, 1927		*Grampus*	2	13023	
Do			18	S.		July 14, 1917	41	*Prince*	1♂		Returned to Biological Board of Canada.
Near Amherst Island., Magdalen Islands.			8	S. M. eel-grass.		July 13, 1917	40	do	1♂ 7 y		Do.
New Brunswick:											
Escuminac Point						Aug. 19–23, 1926		F. Johansen	1 carapace	61618	
Geddes Point				Under stones, low tide.		Sept. 1, 1926		do	1 y	61616	
Cape Bald Harbor						Sept. 7, 1926		do	1 y ♀	61617	
Grand Manan Island						August to September, 1898.		M. J. Rathbun	6	21688	
Nova Scotia:											
Aspey Bay						July 27, 1917		Biol. Board of Canada.	1♀		Do.
North of Cheticamp Island.			30	From haddock stomach.		Aug. 23, 1917	29	*Prince*	3 y		Do.
Do			20	rky	18.42	Aug. 9, 1917	50	do	1		Do.
Eastern Harbor, northeast of mouth.						July 9, 1917			1 y		Do.
Eastern Harbor, near mouth.						June 28, 1917			1♂ 1♀		Do.
Do			8	bk. M		June 26, 1917	34	*Prince*	1♂ 1♀		Do.
			Fathoms								
Off Halifax			16			1877	56–58, 74	*Speedwell*	3 y	2692	
Halifax			l. w.			July 10, 1885		*Albatross*	8♂ 10♀	10135	

Material examined of Cancer irroratus—Continued

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
Maine:	° ′ ″	° ′ ″			°F.						
Eastport						1872		U. S. Fish Commission.	1 lge	3897	
Casco Bay						August, 1911		Rathbun and Dandridge.	1♂ 2♂ 1♂	43201 43733 47972	
Potts Point, Casco Bay.						August 5. 1911		do	2 1	43170 43179	
Mackerel Cove Point, Casco Bay.						Aug. 7, 1911		do	3	43171	
Basin Cove, Casco Bay.						Aug. 8, 1911		do	4	43169	
Merriconeog Sound, Casco Bay.						Aug. 22, 1911		do	1 y ♂ 1 y ♀	61415	
New Hampshire: Hampton Beach						July 15, 1924		Kenneth Hobbs	1 y ♂	61414	
Georges Bank:											
Exact locality unknown.						Oct. 30	Gl. Don. 925	Sch. *Otis P. Lord*	1♂ 2♀	3768	
Northern part Georges Bank.	42 01 00	68 00 30	86	crs. S. bk. Sp. brk. Sh.		Aug. 30, 1883	2057	*Albatross*	1♂	5806	
Do	41 57 30	67 58 00	35	gy. S	°F. 50	do	2058	do	1♂	5810	
Middle of Georges Bank.	41 15 30	68 15 00	18	crs. wh. S. yl. Sp.		Sept. 4, 1885	2576	do	22 y	10794	
Massachusetts:											
Gloucester			Shore.			1878		U. S. Fish Commission.	11♂ 5♀ 19 y	2621	
Ten Pound Island, Gloucester Harbor.						Oct. 2, 1880		do	2	13863	
Off Norman's Woe, Gloucester Harbor.			8–10	Abundant red algae.		Sept. 9, 1878	202	*Speedwell*	1 y	61082	
Off Plymouth	41 58 00	70 33 30 Gurnet Point Light, N. 40° W., 2¾ m.	11.5	br. S Sp. eelgrass.	50	Sept. 9, 1879	336	do	2 y	34023	
Barnstable						Aug. 30, 1875		Verrill and Merriam.	5 y	36887	
Cape Cod Bay	41 55′–56′	70 07 00 Wood End Light, NW.	6–10	crs. S. G.	56–61	Aug. 29, 1879	314–315	*Speedwell*	22 y	3987	

Do	41 49 00	70 09 00 Billingsgate Light, N. 48° E., 5½ m.	7.5	fne. br. S	64	Sept. 15, 1879	357	do	2 s. ♀ 18 y	3934 4312
Mouth Cape Cod Bay	42 01 30	70 30 00 Gurnet Point Light, S. 74° W. 4½ m.	21	fne. br. S	45	Aug. 20, 1879	299	do	1♂ 2♀ (1 ovig.)	3913
Off Cape Cod	41 52 30	70 15 00 Wood End Light, N. 19° E., Rocky Point, N. 74° W.	18		64.5	July 21, 1879	240	do	1 y ♂	3937
Do	42 02 15	70 15 00 Race Point Light, N. 10° E., 1¾ m.	26.5	bu. M	44.8	Aug. 30, 1879	319	do	2♂ 3♀	3941
Do	42 08 30	70 17 00 Race Point Light, S. 23° E.	27	fne. yl. S	40.8	Aug. 25, 1879	309	do	3 y	3988
Do	42 08 00	75 15 00 Between Stellwagens Bank and Race Point.	34	S	48–50	1873	35	*Bache*	1 y 2 y	2694 38153
North Truro						July, 1904		F. W. True	1	31898
Provincetown				Eel-grass		Aug. 23, 1879		U. S. Fish Commission.	1 y	3007
Do			Shore.			1879		do	1♂ 1♀	4105
Race Point beach, Cape Cod.						1879		do	6 y	5129
Do						Aug. 19, 1879		do	1 y	3006
Off Race Point Light			25–30	fne. gy. S		July 22–25, 1879	244–246	*Speedwell*	4 y	3986
Off Race Point			42			1874		U. S. Fish Commission.	2 y	34920
Off Chatham	41 37 30	69 51 00 Chatham Light, N. 55° W., 4¼ m.	11	fne. S		Sept. 19, 1879	366	*Speedwell*	1 y	41026
Do	41 35 30	69 42 00 Chatham Light, N. 75° W., 12 m.	18	spkld. S		do	370	do	15 y	4320
Do	41 35 30	69 35 00 Chatham Light, N. 72° W., 16 m.	34.5	crs. spkld. S		do	371	do	1 y	40759
Crab Ledge		Chatham Light, WNW. ¼ W., 6¼ m.	16	S. G. St	52	Aug. 30, 1881	975	*Fish Hawk*	1♂ 1♀	4578
Nantucket Shoal						Sept. 15, 1875		U. S. Fish Commission.	1 y	36071
Off Nantucket			15			Sept. 8, 1875		do	20 y	2696
North of McBlair's Shoal			13.5			do	747	*Bluelight*	2 y	34008
South of Nantucket	40 05 00	70 34 45	70	bu. M		Sept. 20, 1883	2085	*Albatross*	1	7014

Material examined of Cancer irroratus—Continued

Locality	Bearings		Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
	Latitude N.	Longitude W.									
Massachusetts—Contd.	° ′ ″	° ′ ″			°F.						
Woods Hole						July, 1875		U. S. Fish Commission.	25 y	36630	
Do								V. N. Edwards	3 y	15028	
Do						1905		M. J. Rathbun	22♂ 22♀	32369	
Vineyard Sound						1875		U. S. Fish Commission.	3 y	40115	
Do						1881		do	21♀	3905	Barnacles attached.
Do						1883		do	2♂	40707	
Do						1884		do	3 y	40690	
Do						1881	1001	*Lookout*	1♂ 1♀	3386	
Do	Cape Poge Light, E. by S. ½ S., 3 m.; Buoy 19, Squash Inlet, NE. by N. ¼ N., 2⅛ m.		4	hrd. S	72	Aug. 20, 1892	1672	*Fish Hawk*	3 y	26100	
Do	E. Chop Light, W. by N. ¼ N., 4 m.; Edgartown Light, S.SW. ¼ W., 4¾ m.		9	hrd	73	Aug. 23, 1892	1676	do	1 y	26101	
Do	Nobska Point Light, W.SW. ¼ W., 1¼ m.		4.75	S. G. Sh	71.5	Aug. 18, 1882	1100	do	1♂	5118	
Menemsha Bight						Sept. 9		U. S. Fish Commission.	30	6715	
Do			9–14	S. M	63.5–65	Aug. 28, 1882	1126–1128	*Fish Hawk*	5 y	34218	
Off Menemsha Bight	Gay Head, W. by S. ¾ S., 2¾ m.; N. end Nashawena, N. NW. ¼ W., 5¾ m.		12	S	64.5	Aug. 27, 1883	1169	do	13	13842	
Vineyard Sound	Vineyard Sound Lightship, W. ¾ S., 8¾ m.; Gay Head Light, S. by W., 4¾ m.		10	hrd	68	Aug. 20, 1892	1665	do	1 y	26099	
Do	Gay Head Light, W. ¾ S., 2⅛ m.		10	S	60	July 20, 1881	928	do	3♀	3365	

Do	Gay Head Light, S. ¾ E., 2¾ m.; W. end Nashawena I., NW. by W., 2 m.		13	hrd	69	Aug. 20, 1892	1663	do	25 y	26097
Do	Vineyard Sound Lightship, W. ⅛ S., 8¾ m.; GayHead Light, S. ⅞ E., 3¾ m.		9.5	hrd	68	do	1664	do	2 y	26098
Off Gay Head, from buoy.						Sept. 15, 1883		U. S. Fish Commission.	1 y	40694
Off Marthas Vineyard.						Sept. 6, 1875		U. S. Fish Commission.	1 y	40715
Do			4–9.5		62–64	Sept 2 and 6, 1882.	1129–1134	*Fish Hawk*	2 y	34200
Off No Mans Land	SE. end No Mans Land, W. by S., 7½ m.		13	S	60	Sept. 6, 1883	1176	do	5	15024
Southwest of Marthas Vineyard.	40 54 00	70 48 30	28	S	49	Sept. 7, 1881	987	do	5 y	40717
Do			28–30	S	49–49.5	do	987–989	do	9 y	40736
Do	41 02 00	71 00 00	26.5	S	55	Sept. 6, 1887	1248	do	1 y	12735
10 miles southwest of Cuttyhunk.			25	hrd		1871		U. S. Fish Commission.	4 y	36883
Buzzards Bay	Penikese Island, E., 2 m.		7	bk. M. Sh	66	Aug. 13, 1881	948	*Fish Hawk*	21 y	4579
Do	Nye's Neck, NE. ¾ E., 2¾ m.		8	bk. M	68	Aug. 26, 1881	961	do	3 y	38140
Rhode Island:										
Mouth of Sakonnet River.	Cormorant Rock, NW. by N., ¼ m.		9	G. St	65	Aug. 27, 1880	829	do	6 y	40699
Do	West Island, SE. by E. ½ E., ¾ m.		10.5	S. G	65	do	830	do	1 y	36322
Off Brentons Reef Lightship.	Lightship, NW. ½ W., 4½ m.		19	M. fne. S	53.5	Aug. 12, 1880	786	do	1 y	34136
Do	Lightship, N. NW. ½ W., 4 m.		19	M. fne. S	53.5	do	787	do	2 1 y	4532 36742
Do			8.5–10	S. brk. Sh	63–66	Aug. 23, 1880	816–818	do	15 y	40697
Narragansett Bay	Beaver Tail Light, SE. by S., ⅞ m.		8.25	S. Sh	62.5	Aug. 6, 1880	770	do	9 y	40701
Do	Beaver Tail Light, S. by E., 1¼ m.		8	S. Sh	67	do	772	do	6 y 10 y	36746 61405
Do	Beaver Tail Light, W., 1 m.		18	G. S. Sh	57.5	Aug. 7, 1880	780	do	1 y 1 y	38137 38145
Do	Beaver Tail Light, W.NW., 1 m.		16	S	57	do	781	do	2 y	40732
Do	Beaver Tail Light, W. ¾ N., 1¼ m.		16	S. G. brk. Sh	60	Aug. 12, 1880	782	do	1 y 25	34014 40702

Material examined of Cancer irroratus—Continued

Locality	Bearings		Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
	Latitude N.	Longitude W.									
Rhode Island—Continued.	° ′ ″	° ′ ″			°F.						
Narragansett Bay	Beaver Tail Light, SW. by S., 2 m.		4.5	S	67	Sept. 1, 1880	853	*Fish Hawk*	2 y 4 y	38149 40713	
Do	Beaver Tail Light, SW. ¼ S., 1¾ m.		6	S	67	do	854	do	12 y 2 y	40698 40737	
Do	Beaver Tail Light, W.SW. ¾ W., 6/10 m.		19	S	66	do	857	do	4 y 22 y	36736 36752	
Do	Beaver Tail Light, W.NW. ¼ W., ⅓ m.		14	crs. S. brk. Sh.	66	do	858	do	4 y 3 y	40703 40733	
Do	Fort Dumpling, NW. by W. ½ W., ⅝ m.		27.5	S. Sh.	58.5	Aug. 7, 1880	776	do	1 y	36721	
Do	Fort Dumpling, NW. by W. ½ W., ⅝ m.		27.5	S. Sh. G.	58.5	do	776–777	do	10 y 1 y 1 cheliped.	40695 58060	
Do	Off Fort Dumpling.		26–27.5	S. Sh. G.	58.5	do	777–778	do	2 y	40731	
Do	Fort Dumpling, N. ¾ E., 800 yds.		26	G. S. brk. Sh.	58.5	do	778	do	2 y	40734	
Do	Fort Dumpling, NE., 1¼ m.		22.5	G. S. Sh.	57.5	do	779	do	4 y	40692	
Do	Off the Dumplings.		20.5–27.5	G. S.	61	Aug. 31, 1880	839–840	do	1 y	34011	
Do	Goat Island Light, NE. by E., ⅞ m.		21	M. S. lge. St.	60	do	841	do	25	40705	
Do	Off Newport					1880		U.S. Fish Commission.	1♂ 1 y	3135	
Do	Halfway Rock, W., ¾ m.		12.5	M.	62	Aug. 16, 1880	802	*Fish Hawk*	2 y	40696	
Do	Halfway Rock, N. ¼ W., 1 m.		12.5	M.	62	Aug. 31, 1880	847	do	17 y	40704	
Do	Off Halfway Rock.		12.5–13	M.	63.5–67	Sept. 17, 1880	882–883	do	5 (♀ and y)	5117	
Do	Prudence Light, N. by E. ¾ E., 1½ m.		14.5	sdy. M. brk. Sh.	63	Aug. 31, 1880	846	do	1 y	40714	
Do	Off S. end Hope Island.		5–5.5	M. brk. Sh.	70	Aug. 23, 1880	820–821	do	11 y	36758	

Do	N. end Dutch Island., S., ½ m.	10.5	S. M. Sh	69	Aug. 6, 1880	774	do	5 y	61407
Do	N. end Dutch Island, S., 1 m.	12	G. S. M	68	do	775	do	5 y 1 y	36325 40801
Do	Poplar Point Lights, W. by N., 2¼ m.	4.5	M	68	Aug. 16, 1880	801	do	23 y	36784
Off Point Judith	Point Judith, W. NW. ¾ W., 8½ M.	16	fne. S	54.5	Aug. 13, 1880	790	do	5 y 3 y	34020 38150
Do	Point Judith, W. NW., 12.5 m.	20	fne. sdy. M	60	Aug. 15, 1880	791	do	1 y	61410
Do	Point Judith, W. NW. ½ W., 6 m.	19	S. brk. Sh	63	Aug. 14, 1880	793	do	7 y	61409 34005
Do	Point Judith, W. NW. ½ W., 4 m.	19	fne. sdy. M	53	do	795	do	1 y 5 y	40700
Do	Point Judith, W. NW., 3¼ m.	19	fne. sdy. M	53	do	796	do	1 y ♀	61408
Do	Point Judith, NW. by W. ¾ W., 2¼ m.	16.5	sft. M. crs. S	55	do	797	do	4 y 9 y	40691 40693
Do	Point Judith, NW. by W. ¾ W., 1¼ m.	12.5	S. G. few lge. St.	59	do	798	do	25 y	36725
Off Block Island	S. Light of Block Island, N. ¾ E., 5¾ m.	19	Sh. crs. G	62	Sept. 21, 1880	886	do	1 y	34007
Off Watch Hill		17-21			Aug. 21, 1874		U. S. Fish Commission.	1 y	40706
Connecticut:									
Long Island Sound	Falkner Island Light, NW. by N., 2⅞ m.; Madison Spire, N. by E. ⅛ E., 6⅛ m.	15.5	sft	70	Sept. 17, 1892	1701	*Fish Hawk*	1 y	26102
Do	Falkner Island Light, NW. ⅝ N., 2¼ m.; Goose Island., NW. ¾ W., 1⅞ m.	14	hrd	69	Sept. 10, 1892	1692	do	2 y	26141
Do	Branford Beacon, NE. ⅛ N., 4¼ m.; SW. Ledge Light, N. by W. ¾ W., 4⅞ m.	11.6	sft	69	Sept. 20, 1892	1710	do	1 y	26143
Do	Old Tower, N. ⅜ E., 4¾ m.; SW. Ledge Light, N. ¼ W., 4 m.	9	sft	69.5	Sept. 16, 1892	1695	do	2 y	26142

Material examined of Cancer irroratus—Continued

Locality	Bearings		Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
	Latitude N.	Longitude W.									
Connecticut—Continued.	° ′ ″	° ′ ″			°F.						
Long Island Sound	Stratford Point Light, W. by S. 5/8 S., 3 m.; Middle Ground Light SW. by S. 1/4 S., 7 1/2 m.		5.8	sft	64	Oct. 13, 1890	1633	*Fish Hawk*	1 y	17155	
Do	Bridgeport Light, NW, by N. 1/2 N., 5 1/2 m.; Penfield Reef Light, NW. 1/4 W., 5 1/2 m.		27.5	sft	67	Oct. 1, 1890	1578	do	1 ♀	17151	
Do	Bridgeport Light, N. by W. 1/2 W., 4 7/8 m.; Penfield Reef Light, NW. by W., 4 1/2 m.		12	sft		Sept. 25, 1890	1560	do	1	17154	
Do	Bridgeport Light, N. 1/4 W., 2 1/2 m.; Penfield Reef Light, W. 3/4 N., 2 1/2 m.		6	sft	70	Sept. 19, 1890	1537	do	1 ♀	17150	
Do	Bridgeport Light, N. by W. 1/2 W., 2 3/8 m.; Penfield Reef Light, W. 3/4 N., 3 1/2 m.		6	sft	70	do	1547	do	1 ♂ 2 y	17149	
Do	Bridgeport Light, NW. 3/4 N., 2 1/4 m.; Penfield Reef Light, W. 1/4 S., 3 5/8 m.		3	hrd	69	Sept. 22, 1890	1552	do	1 y	17152	
Do	Bridgeport Light, NW., 1 3/8 m.; Penfield Reef Light, W. by S. 3/4 S., 3 3/8 m.		4	hrd	69.8	Sept. 19, 1890	1550	do	1 y	17153	
Do	Norwalk Light, NW. 3/4 N., 2 m.; Eatons Neck Light, SW. 1/4 W., 4 7/8 m.		14	sft	62	Oct. 10, 1892	1778	do	4 y	32279	

New York:										
Off Montauk						1874		U. S. Fish Commission.	1 y	40716
Great South Bay						1898		T. H. Bean	1♂	42567
Fire Island						Oct. 11, 1898		U. S. Fish Commission.	1 y	61403
Oak Island Beach						Sept. 14, 1898		T.H. and B. A. Bean.	4 y	22173
New Jersey: East of Cape May.	38 53 30	72 52 00	188	gn. M. S		Sept. 21, 1885	2591	*Albatross*	1	35303
Delaware:										
Bethany Beach						July 4–10, 1912		W. D. Appel	1 y	44569
East of Delaware	38 31 00	73 21 00	156	S	49	Oct. 10, 1881	1047	*Fish Hawk*	1♂ 1♀	4829
Virginia:										
Chincoteague						July, 1913		Henderson and Bartsch.	12 y	46286
East of Virginia	37 31 00	74 52 36	19	fne. S. Sh		May 5, 1883	2016	*Albatross*	1♂ 1♀	5615
Do	37 31 00	74 53 30	19	fne. S. Sh		do	2015	do	1♂ 1♀	5609
Do	37 30 48	74 51 24	18	fne. S. Sh	45.5	do	2017	do	2♂	5613
Do	37 22 00 to 37 26 00	74 19 00 to 74 29 00	56–57.5	S. Sh	54–55	Nov. 16, 1880	896, 899	*Fish Hawk*	1 y ♀ 1♂ 1♀	61406 3816
Do	37 10 15	74 32 00	143	gn. M. fne. S		June 3, 1885	2423	*Albatross*	3	14983
Do	37 10 00	75 08 00	18	S		Nov. 16, 1880	901	*Fish Hawk*	2♂ 12♀	4816
East of mouth of Chesapeake Bay.	37 07 00	74 34 30	64	fne. gy. S. P		June 3, 1885	2421	*Albatross*	3	14982
Do	37 03 20	74 31 40	104	bk. S. M. G	47.7	Apr. 5, 1885	2420	do	1	14981
Mouth of Chesapeake Bay.	37 03 24	75 58 24	9.75	hrd. fne. gy. S.	38.5	Mar. 7, 1916	8463	*Fish Hawk*	1♂	58349
Do	36 57 06	75 59 56	12.75	hrd. fne. S. brk. Sh.	43.9	Apr. 22, 1916	8499	do	1 y 1 y 1 y	58350 61083 61530
Do	36 57 02	76 00 26	12	hrd	69.5	June 26, 1915	8595	do	1 y	58352
Do	36 59 45	76 00 34	9	hrd. brk. Sh	47	Apr. 22, 1916	8500	do	1♂	58351
			Meters		°*C.*					
Off York Spit	York Spit 252°; Old Plantation Light 308°.		42.5	bk. M	11.5	Apr. 2, 1921	8985	do	1♀	58354
Off Plantation Light	Plantation Light, SE. ⅜ S.; Buoy 10, N. ¼ E.; Cherrystone Light E. by N.		45.75		21.9	July 8, 1920	8826	do	1 y	55730
Do	Plantation Light, SE. ⅜ S.; Buoy 10, N. ¼ E.; Cherrystone Light, E. by N.		do	gy. S. Sh	4.9	Jan. 23, 1921	8933	do	1♂	58353
Cherrystone						Aug. 27, 1881		M. McDonald	1 s	3476
Mobjack Bay	Head of creek, East River.					July 16, 1892	5	*Grampus*	1 carapace	31479

Material examined of Cancer irroratus—Continued

Locality	Bearings		Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
	Latitude N.	Longitude W.									
North Carolina:	° ′ ″	° ′ ″	*Fathoms*		°*F.*						
East of Currituck Light.	36 20 24	74 46 30	119	dk. gy. M. fne. S.	51.5	June 4, 1885	2425	*Albatross*	12	10108	
East of Croatan Sound.	35 43 00	74 53 30	45	gy. & bk. S		Oct. 21, 1884	2308	do	5♂ 2♀	8861	
Do	35 42 00	74 54 30	43	gy. & bk. S	57.3	do	2307	do	1♂ 1 y	8859 40735	
Do	35 40 00	74 51 30	296	bk. M		Oct. 20, 1884	2299	do	2	14398	
Do	35 39 00	74 52 00	80	bk. M. brk. Sh.		do	2298	do	1	8858	
Do	35 38 00	74 53 00	49	bk. M. brk. Sh.		do	2297	do	1♂	8857	
East of Cape Hatteras	35 01 00	75 12 00	160	crs. gy. S. brk. Sh.		Oct. 17, 1885	2594	do	2♂	11222	
East of Cape Lookout	34 38 30	75 33 30	124	S. R		Oct. 18, 1885	2602	do	4	14028	
East of Cape Fear	34 09 00	76 02 00	168	gy. S. bk. Sp		Oct. 19, 1885	2614	do	3♂ 1♀	11214	
Do	34 00 30	76 10 30	178	glob. Oz	49.5	July 15, 1880	327	U. S. C. S. Str. *Blake.*	1♂	5776	From A. Agassiz.
South Carolina: Southeast of Charleston.	32 10 00 to 32 11 00	79 04 00 to 79 07 00	*Meters* 214	gn. M. S	°*C.* 13.21	Dec. 9, 1919	20035	*Albatross*	1♂	61081	
East coast United States								E. G. Blackford	3 lge. ♂	14822	

Description.—Similar to *C. irroratus*. Antero-lateral margins more broadly rounded; surface much rougher with coarse uneven granules; carapace higher, the convexity ending rather steeply at the dentate rim; lateral teeth with denticulate edges; behind the two postero-lateral teeth there are in old specimens one or two more smaller teeth indicated by slight notches. Chelipeds heavier and rougher; hand high, 7 coarsely granulate carinae on outer-upper surface, the uppermost one denticulate; movable finger with a very rough upper margin; ambulatory legs correspondingly rough. Side margins of 5th–6th abdominal segments in male more nearly parallel than in *irroratus*.

Color.—Brick red above, yellowish beneath, the limbs corresponding more or less in coloration with the lower surface, but of a light reddish tint above.

Measurements.—Male (2134), length of carapace 97.8, width of same 154, fronto-orbital width 36, width of front between antennae 13.6 mm.

FIGURE 31.—CANCER BOREALIS, MALE, CASCO BAY, REDUCED. *a*. RIGHT CHELA. *b*. LEFT CHELA. AFTER S. I. SMITH

Range.—Nova Scotia to Florida; Bermudas. Among rocks, between tides to 435 fathoms.

Material examined.—See table, pages 194–197.

CANCER EDWARDSII Bell

Plate 80; Plate 85, Figure 2

Cancer edwardsii BELL, Proc. Zool. Soc. London, vol. 3, 1835, p. 87 (type-locality near Valparaiso; types not extant); Trans. Zool. Soc. London, vol. 1, 1835, p. 338, pl. 44; pl. 47, figs. 2 and 3.—DANA, U. S. Expl. Exped., vol. 13, Crust. pt. 1, 1852, p. 153 (part; not *C. novae-zelandiae* Jacquinot).—KINAHAN, Journ. Roy. Soc. Dublin, vol. 1, 1858, p. 336.—A. MILNE EDWARDS, Nouv. Arch. Mus. Hist. Nat. Paris, vol. 1, 1866, p. 193.—MIERS, Proc. Zool. Soc. London, 1881, p. 63.

Platycarcinus edwardsii MILNE EDWARDS and LUCAS, d'Orbigny's Voy. l'Amér. Mérid. vol. 6, pt. 1, 1844, p. 20.—NICOLET, in Gay, Hist. Chile, Zool., vol. 3, Crust., 1849, p. 144.

Cancer edwardsi MIERS, Proc. Zool. Soc. London, 1881, p. 67.

Cancer edwardsii var. *annulipes* MIERS, Proc. Zool. Soc. London, 1881, p. 63 (type-locality, Trinidad Channel; type in Brit. Mus.).

Cancer edwardsi var. *annulipes* MIERS, Proc. Zool. Soc. London, 1881, p. 67.

Material examined of Cancer borealis

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
	° ′ ″	° ′ ″			°F.						
Northeast coast of North America: Fishing Banks.								T. H. Bean	1 lge. ♂	21602	
Nova Scotia: Dauphinee's Beach, Hubbards, Halifax County.						July 26, 1920		Provincial Museum, Halifax.	1 left chela		Returned to sender.
New Brunswick: Grand Manan.								Wm. Stimpson	1♂ 1♀	2134	
Maine: Casco Bay:											
Exact locality unknown						1873		U. S. Fish Commission.	1♂ 2♀	40708	Figured.
Do						1873		do	1♂	40179	Do.
Eagle Island						July —, 1903		W. C. Kendall	9♂	32438	
Between Baileys Island and Orrs Island.			(1)			Aug. 9, 1911		Mr. Haskell	2	43166	From Rathbun and Dandridge.
Mackerel Point						Aug. 7, 1911		Rathbun and Dandridge.	2	43167	
Ram Island						Aug. 10, 1911		do	1 y	43165	
Vicinity of Harpswell						Aug. —, 1911		do	1	43168	
Mouth of Casco Bay	43 37 00	70 00 00	30			July 25, 1912	15	Grampus	1 y	46003	
Massachusetts:											
Ten Pound Island, Gloucester.						Sept. 14, 1894		do	1♀	32254	
Vicinity of Woods Hole								M. J. Rathbun	3 y	32368	
Vineyard Sound						1882		U. S. Fish Commission.	1♂	5122	
Menemsha Bight	Gay Head Light, W. by S. ⅜ S., 2½ m.			S	59	July 20, 1881	927	*Fish Hawk*	1♂	3364	
Off Nantucket Shoals	39 57 30	69 41 10	78	gy. S		Aug. 6, 1884	2199	*Albatross*	2♂ 4♀	8040	
Do	39 54 00 to 40 01 00	69 51 30 to 69 56 00	79–134		52	Aug. 4, 1881	940–941	*Fish Hawk*	5♂ ♀	3343	1 soft shell.
Do	40 03 00	69 57 00	78	gn. M. S	51.9	Sept. 27, 1884	2247	*Albatross*	3♂ 7♀	8643	
South of Marthas Vinyard	40 15 30	70 27 00	58	gn. M	51.4	Sept. 26, 1884	2242	do	1♂	8658	
Do	40 21 00	70 29 15	50	gn. M	51.4	do	2241	do	2♂ 2♀	8654	
Do	40 06 50	70 34 15	65	gn. M. wh. S.	50	Sept. 20, 1883	2087	do	1♂ 1♀	5420	
Do	40 05 05	70 35 00	69	gn. M. wh. S.	50	do	2086	do	2♂ 2♀	5408	

Do	40 20 00	70 35 00	55	sft. M	44	Aug. 23, 1883	1159	*Fish Hawk*	1♀ 1y	5883	
Do	39 59 15	70 36 30	143	yl. S	48	Sept. 20, 1883	2088	*Albatross*	1 y ♂	5372	
Do	39 58 30	70 37 00	125	S	48	Oct. 4, 1882	1151	*Fish Hawk*	1♀	5126	
Do	40 02 00 to 40 03 00	70 37 30 to 70 38 00	89–101		48–49	Aug. 22, 1882	1108, 1109	do	11♂♀	4761	
Do	40 32 00	70 39 00	45	bk. M	46.5	Aug. 23, 1883	1162	do	1 y	5880	
Do	39 58 50	70 39 40	168	gy. S	45	Sept. 20, 1883	2089	*Albatross*	1	5369	
Do	39 59 40	70 41 10	140	gy. S. brk. Sh.	48.5	do	2090	do	3	5364	
Do	40 16 18	70 41 18	35	gn. M	42.5	July 16, 1881	919	*Fish Hawk*	3♂ 1♀	3344	
Do	SE. end of No Man's Land, W. by S., 7½ m.		13	S	60	Sept. 6, 1883	1176	do	1	6375	
Do	40 50 00	70 49 00	32	gy. S	45	Aug. 23, 1883	1165	do	1♀	5878	
Southwest of Marthas Vineyard.	40 00 45	70 54 15	129	gn. M. S	51	Aug. 2, 1884	2185	*Albatross*	2♂	8038	
Do	41 04 00	70 59 30	22.5	S	57	Sept. 6, 1887	1249	*Fish Hawk*	1	12854	On sailor's shoe.
Do	39 57 00	70 57 30	126	sft. stky. M.	53	Sept. 13, 1880	875	do	1♂ 1 y	5127	
Rhode Island:											
Southwest of Browns Ledge.	Cuttyhunk Light, NE. by E., 12 m.		21.25	fne. S	52	Aug. 17, 1880	809	do	2 y	40685	
Mouth of Sakonnet River	Cormorant Rock, NW. by N., ¼ m.		9	G. St	65	Aug. 27, 1880	829	*Fish Hawk*	1 y	36718	
Near Newport								Dr. E. A. Mearns, U. S. A.	1 lge. ♂	24800	
South of Narragansett Bay	39 54 00	71 22 00	110			Sept. 23, 1882	1148	Sch. *Josie Reeves*	1♂	5128	
Narragansett Bay	Goat Island Light, NE. by E., ⅞ m.		21	M. S. lge. St.	60	Aug. 31, 1880	841	*Fish Hawk*	1 y	36740	
Do	Poplar Point Lights, W. by N., 2¼ m.		4.5	M	68	Aug. 16, 1880	801	do	1 y	40689	
Narragansett Bay and off Newport.						1880		U. S. Fish Commission.	2 lge. ♂ 1♀	3912	
Off Point Judith	Point Judith, NW. by W. ¾ W., 2¼ m.		16.5	sft. M. crs. S.	55	Aug. 14, 1880	797	*Fish Hawk*	1 y	58061	
Off Block Island	Block Island Light, NW. by N., 17 m.		29	S. G	48	Aug. 18, 1880	815	do	1 y	31464	
Do	SE. of Block Island Light.		27.5–29		46–48	do	812–815	do	1 y	40686	
Off Watch Hill			17–21			Aug. 21, 1874		*Bluelight*	2 y	40688	
South of Watch Hill	39 37 00 to 39 40 00	71 52 00 to 71 55 00	168–291		44–46	Sept. 8, 1882	1137–1139	*Fish Hawk*	4 y	5098	
Connecticut: Noank						1874		U. S. Fish Commission.	1 y ♂	61404	
New York: Off Montauk						1874		do	1 y	40718	
Delaware:			*Meters*		°*C.*						
Off southern Delaware	38 55 00	72 54 00	118	gy. gn. S	9.47	Aug. 3, 1916	10370	*Grampus*	1♂	61411	
			Fathoms		°*F.*						
Do	38 31 00	73 21 00	156	S	49	Oct. 10, 1881	1047	*Fish Hawk*	1♂	4828	
Do	38 28 00	73 22 00	435	M	40	do	1049	do	1 y	4826	

[1] In lobster pot.

Material examined of Cancer borealis—Continued

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
	° ′ ″	° ′ ″									
Virginia:					°C.						
East of Virginia	37 57 00	73 53 30	155	gy. S		July 20, 1884	2170	*Albatross*	8♂ 8♀	7938	
			Meters								
Do	37 55 00	74 15 00	120		6.75	Aug. 12, 1916	10382	*Grampus*	1 y ♂ 1 y ♀	61412	
			Fathoms		°F.						
Do	37 30 48	74 51 24	18	fne. S. Sh	45.5	May 5, 1883	2017	*Albatross*	1 y	5582	
Do	37 26 00	74 19 00	56	S. Sh	55	Nov. 16, 1880	896	*Fish Hawk*	1 y	5021	
Do	37 25 00	74 18 00	157.5	S. M	48	do	897	do	1♂	4827	
Do	37 22 00	74 29 00	57.5	S	54	do	899	do	1♂ 2♀	4849	
Do	37 19 45	74 26 06	102	gn. M. Sh		Mar. 23, 1883	2004	*Albatross*	6 y	5519	
East of mouth of Chesapeake Bay.	37 07 40	74 35 40	70	gn. M. G	57.9	Oct. 18, 1884	2265	do	13♂ ♀	8767	
East of Princess Anne County.	36 41 37	74 42 15	85	bk. M	52.5	June 24, 1885	2424	do	4	10103	
Do	36 41 15	74 39 50	66.5			Apr. 30, 1883	2012	do	15	5592	
Do	36 41 05	74 38 55	373	gn. M. fne. S.		May 1, 1883	2014	do	2♂ 4♀	5614	
Do	36 38 30	74 40 10	81	S. brk. Sh		Apr. 30, 1883	2011	do	1 2♀ 1 y	5577 5616	
North Carolina:											
East of Cape Hatteras	35 02 50	75 18 00	15.5	S. bk. Sp	73.5	Nov. 10, 1883	2112	do	1♂	5678	
Do	35 02 20	75 12 00	120	fne. gy. S		Oct. 17, 1885	2592	do	1 y	11229	
East of Cape Lookout	34 38 30	75 33 30	124	S. R		Oct. 18, 1885	2603	do	1 y	34923	
East of Cape Fear	34 09 00	76 02 00	168	gy. S. bk. Sp		Oct. 19, 1885	2614	do	1♂	7290	
Do	34 00 30	76 10 30	178	glob. Oz		July 15, 1880	327	U. S. C. S. S. *Blake.*	4 y	4917	
South Carolina:											
East of Long Bay	33 37 15	77 35 30	17	crs. yl. S. brk. Sh.		Oct. 20, 1885	2618	*Albatross*	1♀	17777	
			Meters		°C.						
Do	33 34 00 to 33 41 00	76 41 00	210	S. Sh	21.9	Dec. 12, 1919	20037	do	1♀	61401	
			Fathoms		°F.						
East of Charleston Harbor.	32 43 25	77 20 30	233	glob. Oz	53.5	July 13, 1880	321	U. S. C. S. S. *Blake.*	2♂ 2♀	4931	
Do	32 43 00	77 51 00	159	crs. S. bk. Sp. brk. Sh.	47.4	Jan. 5, 1885	2314	*Albatross*	60	9446	
Do	32 35 00	77 30 00	247	gy. S. bk. Sp.		Oct. 21, 1885	2625	do	2♂ 4♀	11206	

East of St. Helena Sound	32 24 00	78 44 00	142	gn. S. bk. Sp.	56.5 °C.	July 12, 1880	314	U. S. C. S. S. *Blake.*	1 lge. ♂	5123
East of Port Royal Sound	{32 10 00 to 32 11 00	79 07 00 to 79 04 00	*Meters* 214	gn. M. S.	13.21	Dec. 9, 1919	20035	*Albatross*	1 ♂	61078
Florida: Off St. Augustine	29 47 00	80 05 45	*Fathoms* 263	fne. gy. S.	°F. 45.2	May 4, 1886	2665	do	1	11370
Gulf Stream off Cape Florida.	3⅞ m. SE. by E. ½ E. of Fowey Rocks Light.		170	sft.	°C. 10.5	Mar. 25, 1903	7512	*Fish Hawk*	3	51001
Bermudas						Aug. 10, 1860		Dr. S. Drake	1 ♂	M.C.Z.

Diagnosis.—Carapace very convex, teeth not prominent. Outer orbital angle not forming a tooth. Basal article of antenna twice as long as broad. Legs naked.

Description.—Carapace very convex, except for the marginal rim; cardiac region deeply outlined; otherwise the surface is slightly uneven; granulation visible to naked eye, coarser on elevations; antero-lateral margin multidenticulate or lobulate, divided by closed fissures into 9 rather obscure teeth. One well-defined postero-lateral tooth followed by one or two slight emarginations. The three frontal teeth between the antennae are short, thick and lobiform, the median the smallest and very little overreaching the adjacent pair. Outer orbital angle not advanced in a tooth; extremity of basal article of antennae thick and blunt, followed by a small lobe on the orbital margin. Outer margin of merus of outer maxilliped oblique, forming a slightly obtuse angle with the anterior margin. Palm with 5 outer and 2 upper carinae; interspaces crossed by transverse rugae. Black color of fingers reaching two-thirds their length from the tips. Legs of moderate length, bare, coarsely granulate; dactyls thick, tapering regularly to the long curved tips.

Color.—Above reddish-brown, beneath yellow mottled with reddish (Bell). Young male (*annulipes* Miers), prevailing color light yellow varied with blotches of dark purplish brown; joints of legs regularly annulated with broad bands of same color.

Measurements.—Female (14844), length of carapace 85, width of same 126, fronto-orbital width 27.8, width of front between antennae 9.8, width between tips of inner orbital teeth 14 mm.

Range.—Ecuador; Peru; Chile as far south as Trinidad Channel.

Material examined.—Guayaquil, Ecuador; specimen in Copenhagen Mus.

Callao, Peru; 4 specimens (Paris Mus.).

Valparaiso, Chile; specimen in Copenhagen Mus.

Talcahuano, Chile; January 15, 1927; W. L. Schmitt; 1 young male (62361).

Talcahuano or Lota; January 15 or 16, 1927; W. L. Schmitt; 1 female (61080).

Lota; January 16, 1927; W. L. Schmitt; 1 male, 5 females (61079).

West coast of South America; Dr. W. H. Jones, U. S. Navy; 1 female (14844).

CANCER PLEBEJUS Poeppig

Plate 81; Plate 82, Figure 1; Plate 85, Figure 3

?*Cancer coronatus* MOLINA, Saggio sulla Storia Naturale del Chili, 1782, p. 207, (type-locality, Chile; type not extant); French translation, 1789, p. 183.

Cancer irroratus BELL, Proc. Zool. Soc. London, vol. 3, 1835, p. 87; Trans. Zool. Soc. London, vol. 1, 1835, p. 340, pl. 46; pl. 47, figs. 6 and 7.—HELLER, Reise *Novara*, Zool., vol. 2, 1865, p. 6.—LENZ, Zool. Jahrb., Suppl. 5, vol. 2, 1902, p. 759. Not *C. irroratus* Say.

Cancer plebejus POEPPIG, Arch. f. Naturg., vol. 2, pt. 1, 1836, p. 134 (type-locality, on muddy shores, Chile; type in Mus. Zool. Univ. Leipzig.—KINAHAN, Journ. Roy. Soc. Dublin, vol. 1, 1858, p. 335.—MIERS, Proc. Zool. Soc. London, 1881, p. 67.—ORTMANN, Zool. Jahrb., Syst., vol. 7, 1893, p. 425.—RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 581; vol. 38, 1910, p. 539, pl. 38, fig. 1.

Platycarcinus irroratus MILNE EDWARDS and LUCAS, d'Orbigny's Voy. l'Amér. Mérid., vol. 6, pt. 1, 1844, p. 19.—NICOLET, in Gay, Hist. Chile, vol. 3, 1849, p. 142; not *C. irroratus* Say nor *C. amaeneus* Herbst.

Cancer plebeius DANA, U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 155.—A. MILNE EDWARDS, Nouv. Arch. Mus. Hist. Nat., vol. 1, 1866, p. 188.

Diagnosis.—First antero-lateral (orbital) tooth narrower than any of the others. Basal antennal article about two-thirds as broad as long. Chelipeds narrow, merus widening distally very little. Black of fingers restricted on outer margin to one-fourth or less of their length.

Description.—Carapace very broad-oval, nearly smooth, having a fine depressed granulation, convex, not very uneven; antero-lateral teeth 9, shallow, edge crenate or denticulate, first 7 teeth truncate, lobiform, last two dentiform; one strong postero-lateral tooth, followed sometimes by a slight notch. Fronto-orbital distance less than one-fourth width of carapace; frontal teeth between the antennae triangular, median one narrower and more projecting; inner orbital tooth short, outer tooth little advanced, forming part of the first antero-lateral tooth. Tooth of basal antennal article large, triangular in cross-section, flat below, well advanced. The outer maxillipeds overlap and conceal the epistome; the truncate distal margin of the merus makes a slightly acute angle with the outer margin, the outer corner rounded. Merus of cheliped with 2 triangular acute teeth at end of upper margin; inner tooth of carpus acute; palm with 4 outer and 2 upper carinae, the uppermost spinous, the next spinulous; upper

surface of movable finger also spinulous; dark color of fingers covering prehensile edge and extending but a short distance on outer margins. Legs nearly naked.

Color.—A light lively red above, with several curved lines of white spots over the branchial and hepatic regions, a white lengthened spot on each side of the genital region, and a white mark like a V over the intestinal region. The anterior feet are of a darkish red above, the remaining legs dotted with purplish red. Under side whitish (Bell).

Measurements.—Male (2376), length of carapace 68.9, width of same 117.2, fronto-orbital width 28, width of front between antennae 9, width between tips of inner orbital teeth 13.2 mm.

Range.—From Callao, Peru, to Port Otway, Magallanes Territory, Chile. To a depth of 6 fathoms (Miers).

Material examined.—Callao, Peru; May 18, 1908; R. E. Coker; specimen returned to Peruvian Government.

Peru; specimens in Paris Museum.

Valparaiso, Chile; J. D. Dana, U. S. Exploring Expedition; 1 male (2376), 4 young (2375). November 1883; Dr. W. H. Jones, U. S. Navy; 1 female (14845).

Talcahuano; low tide; January 15, 1927; W. L. Schmitt; 1 male (61086).

Lota; February 15, 1888; *Albatross;* 1 male, 2 females (21975).

Port Otway; February 9, 1888; *Albatross;* 1 male, 1 female (21976).

CANCER PORTERI,[24] new name

BOCO

Plates 83 and 84; Plate 85, Figure 4

Cancer longipes BELL, Proc. Zool. Soc. London, vol. 3, 1835, p. 87 (type-locality, near Valparaiso; type not extant); Trans. Zool. Soc. London, vol. 1, 1835, p. 337, pl. 43; pl. 47, fig. 1. Not *C. longipes* Linnaeus, 1758.—KINAHAN, Journ. Roy. Soc. Dublin, vol. 1, 1858, p. 336.—A. MILNE EDWARDS, Nouv. Arch. Mus. Hist. Nat., vol. 1, 1866, p. 199.—MIERS, *Challenger* Rept., Zool., vol. 17, 1886, p. 110.—ORTMANN, Zool. Jahrb., Syst., vol. 7, 1893, p. 424.—FAXON, Mem. Mus. Comp. Zoöl., vol. 18, 1895, p. 16.—LENZ, Zool. Jahrb., Suppl. 5, vol. 2, 1902, p. 760.

Platycarcinus longipes MILNE EDWARDS and LUCAS, d'Orbigny's Voy. l'Amér. Mérid., vol. 6, pt. 1, 1844, p. 20.—NICOLET, in Gay, Hist Chile, vol. 3, 1849, p. 144.

