Ralph T. Smi

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THE CANCROID CRABS OF AMERICA OF THE FAMILIES EURYALIDAE, PORTUNIDAE, ATELECYCLIDAE, CANCRIDAE AND XANTHIDAE

BY

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The present work forms No. 152 of the *Bulletin* series.

ALEXANDER WETMORE,
Assistant Secretary, Smithsonian Institution.

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113. *Medaeus spinimanus.*
114. *Medaeus lobipes.*
115. *Platyxanthus orbignyi.*
116. *Platyxanthus crenulatus* and *orbignyi.*
117. *Platyxanthus crenulatus.*
118. *Platyxanthus crenulatus.*
119. *Platyxanthus crenulatus.*
120. *Platyxanthus cokeri.*
121. *Platyxanthus cokeri.*
122. *Platyxanthus cokeri.*
123. *Platyxanthus patagonicus.*
124. *Platyxanthus patagonicus.*
125. *Platyxanthus patagonicus.*
126. *Gaudichaudia gaudichaudii.*
127. *Gaudichaudia gaudichaudii.*
128. *Homalaspis plana.*
129. *Homalaspis plana.*
130. *Homalaspis plana.*
131. *Paraxanthus barbiger.*
132. *Paraxanthus barbiger.*
133. *Paraxanthus barbiger, Cycloxanthus vittatus,* and *sexdecimdentatus.*
134. *Cycloxanthops novemdentatus, sexdecimdentatus,* and *vittatus.*

135. *Cycloxanthops sexdecimdentatus* and *novemdentatus.*
136. *Phymodius maculatus.*
137. *Leptodius floridanus, occidentalis*, and *sanguineus.*
138. *Leptodius floridanus, occidentalis*, and *sanguineus.*
139. *Leptodius snodgrassi.*
140. *Leptodius taboganus.*
141. *Leptodius parvulus* and *agassizii.*
142. *Leptodius cooksoni.*
143. *Leptodius tridentatus* and *Xanthodius stimpsoni.*
144. *Xanthodius sternberghii.*
145. *Xanthodius denticulatus* and *sternberghii.*
146. *Xanthodius denticulatus.*
147. *Xanthodius hebes.*
148. *Metopocarcinus truncatus* and *Lophoxanthus lamellipes*
149. *Lophopanopeus heathii.*
150. *Lophopanopeus bellus.*
151. *Lophopanopeus bellus.*
152. *Lophopanopeus frontalis.*
153. *Lophopanopeus lockingtoni, somaterianus, leucomanus*, and *diegensis.*
154. *Lophopanopeus lockingtoni* and *leucomanus.*
155. *Lophopanopeus distinctus* and *lobipes.*
156. *Panopeus herbstii forma typica* and *forma obesa.*
157. *Panopeus herbstii forma simpsoni* and *forma crassa.*
158. *Panopeus purpureus, convexus*, and *chilensis.*
159. *Panopeus purpureus.*
160. *Panopeus chilensis.*
161. *Panopeus occidentalis forma serrata* and *forma typica.*
162. *Panopeus rugosus.*
163. *Panopeus rugosus.*
164. *Panopeus harttii* and *americanus.*
165. *Panopeus bermudensis.*
166. *Panopeus turgidus.*
167. *Panopeus boekei.*
168. *Neopanope texana, texana sayi*, and *packardii.*
169. *Hexapanopeus angustifrons* and *schmitti.*
170. *Hexapanopeus sinaloensis, orcutti*, and *paulensis.*
171. *Hexapanopeus hemphillii* and *caribbaeus.*
172. *Eurypanopeus abbreviatus, abbreviatus ater*, and *transversus.*
173. *Eurypanopeus dissimilis, depressus*, and *ovatus.*
174. *Eurypanopeus crenatus* and *ovatus.*
175. *Eurypanopeus planissimus* and *planus.*
176. *Eurytium limosus* and *tristani.*
177. *Eurytium affine* and *tristani.*
178. *Micropanope sculptipes, lobifrons*, and *truncatifrons.*
179. *Micropanope xantusii, xantusii taboguillensis*, and *pusilla.*
180. *Micropanope granulimanus, polita, lata*, and *xanthiformis.*
181. *Micropanope spinipes* and *nitida.*
182. *Micropanope areolata* and *urinator.*
183. *Micropanope urinator* and *cristimana*, and *Rhithropanopeus harrisii.*
184. *Tetraxanthus bidentatus.*
185. *Tetraxanthus rugosus.*
186. *Chlorodiella longimana.*
187. *Xanthias inornatus.*
188. *Paraxanthias taylori.*

189. *Paraxanthias taylori, sulcatus,* and *insculptus.*
190. *Eucratodes agassizii.*
191. *Menippe mercenaria.*
192. *Menippe mercenaria.*
193. *Menippe mercenaria.*
194. *Menippe frontalis.*
195. *Menippe frontalis.*
196. *Menippe frontalis.*
197. *Menippe obtusa.*
198. *Menippe obtusa* and *nodifrons.*
199. *Menippe nodifrons.*
200. *Pilumnus sayi, caribaeus, dasypodus,* and *spinosissimus.*
201. *Pilumnus xantusii, sayi,* and *gracilipes.*
202. *Pilumnus townsendi, diomedeae,* and *longleyi.*
203. *Pilumnus spinohirsutus.*
204. *Pilumnus townsendi* and *gonzalensis.*
205. *Pilumnus lacteus, floridanus,* and *stimpsonii.*
206. *Pilumnus quoyi* and *miersii.*
207. *Pilumnus gemmatus, pygmaeus, pannosus,* and *holosericus.*
208. *Pilumnus limosus.*
209. *Pilumnus limosus* and *reticulatus.*
210. *Pilumnus reticulatus forma fragosa* and *forma tessellata.*
211. *Lobopilumnus agassizii forma typica, forma pulchella, forma trinidadensis,* and *forma bermudensis.*
212. *Heteractaea lunata* and *ceratopus.*
213. *Heteractaea ceratopus.*
214. *Heteractaea lunata.*
215. *Acidops fimbriatus.*
216. *Pilumnoides perlatus.*
217. *Pilumnoides hassleri* and *perlatus.*
218. *Pilumnoides nudifrons* and *perlatus.*
219. *Ozius verreauxii.*
220. *Ozius reticulatus* and *verreauxii.*
221. *Ozius perlatus* and *agassizii.*
222. *Eriphia gonagra.*
223. *Eriphia squamata.*
224. *Eriphia squamata* and *granulosa.*
225. *Eriphides hispida.*
226. *Eriphides hispida.*
227. *Domecia hispida.*
228. *Trapezia cymodoce ferruginea, cymodoce maculata,* and *digitalis.*
229. *Quadrella nitida.*
230. *Melybia thalamita.*

THE CANCROID CRABS OF AMERICA

By Mary J. Rathbun

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INTRODUCTION

This volume is the third of the series of handbooks on American crabs. The first volume "The Grapsoid Crabs of America" forms Bulletin 97, and the second volume "The Spider Crabs of America" forms Bulletin 129, of the U. S. National Museum. The introductory remarks in Bulletin 97, relating to sources of material, special researches, acknowledgments, and glossary of terms apply to the present work also.

In recent years the Museum has been enriched by vast collections of crabs from South America obtained by Dr. Waldo L. Schmitt in the course of two extended series of explorations in South American waters under the auspices of the Walter Rathbone Bacon scholarship. Besides the material collected, Doctor Schmitt was able to arrange advantageous exchanges with various South American museums and when that was not feasible, to borrow for study. In this way many gaps in this Museum were filled, both as to species and numbers, and our knowledge of the fauna greatly increased. Among the valuable discoveries was an example of the insignificant little crab, *Metopocarcinus truncatus* Stimpson, of which the type is not extant and no other specimen is known to exist in any collection. More striking is the discovery of a giant *Cancer* on the Atlantic coast of South America, the property of the Museu Paulista. Through the courtesy of the assistente, Dr. H. Luederwaldt, the author is permitted to describe this species from a series of excellent photographs. The carapace has a width of 25 cm. (9.5 inches) and is the largest American species known.

Next in importance are the investigations made through several seasons for the Carnegie Institution by Doctor Schmitt and Mr. Clarence R. Shoemaker at the Tortugas and vicinity, in cooperation with Dr. William H. Longley in charge of the laboratory. These have provided long series of various forms and have extended the range of many, aside from the primary object of the inquiry, to ascertain the food habits of fishes. The University of Southern California and the California Academy of Sciences have submitted special collections from the Pacific coast, the result of which, so far as the Cancroidea are concerned, are recorded here.

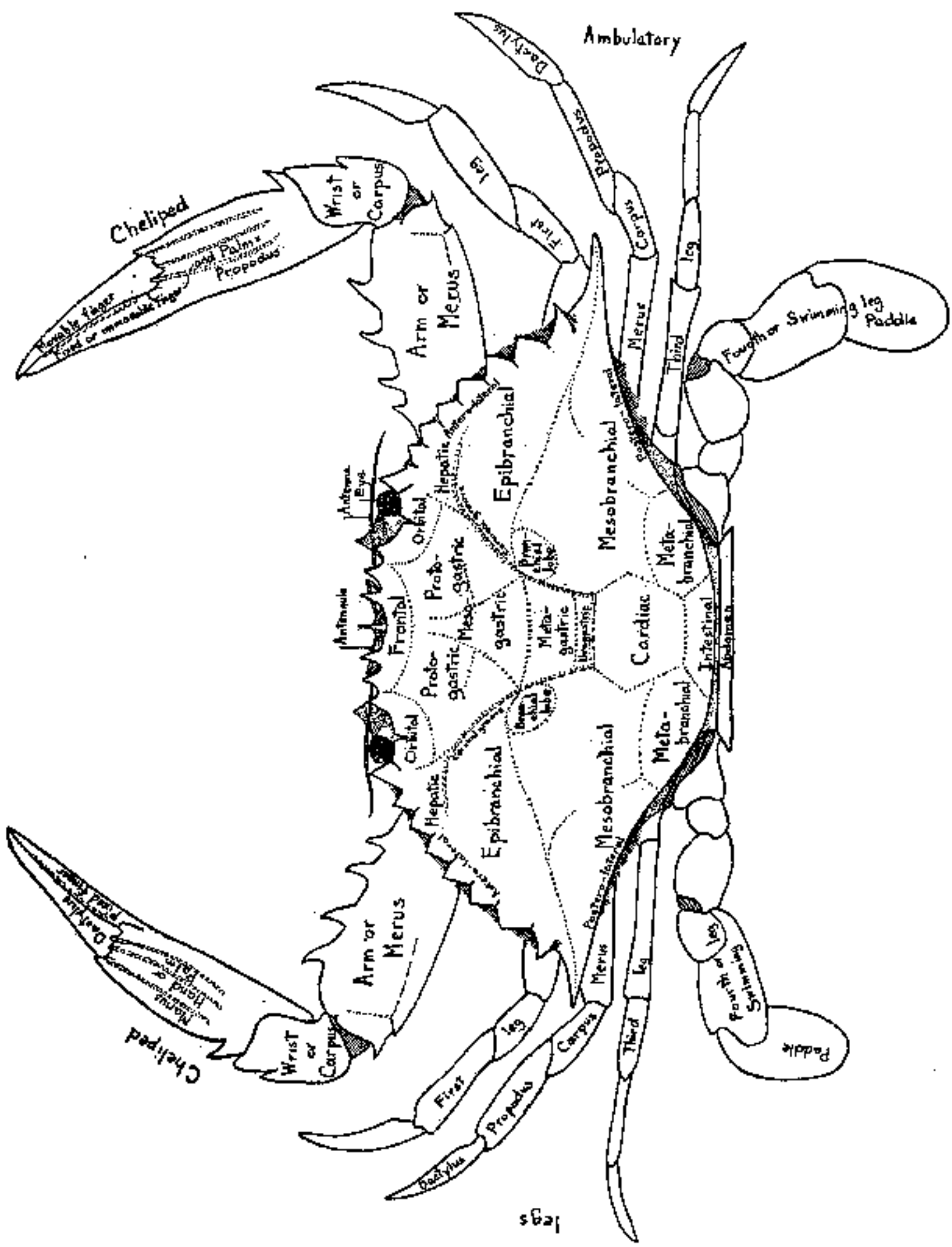

FIGURE 1.—DIAGRAMMATIC DORSAL VIEW OF A PORTUNID CRAB, SHOWING THE TERMS USED IN DESCRIPTION. BY W. L. SCHMITT

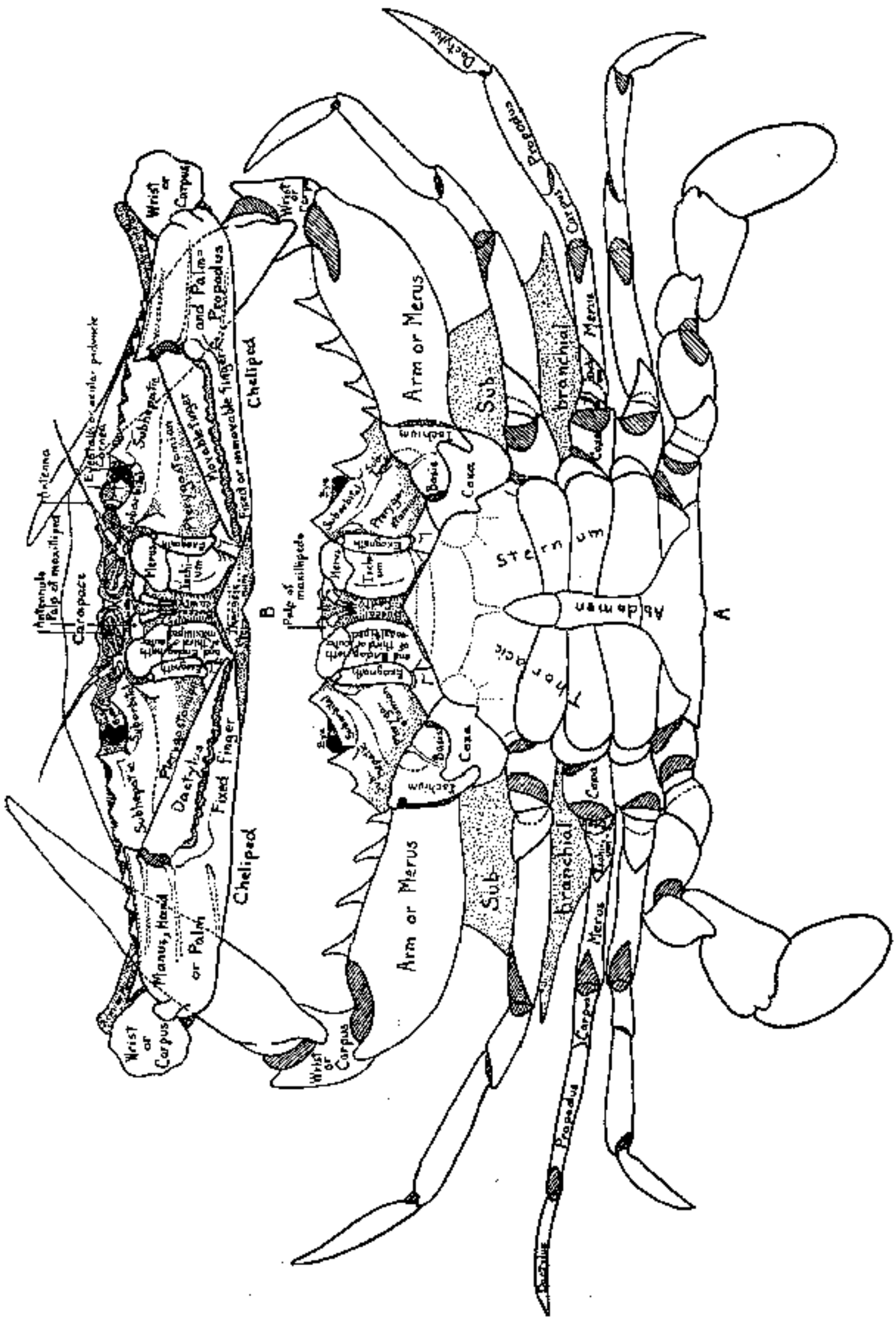

FIGURE 2.—DIAGRAMMATIC VIEWS OF A PORTUNID CRAB, SHOWING THE TERMS USED IN DESCRIPTION. BY W. L. SCHMITT. A, VENTRAL; B, FRONTAL.

EXPLANATION OF MEASUREMENTS AND ABBREVIATIONS USED

Explanation of measurements

The length of the carapace, unless otherwise stated, is measured on the median line, from the anterior to the posterior margin.

The width of the carapace is measured at the widest part.

The fronto-orbital width or exorbital width is measured from the outer angle of one orbit to the outer angle of the other.

The length of the segments of the chelipeds and legs is measured on the upper or anterior margin. The length of the whole cheliped or leg is measured on the lower margin, from the articulation of the coxa with the sternum to the tip of the dactylus.

The width of the segments of the chelipeds and legs is measured at the widest part.

The length of the immovable finger is measured from the tip to the extremity of the sinus between the fingers.

Character of bottom

Under "Material examined," the abbreviations indicating the character of the bottom, are those employed by the Bureau of Fisheries. Nouns begin with a capital, adjectives with a small letter.

bk	black	gy	gray	S	sand
br	brown	hrd	hard	sctrd	scattered
brk	broken	lge	large	sft	soft
bu	blue	lt	light	Sh	shells
Co	coral	M	mud	sm	small
crs	coarse	Oz	ooze	Sp	specks
dk	dark	P	pebbles	St	stones
fne	fine	Ptr	Pteropod	stky	sticky
For	foraminifera	R	rock	vol	volcanic
G	gravel	rd	red	W	seaweed
Glob	globigerina	Rf	reef	wh	white
gn	green	rky	rocky	yl	yellow

Additional abbreviations and notes

In the synonymy an attempt has been made to give all the different names or combinations which have been used, but not all the references to a species.

In the lists under "Material examined" a number in parenthesis following an indication of a specimen or specimens denotes a catalogue number of the United States National Museum unless otherwise indicated. M.C.Z. = Museum of Comparative Zoölogy; P.M.Y.U. = Peabody Museum of Yale University; Mus. S.U.I. = Museum of the State University of Iowa; y. = young; B.A. = Museo Nacional de Historia Natural, Buenos Aires, Argentina. The words "U. S. Fisheries" should be understood before "Str. *Albatross*," "Str. *Fish Hawk*," and "Sch. *Grampus*."

In the same lists there have been entered, besides specimens in the National Museum, many types examined elsewhere, as well as such specimens from other collections as increase our knowledge of the range of the species, but for lack of space no attempt has been made to record all of the many specimens examined in museum and private collections.

In the color notes made by Doctor Schmitt on Tortugas specimens the 1886 edition of Ridgway's "Nomenclature of Colors" is used.

THE CANCROID OR CYCLOMETOPOUS CRABS OF AMERICA

The term "Cancroid or Cyclometopous" is used in contrast to "Grapsoid or Catometopous." Together they form the Brachyrhyncha of Borradaile.[1]

1. In general, the carapace of the Cancroids is broader than long. At the outset we find an exception to the rule in the family formerly known as Corystidae but latterly, in obedience to the International Rules of Nomenclature, as Euryalidae. They have affinities with the anomuran crabs and have not only elongate carapaces but long, coarse antennae and a rather prominent front (between the orbits), which is more than one can say of most of the group. The buccal cavity narrows forward while the outer pair of maxillipeds reach forward almost to the antennules. A small family, especially in our hemisphere, where it is restricted to South America.

2. The Portunidae or swimming crabs can with few exceptions be distinguished by their hind legs which are broad and flat, adapted for swimming. The carapace is of good width with teeth or spines on the margins. A large family, including the so-called "blue crab," the chief edible crab of the Atlantic coast of North America, formerly very abundant, now rapidly becoming a luxury.

3. The family Atelecyclidae is limited in species and distribution. The carapace is narrow, often approaching the circular, oblong or pentagonal. Typically the movable part of the antennae is well developed but it may on the other hand be absent or rudimentary, giving rise to a series of curious forms peculiar to South America.

4. The Cancridae are represented in America by the genus *Cancer*, recognized by its broad oval carapace, and numerous side teeth. The species are numerous and many of them attain a large size and include several of economic value, especially on the west coast of North America.

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[1] Ann. Mag. Nat. Hist., ser. 7, vol. 19, 1907, p. 466.

5. The Xanthidae are by far the most numerous in genera, species, and individuals. They include the large stone crabs, the coral crab of the West Indies, and several of the most important South American forms, but the vast majority are crabs of small or medium size, such as the various mud crabs and coral-reef crabs.

The Potamonidae or fresh-water crabs will be dealt with in another volume.

AREOLATE MARKINGS ON THE CARAPACE OF CRABS

Figure 3 from Dana's "Crustacea, United States Exploring Expedition," part 1, 1852, page 29, is inserted here for convenience of description, especially of Xanthids. The principal parts of the carapace are indicated by letters: F, frontal; M, medial; P, posterior; L, antero-lateral; R, postero-lateral; D, E, N, T, S, antero-lateral teeth; *d'*, *s'*, smaller, occasional teeth. Subdivisions of the above regions are indicated by a number before the letter.

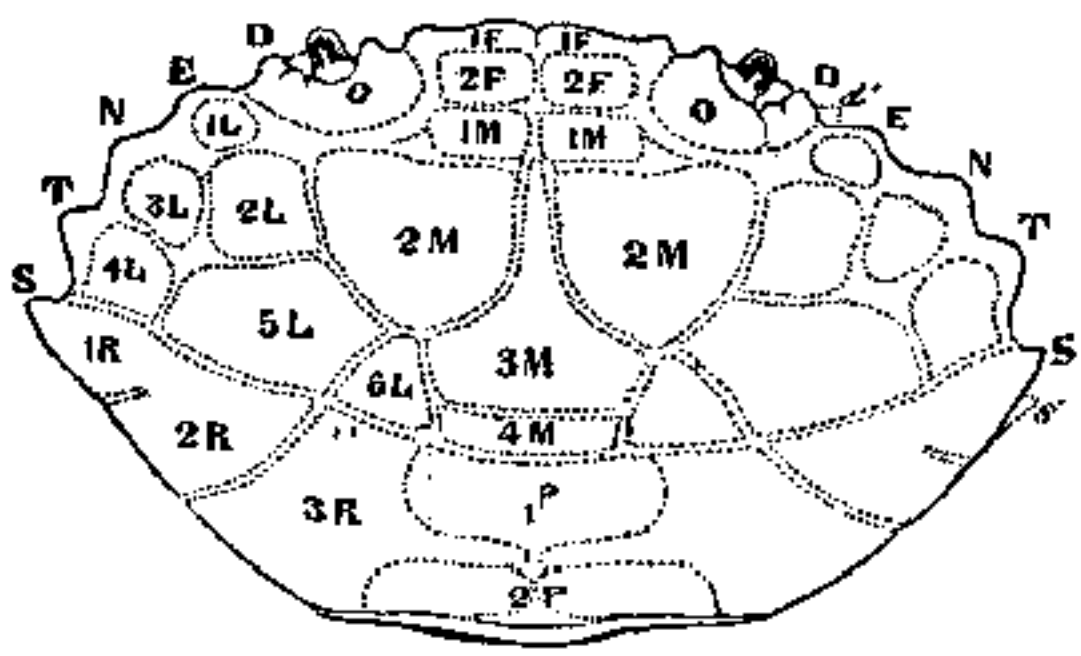

FIGURE 3.—CARAPACE OF A XANTHID CRAB SHOWING THE PRINCIPAL AREOLATIONS. AFTER DANA

ANALOGOUS SPECIES ON OPPOSITE SIDES OF THE CONTINENT

Family PORTUNIDAE

Atlantic	Pacific
Portunus (*Portunus*) *gibbesii.*	*Portunus* (*Portunus*) *xantusii.*
Portunus (*Achelous*) *spinimanus.*	*Portunus* (*Achelous*) *brevimanus.*
Portunus (*Achelous*) *ordwayi.*	*Portunus* (*Achelous*) *angustus.*
Portunus (*Achelous*) *spinicarpus.*	*Portunus* (*Achelous*) *iridescens.*
Callinectes sapidus acutidens.	*Callinectes bellicosus.*
Callinectes danae.	*Callinectes arcuatus.*
Callinectes bocourti.	*Callinectes toxotes.*
Arenaeus cribrarius.	*Arenaeus mexicanus.*

Family CANCRIDAE

Atlantic	Pacific
Cancer borealis.	*Cancer edwardsii.*
Cancer luederwaldti.	*Cancer porteri.* / *Cancer plebejus.*

Family XANTHIDAE

Atlantic	Pacific
Platypodia spectabilis.	*Platypodia rotundata.*
Actaea setigera.	*Actaea dovii.*
Actaea bifrons.	*Actaea angusta.*
Actaea rufopunctata nodosa.	*Actaea sulcata.*
Glyptoxanthus erosus.	*Glyptoxanthus labyrinthicus.*
Medaeus spinimanus.	*Medaeus lobipes.*
Platyxanthus crenulatus.	*Platyxanthus cokeri.*
Leptodius floridanus.	*Leptodius occidentalis.*
Leptodius agassizii.	*Leptodius tridentatus.*
Leptodius parvulus.	*Leptodius cooksoni.*
Xanthodius denticulatus.	*Xanthodius stimpsoni.*
Panopeus herbstii forma crassa.	*Panopeus purpureus.*
Panopeus occidentalis.	*Panopeus convexus.*
Hexapanopeus schmitti.	*Hexapanopeus sinaloensis.*
Hexapanopeus paulensis.	*Hexapanopeus nicaraguensis.*
Eurypanopeus abbreviatus.	*Eurypanopeus ovatus.*
Eurytium limosum.	*Eurytium tristani.*
Micropanope granulimanus.	*Micropanope polita.*
Micropanope truncatifrons.	*Micropanope xantusii.*
Micropanope xanthiformis.	*Micropanope lata.*
Menippe mercenaria.	*Menippe frontalis.*
Pilumnus sayi.	*Pilumnus xantusii.*
Pilumnus longleyi.	*Pilumnus spinohirsutus.*
Pilumnus holosericus.	*Pilumnus limosus.*
Heteractaea ceratopus.	*Heteractaea lunata.*
Pilumnoides hassleri.	*Pilumnoides perlatus.*
Ozius reticulatus.	*Ozius perlatus.*
Eriphia gonagra.	*Eriphia squamata.*

SPECIES ON BOTH SIDES OF THE CONTINENT

Family PORTUNIDAE

Carcinides maenas.
Ovalipes punctatus.
Cronius ruber.

Family ATELECYCLIDAE

Acanthocyclus albatrossis.
Corystoides chilensis.

Family XANTHIDAE

Panopeus bermudensis.
Pilumnus reticulatus.
Domecia hispida.

SYSTEMATIC DISCUSSION

Order DECAPODA

Suborder REPTANTIA

Tribe BRACHYURA

Subtribe BRACHYGNATHA

Superfamily BRACHYRHYNCHA

KEY TO SUBTRIBES OF THE TRIBE BRACHYURA [2]

A¹. Anterior thoracic sterna very broad, posterior thoracic sterna narrow and keel-like. Posterior thoracic epimera largely exposed by reduction of the branchiostegite.....Subtribe *Gymnopleura*.[3]

A². Anterior thoracic sterna not unusually broad, posterior thoracic sterna not keel-like. Posterior thoracic epimera covered by the branchiostegite.

B¹. Mouth field (endostome) prolonged forward to form a gutter. Last pair of legs normal or abnormal. Female openings generally sternal. First *abdominal limbs wanting in female. Gills few.*

Subtribe *Oxystomata*.

B². Mouth field roughly square.

C¹. Last pair of legs abnormal, dorsal. Female openings coxal. First abdominal limbs of female present. Gills usually many.

Subtribe *Dromiacea*.

C². Last pair of legs normal, rarely reduced, not dorsal, except in *Cymopolia* and *Retropluma*. Female openings sternal. First abdominal limbs of female wanting. Gills few.

Subtribe **BRACHYGNATHA**.

KEY TO SUPERFAMILIES OF THE SUBTRIBE BRACHYGNATHA

A¹. Fore part of body narrow, usually forming a distinct rostrum. Body more or less triangular. Orbits generally incomplete.

Superfamily *Oxyrhyncha*.

A². Fore part of body broad. Rostrum usually reduced or wanting. Body oval, round, or square. Orbits nearly always well inclosed.

Superfamily **BRACHYRHYNCHA**.

KEY TO FAMILIES OF THE SUPERFAMILY BRACHYRHYNCHA

A¹. Orbits formed, but more or less incomplete. Second antennal flagella, when present, long and hairy. Rostrum present. Body elongate-oval. Fore edge of mouth indistinct.....Family **EURYALIDAE**=*Corystidae*.

A². Orbits complete (though fissures may remain), except in the Mictyrinae, where the eyes are almost or quite unprotected. Body rarely elongate-oval. Rostrum often wanting. Second antennal flagella usually short, not hairy.

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[2] The keys are for the most part from Borradaile's On the Classification of the Decapod Crustaceans, Ann. Mag. Nat. Hist., ser. 7, vol. 19, 1907, pp. 477–483. The names in the right hand margin which are printed in capitals indicate the families and higher divisions treated of in this volume.

[3] Bourne, The Raninidae, in Journ. Linn. Soc. London, Zool., vol. 35, 1922, p. 55.

B¹. Carpus of third maxillipeds articulates at or near antero-internal angle of the merus. Body usually round or transversely oval. Male openings nearly always coxal. In many species the right chela is always larger than the left.

C¹. Legs more or less distinctly adapted for swimming. Usually a small lobe on the inner angle of the endopodite in the first maxillipeds. The first antennae fold slanting or transverse.

Family **PORTUNIDAE.**

C². Legs not adapted for swimming, or if so modified, then the male genital duct opens sternally or runs in a sternal groove. Inner lobe on the endopodite in the first maxillipeds wanting.

D¹ Fresh-water crabs with the branchial region much developed and swollen. Body often squarish, but male openings coxal.

Family *Potamonidae.*

D². Marine crabs with the branchial region not greatly swollen.

E¹. First antennae fold lengthwise.

F¹. Carapace subcircular. Second antennal flagella either long and hairy or wanting. Family **ATELECYCLIDAE.**

F². *Carapace broadly oval or hexagonal. Second antennal* flagella present, short, not hairy. Family **CANCRIDAE.**

E². First antennae fold slanting or transversely.

F¹. Body usually transversely oval. Male openings rarely sternal. Not sharply separated from the following family. Family **XANTHIDAE.**

F². Body usually square or squarish. Male ducts open on the sternum, or, if coxal, pass along a groove in the sternum. Not sharply separated from the foregoing family. Family *Goneplacidae.*

B². Carpus of third maxillipeds does not articulate at or near the inner angle of the merus. Body usually square or squarish. Male openings sternal except in *Retropluma,* where the duct passes along a sternal groove to the coxopodite. In no species (*Cymopoliidae* excepted) is the right chela always larger than the left.