Diagnosis.—Branchial regions nearly meeting on median line. First antero-lateral (orbital) tooth wider than any of the next 7 teeth. Basal article of antennae nearly as broad as long.

Description.—Similar to *C. plebejus.* Carapace narrower and more convex; inner branchial regions swollen and nearly meeting in the median line; cardiac and metagastric regions correspondingly depressed; surface densely granulate, granules visible to naked eye.

[24] For Prof. Carlos E. Porter, of Santiago, Chile.

Antero-lateral margin with a coarsely granulate or crenulate edge, cut into 9 teeth or lobes which are shallower than in *plebejus*, each tooth having a slightly projecting point; first tooth broadest, composed of the small, triangular outer tooth of the orbit joined to a truncate strip of the anterior margin; 2 postero-lateral teeth, the outer one better defined. Teeth of front broadly triangular, the blunt median tooth only slightly depressed and overreaching the adjacent pair but little; the teeth of this pair directed obliquely outward. Inner orbital tooth subacute, tooth of basal antennal article narrower and more produced, and followed by a small tooth on the suborbital margin. The outer maxillipeds fit into the buccal cavity, the extremity of the merus is obliquely placed. Merus of cheliped widening considerably to the distal end, 2 small sharp spines above; carpus with the customary short pyramidal tooth at inner angle; 4 outer granulated carinae on palm separated by a shallow depression from the pair of superior carinae which are near together and rough with acute granules; dactyl sharply granulate, non-carinate. Dark color of fingers extending the whole length of the prehensile edge and but a short distance from the tip along the outer edge. Chelae much smoother in the old, carinae faint. Legs long and narrow.

Color.—Above light red, indistinctly dotted with yellow; beneath yellowish. (Bell.)

Measurements.—Male (13870), length of carapace 74.4, width of same 121.8, fronto-orbital width 31.7, width of front between antennae 12.6, width between tips of inner orbital teeth 16.9 mm. Faxon notes a specimen 137 mm. wide.

Range.—Bay of Panama, 210 to 286 fathoms, to Valparaiso, Chile.

Material examined.—Bay of Panama; 1891; *Albatross:* Lat. 7° 32′ 36″ N., long. 79° 16′ 00″ W.; 286 fathoms; gn. M.; temperature 45.9° F.; March 8; station 3385; 3 males (20601), 1 male (M.C.Z.). Lat. 7° 32′ 00″ N., long. 78° 36′ 30″ W.; 259 fathoms; hrd. gy. M. S.; temperature 47.4° F.; March 11; station 3396; 2 males, 1 female, all small (20602). Lat. 7° 16′ 45″ N., long. 79° 56′ 30″ W.; 210 fathoms; gn. M.; temperature 48.8° F.; Mar. 9; station 3389; 1 male, 1 female (M.C.Z.).

Peru; specimen in Paris Mus.

Valparaiso, Chile; Nov. 1883; Dr. W. H. Jones, U. S. Navy; 1 male (13870).

Locality not given; C. Pickering, U. S. Expl. Exped.; 3 females (2388).

CANCER LUEDERWALDTI,[25] new species

Plates 86, 87, 88, and 89

Type-locality.—Santos, State of São Paulo, Brazil; 1 large specimen, sex unknown; found dead and dismembered, only the carapace and pair of chelipeds remaining; holotype in Museu Paulista, No. 948;

[25] For Dr. H. Luederwaldt, Museu Paulista, São Paulo, Brazil.

photographs of the same were sent to the U. S. National Museum through the kindness of Doctor Luederwaldt.

Measurements.—Length of carapace 15 cm., width of same 25 cm. (Luederwaldt.) Length of propodus of right cheliped 165.4 mm.

Diagnosis.—First antero-lateral (orbital) tooth as wide as any of the next five teeth. Basal antennal article more than twice as long as wide. Black color of fingers covering all but a small basal portion. Chelipeds narrow, merus not widening distally.

Description.—Carapace larger than any specimen of the genus yet obtained. Surface densely and coarsely granulate, not very uneven; a depression behind the front. Antero-lateral border strongly arched, cut into 9 broad subtruncate teeth which are defined by deep closed sinuses and show each a shallow thick marginal lobule which increases in prominence successively from the first to the ninth tooth. Postero-lateral border with two emarginations, the first well marked, the second slight. The frontal teeth between the antennae are in the same horizontal plane, thick, subequal, tips subacute. According to the dorsal view, shown in plate 86, the front is less advanced than the hepatic regions but this may be apparent rather than actual as the carapace is much foreshortened owing doubtless to the front half being upturned; the ventral view (pl. 87) may show more nearly the real relation of the front to the antero-lateral border. Inner orbital tooth triangular, broad; no supraorbital tooth but the two fissures strongly marked; no projecting tooth at outer angle of orbit. Basal article of antenna (pl. 87) elongate, having a strong terminal tooth; a small tooth close to it on the orbital margin. Epistome advanced at outer ends in a large rounded lobe. Chelipeds rather narrow; merus not enlarging toward distal end. Black color of fingers covering all but the basal end.

Relation.—This species is the first of the genus to be reported from the Atlantic coast of South America. It is allied to *C. porteri* and *C. plebejus* from the Pacific coast, has similar truncate lateral teeth, although without denticulate edges; it lacks a well formed outer orbital tooth present in those species; the antero-lateral margin is more strongly arched, the basal antennal article much longer, the fingers blacker. *C. luederwaldti* resembles *C. porteri* in its coarse granulation, in the shape of the front, and in the long first antero-lateral tooth, but differs most strikingly in the branchial regions not approximating the median line. Our species approaches *C. plebejus* in the moderate size of the chelipeds and in the flatness of the epistome, an indication that it was covered by the maxillipeds (which are lacking in this case), but differs in the partial separation of the lateral teeth.

CANCER POLYODON Poeppig

Plate 82, Figure 2; Plate 85, Figure 5; Plate 90

?Cancer setosus MOLINA, Saggio sulla Storia Naturale del Chili, 1782, p. 207, (type-locality, Chile; type not extant); French translation, 1789, p. 182.

Cancer dentatus BELL, Proc. Zool. Soc. London, vol. 3, 1835, p. 87, (type-locality, near Valparaiso; type not extant); Trans. Zool. Soc. London, vol. 1, 1835, p. 339, pl. 45, pl. 47, figs. 4 and 5.—DANA, U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 155.—KINAHAN, Journ. Roy. Soc. Dublin, vol. 1, 1858, p. 335.—HELLER, Reise *Novara*, Zool., vol. 2, Crust., 1865, p. 6.—A. MILNE EDWARDS, Nouv. Arch. Mus. Hist. Nat., vol. 1, 1866, p. 197.—ORTMANN, Zool. Jahrb., Syst., vol. 7, 1893, p. 427.—LENZ, Zool. Jahrb., suppl. 5, vol. 2, 1902, p. 759.—PORTER, Revista Chilena Hist. Nat., vol. 7, 1903, p. 149. Not *C. dentatus* Herbst, 1785.

Cancer polyodon POEPPIG, Arch. f. Naturg., vol. 2, pt. 1, 1836, p. 133 (type-locality, Chile; type in Mus. Leipzig).—RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 581.

Platycarcinus dentatus MILNE EDWARDS and LUCAS, d'Orbigny's Voy. l'Amér. Mérid., vol. 6, pt. 1, Crust., 1844, p. 20.—NICOLET, in Gay, Hist. Chile, vol. 3, 1849, p. 143.

Diagnosis.—Hairy. Marginal teeth triangular, spinous. Three marginal spines on carpus. Two rows of spines above chelae.

Description.—Carapace convex, hairy and finely granulate, granules not crowded, regions fairly delimited; marginal teeth triangular, prominent, acute, edges coarsely spinous; antero-lateral teeth 9, the first of orbital tooth the smallest; postero-lateral teeth 2, well marked, the first much the larger. Frontal teeth thick those between the antennae small, the median one much slenderer and more produced than outer pair; a shallow lobe between inner and outer supra-orbital teeth; antennal teeth long, inclined toward each other; two very sharp infero-orbital spines, the inner one the larger but much smaller than the antennal spine. Outer maxillipeds overlapping epistome. Chelipeds rough above; two spines on merus; two large spines on carpus, one at articulation, one at inner angle, smaller scattered spines besides one below inner angle; two rows of spines above palm and proximal half of dactyl. Five carinae on outer surface of palm are granulate and hairy. Black of fingers occupies the distal two-thirds. Ventral surface of body and margins of legs coarsely hairy; legs broad and flat, dactyls with 4 or 5 rows of hair.

Color.—Color above rich reddish brown, somewhat mottled with yellowish, particularly in young specimens; beneath red mottled with yellow. (Bell.)

Measurements.—Male (40417) length of carapace 79.8, width of same 124.6, fronto-orbital width 33, width of front between antennae 10.8, width between tips of inner orbital teeth 18.2 mm.

Range.—From Bay of Ancon, Ecuador (Ortmann) to the Island of Chiloe, Chile.

Material examined.—

ECUADOR.—Guayaquil; specimen in Copenhagen Mus.

PERU.—Dr. W. H. Jones, U. S. Navy; 1 female (14843).

Peru; W. E. Curtis, Bureau of Ethnology; 1 specimen (14842).

Pacasmayo; J. Orton; 1 male (62360); received from Boston Society of Natural History.

Salavery; October 22, 1926; W. L. Schmitt; 1 male (60856).

Ancon; sand beach; February 13; R. E. Coker; 1 young (40413); received from Peruvian Government.

Callao; May 18, 1908; R. E. Coker; 1 male (40416) 1 female (40414); received from Peruvian Government.

NE. side of San Lorenzo Island; taken in fish net on rocky shore; Jan. 11, 1907; R. E. Coker; 1 male (40417); received from Peruvian Government.

Independencia Bay, at the Punta Callao of Isla Vieja; 1 fathom; July 20, 1907; R. E. Coker; 2 young males, 2 young females (40415); received from Peruvian Government.

CHILE.—J. D. Dana, U. S. Exploring Expedition; 1 male (2377).

Chile; F. Silvestri; 2 males; lent by Buenos Aires Museum.

Iquique; 1885; Dr. W. H. Jones, U. S. Navy; 5 females (11197).

Antofagasta; November 15, 1926; W. L. Schmitt; 2 young, postlarval stage (60857); identification probably correct. November, 1914; J. N. Rose, Carnegie Institution of Washington; 1 carapace and claw (49059).

Coquimbo; 1849–1852; J. M. Gilliss; 1 male (2408).

Valparaiso: J. D. Dana, U. S. Exploring Expedition; 1 male (2369). January 7, 1927; W. L. Schmitt; 1 young (61088).

Talcahuano; January 15, 1927; W. L. Schmitt: 1 female (61089); low tide, 2 males, 1 female (61087).

Lota; February 15, 1888; *Albatross;* 2 young (21977).

Lota; January 16, 1927; W. L. Schmitt; 1 young, postlarval stage (60858); identification probably correct.

Quetelmahué, Island of Chiloe; June, 1924; Carlos S. Reed; 1 female (61090); from Buenos Aires Museum.

CANCER PRODUCTUS (Randall)

Cancer productus RANDALL, Journ. Acad. Nat. Sci. Philadelphia, vol 8, 1839, p. 116 (type-locality, West America; type in Phila. Acad.).—DANA, U. S. Expl. Exped., vol. 13, Crust., p. 1, 1852, p. 156; atlas, 1855, pl. 7, fig. 3*a–h*.—STIMPSON, Journ. Boston Soc. Nat. Hist., vol. 6, 1857, p. 461 [21]; Smithson. Misc. Coll., vol. 49, 1907, p. 36, pl. 4, figs. 5, 5*a*.—R. RATHBUN, Fisheries & Fishery Industries of U. S., sec. 1, 1844, p. 771, pl. 262.—SCHMITT, Univ. California Publ. Zool., vol. 23, 1921, p. 220, text-fig. 136, and synonymy.

Platycarcinus productus GIBBES, Proc. Amer. Assoc. Adv. Sci., vol. 3, 1850, p. 177.

Cancer perlatus STIMPSON, Proc. California Acad. Nat. Sci., vol. 1, 1856, p. 88 (type-locality, San Francisco Bay; type not located); ed. 2, 1873, p. 96.

Diagnosis.—Front markedly produced beyond outer orbital angles, forming five subequal teeth. Merus of chelipeds unarmed, fingers dark-tipped.

Description.—The five interorbital teeth are flat, obtuse, closely placed, and markedly produced beyond the outer orbital angles;

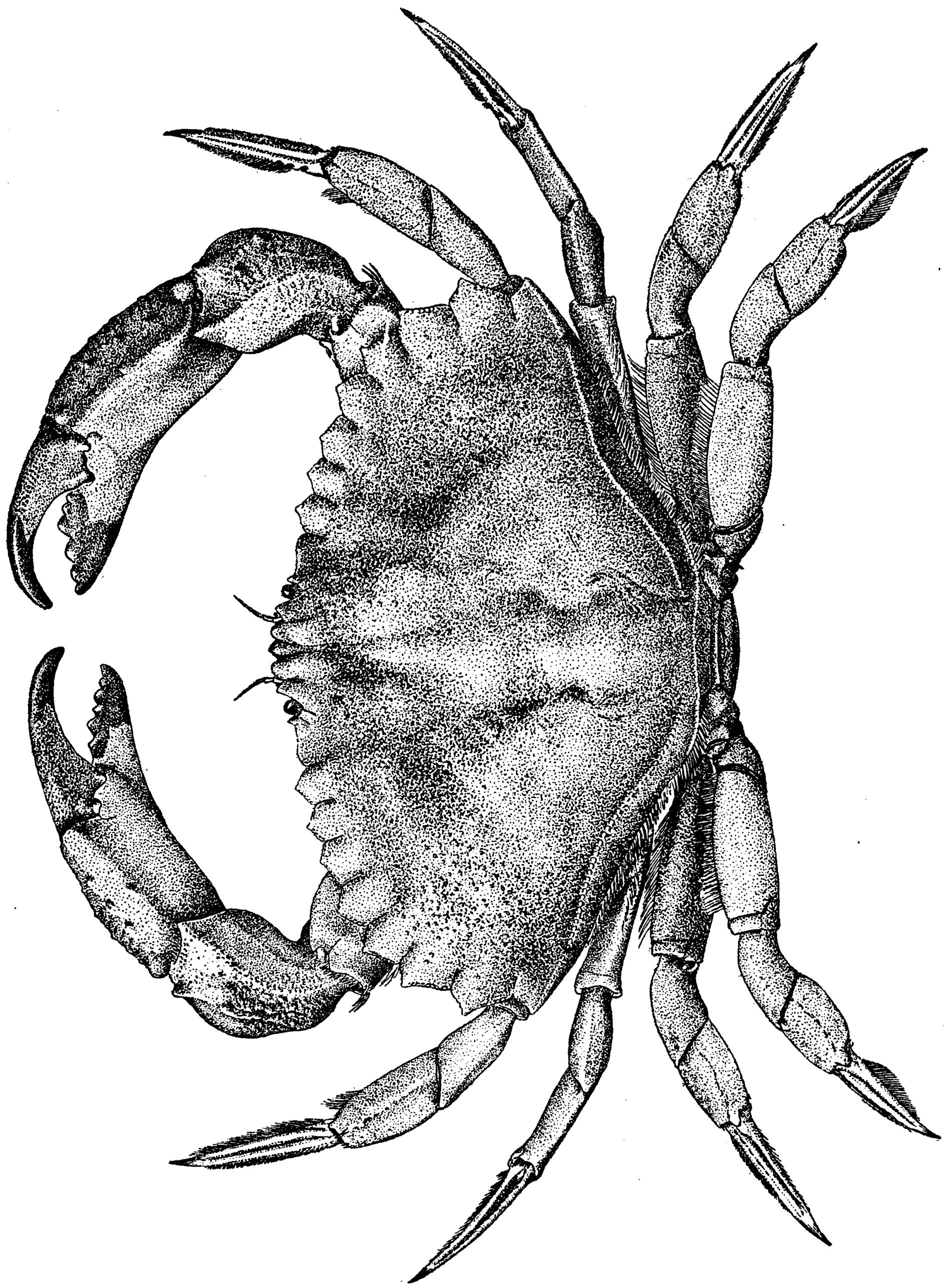

FIGURE 32.—CANCER PRODUCTUS, MALE (2529), DORSAL VIEW, REDUCED. AFTER R. RATHBUN

fronto-orbital width about one-fifth width of carapace. Antero-lateral teeth ten, shallow, outer orbital tooth small, next one rounded, succeeding teeth becoming larger and more acute posteriorly; between the teeth the margin of the carapace is marked with short closed fissures. A single obscure postero-lateral tooth. Carapace slightly

convex, very uneven. Inner lower orbital tooth flat, pressed close to the upper tooth; next it a small acute tooth. Merus of outer maxilliped about as broad as long, its anterior margin very oblique and forming a right angle with outer margin. Chelipeds rough above; merus unarmed; carpus rugose and lumpy, a single broad blunt tooth at inner angle, a large tubercle near articulation with manus; manus with four granulated carinae on outer surface; rugose above and with three rows of more or less obscure tubercles. Dactyli of legs thickly fringed above and below.

Color.—Adult dark red above, dirty white or yellowish white below; sometimes light red above due to minute red spots, not so numerous as in the case of the darker color, on a yellowish ground; or carapace with a complex pattern of narrow red lines on a yellowish ground.

Measurements.—Male (3111), length of carapace 97; width of same 157.5; fronto-orbital width 32; width of front between antennae 13, between tips of inner orbital teeth 18.6 mm. Male (Pacific Grove), width of carapace 173.5 mm. (Weymouth).

Range.—From Kodiak, Alaska, to Laguna Beach, California. Lockington [26] gave Magdalena Bay, L. Cal., as the southern limit. Many specimens formerly referred to the young of the common species, *C. magister*, *C. productus*, etc., were later found to belong to the more recently defined species, *anthonyi*, *branneri*, *jordani*, etc. For this reason only those stations from which material has been revised are included here.

Material examined.—See table, pages 206–207.

CANCER AMPHIOETUS Rathbun

Plate 91

Trichocarcinus dentatus MIERS, Proc. Zool. Soc. London, 1879, p. 34 (type-localities, 4 stations off Korea and Japan, 5.5 to 37 fathoms; types in Brit. Mus.). Not *Cancer dentatus* Herbst, 1785, nor *C. dentatus* Bell, 1835.

Cancer pygmaeus ORTMANN, Zool. Jahrb., Syst., vol. 7, 1893, p. 426, pl. 17, fig. 4 (type-locality, Tokio Bay; type in Strassburg Mus.).—BALSS, Arch. f. Naturg., vol. 88, pt. 2, 1922, p. 94. Not *C. pygmeus* Fabricius, Mantissa Insectorum, vol. 1, 1787, pl. 320; nor *C. pygmaeus* Fabricius, Entom. Syst., 1793, p. 451.

Cancer amphioetus RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 582; name substituted for *dentatus*, preoccupied in the genus *Cancer;* Harriman Alaska Exped., vol. 10, 1904, p. 175, pl. 6, fig. 3.—SCHMITT, Univ. Calif. Publ. Zool., vol. 23, 1921, p. 223, pl. 36, figs. 1 and 2.

Cancer bullatus BALSS, Zool. Anz., vol. 54, 1922, p. 1 (type-locality, Aomori; type in Berlin Mus.); Arch. f. Naturg., vol. 88, pt. 2, 1922, p. 95, pl. 1, figs. 2 and 3 (type designated).

Diagnosis.—Antero-lateral teeth broadly triangular, moderately produced, subequal. Carapace not pubescent, strongly areolated especially in the female.

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[26] Proc. Calif. Acad. Sci., vol. 7, 1876 (1877), p. 94 [1].

Material examined of Cancer productus

Locality	Bearings		Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			° F.						
Northwest coast of America.								T. Nuttall	1 y ♂	Phila. Acad.	Holotype.
Alaska:											
Kodiak								W. G. W. Harford.	1♀	13878	
Kasaan Bay, Prince of Wales Island.								Dr. T. H. Streets, U. S. N.	2♂	14671	
Hunter Bay, Prince of Wales Island.						June 18, 1897		*Albatross*	1♂ 1 y	32217	
British Colombia:											
North Island						Aug. 8, 1883		James G. Swan	1♀	6605	
Beaver Harbor						July 12, 1888		*Albatross*	1♂	16040	
Union Bay, Bayne Island.			Shore.			May 14, 1906		do	1♂	50506	Softshell.
Comox								do	1	F. C. 7119	
North side Denman Island.						May 12, 1914		U. S. Bureau of Fisheries.	1	48838	
Nanaimo						July 10, 1888		*Albatross*	1♀	15466	
Barclay Sound						Sept. 27, 1888		do	2♂	15465	
Washington:											
Sucia Islands						May 6, 1894		do	1♂	18955	
Straits of Fuca						1880		D. S. Jordan	1♂ 1♀	3109	
Puget Sound								J. D. Dana, U. S. Expl. Exped.	1♀	2007	
Do								Young Naturalists' Society, Seattle.	1♀	18815	
Do	From cavities in concrete cylinders, Pier 4, Navy Yard.					Sept. 4, 1923		Marine Piling Investigations (Col. Wm. G. Atwood).	1	57682	
Port Orchard, Puget Sound.								O. B. Johnson	3♂ 1♀	14973	
Oregon:											
Yaquina Bay						1923		J. G. Malone	1♂ 1♀	57270	
Newport						1923		do	1♂ 1 carapace	57275	
California:											
Tomales Bay								E. Samuels	1♂ 1♀	2021	
San Francisco Bay								Wm. Stimpson, N. Pacific Expl. Exped.	3♂ 1♀	2132	
Do								H. Hemphill	3♂ 4♀	2529	

Middle San Francisco Bay.	Off Pt. San Quentin	10.5–12.75	S. M		Feb. 6, 1912	D5708	do	1	55342	
Do	Off Southampton Shoal	7 – 9	S. Sh		Dec. 18, 1912	D5826	do	1	55337	
Do	N. of Angel Island	13 –19	St		Oct. 29, 1912	D5795	do	2	55311	
Do	SW. of Angel Island	19 –17	S. crs. fne. G. brk. Sh.	53.13	Jan. 30, 1912	D5700	do	1	55340	
Do	NW. of Alcatraz Island	13 –12.75	Sh. St		do	D5702	do	1 1	55339 55343	
Do	Alcatraz Lt., 51°, 1.83 m	3 – 3	gy. S. R		May 8, 1912	D5779	do	1	55341	
Do	Off Lime Point	16.5–17	G. S. St		Oct. 29, 1912	D5801	do	1	55346	
Do	Sausalito				Mar. 30, 1912		do	1	55335	
Do	Off Yellow Bluff	3.5– 2.75	R. St		Apr. 15, 1912	D5773	do	2 2	55349 55338	
Golden Gate	W. of Fort Point	43 –27	S. G. St		Nov. 4, 1912	D5808	do	3	52924	
Do	Off Fort Point	3.5– 2.25	gy. S. St		Apr. 17, 1912	D5778	do	1	55350	
Lower San Francisco Bay.	Goat Island Light, 23° 57′.	3 – 1.25	m. S		Apr. 9, 1912	D5767	do	1	55348	
Do	Off Ferry Building	10 –10.25	Sh. M		Oct. 30, 1912	D5802	do	1	55347	
Pillar Point Reef, Half Moon Bay.					May 11, 1913		do	1	55331	
Monterey Bay							Harold Heath	1♀ 1♂	22996 22997	
Do			(1)	Under rocks.			do	1	22865	
Do			3⅓				do	1 y	22866	
Do					Mar. 13, 1890		*Albatross*	1♀	16041	
Monterey					1880		D. S. Jordan, U. S. Fish Commission.	2 y 2♂ lge	3061 3111	
Pacific Grove							John C. Brown	5	23917	
Do					July —, 1895		J. O. Snyder	1 y	19817	
Do					1918		Ida S. Oldroyd	7♂ 2♀ 9 y	54020	
Laguna Beach			12 –15				W. A. Hilton	1 y	50600	6.5 mm. wide, thin shell. White with pale narrow lines.
Southern California					1874		Wm. H. Dall	1♂	14672	
California							E. Samuels	2♀	56770	From Boston Soc. Nat. Hist.

[1] Mean tide mark.

Description.—Male.—Carapace smooth, bare, strongly areolated, the highest elevations occupying the protogastric and mid-branchial regions. Surface composed of fine close-set granules. Antero-lateral margin with 9 flat, broadly triangular, not strongly produced, subequal teeth with granulate margins; last 2 or 3 teeth acute or sharp-pointed. On postero-lateral margin a blunt tooth formed by a distinct emargination and followed by one and sometimes two less distinct. The frontal teeth between the antennae subtriangular, blunt or subtruncate, the middle one narrower and more produced than the next pair. Inner tooth of orbit very broad, shallow, separated from the outer tooth by a small, slightly projecting tooth or lobe. Tooth of basal antennal article broad, oblong; adjacent orbital tooth about half as long. Merus of cheliped armed above with two small, sharp spines, distal and subdistal; carpus with a triangular spine at inner angle and a granulated tubercle at articulation with manus; the latter has five carinae outside, and two above which are furnished with 2 or 3 tubercles each. Fingers granulated, dark color reaching nearly to base. Legs hairy, tips of dactyli bent downward.

Female.—Much more uneven than the male, the elevations forming large bosses, one occupying the whole of each protogastric region, two across the middle of each branchial region, of which the inner is the smaller, the outer one pear-shaped and obliquely transverse in position. Lesser but distinct bosses are on the hepatic region and the widest part of the mesogastric. The cardiac region has a tendency to split up into a 4 or 6 rayed fan. This sexual form is the *bullatus* of Balss, described from two females. Between it and the male described above there are intermediate forms of both sexes. See plate 91.

Young.—In the very young the antero-lateral teeth are longer, thicker, more curved and separated than in the adult and show greater alternation in size; the first of the postero-lateral teeth is more pronounced.

Measurements.—Largest American specimen, male (50637), length of carapace 21.4, width of same 29.5, fronto-orbital width 11.2, width of front between antennae 4 mm. Male (54498), length of carapace 29.5, width of same 41.4, fronto-orbital width 15.8, width of front between antennae 5.4, width between tips of inner orbital teeth 8.1 mm.

Range.—From La Jolla, Calif., to Gulf of California, Mexico. Japan; Korea.

Material examined.—See table, page 209.

Material examined of Cancer amphioetus

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.
California:	° ′ ″	° ′ ″	*Meters*		°*F.*					
Off La Jolla			15–7	S		June 29, 1906	1165	Scripps Institution	1♂	Returned.
Off San Diego Bay						Nov. 3, 1907	5	do	1 ovig. ♀	Do.
			Fathoms							
San Diego Bay			4.5	R. brk. Sh		Mar. 24, 1894	3591	*Albatross*	1♀	18967.
Mexico:										
West coast Lower California—										
Off Cerros Island	28 12 00	115 09 00	44	gn. M		May 5, 1888	2838	do	1 y	18183.
Cerros Island	Middle of E. side					Mar. 12, 1911		do	1 y	60022.
			Meters							
South of Cerros Island	27 57 30	115 13 12	33	brk. Sh		Sept. 1, 1908	1630	Scripps Institution	3♀	Returned.
Do	27 54 12	115 08 00	33	brk. Sh		do	1631	do	3♀	Do.
Santa Maria Bay						Mar. 18, 1911		*Albatross* (P. Bartsch)	12 y	53448.
			Fathoms							
Off Abreojos Point	26 42 30	113 34 15	5.5	gn. M		May 4, 1888	2835	*Albatross*	3 y	21980.
Magdalena Bay	24 38 00	112 17 30	51	gn. M		May 2, 1888	2833	do	1 y ♂	21978.
Do	24 32 00	111 59 00	12	fne. gy. S		do	2831	do	1♀ 1 y	21979.
Do						1917		C. R. Orcutt	2♂	50637.
Lower California						1911		*Albatross*	2 y	61076.
Gulf of California—										
Off Consag Rock, Lower California	31 05 30	114 29 00	12	gy. S		Mar. 27, 1889	3032	do	1 y ♂	17420.
Off Diggs Point, Lower California	30 50 45	114 29 45	18	gy. S	63.5	do	3033	do	1 y	17422.
Off Cape Tepoca	30 16 00	113 05 00	36	gy. S. brk. Sh	63.3	Mar. 24, 1889	3018	do	1 y. ♂	17421.
Northwest of Guaymas	28 16 00	111 54 00	22	fne. gy. S	63	Mar. 23, 1889	3012	do	1 y	18198.
Japan:										
Otaru, Hokkaido								Imper. Univ. Tokyo	4♂ 2♀	45827.
Oshoro, Hokkaido								Madoka Sasaki	2♂	54498.
Hakodate Bay			11.5	gn. M. S		Sept. 19, 1896	3656	*Albatross*	6♂ 7♀	20140.
Do			15.5	fne. gy. S		do	3659	do	2♂ 2♀	20141.
Hakodate								Imper. Univ. Tokyo	1♂	45797.
Do								Madoka Sasaki	1 y ♂	54523.
Off Uki Shima, Gulf of Tokyo			169	M. P	48	Oct. 13, 1896	3661	*Albatross*	1♀	20142.
Nagasaki								Imper. Univ. Tokyo	1♂ 2♀	45796.
Japan								Rev. H. Loomis	1♀	17563.
Do								Imper. Univ. Tokyo	1♀	45826.
Japan? (or Korea?)								Dale and Jouy, U. S. S. *Palos*	1♀	13721.
Korea: Fusan								P. L. Jouy	1♀	12401.

CANCER ANTENNARIUS Stimpson

ROCK CRAB

Plate 92; Plate 93, Figure 2

Cancer antennaria STIMPSON, Proc. Calif. Acad. Nat. Sci., vol. 1, 1856, p. 88 (type-locality, Bay of San Francisco; cotypes, Cat. No. 2033, U.S.N.M.; 1 male, Phila. Acad.); ed. 2, vol. 1, 1873, p. 96.

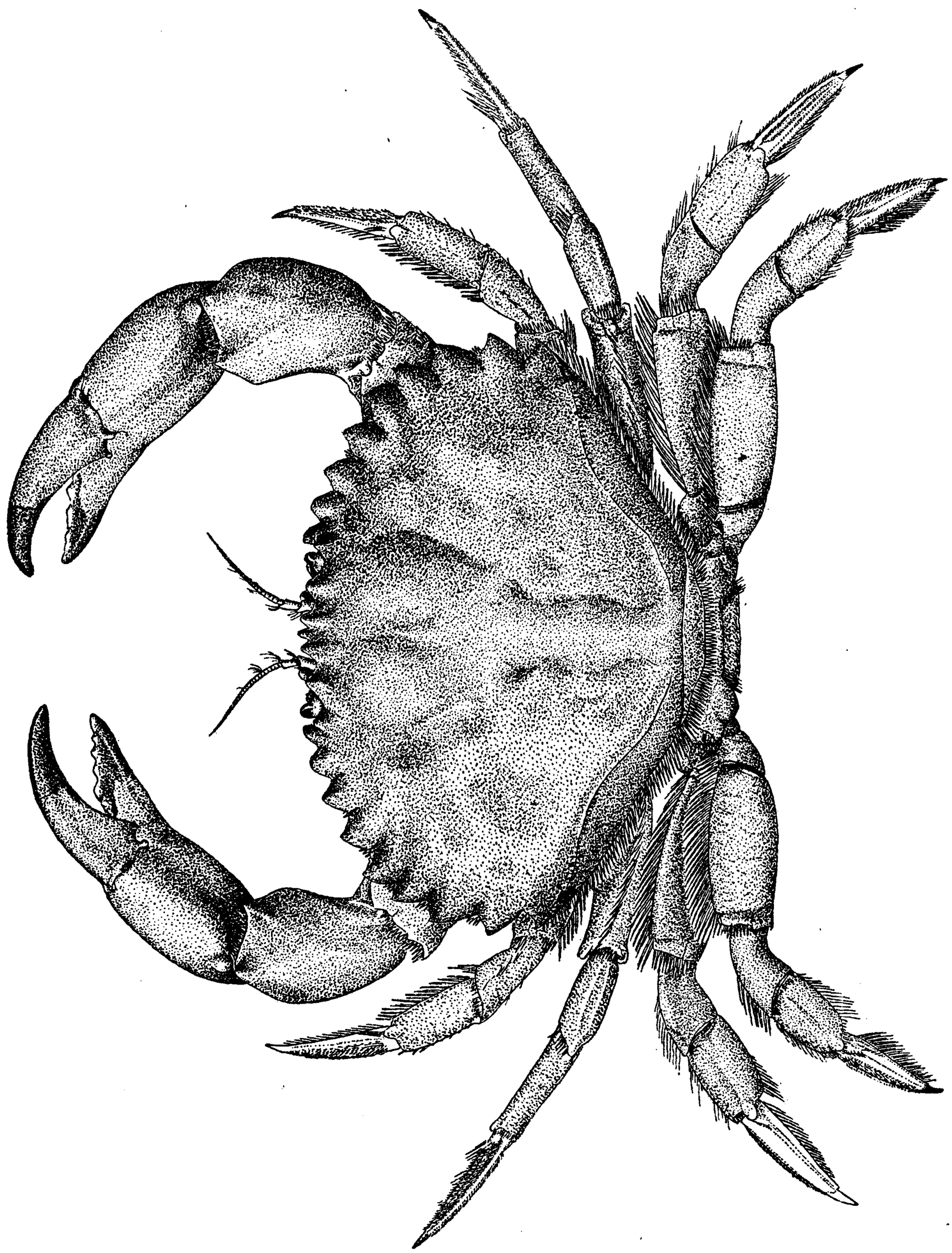

FIGURE 33.—CANCER ANTENNARIUS, MALE, COTYPE (2033), DORSAL VIEW, REDUCED. AFTER R. RATHBUN

Cancer antennarius STIMPSON, Journ. Boston Soc. Nat. Hist., vol. 6, 1857, p. 462, pl. 18.—R. RATHBUN, Fisheries and Fishery Industries of the U. S., sec. 1, 1884, p. 771, pl. 263.—WEYMOUTH, Stanford Univ. Publ., Univ. Ser. No. 4, 1910, p. 47, pl. 10, fig. 31; pl. 11, fig. 32.—SCHMITT, Univ. Calif. Publ. Zool., vol. 23, 1921, p. 224, text-fig. 137, pl. 35, fig. 3, pl. 36, fig. 8, and synonymy.

Diagnosis.—Carapace widest at eighth antero-lateral tooth; two postero-lateral teeth. Under parts spotted or blotched with reddish. A single tooth or spine on wrist.

Description.—Marginal teeth thick, high in the middle, deeply separated, edges finely spinulous. The three frontal teeth between the antennae are narrow, the median smallest and considerably lower than the next pair. Between the large inner and outer orbital teeth there is a smaller but prominent narrow tooth. Nine antero-lateral teeth more or less acute and curving forward. Postero-lateral teeth two, the first short but deeply marked, the second slightly indicated. Dorsal surface very uneven, lumpy, granulation fine, uniform; surface typically devoid of hair except in the very young. Antennae unusually stout and long. Lower orbital margin cut into two teeth between the outer and the antennal tooth. Chelipeds heavy, nearly smooth; merus with a short distal and subdistal spine-tipped tooth; inner tooth of carpus sharp, a conical tubercle near the distal articulation; outer-upper surface of palm obscurely costate. Legs rough and hairy; dactyli with five longitudinal rows of bristles.

Variable as to hairiness, roughness of the hand, size of granules, and thickness and sharpness of teeth.

Color.—Fairly uniform, dark red usually more or less mottled with a lighter, more yellowish tinge; under parts yellowish white spotted with red. Dark color of fingers extends more than half length of outer margins.

Measurements.—Male (15445), length of carapace 78, width of same 118, fronto-orbital width 30.3, width of front between antennae 12, width between tips of inner orbital teeth 20 mm.

Range.—From Tomales Bay, California, to west coast of Lower California, Mexico, as far south as San Geronimo Island, Magdalena Bay (Lockington).

Material examined.—See table, pages 212–213.

CANCER BRANNERI Rathbun

Plate 93, Figure 1

Cancer gibbosulus Rathbun, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 518 (part; not *Corystes* (*Trichocera*) *gibbosula* de Haan); Harriman Alaska Exped., vol. 10, 1904, p. 176 (part).—Weymouth, Stanford Univ. Publ., Univ. Ser. No. 4, 1910, p. 43, pl. 10, fig. 29 (not all synonymy).—Schmitt, Univ. Calif. Publ. Zool., vol. 23, 1921, p. 226, pl. 36, fig. 7 (not all synonymy or localities).

Cancer branneri Rathbun, Bull. 138, U. S. Nat. Mus., 1926, p. 63, pl. 16, fig. 4 (type-locality, San Francisco; type, Cat. No. 3092, U.S.N.M.).

Diagnosis.—First postero-lateral projection spiniform not projecting sideways beyond the carapace margin and followed by a minor tooth. Carapace strongly areolate. Dactyl of cheliped spiny.

Description.—Carapace markedly areolate, sparsely pubescent, hairs rather coarse and harsh, granules scabrous, somewhat scattered;

Material examined of Cancer antennarius

Locality	Bearings		Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
	Latitude N.	Longitude W.									
California:	° ′ ″	° ′ ″			°F.						
Tomales Bay (probably).								E. Samuels	1♂	56768	From Boston Soc. Nat. Hist.
Outside Golden Gate.	Point Bonita		(1)			Aug. 1, 1912		*Albatross*	1	55526	
Middle San Francisco Bay.	Off Southampton light		8	M	60.36	July 22, 1912	H5135	do	2 y	55353	
Do	Sausalito					Oct. 5, 1913		do	1	52679	
Do	Golden Gate		43–27	S. G. St		Nov. 4, 1912	D5808	do	1	55354	
Do	do		33–49	Sh. St		Apr. 7, 1912	D5845	do	1 y	55351	
Do	Off Fort Point Light		3.5–2.25	gy. S. St		Apr. 17, 1912	D5778B	do	1 y	55510	
San Francisco								Wm. Stimpson, N. Pacific Expl. Exped.	4♂ 1♀	2033	Cotypes.
Half Moon Bay	Pillar Point reef					May 11, 1913		W. L. Schmitt, Bur. Fisheries.	2♂ 1♀	52653	
Santa Cruz						Mar. 12, 1890		*Albatross*	2♂	15445	
Do								J. S. Kingsley	1♂	56767	From Boston Soc. Nat Hist.
Monterey Bay			(2)	Under rocks				Harold Heath	1♀	22864	
Do			(3)	do		Jan. 1, 1908		F. W. Weymouth	1	39117	
Do	Santa Cruz Lighthouse, N. 80° W., 2.1 m.		10	fne. gy. S. R		May 19, 1904		*Albatross*	3 y	50973	
Monterey						1880		D. S. Jordan	1♀	3113	
Pacific Grove								Leland Stanford Jr. Univ.	1♂ 1♀	19073	
Do								John C. Brown	6	23918	
Do						June —, 1905		J. E. Benedict	1♀	50492	
Do						1918		Ida S. Oldroyd	{9♂ 10♀ (2 ovig.) {3 y	54018 54017	
Santa Barbara						June —, 1875		Yarrow, Henshaw, Shoemaker; Explor. W. of 100th meridian.	1♀ 1 y	2321	
Do						1880		D. S. Jordan, U. S. Fish Comm.	1♂	3128	
Venice, Santa Monica Bay.	½ m. N. of Long Wharf.							*Anton Dohrn*	1 y	50282	From Venice Marine Biol. Sta.
Do	Under aquarium					Mar. 9, 1913		J. Ross Beck	1 y	50283	Do.

Venice Breakwater.						Jan. 3, 1912		P. S. Barnhart	1 y ♀	50277	Do.
Do						Oct. 25, 1912		*Anton Dohrn*	3♂ 1 immature ♀	50279	Do.
Do						Feb. 19, 1913		J. Ross Beck	1 y♂	50278	Do.
Do						Oct. 29, 1913		*Anton Dohrn*	1 ♂ 1 y	50280 50284	Do. Do.
Do						Mar. 13, 1913		J. Ross Beck	1♂	62465	Univ. Southern California.
San Pedro	Off breakwater		10			Nov. 30, 1912			1♀	Returned	Do.
Do						1880		D. S. Jordan, U. S. Fish Comm.	1 y	3086	
Do			(4)			July, 1896		H. N. Lowe	1♀	19865	
Do								do	1♀ 1♀	32970 32977	
Do						1901		T. D. A. Cockerell.	1♀	31509	
Do								Mr. Baker	7 y	61077	From W. A. Hilton.
Point White, San Pedro.						May 18, 1919		E. P. Chace	1♀	53872	
Off Long Beach			5.5		°C. 19.5	May 16, 1925			1 y	62677	Univ. Southern California.
Long Beach, Los Angeles Harbor.						July 10, 1914		*Anton Dohrn*	1 y	50281	From Venice Marine Biol. Sta.
Do								H. N. Lowe	3 y	50496	
Laguna Beach								W. A. Hilton	1 y	48911	
Santa Catalina Island.	Catalina Harbor		(5)			1874		W. H. Dall	1♂ 1♀	14661	
La Jolla						Mar. 6, 1898		*Albatross*	1♂ 1 y ♀	21773	
Do			(5)	From kelp hold-fast.		Aug. 17, 1918		W. L. Schmitt	1 y	53982	
San Diego						Mar. 15, 1898		*Albatross*	1♂	21772	
Do								H. Hemphill	1♂ 1♀ 2 y	17529	
Do								San Diego Nat. Hist. Soc.	1♂	Returned	
San Diego Bay			5	fne. S. bk. Sh		Mar. 21, 1894	3576	*Albatross*	1♂	22245	
Do	32 41 30	117 13 30	(6)	S		July 9, 1906	1238	Scripps Institution	1♀	Returned	
California								Dr. J. G. Cooper	1♀	2138	
Mexico: Lower California, Todos Santos Island, off Ensenada.								A. W. Anthony	1♂	20692	

[1] Between tide marks. [2] Low tide mark to mean tide. [3] Low tide. [4] Deep water. [5] Beach. [6] Shore.

antero-lateral margin armed with 9 strongly produced, forward-curving, sharp teeth, all except the first two tipped with a spine; postero-lateral margin with a well marked tooth directed upward and not laterally, and behind it an indistinct tooth or notch. Fronto-orbital width one-third that of carapace; median tooth of front sub-oblong, depressed; next pair small, triangular, subacute, and widely separated from the broad orbital pair. Three superior orbital teeth, of which the middle one is similar in shape to the outer one but less advanced. Tooth of basal antennal article narrow, produced beyond the front; adjacent tooth of suborbital margin small. Merus of outer maxilliped truncate, anterior margin shorter than outer margin and forming a slightly obtuse angle; inner angle slightly produced inward in a blunt tooth. Chelipeds hairy; merus with two spines above, distal and subdistal; carpus spinulous above, a spine at articulation with manus, a larger spine at inner angle with a small one below it. Upper surface of hand with 2 rows of 3 to 5 spines each, outer surface with 5 rows marked with hair and spinules; a spine at articulation with carpus; upper margin of dactylus spinous, outer surface with 2 strong carinae the upper of which is spinous and between them a tuberculated carina on proximal half only. Legs hairy; dactyli longer than propodi, straight, tipped with nearly straight corneous spines. Abdomen of male very long and narrow, especially the terminal segment; sixth segment slightly wider than long.

Color.—Whitish marked with irregular but symmetrically disposed reddish blotches, tips of fingers of chelipeds black, ambulatory legs light banded with red. (Weymouth.)

Measurements.—Male holotype, length of carapace 32, width of same 46.6, fronto-orbital width 17, width of front between antennae 5, width between tips of inner orbital teeth 9.4 mm.

Range.—From Granite Cove, Port Althorp, Alaska, to Santa Catalina Island, California.

Material examined.—

Granite Cove, Port Althorp, Cross Sound, Alaska; June 18, 1880; Sylvanus Bailey; 1 male (12516), received through W. H. Dall.

Ucluelet, west coast Vancouver Island, British Columbia; low tide to deep water; Geological Survey of Canada; 1 male (40078).

Off Cape Orford, Oregon; lat. 43° 01′ 00″ N., long. 124° 30′ 30″ W.; 35 fathoms; crs. S. Sh.; temperature 46.7° F.; September 12, 1889; station 3094, *Albatross*; 1 young female (17419).

San Francisco, Calif.; 1880; D. S. Jordan; 1 male, holotype (3092).

SE. of the Farallones, California; Farallones Light, N. 80½° W., 5.4 miles; 35–33 fathoms; sand; October 22, 1912; station D5790, *Albatross*; 1 female, 2 young (52681).

Seal Beach, Calif.; 3 fathoms; February 24, 1923; Univ. Southern California; 1 young (62466).

Catalina Harbor, Santa Catalina Island, Calif.; 30–40 fathoms; sandy mud; W. H. Dall; 1 male, 1 young (14660).