C¹. Small, usually commensal crabs, with very small eyes and orbits. Body usually more or less rounded. Family *Pinnotheridae.*

C². Free-living crabs, with eyes not specially reduced and usually a square body.

D¹. Last pair of legs dorsally placed and weaker than the others. Interantennular septum very thin. No distinct epistome. Exopodites of third maxillipeds not hidden.

E¹. Front narrow. Female openings in normal position. Third maxillipeds subpediform, not covering the mouth.

Family *Retroplumidae*=*Ptenoplacidae.*

E². Front moderately broad. Female openings on the sternal segment corresponding to the first pair of walking legs. Third maxillipeds cover the mouth to a large extent and have very small meropodites.

Family *Cymopoliidae*=*Palicidae.*

D². Last pair of legs not dorsally placed nor markedly weaker than the rest. Interantennular septum not very thin.

E¹. A gap of greater or less size is left between the third maxillipeds. Front very or moderately broad.

F¹. Sides of the body either straight or very slightly arched. Shape squarish. Front broad. Rarely true land crabs. Family *Grapsidae.*

F². Sides of the body strongly arched. Shape transversely oval. Front narrower. Land-crabs.
Family *Gecarcinidae*.

E³. The third maxillipeds almost or quite close the mouth. Front moderately or very narrow.
Family *Ocypodidae*.

B³. Merus of third maxillipeds small, bearing terminally a carpus of nearly its own width. Ischium very broad. Body somewhat oblong. First antennae not retractile into sockets. Parasitic on corals.
Family *Hapalocarcinidae*.

Superfamily BRACHYRHYNCHA

The fore part of the body is broad, the rostrum reduced or altogether wanting. The body is oval, round, or square, usually broader than long. The orbits are nearly always well enclosed.

Family EURYALIDAE[4] (CORYSTIDAE *restricted*[5])

Corystiens (part) MILNE EDWARDS, Hist. Nat. Crust., vol. 2, 1837, p. 139.
Corystoidea—Corystidae (part) DANA, U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, pp. 296 and 297.
Corystoidea (part) MIERS, *Challenger* Rept., Zool., vol. 17, 1886, p. 209.
Majoidea corystoidea (part) ORTMANN, Zool. Jahrb., Syst., vol. 7, 1893, pp. 26 and 28.
Oxyrhyncha—Corystidae (part) ORTMANN, in Bronn's Thier-Reich, vol. 5, pt. 2, 1898, p. 1166.
Corystidae (part) ALCOCK, Journ. Asiat. Soc. Bengal, vol. 68, 1899, p. 103.

Carapace longer than broad, suboval, convex from side to side, regions not well defined. Front rather prominent, cut into three (in American species) or two teeth. Antennules normal, small, folding longitudinally. Antennae long, unusually coarse and setaceous. There is no epistome and the external maxillipeds, which are elongate and sometimes have a slight pediform cast, extend almost up to the antennules. Buccal orifice elongate and square cut with the anterior angles rounded and slightly convergent.

KEY TO THE AMERICAN GENERA OF THE FAMILY EURYALIDAE

A¹. Legs gressorial. Lateral teeth of carapace both before and behind the middle. Size small, not over 10 mm. in length..... **Gomeza**, p. 10.

A². Legs somewhat natatory. Lateral teeth of carapace before the middle only. Size large, over 50 mm. in length..... **Pseudocorystes**, p. 11.

Genus GOMEZA Gray

Gomeza GRAY, Zool. Misc., 1831, p. 39; type, *G. bicornis* Gray.
Oeidea DE HAAN, Fauna Japon., Crust., 1833, pp. 4 and 15; type, *O. vigintispinosa* DE HAAN.

Carapace elongate, subelliptical, sides dentate behind as well as in front of middle, rostrum triangulate. Eyes small or medium. Merus

[4] *Euryala* Weber, 1793 takes precedence of *Corystes* Latreille 1802, both having the same type; hence Euryalidae instead of Corystidae. See Rathbun, Proc. Biol. Soc. Washington, vol. 17, 1904, p. 171.
[5] For the genera *Bellia* and *Corystoides*, see under Family Atelecyclidae, subfamily Acanthocyclinae.

of outer maxillipeds about as broad as long, obliquely truncate at inner distal angle. Legs gressorial; dactyli nearly equal. Of small size. Inhabits the west coast of South America; also Indo-Malaysian, Japanese and Australian seas.

GOMEZA SERRATA Dana

Plate 1, Figures 4–6

Gomeza serrata DANA, U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 305, atlas, 1855, pl. 18, fig. 7*a–c* (type-locality, off Patagonia, 50 fathoms; type not extant).—MIERS, Proc. Zool. Soc. London, 1881, p. 68; *Challenger* Rept., Zool., vol. 17, 1886, p. 212.—LENZ, Zool. Jahrb., Syst., vol. 2, Suppl. 5, 1902, p. 754, pl. 23, fig. 6.—PORTER, Revista Chilena Hist. Nat., vol. 22, 1918, p. 53, text-fig. 3.

Diagnosis.—Carapace scabrous, short hirsute, lateral margin 5-toothed, fourth tooth about at middle, teeth minutely denticulate; rostrum truncate, margin near apex incised.

Description.—Truncate margin of rostrum sinuous and either side just at the angle there is a longitudinal incision separating a narrow, acute lobe; behind this the margin of the beak is minutely denticulate. Lateral teeth of carapace except the first pointing obliquely forward. Cardiac region far behind middle of carapace. Eyes on rather short pedicels, directed straight outward. Length of outer antenna beyond carapace not one-third length of carapace; flagellum with 9 or 10 articles and a few short hairs. Outer maxillipeds short hirsute, not quite meeting on median line; merus about half as long as ischium, inner distal angle deeply truncate. Abdomen hirsute. Hand short; fingers a little incurved, inner margin denticulate. Margins of legs pubescent; dactylus slender, tapering; carpus and propodus subequal.

Measurements.—Type (after Dana), length of carapace 3.1, width at fourth tooth 2.5, fronto-orbital width 1.5, width of front just anterior to inner orbital tooth 0.42 mm. Male (Lenz), size 4.5 mm. Largest specimen (Miers), 10.6 mm. long.

Range.—Callao, Peru, to Straits of Magellan, shallow water to 30 fathoms (Miers); off Patagonia, 50 fathoms (Dana).

Genus PSEUDOCORYSTES Milne Edwards

Pseudocorystes MILNE EDWARDS, Hist. Nat. Crust., vol. 2, 1837, p. 149; type *P. armatus* Milne Edwards.

Carapace nearly oval, much swollen. Front narrow, advanced, horizontal. Ocular peduncles of medium size, orbits shallow, quite open exteriorly. Antennules small, completely covered above by the front; the flagellum folds longitudinally. Antennae very large, inserted under the eye in a hiatus of the orbital border; the gland at its base is especially large. Buccal cavity quite open anteriorly and prolonged laterally to the base of the outer antennae where it is limited by a large conical tooth which, along with the antenna, forms the

lower border of the orbit. Outer maxilliped rather wide, ischium very large; merus small, subtriangular, nearly as wide as long; palp very short, inserted near summit of merus. Sternal plastron narrow, oblong. Chelipeds large, compressed, of medium length. The four pairs of legs are all nearly the same length, much compressed; dactylus lamellate, broad and lanceolate, especially those of first and last pairs. Abdomen very small and narrow-oblong; third, fourth, and fifth segments fused.

Contains but one species.

PSEUDOCORYSTES SICARIUS (Poeppig)

Plate 1, Figures 1–3

Corystes sicarius POEPPIG, Arch. f. Naturg., vol. 2, pt. 1, 1836, p. 139 (type-locality, deep water opposite Bay of S. Vincent, Chili; type in Leipzig Mus.).

Pseudocorystes armatus MILNE EDWARDS, Hist. Nat. Crust., vol. 2, 1837, p. 151 (type-locality, Valparaiso; cotype in Paris Mus.; cotype, Cat. No. 20276, U. S. Nat. Mus.).—MILNE EDWARDS and LUCAS, d'Orbigny's Voy. l'Amér. Mérid., vol 6, pt. 1, 1844, p. 30; atlas, vol. 9, 1847, pl. 15, figs. 2–2c.

Pseudocorystes sicarius WHITE, Cat. Crust. Brit. Mus., 1847, p. 53.—RATHBUN, Proc. U. S. Nat. Mus., vol. 38, 1910, p. 576.—PORTER, Bol. Mus. Nac., Chile, 1913, p. 359, text-fig. 2 and synonymy; Revista Chilena Hist. Nat., vol. 22, 1918, p. 54, text-fig. 4 and synonymy.

Corystoides armatus PHILIPPI, Zool. Anz., vol. 17, 1894, p. 265.

Diagnosis.—Carapace nearly as broad as long, granulate; sides marginate, bidentate. Legs broad, natatory.

Description.—Carapace convex antero-posteriorly as well as from side to side; width about equal to length exclusive of rostrum. Two shallow crescentic furrows near center of carapace. Surface rough with crowded granules which are more acute and upstanding on the anterior half. Rostrum triangular, tridentate, median tooth the largest and most advanced. A sinus at middle of upper orbital border followed by two large teeth on the anterior margin of the carapace, the inner of which represents the external angle of the orbit. Two small teeth on the antero-lateral margin, the posterior one rudimentary; margin of teeth as well as of middle half of carapace thickly denticulate. Surface of chelipeds similar to that of carapace, granulation coarser and sharper toward upper margin. Merus armed with a small triangular spine near distal end of lower, outer margin; a strong spine-tipped tooth at inner angle of carpus, a spinule on inner surface, another smaller one on outer surface, sometimes absent; a denticle near middle of lower edge of propodus, and a series of spinules on upper margin of dactylus and adjacent margin of palm. Fixed finger triangular, broader at base than the dactylus. Fingers nearly meeting, each with about 6 or 7 low prehensile teeth. Remaining legs almost smooth, margins ciliated. Dactylus of last pair thinner than the others, which are flat on the anterior surface and convex on the posterior.

Color.—Carapace tawny-olive lighter in the center; chelipeds and legs wood brown. (After Milne Edwards and Lucas, fig.)

Measurements.—Male (54212), length of carapace 52.4, width of same 47.8, fronto-orbital width 19.5, width of front just anterior to supraorbital eave 6.6 mm.

Range.—West coast of South America, from Independencia Bay, Peru, to Straits of Magellan.

Material examined.—Independencia Bay, Peru; November 1919; Robert Cushman Murphy; 1 male (54212), received from Brooklyn Mus.

Valparaiso, Chile: Gay; 1 female, cotype of *P. armatus* Milne Edwards (20276), received from Paris Mus. 1 male (Copenhagen Mus.).

Chile; 1 ovigerous female, lent by São Paulo Mus.

Family PORTUNIDAE

SWIMMING CRABS

Portunidae MIERS, *Challenger* Rept., Zool., vol. 17, 1886, p. 169.

Carapace depressed, moderately transverse, and usually widest at the last antero-lateral marginal spine. Front horizontal. Orbits and eye-stalks nearly always of moderate length. Lateral teeth usually from five to nine. Last trunk legs usually adapted for swimming, with terminal joint ovate, flatly expanded.

KEY TO THE SUBFAMILIES AND GENERA OF THE GENUS PORTUNIDAE

A¹. Eye-stalks of normal size.
  B¹. No swimming paddles. Carapace with five antero-lateral teeth.
    Subfamily **Carcinidinae**, p. 14.
    Carcinides, p. 14.
  B². The last pair of legs are swimming paddles.
    C¹. Carapace not very broad, antero-lateral teeth 3 to 5.
      Subfamily **Liocarcininae**, p. 18.
      D¹. Antero-lateral teeth five. Front dentate. Antenna not excluded from orbit.
        E¹. Antero-lateral teeth similar, dentiform. Dactylus of swimming paddles broadly oval. Male abdomen oblong ..... **Ovalipes**, p. 18.
        E². A long spine at lateral angle of carapace instead of a tooth. Dactylus of swimming paddles broadly lanceolate, pointed. Male abdomen triangular ... **Bathynectes**, p. 27.
      D². Antero-lateral teeth three. Front subentire. Antenna excluded from orbit ..... **Coenophthalmus**, p. 30.
    C². Carapace usually very broad, antero-lateral teeth 9.
      Subfamily **Thalamitinae**, p. 33.
      D¹. Movable portion of antenna not excluded from orbit.
        E¹. A longitudinal ridge on the palate.
          F¹. Outer maxillipeds not remarkably advanced; segments of palp subcylindrical.
            G¹. Abdomen of male triangular ..... **Portunus**, p. 33.

G². Abdomen of male ⊥-shaped. Antero-external angle of merus of third maxillipeds strongly produced outward ..... **Callinectes**, p. 98.

F². Outer maxillipeds remarkably advanced, overreaching the front margin of carapace; last two articles of palp compressed and lamellate. Chelipeds of male extremely long and slender ..... **Lupella**, p. 132.

E². No longitudinal ridge on the palate. Superior fissures of orbit open, V-shaped ..... **Arenaeus**, p. 134.

D². Movable portion of antenna excluded from orbit by a prolongation of its basal article. Antero-lateral teeth alternately large and small ..... **Cronius**, p. 138.

A². Eye-stalks and orbits extremely long. Antero-lateral teeth 5 or 4. Front very narrow ..... Subfamily **Podophthalminae**, p. 143.
Euphylax, p. 143.

Subfamily CARCINIDINAE (CARCININAE Alcock)

The legs have a tendency to be stout; all four pairs are similar, although the last pair has a broader and flatter dactylus. Carapace not very broad, antero-lateral borders cut into 4 or 5 teeth. Basal article of antenna fixed, longer than broad, and longitudinal in position.

Genus CARCINIDES Rathbun

Carcinus LEACH, Edin. Encycl., vol. 7, 1814, pp. 390 and 429; type, *C. maenas* (Linnaeus). Preoccupied by Latreille, 1796, for a genus of Amphipoda.
Carcinides RATHBUN, Proc. Biol. Soc. Washington, vol. 11, 1897, p. 164; type, *C. maenas* (Linnaeus).

Carapace hexagonal, not broad, convex, regions well defined, no transverse ridges. Front projecting beyond the inner supraorbital angles, three lobed, between a fourth and a sixth as wide as the carapace. Antero-lateral borders shorter than the postero-lateral, thin, oblique, arched, cut into five strong teeth, including the outer orbital angle. Orbits with a notch in the upper and one in the concave lower border, inner lower angle dentiform, not prominent. Antennules transversely oblique. Basal joint of antenna slightly longer than broad, fixed; the flagellum stands in the inner hiatus. Buccal cavern square, a little longer than broad; external maxillipeds rather elongate, especially the merus which projects beyond the edge of the endostome, epistome diamond-shaped. The ridges that define the efferent branchial canals do not approach the edge of the endostome. Chelipeds massive, about as long as the first three pairs of legs, slightly unequal; arm short, unarmed; inner angle of wrist dentiform or spiniform; no spines on hand, which is deep and not prismatic; fingers stout, a little shorter than the length through the middle of the palm, not very strongly toothed. Legs stoutish; the last pair has the merus elongate and unarmed, carpus not dilated, propodite shortened and somewhat broadened, dactylus acutely lanceolate. Third to fifth abdominal terga fused.

Contains only one species.

CARCINIDES MAENAS (Linnaeus)

GREEN CRAB; JOE ROCKER

Cancer marinus sulcatus RUMPH, Amboinsch. Rariteitk., 1705, pl. 6, fig. O.

Cancer maenas LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 627 (type-localities, in Oceano Europaeo, Asiatico; type not extant); Fauna Suecica, 1761, p. 492.

Portunus maenas LEACH, Edin. Encyc., vol. 7, 1814, p. 390.

Carcinus maenas LEACH, Edin. Encyc., vol. 7, 1814, p. 429.—R. RATHBUN, Fisheries and Fishery Industries of the United States, sec. 1, 1893, p. 774, pl. 265.

Portunus menoides RAFINESQUE, Amer. Monthly Mag., vol. 2, 1817, p. 42, (type-localities, New York, Long Island, New Jersey, etc.; types not extant).

Cancer granulatus SAY, Journ. Acad. Nat. Sci. Philadelphia, vol. 1, Aug. 1817, p. 61 (type-locality, "bays and inlets near the sea" [east coast of the United States]; type not extant, according to Say).

Carcinus moenas DE KAY, Nat. Hist. New York, pt. 6, Crust., 1844, p. 8, pl. 5, figures 5 and 6.

Carcinus granulatus S. I. SMITH, in Verrill and Smith, Rept. Commr. of Fish and Fisheries, vol. 1, 1871–1872 (1873), pp. 313 [19] and 547 [253].

Carcinides maenas M. J. RATHBUN, Occas. Papers Boston Soc. Nat. Hist., vol. 7, 1905, p. 8.—SUMNER, Bull. Bur. Fisheries, vol. 31, 1911, part 2, 1913, p. 672.

Diagnosis.—Legs of last pair partially natatory. Front three-toothed. Lateral teeth six, similar. Palms and legs unarmed.

Description.—Carapace about three-fourths as long as broad, gastric region divided into 3 areolae, surface finely granular, especially in anterior half. Middle lobe of front acute, antero-lateral teeth acuminate. Posterior border forming a curve with the postero-lateral borders. Major diameter of orbit about half the width of interorbital space. Antennal flagella about 1½ times the length of the orbit.

Major cheliped 1½ times length of carapace; hand with two costae on upper surface, otherwise smooth. Legs smooth and unarmed, second and third pairs longest and about 1⅔ times the length of the carapace; fourth pair shorter than first pair. Sixth abdominal tergum of male about twice as broad as long, with gradually convergent sides.

Color.—Male (Woods Hole), green ground, mottled with black, granules for the most part yellow; anterior half darker than posterior. Lateral teeth tipped with yellow. Claws similar; on the palm there are small black spots arranged longitudinally. Fingers and adjacent portion of palm bright light blue, with black stripes in the grooves. Prehensile teeth and tips of fingers flesh color. Legs green, speckled with black; distal portion of dactyli light; tips horny. Under side yellowish, deepest on the anterior portion. Female differs from the male in having the ground color orange in place of green, granules whitish. Chelae a duller blue. Under side deep orange.

Measurements.—Male (9006), length of carapace 60, width of same 79.4, fronto-orbital width 33, width of front 15 mm.

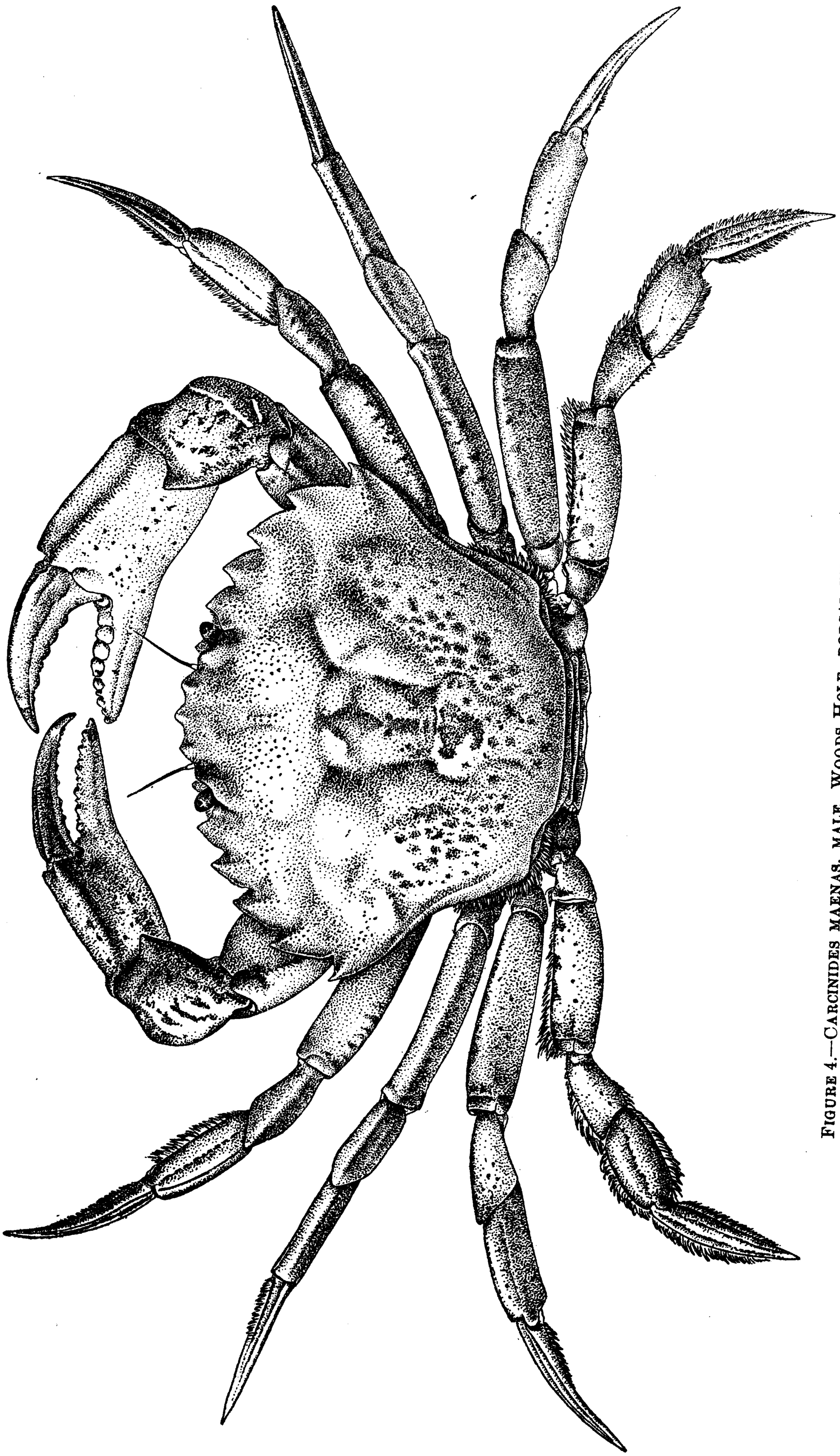

FIGURE 4.—CARCINIDES MAENAS, MALE, WOODS HOLE, DORSAL VIEW. AFTER R. RATHBUN

Habitat.—Under stones toward high water mark to a few fathoms and in tidal pools.

Range.—Atlantic coast of the United States from Thomaston, Maine, to New Jersey. Off Pernambuco, Brazil. Bay of Panama. Also coasts of Europe and north Africa; Suez Canal and Red Sea; Ceylon; Australia; and Hawaiian Islands.

Abundant in Casco Bay; only one record farther east. Seen swimming in Georges River at Thomaston, June, 1922, by William Procter.

Material examined.—

MAINE.—Casco Bay; 1911; Rathbun and Dandridge: August; 14 specimens (43727, 43728); color varieties. S. Harpswell; behind laboratory; August 3; 1 specimen (43180). Vicinity of S. Harpswell; August; 5 specimens (43161). Potts Point; August 5; 22 specimens (43157). Potts Harbor; mud flats; August 10; 1 specimen (43159); grey color. Mackerel Cove Point; August 7; 12 specimens (43158). Ram Island; August 10; 3 specimens (43160). Basin Cove; very low tide; August 11; 1 male (47971).

MASSACHUSETTS.—Ipswich; October 29, 1903; Owen Bryant; 1 specimen (29935). Mattapoisett Harbor; November 1882; Willard Nye; 2 males, 3 females (5757).

Vineyard Sound; U. S. Fish Comm.: 1875; 2 males, 1 female (40118). 1882; 5 young (15020).

Vicinity of Woods Hole; 1887; M. J. Rathbun; 3 males, 1 female (32374).

Great Harbor, Woods Hole; U. S. Fish Comm.: September 23, 1882; Willard Nye, jr.; 9 specimens (9160). July 30, 1892; 1 young (31483).

Woods Hole; U. S. Fish Comm.: 1882; 2 males, 1 female (4901). 1882; Willard Nye, jr.; 1 male (9006), figured. Low water; moulted August 28, 1883; 2 males (36968). August 5; T. Lee; 1 specimen (36967). August 1885; 1 young (34921). 1885; 18 young (11019). 1887; *Fish Hawk;* 4 specimens (12729). January 9, 1888; V. N. Edwards; 1 ovigerous female (13088). 1887; 6 specimens (40004).

Naushon Island, Elizabeth Islands; August 15, 1882; U. S. Fish Comm.; 1 young (40782).

RHODE ISLAND.—Sakonnet Point; 1 specimen (9159).

Newport Harbor; U. S. Fish Comm.: Shore; sand; 1880; 22 young (36321). Shore; 1880; 15 young (36326). Lime Rock; with mussels; July 24, 1880; 15 young (36310, 61062).

Newport; 1880; U. S. Fish Comm.: Shore; 7 males and females (4534), 1 young (34012), 50 young, 1 shedding (36765), 2 young (40126). Outer shores; 1 young (40783). Shore; July 26, 3 young (34010), Sept. 2, 2 young (36779). Shore; in washings of *Mytilus*;

July 27; 2 young (40792). Shore; mud; July 28, 2 young (36296); July 29, 4 young (36356). Wharf; August 20; 3 young (40125).

LONG ISLAND SOUND.—Low water; August 29, 1874; U. S. *Fish. Comm.; 13 young (36266).*

NEW YORK.—Fire Island, Great South Bay, Long Island; September 27, 1884; T. H. Bean; 1 specimen (8919).

NEW JERSEY.—1929; H. G. Richards: Longport; October 20; 1 young male (62959). Cape May Point: September 27, 1 young, returned; in tide pool, September 29, 1 female (62960).

EUROPE.—England; 1923; H. C. Kellers: Medway River, Chatham; October 10; 22 males, 14 females (57417). Cowes; October; 5 males, 2 females (57419); 1 specimen with rhizocephalid parasite.

Channel Islands; Edward Lovett; 2 specimens (6546).

Jersey Island; A. M. Norman; 2 specimens (6776).

Ostend, Belgium; specimen in Mus. Comp. Zoöl.

Helgoland Island, Germany; beach; Roy. Biol. Station, Helgoland; 2 males, 2 females (19899).

Marseilles, France; August 1922; H. C. Kellers; 42 males, 46 females (57416).

Gibraltar; H. C. Kellers: December, 1922; 2 females (57422). August, 1923; 3 males, 2 females (57418).

Constantinople, Turkey: G. P. Marsh, collector; 2 specimens (2051). H. C. Kellers; March, 1923, 9 males (2 hermaphroditic), 21 females (57420); September and October 1923, 15 males, 15 females (57428).

EGYPT.—Port Said; July, 1922; H. C. Kellers; 17 females (57421).

HAWAIIAN ISLANDS.—T. H. Streets; 1 male (2299).

Subfamily LIOCARCININAE (PORTUNINAE Alcock)

The legs often have a tendency to be stout and at least one pair is as long as the chelipeds; the last pair are swimming paddles. Carapace seldom very broad, antero-lateral borders cut into 3 to 5 teeth. Basal article of antenna either fixed or movable, usually longer than broad, and lying almost in the longitudinal axis of the carapace.

Genus OVALIPES Rathbun

Platyonichus LATREILLE, Encyc. Méth., Entom., vol. 10, 1825, p. 151; not *Platyonichus* Latreille, Nouv. Dict. Hist. Nat., vol. 27, 1818, p. 4, which was proposed as a substitute for *Portumnus* Leach, 1814.

Anisopus DE HAAN, Fauna Japon., Crust., 1833, pp. 3 and 12; type, *Corystes* (*Anisopus*) *punctata* de Haan. *Anisopus* preoccupied by Meigen, 1803, for a genus of Diptera.

Platyonychus DANA, Amer. Journ. Sci., ser. 2, vol. 12, 1851, p. 130.

Ovalipes RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 597; type, *O. ocellatus* (Herbst).

Carapace a little broader than long; five subequal teeth on antero-lateral margin; three or four teeth on margin of front between orbits.

Basal article of antennules advanced and visible dorsally between frontal teeth. Chelipeds elongate. Terminal article of last pair of legs broadly oval, rounded at extremity. Abdomen of male oblong.

Nova Scotia to Gulf of Mexico; South America from Peru and Uruguay southward; South Africa; eastern Asia; Australia and New Zealand.

KEY TO THE SPECIES OF THE GENUS OVALIPES

A[1]. Three frontal teeth between orbits. Lateral teeth of carapace widely separated. No tooth on upper margin of orbit.

B[1]. Carapace covered with minute color dots arranged in small annular clusters; granules enlarged along median line. Outer surface of palm nearly smooth ..... **ocellatus ocellatus**, p. 19.

B[2]. Carapace of a uniform color, without spots; granules not enlarged along median line. Outer surface of palm rough . **ocellatus guadulpensis**, p. 23.

A[2]. Four frontal teeth between orbits. Lateral teeth of carapace broad, narrowly separated. A strong tooth on upper margin of orbit .... **punctatus**, p. 24.

OVALIPES OCELLATUS OCELLATUS (Herbst)

LADY CRAB; SAND CRAB; CALICO CRAB

Plates 2 and 3

Cancer ocellatus HERBST, Natur. d. Krabben u. Krebse, vol. 3, pt. 1, 1799, p. 61, pl. 49, fig. 4 (type-locality, Long Island near New York; type not extant).

Portunus pictus SAY, Journ, Acad. Nat. Sci. Philadelphia, vol. 1, 1817, p. 62 (type-locality, "sandy shores of the sea" [eastern United States]: type not extant).

Platyonichus ocellatus LATREILLE, Encyc. Méth., Hist. Nat., Insectes, vol. 10, 1825, p. 152.—DE KAY, Nat. Hist. New York, pt. 6, Crust., 1844, p. 9, pl. 1, fig. 1; pl. 5, fig. 7.—SMITH, Rept. U. S. Commr. Fish & Fisheries, vol. 1 for 1871 & 1872 (1873), pp. 338 [44], 533 [239], 547 [253].—R. RATHBUN, Fisheries & Fishery Industries of U. S., sec. 1, 1893, p. 774, pl. 266.

Ovalipes ocellatus M. J. RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 597; Occas. Papers Boston Soc. Nat. Hist., vol. 7, 1905, p. 9.

Ovalipes ocellatus ocellatus HAY and SHORE, Bull. Bur. Fisheries, vol. 35, 1915–16 (1918), p. 426, and synonymy.

Diagnosis.—Three frontal teeth. Lateral teeth widely separated. No tooth on upper margin of orbit. Color dots of carapace arranged in small annular clusters. Outer surface of palm nearly smooth. Male abdominal segments 3 to 5 fused.