CANCER JORDANI Rathbun

Plate 94, Figures 1 and 2

Cancer jordani RATHBUN, Amer. Nat., vol. 34, 1900, p. 133 (type-locality, Monterey Bay; type, Cat. No. 22868, U.S.N.M.); Harriman Alaska Exped., vol. 10, 1904, p. 176, pl. 6, fig. 4.—WEYMOUTH, Stanford Univ. Publ., Univ. Ser. No. 4, 1910, p. 45, pl. 10, fig. 30.—SCHMITT, Univ. Calif. Publ. Zool., vol. 23, 1921, p. 228, pl. 36, figs. 5, 6.

Diagnosis.—Carapace hairy; antero-lateral teeth spiniform, curved, alternating in size; one postero-lateral tooth.

Description.—Carapace slightly areolated, hairy, and covered with small crowded scabrous granules; antero-lateral teeth separated to their bases, curved forward, tips spiniform, very slender; second, fourth, sixth, and eighth teeth smaller than the others; alternation in size of teeth varying with age, most noticeable in young specimens, less so in large ones; ninth tooth scarcely more prominent than eighth; one postero-lateral tooth is indicated in older specimens and less conspicuously so in younger ones by a slight gap in the spinules marking that margin. Fronto-orbital width nearly half width of carapace. Inner orbital tooth very slightly produced; margin of upper intermediate orbital lobe almost transverse, scarcely dentiform. Tooth of basal antennal article and the adjoining tooth of the orbital margin acute. Movable part of antennae half as long as carapace. Merus of outer maxilliped obliquely truncated, margin at a slightly obtuse angle to outer margin, corner rounded; the merus considerably overlaps the epistome and the basal article of the antenna. Seven carinae on upper-outer surface of palm are fringed with hair, the two superior carinae with several spines. Upper surface of basal half of movable finger rough with sharp granules. Tips of fingers light; the dark color runs along the prehensile margins to the base or nearly so, but about ⅗ or ⅔ of the outer margin. Legs hairy.

Color.—A male from Laguna Beach preserved in formalin showed a regular pattern on the carapace in brick-red blotches. The largest patch stretches from the anterior half of the postero-lateral margin obliquely toward the gastric region; two short patches stretch obliquely outward and forward from the posterior margin. A patch of the same color occupies nearly all of the lower surface of the arm, while a darker shade covers the dorsal aspect of the cheliped.

Measurements.—Male (50299), length of carapace 21, width of same 27.4, fronto-orbital width 11.9, width of front between antennae 4, width between tips of inner orbital teeth 6.6 mm.

Range.—From Humboldt Bay, Calif., to San Geronimo Island, Lower California, Mexico.

Material examined.—See table, pages 216–217.

Material examined of Cancer jordani

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
California:	° ′ ″	° ′ ″									
Humboldt Bay						July 18, 1916		Scripps Institution	1 y	Returned	
Pillar Point Reef, Half Moon Bay.						May 11, 1913		*Albatross*	2	55512	
Monterey								Dr. C. A. Canfield	1 y	3447	
Monterey Bay			(1)	Under rocks				Harold Heath	1	22867	
Do	From sub-umbrella space of large violet and white jellyfish.							do	1♀ holotype, 2 y.	22868	
Do								do	1 y	22869	
Do	36 56 20	122 03 20	13	fne. S. rky		Mar. 15, 1890	3142	*Albatross*	1 y	15446	
Do			(2)	Under rocks		June —, 1907		F. W. Weymouth	1	39116	From Stanford Univ.
Do	Off Del Monte		10-17			June 18, 1906		do	1	39119	Do.
Santa Monica								E. P. Chace	1 y	54001	
Santa Monica Bay	2 m. S. by E. from Del Rey.					Aug. 8, 1913		*Anton Dohrn*	2 ♂ 4 ♀ (1 ovig.)	50303	From Venice Marine Biol. Sta.
Do	2 m. out between Playa del Rey and El Segundo.					Aug. 2, 1913		do	1♂	50294	Do.
Do	Off Venice					July 29, 1913		do	1♂	50301	Do.
Do	do					Aug. 2, 1913		do	3♂ 1♀	50299	Do.
Do	S. of Venice Breakwater.		20					Univ. Southern California.	2 y 1 y	Returned 62690	
Do	3½ m. S. by W. of Venice.		24			July 29, 1913		*Anton Dohrn* (P. S. Barnhart).	1 y 1♂ 1 y	50297 50302	Do.
Point Vincente			8			July 5, 1924		Univ. Southern California.	7 y	62471	
Do			14			Nov. 15, 1924		do	1 y 1 y	Returned 62689	
Point Fermin						July 16, 1923		do	1 y	62470	
San Pedro								H. N. Lowe	1 y. ♂	23054	
Do								E. P. Chace	2 y	61084	
Vicinity of San Pedro						1917		do	2 ♂	54002	
Do						Nov. 30, 1912		*Anton Dohrn*	1 y	50298	Do.
Long Beach			10					Univ. Southern California.	3 y	62472	
Do								H. N. Lowe	1 y	50553	

					°C.					
Off Long Beach			5.5		19.5	May 16, 1925		Univ. Southern California.	1♂	62679	
Seal Beach			3			Feb. 24, 1923		do	1 y	Returned	
Newport Bay, Newport						Nov. 27, 1914		*Anton Dohrn*	1 y	50296	Do.
Laguna Beach								W. A. Hilton	4 y	50610	
									1 y	50595	
Do						Aug. 8, 1918		do	1	54024	
Santa Catalina Island	Isthmus Harbor					Nov. 27, 1913		*Anton Dohrn*	1♀1♀	50300	Do.
Do	Catalina Harbor					1874		W. H. Dall	3 y	19976	
Off San Nicolas Island	E. point San Nicolas Island, S. 77° W., 57 m.		33–32	fne. gy. S		Apr. 12, 1904	4420	*Albatross*	1 y	50969	
La Jolla			Beach.	From kelp hold-fast.		Aug. 17, 1918		W. L. Schmitt	1 y	53983	
Do						July —, 1917		Scripps Institution	1♂	Returned	
			Meters								
Off La Jolla	32 52 00	117 15 54	13	S		June 27, 1906	1146	do	1♂ 1♀	do	
Do	32 52 00	117 16 00	55	S. M.		do	1145	do	1♂ 8♀ (1 ovig.)	do	
Do	32 51 30	117 16 24	146	rky		July 3, 1906	1202	do	1♂	do	
Do	32 51 30	117 16 00	33	S		do	1200	do	1 y	do	
Do	32 50 00	117 18 18	55–73	R		July 16, 1906	1287	do	1♂	do	
Do			15–7	S		June 29, 1906	1165	do	22 y. 1 megalops	do	
Do			12–11	S		do	1167	do	1♀ 10 y	do	
Do			10	S		July 17, 1906	1299	do	7 y	do	
San Diego								H. Hemphill	2 y	62363	
			Fathoms								
Do			10					do	1 y	4282	
San Diego Bay			6.5	M. S		Apr. 1, 1896	3621	*Albatross*	1♀	20139	
Off San Diego Bay	32 38 00	117 14 00				Nov. 3, 1907	6	Scripps Institution	1♂ 1♀	Returned	
Mexico: Lower California—											
			Meters								
Cerros Island	27 54 30	115 08 00	33	brk. Sh		Sept. 1, 1908	1631	do	1♂	do	
Do	Middle of east side					Mar. 12, 1911		*Albatross*	1♀	60023	
San Geronimo Island			7			July 19, 1896		A. W. Anthony	1 y	19524	

[1] Low tide to mean tide.

[2] Low tide.

CANCER ANTHONYI Rathbun

Plate 94, Figure 3

Cancer anthonyi RATHBUN, Proc. Biol. Soc. Washington, vol. 11, 1897, p. 111 (type-locality, Playa Maria Bay, Lower California; type, Cat. No. 19856); Harriman Alaska Exped., vol. 10, 1904, p. 176, pl. 6, fig. 2.—WEYMOUTH, Stanford Univ. Publ., Univ. Ser. No. 4, 1910, p. 49, pl. 11, fig. 33.—SCHMITT, Univ. Calif. Publ. Zool., vol. 23, 1921, p. 227, pl. 35, fig. 1.

Diagnosis.—Carapace widest at ninth antero-lateral tooth; postero-lateral teeth inconspicuous. Intermediate supra-orbital tooth shallow. Under parts of uniform light color.

Description.—Carapace very convex, uneven, furrows at middle well marked; surface smooth to the touch, formed by a pavement of flat, close-set granules. Marginal teeth thick, blunt or subacute. Antero-lateral margin very arcuate, nine-toothed, lateral tooth projecting little beyond the preceding. Postero-lateral margin with two rudimentary, non-projecting teeth or emarginations. Median tooth of front small and narrow. Upper margin of orbit between sutures dentiform or lobiform; tooth low. Basal antennal tooth large, advanced beyond front. Distal margin of merus of outer maxilliped slightly curved and at right angles to outer margin, outer angle rounded. Chelipeds and legs nearly smooth; merus with short distal and subdistal spines; carpus with a broad, inner tooth and a tubercle on upper surface just behind articulation with palm. The latter is obscurely carinated; immovable finger deflexed.

Allied to *C. antennarius* but antero-lateral teeth broader and less projecting, front narrower and legs less hairy.

Color.—Brownish red; under parts uniform light color. The black color on the fingers extends less than half the length of the outer margins.

Measurements.—Male (holotype), length of carapace 42.4; width of same 65; fronto-orbital width 18.2; width of front between antennae 6.3, width between tips of inner orbital teeth 10 mm. Largest specimen, male (23048), length 52.1, width 77.5 mm.

Range.—From Monterey Bay, Calif., to Magdalena Bay, Lower California, Mexico.

Material examined.—

CALIFORNIA.—Monterey Bay; lat. 36° 55′ 30″ N., long. 122° 02′ 00″ W.; 19 fathoms; fne. S. M. St.; temperature 55.4° F.; March 15, 1890; station 3138, *Albatross*; 1 young (19977).

Santa Monica Bay; received from Venice Marine Biological Station: Off Venice; August 2, 1913; *Anton Dohrn;* 1 young male (50178). Venice breakwater; 1 young male (45584). Two miles S. by E. from Playa Del Rey; August 8, 1913; *Anton Dohrn;* 1 young (50176).

Vicinity of San Pedro; 1917; E. P. Chace; 1 young (54006).

Point White, San Pedro; May 18, 1919; E. P. Chace; 1 young (53873).

Seal Beach; July 28, 1923; 1 young, returned to University of Southern California. Off Long Beach; 5½ fathoms; temp. 19.5° C.; May 16, 1925; 9 young (62498), from University of Southern California.

Long Beach; on wharf; H. N. Lowe; 2 males, 2 females (23048).

Anaheim Bay; November 18, 1918; E. P. Chace, 1 young female (54005).

Off Catalina Island; 50 fathoms; H. N. Lowe; 1 young female (29959).

La Jolla; 1915; 2 young; returned to Scripps Institution.

San Diego Bay; 6 fathoms; fne. S. brk. Sh.; March 21, 1894; station 3577, *Albatross*; 1 male (22246).

MEXICO.—West coast of Lower California:

Cape Colnett; gift of Ida S. Oldroyd; 1 young (62738).

Playa Maria Bay; A. W. Anthony; 1 male (holotype), 1 female paratype (19856).

Rosalia Bay; August 20 and 23, 1896; A. W. Anthony; 7 young (19822).

Magdalena Bay; 2 specimens (M.C.Z.).

CANCER GRACILIS Dana

Plate 95

Cancer gracilis DANA, Proc. Acad. Nat. Sci. Philadelphia, vol. 6, 1852, p. 73 (type-locality, Bay of San Francisco; type not located); U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 153; atlas, 1855, pl. 7, fig. 2*a-d*.—WEYMOUTH, Stanford Univ. Publ., Univ. Ser. No. 4, 1910, p. 42, pl. 9, figs. 26–28.—SCHMITT, Univ. Calif. Publ. Zool., vol. 23, 1921, p. 232, pl. 35, fig. 2, and synonymy.

Diagnosis.—Nine low antero-lateral teeth, one postero-lateral. Fingers of cheliped without dark color. Merus of outer maxillipeds elongate, anteriorly rounded.

Description.—Carapace strongly convex, very slightly areolated, densely granulated, widest at ninth (sometimes eighth) tooth. Antero-lateral teeth low, 9 in number, of unequal width, projecting less than one-third width of base, not spiny-pointed. One small blunt postero-lateral tooth. Median tooth of front smaller than those of the next pair but well advanced beyond them. Outer and distal margins of merus of outer maxilliped forming a single curve without angulation. Arm with a small distal and subdistal spine or spinule; wrist with two inner spines or teeth, the smaller below the other. Propodus with nearly horizontal margin, outer-upper surface with seven longitudinal carinae some of which are incomplete, the upper one bispinulous, the next one similar; upper edge of dactylus finely roughened at its middle. Legs relatively narrow, merus finely rugose above, dactyls long and narrow.

Material examined of Cancer gracilis

Locality	Bearings		Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°F.						
Alaska: Kasaan Bay, Prince of Wales Island.								Dr. T. H. Streets, U. S. Navy.	1 ovig. ♀	14662	
British Columbia:											
Comox								*Albatross*	7	F. C. 7118	
Victoria								Mr. Nichols	1♂	50508	
Washington:											
Port Angeles						Sept. 3, 1891		*Albatross*	3♂ 2♀	17094	
Puget Sound								Young Naturalists' Soc., Seattle.	2♂	18814	
Admiralty Inlet	Olele Pt., Oak Bay, S. 27° E., 1.5 m.		16–26	gn. M. S. brk. Sh.	51.8	July 1, 1903		*Albatross*	1 y	31601	
Port Orchard						July —, 1889		O. B. Johnson	3♂ 4♀	14972	
Do								*Albatross*	2♂ 1♀	15447	
Fort Steilacoom								Dr. Geo. Suckley, U. S. Army.	2♀	2049	
Olympia						1923		J. G. Malone	1♀	57277	
Oregon: Off Yaquina	Yaquina Light, S. 84° E., 5.1 m.		34	crs. gy. S		Sept. 2, 1914	H5716	*Albatross*	1	55236	
California:											
Drakes Bay	37 59 20	122 55 30	20	bk. S. M	51.8	Mar. 21, 1890	3154	do	2♂	15451	
Off Bolinas Point	37 49 50	122 37 10	11	fne. gy. S	52.2	Mar. 29, 1890	3182	do	18	17417	
West of Golden Gate	Bonita Pt. Light, N. 46° E.		9–8	fne. dk. S		Mar. 11, 1912	D5733	do	1	55233	
Do	Bonita Point		(1)			Aug. 1, 1912		do	2	55241	
Do	San Francisco Lightship, N. 37 E., 1 m.		26–19	S		Oct. 22, 1912		do	4	55238	
Do			30			July 21, 1912		do	1	55243	
Do			30					do	1	55237	
Sausalito						Mar. 30, 1912		do	1	55240	
Do						Apr. 1, 1912		do	1	55234	
Middle San Francisco Bay.	Off Pt. San Quentin		10.5–12.75	S. M		Feb. 6, 1912	D5708	do	1	55525	
Do	Off Southampton Shoal		7–9	S. Sh		Dec. 18, 1912	D5826	do	8	55231	
Do	do		8.5–12.5	S		do	D5825	do	1	55230	
Do	Off Angel Island		8.5–7.5	S		Oct. 29, 1912	D5797	do	3	55229	
Do	do		8.5–12.5	fne. gy. M. S		do	D5799	do	7	55232	
Do	do		16.5–10.25	M. S. Sh		Jan. 20, 1913	D5828	do	1	55235	
Do	do		8–7.25	M		Oct. 28, 1912	D5798	do	3	55239	
Lower San Francisco Bay.	Off Ferry Building		10–10.25	Sh. M		Oct. 30, 1912	D5802	do	5	52717	Figured

Do	San Francisco							Henry Hemphill	3♀	5133	
Do	Off San Mateo		10-9	M		Apr. 22, 1913	D5849	*Albatross*	1	55531	
Gulf of the Farallones	37 50 00	122 47 00	24	fne. gy. S	50.7	Mar. 29, 1890	3180	do	2 y	15449	
Do	37 43 20	122 43 00	29	crs. S	50.4	Mar. 10, 1890	3100	do	4♂ 4♀	15450	
Off Point Montara	Pt. Montara Light, N. 74½° E., 8.9 m.		39-40	dk. gn. S	49.66	Oct. 15, 1912	D5785	do	2	55242	
Off Pescadero Point	37 13 30	122 26 00	20	gy. S	52.8	Mar 11, 1890	3111	do	3♀	15454	
Off Point Ano Nuevo	37 08 00	122 28 10	47	br. M	51.3	Mar. 15, 1890	3148	do	1 y	15459	
Do	37 00 00	122 20 00	56	br. M	49.2	do	3147	do	2 y	15458	
Santa Cruz								Boston Soc. Nat. Hist.	1♀	56777	
Monterey Bay	Santa Cruz Lighthouse, N. 85° W., 1.6 m.		9-10	rky		June 11, 1904	4564	*Albatross*	1 y	50972	
Do	Santa Cruz Lighthouse, N. 71° W., 2.4 m.		10-12	fne. gy. S. R		do	4560	do	2♀	50523	
Do	Santa Cruz Lighthouse, N. 72° W., 8.1 m.		10	hrd. S. R		do	4562	do	1♂ 1 y	50524	
Do	36 56 20	122 03 20	13	fne. S. rky		Mar. 15, 1890	3142	do	1 y	15455	
Do	36 56 00	122 01 20	11	S. P		do	3137	do	1♀	15452	
Do	36 56 00	122 06 00	24	fne.gy.S.M	53	do	3141	do	3 y	15453	
Do	36 55 40	122 03 10	20	S G. R. M		do	3144	do	4 y	15460	
Do	36 54 10	121 55 00	15	fne. gy. S	54.7	Mar. 14, 1890	3135	do	4♂	15448	
Do	36 51 40	121 51 20	13	fne. S. M	54.5	do	3134	do	1 y	15457	
Do	36 44 00	121 51 00	33	br. M	52.1	do	3132	do	1♂ 1♀	15456	
Do	Pt. Pinos Lighthouse, S. 42° W., 7.6 m.		13-15	fne. gy. S		May 12, 1904	4459	do	1♂ 3♀	50487	
Do	Pt. Pinos Lighthouse, S. 21° W., 3.4 m.		49-50	gn. M. fne. S	48.5	May 11, 1904	4452	do	1 y	50971	
Pacific Grove						July —, 1895		J. O. Snyder	1 y	19818	
Do								John C. Brown	5	23919	From subumbrella of jellyfish.
Monterey						1880		D. S. Jordan, U. S. Fish Comm.	1 ovig. ♀	3063	
Santa Barbara						1880		do	1	3046	
Santa Monica Bay	Between Venice and Rocky Pt.					Aug. 11, 1914		*Anton Dohrn*	10 y	50270	From Venice Marine Biol. Station
Do	do					do		do	4 y	50275	Do.
Do	Off Venice					Aug. 2, 1913		do	1 y. ♂	50272	Soft shell.
Do	3 m. SW. by S. of Venice.		22			do		do	2 y	50273	
Do			14			July 29, 1913		*Anton Dohrn* (P. S. Barnhart).	3	50271	
Off Point Vincente			10			1924		*Anton Dohrn* (E. P. Chace)	1 y	58760	
Point Fermin						July 16, 1923		Univ. Southern California.	1 y	62468	
South side of San Pedro Bay.	600 feet W. of Pier near inlet.			crs. yl. S				do	1♂	62467	
Just east of Long Beach						Nov. 4, 1922		do	1 y♂	62469	
Off Long Beach			12			Oct 21, 1922		do	1 y♂ 1 y♀	Returned	
Newport Bay						Nov. 26, 1914		do	1 y	62688	
Laguna Beach								W. A. Hilton	2 y	50606	

Material examined of Cancer gracilis.—Continued

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
	° ′ ″	° ′ ″			°F.						
California—Continued. Off La Jolla	32 51 30	117 16 00	*Meters* 33	S		July 3, 1906	1200	Scripps Institution.	1 y	Returned to sender.	
North Island, San Diego Bay California						Apr. 2, 1896		*Albatross*	1♂	20171	
								A. Samuels	1♂ 1 ovig. ♀	56779	From Boston Soc. Nat. Hist.
Lower California, Mexico: Playa Maria Bay.						Aug. 24, 1896 to Aug. 26, 1896		A. W. Anthony	4♂ 4 ♀	19522	

[1] Between tide marks.

Color.—Olive overlaid with minute reddish spots, more numerous on the teeth of the antero-lateral margin and on the front, giving to the whole a brownish tinge; edges of teeth, under parts, and greater portion of legs yellowish. (Weymouth.)

Measurements.—Male (50508), length of carapace 59.3, width of same 91, fronto-orbital width 24, width of front between antennae 8.6 mm.

FIGURE 34.—CANCER GRACILIS, MALE (55355), OUTER MAXILLIPED, ×3

Range.—From Prince of Wales Island, Alaska, to Playa Maria Bay, Lower California, Mexico. Low water to 56 fathoms.

Material examined.—See table, pages 220–221.

CANCER MAGISTER Dana

COMMON EDIBLE CRAB

Cancer irroratus RANDALL (not Say), Journ. Philadelphia Acad. Nat. Sci., vol. 8, 1839, p. 116.

Cancer magister DANA, Proc. Acad. Nat. Sci. Philadelphia, vol. 6, 1852, p. 73 (type-locality, Bay of San Francisco; type not located); U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 151;

atlas, 1855, pl. 7, fig. 1*a-d*.—R. RATHBUN, Fisheries & Fishery Industries of the U. S., sec. 1, 1884, p. 770, pl. 261.—SCHMITT, Univ. Calif. Publ. Zool., vol. 23, 1921, p. 229, and synonymy.

Metacarcinus magister A. MILNE EDWARDS, Nouv. Arch. Mus. Hist. Nat., Paris, vol. 1, 1866, p. 202, pl. 19.

Diagnosis.—Carapace widest at tenth or last antero-lateral tooth. Postero-lateral margin unbroken, entire. Antero-lateral teeth with more or less prominent serrations anteriorly. Fingers of chelipeds without dark color.

Description.—Carapace with 10 antero-lateral teeth, counting the orbital tooth, each acutely pointed at the anterior end, teeth 2 to 8, inclusive, increasing successively in width; edges denticulate; lateral tooth large, strongly projecting. Postero-lateral margin rimmed, entire. Middle tooth of front slightly larger than those of outer pair and more advanced. Inner orbital tooth considerably larger, less produced and separated from the front by a broad interval. Dorsal surface uneven, the elevated spots coarsely granulate. Basal article of antenna very broad and well advanced. Merus of outer maxilliped widened distally, its anterior margin forming a very obtuse angle with outer margin. Merus of cheliped with a distal and a subdistal spine above; wrist with a strong inner spine; hand with six carinae on upper outer surface, the uppermost spinous, as is also the upper margin of the dactyl for two-thirds of its length. Propodal finger much deflexed. Fingers without dark color. Legs rough above and very broad and flat, especially the propodus and dactylus of the last pair.

Color.—Light reddish-brown, darkest anteriorly, often light orange below; inner sides of the anterior feet and hands crimson. (Stimpson.)

Measurements.—Male (32235), length of carapace 126, width of same 198, fronto-orbital width 48.2, width of front between antennae 12.3 mm.

Range.—From Unalaska to Monterey Bay, Calif.[27] Low water to 50 fathoms.

Material examined.—

ALASKA.—Off village of Iliuliuk, Unalaska; 6 fathoms; mud; 1871; W. H. Dall; 3 specimens (14666).

East side Unga Island; 1872; Harrington and Hall; Dall collection; 1 male (14665).

Sanborn Harbor, Nagai Island; low water; 1872; W. G. Hall; Dall collection; 1 male (14663).

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[27] Lockington (Proc. Calif. Acad. Sci., vol. 7, 1876 (1877), p. 94 [1]), reported the young of *C. magister* from Magdalena Bay. The present author is convinced that this is a mistake, as Monterey appears to be the southern limit. Among large collections of *Cancer* examined from southern California, no *C. magister* has been found. Lockington's specimens may well have been *C. jordani*. See "Relations" under *Cancer jordani* in Harriman Alaska Exped., vol. 10, 1904, p. 177.

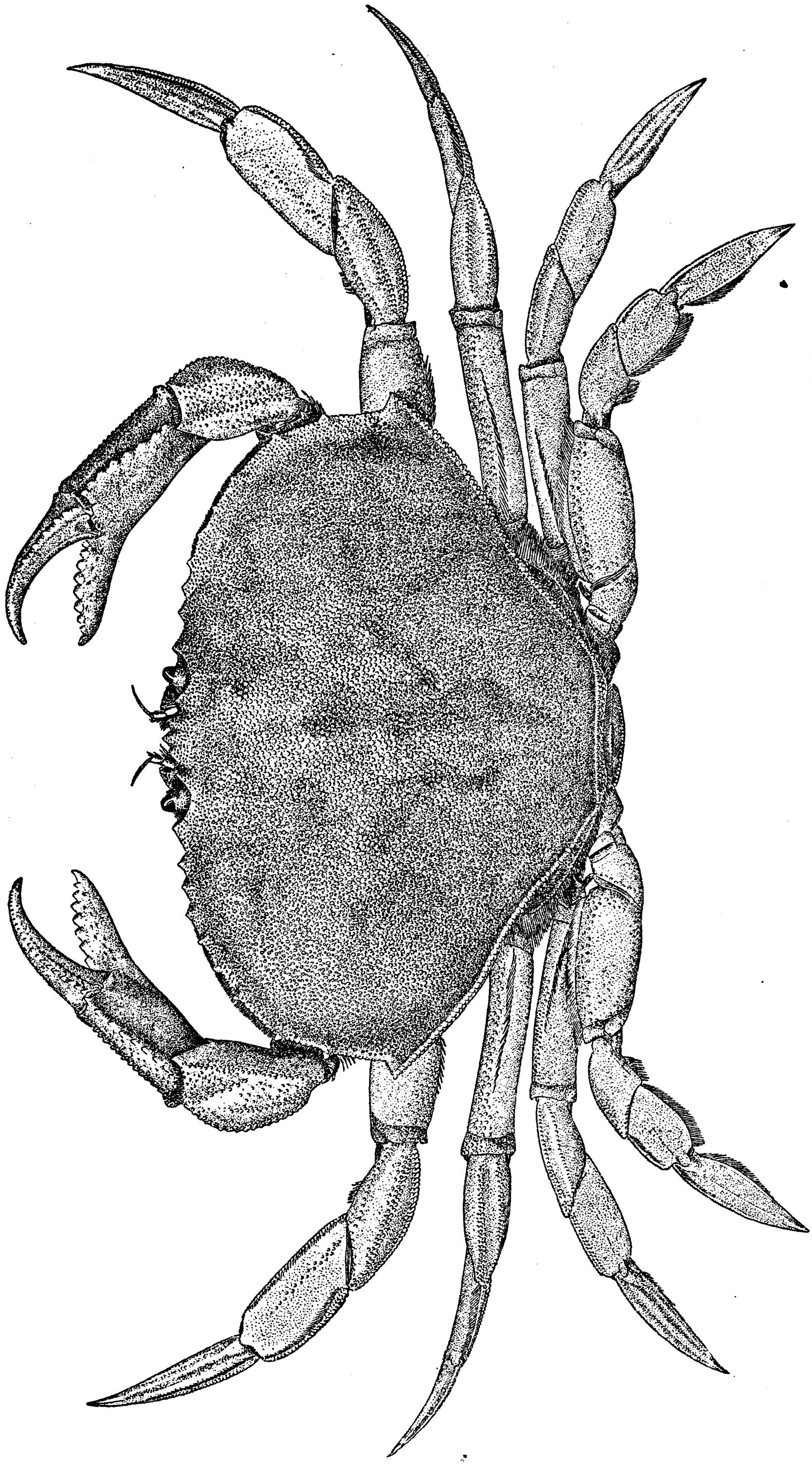

FIGURE 35.—CANCER MAGISTER, MALE (2553), CALIFORNIA, DORSAL VIEW, REDUCED. AFTER R. RATHBUN

Security Bay; low tide; Dr. W. H. Jones, U. S. Navy; 1 female (5794).

Yakutat Bay: Low water; 1874; W. H. Dall; 1 female (14664), in drag seine. August 28, 1897; *Albatross;* 1 specimen (21777).

Lituya Bay; 6–9 fathoms; 1874; W. H. Dall; 1 young (14667).

Sitka; Dr. Trowbridge; 1 male (17578).

Bay of Pillars; shore; August 30, 1900; *Albatross;* 1 female (33460).

Duncan Canal; *Albatross:* September 5, 1900; 1 male (26096). Shore; September 6, 1900; 1 male (33461).

Wrangell; Dr. W. H. Jones, U. S. Navy, U. S. S. *Wachusett:* Rocky beach, under stones; May 25, 1882; 2 young females (5131). Under stones; August 28, 1882; 2 males (6630). July, 1882; 2 males (5134).

Karta Bay, Prince of Wales Island; June 26, 1897; *Albatross;* 1 female (21776).

Kasaan Bay, Prince of Wales Island; Dr. T. H. Streets, U. S. N.; 3 females (14670).

Helm Bay; July 3, 1897; *Albatross;* 2 males, 1 female (21774).

Loring; June 16, 1904; Chamberlain and Aller, Bureau of Fisheries; 1 young female (50511).

Ward Cove, Revilla Gigedo Island; Dr. T. H. Streets, U. S. Navy; 1 female (14669).

Alaska; 1897; *Albatross;* 1 male; 3 females (32223).

BRITISH COLUMBIA.—Beaver Harbor; *Albatross;* 1 male, 1 female (15463).

FIGURE 36.—CANCER MAGISTER, MALE (15461), OUTER MAXILLIPED, ×2

Rock at Gordon Head, Victoria; May 1–3, 1905; J. E. Benedict; 1 specimen (52759).

WASHINGTON.—Puget Sound; J. D. Dana, U. S. Exploring Expedition; 1 female, paratype [28] (2370).

San Juan Island, Puget Sound; 20 meters; K. L. Hobbs; 3 young (62356).

Port Townsend; June 27, 1903; Bur. Fisheries; 3 young (50521).

Marrowstone Point, near Port Townsend; June 29, 1903; *Albatross;* 1 male, 1 female (31602).

Kilisut Harbor, near Port Townsend; July 1, 1903; *Albatross;* 2 young (31669).

Port Angeles; September 3, 1891; *Albatross;* 16 young (17095).

Neah Bay; in drag seine; May 18, 1897; *Albatross;* 8 specimens (21775).

[28] Although Dana does not mention "Puget Sound," yet he had this specimen on hand when describing the species.

Off Grays Harbor; lat. 46° 47′ 00″ N., long. 124° 30′ 15″ W.; 50 fathoms; fne. gy. S.; temperature 45.9° F.; June 7, 1889; station 3047, *Albatross;* 1 female (15462).

Willapa Harbor; December 29, 1914; W. L. McAtee; 3 males (48774).

Shoalwater Bay; J. G. Cooper; 2 males (2027).

OREGON.—Off Tillamook Rock; *Albatross:* lat. 45° 56′ 00″ N., long. 124° 01′ 30″ W.; 29 fathoms; fne. gy. S.; temperature 50.1° F.; Oct. 18, 1888; station 2883; 1 young (17418). Lat. 45° 56′ 15″ N., long. 124° 01′ 30″ W.; 28 fathoms; br. M.; June 13, 1889; station 3060; 1 male (19480).

Off Yaquinna Head; lat. 44° 41′ 30″ N., long. 124° 01′ 15″W., 28 fathoms; fne. gy. S.; temperature 47.4° F.; *Albatross:* Station 3055; 1 female (19478). Station 3056; 1 female (19479).

CALIFORNIA.—Drakes Bay; March 23, 1890; *Albatross;* 1 male (15464).

Sacramento market; 1875; from E. G. Blackford; 2 large males (14470).

San Francisco market; R. E. C. Stearns; 1 specimen (5040).

San Francisco: Ferd. Bischoff, Western Union Telegraph Expedition; 1 male (12492). 1880; D. S. Jordan; 1 young (3123). April 3, 1883; R. E. C. Stearns; 6 specimens (5037). H. Hemphill; 1 large male (2216); 4 males, 1 female (2279).

San Francisco Bay: William Stimpson, North Pacific Exploring Expedition; 2 specimens, 1 figured (2553). W. H. Dall; 2 young (17241). For collections made by the *Albatross*, see table, page 227.

Santa Cruz; in seine; April 12, 1897; *Albatross;* 2 females (20133).

Monterey; in seine; April 15, 1897; *Albatross;* 1 female (20134).

California: T. Nuttall; 2 small (Phila. Acad.). Dr. LeConte; 2 small (Phila. Acad.).

WEST COAST OF NORTH AMERICA.—Exact locality unknown: 1 large male (25016). 1 large male (32235). 4 specimens, F. C. 3557 (46126).

CANCER OREGONENSIS (Dana)

Plate 96

Trichocera oregonensis Dana, Proc. Acad. Nat. Sci. Philadelphia, vol. 6, 1852, p. 86 (type-locality, Puget Sound; type not extant); U. S. Expl. Exped., vol. 13, Crust., part 1, 1852, p. 299; atlas, 1855, pl. 18, fig. 5*a–g*.—Stimpson, Boston Journ. Nat. Hist., vol. 6, 1857, p. 464.

Platycarcinus recurvidens Bate, Proc. Zool. Soc. London, 1864, p. 663 (type-locality, Esquimalt Harbor, Vancouver Island; type not in Brit. Mus.).

Trichocarcinus oregonensis Miers, Proc. Zool. Soc. London, 1879, p. 34.—Holmes, Occas. Papers Calif. Acad. Sci., vol. 7, 1900, p. 54, and synonymy.—Lenz, Zool. Jahrb., Syst., vol. 14, 1901, p. 452.

Material examined of Cancer magister collected in San Francisco Bay by the Albatross

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
California	° ′ ″	° ′ ″			°F.						
Upper San Francisco Bay	Off Mare Island		6	M	64.86	July 31, 1912	H5168	*Albatross*	2	55304	
Do	do		9.5–10.5	M. Sh		Dec. 9, 1912	D5816	do	5 legs	55305	
Do	Off Pinole Point		5.5–4.75	S. M. Sh		Dec. 10, 1912	D 5818	do	5	55319	
Do	do		7–6	S. M. Sh		do	D 5819	do	6	55322	
Do	San Pablo Bay		5–1	gy. M. Sh		May 13, 1912	D5780A	do	3	55323	
Do	do		5–1	gy. M. Sh		do	D5780B	do	3	55325	
Do	do	37 59 08	122 25 45	12	bu. M		Mar. 5, 1890	3097	do	1♂ 2♀	15461
Do	San Pablo Bay					Nov. 8, 1890		*Albatross* (C. H. Townsend)	1♀	20138	In Chinese shrimp net.
Do	do							do	1	23941	Do.
Middle San Francisco Bay	Off Point San Quentin		5–6	S. M. Sh		Dec. 17, 1912	D5822	*Albatross*	3	55312	
Do	do		10.5–12.75	S. M		Feb. 6, 1912	D5708	do	1	55299	
Do	Off Southampton Shoal.		7–9	S. Sh		Dec. 18, 1912	D5826	do	10	55318	
Do	do		8–7.25	M		Oct. 29, 1912	D5798	do	1	55297	
Do	do		8.5–12.5	S		Dec. 18, 1912	D5825	do	1	55310	
Do	Tiburon, Raccoon St		0–3	M		Apr. 29, 1913		do	1	55309	
Do	N. of Angel Island		13–19	St		Oct. 29, 1912	D5795	do	2	55311	
Do	do		19–13.5	S. Sh		do	D5796	do	3	55302	
Do	do		20.5–20	crs. gy. S. Sh. St. bk. M.		Mar. 18. 1912	D5742	do	1	55300	
Do	E. of Angel Island		16.5–10.25	M. S. Sh		Jan. 20, 1913	D5858	do	1	55298	
Do	Angel Island					Nov. 7, 1890		*Albatross* (C. H. Townsend)	2♂	20135	
Do	Fort Baker Beach		0–3	S		Apr 18, 1913		*Albatross*	1	55313	
Do	do		0–3			May 13, 1913		do	6	55320	
Do	Alcatraz Lt., 51°, 1.83 m.		3–3	gy. S. R		May 8, 1912	D5779B	do	3 y	55324	
Do	Off Lime Pt		16.5–17	G. S. St		Oct. 29, 1912	D5801	do	13	55317	
Do	Piles N. of Key Route Pier.					Aug. 2, 1912		do	2	55303	
Golden Gate	W. of Fort Point		43–27	S. G. St		Nov. 4, 1912	D5808	do	13	55321	
Do	do		53–21.5	S. G. St		do	D5809	do	8	55315	
West of Golden Gate	Off San Francisco Lightship.		14.25–13	S	51.91	do	D5806	do	7	55307	
Do	do		28–30	S		July 8, 1912		do	25	55308	
Do	do		30	S		July 21, 1912		do	4	55301	
Do	do		8.5–9		53.36	Oct. 30, 1912	D5807	do	6	55314	
Lower San Francisco Bay	Off Ferry Building		10–10.25	Sh. M		do	D5802	do	5	55306	
Do	Off Hunters Point		7.5–6.75	sft. M		do	D5804	do	1	55316	
Do	Off Point San Mateo		1.5–1.75			May 28, 1912	D5784BD	do	2	55326	
Do	do		3			1896		do	1♂	20136	
Do	South Belmont oyster beds.					Oct. —, 1890		*Albatross* (C. H. Townsend)	1♂ 2♀	20137	In seine.

Trichocarcinus recurvidens WALKER, Trans. Liverpool Biol. Soc., vol. 12, 1898, p. 271, pl. 15, figs. 1–1*b*.[29]

Trichocarcinus walkeri HOLMES, Occas. Papers Calif. Acad. Sci., vol. 7, 1900, p. 53 (new name for *recurvidens* Walker).

Cancer oregonensis RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 581; Harriman Alaska Exped., vol. 10, 1904, p. 178, pl. 7, fig. 1.—SCHMITT, Univ. Calif. Publ. Zool., vol. 23, 1921, p. 234, pl. 36, figs. 3 and 4.

Diagnosis.—Antero-lateral and postero-lateral margins not meeting at a distinct angle. Carapace widest at seventh or eighth tooth. Merus of outer maxillipeds with antero-external angle produced.

Description.—Carapace elliptical, more or less evenly rounded at sides, antero-lateral and postero-lateral margins not meeting at a distinct angle, carapace widest at seventh or eighth tooth; 12 or 13 teeth; fronto-orbital width nearly one-half width of carapace. All teeth with granulated edges. Front between antennae truncate, advanced slightly beyond line of outer orbital angles and separated by a rounded sinus from inner orbital angles; median tooth very small. Middle tooth of orbit lobiform, reflexed. The first 10 lateral teeth of carapace similar, curved forward, spine-tipped except for the first 2; last 2 or 3 teeth small and blunt. Surface coarsely and densely granulate, and lumpy, the granulation coarser on the elevations. Carpus of chelipeds tuberculate above and with a short spine at inner angle and a tooth below it; hand thick and high, the short upper edge of palm with 2 rows of tubercles, outer surface with 5 finely granulate lines; dark color of fingers reaching nearly to their bases. Legs hairy.

Variations.—In the female the carapace is more uneven than in the male, the elevations higher and more pronounced. In many cases (form *a*, pl. 96, fig. 3) this is carried to an extreme and the sexes are very unlike; in the female the elevations are isolated, baccate and flattened, the intervening furrows quite smooth; the protogastric lobes are largest and highest, the narrow part of the mesogastric region is a short linear row of single berries, the hepatic region has a Y-shaped lobe, the arms of the Y extending to the lateral teeth; a fan-shaped pattern of 6 segments diverges from the posterior margin. In some individuals of this type the lateral teeth are shortened and their ends bluntly rounded (3076). The chelipeds are rougher in the female than in the male.

Form *b* (pl. 96, fig. 1) is represented by a male (17424) which is even further removed from typical *oregonensis*. The elevations of the carapace are small, hemispherical, the largest and most sharply defined on the summit of each protogastric region; the mesogastric boss is small. On the branchial region are three bosses, of which the 2 largest are placed longitudinally at the middle of the region and are

[29] Walker, p. 272, calls his specimen a male; I have found the same ornamentation only in the female, or form *a*.

Material examined of Cancer oregonensis

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
Alaska:	° ′ ″	° ′ ″			° F.						
St. George Island, Pribilof Islands.			40			Feb. 19, 1914		G. D. Hanna, U. S. Bureau of Fisheries.	1 ovig. ♀	61085	Form *a*. From stomach of cod.
Constantine Harbor, Amchitka Island.			6–10	S. St		1873		W. H. Dall	1 ♀	14785	Form *a*.
Unalaska Island								do	1 ♂	14787	Typical.
Off Imagnee Pinnacle, Captains Bay, Unalaska.			8–20			1880		do	1 ♂	12539	Intermediate between typical and form *b*.
Iliuliuk Harbor, Captains Bay.			10	shingle		1871		do	1 ♀	14788	Typical.
Off S. entrance to Akutan Pass.	53 56 00	165 56 00	45	brk. Sh. P	43.5	July 28, 1888	2843	*Albatross*	5 ♂ 5 ♀	15582	Do.
Northwest of Unimak Island	54 49 30	165 02 00	43	bk. S. R	40.7	June 2, 1890	3262	do	4 ♂ 1 ♀	17426	1 ♂ is intermediate between typical and form *b*.
Unimak Pass	54 15 00	165 06 00	34	G. brk. Sh		May 22, 1890	3220	do	1 ♂ 3 ♀	17425	Typical.
Northeast of Amak Island	55 34 30	162 31 45	19	bk. S. Sh		June 27, 1890	3274	do	1 ♂	17424	Form *b*.
Belkofski Bay			15–25	Sh		1880		W. H. Dall	2 ♂ 6 ♀ 7 y	12529	♀ ♀ between typical and form *a*.
Coal Harbor, Unga Island, Shumagins.			3–9			1872		do	19 ♂ 17 ♀ 4 y	13112	♀ ♀ range from typical to form *a*.
New Harbor, Unga Island						do		Captain Hall for W. H. Dall.	2 ♂ 2 ♀	14777	♀ ♀ form *a*.
Popof Strait, Shumagins			6			do		W. H. Dall	15 ♂ 15 ♀ 5 y	13120	♀ ♀ range from typical to form *a*.
Sanborn Harbor, Nagai, Shumagins.			6–8	shelly S		do		do	1 ♀	13130	Typical.
Anchorage, Big Koniuji Island, Shumagins.			6–20	S. R		1874		do	1 ♀	14789	Form *a*.
Anchorage, Chirikof Island			9–14	S		do		do	1 ♂	13125	Typical.
Woody Id., Kodiak Island			(1)			Sept. 21, 1920		G. D. Hanna, Calif. Acad. Sci.	1 ♀	Returned	
Virgin Bay, Prince William Sound.						1899		W. R. Coe, Harriman Exped.	2 ♂	25852	Do.
Fox Island, Prince William Sound.						1899		T. Kincaid, Harriman Exped.	1 ♂ 1 ♀	23843	

[1] Low tide.

Material examined of Cancer oregonensis—Continued

Locality	Bearings		Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
	Latitude N.	Longitude W.									
Alaska—Continued.	° ′ ″	° ′ ″			° F.						
Port Etches, Hinchinbrook Island, Prince William Sound.			(2)			1874		W. H. Dall	1♂	14782	Typical.
Do			12–18			do		do	1♂	14871	Do.
West side of Middleton Island.			10–12	G. St		do		do	2 sm. ♂ 1 ♀ 1 y.	14786	♀ covered with bryozoan.
Yakutat						June 19, 1899		W. E. Ritter, Harriman Exped.	1♂ 2♀	25837	Typical.
Lituya Bay			6–9			1874		W. H. Dall	2♂ 1♀ 1 y	14783	Between typical and form *b*.
Granite Cove, Port Althorp, Chichagof Island.						1880		S. Bailey for W. H. Dall.	2♂ 4♀	12522	♀♀ between typical and form *a*.
Sitka Harbor			15	G. M		1874		W. H. Dall	1♂	14784	Typical.
Horn Cliff, near Petersburg, Mitkof Island.								H. C. McMillin, U. S. Bureau of Fisheries.	3♂ 1♀	61734	♀ form *a*.
Wrangell						Mar. 10, 1914		E. P. Walker, U. S. Bureau of Fisheries.	1 y. ♀	48816	Soft shell.
Boca de Quadra	Center of Grouse Islet, Mink Bay, N. 20° W., 2.5 m.		48–57	sft. gn. M	44.6	July 6, 1903	4223	*Albatross*	1♂ 1♀	31597	Typical.
Cedar Id., Loring, Revillagigedo Island.						June 17, 1904		U. S. Bureau of Fisheries.	2♂	50478	Do.
Kasaan Bay, Prince of Wales Island.	Center of Round Island, S. 10° W., 0.4 m.		95–98	dk. gn. M. S. Sh. R.	48.9	July 11, 1903	4245	*Albatross*	1♀	31667	Do.
Chasina Bay, Prince of Wales Island.								Dr. T. H. Streets, U. S. Navy.	1♀	14790	Do.
Fort Tongass, Tongass Island.						July 4, 1882		Lieut. Comdr. H. E. Nichols, U. S. Navy.	1♀	5767	Do.
British Columbia:											
Fort Rupert, Vancouver Island.			(3)	R. seaweed, kelp.				Harlan I. Smith	1♀	22589	Do.
Queen Charlotte Sound	Center of Round Island, N. 22° W., 1.5 m.		25–30	vol. S. G. brk. Sh. sponge.	49.1	June 25, 1903	4203	*Albatross*	1 y	31662	Do.
Do	50 49 00	127 36 30	238	gy. S. P	44.7	Sept. 1, 1888	2862	do	1♂ 1♀	15579	Do.