Description.—Carapace about one-fourth wider than long, convex, finely granulate everywhere except in the median line where there is a longitudinal band of slightly enlarged granules. Front with three acute teeth, the median about twice as long as the lateral ones. Orbit with one shallow fissure above. Antero-lateral teeth strong, acute, directed forward. Inner suborbital angle projecting as far as the median tooth. Pterygostomian region with a long curved stridulating ridge made up of approximately 50 close set striae which narrow into tubercles at the inner end of the ridge; a short complementary ridge exists at the proximal end of the inner margin of the

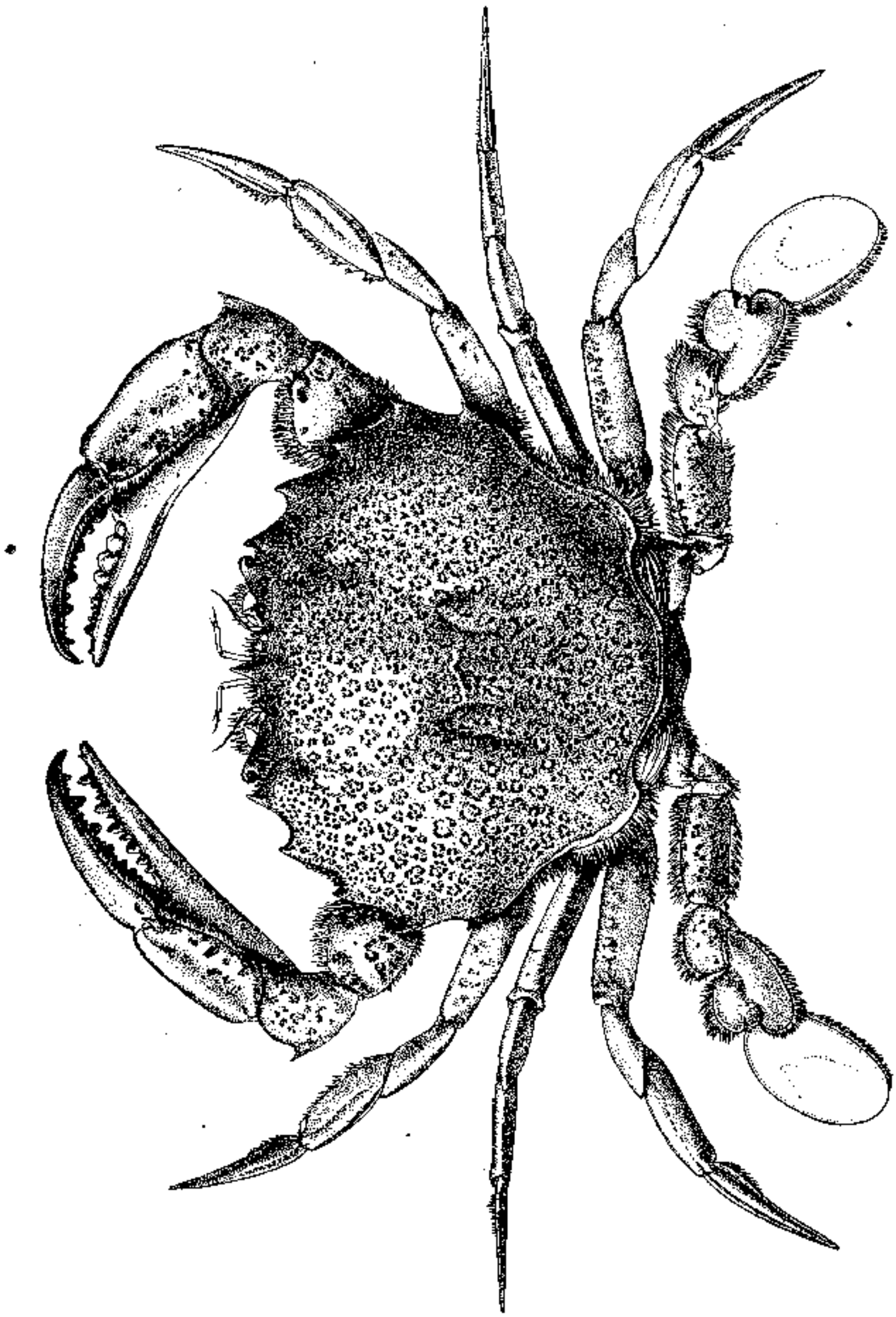

FIGURE 5.—OVALIPES OCELLATUS OCELLATUS, MALE, WOODS HOLE, DORSAL VIEW. AFTER R. RATHBUN

arm. Tooth at distal inner angle of merus of outer maxilliped longer than broad.

Chelipeds rather large; distal three-fifths of anterior margin of merus with several small spines and a dense fringe of hair; carpus with two spines the inner one very long; hand triangular in section, external border costate, internal border with an overhanging densely ciliated ridge which ends distally in a sharp spine; external costa and internal line of cilia continued on the dactyl. Fingers about as long as palm, tapering very gradually, tips turned abruptly toward each other. Abdomen of male narrow, sides nearly parallel; sixth segment nearly twice as long as seventh measured on the median line; seventh segment subcircular. Abdomen of adult female suboval and small compared to the sternum.

Color.—Yellowish gray, closely set with small annular spots of reddish purple; carapace and chelipeds with a silvery or brassy iridescence. (Hay and Shore.) Ground color of chelipeds and legs light brownish tending to orange and bluish; large irregular bluish purple spots on upper surface of chelipeds; large part of wrist including spine bluish; similar but lighter spots on proximal half of other legs; paddles greenish yellow, with deep yellow rim.

Measurements.—Male (32448), length of carapace 55.2, width of same 69.2, fronto-orbital width 29.4, width of front, between tips of spines 10.2 mm.

Range.—Minas Basin at Bass River, Nova Scotia (Leim). From Provincetown, Cape Cod, Massachusetts, to South Carolina. In sand at low-water mark and off shore to 10 fathoms.

Material examined.—

MASSACHUSETTS.—Provincetown; swimming in schools at surface by laboratory dock about 9. a. m.; August 16, 1879; U. S. Fish Comm.; many very young (3888).

Provincetown; shore, sand; September 3, 1879; U. S. Fish Comm.; 22 young (3887); undoubtedly the same brood as the preceding.

Provincetown; 1899; J. E. Benedict; 1 male, 1 female (29320).

Muskeget Channel; surface; August 12, 1887; U. S. Fish Comm.; 10 specimens (12791).

Woods Hole; U. S. Fish Comm.: 1882; 4 males, 4 females (4894). Low water; 1883; 1 exuvia of female (5803). Low water; 1883; 1 young with its exuvia, August 8 (6392). 1885; 1 male and exuvia, moulted September 2 (36969). Nobska beach; July 20, 1892; V. N. Edwards; 9 young (26185). Vicinity of Woods Hole; 1911; 1 male, 3 females (32448), 1 specimen (43186). Surface, by electric light; September 5; 4 males, 3 females (40710). Low water; 1 male, moulted; September 5 (36970).

Vineyard Sound; U. S. Fish Comm.: 1871; 1 young (34926). 1875; 24 very small to medium (2557). Surface; July 31, 1882;

1 young (12562). 1883; 1 male (40709). 1 female with malformed claw (40521). West Chop Light, E. ½ N., 1½ miles; 6 fathoms; S. G.; temperature 65° F.; September 22, 1881; station 1042, *Fish Hawk*; 1 female, medium size, with small barnacles attached (4006). Cuttyhunk Light, N. ¾ W., 3¾ miles; 17 fathoms; S.; temperature 61° F.; September 3, 1880; station 861, *Fish Hawk*; 1 female (4540).

Cataumet; July 22; U. S. Fish Comm.; 1 young (40790).

Buzzards Bay; 1881; U. S. Fish Comm.; 1 young (31485).

GEORGES BANK.—Lat. 41° 15′ 30″ N., long. 68° 15′ 00″ W.; 18 fathoms; crs. wh. S. yl. Sp.; station 2576, *Albatross*; 1 male (10796).

RHODE ISLAND.—Sakonnet River; 5–5½ fathoms; S.; temperature 68°–71° F.; August 27, 1880; stations 837, 838, *Fish Hawk*; 11 male and female (4541). Newport; shore; 1880; U. S. Fish Comm.; 3 young (5756).

Narragansett Bay; S. end of Hope Island, NE.; 5–5½ fathoms; M. brk. Sh.; temperature 70° F.; August 23, 1880; stations 820, 821, *Fish Hawk*; 1 young (40722), 1 young (34061).

CONNECTICUT.—*Fish Hawk*: Between Stratford Point Light and Middle Ground Light; 6 fathoms; sft.; temperature 63° F.; October 10, 1890; station 1620; 1 young (32277). Between Stratford Point Light and Bridgeport Light; 4.5 fathoms; hrd.; temperature 68° F.; September 22, 1890; station 1553; 1 male, 2 females (18205). Off Norwalk Light; 14 fathoms; sft.; temperature 62° F.; October 10, 1892; station 1778; 1 male (32259).

NEW YORK.—Gardiners Bay, Long Island; 1874; U. S. Fish Comm.; 1 young (40791).

Fire Island, Great South Bay; September 27, 1884; T. H. Bean; 22 specimens (8917).

Clam Pond Cove; October 8, 1898; T. H. Bean; 2 males (42564).

NEW JERSEY.—Beesleys Point; S. F. Baird; 10 specimens (2099).

DELAWARE.—Bethany Beach; July 4–10, 1912; W. D. Appel; 3 young (44570).

MARYLAND.—Crisfield; August 1879; T. B. Ferguson, U. S. Fish Comm.; 2 males, medium size (3262).

VIRGINIA.—Eastern shore of Virginia; H. E. Webster; 1 male, 1 female (13857).

Smith Island; May 16–25, 1894; Charles W. Richmond; 2 males, 2 females (18288). May 19, 1898; William Palmer; 4 specimens (21620). E. A. Mearns; 2 males (41020).

End of Cape Charles; May 23, 1922; W. R. Schroeder, U. S. Bur. Fisheries; 1 female (57149).

Cape Charles [City]; September 1890; W. P. Seal; 1 male (31486).

Cherrystone; August 27, 1881; M. McDonald, U. S. Fish Comm.; 6 young (3474).

Off Back River Light, Chesapeake Bay; May 9, 1888; *Grampus;* 1 young (61074).

Chesapeake Bay; No. 2 B Buoy, N. by W. ⅜ W., No. 3 B Buoy W. ¼ N.; 11.44 m.; July 9, 1920; station 8830, *Fish Hawk*; 19 males, 6 females, (55734).

Off mouth of Chesapeake Bay; *Fish Hawk*: Lat. 37° 01′ 09″ N., long. 75° 59′ 20″ W.; 4½ fathoms; hrd. brk. Sh.; 49° F.; April 22, 1916; station 8501; 1 young (58365). Lat. 37° 03′ 18″ N., long. 75° 58′ 12″ W.; 7½ fathoms; sft. fne. S. brk. Sh.; 48.5° F.; December 3, 1915; station 8371; 1 female (58364). Lat. 36° 59′ 55″ N., long. 76° 00′ 42″ W.; 7½ fathoms; hrd. fne. gy. S.; 53.4° F.; December 3, 1915; station 8369; 1 specimen (58363).

Cape Henry; William Evans; 2 males, small (2510).

Lynnhaven Roads; 1916; *Fish Hawk:* Beach; June 7; 2 males, 3 females (55556). In seine; July 16; 10 males, 1 female (61890).

NORTH CAROLINA.—Off Cape Hatteras; October 19, 1884; *Albatross:* Lat. 35° 21′ 30″ N.; long. 75° 25′ 00″ W.; 11 fathoms; crs. gy. S.; station 2286; 3 females (8791). Lat. 35° 21′ 25″ N.; long. 75° 24′ 25″ W.; 13 fathoms; crs. gy. S.; station 2285; 2 females (P.M.Y.U.).

Middle Sound, near Wilmington; April 18, 1880; R. E. Earll, U. S. Fish Comm.; 2 males (4016).

SOUTH CAROLINA.—Charleston; 6 males and females (4493).

Charleston Harbor; 7.8 fathoms; stky.; temperature 58° F.; March 13, 1891; station 1659, *Fish Hawk;* 3 males, 1 female, 2 young (17174).

OVALIPES OCELLATUS GUADULPENSIS (Saussure)

Plate 4

Cancer Ciri Apoa, seu Aratu Pinima, Brasiliensis SEBA, Thesaurus, vol. 3, 1758, p. 44, pl. 18, fig. 9. "*Color ab omni parte idem dilute flavus, splendens.*"

Portunus guadulpensis SAUSSURE, Mém. Soc. Phys. Hist. Nat. Genève, vol. 14, 1858, p. 433 [17], pl. 2, fig. 10 (type-locality, Guadeloupe; type [6] in Geneva Mus.).

Platyonichus ocellatus var. SMITH, Rept. U. S. Commr. of Fish and Fisheries for 1885 (1886), p. 632.

Ovalipes ocellatus floridanus HAY AND SHORE, Bull. Bur. Fisheries, vol. 35, 1915–16 (1918), p. 427, pl. 32, fig. 8 (type-locality, Pensacola, Florida; type, Cat. No. 47959, U.S.N.M.).

Diagnosis.—Color uniform, unspotted. No median band of enlarged granules. Orbits wider than in the preceding, distance between outer and inner orbital spines exceeding distance between suborbital spines.

Description.—Carapace less arched than in *O. ocellatus ocellatus* and evenly granulate all over. Antero-lateral spines, especially the outer orbitals, more acute. Orbits usually wider and in consequence

[6] Examined by Dr. J. Carl.

the distance between suborbital spines narrower, but this character is not constant, varying in the region where the two forms meet.

Color.—Uniform grayish yellow (Hay), except the spine on the inner side of the carpus and a few tubercles on the chela which are dark brown in many specimens (Smith).

Measurements.—Male (17915), extreme length of carapace 34, greatest width of same 46, fronto-orbital width 20.9, width of orbit 7.7, width between suborbital spines 6.6 mm. Largest specimen, female (8856), extreme length of carapace 52, greatest width of same 63 mm.

Range.—North Carolina to Texas; Guadeloupe (Saussure); Brazil (Seba).

Material examined.—See table, page 25.

OVALIPES PUNCTATUS[7] (de Haan), new combination

Plates 5, 6, 7, and 8

Corystes (*Anisopus*) *punctata* DE HAAN, Fauna Japon., Crust., 1833, p. 13; 1835, p. 44, pl. 2, figs. 1–1*d* (type-locality, Japan; type in Leiden Mus.).

Corystes (*Anisopus*) *trimaculata* DE HAAN, Fauna Japon., Crust., 1833, p. 13, *nomen nudum* (not Seba, pl. 18, fig. 9) (type-locality, Cape of Good Hope; type in Leiden Mus.); 1835, p. 44 (considered identical with *P. bipustulatus*).

Platyonichus bipustulatus MILNE EDWARDS, Hist. Nat. Crust., vol. 1, 1834, p. 437, pl. 17, figs. 7–10 (type-locality, Indian Ocean; type in Paris Mus.).

Anisopus trimaculatus M'LEAY, Illustrations Zool. South Africa, 1838, p. 62.—KRAUSS, Die südafrik. Crust., 1843, p. 27.

Platyonychus africanus A. MILNE EDWARDS, Arch. Mus. Hist. Nat. Paris, vol. 10, 1861, p. 413, pl. 34, figs. 2 and 2*a* (type-locality, Simons Bay, Cape Colony; type in Paris Mus.).