Departure and Alert Bays						Feb. —, 1882		Dr. W. H. Jones, U. S. Navy.	1♀	13874	Do.
Comox						Sept. 22, 1893		*Albatross*	1♀	18299	Do.
Off Cape Beale	49 00 00	125 48 00	24	gy. S	52.3	Sept. 26, 1888	2881	do	5♂ 10♀ 1 y	15578	Small; tending toward form *a*.
Do	48 53 00	125 53 00	34	R	50.3	do	2879	do	1♂ 2♀	15580	Females form *a*.
Victoria						July 9, 1888		do	1♂ 1♀	17423	Typical.
Washington:			*Meters*								
Friday Harbor			100					K. L. Hobbs	1♂ 6♀	62355	Do.
Strait of Juan de Fuca									1 y	14791	Do.
Do						1880		D. S. Jordan, U. S. Fish Commission.	9♂ 4♀ 1 y	3076	Females form *a*.
Neah Bay						Apr. 27, 1914		*Albatross*	1♂ 1♀	48832	Typical.
Strait of Juan de Fuca	48 26 50	124 39 35	151	G	44	Aug. 28, 1891	3450	*Albatross*	1♀	17069	Form *a*.
Do	48 17 20	124 07 25	114	gy. S. G. R.	44.4	Sept. 2, 1891	3461	do	1 y	17070	Typical.
Do	48 18 30	123 22 00	56	gy. S. Sh. rky.	48.5	Sept. 4, 1891	3466	do	3	17072	
Do	48 21 00	123 14 00	48	rky	49.9	do	3465	do	17	17071	Do.
Do	48 13 30	123 11 20	97	gn. M. P	46	Aug. 27, 1891	3443	do	9 y	17068	
Do	48 15 00	123 00 00	67	crs. bk. S	45	Apr. 30, 1894	3597	do	1♀ 1 y	18966	Do.
Washington Sound	48 22 00	122 51 00	48	M. brk. Sh. S.	47.7	Sept. 6, 1888	2864	do	2♂ 9♀ (y.)	15577	
Puget Sound						1880		D. S. Jordan, U. S. Fish Commission.	1♀ and claw	4261	Form *a*.
Do	48 12 00	122 49 00	40	P	51.7	Sept. 6, 1888	2865	*Albatross*	4♂ 2♀	15581	Females approaching form *a*.
Do	48 11 30	122 48 00	37	rky	46	Apr. 30, 1894	3593	do	1♂ 1 y	18965	Between typical and form *b*.
Admiralty Inlet	Olele Point, Oak Bay, S. 61° W., 1.4 m.		39	gy. S. brk. Sh.	50.8	July 1, 1903	4222	do	8 y	31666	
Do	Olele Point, Oak Bay, S. 20° E., 0.8 m.		16–31	gn. M. S. brk. Sh.	50.8	do	4220	do	1 sm. ♂	31665	
Do	Bush Point Light, S. 28° E., 3.3 m.		79–101	rky	49	do	4216	do	1♀ 1 y	31664	Typical.
Do	Admiralty Head Light, N. 88° W., 1.4 m.		19–25	crs. gy. S. brk. Sh.	51	June 30, 1903	4212	do	1 y	31663	Do.
Do	Admiralty Head Light, N. 22° W., 3.5 m.		83–99	rky	50.5	June 29, 1903	4208	do	2♀	30542	1 female typical, 1 female form *a*.
Do	Admiralty Head Light, N. 38° W., 1.3 m.		26–15	R. Sh	50.8	do	4205	do	3♂ 1♀ 4♂ 4♀ 1 y	50477 31596	Typical. Females form *a*.
Kilisut Harbor, near Port Townsend.						July 1, 1903		do	2 ♂	31598	Typical.

[2] Low water.

[3] Between high and low tide lines.

Material examined of Cancer oregonensis—Continued.

Locality	Bearings: Latitude N.	Bearings: Latitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
Washington—Continued.	° ′ ″	° ′ ″			°F.						
Port Ludlow								Sylvanus Bailey	1 ♀	5785	Typical.
Port Orchard						July —, 1889		O. B. Johnson	3 ♂ 12 ♀	14964	Males and females not very unlike.
Docton						May 10, 1906 May 11, 1906		*Albatross*	5 ♂ 11 ♀ (2 ovig.)	50479	Typical.
Off Grays Harbor	46 48 30	124 28 00	48	fne. gy. S	46.1	June 7, 1889	3046	do	2 y	18182	Do.
Oregon:											
Off Cape Kiwanda	Cape Kiwanda, N. 31° E., 12.2 m.		50	fne. gy. S		Sept. 3, 1914	H5732	do	1 y	49939	
Newport						1923		J. G. Malone	1 ♂ 1 ♀	57272	
Off Alseya River	44 28 00	124 25 30	46	C. R	46.6	Sept. 3, 1889	3088	*Albatross*	1 ♀	18618	Typical.
Off Heceta Head	Heceta Light, S.74° E., 29.2 m.		61	Sh. S. fne. G.		May 5, 1914	H5447	do	1 y	50466	Do.
California:											
Humboldt Bay						July 18, 1916		Scripps Institution.	1 y	Returned	
Farallone Islands	37 47 20	123 10 00	27	rky		Mar. 22, 1890	3159	*Albatross*	1 ♀	15583	Form *a*.
Santa Barbara						1880		D. S. Jordan, U. S. Fish Comsion.	1 ♂	3103	Typical.

partly confluent; the next in size is near the inner angle of the region; behind are 2 very small unequal elevations or tubercles. A well-marked 6-parted fan diverges from the posterior margin, the tips of the divisions tuberculiform. The antero-lateral area is a smooth concave basin (including the hepatic region). The lateral rim is strongly ascending, teeth anomalous, oblong, flat, widening from base to extremity, and therefore overlapping; only a slight vestige of a normal midrib is visible in a short ridge terminating in a small incurved spine or spinule; the margin from the first to the eighth tooth is finely and obscurely granulate, from the ninth tooth backward coarsely so. The edge of the inner tooth of the orbit is coarsely granulate, that of the middle tooth of the orbit and of the three teeth of the front have granules of intermediate size. Upper surface of chelipeds rough as in form *a*, outer surface of palms nearly smooth. Only males of this form or approaching this form have been observed.

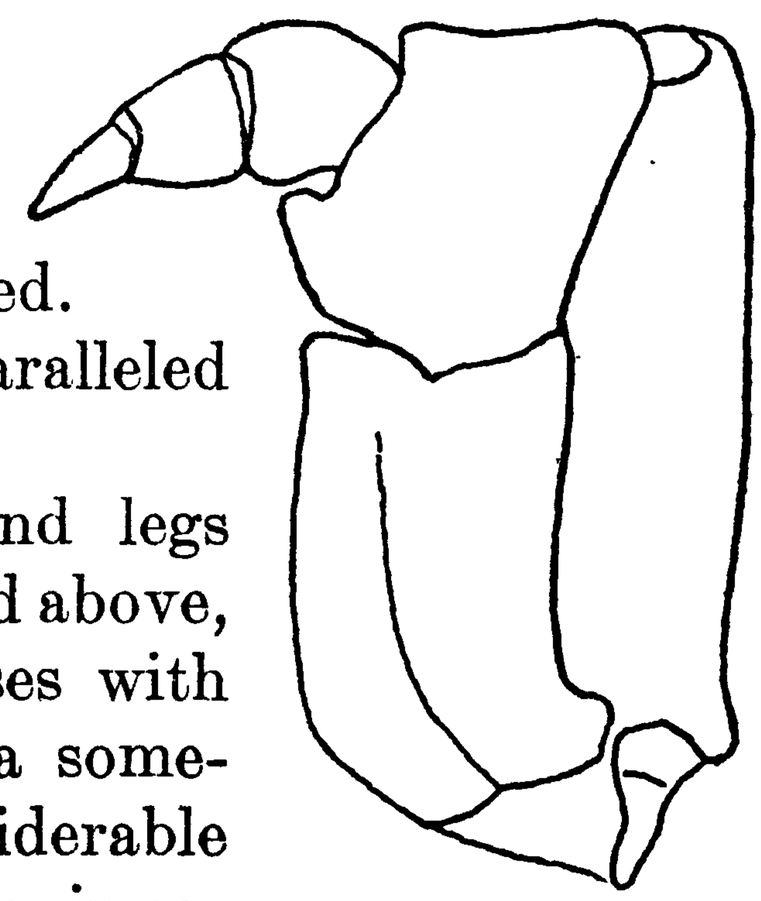

FIGURE 37.—CANCER OREGONENSIS, MALE (3076), OUTER MAXILLIPED, ×4

The remarkable variation in form is paralleled in *C. amphioetus*.

Color.—Areolae bright red, chelipeds and legs flesh color, fingers black (Walker). Dark red above, lighter beneath; walking legs in some cases with light spots which tend to give the legs a somewhat banded appearance. There is considerable variation in color; in some specimens a very irregular band of orange or yellow extends across the carapace anterior to the cardiac groove, with the whole carapace more gray and more or less spotted; in others the median line from the posterior end to beyond the cardiac groove shows very gray (Way).

Measurements.—Female (14964), length of carapace 36.5, width of same 47.1, fronto-orbital width 20.2, width of front between antennae 7, width between tips of inner orbital teeth 9.6 mm.

Range.—From Pribilof Islands and Rat Islands, Alaska, to Santa Barbara, California.

Material examined.—See table, pages 229–232.

Family XANTHIDAE

Canceridae, part (p. 85) +*Pilumnidae* (p. 86) LEACH, in Samouelle, The Entomologists' Useful Compendium, London, 1819.

Xanthidae ALCOCK, Journ. Asiat. Soc. Bengal, vol. 67, 1898, p. 69.

Carapace transversely oval or transversely hexagonal or subquadrate, rarely subcircular, and almost always broader than long. Front rather broad or very broad, never produced in the form of a rostrum. Antennules folded transversely or obliquely

transversely. Antennal flagella short, slender. Anterior margin of buccal cavity well defined, not overlapped by the outer maxillipeds. Legs ambulatory.

KEY TO THE AMERICAN GENERA OF THE FAMILY XANTHIDAE [30]

A[1]. The ridges that define the efferent branchial channels, if present, are low and are confined to the posterior part of the endostome, never reaching to the anterior boundary of the buccal cavity.

B[1]. Fronto-orbital border less than half the greatest width of carapace.

C[1]. Antero-lateral border of carapace thin, cristiform; upper border at least of arms and of merus, carpus and propodus of legs sharp, cristiform.....**Platypodia**, p. 246.

C[2]. Antero-lateral border of carapace and upper border of legs not cristiform.

D[1]. Antero-lateral border entire up to a strong lateral epibranchial tooth. Carapace perfectly smooth without trace of regions. Chelipeds unequal, fingers pointed. Front three-lobed. **Carpilius**, p. 239.

D[2]. Antero-lateral border cut into teeth or lobes.

E[1]. Anterior half of buccal frame nearly vertical. Fronto-orbital width about one-third width of carapace. Orbits largely dorsal in position. Male abdomen with segments 3–5 fused.....**Paraxanthus**, p. 286.

E[2]. Buccal frame horizontal. Orbits forward looking.

F[1]. Fronto-orbital border less than a third width of carapace. Regions indistinctly marked. Antero-lateral border obscurely lobed.....**Homalaspis**, p. 287.

F[2]. Fronto-orbital border more than a third width of carapace.

G[1]. Carapace narrow, lateral teeth about nine, front strongly produced. Male abdomen with segments 3–5 fused.....**Cycloxanthops**, p. 289.

G[2]. Carapace wider, lateral teeth or lobes not more than five.

H[1]. Carapace more or less octagonal, the first two antero-lateral teeth obsolete or nearly so, the last three laterally prominent.

J[1]. Fronto-orbital distance nearly half width of carapace. Orbits long. **Lophopanopeus**, p. 319.

J[2]. Fronto-orbital distance less than two-fifths of width of carapace. Orbits subcircular. Front four-toothed. **Gaudichaudia**, p. 278.

H[2]. Carapace with antero-lateral margins forming a regular arch.

J[1]. Carapace usually conspicuously lobulate, granulate, or eroded.

K[1]. Carapace lobulate or granulate, chelipeds and legs also granulate, often hairy. Small species. **Actaea**, p. 250.

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[30] Subfamilies are omitted as no satisfactory arrangement to include all genera has yet been made.

K². Carapace and legs deeply eroded.
Glyptoxanthus, p. 263.

J². Surface nearly smooth.

K¹. Front deeply separated from inner angles of orbit. Antero-lateral teeth and lobes more or less denticulate. Front quadridentate.
Platyxanthus, p. 279.

K². Front not deeply separated from inner angles of orbit. Antero-lateral teeth or lobes not denticulate. Outer angle of orbit not dentiform.

L¹. Superior inner tooth of orbit obsolete. Carapace convex in both directions, thick, broad oval, front not produced beyond general outline.
Carpilodes, p. 241.

L². Superior inner tooth of orbit distinct though small. Antero-lateral rim lobate or dentate and continued behind widest part of carapace, its chord longer than postero-lateral distance------**Xanthodius**, p. 311.

B². Fronto-orbital border half or more than half the greatest width of carapace.

C¹. Antero-lateral margin continued forward and downward to anterior angle of buccal cavity instead of to orbit.

D¹. Attachment of movable part of antenna to basis concealed. Front forming a projecting hood over antennules. Surface covered with a reticulating pattern of granules.
Lipaesthesius, p. 270.

D². Attachment of movable part of antenna normal.

E¹. Superior inner orbital tooth separated from the front by a notch----------**Medaeus**, p. 273.

E². Superior inner orbital tooth absent-----**Carpoporus**, p. 269.

C². Antero-lateral margin continued to orbit.

D¹. Dorsal surface of carapace and exposed surface of chelipeds and legs covered with smooth, rounded, convex lobules-**Daira**, p. 268.

D². Dorsal surface not covered with smooth rounded convex lobules.

E¹. Carapace rough and hairy except on margin of front and orbits. A lunate crest above carpus of ambulatory legs. Antero-lateral margin spinous-------**Heteractaea**, p. 530.

E². Carapace smooth (non-granulate) and bare or nearly so.

F¹. Carapace transversely oval.

G¹. Antero-lateral teeth strong.

H¹. Five strong antero-lateral teeth including the orbital. Regions well delimited. Fingers often spooned----------**Leptodius**, p. 296.

H². Two antero-lateral teeth behind orbital angle. Regions not at all delimited. Antenna excluded from orbit--**Ectaesthesius**, p. 460.

G². Antero-lateral teeth not strong.
H¹. Superior inner orbital tooth not separated by an emargination from the outer angle of the front.
J¹. Surface of body and appendages covered with a short close pile (in the American species). Legs of moderate length. Antero-lateral divisions obscure. Front arcuate_____**Xanthias**, p. 464.
J². Five low antero-lateral teeth. Teeth and lower surface of chelipeds granulate. Front bilobed_____**Eucratodes**, p. 470.
H². Superior inner orbital tooth separated by an emargination from the outer angle of the front.
J¹. Regions well marked. Antero-lateral teeth projecting well outward even though small_**Paraxanthias** (part), p. 465.
J². Carapace more even, regions not well indicated.
K¹. Carapace depressed. Antero-lateral margin thin, teeth little projecting, second tooth fused with first.
Eurypanopeus, p. 403.
K². Carapace convex, smooth. Antero-lateral margin faintly lobed or toothed. Palms elongate, major palm at least twice as wide as minor; fingers short__**Paraliomera**, p. 243.
F². Carapace more or less hexagonal or subquadrate.
G¹. Margin of hepatic region thick, non-dentate. Carapace flat. Chelipeds heavy, unequal.
Lophoxanthus, p. 316.
G². Margin of hepatic region not thick nor dentate.
H¹. Frontal and antero-lateral regions rough with numerous tubercles, spinules or sharp granules. Ambulatory legs spinulous above.
J¹. Antero-lateral regions coarsely tuberculate.
K¹. Basal antennal article broad, prolonged into the orbital hiatus. Front prominent, four-toothed. Fingers spooned_____**Phymodius**, p. 294.
K². Basal antennal article narrow, not prolonged into the orbital hatius. Chelipeds coarsely tuberculate. Fingers pointed.
Paraxanthias (part), p. 465.

J². Antero-lateral regions, chelipeds and legs spinulous or sharply granulous. Size small. Antero-lateral margin shorter than postero-lateral, with either second or fifth tooth or both reduced or wanting. Basal antennal article not reaching or barely reaching the prolongation from the front.....**Micropanope**, p. 426.

H². Frontal and antero-lateral regions relatively smooth, never spinulous or sharply granulous.

J¹. Length and breadth of carapace subequal. Size small. Front broad, truncate. **Metopocarcinus**, p. 318.

J². Breadth exceeding length of carapace. Third to fifth segments of male abdomen fused.

K¹. Only four antero-lateral teeth including orbital angle. Carapace very convex from front to back. Front truncate. Chelae elongate. **Tetraxanthus**, p. 458.

K². Five antero-lateral teeth.

L¹. Antero-lateral teeth small, thick, widely separated. A few smooth transverse ridges on antero-lateral and epigastric regions. Legs thickly hairy. **Chlorodiella**, p. 462.

L². Antero-lateral teeth broad, flat, the first and second more or less fused.

M¹. Third segment of male abdomen not reaching coxae of legs of last pair. Carapace subquadrate, broad behind, front truncate. **Rhithropanopeus**, p. 455.

M². Third segment of male abdomen reaching coxae of legs of last pair. Carapace narrower behind.

N¹. Carapace crossed by broken, transverse, raised, granulated lines on anterior half. Front nearly transverse, not advanced. First and second antero-lateral teeth partially fused. **Panopeus**, p. 333.

N². Carapace narrow, not crossed by transverse raised lines.

O¹. Front arcuate, forming a regular curve with antero-lateral margins. Second antero - lateral tooth lobiform, separated from the first by a shallow sinus. Male abdomen constricted between fifth and sixth segments; terminal segment subtriangular.
Neopanope, p. 366.

O². Hexagonal. Front narrow, prominent beyond curve of antero-lateral margins. Postero-lateral margins strongly converging. Antero-lateral teeth prominent. Supra-orbital lobe well marked.
Hexapanopeus, p. 383.

A². The ridges that define the efferent branchial channels extend to the anterior boundary of the buccal cavity and are often very strong.

B¹. Eyestalks subcylindrical, circular in cross-section.

C¹. Fronto-orbital border half or less than half the greatest width of carapace.

D¹. Basal antennal article does not nearly reach front.

E¹. Carapace broad, suboval. Surface of carapace and chelipeds smooth.....**Menippe**, p. 472.

E². Carapace not much broader than long, subcircular. Chelipeds very rough.....**Pilumnoides**, p. 534.

D². Basal antennal article touching front.

E¹. Anterior margin of merus of outer maxillipeds notched at orifice of efferent branchial channel. Orbits suborbicular.....**Ozius**, p. 539.

E². Anterior margin of merus of outer maxilliped not notched at orifice of efferent branchial channel. Orbits oblong.
Eurytium, p. 422.

C². Fronto-orbital border much more than half the greatest width of carapace.

D¹. Fronto-orbital border about two-thirds the greatest width of carapace. Antero-lateral borders shorter than postero-lateral. Front with a narrow outer tooth, spine or lobe, separated by a notch from the superior inner angle of orbit.

E¹. More or less hairy and generally armed with spines or sharp granules.....**Pilumnus**, p. 481.

E². More massive than the preceding, carapace deeply lobulate anteriorly, antero-lateral margin with three large teeth behind the orbit.....**Lobopilumnus**. p. 525.

D². Fronto-orbital border much more than two-thirds the greatest width of carapace.

E¹. Antennae not excluded from orbit. Chelipeds long, merus reaching far beyond carapace. Carapace resembling a Portunid.....**Melybia**, p. 561.

E². Antennae excluded from orbit.

F¹. Carapace rough above.

G¹. Merus of outer maxillipeds as long as or nearly as long as broad.

H¹. Width of front between antennae more than one-fourth width of carapace. Regions distinct. Fingers pointed.....**Eriphia**, p. 545.

H². Width of front between antennae less than one-fourth width of carapace. Antennae remote from orbit. Regions indistinct. Fingers of minor chela spooned.**Eriphides**, p. 552.

G². Merus of outer maxillipeds twice as broad as long. Carapace and chelipeds armed with black spines. **Domecia**, p. 553.

F². Carapace smooth above.

G¹. Chelipeds with short arms, projecting but little outside the carapace. Front lobed or dentate. **Trapezia**, p. 556.

G². Chelipeds with long arms, projecting far outside the carapace. Front acutely spinate. **Quadrella**, p. 560.

B². Eyestalks long and flat; when in orbits their acute anterior edge is continuous with margin of carapace. Merus of outer maxilliped transversely oblong, inner margin arcuate, without indentation. Carapace, chelipeds and legs fringed with long hair.....**Acidops**, p. 533.

Genus CARPILIUS Leach

Carpilius Leach, in Desmarest, Dict. Sci. Nat., vol. 28, 1823, p. 228; type, *C. maculatus* = *Cancer maculatus* Linnaeus, 1758.

Carapace broad, very convex in both directions, smooth (except for some coarse pitting inside frontal and antero-lateral borders), with no indication of regions; antero-lateral borders strongly arched, thick, entire, smoothly molded; postero-lateral borders strongly convergent, straight, with a prominent tubercle at angle of junction with antero-lateral. Front moderately broad (less than a third the greatest width of carapace), deflexed, three-lobed, the middle lobe prominent, the edges of all thickened. Orbital margins entire, the upper margin thickened and forming a well-marked blunt tooth at its junction with the antero-lateral margin. Eyes on short, thick stalks. Antennules folding obliquely; inter-antennular septum broad. Basal article of antenna long, flat, running up into an oblique cleft between margin of front and infra-orbital plate; flagellum very small, less than half diameter of orbit and lodged in said cleft. Merus of

external maxillipeds with anterior border very oblique. Chelipeds massive, smooth, unequal in both sexes; fingers bluntly pointed, those of larger cheliped with one or two molariform teeth, those of smaller cheliped with a blunt cutting edge. Legs smooth. Abdomen of male six-segmented, third and fourth somites fused with obliteration of sutures, fifth somite also immovably adherent to fourth.

Contains three large species, one inhabiting the Atlantic coast of middle America, the others widely distributed through the Indo-Pacific region.

CARPILIUS CORALLINUS (Herbst)

CORAL CRAB; QUEEN CRAB

Plates 97–99

Cancer corallinus HERBST, Natur. Krabben u. Krebse, vol. 1, 1783, p. 133, pl. 5, fig. 40; not synonymy except Plumier (type-locality, not given; type not found in Berlin Museum, 1896).

Carpilius corallinus LEACH in Desmarest, Consid. sur les Crust., 1825, p. 104; not Gundlach, An. Acad. Cien. Habana, vol. 36, 1899, p. 367, text-fig., which is a *Menippe*.

Description.—Front almost vertically deflexed, median lobe entire in large specimens, bilobate in small ones, and separated on either side from the forward pointing lateral lobes by a deep U-shaped sinus no larger than the lateral lobe. Movable finger of larger cheliped with two prehensile teeth; immovable finger with a single larger tooth. Legs compressed.

Color.—Ground pale red with scarlet spots among which are meandering designs in white and yellowish (Herbst). Carapace brick-red, somewhat wine-colored or coral-red, covered with yellow spots; legs veined with brown; claws spotted; fingers and nails brown (A. Milne Edwards).

Measurements.—Male (Bahamas), length of carapace 108.2, width 143.8, fronto-orbital width 53, width of front 37.2 mm. Male (von Martens), length 128, width 154 mm. This species is the largest of the West Indian crabs, and is often used for food.

Range.—Bahamas to State of Pernambuco, Brazil.

Material examined.—Spanish Wells, Bahamas; 1893; Biological Expedition, State University of Iowa; 1 large male (S.U.I.).

Santa Lucia, Cuba; May, 1914; Paul Bartsch and John B. Henderson, *Tomas Barrera* Expedition; 1 specimen (47918).

Jamaica: J. E. Duerden; specimen in Mus. Inst. Jamaica. C. R. Orcutt; 1928: Harboreale, 1 carapace (61341); without locality, 1 carapace (61343).

Porto Rico: George Latimer; 1 female (3575). Collector unknown; 2 specimens (2154).

St. Thomas, Virgin Islands; 1915; Clarence R. Shoemaker; received from Carnegie Institution: July 1; St. Thomas Harbor; 1 male (54046). July 19; Buck Island, off St. Thomas; 2 females (54045).

Simsons Bay lagoon, St. Martin, Virgin Islands; 1 fathom; sandy; September 21, 1905; J. Boeke; 1 adult male (Leiden Mus.).

La Sita, Guadeloupe; from Museum of L. Guesde; 1 female (4094).

Roseau, Dominica; 25 fathoms; A. Hyatt Verrill; 1 female (32509).

Slagtbaai, Bonaire, Curaçao Islands; 1 fathom; stony; August 2, 1905; J. Boeke; 1 very large female (Leiden Mus.).

Curaçao: Among coral reefs; June 26, 1905; J. Boeke; 1 adult female (42949).

Caracas Bay, Curaçao; 1920; C. J. van der Horst: In net; April 26; 1 male, 1 female (Amsterdam Mus.). April 27; 1 male (Amsterdam Mus.). April 24; 1 male (57006)

Old Providence Island, Caribbean Sea; 1884; *Albatross;* 1 male (7342).

Goyanna stone reef, Pernambuco, Brazil; June 18, 1899; Arthur W. Greeley, Branner-Agassiz Expedition; 1 male (25717).

Pernambuco, Brazil; 1876–1877; R. Rathbun, Hartt Explorations; 1 male, 1 female (40576).

Locality unknown; 1 specimen (14590).

Genus CARPILODES Dana

Carpilodes DANA, Amer. Journ. Sci., ser. 2, vol. 12, 1851, p. 126; monotypic type, *C. tristis* Dana; specific name not given till 1852.—ODHNER, Göteborg's K. Vet. Handl., Fjärde Följden, vol. 29, No. 1, 1925, p. 8.

Liomera DANA (part), Amer. Journ. Sci., ser. 2, vol. 12, 1851, p. 124; type, *L. cinctimana*=*Carpilius cinctimanus* White.

Carpiloxanthus A. MILNE EDWARDS, Faune Carcin. de l'ile de la Réunion, 1862, p. 3; type, *C. vaillantianus* A. Milne Edwards, 1862=*Carpilodes bellus* (Dana), 1852.

Carapace very broad, convex in both directions, regions usually well demarcated and, especially in anterior half, more or less subdivided into lobular areolae; antero-lateral borders usually cut into four broad, shallow, rounded lobes; postero-lateral borders straight, or a little concave, and strongly convergent. Front from a third to nearly a fifth of greatest breadth of carapace, obliquely deflexed, grooved and slightly notched in middle line. Orbits small, margins entire, but usually with the three suture lines near outer angle more or less distinct; eyestalks short and thick. Antennules folding obliquely, almost transversely. Basal antennal article running up between front and lower orbital plate. Chelipeds equal or subequal in both sexes; fingers more or less pointed, but usually grooved or hollowed near tips. Abdomen of male with third to fifth somites fused.

Contains numerous species distributed throughout the Indo-Pacific region, only one of which has been reported from America.

CARPILODES CINCTIMANUS (White)

Plate 100

Carpilius cinctimanus WHITE, in Jukes, Narrative Voy. H. M. S. *Fly*, vol. 2, Append. No. 8, 1847, p. 336, pl. 2, fig. 3 (type-localities, Indian Ocean and Eastern Seas; types not in Brit. Mus.); List Crust. Brit. Mus. 1847, p. 14, no description, Philippine Islands and Mauritius (specimens in Brit. Mus.).[31]

Liomera cinctimana DANA, Amer. Journ. Sci., ser. 2, vol. 12, 1851, p. 124.—STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 10, 1871, p. 103.

Liomera lata DANA, Proc. Acad. Nat. Sci. Philadelphia, 1852, p. 73 (type-locality, Feejee Islands, type not extant).—STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 10, 1871, p. 104.

Carpilodes cinctimanus MIERS, Ann. Mag. Nat. Hist., ser. 5, vol. 5, 1880, p. 234.—ODHNER, Göteborg's K. Vet. Handl., Fjärde Följden, vol. 29, No. 1, 1925, p. 14.

Liomera cocosana BOONE, Zoologica, vol. 8, 1927, p. 184, text-fig. 63 (type-locality, Cocos Island; type in Mus. New York Zool. Soc.).

Diagnosis.—Carapace nearly twice as long as broad, barrel form, without granulation; 2 M incompletely divided. (See diagram, p.6.)

Description.—Carapace extremely broad; two lobules on 2 M anteriorly and on 2+3 L, which are united; mesogastric region faintly delimited. Surface otherwise smooth and closely punctate. Anterolateral border divided into three coarse lobes separated by deepish grooves; lobe next the orbit not projecting. Anterior margin of merus of outer maxilliped oblique.

Color.—Light red, sometimes white near the sides in the male; pterygostomian regions white; fingers of chelae black with white tips, the black color extending in adult male part way along the lower side of the palm, thence upward forming a broad black band around middle of palm, whence the specific name; base of ambulatory dactyli red, middle portion white, nail black.

Measurements.—Male (17795), length of carapace 15.4, width 28.2, width of front 6.1 mm.

Range.—From Gulf of Aden eastward to Australia, Japan and the islands of the Pacific Ocean. From Cape St. Lucas, Lower California, Mexico (Stimpson) to the Galapagos Islands (Boone).

Material examined.—Western Indian Ocean; 1905; H. M. S. *Sealark*, J. Stanley Gardiner: Salomon; 1 male, 2 females (Cambridge Mus.). Coetivy; 2 males, 3 females (41169).

Mauritius; purchased of Henry A. Ward; 3 females (17795).

Atami Province, Japan; F. Sakamoto; received from Garrett Droppers; 1 female (18858).

Mexico; from Secretaria de Agricultura y Fomento, through A. L. Herrera: Teacapan, Sinaloa, August, 1926; 1 female (60723). Maria Madre Island; March–May, 1927; 1 immature female (60722).

Mexico: Maria Madre Island; E. part of bay; 5–8 meters; May 17, 1925; F. Contreras; California Acad. Sci.; 1 female, returned; 1 young (62697).

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[31] Verified by Dr. Isabella Gordon.

PARALIOMERA, new genus

Type.—Liomera longimana A. Milne Edwards.

Carapace broad-oval, nearly smooth; antero-lateral margin obscurely lobed or toothed; front about a third as wide as carapace, having a small outer lobe which is separated by a notch from the inner upper angle of the orbit. Basal antennal article touching the downward prolongation of the front. Chelipeds very unequal, smooth; fingers short. Abdomen of male with third, fourth and fifth segments fused.

Contains only two species.

KEY TO THE SPECIES OF THE GENUS PARALIOMERA

A[1]. Gastric region plainly but not deeply delimited. Transverse fringe of hair on front. Major palm thrice as wide as the long slender minor palm. ----------longimana, p. 243.

A[2]. Carapace almost smooth, shining, very small. Major palm twice as wide as minor palm---------- dispar, p. 244.

PARALIOMERA LONGIMANA (A. Milne Edwards), new combination

Plate 101, Figures 1–3

Liomera longimana A. Milne Edwards, Nouv. Arch. Mus. Hist. Nat., Paris, vol. 1, 1865, p. 221, pl. 12, figs. 7–7*b*; figs. 7 and 7*a* are incorrect, hands represented of equal size (type-locality, Guadeloupe; type in Paris Mus.); Crust. Rég. Mex., 1879, p. 240, pl. 46, figs. 1–1*c*.—Rathbun, Bull. U. S. Fish Comm. for 1900, vol. 20, part 2 (1901), p. 25.

Cancer nigerrimus Desbonne, in Desbonne and Schramm, Crust. Guadeloupe, 1867, p. 25 (type-locality, Guadeloupe; type perhaps not extant).

Diagnosis.—Gastric region plainly delimited; transverse fringe of hair on front; antero-lateral margins with four shallow lobes. Chelipeds strikingly unequal, minor hand about a third as wide as major.

Description.—Carapace about three-fifths as long as broad, thick, very convex, regions very faintly marked; antero-lateral margin showing four shallow lobes or teeth, the last two most distinct and angular. Front a little less than a third the breadth of carapace, distinctly bilobed, and with a separate tooth at outer end below orbital angle; a transverse fringe of hair behind the lobes. Antennal flagellum longer than greatest diameter of orbit. Chelipeds extremely unequal in both sexes, smooth, conspicuously punctate; arm projecting beyond carapace; larger cheliped heavy, hands with subparallel margins; the smaller hand very slender, about one-third the width of larger. Fingers moderately gaping. Larger wrist nearly as broad as long, inner angle blunt; smaller wrist much longer than broad, without an inner angle. Legs compressed, almost smooth, hairy.

Color.—Solid black on anterior and lateral portions of dorsal surface of carapace; toward the center, clove black with slightly greenish dots; but on a large, roughly oblong, posterior area, slate black, with slate black dots with mouse gray suffusions around them. Under parts slate gray; pterygostomian region, maxillipeds, and epistome

slate black. Chelipeds shiny black, smaller one with spots of the faintest straw yellow, larger one with cinerous spots. Extreme tips of fingers white, with a bit of brown before the black. Legs cream buff with Prouts brown spots. (Schmitt.)

Measurements.—(18679) length 8.2, width 13.7 mm.

Range.—Florida Keys; West Indies; Vera Cruz, Mexico (Ives); Curaçao.

Material examined.—Key West, Florida: H. E. Webster; received from Boston Society of Natural History; 2 males (56766). Union College collection; 1 female (42675), 2 males, 1 female (42676).

Tortugas, Florida; June 5 to 8, 1893; Biological Expedition, State University of Iowa; 2 males, 1 female (18679).

Tortugas, Florida; gift of Carnegie Institution: Fort Jefferson, Garden Key; shallow water; July 19, 1926; station 4; C. R. Shoemaker; 1 male (60924). West side Bush Key reef near Long Key; 4 feet; from holes in rocks; July 30, 1924; W. L. Schmitt; 1 male, 1 female (60810). Washed from weeds and rocks off mid-section of Bush Key reef inside, 3 feet before eel grass; August 1, 1924; W. L. Schmitt; 1 male, 2 females (60923).

Playa de Ponce, Porto Rico; February 1, 1899; *Fish Hawk;* 2 males, 2 females (24255).

St. Thomas, Virgin Islands: 1860; Krebs collector; Zoological Museum, Copenhagen; 2 males, 2 females (19698). 1915; Clarence R. Shoemaker; gift of Carnegie Institution: French Bay; ½ to 2½ fathoms; July 5; station 6; 1 male (60925). Drift Bay; July 15; station 11; 1 male, 1 female (53764).

Barbados; 1918; Barbados-Antigua Expedition, State University of Iowa: Needham Point; May 18; 3 males, 1 female (S.U.I.). One mile south of station 19, off Needham Point; 84 fathoms; rocky; station 20; 4 males, 2 females (S.U.I.). Okra Reef; May 13; 35 males, 44 females (35 ovigerous), 8 young (S.U.I.). May 15; 10 males, 9 ovigerous females (58009). On old coral; May 31; 8 males, 15 females (S.U.I.). On old coral heads; June 4; 12 males, 11 females (1 ovigerous) (S.U.I.).

Caracas Bay, Curaçao; April 19, 1920; C. J. van der Horst; 1 male (Amsterdam Mus.).

PARALIOMERA DISPAR (Stimpson), new combination

Plate 101, Figures 4–5

Chlorodius dispar STIMPSON, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 140 (type-locality, Cruz del Padre, Cuba; type in Museum of Comparative Zoölogy).

Leptodius dispar A. MILNE EDWARDS, Crust. Rég. Mex., 1880, p. 27.

Liomera dispar RATHBUN, Ann. Inst. Jamaica, vol. 1, 1897, p. 13; Bull. U. S. Fish Comm. for 1900, vol. 20, pt. 2 (1901), p. 25.

Diagnosis.—Carapace almost smooth, shining; antero-lateral margins almost entire. Chelipeds very unequal, minor hand half width of major.

Description.—Carapace about three-fourths as long as broad, thick, convex, covered with a short pubescence easily rubbed off; regions not defined; an anterior median furrow, also a furrow separating the front from orbital angle; antero-lateral margins almost entire, three lobes faintly discernible. Front about one-third width of carapace, bimarginate, margin convex, median notch small, external angle not projecting. Eyes very short and stout. Antennal flagellum shorter than greatest diameter of orbit. Chelipeds less unequal than in *P. longimana*, the smaller hand not so slender, about half the width of larger. Smaller wrist similar in shape to larger and with an inner tooth. The black color of thumb runs back a little on the hand, forming a convex outline. Otherwise resembling *P. longimana.*

Color.—Carapace dark brown, chelipeds dark reddish, fingers black greater hand with one or two white spots on outer side between bases of fingers. (Stimpson.)

Measurements.—Male (24862), length of carapace 5.2, width 8 mm. Female (58008), length of carapace 4.3, width 6.3 mm.

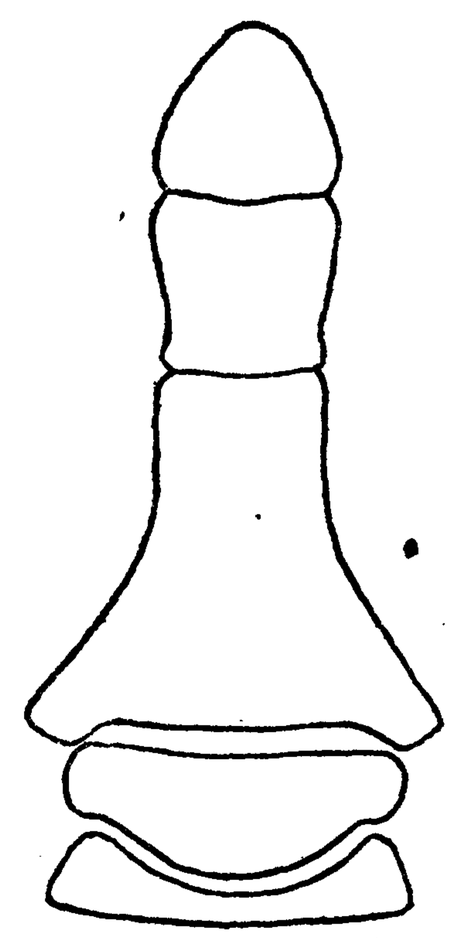

FIGURE 38.—PARALIOMERA DISPAR, MALE (24862), ABDOMEN, × 12

Range.—Florida Keys and West Indies to north coast of South America; Bermudas.

Material examined.—Key West, Florida; H. E. Webster; received from Boston Society of Natural History; 1 ovigerous female (56828).

Off Southeast lighthouse dock, Loggerhead Key, Tortugas, Florida; June 14, 1925; Valentine and Chester; 1 female (62550); gift of Carnegie Institution.

Cabañas, Cuba; sand, shell, grass to mud bottom; June 8–9, 1914; station 16; Henderson and Bartsch, *Tomas Barrera* Expedition; 1 ovigerous female (48925), poisoned with copper sulphate on reef.

Jamaica; P. W. Jarvis; 1 ovigerous female (20507).

Haiti; near the Caimites; April, 1865; P. R. Uhler; 1 female (2380, M.C.Z.).

On lighthouse reef, Arroyo, Porto Rico; February 3, 1899; *Fish Hawk;* 1 male, 1 young female (24254).

Pillars of Hercules, Antigua; 1918; Barbados-Antigua Expedition, State University of Iowa; 1 female (S.U.I.).

Barbados: 1918; Barbados-Antigua Expedition, State University of Iowa: One mile south of station 19, off Needham Point; 84 fathoms; rocky; station 20; 2 males, 4 females (2 ovigerous) (S.U.I.). Okra Reef; May 13; 3 males, 14 females (7 ovigerous) (58008). May 15; 6 males, 21 females (8 ovigerous) (S.U.I.). On old coral; May 31; 3 males, 13 females, 2 young (S.U.I.). On old coral heads; June 4; 4 males, 4 females (S.U.I.).

Caracas Bay, Curaçao; 1920; C. J. van der Horst: In coral; April 7; 1 male, 1 female (56884), 2 males, 1 female (Amsterdam Mus.); 1 male and 1 female have both branchial regions swollen by isopod parasites. May 1; 1 male, parasitized on both sides (Amsterdam Mus.).

Cartagena, Colombia; College of San Pedro Apostal; 1 female (53410).

Bermudas; J. Matthew Jones; received from A. E. Verrill; 1 male (24862).

Genus PLATYPODIA Bell

Platypodia Bell, Trans. Zool. Soc. London, vol. 1, 1835, p. 336; type, *P. granulosa* (Rüppell) = *Xantho granulosus* Rüppell, 1830, = *Cancer limbatus* Milne Edwards, 1834.—Rathbun, Proc. Biol. Soc. Washington, vol. 11, 1897, p. 158.

Lophactaea A. Milne Edwards, Ann. Sci. Nat., ser. 4, vol. 18, 1862, p. 43; type, *L. granulosa* (Rüppell) = *Xantho granulosus* Rüppell.

Carapace moderately broad, convex in both directions; regions generally well delimited and subdivided into lobes; surface generally (not always) granular; antero-lateral borders with an independent crest-like edge, generally thin and sharp and distantly fissured; postero-lateral borders rather concave. Front a little deflexed, about a fourth the greatest breadth of carapace, grooved and emarginate in middle line. Orbits large, three suture lines near outer angle distinct. Eyes on short thick stalks. Antennules folding obliquely transversely; inter-antennular septum broad. Basal article of antennae short, touching front only; flagellum lodged in orbital hiatus. Merus of external maxillipeds with front edge a little oblique. Chelipeds equal in both sexes; fingers pointed, not hollowed at tip. Long joints of legs with sharp crest-like upper borders. Abdomen of male five-jointed, third to fifth somites being fused.

Inhabits the Indo-Pacific region besides both coasts of middle America and the Bermudas.

KEY TO THE AMERICAN SPECIES OF THE GENUS PLATYPODIA

A[1]. Carapace not coarsely granulate near the margins. Lobules almost smooth and naked. Mesogastric region narrow, tapering to a slender point. **spectabilis, p. 247.**

A[2]. Carapace coarsely granulate near the margins. Mesogastric region somewhat constricted at middle of its length; extremity not acuminate.

B[1]. Lobules irregular in shape, not surrounded by a furry coat. Protogastric lobules two, a large outer, a small inner one------**rotundata, p. 248.**

B[2]. Lobules mostly round, finely and crisply granulate, standing out from a background of hair. Only one protogastric lobule on each side. **gemmata, p. 249.**

ANALOGOUS SPECIES OF PLATYPODIA ON OPPOSITE SIDES OF THE CONTINENT

Atlantic	Pacific
spectabilis	*rotundata*

PLATYPODIA SPECTABILIS (Herbst)

Plate 102, Figure 4

Cancer spectabilis HERBST, Natur. Krabben u. Krebse, vol. 2, 1794, p. 153, pl. 37, fig. 5 (type-locality unknown; type in Berlin Museum, examined by the writer, 1896).

Cancer lobata MILNE EDWARDS, Hist. Nat. Crust., vol. 1, 1834, p. 375 (type-locality, Antilles; type in Paris Museum).

Lophactaea lobata A. MILNE EDWARDS, Nouv. Arch. Mus. Hist. Nat. Paris, vol. 1, 1866, p. 249, pl. 16, figs. 3, 3*a*.

Platypodia spectabilis RATHBUN, Ann. Inst. Jamaica, vol. 1, 1897, p. 13.

Diagnosis.—Lobules of carapace appearing almost smooth. Mesogastric region narrowing regularly to a point in front. Antero-lateral rim of good width. Palm elongate.

Description.—Surface lobulated, granulate. Antero-lateral crest extending very far back and continued by a small transverse crest on carapace in line with cardiac region; marginal crest cut by three narrow fissures; postero-lateral borders concave. Front deflexed, presenting two oblique truncate lobes in dorsal view; in front view these lobes are concave. Hands short, compressed, surmounted by a sharp, entire crest; outer surface covered with granules, irregularly placed on upper portion, but forming three or four longitudinal lines on lower part. Fingers pointed, channeled, their prehensile borders denticulate, also a broad lobe at base of immovable finger. Ambulatory legs short, compressed; nails very sharp. Suture lines faintly visible between the third, fourth, and fifth abdominal segments in the male.

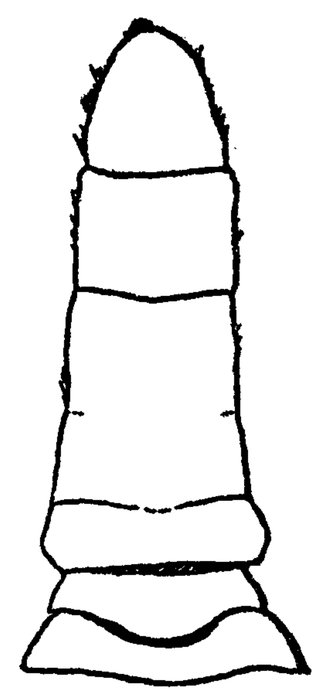

FIGURE 39.—PLATYPODIA SPECTABILIS (25440), MALE ABDOMEN, CARAPACE 13.2 MM. WIDE

Color.—Chocolate brown, with some yellow spots bordered with blue and black; similar spots on chelipeds. Legs red, with tricolored bands of yellow, blue, and black. Eggs reddish yellow. (A. Milne Edwards.)

Measurements.—Female (7688), length of carapace 13, width 19.3, fronto-orbital width 9, width of front 5 mm.

Range.—Gulf of Mexico, Bahamas and Florida Keys to Fernando Noronha, Brazil; Bermudas.

Material examined.—Bahamas; J. I. Northrop; specimen returned to sender.

Key West, Florida; on reefs; Mar., 1885; R. E. C. Stearns; 1 female (14460).

Vera Cruz, Mexico; specimens in Paris Museum.

Jamaica: March 1–11, 1884; *Albatross;* 1 male, 1 female (7688). Kingston Harbor; 1893; R. P. Bigelow; 1 female (17967).

Porto Rico; 1899; *Fish Hawk:* Porto Real; January 27; 1 male, 1 female (24256). Guanica Bay; January 29; 1 young female (Yale Mus.). Culebra; February 11; 1 female (24257).

St. Thomas, Virgin Islands; specimens in Paris Museum and in Copenhagen Museum.

St. John, Virgin Islands; 2.5 fathoms; in crevice between coral and encrusting alcyonarian; July 10, 1915; station 8; Clarence R. Shoemaker, for Carnegie Institution; 1 female (56381).

Guadeloupe; specimen in Paris Museum.

Marie Galante; specimen in Paris Museum.

Martinique; specimen in Paris Museum.

Needham's Point, Barbados; May 18, 1918; Barbados-Antigua Expedition, State University of Iowa; 1 male (58044), 1 ovigerous female (S.U.I.).

Curaçao; 1920; C. J. van der Horst: West Punt; May 14; 3 males, 1 female (Amsterdam Mus). Caracas Bay; May 5; 1 male (56906).

Bermudas: 1876–1877; G. Brown Goode; 1 female (43048). Hungry Bay; July-September; F. G. Gosling; 4 males, 4 females (25440).

Locality unknown; Herbst's type-specimen (Berlin Mus.).

PLATYPODIA ROTUNDATA (Stimpson)

Plate 102, Figures 1–3

Atergatis rotundatus STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 202 [74] (type-locality, Cape St. Lucas; cotypes in M.C.Z.).

Lophactaea rotundata A. MILNE EDWARDS, Nouv. Arch. Mus. Hist. Nat., Paris, vol. 1, 1866, p. 250; Crust. Rég. Mex., 1879, p. 243; 1880, pl. 44, fig. 2.

Lophactaea rotunda [by error] SPENCE BATE, Zool. Rec. for 1866 (1867), p. 222.

Atergatis cristatissimo LOCKINGTON, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 41 [1] (type-locality, La Paz, Lower California; type not extant).

Platypodia rotundata RATHBUN, Proc. U. S. Nat. Mus., vol. 38, 1910, p. 584.

Diagnosis.—Carapace coarsely granulate on and near the margins. Mesogastric region narrowing regularly to a point in front except for a slight constriction at middle. Antero-lateral rim narrow. Palm short and high.

Description.—Carapace narrower than in *spectabilis*, equally convex posteriorly and anteriorly, areolated and granulated, the granules extending entirely around the marginal areas and especially coarse on the branchial regions which they almost entirely cover. Crest of antero-lateral margin narrow, indistinctly quadrilobate, the lobes separated by slight notches and furrows; the crest granulate especially on its margin. Postero-lateral side very short. Hand of chelipeds short, with a high lamelliform superior crest; outer surface granulate above, ornamented with four or five granulate costae.

Color.—Of dried specimens, bright vermilion red throughout except on fingers which are brown (Lockington).

Measurements.—Male (46078), length of carapace 7.3, width 10.7 mm. Sex not given, length 12.7 mm. (0.5 inch), width 17.7 mm. (0.7 inch). (Lockington).

Range.—La Paz, Gulf of California, Mexico, to Ecuador.

Material examined.—Cape St. Lucas, Lower California, Mexico; John Xantus; 1 male, 1 female, cotypes (1251, M.C.Z.).

Manzanillo, State of Colima, Mexico; on drifted pile; July 17, 1913; C. R. Orcutt; 1 male (46078).

Panama: Capt. John M. Dow; 1 female (4079). Low tide, rocks; May–July, 1924; E. Deichmann; 1 female (60823).

South side of Point Santa Elena, Ecuador; among brown sea anemones; September 16, 1926; W. L. Schmitt; 2 males (60962).

PLATYPODIA GEMMATA Rathbun

Platypodia gemmata RATHBUN, Proc. Washington Acad. Sci., vol. 4, 1902, p. 279, pl. 12, figs. 5 and 6 (type-locality, Albemarle Island, Galapagos Islands; type, Cat. No. 24850, U.S.N.M.).

Diagnosis.—Internodular depressions filled with short hair. Elevations mostly subcircular, granulate. Antero-lateral rim extremely narrow. Palm short and high.

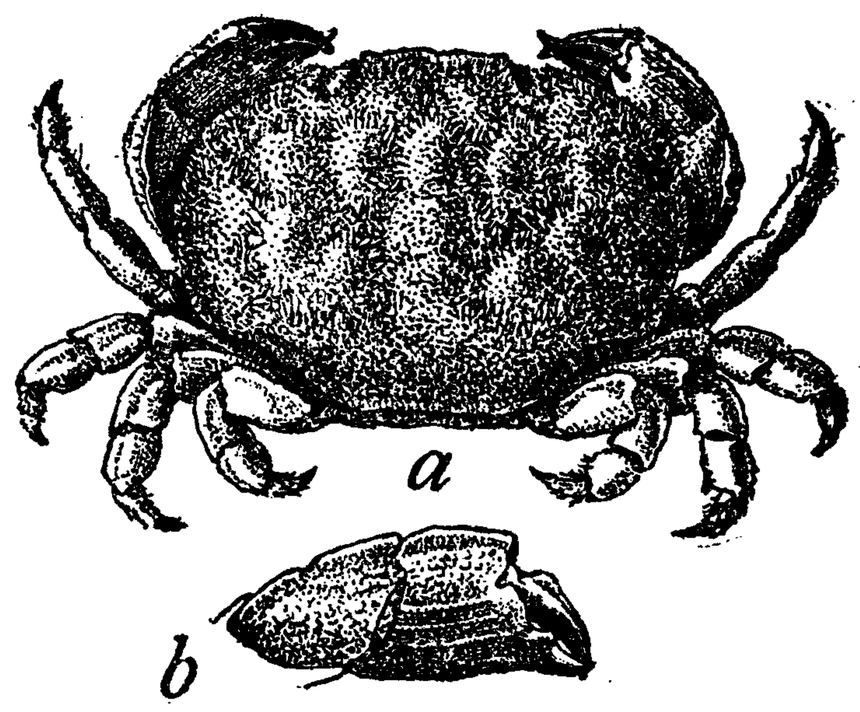

FIGURE 40.—PLATYPODIA GEMMATA, MALE, COTYPE, × 3. *a.* DORSAL VIEW. *b.* WRIST AND CHELA

Description.—Anterior two-thirds of carapace divided into about twenty lobules, for the most part circular, except the mesogastric lobule; covered with crowded depressed granules and separated from each other by depressions filled with a dense furry coating. Front with a thin bilobed edge, lobes slightly sinuous. Antero-lateral crest narrow, thin, covered above by a short fringe of fur, edge granulate; below are visible three fissures dividing the margin obscurely into four lobes. Postero-lateral borders short and deeply cut.

Related to *rotundata*, but the nodules are of different shape; the mesogastric is not linear and pointed anteriorly, the protogastric nodule is single, not subdivided by a longitudinal furrow. The granulation of the nodules of the anterior-median part of the carapace is very fine and sharp, not rough and uneven as in *rotundata*. The marginal rim is even narrower than in the allied species. Chelipeds similar in the two.

Measurements.—Ovigerous female, cotype, length of carapace 6.8, width 9.6, fronto-orbital width 4.9, width of front 2.8 mm.

Range.—Known only from the type-specimens from the reef north of Tagus Hill, Tagus Cove, Albemarle Island, Galapagos Islands; 1898-1899; Hopkins Stanford Expedition; 1 male, 1 ovigerous female (24830), 2 immature females (Stanford Univ.).

Genus ACTAEA de Haan

Actaea DE HAAN, Fauna Japon., Crust., 1833, pp. 4 and 18; type, *A. savignii* (Milne Edwards) = *Cancer savignii* Milne Edwards 1834 = *C. granulatus* Audouin, 1825, not *C. granulatus* Linnaeus, 1758.—RATHBUN, Bull. U. S. Fish Comm., vol. 20 for 1900, pt. 2 (1901), p. 33.—ODHNER, Göteborg's K. Vet. Handl., Fjärde Följden, vol. 29, No. 1, 1925, p. 35 (part).

Anchilops GISTEL, Naturg. Thierreichs, 1848, p. VIII, substituted for *Actaea*, which was considered preoccupied in botany.

Actaeodes DANA, Amer. Journ. Sci., ser. 2, vol. 12, 1851, p. 126; type, *A. tomentosus* Dana = *Zozymus tomentosus* Milne Edwards, 1834.

Iphimedia DUCHASSAING, MS., in A. Milne Edwards, Nouv. Arch. Mus. Hist. Nat., Paris, vol. 1, 1866, p. 271; type, *I. sulcata* Duchassaing, MS., 1865, = *A. setigera* A. Milne Edwards, 1865 = *Xantho setiger* Milne Edwards, 1834.

Banareia A. MILNE EDWARDS, Ann. Soc. Entom. France, ser. 4, vol. 9, 1869, p. 168; type, *B. armata* A. Milne Edwards.

Euxanthodes PAULSON, Investig. Crust. Red Sea, vol. 1, 1875, p. 33; type, *E. granulatus* Paulson = *Cancer granulatus* Audouin, 1825 (not *C. granulatus* Linnaeus, 1758) = *C. savignii* Milne Edwards, 1834.

Psaumis KOSSMANN, Zool. Ergeb. Reise Küstengeb. Rothen Meeres, Crust., 1877, p. 26; type, *P. fossulatus* (Girard) = *Cancer fossulatus* Girard, 1859. *Psaumis* used by Pascoe, Trans. London Ent. Soc., ser. 3, vol. 3, 1866, pp. 228 and 246, for a species of Coleoptera.

Cycloblepas ORTMANN, in Semon, Zool. Forsch. Austral. u. Malay. Arch., Crust., 1894, p. 53; type, *C. semoni* Ortmann.

Carapace convex fore and aft, slightly convex or flat from side to side, commonly broad, regions well demarcated by deep grooves and again subdivided into lobules, which are usually convex and granular. Antero-lateral borders as a rule four-lobed, lobes shallow and often indistinct. Postero-lateral borders usually concave, always short, not strongly convergent. Front between a third and a fourth the greatest width of carapace, deflexed, cleft in middle line into two lobes. Upper edge of orbit tumid, usually with two fissures or sutures; a third fissure below outer orbital angle; eye-stalks short and thick. Antennules folding obliquely or nearly transversely. Basal antennal segment usually stopping at angle of deflexed front, but often prolonged beyond this, toward or nearly into orbit; flagellum about as long as orbit and lodged in orbital hiatus. Merus of external maxillipeds with anterior border little oblique. Chelipeds equal in both sexes; fingers either acute or blunt-pointed, sometimes hollowed out at tip. Abdomen of male five-jointed, somites three, four, and five fused.

Contains many species. Bahamas and Florida Keys to Bahia, Brazil; Bermudas; Cape Verde Islands; Ascension Island; east coast of Africa from Natal northward; Indian Ocean; Australia; East Indian Islands to Japan; islands of the Pacific to Hawaiian Islands; Gulf of California, Mexico, to Ecuador and Galapagos Islands.

Usually found in shallow water but reported from a depth of 400 fathoms.

KEY TO THE AMERICAN SPECIES OF THE GENUS ACTAEA

A¹. Areoles covered with granules.
  B¹. Areoles low, separated by narrow furrows.
    C¹. Marginal divisions of carapace lobiform, not angular nor dentiform.
      D¹. Carapace uniformly granulate. Black color of immovable finger of adult male widely extended on palm. Fingers grooved, sharply granulate.....**setigera**, p. 251.
      D². Granulation finer and denser than in *setigera*.....**dovii**, p. 254.
    C². Marginal divisions of carapace angular or dentiform. Carapace narrower than in D¹. Front steeply inclined.
      D¹. Palm concealed by long thick hair. Fingers long, smooth, punctate, not channeled.....**bifrons**, p. 255.
      D². Palm with longitudinal rows of granules not concealed by hair. Fingers deeply channeled, ridges granulate proximally, **angusta**, p. 256.
  B². Areoles high, convex, widely separated.
    C¹. Areoles separated by short pubescence. Anterior mesogastric nodule small.
      D¹. Nodules 1 F not fused with frontal margin. Marginal lobes D and E not remarkably small.....**rufopunctata nodosa**, p. 257.
      D². Nodules 1 F fused with frontal margin. Marginal lobes D and E remarkably small.....**sulcata**, p. 259.
    C². Areoles raspberry-like, set in a thick coat of long hair. Palms shaggy. Fingers broad, smooth, sharp-edged, acutely tipped. **palmeri**, p. 260.
A². Carapace covered dorsally with spines or sharp tubercles. Marginal lobes spinous.....**acantha**, p. 261.

ANALOGOUS SPECIES OF ACTAEA ON OPPOSITE SIDES OF THE CONTINENT

Atlantic	Pacific
setigera.	*dovii.*
bifrons.	*angusta.*
rufopunctata nodosa.	*sulcata.*

ACTAEA SETIGERA (Milne Edwards)

Plate 103

Xantho setiger MILNE EDWARDS, Hist. Nat. Crust., vol. 1, 1834, p. 390 (type-locality, Antilles; type in Paris Mus.).

Actaea setiger STIMPSON, Ann. Lyc. Nat. Hist. N. Y., vol. 7, 1859, p. 51.

Actaea setigera A. MILNE EDWARDS, Nouv. Arch. Mus. Hist. Nat., Paris, vol. 1, 1866, p. 271, pl. 18, fig. 2.—RATHBUN, Bull. U. S. Fish Comm., vol. 20 for 1900, pt. 2 (1901), p. 34.

Diagnosis.—Carapace wide, uniformly granulate; lateral lobes not dentiform; black color of immovable finger of male widely extended on palm; fingers grooved, sharply granulate.

Description.—Carapace wide, ovoid, covered with short, stiff yellow hair and with granules; strongly lobulated anteriorly. Antero-lateral border divided into four lobes, which do not project beyond the general outline of the carapace. Postero-lateral borders concave. Median notch of front large; each lobe has an inconspicuous outer tooth. Basal antennal joint short, not prolonged into orbit. Ptery-

gostomian regions finely granulous. Chelipeds hairy and very granulous; fingers slightly deflexed, black, this color extending in full-grown males upon external and internal surfaces of palm almost to articulation with wrist; in females the fingers only are black. Fingers grooved, intervening ridges sharply granulate on the proximal half; tips acute. Legs covered with hairs; meral joints of first three pairs smooth outside and granulous on margins; of last pair, granulous on outside also; two following joints granulous; dactyls long, granulous, and terminating in a sharp nail. Abdomen of the male long and narrow.

Color.—In formalin, upper surface light orange red with whitish granules; fingers very dark purplish brown.

Measurements.—Male (14325), total length of carapace 16.9, width 25.6, fronto-orbital width 11.2, width of front 6 mm.

Range.—Bahamas and Florida Keys to north coast of South America; Bermudas. On reefs.

Material examined.—Abaco, Bahamas; 1886; *Albatross*; 1 male (17778).

Andros Island, Bahamas: In sponge; Frederick Stearns collection; destroyed by fire. Near lighthouse, south of South Bight, east side of island; May 14, 1912; Paul Bartsch; 1 male (45574).

Cape Florida, Florida; 1884; Edward Palmer; 2 females (9301).

Indian Key, Florida: 1884; Edward Palmer; 1 male, 1 female (15011). Between tides; Henry Hemphill; 3 males (14057).

Knights Key, Florida; among rocks, low tide; H. Hemphill; 2 males, 2 females (14074).

Key West, Florida; H. E. Webster; received from Boston Soc. Nat. Hist.; 1 male (56804). Among rocks, low tide; 1884; Henry Hemphill; 2 males, 2 young (9302). April 15–27, 1884; *Albatross*; 1 young (18521). February 3, 1901; B. A. Bean and W. H. King; 2 males (24844).

Tortugas, Florida; 1893; Biological Expedition, State University of Iowa; 1 female (S.U.I.).

Tortugas, Florida; 1924; W. L. Schmitt; gift of Carnegie Institution: Loggerhead Key, rocks, east side; July 28; 1 male (59413). From rocks below lighthouse pier, east side Loggerhead Key; August 24; 1 ovigerous female (59418). Bird Key: Southwest side, with boat dredge; August 8; 1 male (59411). Reef; July 16; 1 male, 2 females (59412). Reef; July 28; Bender collector; 1 male, 1 female (59415). North end of reef, "Channel reef"; August 12; 1 male (59416). Mid-section of reef; July 26; 2 males, 1 female (59417). South end of reef; August 13; 2 males (59414). Garden Key; about rocks, Fort Jefferson docks; July 30; Bender collector; 1 male, 1 female (59410). Bush Key reef: Mid-section; August 1; 4 males, 6 females (59409). South end; July 31; 1 male, 1 female (59419).

Tortugas, Florida; 1925; W. L. Schmitt; gift of Carnegie Institution: Bird Key reef: June 4, 1 young (60854); low tide, June 6, station 25–5, 1 female (60853); low tide, June 7, station 25–6, 4 males, 5 females (1 ovigerous), 1 young (60849). June 22; Dexter collector; 1 female (60852). Fort Jefferson, Garden Key; rocks at south coal dock; June 13; 1 female (60855). Bush Key reef near Long Key; June 3; 4 males, 1 female (60850).

Fort Jefferson, Garden Key, Tortugas; from beach at pier; July 25, 1926; station 6; C. R. Shoemaker; 1 male (60851); gift of Carnegie Institution.

Ensenada de Cajon, off Cape San Antonio, Cuba; May 22, 1914; Henderson and Bartsch, *Tomas Barrera* Exped., station 11; caught by copper sulphating on reef; 1 male (48558).

Kingston Harbor, Jamaica; 1893; R. P. Bigelow; 1 female (17965).

Montego Bay, Jamaica: Coral reef; July 12, 1910; C. B. Wilson; 1 ovigerous female (42929). Rocks in front of Sea View; August 30, 1910; E. A. Andrews (43049).

Umbrella Point, Jamaica; July 14, 1910; E. A. Andrews; 1 male (42922).

Porto Rico; 1899; *Fish Hawk:* Playa de Ponce Reef; February 1; 1 male, 1 female (24269). Caballo Blanco Reef; February 7; 1 young (24284). Ensenada Honda, Culebra; February 9 and 11; 1 male, 1 young (24282). Exact locality not given; 1 young (24283).

San Juan, Porto Rico; G. M. Gray; specimens in Marine Biological Laboratory, Woods Hole.

St. Thomas, Virgin Islands; 1884; *Albatross;* 6 males, 1 female, 2 young (17809).

Antigua; 1918; Barbados-Antigua Expedition, State University of Iowa: Pillars of Hercules; 2 males (Mus. S.U.I.). English Harbor; 1 male, 1 young (57958).

Barbados; 1918; Barbados-Antigua Expedition, State University of Iowa: Okra Reef; May 13; 1 male, 3 young (Mus. S.U.I.). Pelican Island; 1 young female (57987). Needham Point; 1 young male (57988); May 18, 1 young female (Mus. S.U.I.). Exact locality not given; 1 male (57989); 2 males, 2 females, 5 young, mostly from coral heads (Mus. S.U.I.).

Trinidad; Mr. Crosby collector; in exchange with Boston Society of Natural History; 1 young (56805).

Caracas Bay, Curaçao, Venezuela; under stones or in coral; 1920; C. J. van der Horst: 1 male, 1 young (56870); 2 males, 1 female, 9 young (Amsterdam Mus.).

Cartagena, Colombia; Colegio de San Pedro Apostal; 1 young female (53408).

Margarita Island, Atlantic side of Panama; coral rocks, low tide; June, 1924; E. Deichmann; 2 males (60717).

Hungry Bay, Bermudas; July-September; F. G. Gosling; 1 female (25441).

ACTAEA DOVII Stimpson

Plate 104, Figures 1–2

Actaea dovii STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 10, 1871, p. 104 (type-localities, San Salvador and Panama; type from Panama, 1021, Mus. Comp. Zoöl.).[32]—A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 244, pl. 45, fig. 1.—FAXON, Mem. Mus. Comp. Zoöl., vol. 18, 1895, p. 16.—RATHBUN, Proc. Washington Acad. Sci., vol. 4, 1902, p. 281.

Diagnosis.—Granulation finer and denser than in *A. setigera*, especially on posterior portion of carapace.

Description.—The Pacific counterpart of *A. setigera*. The terminal segment of the male abdomen is more triangular than in *setigera;* the granulation of the carapace finer, specimens of similar size compared. There is considerable difference in the smaller specimens of *dovii*. A female from Panama is most sharply marked and has also the edge of front finely but distinctly beaded. A little larger female from Perico Island has lower and very inconspicuous granulation, almost hidden by fine hairs; granulation of front edge almost negligible. A male 7.1 mm. wide from Albemarle Island is narrower, granulation low and scabrous and, with the areolation almost disappearing in its posterior part; edge of front smooth. In none of the specimens is the granulation of the posterior regions more distinct than in *setigera*, as stated by Stimpson.

Color.—Eleven orange-red stripes extend backward from frontal and antero-lateral margins and converge posteriorly (25668).

Measurements.—Male, type, according to Stimpson, length 11.4 mm. (.45 inch), width 16 mm. (.63 inch). Female (20600), length 6.3, width 9.6 mm. Female (33264), length 7.2, width 10.3 mm.

Range.—San Salvador, Central America to Ecuador (Nobili) and Galapagos Islands.

Material examined.—Panama: Reef; March 12, 1891; *Albatross;* 1 young female (20600). March 15, 1860; A. Agassiz; 1 male (1021, M.C.Z.). Dr. Sternbergh, *Hassler* Exped.; 2 females (2210, M.C.Z.). Perico Island; Bay of Panama; October 26, 1904; *Albatross;* 1 young female (33264), 1 young female (M.C.Z.).

Taboga Island, Panama; July, 1924; E. Deichmann; 2 females (60718).

Reef N. of Tagus Cove, Albemarle Island, Galapagos Islands; March 16, 1899; Hopkins Stanford Expedition; 1 male (25668).

Other records.—S. Josá, Pearl Islands, Bay of Panama (Odhner); Ecuador.

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[32] The specimen collected in Panama by A. Agassiz is not marked "type".

ACTAEA BIFRONS Rathbun

Plate 104, Figures 3–6

Actaea bifrons RATHBUN, Bull. Lab. Nat. Hist. State Univ. Iowa, vol. 4, 1898, p. 262, pl. 4, figs. 3 and 4 (type-locality, off Aspinwall [Colon], 34 fathoms; type, Cat. No. 7803, U.S.N.M.); Bull. U. S. Fish Comm., vol. 20 for 1900, pt. 2 (1901), p. 34.—ODHNER, Göteborg's K. Vet. Handl., Fjärde Följden, vol. 29, No. 1, 1925, p. 50, pl. 3, figs. 12 and 12*a*.

Diagnosis.—Carapace flattish, granulation sparse anteriorly; front steeply inclined; palm concealed by long thick hair; fingers long, smooth and punctate, not channeled.

Description.—Compared to *A. setigera*, carapace narrower and flatter, areolations similar, but epigastric and postfrontal lobes sharply set off, sparsely granulate, marginal lobes more angular. Single hairs on carapace especially on side margins; like the remaining hairs, they are weak and colorless, not stiff and yellow as in *setigera*. Frontal

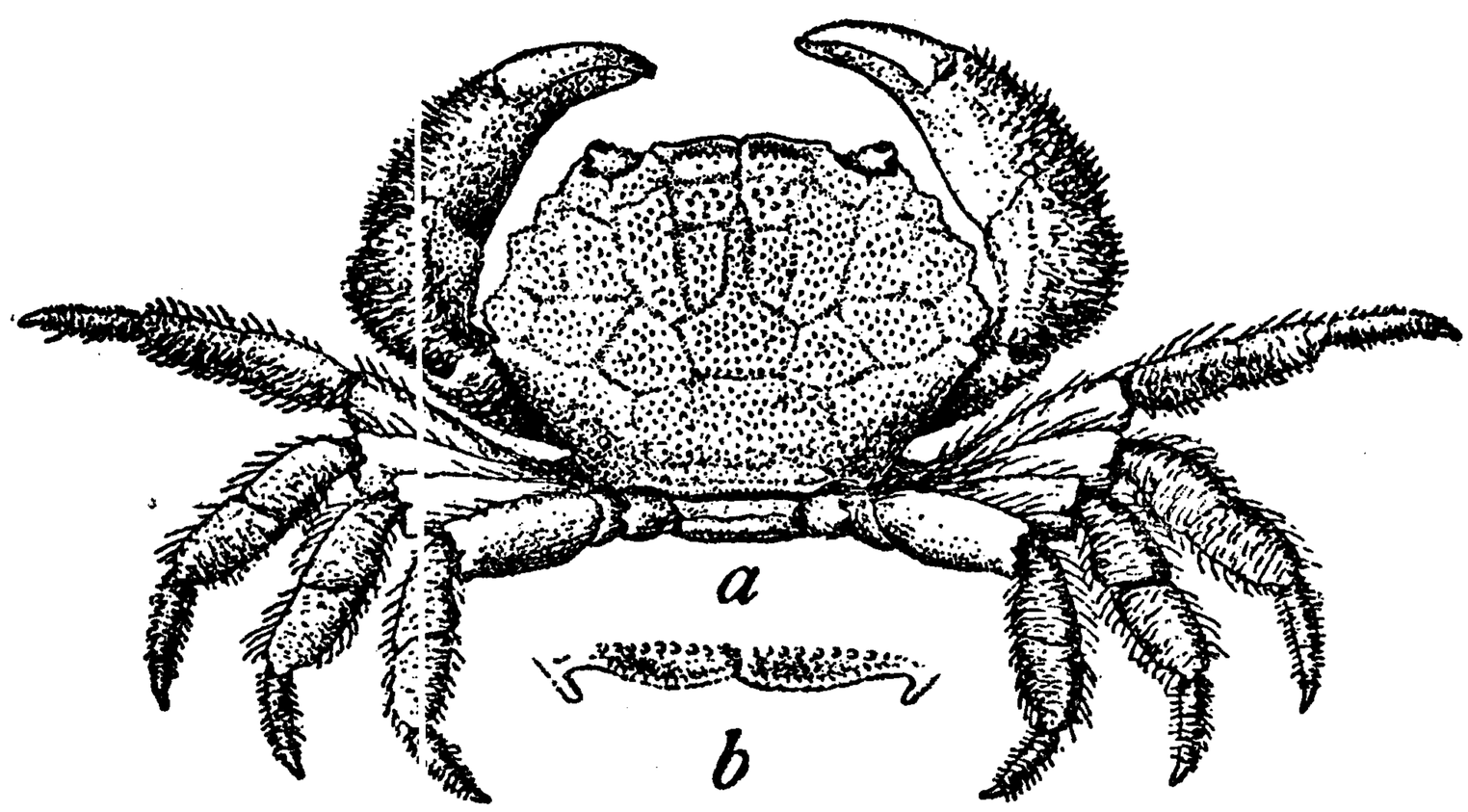

FIGURE 41.—ACTAEA BIFRONS, MALE. *a*. DORSAL VIEW, ×3.2. *b*. FRONT, ×6.4

lobes bent abruptly down, margins little advanced. Eyes larger; tooth at lower inner angle of orbit prominent. Chelipeds differ from those of *setigera* in the fingers longer in proportion to the palm, more strongly bent downward, and smooth, not channeled but with two rows of punctae on outer surface; in the immovable finger wider at base than the movable; in the granules of wrist and hand nearly concealed by thick hairy covering. Ambulatory legs tolerably hairy, especially the dactyls.

Color.—Carapace above reddish orange; fingers faded brownish black (Henderson).

Measurements.—Ovigerous female (53769), total length of carapace 7, width 10.5 mm. Female, Spanish Water, length of carapace 10.5, width 15.2 mm.

Range.—Florida Keys to north coast of South America. To a depth of 40 fathoms.

Material examined.—Western Dry Rocks, Key West, Florida; 25 fathoms; J. B. Henderson; 1 ovigerous female (53769).

Porto Rico; 1899; *Fish Hawk:* Off Vieques Island; North Cabras Island, NE. ⅜ E., 10½ miles; 12 fathoms; Co.; temp. 27° C.; station 6094 (166); 1 young (24298). Ensenada Honda, Culebra; February 11; 1 female (24299).

Barbados; 1918; Barbados-Antigua Expedition, State University of Iowa: 1 male (Mus. S.U.I.). Shoal Bank; 20–40 fathoms; sponge bottom; station 101; 1 male (57986). Shoal Bank, about 3 miles W. of Needham Point; 20–40 fathoms; bottom rough; June 12; station 96; 1 male (Mus. S.U.I.).

Spanish Water, Curaçao, Venezuela; in *Porites furcata;* 1920; C. J. van der Horst; 1 female (Amsterdam Mus.).

Off Aspinwall [Colon], Panama; lat. 9° 32′ 20″ N., long. 79° 54′ 45″ W.; 34 fathoms; Co.; temperature 78.5° F.; April 2, 1884; station 2147, *Albatross;* 1 male (7803), holotype.

Other records.—Salt Island, Virgin Islands, 40 fathoms (Odhner), and St. Bartholomew, 10–16 fathoms (Odhner).

ACTAEA ANGUSTA Rathbun

Plate 104, Figures 7 and 8

Actaea angusta RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 582, pl. 42, fig. 2 (type-locality, off Hood Island, Galapagos Islands, 20 fathoms; type, Cat. No. 21578, U.S.N.M.).

Diagnosis.—Carapace narrow, posteriorly areolated; lateral lobes dentiform; granulation on chelipeds coarser than on carapace; fingers rough.

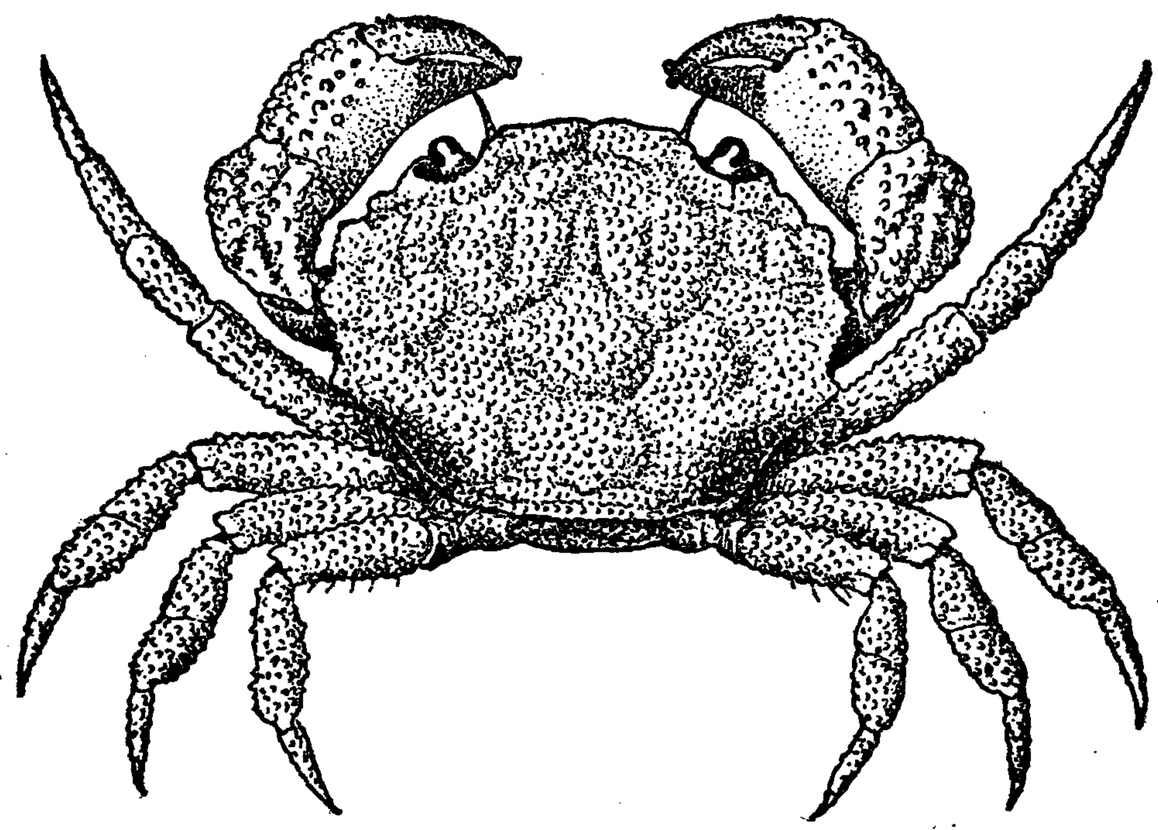

FIGURE 42.—ACTAEA ANGUSTA, FEMALE, HOLOTYPE, CARAPACE 6 MM. WIDE, DORSAL VIEW

Description.—Carapace narrow, slightly convex, areolate on posterior as well as anterior half; areoles granulate. Metagastric and cardiac regions very broad. Front slightly deflexed, margin visible in dorsal view, its lobes oblique, nearly straight; a broad median V. Lateral lobes four (besides the orbital), dentiform, first very short, second twice as long, third much the longest. Inner suborbital lobe rounded, prominent. Chelipeds covered with large sharp granules, carpus deeply grooved, granules of hands in longitudinal rows, fingers deeply channeled, intervening ridges granulate on proximal half.

Measurements.—Female holotype, length of carapace 4.3, width 5.8 mm.

Range.—Known only from the type-specimen (female) from off Hood Island, Galapagos Islands; lat. 1° 21′ 30″ S.; long. 89° 39′ 45″ W.; 20 fathoms; Co. S.; April 7, 1888; station 2812, *Albatross* (21578).

ACTAEA RUFOPUNCTATA NODOSA Stimpson

Plate 105, Figures 1–2

Actaea nodosa STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 203 [75] (type-locality, Tortugas, Florida; type not extant).—A. MILNE EDWARDS, Nouv. Arch. Mus. Hist. Nat., Paris, vol. 1, 1866, p. 266, pl. 17, figs. 6–6*c*.

Actaea rufopunctata var. *nodosa* MIERS, *Challenger* Rept., Zool., vol. 17, 1886, p. 122.—A. MILNE EDWARDS and BOUVIER, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 316.

Actaea rufopunctata nodosa RATHBUN, Bull. U. S. Fish. Comm., vol. 20 for 1900, pt. 2 (1901), p. 33.

Actaea rufopunctata ODHNER, Göteborg's K. Vet. Handl., Fjärde Följden, vol. 29, No. 1, 1925, p. 60 (part).

Diagnosis.—Carapace nodulous, nodules high and formed by distinct granules. Internodular depressions hairy. Anterior mesogastric nodule small. Nodules 1 F not fused with frontal margin.

Description.—Carapace broad, ovoid, its extreme length not quite three-fourths, but more than two-thirds its extreme breadth; its surface broken by deep and broad grooves into numerous (about twenty-seven, excluding those around the orbits and the front) very convex lobules, which are covered very closely with large vesiculous granules; grooves filled with a dense short felt, with longer hairs sometimes interspersed, against which the lobules stand out like islands. Exposed surface of carpal and propodal joints of chelipeds and legs lobulated in same style as carapace. Front strongly deflexed, but somewhat prominent and rather sharply bilobed. The tumid supraorbital margin broken by two cross grooves and separated from lower margin of orbit by a fissure. Antero-lateral borders cut into four rounded lobules of nearly equal size by deepish fissures. Outer angle of basal antennal joint in contact with inner angle of lower edge of orbit. Edges of legs and of arm fringed with coarse hair. Lower outer surface of hand with granules arranged in lines. Fingers blunt-pointed, hollowed out at tip.

This subspecies or variety or form which inhabits the Atlantic is distinguished from the principal or typical form which inhabits the Pacific and Indian Oceans by the reduction of the small anterior median nodule of the mesogastric region. It may extend to the middle of the adjacent protogastric nodule, while in typical *rufopunctata* it extends as far as, or farther than, the end of that nodule. The frontal nodules (1 F) are not fused with the margin of the front.

Measurements.—Female (15010), length of carapace 16, width 22.7 mm. Female (Stimpson), length 16.25 mm. (0.64 inch), width 24.63 mm. (0.97 inch).

Range.—Florida Reefs, Bahamas, and West Indies to Bahia, Brazil; Ascension Island, South Atlantic. To a depth of 70 fathoms.

Material examined.—Off Biscayne Bay, Florida; 16 to 34 feet; May 29, 1912; Paul Bartsch; 1 male (53767).

Indian Key, Florida; 1884; Edward Palmer; 1 female (15010).

Key West, Florida; 1885; Henry Hemphill; 1 female (15009).

Tortugas, Florida: June 5–8, 1893; Biological Expedition, State University of Iowa; 1 female (S.U.I.). Bush Key; June, 1921; Paul Bartsch; 1 female (57130). About 8 miles S. of No. 2 buoy (sponge haul); 25 fathoms; June 11, 1925; station 217; W. L. Schmitt; 2 carapaces (60848); gift of Carnegie Institution.

Off Charlotte Harbor, Florida; lat. 26° 33′ N., long. 83° 10′ W.; 28 fathoms; sdy.; temperature 66° F. (19° C.); April 2, 1901; station 7123, *Fish Hawk;* 1 young female (25609).

Andros Islands, Bahamas; in sponge; Frederick Stearns collection; destroyed by fire.

Green Cay, Bahamas; June 30, 1903; B. A. Bean, Geographic Society of Baltimore; 1 female (31063).

Bahia Honda, Cuba; M. Co.; June 4–5, 1914; Henderson and Bartsch, *Tomas Barrera* Exped., station 15; 1 young female (48529).

Esperanza, Cuba; shallow water; May 11, 1914; Henderson and Bartsch, *Tomas Barrera* Exped.; station 21; 1 young male (48530).

Kingston Harbor, Jamaica; May–July, 1896; F. S. Conant; 1 young female (19597).

Between Jamaica and Haiti; lat. 17° 44′ 05″ N.; long. 75° 39′ W.; 23 fathoms; Co. brk. Sh.; February 29, 1884; station 2123, *Albatross;* 1 female (7762).

Between Jamaica and Haiti; lat. 17° 43′ 40″ N., long. 75° 38′ 25″ W.; 52 fathoms; Co. brk. Sh.; February 29, 1884; station 2136, *Albatross;* 1 female (17810).

Porto Rico, 1899; *Fish Hawk:* Off Vieques Island; Point Mula lighthouse, E. ½ N., 11¼ miles; 6 fathoms; Co.; temperature 27.3° C.; February 14; station 6096 (168); 1 young female (24264). Ensenada Honda, Culebra; February 9 and 11; 1 male (24263). Fajardo; February 17; 1 female (24262).

St. Thomas; specimens in Copenhagen Museum.

Off Santa Cruz; 115 fathoms; 1878–79; *Blake* station 132; 1 specimen (2718, M. C. Z.).

Flannegan Passage; 27 fathoms; 1878–79; *Blake* station 142; 2 females (2901, M.C.Z.).

Barbados: 1¼ miles due W. from white lighthouse at Needham Point; in line with red house; 67–70 fathoms; stony; May 17, 1918; station 11, Barbados-Antigua Expedition; 1 young male (S.U.I.). 94 fathoms; 1878–79; *Blake* station 276; 1 specimen (2664, M.C.Z.).

Curaçao, Venezuela; 1920; C. J. van der Horst: Caracas Bay; in coral; April 7; 1 male (Amsterdam Mus.). Spanish Port; May 20; 1 female (56869).

Off Cape Frio, Brazil; 35 fathoms; *Hassler* Exped.; 1 male (2532, M.C.Z.).

Ascension Island; 1889; William Harvey Brown, U. S. Eclipse Expedition to West Africa; 1 young (17805).

ACTAEA SULCATA Stimpson

Plate 105, Figures 3–4

Actaea sulcata STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 203 [75] (type-locality, Cape St. Lucas; type not extant).—A. MILNE EDWARDS, Nouv. Arch. Mus. Hist. Nat., Paris, vol. 1, 1866, p. 267.—ODHNER, Göteborg's K. Vet. Handl., Fjärde Följden, vol. 29, No. 1, 1925, p. 78, pl. 5, fig. 6.

Diagnosis.—Carapace nodulous, nodules deeply and widely separated, less prominent than in *rufopunctata nodosa*, their granules fused. Nodules D and E remarkably small. Nodules 1 F fused with frontal margin.

Description.—Upper surface of carapace divided into 30 flattened, granulate lobules (besides the small ones around orbits), separated by deep pubescent sulci. Owing to fusion of granules, the surface of lobules appears feebly granulate. Posterior lobules less prominent, more distinctly granulated and sometimes concealed by pubescence. According to Odhner the pattern corresponds to that of *A. rufopunctata* with few exceptions: 3 M is rudimentary [as in *r. nodosa*], 4 L and T are united, lobules 1 F are square and fused with the frontal margin; marginal teeth D and E are separate and very small. Furrows between lobules are very wide and covered with a short dark tomentum; three pairs of bunches of hair on carapace.

Chelipeds nodose above like carapace; granules similar, fused, especially on carpus; three such nodules on upper margin of palm; palms and base of fingers strongly granulate externally. Fingers partially excavate at tips. On the hairy ambulatories the granules are fused and form on merus and carpus raised bands which on carpus of first three pairs are U-form and make one continuous crest with those on merus.

Color.—Bright red somewhat maculated or mottled with white.

Measurements.—Female holotype, length of carapace 9.4 mm. (0.37 inch), width 14.2 mm. (0.57 inch) (Stimpson).

Range.—Cape St. Lucas, Lower California, Mexico (Stimpson), to San José, Pearl Islands, Bay of Panama, 15 fathoms (Odhner).

Material examined.—Maria Madre Island, Mexico; March–May, 1927; from Secretaria de Agricultura y Fomento, Mexico, through A. L. Herrera; 1 male (60721).

Maria Madre Island; E. part of bay; 5–8 meters; May 17, 1925; F. Contreras; California Acad. Sci.; 1 male (62696); 1 female, returned.

ACTAEA PALMERI Rathbun

Plate 106, Figures 3–6

Actaea lanigera HANSEN, MS., in Copenhagen Mus.

Actaea palmeri RATHBUN, Proc. U. S. Nat. Mus., vol. 17, advance sheet, March 30, 1894, p. 3; July, 1894, p. 85 (type-locality, Rodriguez Creek, Florida; type, Cat. No. 13927, U.S.N.M.).—ODHNER, Göteborg's K. Vet. Handl., Fjärde Följden, vol. 29, No. 1, 1925, p. 76, pl. 4, figs. 20, 20*a*.

Diagnosis.—Clothed with a thick coat of long hair in which raspberrylike nodules stand out. Fingers sharp-edged, tips acute. A row of denticles on inner margin of ischium of maxillipeds.

Description.—Carapace as well as exposed surface of chelipeds and legs ornamented with raspberrylike nodules; intervening furrows filled with long silky hair which covers also the hinder part of the dorsal surface of carapace as well as the whole exposed under surface of the crab. Nodules of carapace, about 30 in number not counting orbits, vary in form and size and occupy approximately the following areas: 1 M; 2 M (two side by side); 3 M (two median, sometimes grown together in the old, and behind, two lateral, with sometimes another pair very small, still further back, more often concealed); 1–6 L; 1–2 R. The "raspberries" on 1 L, 3 L, 4 L and 1 R follow the antero-lateral margin; in the intervals between them are three sharp incisions well covered with thick hair and best seen from below. Edge of front with three strong U-shaped bays; median lobes and much smaller lobes at outer angles raspberrylike. A small, similar nodule on basal article of outer antenna. Three supraorbital and two suborbital lobules surround the eyes. In front of the first lobule of the side margin (1 L) is another very small one. A still smaller lobule median, on intestinal region immediately behind cardiac region. A pair of low, elongate nodules covered with extremely small and well separated granules occupy the cardiac region, and are seldom exposed.