Anisopus punctatus STIMPSON, Proc. Acad. Nat. Sci. Philadelphia, vol. 10, 1858, p. 39 [37]; Smithsonian Misc. Coll., vol. 49, 1907, p. 86.

Platyonychus purpureus DANA, U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 291; pt. 2, 1853, p. 1593; atlas, 1855, pl. 18, figs. 3*a*, 3*b* (type-locality, Valparaiso; cotypes, Cat. Nos. 4280, 4281, M.C.Z.).

Ovalipes bipustulatus RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 597.—PORTER, Revista Chilena Hist. Nat., vol. 9, 1905, p. 32.

Ovalipes trimaculatus STEBBING, South African Crustacea, pt. 2, 1902, p. 13.—DOFLEIN, Wiss. Ergeb. deutschen Tiefsee-Exp. "Valdivia," vol. 6, 1904, p. 92, pl. 32, fig. 6.

Diagnosis.—Four frontal teeth. Lateral teeth broad. No abdominal segments fused. Three large color spots on carapace; dots not arranged in clusters. A strong tooth on upper margin of orbit. Outer surface of palm very rough.

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[7] In my previous use of the specific name *bipustulatus* instead of *punctatus* it was considered that *Corystes* (*Anisopus*) *punctata* was a *nomen nudum* in 1833 and should give way to *Platyonichus bipustulatus* 1834. Subsequently it was brought to my notice by Stebbing (S. Afric. Crust., pt. 2, 1902, p. 14) that the species *punctata* was sufficiently defined by de Haan under the subgenus *Anisopus*, where he described the peculiarity of the dactylus of the second pair of trunk legs, a character not shared by *ocellatus*, the only other valid species of the genus.

Material examined of Ovalipes ocellatus guadulpensis

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temp.	Date	Station	Collector	Specimens	Cat. No.	Remarks
	° ′ ″	° ′ ″			°F.						
North Carolina:											
Off Cape Hatteras.	35 25 30	75 20 30	16	gy. S. brk. Sh.		Oct. 20, 1884.	2291	*Albatross*	2 ♀	8856	Subsp. *guadulpensis* as to color and granulation, but not as to measurements.
Do	35 22 50	75 26 00	7	crs. S.		do	2289	do	1 y	7244	
Do	35 21 15	75 23 15	14	gy. S.		Oct. 19, 1884	2283	do	2♂, 1♀	P. M. Y. U. Amer. Mus.	
Do	35 17 00	75 01 00	41	fne. gy. S.		Oct. 21, 1884	2303	do	2♂	P. M. Y. U.	
Do	35 16 00	75 09 00	26	crs. gy. S. bk. Sp.		Oct. 19, 1884	2271	do	1♂	S. I. S.	
Do	35 14 00	75 03 00	49	S. Co.	71	Oct. 21, 1884	2302	do	1 ♀	P. M. Y. U.	
Do	35 12 30	75 05 00	48	crs. gy. bk. S.	77	Oct. 19, 1884	2269	do	2♂	8751	Do.
Off Beaufort						May, 1907		*Fish Hawk*	3 y	51015	
					°C.						
Georgia,: Off Sapelo Island.	16 miles off Sapelo Island lighthouse.		(1)		23	May 3, 1915	8259	*Fish Hawk* (E. Danglade).	1♂ 20 y.	61891	
					°F.						
Florida:											
Off Pensacola	Pensacola Light, N. NW. ⅛ N., 9⅜ miles.		12	S.	59.7	Jan. 18, 1913		do	2 y	61075	
Pensacola								J. E. Kauser	16	17915, 17916.	
Do								do	1 immature ♀	47959	Holotype of *O. o. floridanus.*
Alabama: Perdido						Jan. 27, 1912		Biological Survey, Department of Agriculture.	Fragments	B.S.D.A	1 movable finger, 1 inner spine of wrist, 1 fragment of anterior end of sternum. From stomach of *Larus argentatus*, No. 99940. Supposed to be subsp. *guadulpensis.*
Gulf of Mexico [2].						1891		Joe D. Dantagnan	1♂	15815	

[1] Surface, 8-9 p. m.
[2] Young lady crabs were observed at Pass Cabello, Texas, by the late J. D. Mitchell; they were probably subsp. *guadulpensis.*

Description.—Carapace about one-third wider than long, convex, covered with crowded granules of rather uniform size. Front with four acute teeth, the median pair narrower than the lateral, the median sinus shallower than the lateral sinuses. Orbit with two fissures above; between them a strong triangular tooth pointing obliquely *outward. Antero-lateral teeth broad, their outer margins much longer* than the inner and conspicuously denticulate; sinuses narrow, semicircular. Inner suborbital tooth or spine advanced beyond the frontal teeth. Tooth at distal inner angle of merus of outer maxilliped no longer than broad.

Chelipeds shorter than in *ocellatus;* a fringe of hair along the inner side of the upper margin; merus overreaching carapace but little, inner surface granulate, also distal end of upper surface; inner carpal spine broad, having a superior carina, outer spine lacking, upper surface rough; palm with five carinae on upper-outer surface, two carinae at middle of inner surface. Most striking is the broad lower surface of the palm which is crossed by from 20 to 25 or more strong' well separated, granulated striae, the striae breaking into short pieces toward the distal end of the palm. Complementary to this stridulating ridge there is a short, thick, transverse horny ridge on the distal margin of the anterior surface of the merus of the first ambulatory leg. Fingers strongly carinated, carinae granulate; movable finger with three longitudinal rows of spinules above, those of the inner row longest and sharpest; prehensile teeth unequal, the larger ones with dentate or lobulate margins. Legs broad, espe*cially last two articles. Dactylus of first pair in adult male falciform,* dilated, upper (dorsal) edge deeply grooved, the furrow beginning near the base, its edges then spread out and give a broad, somewhat flattened appearance to the upper surface when viewed from above. Lower edge of first leg heavily furred in the old; swimming feet also margined with hair.

Color.—Ground yellow thickly mottled with blood-red, reddish-brown or purple dots besides a crescent-shaped median spot and a round or oblong spot near the postero-lateral angle of the carapace.

Measurements.—Male (61019), length of carapace to end of submedian spine 85, greatest width of same 109.5, fronto-orbital width 49.7, width of front between tips of spines 15 mm.

Range.—Peru; Chile as far south as Trinidad Channel (Miers); Uruguay; Argentina. South Africa; Japan; China; Australia; New Zealand. On sandy shores.

Material examined.—

PERU.—Independencia Bay; 1919; Robert Cushman Murphy; 1 male (54213), from Brooklyn Mus.

CHILE.—Valparaiso; H. Kröyer collector; specimen in Copenhagen Mus. U. S. Exploring Expedition; 1 male, 1 female, cotypes of *Platyonychus purpureus* Dana (4280, 4281, M.C.Z.).

Tome; February 20, 1888; *Albatross;* 4 males, 10 females (22048).

Lota: February 15, 1888; *Albatross;* 3 males, 3 females (22049). January 16, 1927; W. L. Schmitt; 1 male (61022).

Juan Fernandez Islands; 1926; W. L. Schmitt: 11 males, 9 females (1 ovigerous) (61021). Cumberland Bay; 7–10 fathoms, December 10, 1 young (61103); in seine haul on beach, December 19, 1 ovigerous female (61020).

Chile; May 10, 1898; F. Silvestri collector; 1 male (61073), from Buenos Aires Mus.

URUGUAY.—Cabo Santa Maria, Rocha; Florentino Felippone; 1 male (54632).

ARGENTINA.—Mar del Plata: March 1918; M. Doello-Jurado; 1 young, lent by Buenos Aires Mus. F. Felippone; 2 females (62365, 62475).

Golfo Nuevo, Chubut Territory; from Buenos Aires Mus.: *Independencia* collector; 1 male (61019). 1915; Puerto Madryn; 1 male, 1 female (61018).

AFRICA.—Cape Town; February 1890; W. H. Brown; 5 males, 4 females (14882), from United States Eclipse Expedition.

JAPAN.—Oshoro, Hokkaido; Madoka Sasaki; 1 male (54479).

Hakodate, Hokkaido; September 19, 1896; *Albatross;* 1 female (20178).

Off northeast coast of Nippon; William Stimpson, N. Pacific Exploring Expedition; 3 males (2038), received from U. S. Navy Department.

Same, Rikuoku, Nippon; 1900; Jordan and Snyder; 1 male (26256), from Stanford University.

Yenoshima; Imperial University, Tokyo; 2 males, 5 females (45868), 2 males, 5 females (45877).

Sibushi, Osuni, Kiusiu Island; T. Urita; 1 male (48327).

Japan; H. Loomis; 2 males, 1 female (17561).

Japan or China; Dale and Jouy, U. S. S. *Palos;* 1 young (5284).

CHINA.—Foochow, Fukien; 1924; C. R. Kellogg; 1 male (58727).

AUSTRALIA.—Port Jackson, New South Wales; Australian Museum; 1 male, 1 female (17031).

Genus BATHYNECTES Stimpson

Bathynectes STIMPSON, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 145; type, *B. longispina* Stimpson, 1871 = *B. superba* (Costa, 1853).

Thranites BOVALLIUS, Öfvers. K. Vetensk.-Akad. Förh., 1876, p. 59 (1877); type, *T. velox* Bovallius, 1877 = *B. superba* (Costa, 1853).

Thranistes A. MILNE EDWARDS, Bull. Soc. Philom. Paris, 1881, p. 60; error for *Thranites*.

Antero-lateral teeth five, spiniform, separated by considerable intervals, the posterior one much the longest. Front without a median tooth. Inner hiatus of orbit wide open, not filled by the

basal article of the outer antenna which is narrow and firmly soldered anteriorly to the process of the front. The merus of the outer maxillipeds is as broad as long, does not project beyond the buccal cavity but fits close to its anterior edge. Legs very slender, first shorter than second, second and third very long, third a little the longer; fourth nearly two-thirds as long as third, its last two articles broad and flat, the terminal one without midrib.

Contains only one species.

BATHYNECTES SUPERBA (Costa)

Plates 9 and 10

Portunus superbus O. G. Costa, Fauna del Regno di Napoli, Addizioni a i Decapodi Brachyuri, 1853[8], p. 19, pl. 7, colored (type-locality, near Naples; type in Naples Mus.).—Carus, Prod. Fauna Medit., vol. 1, p. 517.

Bathynectes longispina Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 146 (young male) (type-localities, off Sand Key, Key West, and American Shoal, all in the Florida Straits, 100–150 fathoms; types in M.C.Z.).—A. Milne Edwards, Crust. Rég. Mex., 1879, p. 234, pl. 42, fig. 1–1c (young male).—Smith, Proc. U. S. Nat. Mus., vol. 6, 1883, p. 17.

Bathynectes brevispina Stimpson, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 147 (female) (type-locality, off the Marquesas, Florida Straits, 107 fathoms; type in M.C.Z.).—A. Milne Edwards, Crust. Rég. Mex., 1879, p. 235.

Thranites velox Boyallius, K. Vetensk.-Akad. Forhand., 1876 (1877), No. 9, p. 60, pls. 14 and 15 (type-locality [Storeggen], northwest of Bergen, Norway, 150 fathoms; type in Stockholm Mus.).—G. O. Sars, Den Norske Nordhavs Exped., vol. 15, Crust., pt. 2, 1886, p. 1.

Bathynectes superba Norman, Ann. Mag. Nat. Hist., ser. 6, vol. 7, 1891, p. 274, and synonymy.—A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 311.

Diagnosis.—Frontal teeth four. Spine at lateral angle of carapace unusually long. Chelipeds spinous. Legs very long.

Description of adult.—Carapace covered with a close-cut pubescence and dense granulation. A transverse blunt ridge connects the spines at the lateral angle; a similar ridge crosses the cardiac region; the antero-lateral spines increase in length from the first to the last; last spine about twice as long as the next. Of the frontal teeth those of the middle pair are subspiniform, more advanced and much narrower than the outer teeth, which are broad and triangular. Inner upper angle of orbit small, acute; sinuses short and open; lower border denticulate and with a prominent inner spine, and a small outer spine, below which is a deep narrow fissure, and above it a broad, shallow fissure. From the base of the inner spine a small projecting lobe crosses the bottom of the hiatus of the orbit and reaches the basal article of the antenna. This article is oblong and bears a crest or carina along the outer side, terminating anteriorly in a slight tooth. Flagellum of outer antennae more than half as long as the carapace.

[8] For the dates of the various parts of Costa's work, see Sherborn, Ann. Mag. Nat. Hist., ser. 8, vol. 5, 1910, p. 132, and Index Animalium, pt. 1, 1922, p. xxxix.

Material examined of Bathynectes superba

Locality	Bearings: Latitude N.			Bearings: Longitude W.			Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
	°	′	″	°	′	″			°F.						
New England:															
Off Nantucket Shoals	39	57	30	69	41	10	78	gy. S.		Aug. 6, 1884	2199	*Albatross*	1 ♀	8041	
Off Marthas Vineyard	39	54	00	69	44	00	158	fne. S	45	Aug. 11, 1882	1097	*Fish Hawk*	1 ♂	6743	To A. M. Norman.
Do	39	54	00	69	51	30	134	hrd. S. sponges	52	Aug. 4, 1881	940	do	1 ♂	4987	
Do	39	58	00	70	06	00	146	S. Sh	47	Sept. 21, 1881	1038	do	1 ♂ 1 y	4557 18810	
Do	40	02	54	70	23	40	115	M. fne. S	49	Sept. 4, 1880	871	do	2 y	P. M. Y. U.	
Do	40	05	39	70	23	52	86	S. Gr. Sh. sponges	50.5	do	872	do	2 y	5108	
Do	39	58	00	70	35	00	115	S	48	Oct. 4, 1882	1152	do	1 ♂ 1 ♂	18760 P. M. Y. U.	
Do	39	49	30	70	54	00	225	S. bu. M	42	Sept. 13, 1880	879	do	1 y	5107	
Do	40	00	00	70	57	00	85	sft. stky. M	51	do	874	do	1 y	P. M. Y. U.	
Delaware: East of Cape Henlopen.	38	39	00	73	11	00	130	S	49	Oct. 10, 1881	1043	do	1 ♀ 1	18759 P. M. Y. U.	
Virginia: Off mouth of Chesapeake Bay.	37	07	50	74	34	20	167	gy. S	46.8	Oct. 18, 1884	2264	*Albatross*	1 ♂	7209	
Do	37	07	40	74	35	40	70	gn. M. G	57.9	do	2265	do	1 ♂ 2 ♂	7210 P. M. Y. U.	
North Carolina: Off Currituck Sound.	36	01	30	74	47	30	93	crs. gy. bk. S. brk. Sh.	52	June 4, 1885	2426	do	1 ♂ 2 ♀	14949	
Georgia:															
East of Sapelo Island	31	26	00	79	07	00	276	Co. brk. Sh	53.8	Apr. 1, 1885	2416	do	1 ♂ 3 ♀ 2 y	9856	
East of Altamaha Sound	31	20	00	79	22	00	280	gy. S. dead Co		May 5, 1886	2671	do	2 ♀ 1 y	11373	
East of Cumberland Island.	30	44	00	79	26	00	440	Co. crs. S. Sh. For.	45.6	Apr. 1, 1885	2415	do	1 y	14948	
Florida:	°	′	″	°	′	″									
Off Fernandina	31	09	00	79	33	30	352	gy. S. dead Co	43.7	May 5, 1886	2669	do	7 ♂ 11 ♀ 18 y	11366	
Do	30	58	30	79	38	30	294	gy. S. dead Co	46.3	do	2668	do	1 ♂ 1 ♀	14950	
Gulf Stream off Key West.	24	18	37	81	36	00	127	rky	°C. 18	Mar. 4, 1902	7301	*Fish Hawk*	1 ♀	60976	
Do	Sand Key Light, NNW.						[1] 100			June 20, 1893	30	State Univ. Iowa Exped.	1 ♂	Mus. S. U. I.	
Do	Sand Key Light, NNW., about 5 miles.						[1] 90			June 21, 1893	35	do	1 ♀	do	
Europe:							*Meters*								
Off Santander, Spain							564			July 6, 1882		*Travailleur*	1 y	22949	From Paris Museum.
Near Naples, Italy												Zoological Station Naples.	2 ♀	18942	

[1] About.

Chelipeds one half longer than the carapace; merus with a long spine on the inner edge and a short one on the upper edge, both distant from the anterior extremity of the arm about one-third of its length. Carpus with a very long spine at inner angle, which spine is itself armed with two or three small spines on the anterior edge; carpus also with three other spines and several spinules on the upper-outer surface. Hand costate, three ridges on the outer, two on the upper, and one on the inner side; of the superior ridges, the outer one is armed with five spines and the inner one is denticulated and has a long spine at the summit anteriorly; fingers nearly as long as palm, strongly carinate and irregularly dentate within. Ambulatory legs of the third pair two and a half times as long as carapace. Dactylus of swimming paddles broadly lanceolate, pointed.

Young.—A transverse ridge interrupted at the middle is apparent on the gastric region. The frontal teeth are blunt, those of the middle pair are rounded lobes. The lateral teeth are proportionally wider and the intersinuses narrower.

Color.—Dull red, grayish between granules; marginal spines bright red. Ventral surface and appendages including proximal portion of ambulatory legs pale red or tinged with red. Chelipeds specked and slightly mottled with red. Terminal third of digits scarlet, somewhat obscured at the tips by blackish. Merus and carpus of legs and propodus of last leg specked and mottled with scarlet; propodus of first 3 pairs, except a narrow band at distal end, and dactyli of all four pairs, bright scarlet. (After Smith.)

Measurements.—Male (11366), length of carapace including frontal teeth 34.2, excluding teeth 32.4, width of carapace in front of lateral spines 40.2, width between tips of lateral spines 52, fronto-orbital width 27, width of front 11.6 mm. Longest specimen, with unusually short lateral spine, male (11366), total length of carapace 42.2, total width 63, width in front of lateral spines 52.9 mm.

Range.—North Atlantic Ocean: From off Marthas Vineyard, Massachusetts, to the Gulf Stream in Florida Straits; Europe, from Norway to Great Britain and southward to Cape Verde Islands. Mediterranean and Black Seas. Depth, 70 to 492 fathoms.

Material examined.—See table, page 29.

Genus COENOPHTHALMUS A. Milne Edwards

Coenophthalmus A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 236; type, *C. tridentatus* A. Milne Edwards.

Carapace almost quadrilateral. Front very wide, united with the suborbital border for a considerable distance so as to completely exclude the antenna from the orbit. Basal article of antenna short and narrow; movable part reaching a little beyond outer orbital angle.

First article of antennules very broad. Buccal cavity rounded anteriorly. The endostome has a strong crest defining the respiratory canal. Merus of outer maxillipeds subquadrate and slightly truncate at its inner angle for insertion of palp. Chelipeds short. Ambulatory dactyls slightly widened; those of last pair shorter and more compressed than the preceding, their penult article elongate.

Contains only one species.

COENOPHTHALMUS TRIDENTATUS A. Milne Edwards

Plates 11 and 12; Plate 13, Figures 3–5

Coenophthalmus tridentatus A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 237, pl. 42, figs. 2–2*b* (*Ctenophthalmus* on explanation of plate) (type-locality, Montevideo; figured type in Paris Mus.).[9]

Diagnosis.—Subquadrilateral. Three lateral teeth. Front arcuate. Legs spinuous.

Description.—Carapace broader than long; surface uneven and rugose with numerous short transverse lines on which very short hairs are inserted. Front very wide, arcuate, subentire, or slightly wavy and obscurely four lobed; a slight sinus separates it from the inner orbital angles which are shallow rounded lobes. Orbital border deeply cut and with two small open fissures above and a large V-shaped outer emargination. Eye short and thick. Antero-lateral border three-toothed; first tooth at outer angle of orbit shallow, with a minute point; the others tipped with a slender spine, the third narrower than the second. Postero-lateral borders nearly twice as long as antero-lateral, thick and slightly convergent. Posterior border very wide. Pterygostomian region, sternum and legs covered with a short velvet like that on dorsal surface of carapace.

Chelipeds stout. The arm overreaches the carapace very little; it has three spines on its inner margin, four on its upper. Carpus with a strong acuminate inner spine, and various spinules on the upper-outer surface. Palm with a double denticulate crest above, outer surface rugose. Fingers short, channeled, prehensile borders sharp, cut into several close-set teeth. Merus of first three ambulatory legs spinous above; the last leg has two or three spines below on the distal half; the propodus of each leg has a pair of spines at distal end below, one spine outside, the other inside. Abdomen of male triangular from the fourth segment to the tip; a naked, transverse swelling on each segment from the second to the sixth inclusive.

Measurements.—Male (15406, B. A. Mus.), length of carapace 11, width of same at last tooth 15.6, fronto-orbital width 11.8, width between orbits 7.9 mm. In the specimens examined the females run larger than the males: Female (Mar del Plata), length of carapace

[9] The figured type is said to be female in explanation of plate (probably correct), but male in text, p. 238.

Material examined of Coenophthalmus tridentatus

Locality	Bearings: Latitude S.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Cat. No.	Remarks
	° ′ ″	° ′ ″									
Uruguay: East of Rocha	34 21 00	53 41 30				Mar. —, 1925	6	*Atair*	1♂ 1♀	(15403)	Lent by Buenos Aires Museum.
Argentina:											
Off Cape San Antonio	36 42 00	56 23 00	11.5	S. brk. Sh.		Jan. 12, 1888	2764	*Albatross*	4♂	22050	
Do	36 43 00	56 23 00	10.5	S. brk. Sh.		do	2765	do	2♂ 1♀	22051	
Do	36 47 00	56 23 00	10.5	S. brk. Sh.		do	2766	do	1♀ 1 y	22052	
			Meters								
Off Punta Mogotes to the south of Mar del Plata.			[1] 25			1914	76	*Patria*	3♀	(8620)	Do.
Do			[1] 25			1914	76	do	2♂ 1♀		Do.
Do			[1] 25			1914	76-77	do	1♀		Do.
Do			[1] 25			1914	77	do	1♂ 3♀		Do.
Mar del Plata						Aug. 7, 1918		M. Doello-Jurado	1♀ ovig	(9445)	Do.
Do						Aug. 20, 1919		do	1♀ ovig	(10113)	Do.
Do						Aug. 28, 1920		do	2♀ (1 ovig.)	(11381)	Do.
Mar del Plata, from the market.								do	1♀		Do.
Mar del Plata						Apr. 14, 1921		M. Lesieux	1♀		Do.
			Fathoms								
Southwest of River Quequen Grande.	39 02 00	59 27 00	25			Sept. —, 1917		*Alferez Mackinlay*	3♂ 6♀ (1 ovig.)	(9149)	Do.
Between Union Bay and Anegada Bay, Prov. Buenos Aires.						Feb. —, 1920		*Uruguay*	1♂ 2♀ ovig	(10395)	Do.
Patagonia:											
Off Bermeja Head	41 17 00	63 00 00	17			Mar. 4, 1872	28	*Hassler* Exped	1♀	2970, M.C.Z.	Paratype.
Off Gulf of San Matias	41 30 00	61 20 00	27			Jan. 19, 1920		*Sarmiento*	1♂	(10502)	Lent by Buenos Aires Museum.
Puerto Madryn									1 y		Do.

[1] About.

12.3, width at last tooth 17.4, fronto-orbital width 14, width between orbits 10 mm.

Range.—Uruguay to Patagonia.

Material examined.—See table, page 32.

Subfamily THALAMITINAE (LUPINAE Alcock)

Chelipeds longer, usually much longer, than any of the legs, the first three pairs of which have a tendency to be slender; the last pair are swimming paddles. Carapace commonly conspicuously broad; antero-lateral borders usually cut into 9 distinct teeth, exceptionally 5 or 4.

Genus PORTUNUS Weber

Portunus WEBER, Nomenclator entomologicus, 1795, p. 93; type, *P. pelagicus* (Linnaeus, 1758) = *Cancer reticulatus* Herbst, 1799.—FABRICIUS, Supplementum Entomologiae Systematicae, 1798, p. 325.—RATHBUN, Proc. Biol. Soc. Washington, vol. 11, 1897, pp. 155 and 160. Not *Portunus* Leach, Edin. Encyc., vol. 7, 1814, p. 390 [228].

Lupa LEACH, Edin. Encyc., vol. 7, 1814, p. 390 [228]; type, *L. pelagica* (Linnaeus). Not *Lupa* de Haan, Fauna Japon., Crust., 1833, p. 11.

Lupania RAFINESQUE, Amer. Monthly Mag., vol. 3, 1818, p. 272 (substituted for *Lupa* Leach).

Neptunus DE HAAN, Fauna Japon., Crust., 1833, pp. 3 and 7; subgenus of *Portunus;* type, *P.* (*N.*) *pelagicus* (Linnaeus).

Achelous DE HAAN, Fauna Japon., Crust., 1833, pp. 3 and 8; subgenus of *Portunus;* type, *P.* (*A.*) *spinimanus* Latreille.

Amphitrite DE HAAN, Fauna Japon., Crust., 1833, pp. 3 and 8; subgenus of *Portunus;* type, *P.* (*A.*) *gladiator* Fabricius.

Pontus DE HAAN, Fauna Japon., Crust., 1833, pp. 3 and 9; subgenus of *Portunus;* type, *P.* (*Pontus*) *convexus* de Haan.

Monomia GISTEL, Naturgeschichte des Thierreichs, 1848, p. VIII (substituted for *Amphitrite*, preoccupied).

Posidon HERKLOTS, Addit. Faun. Africae Occid., 1851, p. 3; type, *P. validus* Herklots.

Xiphonectes A. MILNE EDWARDS, Nouv. Arch. Mus. Hist. Nat. Paris, vol. 9, 1873, p. 157; type, *X. vigilans* (Dana).

Hellenus A. MILNE EDWARDS, Crust. Rég. Mex., 1879, pp. 210 and 221; subgenus of *Neptunus;* type, *N.* (*H.*) *spinicarpus* (Stimpson).

Carapace transverse, usually broad, and depressed or little convex, often with surface areolated. Front proper well delimited from inner supra-orbital angles and cut into from three to six—usually four—teeth; its breadth is from a sixth to a fifth the greatest breadth of carapace (lateral epibranchial spines not included). Antero-lateral borders oblique, arched, longer than postero-lateral, cut into nine teeth (including outer orbital angle), of which the ninth may be enlarged. The orbit usually has two fissures or sutures in upper border, which border is less prominent than lower border, so that the orbit very often has a dorsal inclination; the lower border has a fissure or suture near the outer angle, inner angle dentiform and usually very prominent.

The antennules fold transversely. The basal antennal article is peculiarly short and has its antero-external angle produced to form a lobule or spine extending into the orbit; the flagellum, of moderate length, stands in the orbital hiatus. Epistome short or even linear, sometimes prolonged in the middle line to form a spine lying below the interantennulary septum. Buccal cavity squarish, broader than long, efferent branchial channels almost always well defined. Palpus of outer maxillipeds subcylindrical. Chelipeds longer, usually much longer than any of the legs, and massive; arm with spines; both inner and outer angles of wrist spiniform; palm prismatic, costate, and usually with spines, fingers usually nearly as long as the palm and strongly toothed. Ambulatory legs compressed; in the last pair the merus and carpus are short and broad; propodus and dactylus typically foliaceous and paddle-like for swimming. Abdomen of male triangular, five-segmented, the third, fourth, and fifth segments being fused; the first segment in both sexes is almost entirely concealed beneath the carapace.

Found in tropical and temperate seas.

The chelipeds of the female are shorter than those of the male and sometimes stouter or more swollen; the carapace may be narrower than in the male. In the young the carapace is often narrower in proportion to its length than in the old; the antero-lateral teeth may be more unequal; usually the lateral spine is longer than in the full grown but the reverse is true in some cases. The descriptions of species are based on the old so far as possible.

KEY TO THE AMERICAN SUBGENERA AND SPECIES OF THE GENUS PORTUNUS

A¹. Carapace wide; antero-lateral margin the arc of a circle with long radius, whose center is near the posterior margin of the carapace.
Subgenus **Portunus**, p. 36.

B¹. Without stridulating apparatus. Posterior angles of carapace unarmed.

C¹. Postero-distal margin of merus of swimming feet unarmed.

D¹. Carapace convex, for the most part smooth and glossy; palms swollen, only one spine on upper margin..... **sayi**, p. 37.

D². Carapace uneven, not smooth and glossy; two spines on upper margin of palm; submedian teeth of front very small.

E¹. A spine at extremity of outer margin of arm. Submedian teeth of front much less advanced than outer teeth.
anceps, p. 42.

E². No spine at extremity of outer margin of arm. Submedian teeth of front nearly or quite as advanced as outer teeth.
ventralis, p. 43.

C². Postero-distal margin of merus of swimming feet armed with a spine and spinules or with spinules only.

D¹. Postero-distal margin of merus of swimming feet armed with spinules and with a spine at the angle.

E¹. Carapace very wide; lateral spine nearly two-thirds as long as antero-lateral margin..... **acuminatus**, p. 56.

E². Carapace narrower; lateral spine not longer than the width of four adjacent teeth.

F¹. Chelipeds heavy, propodus dilated, its lower margin convex ..... **asper**, p. 56.

F². Chelipeds elongate, propodus not dilated, its lower margin straight or nearly so ..... **panamensis**, p. 58.

D². Postero-distal margin of merus of swimming feet armed with a row of spinules but no spine.

E¹. Frontal teeth blunt. Width of merus of swimming feet equal to length of anterior margin ..... **gibbesii**, p. 49.

E². Frontal teeth sharp. Width of merus of swimming feet less than length of anterior margin ..... **xantusii**, p. 50.

B². A stridulating ridge on lower surface of carapace. A spine at posterior angle of carapace ..... **vocans**, p. 60.

A². Carapace narrow; antero-lateral margin the arc of a circle with short radius, whose center is near the center of the cardiac region.

Subgenus **Achelous**, p. 62.

B¹. Carapace with posterior corners (marginal line) rounding, unarmed.

C¹. Postero-distal margin of merus of swimming feet unarmed. Two spines on upper margin of palm.

D¹. Lateral spine or tooth of carapace larger than the next tooth.

E¹. Lateral spine of carapace similar to, and very little larger than the next spine or tooth. Upper margin of movable finger conspicuously fringed with long hair.

depressifrons, p. 84.

E². Lateral spine much larger than the next spine or tooth and directed more outward. Hair on upper margin of movable finger inconspicuous ..... **floridanus**, p. 82.

D². Lateral tooth no larger than the preceding teeth.

bahamensis, p. 90.

C². Postero-distal margin of merus of swimming feet armed with one or two spines or with spinules or with both.