Inner margin of ischium of outer maxillipeds bears a row of rounded denticles.

Chelipeds with 6 "raspberries" on carpus (7 in large female, 25572), and 5 on hand (6 in 25572), of which 4 form a longitudinal row on upper edge. Lower edge of hand marked by a row of granules. Fingers bare, broad at base, meeting when closed, edges sharp, tips acute and crossing; 3 or 4 prehensile teeth on basal half of each; dactylus with acute granules on upper surface of proximal half, almost concealed by long hair.

The first three ambulatories bear small "raspberries" of which 2 are on the carpus and 2 on the propodus; the carpus of the third pair may have a third nodule. In the last leg the merus has proximally a single granule, distally a small "raspberry," the carpus bears three of which the 2 proximal are near together, and the propodus either two, one, or none.

Color.—Fur olive-buff, "raspberry" protuberances flesh color; eyes bay; fingers vinaceous, tips white (Bartsch).

Measurements.—Female (25572), total length of carapace 25, width 34.6 mm. Male holotype, total length of carapace 16, width 21 mm.

Range.—Florida Keys and the Bahamas to north coast of South America. Shallow water to 78 fathoms.

Material examined.—Off Biscayne Key, Florida; 16–34 feet; May 29, 1912; Paul Bartsch; 2 females (45623).

Elliott Key, Florida; 1901; J. E. Benedict; 2 females (25572).

Rodriguez Creek, Florida; Edward Palmer; 2 males, 2 females (13927).

Cotton Key Lake, Florida; from sponges; February 5, 1903; *Fish Hawk;* 2 females (53766).

Off Sand Key, Florida; 50 fathoms; 1913; J. B. Henderson; 1 young female (46065).

Bahama Banks; 1893; State University of Iowa Expedition to Bahamas; 1 male (S.U.I.).

Inside of Golding Key, Andros Islands, Bahamas; 1912; Paul Bartsch; 1 female (45575).

Golding Key, Andros Islands, Bahamas; May 15, 1912; Paul Bartsch; 1 female (45549).

Bahamas; June 15, 1859; Dr. Henry Bryant; received from Boston Society of Natural History; 1 male (56803).

Off Havana, Cuba; lat. 23° 10′ 28″ N., long. 82° 20′ 27″ W.; 78 fathoms; Co.; May 1, 1884; station 2169, *Albatross*; 1 female (7799).

Miragoane, Haiti; from coral; September 10, 1927; Walter J. Eyerdam; 1 immature female (60720).

St. Thomas, Virgin Islands; Riise collector; three specimens (Copenhagen Mus.).

Harbor of St. Thomas, Virgin Islands; from sponge; July 11, 1915; Clarence R. Shoemaker; received from Carnegie Institution; 1 male (53765).

Caracas Bay, Curacao, Venezuela; among branches of *Porites furcata;* April 29, 1920; C. J. van der Horst; 1 male (Amsterdam Mus.).

ACTAEA ACANTHA (Milne Edwards)

Plate 105, Figure 5; Plate 106, Figures 1 and 2

Cancer acanthus MILNE EDWARDS, Hist. Nat. Crust., vol. 1, 1834, p. 379 (type-locality unknown; type in Paris Mus.).

Actaea acantha A. MILNE EDWARDS, Nouv. Arch. Mus. Hist. Nat. Paris, vol. 1, 1865, p. 278, pl. 17, fig. 1 (Ile Maurice ?); Crust. Rég. Mex., 1879, p. 245, pl. 43, figs, 1–1*c* (Guadeloupe).—RATHBUN, Bull. U. S. Fish Comm., vol. 20 for 1900, pt. 2 (1901), p. 34.—ODHNER, Göteborg's K. Vet. Handl., Fjärde Följden, vol. 29, No. 1, 1925, p. 53, pl. 5, figs. 10, 10*a*.

Actaea spinifera KINGSLEY, Proc. Acad. Nat. Sci. Philadelphia, vol. 31, 1879 (1880), p. 392 (type-locality, Plantation Key, Florida; type in Mus. Phila. Acad.).

Diagnosis.—Carapace, chelipeds and legs covered with conical spines or tubercles; lateral lobes bordered with spines; fingers short, channeled, rough except at tips.

Description.—Carapace and feet covered with long hairs; lobules of anterior portion of carapace very prominent, covered with pointed tubercles or spinules, between which are deep smooth grooves. Frontal lobes four, outer pair small, forming inner angle of orbit, those of inner pair large, separated by a relatively broad median U. Margin of front and orbits armed with spines. Antero-lateral margin cut into five lobes, each armed with three or four spines; outer orbital angle also spinulous. Postero-lateral borders concave. Posterior margin marked by rows of tubercles. Basal article of antenna spinulous. Merus of outer maxillipeds tuberculate, margins denticulate. Chelipeds subequal. Wrist and hand covered with spines; fingers short, spinulous, blunt, and somewhat hollowed out at tips; white at tips, remainder black, the black color extending in old males over nearly the whole hand. Ambulatory feet spinous.

Color.—Purplish, pincers brown (Desbonne and Schramm).

Measurements.—Male (56802), total length of carapace 22.3, width 31, fronto-orbital width 15.8, width of front 9, width across submedian lobes 5.8 mm. Female (48568) total length of carapace 22.3, width 32.4, fronto-orbital width 16.2, width of front 9.6, width across submedian lobes 6.6 mm.

Range.—Florida Keys to Fernando Noronha, Brazil. To a depth of 10 fathoms.

Material examined.—

Rodriguez Creek, Florida; 1884; Edward Palmer; 1 young (14428).

Bird Key reef, Tortugas, Florida; W. L. Schmitt; gift of Carnegie Institution: South end of reef; washed from seaweed from four rocks cracked up; July 31, 1924; 1 female (59407). Mid-section; August 1, 1924; 1 male (59408). Low tide; June 7, 1925; station 25–6; 1 male, 1 female (60844).

Florida; exact locality not given; possibly a topotype of *A. spinifera*; "Kingsley collection"; received from Boston Society of Natural History; 1 male (56802).

Nassau, Bahamas; April 15, 1902; Dr. George B. Shattuck; received from Geographic Society of Baltimore; 1 female (31047).

Cabañas, Cuba; 2 to 12 fathoms; sand, shell, grass to mud bottom; June 8–9, 1914; Henderson and Bartsch, *Tomas Barrera* Exped., station 16; caught by copper sulphating on reef; 1 female (48568).

Kingston Harbor, Jamaica; 1893; R. P. Bigelow; 1 female (17966).

Miragoane, Haiti; from coral; September 10, 1927; Walter J. Eyerdam; 1 female (60716).

Off Gallards Bank, Porto Rico; tangent of Murillo de Cabo Rojo, E. SE. ¾ E., 9⅓ miles; 10 fathoms; Co. S.; temperature 26.3° C.; January 26, 1899; station 6076 (148), *Fish Hawk;* 1 female (24272).

Fernando Noronha, Brazil; 1876–1877; R. Rathbun, Hartt Explorations; 2 males (40625).

Other records.—St. Bartholomew (Odhner); Guadeloupe (Desbonne and Schramm); Fernando Noronha (Pocock).

Genus GLYPTOXANTHUS A. Milne Edwards

Glyptoxanthus A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 253; type, *G. erosus* A. Milne Edwards=*Actaea erosa* Stimpson, 1859.

Actaea ODHNER, Göteborg's K. Vet. Handl., Fjärde Följden, vol. 29, No. 1, 1925, p. 35 (part).

Near *Actaea.* Body thick, the lateral margin continued anteriorly downward and forward to the angle of the buccal cavity; suborbital region deep. Antero-lateral margin distinctly separated from the postero-lateral, having a strong tooth or lobe at the lateral angle. Surface, in American species, deeply eroded, above and below and on the appendages, except the dactyls of the ambulatories which are rough with granules and sharp spinules. The frontal lobes are rounded and deflexed to a line below the level of the orbits. Orbits deep and almost round. Basal antennal article wide and wedged between front and lower margin of orbit. Inner distal angle of merus of maxilliped deeply cut. Fingers pointed. Ambulatory legs strong; they with the chelipeds when retracted fit close together.

Middle America; West Africa; Cape Verde Islands; Red Sea.

KEY TO THE AMERICAN SPECIES OF THE GENUS GLYPTOXANTHUS

A¹. Cardiac elevation without long transverse furrows. Both lateral and median mesogastric punctae.

B¹. Vermiculations very rough, intervening furrows narrow. 5 L convex. Outer areole of 2 M independent anteriorly..... **erosus, p. 263.**

B². Vermiculations smooth, intervening furrows wide. 5 L flat. Outer areole of 2 M entirely independent..... **labyrinthicus, p. 266.**

A². Cardiac elevation with two long transverse furrows. Mesogastric punctae median only. Outer areole of 2 M confluent with epigastric area..... **vermiculatus, p. 266.**

ANALOGOUS SPECIES OF GLYPTOXANTHUS ON OPPOSITE SIDES OF THE CONTINENT

Atlantic	Pacific
erosus	*labyrinthicus*

GLYPTOXANTHUS EROSUS (Stimpson)

Plate 107

Actaea erosa STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1859, p. 51 [5] (type-locality, Florida; type not extant).

Xantho vermiculatus DESBONNE and SCHRAMM, Crust. Guadeloupe, 1867, p. 27 (*teste* A. Milne Edwards).

Glyptoxanthus erosus A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 254, pl. 43, figs. 3 and 3*a;* pl. 44, figs. 4–4*c*.

Diagnosis.—Surface vermiculated; vermiculations rough; furrows between them narrow; punctae numerous; mesogastric punctae median and lateral; 5 L convex.

Description.—Carapace flattened in its posterior three-fourths and transversely so in its middle two-thirds. Frontal and antero-lateral regions rolling convexly downward. The whole upper and lower surface of body and feet, exposed when the chelipeds and legs are flexed, has a deeply eroded or vermiculated appearance, being filled with small cavities which make a regular pattern. The elevated portions between the cavities are formed by masses of small granules crowded close together. This produces a very rough surface in the young and half grown; in the old the surface has worn off until it is more or less smooth and the granulation is evident only with a lens and is indicated largely by small punctae between granules. Margins of cavities fringed with short pubescence. Carapace areolated, but the divisions are to a large extent rendered indistinct by the character of the surface. Lateral boundaries of gastric region deep; also the median suture from the frontal margin to the mesogastric region. A transverse suture runs a little behind each orbit, between the marginal teeth E and N and forms the anterior boundary of the outer of the two protogastric areoles. Another transverse suture extends from near the median line in front of the cardiac region outward to the base of marginal tooth S. A suture across the carapace behind cardiac region is partly interrupted at middle by a small, transverse nodule. From the gastric region a curved suture concave forward, separates 2 L, 3 L, N from 5 L, 4 L, T. Front steeply inclined; median lobes evenly rounded, separated by a V notch from each other and by a broad oblique rounded sinus from the small, conical, blunt outer lobes. Outer angle of orbit neither dentiform nor projecting. The first of the four antero-lateral teeth (E of Dana) is prominent, a little below the orbital level, the inner and inferior slope of its acute edge is directed toward the angle of the buccal cavity. Lobes N and T are successively longer than E; above T is a shallow blunt point on the lobe 4 L. S is dentiform, subacute and set off from the rest of the margin.

On the ischium of the outer maxilliped is an obliquely longitudinal erosion pointed at both ends and extending nearly the whole length of the article; a second, parallel suture on the outer distal half forms part of an erosion which involves the adjacent carapace. A notch on anterior margin of merus.

Hands short and broad, upper surface divided by furrows into transverse tuberculate ridges, outer surface divided into longitudinal ridges the tubercles of which are smaller and better defined. Fingers short, deeply grooved, 4-5-toothed within, dactyls tuberculate at base on the upper side. Ambulatory legs with hairy edges, dactyli pubescent.

On the first five segments of the abdomen the eroded cavity is transverse and in the male occupies the entire width of segment.

Color.—A specimen in formalin was cream white with blotches and small spots of bright red, especially persistent on the ambulatory legs, the dactyls of which are red at base and yellowish distally.

Measurements.—Male (25573), entire length of carapace 33, width 47.3 mm.

Range.—Bahamas; east Florida; Gulf of Mexico. Guadeloupe (Desbonne and Schramm, as *vermiculatus*). On coral reefs, to a depth of 36 fathoms. (A. Milne Edwards.)

Material examined.—

BAHAMAS.—Frederick Stearns collection; specimens destroyed by fire.

FLORIDA.—Biscayne Bay; 1901; J. E. Benedict; 1 male (25573).

Cape Florida; G. Wurdemann; Gray Fund, June, 1859; 1 male, 1 female (2217, M. C. Z.).

Tortugas; June–August, 1926; W. H. Longley; 1 female (60719).

Tortugas; W. L. Schmitt; gift of Carnegie Institution: West of Loggerhead Key; six dredge hauls off dock and north of lighthouse pier; 8–5 feet; August 3, 1924; 1 male (60846). Near Fort Jefferson landing, Garden Key; from rocks and *Halimeda* scraped from rocks; August 17, 1924; 1 male (60845). White Shoals; July 20, 1924; stations 35, 36; 1 young (61104). About 10 miles south of No. 2 buoy; 35–37 fathoms; coarse sand; June 10, 1925; haul 206; 2 carapaces (60847).

Southwest of Cedar Keys; lat. 28° 46′ 00″ N.; long. 84° 49′ 00″ W.; 26 fathoms; crs. S. Co.; March 15, 1885; station 2406, *Albatross;* 1 male (17814).

Southwest of Cape San Blas; lat. 29° 17′ 00″ N.; long. 85° 30′ 45″ W.; 26 fathoms; gy. S. brk. Sh.; February 7, 1885; station 2371, *Albatross;* 1 female (9608).

Pensacola; in stomach of fish; D. S. Jordan; 1 male, much defaced (4665).

LOUISIANA.—Grand Isle; June 25, 1928; E. H. Behre; 1 young (63038).

MEXICO.—Campeche Snapper Banks, NE. coast of Mexico; Joseph Lee; one specimen returned to sender.

Off Cape Catoche, Yucatan; lat. 22° 18′ 00″ N.; long. 87° 04′ 00″ W.; 24 fathoms; wh. R. Co.; January 30, 1885; station 2365, *Albatross;* 2 males, 2 females (9585).

Off Cape Catoche, Yucatan; lat. 22° 07′ 30″ N.; long. 87° 06′ 00″ W.; 21 fathoms; wh. R. Co.; January 30, 1885; station 2363, *Albatross;* 3 males, 1 female (15001).

GLYPTOXANTHUS LABYRINTHICUS (Stimpson)

Plate 108, Figures 1–3

Actaea labyrinthica STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 204 [76] (type-locality, Panama; type not extant).

Actaea meandrica LOCKINGTON, Proc. California Acad. Sci., vol 7, 1876 (1877), p. 97 [3] (type-locality, Mulege Bay, Gulf of California; types not extant).

Glyptoxanthus labyrinthicus A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 255, pl. 43, figs. 4–4*b*.

Diagnosis.—Surface vermiculated; vermiculations smooth; furrows between them wide; punctae relatively few; mesogastric punctae median and lateral; 5 L flattened.

Description.—Carapace flatter than in *erosus*, less minutely eroded or vermiculated; furrows wider, the prominent parts between principal furrows of erosion being smaller, flatter, and smoother; they are covered with a very fine flat granulation not at all rough. The difference in elevation is especially notable in the area 5 L. The tubercles on outer surface of hands are pointed or mammilliform.

Lockington says: "This little crab has a peculiarly compact appearance. The rugosities of its limbs are so arranged that when they are folded up close to the carapax not a portion of smooth surface can be seen either above or below, the only smooth portions being lateral and hidden."

Color.—Variegated with yellow and carmine (Stimpson).

Measurements.—Female (3272), total length of carapace 23.2, width 32.8 mm.

Range.—West coast of Mexico; Panama; Galapagos Islands.

Material examined.—Panama: Rev. J. Rowell; 1 male, type (1295, M.C.Z.). Capt. John M. Dow; 1 male, 1 female (3272). Darien Exped., Dr. Maack; 2 males (2218, M.C.Z.). On reef: March 12, 1891; *Albatross;* 1 male (20604).

Pearl Islands, Panama Bay; April, 1875; S. Garman; 1 female (2306, M.C.Z.).

Galapagos Islands; June, 1872; *Hassler* Exped.; 1 female (2219, M.C.Z.), slight variation.

GLYPTOXANTHUS VERMICULATUS (Lamarck)

Plate 108, Figure 4; Plate 109

Cancer vermiculatus LAMARCK, Hist. Nat. Anim. sans Vert., vol. 5, 1818, p. 271 (type-locality unknown; type in Paris Mus.).

Xantho vermiculatus MILNE EDWARDS, Hist. Nat. Crust., vol. 1, 1834, p. 391.—A. MILNE EDWARDS, Nouv. Arch. Mus. Hist. Nat., Paris, vol. 4, 1868, p. 49.

Actaea angolensis BRITO CAPELLO, Desc. alg. esp. nov. Crust. e Arach. Portugale poss. Port. do ultramar, 1866, p. 4, pl. 1, fig. 3–3*b*; reprinted in Mem. Acad. R. Sci. Lisboa, Cl. de Sci. Nat., new ser., vol. 4, 1867, pt. 1 (type-locality, Angola; type in Lisbon Mus.).

Glyptoxanthus vermiculatus A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 255, pl. 43, figs. 2–2*b*.—RATHBUN, Proc. U. S. Nat. Mus., vol. 22, 1900, p. 288.

Actaea (*Psaumis*) *maeandrina* KLUNZINGER, Nova Acta, Abh. K. Leop.-Carol. Deutschen Akad. Naturforscher, vol. 1c, No. 2, 1912, p. 89 [185], pl. 1 [5], fig. 5*a*–5*b*, pl. 6 [10], fig. 4 (type in Stuttgart Mus.).

Actaea vermiculata ODHNER, Göteborg's K. Vet. Handl., Fjärde Följden, vol. 29, No. 1, 1925, p. 57, pl. 4, fig. 1.

Diagnosis.—Surface vermiculated; vermiculations smooth, showing boundaries between granules; elongate furrows replacing most punctae; cardiac elevation crossed by two long transverse furrows; all mesogastric punctae median.

Description.—In some respects intermediate between *erosus* and *labyrinthicus;* as for example, in convexity of carapace and of vermiculations, and in distinctness of granulation. The raised surface is composed entirely of granules crowded close together and smoothed off so that the elevations present a glossy surface ornamented with darker lines indicating boundaries of granules. Sutures between larger divisions, as well as smaller ones, wide as in *labyrinthicus.*

The number of depressions in the vermiculations is fewer than in either of the other species, partly due (1) to the confluence of two or more depressions to form elongate ones as on 5 L and 2 M and most noticeably on 1 P where there are two long transverse furrows, and (2) to the opening of many of the small depressions into the furrows bordering the islets instead of being entirely enclosed. 3 M has only three depressions, all median, against six (four in a transverse line, two median) in *labyrinthicus* and *erosus.*

The connections of certain areoles are different in the three allied species. The outer protogastric areole (2 M) is independent in *labyrinthicus*, continuous with the epigastric area in *vermiculatus*, while in *erosus* it is free anteriorly but confluent posteriorly with the mesogastric areole. 2 L and 3 L are united in *vermiculatus* and *erosus*, separate in *labyrinthicus.*

Tubercles on outer surface of palm acutely pointed as in *labyrinthicus* but much more complex in their basal outlines.

Color.—White, including the fingers in their whole length; ambulatory claws horn color (Klunzinger).

Measurements.—Female (7589), entire length of carapace 21.8, width 32.6 mm.

Range.—Curaçao, South America; Angola, West Africa (Brito Capello, Osorio).

Material examined.—Curaçao; February 10–18, 1884; *Albatross;* 1 female (7589).

Remarks.—Brito Capello's figure shows the two elongate cardiac furrows; on the other hand the areoles are represented much more subdivided and the outer furrow on the ischium of the external maxilliped much longer and more complete than in the Curaçao specimen here described. The American and African forms are

united on the authority of A. Milne Edwards (1868) who says, "Le *Xantho vermiculatus* des Antilles a été signalé à Angola par M. Capello."

Genus DAIRA de Haan

Daira DE HAAN, Fauna Japon., Crust., 1833, pp. 4 and 18; type, *D. perlata* (Herbst) = *Cancer perlatus* Herbst, 1790 = *Cancer daira* Herbst, 1801 = *Cancer* (*Daira*) *perlatus* de Haan, 1833.

Lagostoma MILNE EDWARDS, Hist. Nat. Crust., vol. 1, 1834, p. 386; type, *L. perlata* (Herbst) = *Cancer perlatus* Herbst, 1790.

Carapace broad, oval, strongly convex in both directions, regions well delimited and subdivided into very numerous rounded, convex lobules; antero-lateral borders strongly arched, crenate; postero-lateral borders concave, very short. Front deflexed, bilobed, lobes conspicuous and prominent. Orbital margin thickened and smoothly crenulate, a strong suture line in lower margin. Eyes on short thick subglobular stalks. Antennules folding obliquely owing to large size of basal article; interantennular septum broad. Basal article of antenna not touching front, the next article and the very short flagellum wedged in gap between orbit and front. Merus of outer maxillipeds with a wide and deep notch in anterior margin.

Chelipeds unequal in both sexes; finger tips either spoon-shaped or acute. Upper edge of merus of chelipeds and legs crestlike, serrated; upper edge of succeeding joints of legs with a crest of stout sharp spines; all this ornamentation concealed by a thick fringe of long coarse hair. Abdomen of male with all seven segments distinct, but the 3rd–5th not movable on one another. (After Alcock.)

Contains two species, *D. perlata*, widely distributed through the Indo-Pacific region, and *D. americana* from the west coast of middle America.

DAIRA AMERICANA Stimpson

Plate 110, Figures 1 and 2

Daira americana STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 212 [84] (type-locality, Cape St. Lucas; type in M.C.Z.).—A. MILNE EDWARDS, Nouv. Arch. Mus. Hist. Nat., Paris, vol. 1, 1866, p. 299, pl. 16, figs. 4–4*c*.

Diagnosis.—Thick tufts of hair among tubercles of carapace. Finger tips pointed, not spooned.

Description.—The furrows separating the different areoles or groups of tubercles on the carapace are filled with thick tufts of coarse hair; these tufts are scarce on the posterior third of the carapace, and are almost absent from a young female 10.8 mm. wide. Tubercles crowded with fine flattened granules, and marked in many cases with impressed lines or patterns of punctae; punctate lines also separate individual tubercles. The five large crenations of the antero-lateral margin are separated by units of one or two smaller crenations, best seen from below, hairy above.

Upper and outer surface of wrist lobulated like the carapace but without hairy tufts. The same surface of hand and dactylus covered with more or less conical tubercles. Upper part of inner surface of wrist and hand covered with a mosaic of flat markings; a similar mosaic occurs on outer surface of arm and merus of legs, but on the dactyli and propodites of the legs the tubercles are either spiny or acute. Fingers pointed, cutting edges dentate in both chelae. Lower edge and surface of merus of legs somewhat excavate to receive the bulging of carpus and propodus in flexion. Upper edge of legs down to the propodus fringed with hair which partially conceals their sculpture. A few brushes of hair on under side of propodus and dactylus.

Color.—Specimens in alcohol are shaded brown, darker anteriorly.

Measurements.—Female (5768), total length of carapace 26, width 37 mm.

Range.—Lower California ["California," A. Milne Edwards] to Ecuador (Nobili).

Material examined.—Cape St. Lucas, Lower California, Mexico; John Xantus; 1 male, type (1275, M. C. Z.). Socorro Island, Mexico; Hanna and Jordan, California Acad. Sci.; 1 young female, returned. Panama; Capt. John M. Dow; 2 females, 1 young (5768).

Genus CARPOPORUS Stimpson

Carpoporus STIMPSON, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 138; type, *C. papulosus* Stimpson.

Carapace subhexagonal, nearly as long as broad; antero-lateral margin in a line which conducts beneath the orbit anteriorly, armed with about three small teeth and drawn in posteriorly, the greatest breadth of the carapace being at the penultimate tooth; postero-lateral about as long as posterior margin; facial region very broad; front prominent. Orbit circular. Basal article of antennae narrowing forwards, reaching the front, and the hiatus of the orbit; movable part of peduncle very small; flagellum about as long as eye. Chelipeds when retracted having a large hole above between the carpus and manus for the passage of water to the afferent branchial apertures. Third, fourth, and fifth segments of the male abdomen fused; terminal segment as broad as long.

Contains only one species.

CARPOPORUS PAPULOSUS Stimpson

Plate 110, Figures 3–6; Plate 111

Carpoporus papulosus STIMPSON, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 139 (type-localities, SW. of Tortugas, 25 fathoms, and off Carysfort Reef, 52 fathoms; types not extant).—A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 247, pl. 44, figs. 1–1*d*.

Diagnosis.—Chelipeds with a large hole above between carpus and manus. Lobes of front very oblique, edge concave. Color of fixed finger encroaching very slightly on palm.

Description.—Carapace naked above, areolated; areolets protuberant, somewhat wartlike and granulated; gastric and epibranchial regions very prominent. Lateral teeth small, spiniform, their interspaces armed with denticles, two or three in number. Front strongly projecting at middle and bilobed, margin of lobe concave, inner end rectangular, outer end spiniform. Peduncle of eye granulated, a few spinules at summit. Orbit with the margin sharply granulated above, two closed fissures faintly indicated, no tooth at upper inner angle; two or three spinules below near outer side and a spine at lower inner angle. Exposed portion of outer maxillipeds, except dactyls, ornamented with bead granules.

Chelipeds when retracted having a large hole above between the carpus and manus for the passage of water to the afferent branchial apertures. Near the middle of the inner surface of the manus are two unequal peglike spines, which form in retraction a sort of filter before the branchial opening.

Carpus and hand sculptured externally with granulated protuberances which on the hand are arranged in four or five longitudinal rows; hand serrated above with four teeth, partially joined by a thin web; fingers stout, short, less than half as long as palm. Legs thickly hairy below; carpus and propodus armed posteriorly with acorn-shaped spines.

Measurements.—Male (15006), length of carapace 13.2, width of same 16, fronto-orbital width 9.5, width of front 5.6 mm.

Range.—Off North Carolina to Mexico.

Material examined.—See table, page 271.

Genus LIPAESTHESIUS Rathbun

Lipaesthesius RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 584; type, *L. leeanus* Rathbun.

Anterior portion of carapace very broad, posterior fourth very narrow; anterior half very convex longitudinally, posterior half flattened. Antero-lateral margin arcuate, running obliquely downward to angle of buccal cavity. Front deflexed, forming a projecting hood over the antennules. Orbits small, subcircular, without sutures. The anterior margin of the basal antennal article is joined to the downward prolongation of the front, only the flat lower surface of the article being exposed to view. The epistome has a deep transverse invagination through its entire width. Abdomen of male with third to fifth segments fused. Chelipeds concave on inner side to fit closely against carapace. Last pair of legs fitting into postero-lateral sinus of carapace.

One species only.

Material examined of Carpoporus papulosus

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
North Carolina:	° ′ ″	° ′ ″			° F.						
Between Capes Hatteras and Lookout.	34 38 00	76 12 00	18	fne. gy. S		Oct. 19, 1885	2607	*Albatross*	1♀	11220	
Do	34 37 30	75 39 45	34	yl. S. brk. Sh		Oct. 18, 1885	2604	do	1♂	11225	
Off Cape Lookout	34 26 00	76 12 00	22	fne. gy. S		Oct. 19, 1885	2609	do	1♂	18809	
Florida:											
Off Key West	24 25 45	81 46 00	45	Co	75	Jan. 15, 1885	2318	do	2	15110	
Do	Sand Key Light, WNW., Key West Light, N.		60			June 19, 1893	24	Biological Expedition, State University of Iowa.	4♂ 1♀ 2 y	Mus. S. U. I.	
Tortugas	About 10 miles S. of No. 2 buoy.		35–37	crs. S		June 10, 1925	206	W. L. Schmitt	1♀ 1 y	60859	Gift of Carnegie Institution.
Do	8 miles S. of red buoy No. 2.		25			June 11, 1925	217	do	1♂	61105	Do.
West of Marco	26 13 00	83 44 00	51	wh. S	69	Mar. 18, 1889	5104	*Grampus*	2	15221	
West of Charlotte Harbor.	26 30 00	83 19 00	27.5	gy. S. brk. Sh	67.5	Mar. 23, 1889	5115	do	1	15222	
Do	26 39 00	83 56 30	45	wh. S. Algae	65	do	5119	do	1	15223	
Do	26 33 00	83 10 00	28	sdy	66	Apr. 2, 1901	7123	*Fish Hawk*	1 y	25610	
South of Cape St. George.	28 45 00	85 02 00	30	gy. S. brk. Co		Mar. 15, 1885	2405	*Albatross*	3♂ 2♀ 7 y	15006	
South of St. George Island.	28 46 00	84 49 00	26	crs. S. Co		do	2406	do	3♂ 3♀ 1 y	15007	
Southeast of St. George Island.	28 47 30	84 37 00	24	Co. brk. Sh		do	2407	do	3 y	15008	
Southwest of Cape San Blas.	29 14 00	85 29 15	25	Co		Feb. 7, 1885	2373	do	1♀ 2 y	15004	
Do	29 15 30	85 29 30	27	G		do	2372	do	1♀ 2 y	15003	
Do	29 18 15	85 32 00	25	crs. gy. S. brk. Sh.		do	2370	do	5 y	15002	
West coast of Florida.			25–27			do	2369–2374	do	4 y	20326	
Alabama:											
South of Mobile Bay.	29 27 30	87 48 30	30	crs. S. bk. Sp. Sh.		Mar. 4, 1885	2390	do	1	18010	
Do	29 24 30	88 01 00	35	yl. S. brk. Sp		do	2388	do	2♂	15005	
Mexico: Off Cape Catoche, Yucatan.	22 18 00	87 04 00	24	wh. R. Co		Jan. 30, 1885	2365	do	4	15102	

LIPAESTHESIUS LEEANUS Rathbun

Plate 112

Lipaesthesius leeanus RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 585, pl. 42, figs. 4 and 5 (type-locality, southern part of Gulf of California, 10 fathoms; type, Cat. No. 21581, U.S.N.M.).

Medaeus rugosus BOONE, Zoologica, vol. 8, 1927, p. 201, text-fig. 70 (type-locality, off Gardner Bay, Hood Island, Galapagos Islands; type in Mus. N. Y. Zool. Soc.).

Diagnosis.—Basal antennal article terminating at prolongation of front. Surface of carapace and appendages covered with pearly granules which form a more or less reticulating pattern.

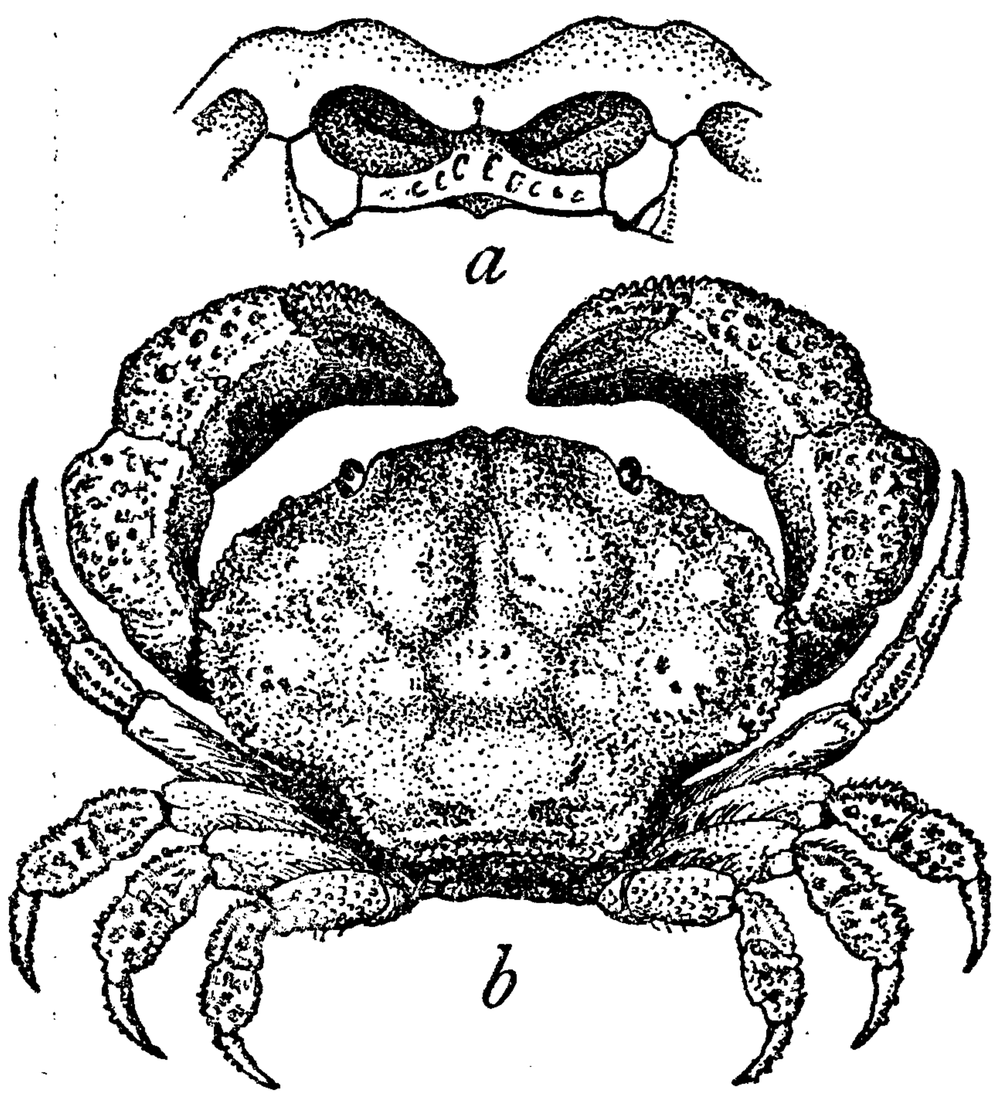

FIGURE 43.—LIPAESTHESIUS LEEANUS, MALE, HOLOTYPE, CARAPACE 11.4 MM. WIDE. *a*. FRONT VIEW. *b*. DORSAL VIEW

Description.—Mesogastric and cardiac regions depressed; protogastric region forming an elevated protuberance; a similar but smaller protuberance at middle of branchial region, and in front of it, two tubercles. Hepatic region inclined strongly toward the vertical. Antero-lateral margin subacute, with about four distant tubercles above the edge. Surface covered with coarse, bead granules arranged to form a network or an eroded surface; gastric sutures smooth. Front strongly deflexed, thin, emarginate, a short closed median fissure; lobes oblique, sinuous, bent down at outer angles to meet basal antennal article. Upper inner angle of orbit fused with the front and without tooth.

The basal antennal article is broad behind, obliquely placed, its distal surface (where the next article is commonly attached) is fixed against the downward prolongation of the front. In the type-specimen, the inner lower angle of the orbit also joins the front, closing the orbit. The antenna, however, is not without a flagellum, as at first supposed. By rotating the eyestalk a short flagellum of a few articles (tip broken off) was disclosed; its attachment is entirely concealed as it proceeds from the upper surface of the basal article, bordering the lining of the orbit.[33] In a smaller male from the type-locality, the union of the front with the orbital angle is very slight, whereas in a small male from Maria Madre, there is no union of front with orbit and the outer angle of the basal article of the antenna lies in the orbital hiatus. The attachment of the movable part of the antenna to the basis is concealed but is not so remote from the orbital

[33] This discovery was not made until the validity of "*Medaeus rugosus*" was investigated.

opening as in the type-specimen, with the result that the flagellum, which is as long as the eyestalk, is not concealed; three articles of the peduncle are visible and at least seven of the flagellum.

Ventral surface of crab granulous and eroded, except abdomen and portions against which legs are applied. Abdomen almost smooth. Palpus of endognath folded above merus and only slightly visible in ventral view.

Chelipeds subequal, thick, outer surface granulate and eroded. Fingers gradually curved downward, very rough with granulation except at the tip; prehensile edges toothed, not gaping; color brown, that of fixed finger running back on palm, further on inner surface than on outer; dactylus longer than superior margin of palm. Legs short, ornamented with granulations similar to those on carapace.

Measurements.—Male holotype, length of carapace 8.4, width of same 11.4, fronto-orbital width 5.7, width of front 3.6 mm.

Range.—From Gulf of California, Mexico, to the Galapagos Islands.

Material examined.—Gulf of California: East of La Paz; lat. 24° 11′ 30″ N., long. 109° 55′ 00″ W.; 10 fathoms; Sh.; April 30, 1888; station 2828, *Albatross;* 2 males, holotype and paratype (21581).

Maria Madre Island, Mexico; 4–10 fathoms; California Academy of Sciences; 1 male (62713); 1 young female, returned.

Gardner Bay, off Hood Island, Galapagos; 15 feet; William Beebe by diving at station 54, *Arcturus;* one ovigerous female, holotype of *Medaeus rugosus* (Mus. N. Y. Zool. Soc.).

Genus MEDAEUS Dana

Medaeus Dana, Amer. Journ. Sci., ser. 2, vol. 12, 1851, p. 125; type, *M. ornatus* Dana, 1852.—Alcock, Journ. Asiat. Soc. Bengal, vol. 67, 1898, p. 123.—Odhner, Göteborg's K. Vet. Hand., Fjärde Följden, vol. 29, No. 1, 1925, p. 81.

Carapace not very broad, hexagonal, regions well defined and well areolated. Antero-lateral border ascending, cut into about four large teeth with thick tuberculiform tips, and continued beneath the orbits to the angles of the buccal cavern. Fronto-orbital border half, or a little more than half, the greatest breadth of the carapace. Front about a fourth, or a little more than a fourth, the greatest breadth of the carapace, horizontal, rather prominent, notched in the middle line, separated from the supra-orbital margin by a notch. Chelipeds either unequal or subequal, wrists and hands typically covered with large nodules, fingers pointed. Abdomen of male with third to fifth somites fused.

Indo-Pacific region; tropical America.

KEY TO THE AMERICAN SPECIES OF THE GENUS MEDAEUS

A[1]. Palm with a superior lobate crest.
  B[1]. Carpus of ambulatory legs with a multidenticulate crest. **spinimanus**, p. 274.
  B[2]. Carpus of ambulatory legs with a trilobed crest.....**lobipes**, p. 275.
A[2]. Palm without lobate crest, and armed with spinules only..**spinulifer**, p. 276.

ANALOGOUS SPECIES OF MEDAEUS ON OPPOSITE SIDES OF THE CONTINENT

Atlantic	Pacific
spinimanus	*lobipes*

MEDAEUS SPINIMANUS (Milne Edwards)

Plate 113

Cancer spinimanus MILNE EDWARDS, Hist. Nat. Crust., vol. 1, 1834, p. 378 (type-locality unknown; type in Paris Mus.).

Cancer miniatus DESBONNE and SCHRAMM, Crust. Guadeloupe, 1867, p. 23, pl. 4, fig. 3 (type-locality, Guadeloupe; type not extant).

Medaeus spinimanus A. MILNE EDWARDS, Ann. Soc. Entom. France, vol. 7, 1867, p. 270; Crust. Rég. Mex., 1879, p. 250; 1880, pl. 44, figs. 3–3*b*.

Diagnosis.—Carpus of ambulatory legs with a multidenticulate crest. Distal end of abdominal segments of male without a band of pubescence. Tuberculation of carapace coarse and conspicuous.

Description.—Carapace bare, strongly lobulated especially anteriorly; all the prominent parts granulate, all the furrows smooth. Front most advanced in the middle, lobes oblique, a narrow median fissure, best seen from below where it is continued to the point of the epistome. Orbits subcircular; infero-internal angle more produced than basal article of antenna. Antero-lateral border cut into four triangular teeth which are united by a denticulate crest; the first tooth which is the smallest is placed below the level of the outer orbital angle. Pterygostomian regions, outer maxillipeds and sternum granulate.

Chelipeds short and stout; arm not projecting beyond carapace, granulated below; wrist rugose and granulate outside and above, two somewhat conical teeth at inner angle; hand surmounted by a crest cut into five large teeth, and ornamented outside with raspberrylike tubercles arranged more or less in longitudinal rows and separated by irregular, crowded granules; fingers broad, deeply channeled, prehensile edges meeting when closed; above the dactylus a crest the edge of which is feebly granulate in its proximal half. Color of immovable finger not continued on palm. Ambulatory legs rather long, covered with granules or spinules, margins hairy except the dactyls which are hairy all over.

Abdomen of male narrow, basal half granulate.

Color.—Carapace yellowish gray spotted with vermilion; chelipeds vermilion, legs spotted with the same; fingers brown (Desbonne). Orange red (A. Hyatt Verrill).

Measurements.—Male (31085), entire length of carapace 20.4, greatest width of same 34.7, fronto-orbital width 16.6, front 9.9 mm.

Range.—Bahamas; West Indies. Rare.

Material examined.—Off Green Cay, Bahamas; in oyster dredge; June 30, 1903; B. A. Bean, Geographic Society of Baltimore; 1 male (31085).

Guadeloupe; M. Beaupertius; received from Paris Museum; 1 female (20265).

Dominica; 15 fathoms; A. Hyatt Verrill; identified from pencil sketch.

Martinique; specimen in Paris Museum.

MEDAEUS LOBIPES Rathbun

Plate 114

Medaeus lobipes RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 583, pl. 44, fig. 1 (type-locality, Panama Bay, 33 fathoms; type, Cat. No. 21580, U.S.N.M.).

Diagnosis.—Carpus of ambulatory legs with a trilobed crest. Distal end of abdominal segments of male with a band of pubescence. Tuberculation of carapace fine, inconspicuous.

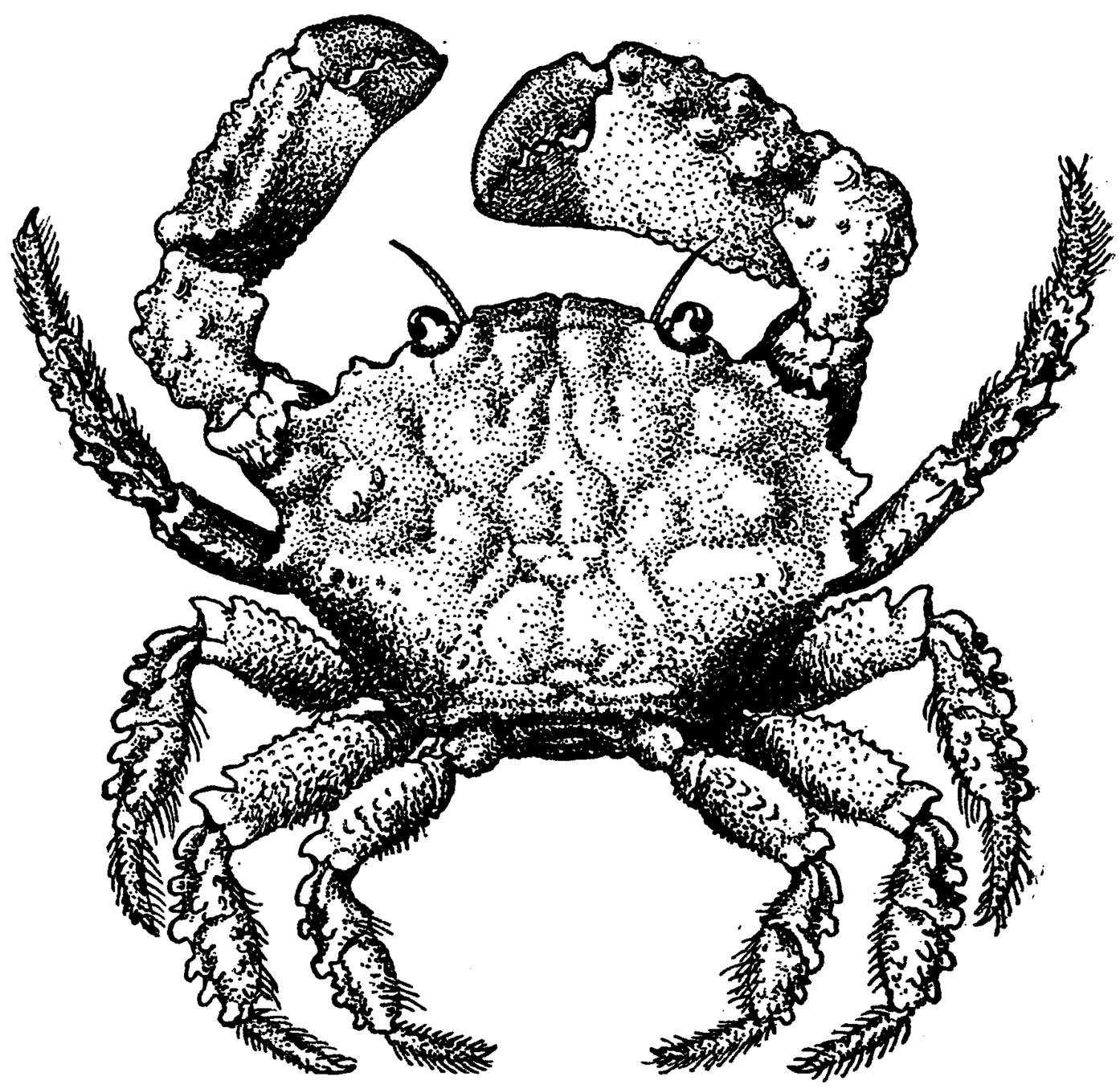

FIGURE 44.—MEDAEUS LOBIPES, MALE, HOLOTYPE, CARAPACE 25.6 MM. WIDE, DORSAL VIEW

Description.—Compared to *M. spinimanus*, the carapace is shorter and broader, lobules similar in shape and position, their area of tuberculation diminishing with age; front less advanced, its lobes less oblique. Cardiac and metagastric region each divided by a median sulcus into two lobules. Chelipeds more feebly roughened than in *spinimanus;* teeth on upper border of hand very unequal, the second, counting from the wrist, largest, the distal one a low tubercle. Ambulatory legs shorter than in the allied species; merus denticulate or spinulous on upper margin, carpus with a trilobed crest above, propodus with a row of three smaller lobes or teeth on each side of the upper surface; a similar row on each side of the carpus of the first three legs, and on the outside of the last leg. Legs hairy, especially the

last. First three segments of male abdomen tuberculate; distal end of each segment save the last marked by a narrow transverse band of pubescence. Posterior half of sternum tuberculate, anterior half punctate.

Measurements.—Male holotype, length of carapace 17, width 25.6 mm. Female (21986), length 8.5, width 12.3 mm.

Range.—Cape St. Lucas, Mexico; Bay of Panama; Galapagos Islands, 5½ to 33 fathoms.

Material examined.—Off Cape St. Lucas, Lower California, Mexico; lat. 22° 52′ 00″ N.; long. 109° 55′ 00″ W.; 31 fathoms; rky.; temp. 74.1° F.; May 1, 1888; station 2829, *Albatross;* 1 male (21987).

Bay of Panama; 1888; *Albatross:* Lat. 8° 05′ 00″ N.; long. 78° 51′ 00″ W.; 33 fathoms; gy. S. brk. Sh.; Mar. 5; station 2796; 1 male, holotype (21580). Lat. 7° 56′ 00″ N.; long. 79° 41′ 30″ W.; 51½ fathoms; gn. M.; Mar. 30; station 2805; 2 small males (21985).

Off Hood Island, Galapagos Islands; lat. 1° 21′ 30″ S.; long. 89° 39′ 45″ W.; 20 fathoms; co. S.; April 7, 1888; station 2812, *Albatross;* 1 female (21986).

MEDAEUS SPINULIFER (Rathbun), new combination

Pilumnus spinulifer RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 585, pl. 42, figs. 6–8 (type-locality, off Cape St. Lucas, 31 fathoms; type, Cat. No. 21582, U. S. N. M.); Proc. Washington Acad. Sci., vol. 4, 1902, p. 281.—BOONE, Zoologica, vol. 8, 1927, p. 217, text-fig. 79.

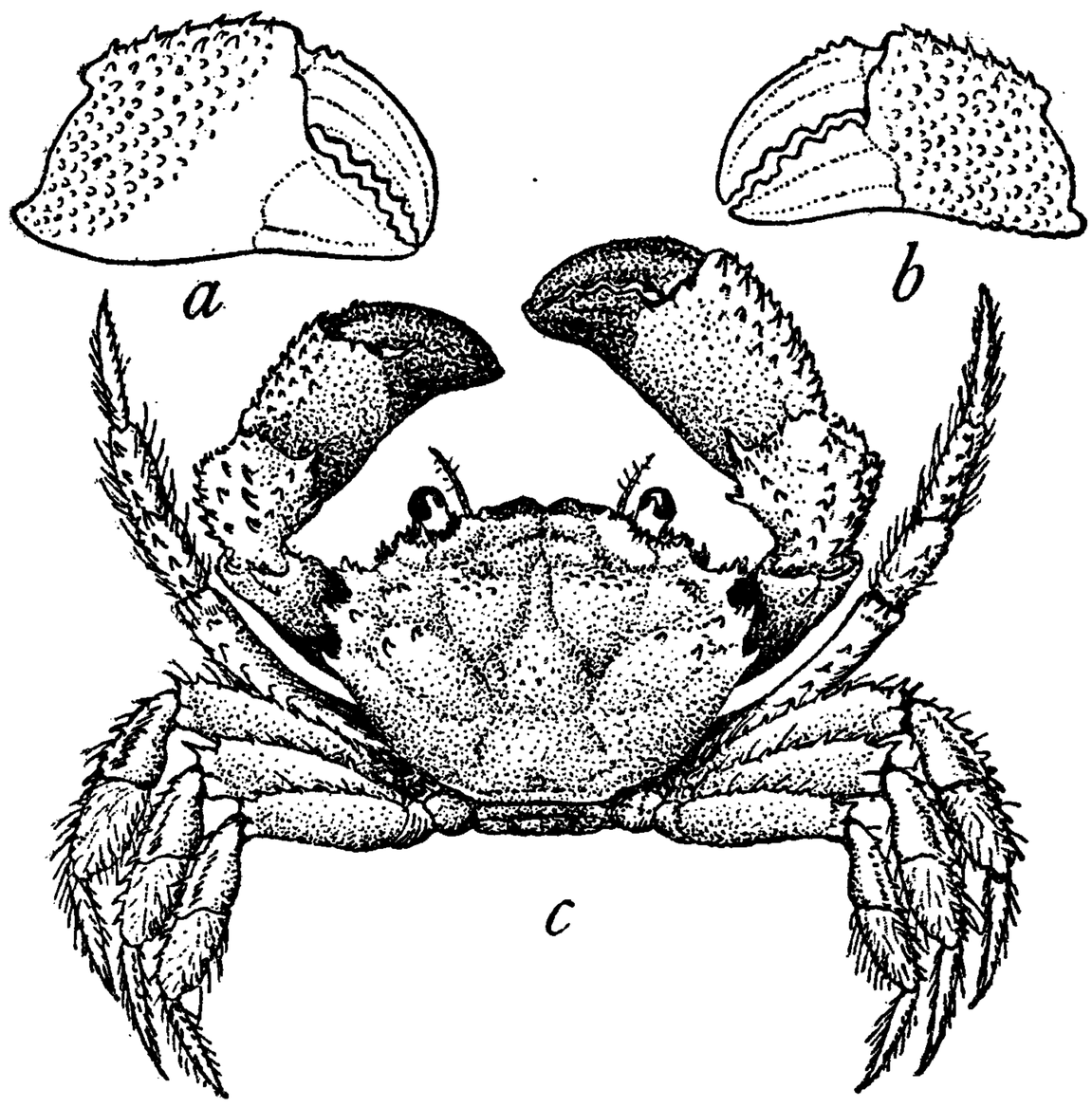

FIGURE 45.—MEDAEUS SPINULIFER, MALE, HOLOTYPE, CARAPACE 12.5 MM. WIDE. *a.* MAJOR CHELA. *b.* MINOR CHELA. *c.* DORSAL VIEW

Diagnosis.—Rough and hairy. Four lateral spines, a subhepatic spine. Frontal lobes triangular. Half or nearly half of outer surface of major palm smooth and bare.

Description.—Carapace covered with a short coating of downy hair, thicker on anterior portion, where there are tufts of longer and stouter setae; or it may be nearly naked in large specimens. Carapace wide, convex in both directions, deeply areolated, covered with spiniform granules which are very small posteriorly, but larger anteriorly, many becoming spinules on the antero-lateral regions. Median sinus of front very large and V-shaped, forming inner margins of two large angular lobes whose outer margins are longer and very oblique;

outer angles of front rectangular, inconspicuous; edge thin and granulate. Superior margin of orbit spinulous, inferior margin armed with slender spines; inner suborbital tooth prominent, subtriangular, edge spinulous, sharp. Antero-lateral margin with four spines, bordered by smaller spines or spinules; between the second and first or orbital tooth is the greatest interval, below which is a subhepatic spine similar to, but less produced than those of the margin. Lower surface of carapace rough, similar to upper.

Chelipeds hairy except on smooth portions. Arms granulate on outer surface; margins armed with spines and spinules, those of upper surface increasing in size distally. Wrist rough with sharp granules or spinules. Upper and proximal half of outer surface of major palm covered with stout spinules, which have a tendency to form longitudinal rows and toward the lower and distal margins become smaller and granuliform. Smaller palm roughened on entire outer surface with spinules or spiniform granules; upper surface with two rows of spines; inner face granulous except near fingers; dactyli of both chelipeds a little roughened near the base. Fingers of minor chela deeply grooved, of major chela less so. Merus of legs armed on anterior margin with a row of slender spines; posterior margin spinulous; carpus and propodus armed above, below, and anteriorly with a row of spines. Legs sparingly hairy.

Variation.—In the largest (type) specimens the carapace is nearly naked and rougher than in the smaller specimens; the bare portion of the outer surface of the major palm is more distal than inferior. In the Galapagan specimens the carapace is clothed with hair, and the bare portion on the major palm is almost wholly inferior and is set off by a longitudinal row of acute granules.

Measurements.—Male, holotype, entire length of carapace 8.8, width of same including spines 12.5, fronto-orbital width 8.2, width of front 4 mm.

Range.—From Cape St. Lucas, Lower California, Mexico, to Galapagos Islands.

Material examined.—Off Cape St. Lucas; lat. 22° 52′ 00″ N.; long. 109° 55′ 00″ W.; 31 fathoms; rky.; temperature 74.1° F.; station 2829, *Albatross;* 2 males, 1 is holotype (21582).

Tagus Cove, Albemarle Island, Galapagos Islands; 1899; Hopkins Stanford Galapagos Expedition: 12 fathoms; 1 male (25670), 1 male, 1 young female (Stanford Univ.). Reef, north of Tagus Hill: March 16; 1 male (25669).

Remarks.—In this species the antero-lateral border is not prolonged so distinctly to the buccal angle as in typical *Medaeus*. In this respect it is akin to *M. reynaudii* (Milne Edwards), formerly in *Xantho*, but recently placed in *Medaeus* by Odhner.[34] In *spinulifer* the areolation, shape of front and arrangement of lateral teeth conform to *Medaeus*.

[34] Göteborg's K. Vet. Hand., Fjärde Följden, vol. 29, No. 1, 1925, p. 81.

GAUDICHAUDIA, new genus

Type.—*Xantho gaudichaudii* Milne Edwards.

Diagnosis.—Near *Xantho*. Front one-fifth of carapace-width; margin thick, appearing double-edged, bilobed, lower or true edge quadrilobulate. Orbits subcircular, edge subentire, three sutures faintly indicated. Basal article of antenna broad, touching front; first movable article broad, situated in the orbital hiatus. Epistome slightly produced at middle. Antero-external margin of merus of outer maxilliped nearly transverse; antero-internal margin not deeply notched, but sinuous or somewhat trilobed. Legs broad, thick, and rough. Otherwise as in *Xantho*.

Contains only one species.

GAUDICHAUDIA GAUDICHAUDII (Milne Edwards), new combination

Plates 126 and 127

Xantho gaudichaudii Milne Edwards, Hist. Nat. Crust., vol. 1, 1834, p. 396 (type-locality, Chile; type in Paris Mus.).—Milne Edwards and Lucas, d'Orbigny's Voy. Amér. Mér., vol. 6, pt. 1, 1844, p. 15; vol. 9, atlas, 1847, pl. 5, fig. 4.—Rathbun, Proc. U. S. Nat. Mus., vol. 38, 1910, p. 540, pl. 39, fig. 1 (after Milne Edwards and Lucas).

Xantho bifrons Ortmann, Zool. Jahrb., vol. 7, 1893, p. 450, pl. 17, fig. 7 (type-locality, Ancon [35] Gulf; type in Strassburg Mus.).

Xantho gaudichaudi Ortmann, Zool. Jahrb., vol. 10, 1897, p. 296.—Lenz, Zool. Jahrb., Suppl. 5, vol. 2, 1902, p. 760.—Porter, Revista Chilena Hist. Nat., vol. 9, 1905, p. 32, text-fig. 1.

Diagnosis.—Margin of carapace thick. Edge of front with four small lobules. Margin of orbit subentire. Four antero-lateral lobes, the first one almost obsolete. Upper margin of merus of ambulatory legs spinulous.

Description.—Surface punctate and under the lens finely and closely granulate. Areolation fairly well marked; a deep longitudinal groove runs back from the fronto-orbital notch. Antero-lateral margin very thick, without tooth at orbit; first lobe low, obscure; next three lobes slightly prominent or dentiform with very blunt tips. Sinuses of front U-shaped, the lateral ones broadly so; both edges of front coarsely granulate. Inner supra-orbital tooth well marked and well separated from the front.

Chelipeds unequal in both sexes, heavy; upper margin of merus denticulate, a shallow subdistal sinus; carpus with a short blunt inner tooth and a more obscure one below; manus widening distally; the black of the fingers covers all but the tips and the extreme proximal end of the dactylus, and extends from the immovable finger back a little on the palm. Ambulatory legs rough and hairy; merus spinulous on upper margin; carpus and propodus more or less sharply

[35] Ecuador.

roughened on upper half; last three articles covered with short, bristly hairs.

Color.—Reddish brown (Nicolet).

Measurements.—Male (21993), total length of carapace 33, width of same 50, fronto-orbital width 18, width of front 10 mm.

Range.—Ecuador to Chile. Island of Juan Fernandez (Porter).

Material examined.—

PERU.—R. E. Coker, for the Peruvian Government: Bay of Sechura, west of Matacaballa, in trawl at about 5 fathoms, April 8, 1907, 1 very young (40421). La Punta, tide pool on shingle beach, December, 1906, 1 young male (40422), 1 male (Peruvian Government).

CHILE.—Antofogasta; November 15, 1926; W. L. Schmitt; 1 male (60739). Santiago (?); 1 male (17537). Port Otway; February 10, 1888; *Albatross;* 8 males, 5 females (21993). Exact locality not given; 1 immature female (Mus. Paulista, 1306).

Variation.—The young have a more deeply areolated carapace, the three dentiform lateral lobes more prominent and more acute, the margin of the frontal lobes concave but not lobulated.

Genus PLATYXANTHUS A. Milne Edwards

Platyxanthus A. MILNE EDWARDS, Ann. Sci. Nat., ser. 4, vol. 20, 1863, p. 280; type, *P. orbignyi* (Milne Edwards and Lucas).

Antero-lateral margins strongly arched; front very little advanced beyond the arch, and deeply separated from the dentiform superior angles of the orbits. Surface convex, uneven. Antero-lateral margin cut into five teeth or lobes (including the orbital angle), some or all of which are subdivided. Front typically quadridentate. Inner lower tooth of orbit well developed. Basal article of antenna falls far short of front. Anterior margin of merus of outer maxillipeds oblique. Chelipeds unequal, strong. No subterminal tooth on merus of ambulatory legs. Abdomen of male with its seven segments distinct.

South American coasts.

KEY TO THE SPECIES OF THE GENUS PLATYXANTHUS

A¹. Merus of outer maxilliped longer than broad.
- **B¹.** Second, third and fourth antero-lateral lobes deeply subdivided into large teeth. Outer tooth of front directed forward. Fingers shorter than middle length of palm ..... **orbignyi**, p. 280.
- **B².** Antero-lateral lobes not deeply subdivided. Outer tooth of front directed obliquely outward. Fingers as long as middle length of palm. **cokeri**, p. 283.

A². Merus of outer maxilliped as broad as long.
- **B¹.** Regions slightly indicated. Frontal lobes each subdivided by a deep sinus into two tuberculiform teeth. Dark color almost covering dactylus of chelipeds ..... **crenulatus**, p. 281.

B². Regions fairly well indicated, especially the hepatic and anterior gastric regions. Frontal lobes each subdivided by a broad shallow sinus. Dark color covering about two-thirds of dactylus of chelipeds. **patagonicus**, p. 284.

ANALOGOUS SPECIES OF PLATYXANTHUS ON OPPOSITE SIDES OF THE CONTINENT

Atlantic	Pacific
crenulatus	*cokeri*

PLATYXANTHUS ORBIGNYI (Milne Edwards and Lucas)

Plate 115; Plate 116, Figure 2

Xantho orbignyi MILNE EDWARDS and LUCAS, d'Orbigny's Voy. Amér. Mer., vol. 6, pt. 1, 1844, p. 14; atlas, vol. 9, 1857, pl. 7, fig. 1–1*e* (type-locality, Chili; type in Paris Mus.).

Platyxanthus orbignyi A. MILNE EDWARDS, Ann. Sci. Nat., ser. 4, vol. 20, 1863, p. 280.

Diagnosis.—Antero-lateral margin cut into nine large teeth. Merus of outer maxillipeds longer than broad; two punctate lines on ischium. Ambulatory legs very broad.

Description.—Carapace moderately convex, uneven; regions outlined by shallow furrows; a broad median furrow extends backward from the front margin. Surface paved with crowded flattened granules; a raised line runs obliquely backward from the last lateral tooth. Antero-lateral borders broadly arcuate, occupying three-fifths of the length of the carapace; they are cut into nine strong teeth trending forward and a few secondary teeth, not counting the first or orbital tooth; the last tooth is simple; the eight intermediate ones are resolvable by the depth of the emarginations into three groups of two, four and two teeth respectively. The numerous marginal teeth therefore correspond to the five teeth or lobes in other species of the genus and in most species of Xanthidae. Postlateral margin slightly sinuous. Front divided into four subequal triangular blunt teeth; median sinus deeper than the lateral. Inner upper tooth of orbit short but well marked; the three fissures of orbit deeply cut; outer suborbital tooth more advanced than the one above it; inner suborbital tooth as advanced as or more advanced than the front.

Ischium of outer maxillipeds with a longitudinal row of linear punctae near inner margin; another row of round and more distant punctae at inner third; merus subtriangular, elongate, outer angle opposite inner tooth. Chelipeds massive, very unequal; a low protuberance on upper border of arm and an acute tooth at inner angle of wrist; palms swollen; fingers shorter than middle length of palm, gaping; the dark color of the dactylus does not cover the basal fourth, that of the immovable finger is not continued on the palm; prehensile teeth white. Under part of carapace, upper border of arm and margins of legs hairy.

Color.—Red spotted with yellowish above, yellow below, fingers and nails black (A. Milne Edwards and Lucas).

Measurements.—Male (14847), total length of carapace 63.4, width of same 93, fronto-orbital width 27.3, width of front 13.8 mm.

Range.—Peru; Chile.

Material examined.—

PERU.—Salavery; October 22, 1926; W. L. Schmitt; 3 males, 3 females (2 ovigerous) (60967).

Callao; May 18, 1908; R. E. Coker collector; received from Peruvian Government; 1 male (40412).

Callao; specimens in Paris Mus.

San Lorenzo Island; January, 1884; Dr. W. H. Jones, U. S. Navy; 1 ovigerous female (13864).

Pisco Bay; specimens in Paris Mus.

Peru: Dr. W. H. Jones, U. S. Navy; 3 males, 1 female (14847, 46331). W. E. Curtis; 8 specimens (12552).

PLATYXANTHUS CRENULATUS A. Milne Edwards

Plate 116, fig. 1; Plates 117–119

Platyxanthus crenulatus A. MILNE EDWARDS, Bull. Soc. Philom., ser. 7, vol. 3, 1879, p. 106, pl. 2, fig. 1 (type-locality, Patagonia; type in Paris Mus.). Not *P. crenulatus* Rathbun, Proc. U. S. Nat. Mus., vol. 38, 1910, p. 540, except figure copied from A. Milne Edwards.

Diagnosis.—Carapace nearly smooth; four antero-lateral lobes or teeth. Merus of outer maxillipeds as broad as long, anterior margin oblique. Dark color almost covering dactylus of chelipeds.

Description.—Regions feebly indicated. Surface covered with small separated granules. An oblique raised granulated line on the hepatic and on the epibranchial region, parallel to each other. Two similar transverse parallel lines on each protogastric region, the posterior shorter and further from the median line than the anterior; while these granulated lines are distinct in small and medium specimens they disappear in the old. Antero-lateral borders occupy half the length of carapace and are cut by three V-notches into two lobes and two teeth; the first two lobes are subequal in extent, edges crenulate, the crenules deeply divided in the young, obscure in the old; the first lobe is transverse for half its length and confluent with the orbital angle which is dentiform in the young, not so in the old; third and fourth prominences dentiform, subacute, the third projecting sideways beyond the line of the preceding lobe and bearing a denticle or two at the posterior end of its outer margin. A line of coarse granules runs obliquely inward from tip of last tooth. Post-lateral margin nearly straight. Four frontal teeth subequal, tuberculiform, separated by U-shaped sinuses, median sinus narrow, outer sinuses very wide. Inner supra-orbital tooth triangular; orbital fissures deep; of the two inferior, rounded teeth the outer is the smaller and more advanced than outer angle of orbit, the inner tooth is

more advanced than the inner supra-orbital tooth but less advanced than frontal teeth.

Ischium of outer maxillipeds with a deeply impressed longitudinal line at its inner two-fifths; merus as broad as long. Chelipeds very unequal in both sexes; a deep subdistal indentation on upper margin of merus and a corresponding low tooth; a short subacute tooth at inner angle of wrist; palms inflated, fingers considerably shorter than middle length of palm, gaping; the dark color of fingers covers the dactyl except at its base and barely covers the fixed finger; prehensile teeth white. Dactyls of ambulatory legs clothed, except in the longitudinal furrows and the horny tips, with a short felt; also a fringe of longer hair on the lower margin.

Young.—Two young, the largest only 11.3 mm. wide from La Paloma, have the front double-edged, the edges granulate and separated by a deep groove; the lobes are subtruncate and slightly concave but scarcely bilobed, although the inner part of the lower lobe projects slightly beyond the upper edge. In all other characters these specimens resemble adult *crenulatus*. The probability is, therefore, that the lower edge of the front in the young becomes the true thick edge in the adult, and that the upper edge in the young is represented in the adult by the row of coarse granules just behind the front which is set off by an inconspicuous groove corresponding to the deep marginal groove in the young. A series of sizes intermediate between 12 and 40 mm. in carapace width is needed to confirm this surmise.

Color.—Dried male (57124), dark carmine above, light buff below, ambulatory legs and hind part of carapace dotted with light buff; fingers nearly black.

Measurements.—Male (57124), total length of carapace 50.8, width of same 74.2, fronto-orbital width 23.2, front 12.3 mm. Young male (60972), total length of carapace 8.7, width of same 11.3, fronto-orbital width 6.1, width of front 3.1 mm.

Range.—Uruguay to Patagonia.

Material examined.—

URUGUAY.—Coronilla Island; beach; 1922; Hugh M. Smith; 1 major chela (57692).

Cabo Polonia, Rocha; F. Felippone; 3 males, 2 females and 3 major chelae of larger specimens (55569, 56689, 57124).

Cabo Santa Maria, Rocha; F. Felippone; 1 male (57574), 1 female (54635), 1 female (61379).

Puerto La Paloma; December 6 and 7, 1925; W. L. Schmitt; 19 specimens (60964, 60965). March, 1925; *Atair;* 1 young, lent by Buenos Aires Mus. (15412), 1 young (60972). F. Felippone; 1 male, 1 ovigerous female (61378).

Punta del Este, Maldonado; 1922; F. Felippone; 1 male (57123).

Montevideo; F. Felippone; 1 male (55174).

ARGENTINA.—Market of Buenos Aires; from stomach of *Acanthistius patachonicus;* U. S. Bureau of Fisheries; 1 male (32566).

La Plata; February, 1902; Bisego collector; 1 male (Mus. Paulista, 383).

Puerto San Antonio West; April, 1920; A. Carcelles, collector; 3 females (60963); gift of Buenos Aires Museum.

Mar del Plata; 1 young male (60966); gift of Buenos Aires Museum.

Argentina; exact locality not given; 1910; A. Hrdlicka; 1 female (50528).

PATAGONIA.—Exact locality not given; d'Orbigny collector; 2 cotypes (Paris Mus.).

PLATYXANTHUS COKERI, new species

Plates 120–122

Platyxanthus crenulatus RATHBUN, Proc. U. S. Nat. Mus., vol. 38, 1910, p. 540, not pl. 39, fig. 2; not *P. crenulatus* A. Milne Edwards 1879.

Type-locality.—Near mouth of Rimac River, Peru; R. E. Coker; one male holotype (Cat. No. 40410, U.S.N.M.).

Diagnosis.—Carapace very convex. Outer frontal teeth directed obliquely outward. Merus of maxillipeds longer than broad. Fingers in the old as long as middle length of palm. Major dactylus without large basal tooth.

Description.—Closely allied to *P. crenulatus*, to which I formerly assigned these Peruvian specimens. The carapace is more convex than in *crenulatus;* the granulation is similar, but the granules are thickly interspersed with punctae plainly visible to the naked eye; the hepatic and the epibranchial ridge are thick and blunt and persist in the old; there is also a single but less evident protogastric ridge; in the young only is there a trace of the second or short ridge. The first of the antero-lateral lobes is longer than the second and is separated from the orbital angle by a distinct sinus; the anterior margin of the two lateral teeth slopes inward and forward instead of inward and backward as in *crenulatus;* postlateral margin more sinuous. Outer teeth of front wider than inner and directed obliquely outward; median sinus subtriangular, wider than in *crenulatus*, lateral sinuses broad, asymmetrical. Inner supra-orbital tooth forming an obtuse angle; orbital fissures short and shallow; suborbital teeth lobiform, outer one low, inner one large, inclined inward and nearly as advanced as the outer frontal tooth; outer angle of orbit less advanced than the tooth below it. The first and second truncate lobes of the antero-lateral margin are bordered by shallow crenulations; the last three sinuses are broadly V-shaped.

Merus of outer maxilliped longer than wide, the anterior (or antero-external) margin being more oblique than in *crenulatus;* the merus is intermediate in shape between those of *orbignyi* and *crenulatus*. The merus of the chelipeds has a strong, acute, upstanding,

subdistal tooth; the distal extremity also is acutely pointed. Tooth at inner angle of carpus strong. Fingers more elongate than in *crenulatus;* in the old the dactylus of both chelae exceeds in length the middle length of the palm; the major dactylus has no large basal tooth as is present in both sexes in *crenulatus;* the dark color of the fingers in the female of medium size covers little more than the distal half except alongside the white prehensile teeth; in the old male the color has almost disappeared, but it seems to have been much less extensive than in the smaller specimen. The felt-like covering of the dactylus of the ambulatory legs is interrupted by five longitudinal lines of short hairs.

Young.—A young male, 31.9 mm. wide, shows the following differences from the adult: The first and second lobes of antero-lateral margin are cut into irregular, tuberculiform denticles; the second lobe, especially on the right is in its entirety more dentiform than in, the adult.

Measurements.—Male holotype, total length of carapace 59.8, width of same 88.3, fronto-orbital width 26.7, frontal width 13.6 mm.

Range.—Peru.

Material examined.—

PERU.—R. E. Coker collector; received from Peruvian Government: Southeast of Caleta Colon, Bay of Paita; 7 to 8 fathoms; soft mud; taken in boat beam trawl; April 13; 1 young male (40411). Near mouth of Rimac River; thrown on beach by strong sea; February 4, 1907; 1 male holotype, 1 female returned to Peruvian Government. Callao; identified by a photograph received from R. E. Coker. Pisco, on beach; July 7, 1908; 1 female (40409).

Paita; October 8, 1926; W. L. Schmitt; 1 young (62714).

PLATYXANTHUS PATAGONICUS A. Milne Edwards

Plates 123–125

Platyxanthus patagonicus A. MILNE EDWARDS, Bull. Soc. Philom., ser. 7, vol. 3, 1879, p. 107, pl. 1 (type-locality, Patagonia; type in Paris Mus.).

Diagnosis.—Surface very uneven, antero-lateral margin with numerous indentations. Frontal lobes not deeply subdivided. Merus of maxilliped broader than long. Dark color covering about two-thirds of dactylus of chelipeds. Ambulatory legs narrow.

Description.—Carapace uneven; hepatic region defined by broad deep furrows; anterior mesogastric region distinct; surface covered with a flat pavement of dense granules and innumerable punctae; toward the margins and on the ridges coarsely granulate; an hepatic and an epibranchial ridge, subparallel; a short high epigastric ridge, a protogastric ridge directed inward and a little backward; a ridge proceeding obliquely backward from the last lateral tooth and finally turn-

ing transversely inward on the carapace; this portion is accented by furrows behind and before. The antero-lateral margin is considerably divided and subdivided into teeth and denticles or crenules whose true relations are indicated by the three broad furrows which divide the margin into four parts. The first lobe, which is confluent and in line with the orbital angle, is transversely oblique and is divided into four or five denticles followed by a small bidentate lobe; the second lobe is divided into a large subacute triangular tooth with a denticle on each slope followed by a small bidentate lobe; the third projection is the largest, dentiform, and has 2 or 3 denticles on its outer margin; last tooth narrow, simple. Front bilobed, lobes with concave margins, median sinus a narrow slit. Inner orbital angle blunt, inner margin of orbit raised and separated by a furrow from the frontal region; the two suborbital teeth small, the outer one lobiform, the inner one narrow, acute, much less advanced than the tooth above it.

Merus of outer maxilliped broader than long, distal margin slightly oblique, arcuate; outer lobe more advanced than inner. Chelipeds coarsely granulate; merus roughly denticulate above and with a strong rectangular subdistal tooth; carpal tooth stout; palms elongate, much exceeding fingers; a groove on outer surface just below upper margin. The dark color extends the whole length of the fingers along the prehensile edges, but only two-thirds the distance on outer edges; a strong tooth at base of major dactyl. A furry covering on the dactyls of ambulatory legs except in the lateral furrows.

Measurements.—Male (32842), total length of carapace 45, width of same 62.3, fronto-orbital width 22, width of front 13.4 mm. Male holotype, length of carapace 75, width of same 100 mm. (A. Milne Edwards). Male, Puerto Priamides, length of carapace 75, width 109 mm.; length of right palm through middle 73, width 35, thickness 23 mm.; length of left palm through middle 64, width 29, thickness 18 mm.; length of right movable finger from top at articulation to tip, 65, of left ditto, 53; right fixed finger broken, length of left from base of sinus to tip, 40 mm.

Range.—Uruguay to Patagonia.

Material examined.—

URUGUAY.—Cabo Santa Maria; F. Felippone; 1 male (32842).

East of Cabo Santa Maria; lat. 34° 50′ S., long. 52° 20′ W.; 58–65 fathoms; *Undine;* 1 male (Buenos Aires Mus., 16658); carapace 94 mm. wide; photographs sent by M. Doello-Jurado.

Off Mar Chiquita; lat. 37° 50′ S., long. 56° 00′ W., 1 male (Buenos Aires Mus., 17635); carapace 97 mm. wide; photographs sent by M. Doello-Jurado.

ARGENTINA.—Mar del Plata: August 7, 1918; 1 female (60824); received from Buenos Aires Museum. Twenty-five fathoms; March,

1918; Martin Doello-Jurado collector; 1 young female; lent by Buenos Aires Museum (9359). Dr. Pedro Rojas collector; 1 ovigerous female (Buenos Aires Mus., 12908); carapace 91 mm. wide; photographs sent by M. Doello-Jurado.

Argentina; 1897; Bicego collector; 1 young; lent by Mus. Paulista (923).

PATAGONIA.—D'Orbigny collector; 1 male holotype (Paris Mus.).

Playa Puerto Piramides; March, 1915; Martin Doello-Jurado collector; 1 large male (Buenos Aires Mus. 9185*a*); examined by Dr. W. L. Schmitt; photographs sent by the collector.

Genus PARAXANTHUS Milne Edwards and Lucas

Paraxanthus MILNE EDWARDS and LUCAS, d'Orbigny's Voy. Amér. Mer., vol. 6, pt. 1, 1844, p. 18; type, *P. hirtipes* Milne Edwards and Lucas.—NICOLET, in Gay, Hist. Chile, vol. 3, 1849, p. 140.

Carapace narrow, nearly flat except toward the edges; regions well marked; antero-lateral borders long, quadrilobate. Front very prominent, bilobed. Orbits small, oval, directed obliquely upward and forward; margin as in *Xantho*. Antennules folding very obliquely. Antennae in the inner hiatus of orbit, basal article small, scarcely reaching front, next article short, flagellum of medium length. Epistome small and deeply sunken. Buccal cavity much longer than wide, anterior border almost semicircular, arched upward not forward. Outer maxillipeds elongate; merus longer than wide, its anterior border so oblique that its inner angle forms a sort of terminal tubercle, and is prolonged noticeably beyond the insertion of the following article which is disposed as in *Cancer*, that is, situated in a cut of that angle. First maxillipeds almost like those of *Xantho*, as are also the chelipeds and legs except that the meropodites of the latter are so short that they do not reach the line of the lateral border of the carapace. The sternal plastron is rather wide anteriorly, strongly narrowed behind; the abdomen is very narrow in both sexes, all segments are distinct in the female, the third, fourth and fifth fused in the male. (Milne Edwards and Lucas.)

Contains only one species.

PARAXANTHUS BARBIGER (Poeppig)

Plates 131 and 132; Plate 133, Figures 1 and 2

Gecarcinus barbiger POEPPIG, Arch. f. Naturg., vol. 2, pt. 1, 1836, p. 138 (type-locality, shallow brackish bays at the mouths of the Andalien river near Concepcion, Chile; type in Leipzig Mus.).—NICOLET, in Gay, Hist. Chile, vol. 3, 1849, p. 153.

Paraxanthus hirtipes MILNE EDWARDS and LUCAS, d'Orbigny's Voy. Amér. Mér., vol. 6, pt. 1, 1844, p. 19; vol. 9, atlas, 1847, pl. 7*bis* (type-locality, Valparaiso; type in Paris Mus.).—NICOLET, in Gay, Hist. Chile, vol. 3, 1849, p. 141.—PHILIPPI, Zool. Anz., vol. 17, 1894, p. 265 [2].

Paraxanthus barbiger RATHBUN, Proc. U. S. Nat. Mus., vol. 38, 1910, p. 583.

Diagnosis.—Anterior border of buccal cavity almost semicircular, arched upward not forward. Sternum narrow. Merus of outer maxilliped elongate, anterior margin oblique, forming a tooth at inner angle.

Description.—Carapace finely punctate and obscurely granulate, rather deeply furrowed, most of the furrows indicating regions and subregions; three furrows run obliquely inward from the lateral margin and are bordered behind by granulated ridges; the two anterior of these end in a small tooth not projecting outwardly beyond the general margin. Still further forward on the margin is a similar tooth without the accompanying ridge and furrow. Antero-lateral margins thick, finely granulate, postero-lateral margins concave, smooth and rough with long hair. Front and orbits finely granulate; each lobe of front is subdivided forming two tuberculiform lobules at the angles, median fissure closed. Inner supra-orbital tooth a little less than a right angle; orbital denticles between fissures not projecting into orbit, the outer one much narrower than the upper one; two inferior teeth similar in shape and size, the inner one the more advanced, but less so than the angle above it.

Outer maxillipeds smooth, ischium slightly ciliated on inner border, merus with a bouquet of long hairs at summit of tubercle. First three articles of cheliped bristling with long hairs; remainder smooth; fingers long, robust, strongly channeled. Legs much ciliated, merus and carpus covered with a short thick tomentose velvet. Abdomen ciliated in both sexes; the sternum has here and there some bouquets of hair.

Color.—Dirty gold color; dried animal, pale red (Poeppig). Red tinged with yellowish, fingers blackish brown (Milne Edwards and Lucas).

Measurements.—Holotype of *P. hirtipes*, length of carapace 57 (not 27), width of same 82 mm. (Milne Edwards and Lucas).

Range.—From Tumbes, Peru (Lenz) to Concepcion, Chile; Juan Fernandez Islands (Lenz, Balss).

Material examined.—

CHILE.—A part of two carapaces (17539).

Valparaiso; Edwyn Reed collector; 1 ovigerous female (Buenos Aires Mus., 10807).

Genus HOMALASPIS A. Milne Edwards

Homalaspis A. Milne Edwards, Ann. Sci. Nat., ser. 4, vol. 20, 1863, p. 279; type, *H. plana* (Milne Edwards).

Carapace broad, longitudinally convex; regions indistinct, not lobulated. Antero-lateral borders obscurely lobed, postero-lateral margins strongly convergent. Front advanced, deflexed, very narnow, not more than a sixth the greatest width of carapace, not separated from the supra-orbital margin by a notch or groove. Orbits

circular, with two suture lines above and one below; inner-lower tooth not prominent. Antennae as in *Xantho*. Anterior edge of merus of external maxillipeds very oblique. Chelipeds unequal in both sexes, strong. Legs thick. Abdomen of male with its seven segments distinct.

Contains only one species.

HOMALASPIS PLANA (Milne Edwards)

Plates 128–130

Xantho planus MILNE EDWARDS, Hist. Nat. Crust., vol. 1, 1834, p. 397 (type-locality, Chile; type in Paris Mus.).—MILNE EDWARDS and LUCAS, d'Orbigny's Voy. l'Amér. Mérid., vol. 6, pt. 1, 1844, p. 14; atlas, vol. 9, 1847, pl. 6.—NICOLET, in Gay, Hist. Chile, vol. 3, 1849, p. 136.—PORTER, Revista Chilena Hist. Nat., vol. 9, 1905, p. 31, pl. 3.

Gecarcinus regius POEPPIG, Arch. f. Naturg., vol. 2, pt. 1, 1836, p. 136 (type-locality, Chile; type in Leipzig Mus.).—NICOLET, in Gay, Hist. Chile, vol. 3, 1849, p. 153.

Homalaspis planus A. MILNE EDWARDS, Ann. Sci. Nat., ser. 4, vol. 20, 1863, p. 280.

Xantho plana PHILIPPI, Zool. Anz., vol. 17, 1894, p. 265[2].

Diagnosis.—Margin of carapace obscurely lobed. Front extremely narrow, fused with orbital margin. Of large size.

Description.—Surface covered with coarse depressed crowded granules most evident around the antero-lateral arch. Mesogastric region faintly outlined. Antero-lateral margin thick, divided by three closed fissures or thumb-nail impressions into four lobes; the first two lobes follow the general outline of the carapace, with but a slight shallow emargination between, second lobe longer than first; the third lobe projects a little, the fourth still more; from the fourth a ridge, concave forward, curves obliquely inward and backward. Anterior margin of front bilobed, lobes oblique, their margins concave, separated by a small V-shaped median emargination which is continued back for a short distance by a closed fissure. Sides of front forming with inner margin of orbit a very oblique line. Superior orbital fissures obscure, not interrupting the curve of the margin; no tooth at outer angle; two well-developed teeth below, the one at inner angle larger than the other. The inclined front is produced considerably beyond the peduncle of the antennae. Outer maxillipeds coarsely granulate, especially so on the merus and distal end of the ischium; merus widest at its middle, bearing two deep depressions, hairy in the old.

Chelipeds massive; the merus is almost entirely covered by the carapace and has a subterminal tooth above, formed by a deep triangular indentation. Inner angle of carpus dentiform, very blunt. Fingers strongly toothed, teeth mostly white, a large backward-pointing tooth at base of major dactylus. The dactyli of the am-

bulatory legs have a feltlike brush of hair above and below, covering the greater part of the article.

Color (after plate of Milne Edwards and Lucas).—General color ox-blood red with spots on carapace of mikado orange and pinard yellow and extensive mottlings of the latter on chelipeds; ambulatory legs reticulated with cadmium yellow.

Measurements.—Female (14364), length of carapace 98, width 151.5, fronto-orbital width 38.2, width of front 24.7 mm.

Remarks.—Common on sandy shores; edible (Poeppig).

Range.—From Ecuador to Chile.

Material examined.—

ECUADOR.—Guayaquil; specimens in Copenhagen Museum.

CHILE.—Antofagasta; November 15, 1926; W. L. Schmitt; 2 young, about 3.5 mm. wide (60743).

Valparaiso: U. S. Exploring Expedition; 1 male (14848). November, 1883; Dr. W. H. Jones, U. S. Navy; 2 females (14364, 46340). April, 1920; Edwyn Reed; 6 young (Buenos Aires Mus., 10805).

Lota: January 16, 1927; W. L. Schmitt; 25 young (60882).

Quetelmahué, Chiloe; June, 1924; Carlos Reed; 1 male (60883); received from Buenos Aires Museum.

Chile: C. E. Porter; 1 young (46030). Origin unknown; 1 major chela (59376). 1 male, 5 young (Mus. Paulista, 1306). F. Silvestri; 1 young male, lent by Buenos Aires Mus. (4673).

Port Otway; February 10, 1888; *Albatross;* 3 males, 1 female (21994).

Genus CYCLOXANTHOPS Rathbun

Cycloxanthus A. Milne Edwards, Ann. Sci. Nat., ser. 4, vol. 20, 1863, p. 278; type, *C. sexdecimdentatus* (Milne Edwards and Lucas); Crust. Rég. Mex., 1879, p. 258. *Cycloxanthus* used by H. Milne Edwards, 1850, in d'Archiac's Hist. Prog. Géol., vol. 3, p. 304*k*, for a different genus of crabs found fossil.

Cycloxanthops Rathbun, Proc. Biol. Soc. Washington, vol. 11, 1897, p. 164; substituted for *Cycloxanthus*, preoccupied.

Carapace rather narrow; front horizontal, prominent, and divided by a closed median fissure into two lamellar truncate lobes, and separated from internal orbital angles by a deepish notch. Orbits small; two fissures in supra-orbital margin; external orbital angles inconspicuous, continuous with antero-lateral borders. Antero-lateral borders very long, strongly curved, extending far backwards. In the American species nine lateral teeth, besides the orbital tooth, the last two small and post-lateral. Basal antennal article short, but touching the front at its inner angle; flagellum inserted in orbital hiatus. Merus of external maxillipeds subquadrilateral. Chelipeds moderately unequal. Fingers sharp-pointed, not hollowed. Abdomen of male consists of five movable pieces.

West coast of America; Indo-Pacific.

KEY TO THE AMERICAN SPECIES OF THE GENUS CYCLOXANTHOPS

A[1]. Carapace nearly smooth, with a flattened marginal rim. Superior orbital margin between fissures arcuate, not dentiform, surface flat. **sexdecimdentatus**, p. 290.

A[2]. Carapace rugose, not rimmed. Superior orbital margin between fissures narrow, thick, raised.

B[1]. Tooth at superior inner angle of orbit with a denticle on outer slope. Carapace narrow, a fringe of hair under lateral margin **vittatus**, p. 291.

B[2]. Tooth at superior inner angle of orbit without a denticle on outer slope. Carapace wider, margin naked **novemdentatus**, p. 292.

CYCLOXANTHOPS SEXDECIMDENTATUS (Milne Edwards and Lucas)

Plate 133, Figures 5 and 6; Plate 134, Figure 2; Plate 135, Figure 1

Xantho sexdecimdentatus MILNE EDWARDS and LUCAS, d'Orbigny's Voy. Amér. Mér., vol. 6, pt. 1, 1844, p. 15; vol. 9, atlas, 1847, pl. 7, fig. 2 (type-locality, Chile; type in Paris Mus.).

Paraxanthus sexdecimdentatus DANA, U. S. Expl. Exped., vol. 13, Crust., part 1, 1852, p. 172.

Cycloxanthus sexdecemlineatus (by error) A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 258.

Cycloxanthus sexdecemdentatus A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 259.

Cycloxanthops sexdecimdentatus RATHBUN, Proc. U. S. Nat. Mus., vol. 38, 1910, p. 541.

Diagnosis.—Carapace nearly smooth and with a flattened marginal rim. Superior orbital margin between fissures arcuate, surface flat. A lobe below spine at inner angle of wrist.

Description.—Carapace intermediate in width between the two following species; convex except for a flat lateral rim which bears the slightly upturned lateral teeth; surface nearly smooth. Regions separated for the most part by broad shallow grooves; a large dimple near middle of branchial region; a short oblique ridge subparallel to postlateral margin, and stopping abruptly inside the lateral rim. First two lateral teeth subtruncate, remainder subacute, unequal; last two teeth small and sometimes obscure. Front strongly advanced at middle, each lobe oblique, bilobed in smaller, nearly straight in larger specimens. Major chela very heavy, the palm increasing in width distally; fingers dark brown; a lobe below spine at inner angle of wrist.

Color.—Red tinged with yellowish above, bright fawn yellow below; fingers and dactylus of ambulatory legs a bright brown (Milne Edwards and Lucas). Carapace generally a dark prune purple to claret brown, so dark that on higher parts of carapace it is almost black; the same on antero-lateral spines. Chelae lavender, lilac on upper margin, on prominent superior spine of carpus and on smooth portions above. Teeth of fingers white, also tip of inner carpal spine. The short curved groove on outer face of palm leading down from articulation with dactylus is almost cadmium orange.

Pits of reticulations rufous to ochraceous rufous, darker and redder than ambulatory legs. Legs almost orange, ochraceous orange buff. (Schmitt.) Small specimen dull white around free edge of carapace, anterior median part drab gray with touches of russet, hinder part more lilac gray. Fingers of chelae dark mummy brown. Propodi and dactyli of first and second legs drab to raw umber, distal third of dactyls white; dactyl of third leg with band of same color as the preceding legs; fourth legs all white. (Schmitt.)

Measurements.—Male (40431), length of carapace 30.6, width of same 45.8, fronto-orbital width 15.2, width of front 7.1 mm.

Range.—Mexico to Chile.

Material examined.—

MEXICO.—Maria Madre Island; 4–10 fathoms; California Acad. Sci.; 1 small male, soft shell, without chelipeds or legs; returned.

PERU.—Paita; 1926; W. L. Schmitt; 2 males (61373).

Bay of Sechura; west of Matacaballa; about 5 fathoms; taken in trawl; April 8, 1907; R. E. Coker, collector; received from Peruvian Government; 1 young female (40428).

Bay of Sechura; about half way between Bayovar and Matacaballa; 5 to 6 fathoms; April 10, 1907; R. E. Coker, collector; specimens returned to the Peruvian Government.

Lobos de Afuera; March 25; R. E. Coker, collector; received from Peruvian Government; 1 female (40434).

La Punta; tide pool on shingle beach; December, 1906; R. E. Coker, collector; received from Peruvian Government; 1 male (40433), 5 males (40431).

Callao; photograph received from C. E. Porter.

Near northeast side of San Lorenzo Island, Callao Bay; 2.5 fathoms; dredged; February 5; R. E. Coker, collector; received from Peruvian Government; 1 young female (40429).

Dredged off San Lorenzo Island; 1926; W. L. Schmitt: November 3; 2 males (1 soft shell) (60725). November 7; 2 males (60726), 1 male (60727).

Bay of Chilca; September 2, 1907; R. E. Coker, collector; received from Peruvian Government; 1 male, 1 female (40430).

Independencia Bay; at the Punta Callao of Isla Vieja; 1 fathom; July 20, 1907; R. E. Coker, collector; received from Peruvian Government; 1 male (40432).

Chincha Islands; Saussure, collector; specimens in Geneva Mus.

CHILE.—Without definite locality; 1 chela (17538).

CYCLOXANTHOPS VITTATUS (Stimpson)

Plate 133, Figures 3 and 4; Plate 134, Figure 3

Xantho vittata STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 206 [78] (type-localities, Panama and Cape St. Lucas; cotypes from Cape St. Lucas in Mus. Comp. Zoöl.).

Cycloxanthus vittatus A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 259, pl. 46, fig. 5–5*d*.

Cycloxanthops vittatus RATHBUN, Mem. Mus. Comp. Zoöl., vol. 35, 1907, p. 70.

Diagnosis.—Carapace narrow, rugose; some transverse lines. A denticle on slope of inner-upper angle of orbit. Superior orbital margin between fissures advanced, dentiform.

Description.—Carapace very narrow, anteriorly more lobulated than in *C. sexdecimdentatus*, lobules rugose and crossed by some transverse lines. Front separated from the superior inner angles of orbit by a deep furrow; these angles are tuberculiform and directed a little outward at tip and bear a denticle on their outer border; a few hairs on edge of front; orbital border interrupted by two fissures, either side of a projecting tooth. Lateral teeth well separated, very unequal, fourth, sixth, eighth, and ninth much reduced. Lateral border hairy below the teeth. Upper surface of carpus and manus feebly eroded; a short blunt tooth behind distal angle of carpus; secondary inner tooth reduced. Palms short and broad, both margins arcuate; color of immovable finger continued a little on palm.

Color.—Yellowish grey; carapace with 11 longitudinal stripes of red (Stimpson). Fingers dark brown.

Measurements.—Male (3208), length of carapace 17.6, width of same 23.5, fronto-orbital width 10.6, width of front 5.3 mm.

Range.—From Cape St. Lucas, Lower California, Mexico, to Panama.

Material examined.—Cape St. Lucas, Mexico; John Xantus, collector; 9 small specimens, cotypes (1260, M.C.Z.).

Puerto Angel, State of Oaxaca, Mexico; 1910; C. R. Orcutt, collector; 1 male (50924).

Panama: Specimens named by Stimpson, not including the measured type (M.C.Z.). John M. Dow, collector; 2 males, 2 females (3208).

Perico Island, Panama; October 26, 1904; *Albatross;* 1 male (33276).

CYCLOXANTHOPS NOVEMDENTATUS (Lockington)

Plate 134, Figure 1; Plate 135, Figures 2 and 3

Xanthodes ? novemdentatus LOCKINGTON, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 32 [5] (type-locality, San Diego; type not extant).

Xantho novem-dentatus LOCKINGTON, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 99 [5].

Cycloxanthus californiensis RATHBUN, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 237 (type-locality, Guadalupe Island, L. Cal.; type, Cat. No. 17395, U.S.N.M.).

Cycloxanthops novem-dentatus HOLMES, Occas. Papers California Acad. Sci., vol. 7, 1900, p. 56.

Cycloxanthops rugosa HOLMES, Occas. Papers California Acad. Sci., vol. 7, 1900, p. 59 (type-locality, San Diego; type in Mus. Univ. Cal.).

Cycloxanthops novemdentatus RATHBUN, Harriman Alaska Exped., vol. 10, 1904, p. 180, pl. 7, fig. 10.

Diagnosis.—Carapace wide, for the genus; rugose; edge thick. Secondary tooth on wrist well developed; palms oblong.

Description.—Carapace slightly convex, flattened behind, punctate and anteriorly rugose, wider than the two preceding species; regions separated and subdivided by shallow grooves, less distinct than in *C. vittatus*. First lateral tooth depressed, last two small, postlateral, last one absent in small specimens; margin thick, teeth short, subacute. Front produced, more advanced at middle than at orbits; lobes each with a shallow sinus, or almost straight, a well developed outer tooth in small specimens. Abdomen broader than in *C. vittatus*, second and penult segments shorter. Wrist and upper part of hand very rugose; wrist with two blunt teeth at inner angle; hands oblong, upper and lower margins subparallel; fingers irregularly toothed, not gaping, grooved. Legs hirsute on margins.

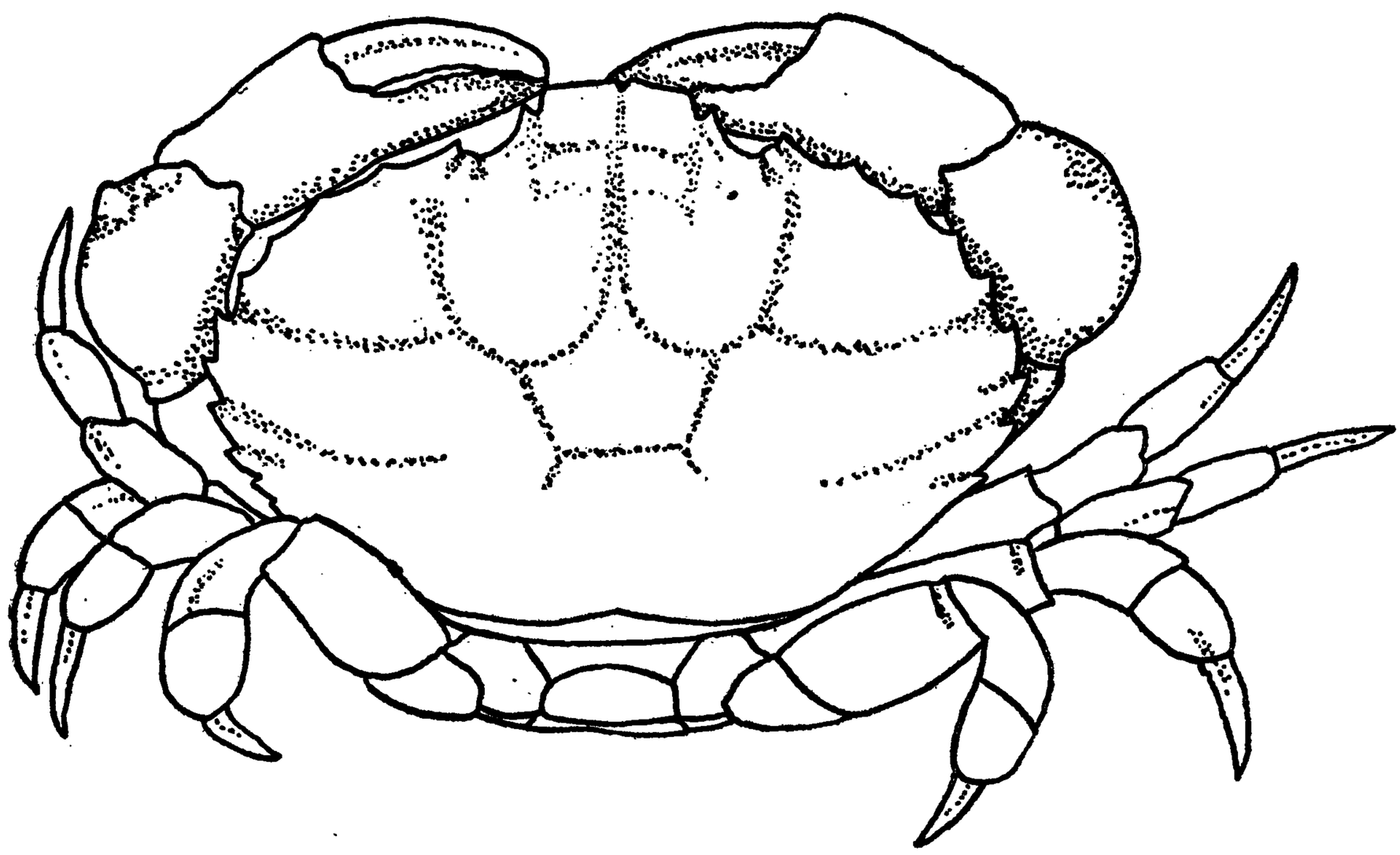

FIGURE 46.—CYCLOXANTHOPS NOVEMDENTATUS, MALE, DORSAL VIEW. AFTER HOLMES

Color.—General color dull reddish brown, showing traces of purple at posterior part of carapace and still more strongly on ambulatory legs and below. Fingers black with teeth along prehensile margins white. (Schmitt.) See under "*Material examined.*"

Measurements.—Male (17536), length of carapace 28, width of same 43.2, fronto-orbital width 13.3, width of front 7.2 mm. Male (19505), length of carapace 53.4, width of same 94.1, fronto-orbital width 23.2, width of front 12.2 mm.

Habitat.—Frequent under stones between tides (Baker).

Remarks.—The form called *rugosa* by Holmes is probably a variation of *novemdentatus*, this species having great variation in roughness.

Range.—From Monterey Bay, California, to Guadalupe Island, Lower California, Mexico.

Material examined.—

CALIFORNIA.—Venice Breakwater: *Anton Dohrn;* Venice Marine Biological Station; 3 males (50252). March 13, 1913; J. R. Beck; 1 male (62512); from Univ. Southern California.

Redondo; E. P. Chace; 1 male (53905).

Point Fermin; March 25, 1918; E. P. Chace; 1 male (53990).

San Pedro; H. N. Lowe; 3 males, 2 females (23052).

Point White, San Pedro; May 18, 1919; E. P. Chace; 2 young (53901, 53902).

Long Beach; H. N. Lowe: 1 female (50514). December, 1924; 1 female (60863).

Laguna Beach; W. A. Hilton; 1 male (48994); 9 young (54025–54030); 1 specimen (50602); 1 young male, medium low tide (50603), carapace very light, almost white, fingers and second, third and fourth pairs of legs brown; 1 male, 1 female (50601), carapace white with purplish pink longitudinal marks.

Catalina Harbor, Santa Catalina Island; W. H. Dall: Beach; 7 males, 1 young (17507), 2 males (17509). 30–40 fathoms, sandy mud; 2 females, 2 young (17508).

Catalina Harbor; west shore; December 28, 1912; *Anton Dohrn;* Venice Marine Biological Station; 2 males (50249).

Isthmus Harbor, Santa Catalina Island; *Anton Dohrn;* Venice Marine Biological Station; 10 males, 6 females, 8 young (50250).

Avalon, Santa Catalina Island; C. F. Baker; 2 males (29305).

Sugar Loaf Rock, Avalon Bay, Santa Catalina Island; June 18, 1913; *Anton Dohrn*; Venice Marine Biological Station; 3 males (50251, 50266).

San Nicholas Island; H. N. Lowe; 1 male, 1 female (32968).

San Clemente Island; January, 1899; H. N. Lowe; 2 males (23061).

La Jolla; September 22, 1918; W. L. Schmitt; 6 males, 5 females, 2 young (53972).

San Diego: 1861; J. G. Cooper; 2 males (17536). H. Hemphill; 1 male, 6 females (17531). C. R. Orcutt; 2 males (17499). San Diego Society of Natural History; 2 specimens (53360).

California; from Boston Society of Natural History; 1 female (56807).

LOWER CALIFORNIA.—San Martin Island; July 16, 1896; A. W. Anthony; 1 male (19505). An unusually large specimen of extraordinary width. See under "*Measurements.*"

Guadalupe Island; 1889; *Albatross;* 1 male (17395), holotype of *C. californiensis* Rathbun.

Genus PHYMODIUS A. Milne Edwards

Phymodius A. Milne Edwards, Ann. Sci. Nat., ser. 4, vol. 20, 1863, p. 283; type, *P. ungulatus* (H. Milne Edwards).

Carapace moderately convex, hexagonal, regions well delimited and broken up into numerous convex areolae. Front bilobed, the

outer angle of each lobe forming a distinct little lobule. Orbital margin with two grooves above and one below outer angle. Eyes on short thick stalks. Basal antennal article large, extending outwards and upwards into the gap between front and orbit. Chelipeds unequal, fingers large, deeply hollowed at tip. Merus, carpus and propodus of legs spinulous above. Male abdomen five-segmented.

Inhabits the Indo-Pacific region and the east coast of middle America.

PHYMODIUS MACULATUS (Stimpson)

Plate 136

Chlorodius maculatus STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 210 [82] (type-locality, Tortugas, Fla.; type not extant).

Phymodius maculatus A. MILNE EDWARDS, Crust. Rég. Mex., 1880, p. 267.

Diagnosis.—Carapace areolated; lateral teeth sharp, separated by concave spaces; front advanced, four-toothed. Fingers gaping, spooned. Legs spinulous and hairy.

Description.—Carapace evenly convex, areolated; lobules rather prominent anteriorly and antero-laterally, with nearly smooth surfaces. No transverse ridges. Surface posteriorly glabrous. Antero-lateral teeth four (excluding angle of orbit), subequal, small but sharply prominent; interspaces broad, concave. Front advanced, sublaminiform, median notch small, lobes oblique, outer lobules produced. A blunt subhepatic tooth or tubercle just in front of the first of the four antero-lateral teeth.

Anterior margin of merus of maxillipeds oblique. Chelipeds stout, not very unequal; merus spinulous above. Upper surface of carpus and manus slightly rugose. Two teeth at inner angle of carpus, the upper one much the longer. Chelae dissimilar; immovable finger with color ending in an oblique line on palm, and with a tooth at middle of prehensile margin, which may be absent in the minor chela of old specimens. Major dactyl with a small tooth near its base. Fingers spooned, gaping, the gape wider in the minor chela. Legs spinulous and hairy.

Color.—Carapace yellowish with numerous brown spots. Chelipeds spotted with red.

Measurements.—Male (13833), length of carapace 17, width of same 23.5, fronto-orbital width 13.6, frontal width 6.1 mm.

Range.—Florida Keys; Bahamas; West Indies.

Material examined.—

FLORIDA.—Cape Florida; Dr. Edward Palmer; 1 young female (17899).

Indian Key; along shore, low tide; H. Hemphill; 1 female (17826).

Key West: Among rocks, low tide; H. Hemphill; 10 males, 7 females (13833). 1884; *Albatross;* 2 males, 4 females (17825).

Dry Tortugas: Dr. Edward Palmer; 1 female (17827). Shallow water; June, 1893; Biological Expedition, State University of Iowa;

1 male, 3 females; returned to sender. North end Bird Key reef; "Channel reef"; Aug. 12, 1924; W. L. Schmitt; 1 female (59467); gift of Carnegie Institution. Bird Key Reef; June 2, 1925; W. L. Schmitt; 1 female (60926). J. E. Mills; 1 ovigerous female (M.C.Z.).

Florida Keys; May, 1913; J. B. Henderson; 1 female, with left orbit and maxilliped malformed (46064).

BAHAMAS.—Spanish Wells; July 13, 1893; Biological Expedition, State University of Iowa; 1 male; returned to sender.

CUBA.—1914; Henderson and Bartsch, *Tomas Barrera* Expedition: Ensenada de Cajon off San Antonio; station 11; May 22; 1 young male (48536); caught by copper sulphating on reef. On reef flat between Cayo Hutia and Little Cayo, NE. of Light; 1 male (48517).

ST. THOMAS, VIRGIN ISLANDS.—Specimens in Copenhagen Museum.

Genus LEPTODIUS A. Milne Edwards

Leptodius A. Milne Edwards, Ann. Sci. Nat., ser. 4, vol. 20, 1863, p. 284; type, *L. exaratus* (Milne Edwards) = *Chlorodius exaratus* Milne Edwards, 1834.

Carapace broad, suboval, moderately convex anteriorly, flat in posterior half; regions generally well delimited and fairly well lobulated in anterior two-thirds, but not posteriorly. Antero-lateral borders arched, usually cut into four strong teeth; postero-lateral borders as long as chord of antero-lateral, moderately convergent, not concave. Fronto-orbital distance about half or more that half of extreme width of carapace. Front not produced, about a fourth the greatest width of carapace; notched in middle line, separated from supra-orbital margin by a notch or groove. Orbits suboval, margin with two suture lines above and one just below outer angle; usually a prominent tooth at inner angle of lower edge of orbit. Eyes on short thick stalks. Basal antennal article short, meeting front at inner angle; flagellum lodged in orbital hiatus. Anterior edge of merus of external maxillipeds nearly transverse, with commonly a small tooth near antero-internal angle. Chelipeds unequal in both sexes. Legs thick, upper edges often sharp. Abdomen of male with third to fifth segements fused.

East and west coasts of America; Europe; eastern Atlantic; Indo-Pacific region.

KEY TO THE AMERICAN SPECIES OF THE GENUS LEPTODIUS

A[1]. Antero-lateral margins dentate.
- B[1]. Palms of chelipeds without strong longitudinal ridges outside.
  - C[1]. Only five lateral teeth including orbital angle.
    - D[1]. Last (or most posterior) of antero-lateral teeth directed obliquely forward.
      - E[1]. Granulation of carapace and chelipeds inconspicuous. Lateral teeth of carapace rather broad and flat.

F[1]. Front plainly double-edged in middle. Dorsal lobe 1 L conical, its ridge continued along margin of first lateral tooth. Dark color of both immovable fingers of male continued on palm.....**floridanus**, p. 297.

F[2]. Front faintly double-edged in middle. Dorsal lobe 1 L low, oblong, inconspicuous. Dark color of immovable fingers of male not continued on palm.....**occidentalis**, p. 301.

E[2]. Granulation coarse; dorsal aspect of chelipeds covered with tubercles. Lateral teeth of carapace subconical, hooked, the last three with pointed tips.

F[1]. Carapace lobulate; tubercles of chelipeds composed of granules; ambulatory legs rough with acute granules.....**agassizii**, p. 307.

F[2]. Carapace not lobulate; tubercles of chelipeds small, not composed of granules; ambulatory legs spinulous.....**tridentatus**, p. 308.

D[2]. Last (or most posterior) of antero-lateral teeth directed straight outward.

E[1]. Areolations of carapace crossed by one or more granulated ridges. Transverse branchial ridge behind apex of last marginal tooth reaching to carapace margin. Antero-lateral edge thin.....**taboganus**, p. 304.

E[2]. Areolations of carapace not crossed by a granulated ridge. Antero-lateral edge thick.....**parvulus**, p. 305.

C[2]. Six lateral teeth including orbital angle.....**sanguineus**, p. 302.

B[2]. Palms of chelipeds with strong longitudinal ridges. Antero-lateral margin strongly dentate.....**snodgrassi**, p. 303.

A[2]. Antero-lateral margins thick and lobed, the lobes more or less angular. Upper inner margin of palm cristate. Color of immovable fingers not con-continued on palm.....**cooksoni**, p. 310.

ANALOGOUS SPECIES OF LEPTODIUS ON OPPOSITE SIDES OF THE CONTINENT

Atlantic	Pacific
floridanus	*occidentalis*
agassizii	*tridentatus*
parvulus	*cooksoni*

LEPTODIUS FLORIDANUS (Gibbes)

Plate 137, Figures 1 and 2; Plate 138, Figure 1

Chlorodius floridanus GIBBES, Proc. Amer. Assoc. Adv. Sci., vol. 3, 1850, p. 175 [11] (type-locality, Key West; cotypes in Charleston Mus.).[36]

Chlorodius limosus DESBONNE and SCHRAMM, Crust. Guadeloupe, 1867, p. 30 (type-locality, Guadeloupe; type not extant).

Chlorodius exaratus DANA, U. S. Expl. Exped., vol. 14, Crust., part 2, 1853, p. 1554; not *C. exaratus* Milne Edwards, 1834.

Leptodius floridanus A. MILNE EDWARDS, Crust. Rég. Mex., 1880, p. 268, pl. 49, figs. 2 and 2*a*.

Diagnosis.—Front plainly double-edged in middle. Dorsal lobe 1 L conical, its ridge continued along margin of first lateral tooth to orbit.

[36] According to E. B. Chamberlain the label reads, "Charleston Cabinet. Brought from Key West in numbers, by Doctor Wurdemann in 1845, and lately by Prof. W. H. Harvey." These words precede Gibbes's description.

Dark color of both immovable fingers of male continued on palm. Suture between third and fourth and fourth and fifth abdominal somites very slightly indicated.

Description.—Lateral lobules of dorsal surface, 1 L, 3 L, and 4 L, tuberculiform and conical; remaining lobules flattened, crossed by short transverse lines, finely granulate or punctate and defined anteriorly by shallow grooves. Frontal lobes subtruncate, separated by a narrow emargination, each lobe subdivided by a shallow sinus; the inner angle of the lobe made double by a deep groove, the upper edge less produced than the under. Antero-lateral teeth large, subacute; the second tooth is a little below the line between the third and the first or orbital tooth. Just behind the tip of the last tooth a transverse raised granulate line runs inward nearly across branchial region.

Merus of chelipeds short not reaching beyond carapace; wrist and upper portion of hand rugose; fingers stout, grooved and punctate, dentate within, touching only at the broadly spoon-shaped extremities; a tuft of hair in the spoon. Dark color of immovable finger continued back a short distance on palm. Legs hairy on margin.

Color.—Ground of back (46039) ivory white, growing darker forward; irregular spots almost black; legs same color as hinder part of back and spotted with brown; upper portion of claws very dark green growing lighter to white underneath; pincers chestnut, white tipped; entire under part of body and claws white. Some specimens grayish green, uniform on legs and claws; pincers rich chestnut, tips and teeth white; under portion lighter, grayish or whitish. (Henderson.) Grayish green, fingers black (Desbonne). Sometimes yellow with red spots (A. Milne Edwards).

Measurements.—Male (57126), extreme length of carapace 22, width of same 33, fronto-orbital width 18, front 8 mm.

Range.—Bermudas; Bahamas and Florida Keys to the State of São Paulo, Brazil. In shallow water and on reefs.

Material examined.—

BERMUDAS.—F. V. Hamlin; received from Wesleyan University; 3 females (4023).

BAHAMAS.—Abaco; 1886; *Albatross;* 2 males, 2 females (17779).

Powell's Point, Eleuthera Island; July 8, 1903; B. A. Bean; received from Geographic Society of Baltimore; 1 male (31042).

New Providence; specimens in Copenhagen Museum.

Bahamas; Frederick Stearns collection; specimens destroyed: Andros Island in sponges; Andros Banks, west side, in live sponges.

Bahamas; Dr. Henry Bryant; from Boston Society of Natural History: 2 males, 3 females (56761), 1 young (56822).

FLORIDA.—Ragged Key; April 27, 1912; Paul Bartsch; 3 females (2 ovigerous).

Indian Key; along shore, low tide; 1885; Henry Hemphill; 3 males (15026).

Key Vaccas; H. Hemphill; 1 male, 1 female (15027).

Big Pine Key; H. Hemphill; 1 male, 1 female (15025).

Key West; A. S. Packard; received from Boston Society of Natural History; 5 females (56765). December, 1883; D. S. Jordan; 2 males, 1 female (5826). April 15–27, 1884; *Albatross;* 6 males, 2 females (17780). H. Hemphill; 39 males, 26 females (9274). C. N. E. Eliot; 1 male (22990). May 27, 1926; U. S. Bureau of Fisheries; 3 males, 3 females (60748). Off North Fort Murtane; July 14, 1924; W. L. Schmitt; 1 male (60895); gift of Carnegie Institution.

Tortugas; Biological Expedition of State University of Iowa, 1893: June 5–8; 6 males, 10 females (S. U. I.). In gulf weed; June 13; 2 males (S. U. I.).

Tortugas; W. L. Schmitt collector; gift of Carnegie Institution: About 7 miles S. of No. 2 buoy; 18 fathoms; coarse sand; July 22, 1924; station 44; 1 young (60894). From stomach of fish No. 430, yellowtail, *Ocyurus chrysurus* (Bloch), taken by dynamiting on reef patch south of channel at Fort Jefferson; June 18, 1925; 1 specimen (60896).

Tortugas Reef; J. B. Henderson; 1 male (53744).

Loggerhead Key, Tortugas; 1924; W. L. Schmitt: Off northern end; August 10; 1 male (59430). Rocks on east side; July 27 and 28, 1924; 4 males, 2 females (59432). East side, below lighthouse pier; from weeds and rocks; August 18; 1 female (59428). West of lighthouse, on rocks; July 21; 1 male (59441).

Bird Key, Tortugas; 1924; W. L. Schmitt: On reef; 1 male (59439). On reef; July 26 and 28; Bender collector; 7 males, 8 females (1 ovigerous, 1 immature) (59437). North end of reef, "Channel reef"; August 12; 4 males, 1 female (59434). Mid-section of reef; August 15; 4 males, 2 females (59435). South end of reef; August 13; 6 males, 6 females (2 ovigerous) (59438). East side of harbor; 10 feet; with boat dredge; August 8; 1 male (59433).

Bird Key; 1889; Grampus; 2 males (15220).

Bird Key Reef, Tortugas; 1925; W. L. Schmitt: June 2; 3 females (1 ovigerous) (60892). Low tide; stations 25–26; June 7; 22 males, 22 females (8 ovigerous) (60888). June 20; 1 female (61109). June 22; Dexter, collector; 7 males, 5 females (60889).

Long Key, Tortugas; 1924; W. L. Schmitt: From bunches of *Hypnea,* in water too deep for seining; July 30; 1 male (59431). Long Key Shoal, from rocks and seaweed; 2½–3 feet; August 14; 1 male (59440).

Bush Key, Tortugas; 1924; W. L. Schmitt: Northern section of reef; August 2; 2 males (59427). Mid-section of reef; August 1; 27 males, 12 females (3 ovigerous) (59436). Off reef; August 20; 1 male (59429).

Bush Key, Tortugas; June, 1921; Paul Bartsch; 23 males, 20 females (2 ovigerous) (57126). Bush Key reef: Near Long Key; June 3, 1925; W. L. Schmitt; 2 males, 2 females (60891). Shallow water; July 29, 1926; C. R. Shoemaker; station 7; 1 female (60893); gift of Carnegie Institution.

Florida Keys: Received from Boston Society of Natural History; 4 males, 3 females (56762). 1884; Edward Palmer; 2 males (9275). May, 1913; J. B. Henderson; 5 males (46039).

CUBA.—Cuba; 1914; Henderson and Bartsch, *Tomas Barrera* Expedition: Ensenada de Cajon, off Cape San Antonio; May 22; station 11; 1 male (48550). On reef at Cape San Antonio; caught by copper sulphating; 4 females (48539). Cabãnas; 2–12 fathoms; sand, shell, grass to mud bottom; caught by copper sulphating on reef; June 8–9; station 16; 2 males, 2 females (48569).

Mariel; under stones between tides; May 10, 1900; William Palmer and J. H. Riley; 2 specimens (23831).

Cojimar; C. F. Baker; 1 male, 1 female (31894).

Cardenas; 1923; Francisco R. Sosa; 2 males, 1 female (58390).

SANTO DOMINGO.—1878; W. M. Gabb; 5 males, 4 females (3195).

JAMAICA.—Montego Bay; on coral reef; July 12, 1910; Charles B. Wilson; 1 male, 1 ovigerous female (42931); 1 male (42932).

Montego Bay; 1910; E. A. Andrews: June 28; 1 ovigerous female (42926). June 21; coral reef near Bogue Islands; 2 males (42928). June 25; at Montego Bay Point; 1 male (43053).

Umbrella Point; July 14, 1910; E. A. Andrews; 1 male (42927).

Port Royal Cayes; P. W. Jarvis; specimens in Jarvis collection.

PORTO RICO.—Porto Rico; 1899; *Fish Hawk:* Guanica, reefs; January 29; 1 male (24247). Ponce; January 31; 1 female (24347). Playa de Ponce Reef; February 1; 1 male, 1 female (24274). Arroyo; February 4; 4 males, 5 females (24265).

San Juan; G. M. Gray; specimens returned to sender.

Ensenada Honda, Culebra Island; February 9 and 10, 1899; *Fish Hawk;* 2 males, 2 females (24348).

Caballo Blanco Reef, Vieques Island; February 7, 1899; *Fish Hawk;* 1 male (24271).

ST. THOMAS.—St. Thomas, Virgin Islands: January 17–24, 1884; *Albatross;* 2 males, 1 female (18514). Lagoon; July 9, 1915; Clarence R. Shoemaker; received from Carnegie Institution; 1 male, 1 female (53745).

ST. CROIX.—St. Croix; specimens in Copenhagen Museum.

ANTIGUA.—Pillars of Hercules; 1918; Barbados-Antigua Expedition of State University of Iowa; 1 female (S. U. I.).

BARBADOS.—Barbados; May 8, 1890; W. H. Brown; U. S. Eclipse Expedition to Africa; 3 females (14887).

Barbados; 1918; Barbados-Antigua Expedition of State University of Iowa: 8 males, 3 ovigerous females (S. U. I.). Pelican Island, tide pools: 2 males (S. U. I.); May 11, 3 males (58007); May 13, 4 females (3 ovigerous) (58006). Pelican Island, shallow water, 1 male, 1 young female (S. U. I.).

CURAÇAO.—Curaçao: 1884; *Albatross;* 5 males, 5 females (17813). Spanish Port; April 10, 1920; C. J. van der Horst; 1 female (Amsterdam Mus.).

COLOMBIA.—Sabanilla [Puerto Colombia]; March 16–22, 1884; *Albatross;* 7 males, 7 females (17823).

PANAMA.—Colon [Aspinwall]; J. A. McNiel; received from Boston Society of Natural History; 1 male, 1 female (56760). Coral reef; May 2, 1911; Meek and Hildebrand; Smithsonian Biological Survey; 1 male (44189).

BRAZIL.—Abrolhos Islands; 1887; *Albatross;* 1 female (22010).

Pirangi, Ceara, Brazil; 1911; Fred Baker, Stanford Expedition; 1 female (53746).

Brazil; 1899; A. W. Greeley, Branner-Agassiz Expedition: June 22 and 23; Mamanguape stone reef, Parahyba; 2 males, 1 female (25730). June 18; Rio Goyanna stone reef, Pernambuco; 3 males, 1 female (25731). Coral reef, Maceio; 1 male, 3 females (Stanford Univ.).

Brazil; 1876–1877; R. Rathbun, Hartt Explorations; Bom Fim, Bahia; 1 male (19964). Plataforma, Bahia; 2 males, 2 females (40605).

Rio de Janeiro; H. Krøyer; specimens in Copenhagen Museum.

Villa Bella, Ilha São Sebastião, São Paulo, Brazil; Sept. 29, 1925; W. L. Schmitt; 2 males (60890).

LEPTODIUS OCCIDENTALIS (Stimpson)

Plate 137, Figures 3 and 4; Plate 138, Figure 2

Chlorodius occidentalis STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 10, 1871, p. 108 (type-localities, Panama and Manzanillo, Mexico; types not extant).
Chlorodius fisheri LOCKINGTON, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 104 [10] (type-locality, Magdalena Bay, Mexico; type not extant).
Chlorodius fischeri [by error] A. MILNE EDWARDS, Crust. Rég. Mex., 1880, p. 269.
Leptodius occidentalis A. MILNE EDWARDS, Crust. Rég. Mex., 1880, p. 269.

Diagnosis.—Front faintly double-edged in middle. Dorsal lobe 1 L low, oblong, inconspicuous. Dark color of immovable fingers of male not continued on palm. Sutures between third and fourth and fourth and fifth abdominal somites well marked.

Description.—Carapace broader than in *floridanus;* front less projecting, teeth of median pair less produced beyond those of lateral pair than in *floridanus;* margin of front very slightly double along median lobes, the two parts, upper and lower, equally advanced. Carapace smoother, less rugose; antero-lateral teeth broader, especially the second which is more obtuse. Dorsal lobe 1 L low, oblong.

Color of immovable finger running from the proximal end of the prehensile edge obliquely downward and backward in a wavy line to lower margin.

Color.—Carapace greenish red; chelipeds marbled with purplish red, white beneath; fingers black (Lockington).

Measurements.—Male (50626), extreme length of carapace 24.7, width of same 39.6, fronto-orbital width 19.2, front 9.3 mm.

Range.—Magdalena Bay, Lower California, and also the Gulf of California, Mexico, to Panama; Galapagos Islands.

Material examined.—Magdalena Bay, west coast of Lower California; 1917; C. R. Orcutt; 1 male (50626).

La Paz, Gulf of California: L. Belding; 4 males (4626). *Albatross;* 1 male, 1 female (17398). Harbor; *Albatross;* 2 males, 1 female (17399).

Pichilinque Bay, Gulf of California; *Albatross:* April 29, 1888; 4 males, 8 females (22011). March 27, 1911; 1 male, 1 female (50482), 4 males, 2 females (Amer. Mus.).

San Josef Island, Gulf of California; March 16, 1889; *Albatross;* 5 females (17400).

Agua Verde Bay, Gulf of California; April 1, 1911; *Albatross;* 3 males (50483).

Concepcion Bay, Gulf of California; March 19, 1889; *Albatross;* 9 males, 12 females (17406).

San Luis Gonzales Bay, Gulf of California; March 27, 1889; *Albatross;* 1 male, 1 female (17410).

Guaymas, Sonora, Mexico: March 21, 1889; *Albatross;* 5 males, 6 females (17408). Inner harbor; February 23, 1891; P. L. Jouy; 1 male, 1 female (17305). Bay shore, among rocks; February 22, 1904; William Palmer; 2 females (31514).

Manzanillo, Colima, Mexico; on drifted pile; July 17, 1913; C. R. Orcutt; 1 female (54464).

Clarion Island, west of Mexico: A. W. Anthony; 1 male (20699). Shore; Hanna and Jordan, California Acad. Sci.; 3 males, 3 females returned; 2 males, 2 females (62703).

Galapagos Islands; 1888; *Albatross;* 1 male, 1 female (22012).

LEPTODIUS SANGUINEUS (Milne Edwards)

Plate 137, Figure 5 and 6; Plate 138, Figure 3

Chlorodius sanguineus MILNE EDWARDS, Hist. Nat. Crust., vol. 1, 1834, p. 402 (type-locality, Mauritius; type in Paris Mus.).

Lagostoma nodosa RANDALL, Journ. Acad. Nat. Sci. Philadelphia, vol. 8, 1839 (1840), p. 111 (type-locality, Sandwich Islands; type not located).

Chlorodius nodosus DANA, Proc. Acad. Nat. Sci. Philadelphia, 1852, p. 79.

Leptodius sanguineus A. MILNE EDWARDS, Nouv. Arch. Mus. Hist. Nat., Paris, vol. 4, 1868, p. 71.—DEMAN, Abh. Senck. naturf. Ges., Frankfurt, vol. 25, 1902, p. 602.

Leptodius exaratus var. *sanguineus* CANO, Boll. Soc. Nat. Napoli, ser. 1, vol. 3, 1889, p. 203.
Xantho exaratus var. *sanguinea* ORTMANN, Zool. Jahrb., Syst., vol. 7, 1893, p. 447.
Xantho (*Leptodius*) *sanguineus* ALCOCK, Journ. Asiat. Soc. Bengal, vol. 67, 1898, p. 119; not *Chlorodius edwardsi* Heller.

Diagnosis.—A small tooth on the postero-lateral margin. Dark color of immovable fingers of male continued well back on palm. No fine transverse granulate lines on lobules of dorsal surface of carapace.

Description.—Related to *floridanus* and *occidentalis* but distinguishable at once by an additional though small tooth on the lateral margin, behind the lateral angle and therefore postero-lateral. Lobules of dorsal surface smooth, lacking the fine transverse striae of the above-named species. 2 L, 3 L, and 4 L subtruncate on the steep side toward the carapace margin. 1 L oblong, independent, 2 M longitudinally divided for fully half its length. Frontal margin thick sinuous, median emargination shallow, a short closed fissure behind it. Lateral teeth subacute; D tuberculiform, E and N shallow, obtuse-angled, T pointing forward or a little inward, S and the postero-lateral tooth directed obliquely outward and forward. Wrist and palm rough above; a very short conical tooth at inner angle of wrist. Fingers broadly spooned; dark color of immovable fingers of male continued well back on palm. Abdomen of male narrow.

Color.—With orange, reddish and white spots.

Measurements.—Male (Paita), length 21.5, width 34 mm. (Cano).

Range.—Indo-Pacific region from the Red Sea and Mauritius to Australia, Loo Choo Islands, Marcus Island, and the islands of the eastern Pacific, the Hawaiian, Marquesas and Paumotu Islands. Paita, Peru (Cano), the only American record.

LEPTODIUS SNODGRASSI Rathbun

Plate 139

Leptodius snodgrassi RATHBUN, Proc. Washington Acad. Sci., vol. 4, 1902, p. 279, pl. 12, figs. 7 and 8 (type-locality, Black Bight, Albemarle Island, Galapagos; type, Cat. No. 24831, U.S.N.M.).

Diagnosis.—Antero-lateral margins strongly toothed. Protogastric regions longitudinally divided for less than half their length. Wrist and hand deeply dimpled; hand with five longitudinal ridges, three outside, two above. Color of immovable finger extending on palm.

Description.—Carapace deeply areolated in anterior two-thirds; the areoles generally marked anteriorly by a transverse or nearly transverse line of granules from which the surface falls steeply down; epigastric lobes prominent; protogastric lobes partially longitudinally divided, the outer half itself divided in two crosswise; 2 L and 3 L fused, a short groove paralleling the anterior border; 5 L short and broad; D and 1 L united by a blunt ridge; 4 L roundish. E blunt and obtuse, N larger, dentiform, T and S acute, slightly curved at

tip, S much smaller than T. Front thick, double-edged by a shallow groove; median emargination shallow, margin of lobes little oblique and cut by shallow sinuses.

Chelipeds very unequal in male; upper and outer surface of wrist deeply dimpled or wrinkled; a strong tooth at inner angle of wrist. Hand with blunt longitudinal carinae, two on upper margin and three on outer surface; upper carina of outer surface broad, having a row of deep pits or dimples; lowest carina at inferior third of outer surface and continued along upper margin of thumb; upper part of inner surface of palm pitted. Entire surface of chelipeds and carapace finely and closely granulate and irregularly punctate. Fingers carinated, lower carina of outer surface of immovable finger is continued one-third length of palm; fingers black, color extended on palm ending in a zigzag line. Fingers of large hand gape widely, of small hand slightly; major dactylus with two large prehensile teeth and a small intermediate one; two large teeth on immovable finger; tips

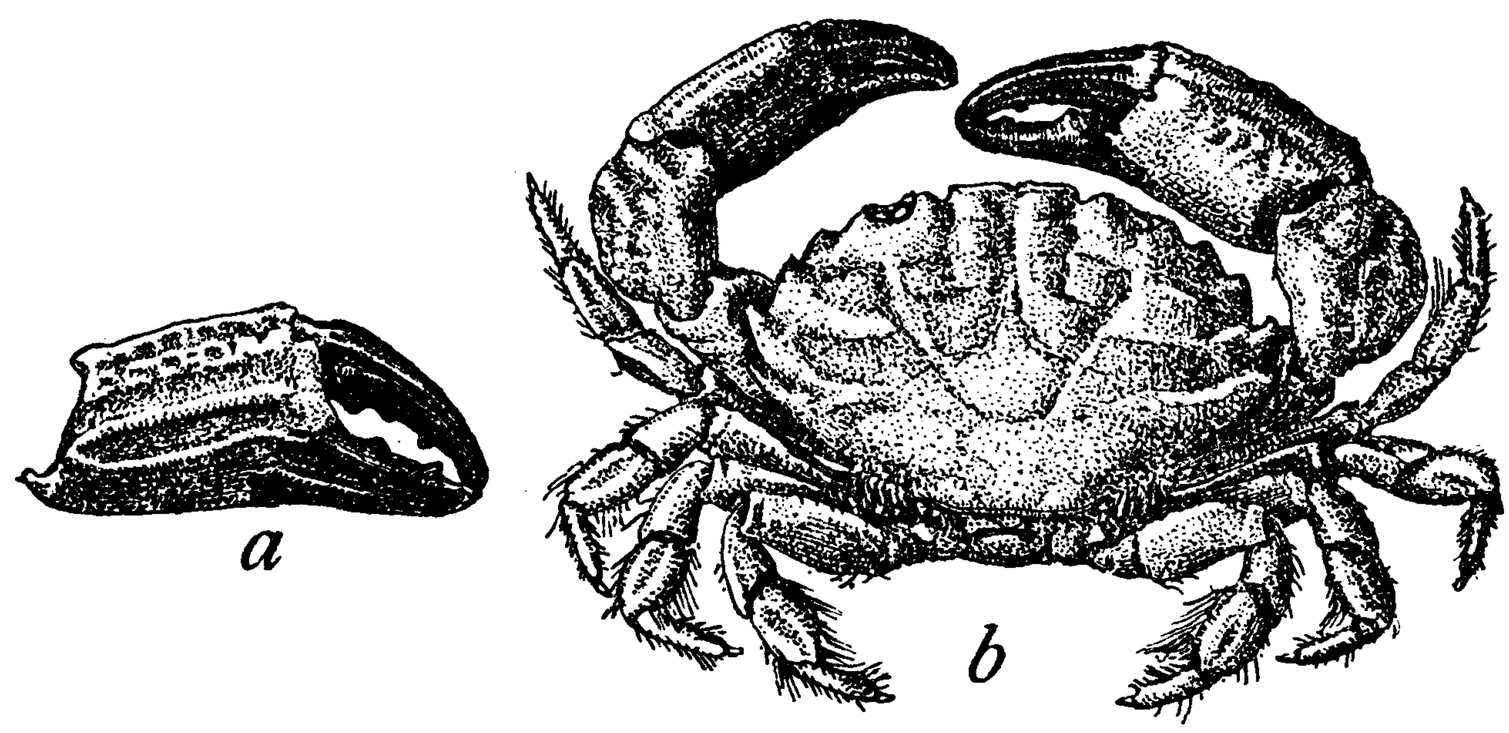

FIGURE 47.—LEPTODIUS SNODGRASSI, MALE, TYPE, ALBEMARLE ISLAND, ×1.5.
a. CHELA. *b*. DORSAL VIEW OF CRAB

broadly hollowed out; fingers of minor chela with prehensile margins wavy.

Measurements.—Male holotype, length of carapace 13.1, width 20.4, fronto-orbital width 11.8, width of front 5.5 mm.

Range.—Found only at the Galapagos Islands.

Material examined.—Albemarle Island, Galapagos Islands; 1899; Hopkins Stanford Expedition: Black Bight; January 9; 2 males (1 holotype) (24831). Reef north of Tagus Cove; March 16; one minor cheliped (Stanford Univ. Mus.).

LEPTODIUS TABOGANUS Rathbun

Plate 140

Leptodius taboganus RATHBUN, Smithson. Misc. Coll., vol. 59, 1912, p. 3 (type-locality, Taboga Island; type, Cat. No. 43658, U. S. National Museum).

Diagnosis.—Last antero-lateral tooth pointing directly outward; remaining teeth shallow, little projecting. Transverse branchial ridge continued to margin of carapace. Color of immovable finger extending on palm.