D¹. An erect spine on basis of swimming feet. A large round persistent red spot on postero-lateral slope of carapace ..... **sebae**, p. 79.

D². No erect spine on basis of swimming feet. No large persistent red spot on postero-lateral slope of carapace.

E¹. Postero-distal margin of merus of swimming feet armed with one or two spines besides inconspicuous spinules.

F¹. One spine at postero-distal angle of merus of swimming feet.

G¹. Frontal teeth sharp, spiniform. Lateral spine short.

H¹. Merus of swimming feet as broad as long or nearly so. Eight antero-lateral teeth equal.

spinimanus, p. 62.

H². Merus of swimming feet half again as long as broad. Antero-lateral teeth 2, 4 and 6 slightly reduced. Carapace lumpy in the middle.

stanfordi, p. 69.

G². Frontal teeth blunt-tipped. Antero-lateral teeth very unequal. Lateral tooth similar to and scarcely larger than seventh tooth ..... **angustus**, p. 70.

F². Two spines at postero-distal angle of merus of swimming feet; this merus distinctly longer than broad.

brevimanus, p. 68.

E². Postero-distal margin of merus of swimming feet armed with spinules but no spines.

F¹. A shallow, spinulous lobe at postero-distal end of merus of swimming feet. Inner spine of carpus of male longer than palm.....**spinicarpus**, p. 92.

F². No lobe at postero-distal end of merus of swimming feet. Inner spine of carpus shorter than palm.

G¹. Upper half of outer surface of palm smooth, iridescent. Chelipeds conspicuously fringed with hair above. **ordwayi**, p. 71.

G². Upper half of outer surface of palm crossed by a longitudinal carina. Hair of chelipeds inconspicuous.

H¹. Lateral spine of carapace less than twice as long as preceding tooth. Carapace very convex. **affinis**, p. 80.

H². Lateral spine of carapace twice or more than twice as long as preceding tooth. Antero-lateral teeth unequal.

J¹. Lateral spine of carapace twice as long as preceding tooth. Antero-lateral teeth closely placed.....**minimus**, p. 76.

J². Lateral spine of carapace as long as the width of the next three teeth. Front prominent.....**pichilinquei**, p. 78.

B². Carapace with posterior corners angled, armed with a spine or tooth.

C¹. A spine at posterior angles. Lateral spine very long. Merus of swimming feet unarmed. Ten tubercles on carapace. **tuberculatus**, p. 90.

C². A tooth at posterior angles. Merus of swimming feet with postero-distal margin spinulous. Inner spine of carpus of male as long as palm.....**iridescens**, p. 93.

ANALOGOUS SPECIES ON OPPOSITE SIDES OF THE CONTINENT

Atlantic	Pacific
gibbesii	*xantusii*
spinimanus	*brevimanus*
ordwayi	*angustus*
spinicarpus	*iridescens*

SPECIES PROBABLY ERRONEOUSLY REFERRED TO AMERICA

Portunus pusillus LEACH, said to be a Californian species by Filhol, Rec. Passage de Vénus, vol. 3, pt. 2, Mission de l'Ile Campbell, 1885, p. 381.

Neptunus gladiator var. *argentatus* WHITE. Payta given as locality by Cano, Boll. Soc. Nat. Napoli, ser. 1, vol. 3, 1889, p. 214. In his geographical list on p. 101, however, this species is not given under Payta.

Subgenus PORTUNUS

Carapace very wide, the antero-lateral margin being the arc of a circle with long radius, whose center is near the posterior margin of carapace. Last spine of antero-lateral margin usually much larger and longer than the others.

PORTUNUS (PORTUNUS) SAYI (Gibbes)

Plate 14

Portunus hastatus FABRICIUS, Suppl. Entom. Syst., 1798, p. 367, *in Americae Insulis;* not *Cancer hastatus* Linnaeus, 1767, Adriatic.—LATREILLE, Hist. Nat. Crust., vol. 6, 1802–1803, p. 18.

Portunus pelasgicus Bosc, Hist. Nat. Crust., vol. 1 [an X], 1801–1802, p. 219, pl. 5, fig. 3, not *P. pelagicus* (Linnaeus, 1758); "dans la haute mer parmi les fucus."

Lupa pelagica SAY, Journ. Acad. Nat. Sci. Philadelphia, vol. 1, 1817, p. 97; Gulf Stream.

Lupa sanguinolenta KRAUSS (not Herbst), Sudafrik. Crust., 1843, p. 11; Sargasso Sea.

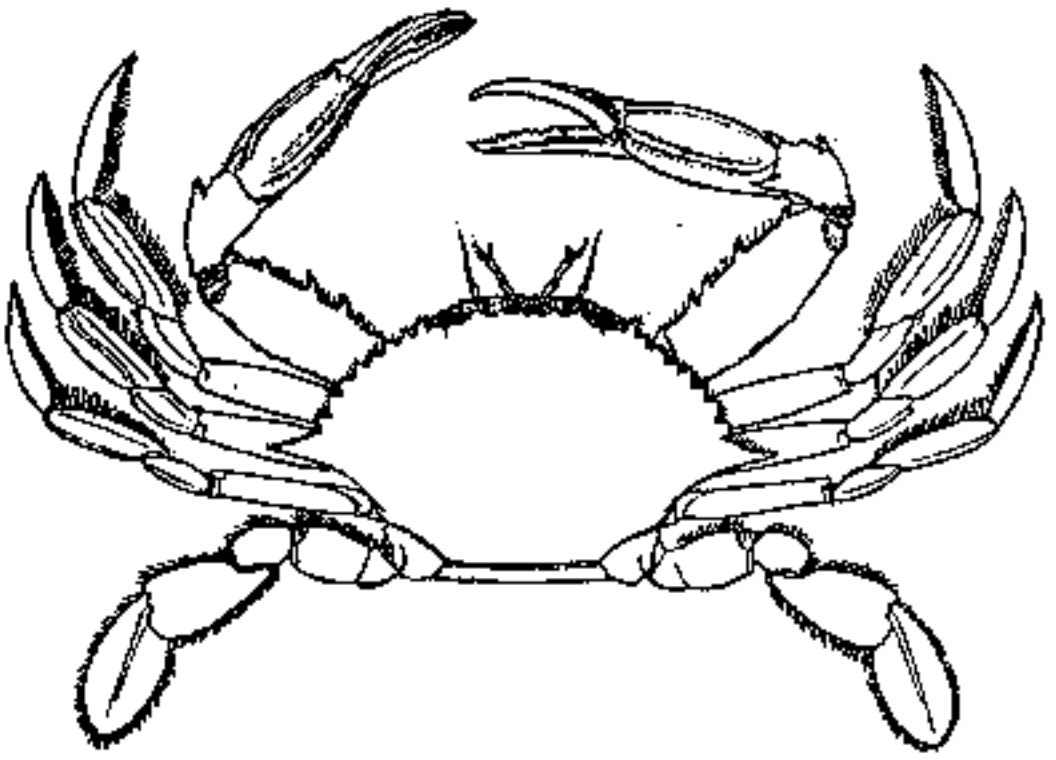

FIGURE 6.—PORTUNUS (PORTUNUS) SAYI, MALE, NATURAL SIZE, DORSAL VIEW

Lupa cranchiana LEACH (*nomen nudum*) in White, List Crust. Brit. Mus., 1847, p. 27, not *Neptunus sanguinolentus* (Herbst); lat. 30° N., long. 36° W., on a floating thalassiophyte, Tuckey's Congo Expedition, 1816 (specimen in Brit. Mus.).

Lupa sayi GIBBES, Proc. Amer. Assoc. Adv. Sci., 3d meeting, 1850, p. 178 [14] (type-locality, South Carolina; no types in Charleston Mus.).

Lupea pudica GERSTAECKER, Arch. f. Naturg., vol. 22, pt. 1, 1856 (1857), p. 130 (type-locality, Brazilian coast; type in Berlin Mus.).

Neptunus sayi A. MILNE EDWARDS, Arch. Mus. Hist. Nat., Paris, vol. 10, 1861, p. 317, pl. 29, fig. 2.

Lupea parvula DESBONNE in Desbonne and Schramm, Crust. Guadeloupe, 1867, p 40 (type-locality, Guadeloupe; type not extant).

Portunus sayi RATHBUN, Ann. Inst. Jamaica, vol. 1, 1897, p. 22.—VERRILL, Trans. Connecticut Acad. Arts and Sci., vol. 13, 1908, p. 376.

FIGURE 7.—PORTUNUS (PORTUNUS) SAYI, OUTER MAXILLIPED, ENLARGED

Diagnosis.—Carapace very convex, rather smooth and glossy; only four ridges; eight lateral teeth shallow. Palms swollen, bidentate.

Description.—Carapace high in the middle, sloping downward in all directions; furrows shallow, granulation fine, scarcely visible to the naked eye; two low granulated ridges concave forward across the gastric region; a sinuous ridge leading up on the branchial region from the branchial spine. Frontal or rostral teeth four, the median and submedian pairs about equally advanced, the median very small. Inner supraorbital tooth simple, undivided. Inner suborbital tooth large, advanced far beyond the front. Antero-lateral teeth trending forward, their posterior margins longer than their anterior; lateral spine long and strong, directed outward.

Material examined of Portunus (Portunus) sayi

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Temp. at surface	Date	Station	Collector	Specimens	Cat. No.	Remarks
	° ′ ″	° ′ ″		°F.						
Nova Scotia: South of Nova Scotia.	40 50 00	60 53 00			July 2, 1915		C. W. Furlong, *Kitty A.*, W. African Islds. Exped.	1 ♀ ovig	53352	From gulf weed.
Georges Bank:										
Off Georges Bank	41 43 00	65 21 50		69	Sept. 3, 1883	2074	*Albatross*	50 y	40719	
Do	41 15 30	64 23 00	Surface	69	June 19, 1885	Hyd. 743	do	1	11040	
Do	40 09 00	68 52 00					W. E. Safford, U. S. Navy, U. S. S. *Vandalia.*	4 ♂ 4 ♀	12585	
Do	40 03 30	67 27 15	Surface	70	July 15, 1885	2535	*Albatross*	10	10852	
Do	40 02 00	68 50 30	do	72	July 31, 1883	2048	do	2	5802	
Do	38 19 26	68 20 20	do	81	July 28, 1883	2039	do	1 ♀ ovig	40522	
Georges Bank					Sept. 1, 1872		U. S. Fish Commission	1 y	40720	
Do					Sept. 14, 1872 Sept. 15, 1872		do	1 y	40727	
Massachusetts:										
Woods Hole			Surface		Sept. 3, 1904		V. N. Edwards, U. S. Fish Commission.	3 y	32480	
Do							do	1 y	3815	
Vineyard Sound			Surface		1881		do	1 ♂	4560	
Menemsha Bight			do		Aug. 29, 1906		Bureau of Fisheries	1 ♀	33103	Very large. On floating gulf weed.
South of Nantucket			do		July 16, 1896		U. S. Fish Commission	100	11842	Megalops.
Do	39 45 00	69 44 45	do	70	Aug. 4, 1881	935	*Fish Hawk*	2 ♀	4561	
Do	39 49 25	69 49 00		72	do	937	do	1 y	34046	
Do	39 58 00	70 06 00		67	Sept. 21, 1881	1038	do	1,000	43386	Eggs.
Do					do	Near 1038	do	2	40523	
Off Marthas Vineyard	Between 39 59 15 and 40 06 50	Between 70 34 15 and 70 36 30	Surface	67–68	Sept. 20, 1883	2085–2088	*Albatross*	65	9921	
Do	39 59 40	70 41 10		68	do	2090	do	2 ♀ 23 y	5820	
Do	39 57 45	70 50 30		73	Aug. 7, 1885	2541	do	1 y	40726	
Do	39 57 30	70 51 15		74	do	2538	do	2	11056	
Do	39 22 20	70 52 20		69	Sept. 30, 1883	2096	do	1 ♂ 11 y 2 y	31459 5427	
Do	Between 39 58 35 and 40 01 50	Between 70 59 00 and 71 00 30	Surface	67.5–69	Sept. 21, 1883	2091, 2092	do	1 ♀ 55 y 15 y	5813 31548	

Rhode Island:												
South of Block Island	39	40	30	71	31	00	do	68	Sept. 8, 1881	Near 995	*Fish Hawk*	1 y	40728	On floating plant
Do	39	38	00	71	39	45	do	67	Aug. 19, 1884	2202	*Albatross*	10	8217	
Do	39	34	15	71	41	15	do	74	do	2203	do	6	8218	
New York: South of Long Island.	39	02	00	72	36	00	do	71	Sept. 20, 1885	2588	do	1 claw	34931	
New Jersey:														
Off Barnegat	39	45	00	73	58	00	do	75	July 31, 1913	10081	*Grampus*	21 y	61321	
Off Cape May	39	04	00				do		July 23, 1892		do	10 y	61330	
East of Cape May	38	59	00	70	07	00			Sept. 16, 1886	2711	*Albatross*	3 y	12019	
Maryland: East of Maryland.	38	20	00	70	08	30	do		Sept. 17, 1886	2713	do	12 1 ♂	18804 12013	With *Conchoderma virgatum* attached.
Virginia:														
East of Chincoteague Island.	37	56	20	70	57	30	do	72.5	Oct. 1, 1883	2097	do	16	5822	
East of Accomac County.	37	46	30	73	56	30	do	69	Sept. 17, 1887	2742	do	6 y	12871	
East of Northampton County.	37	23	00	68	08	00	do	80	Aug. 29, 1885	2566	do	12 1 y	10857 40725	
East of Chesapeake Bay.	37	08	30	74	33	30	do	63	June 3, 1885	2422	do	1 ♂ 1 y	10097	
East of Princess Anne County.	36	47	00	73	25	00	do		Oct. 23, 1886	2724	do	10	37852	
Smith Island											Percy Shufeldt	1 y	23125	
North Carolina:														
Off Currituck	36	20	24	74	46	30	Surface	69	June 4, 1885	2425	*Albatross*	100 y	10112	
Off Cape Hatteras	35	16	00	75	02	30		78.5	Nov. 9, 1883	2108	do	2 ♀	5654	
Do	Between 35 10 40 and 35 12 30			Between 75 05 00 and 75 06 10				75–79	Oct. 19, 1884	2268, 2269	do	12	8833	
Do							Surface		June 5, 1885		do	2 ♀ 11 y	10123	
Edge of Gulf Stream, off Cape Hatteras.							do		June 6, 1903		B. A. Bean, for Geogr. Soc. of Baltimore.	2 ♂ 2 ♀ 23 y	31075	In *Sargassum*.
Off Beaufort	¼ mile N. NE. of can buoy.								Aug. 12, 1914	8220	*Fish Hawk*	1 y	51388	
Do	Due W. from buoy.								Aug. 10, 1914	8205	do	1 y	51384	
Mouth of Cape Fear River.							Surface	83	July 12, 1915	8275	do	6 y	61328	
Off Southport							do		July 18, 1915		do	1 y	61327	Net out from 11.16 p. m. to 12 midnight.
South Carolina:														
Off Charleston	32	43	00	77	51	00	do	69	Jan. 5, 1885	2314	*Albatross*	30	9447	
Open ocean off Gulf Stream.	32	00	00	74	00	00	do		June 12, 1903		B. A. Bean, for Geogr. Soc. of Baltimore.	1 ♂	31077	
Georgia	31	16	00	71	50	00	do		Nov. 23, 1887		*Albatross*	10	22022	

Material examined of Portunus (Portunus) sayi—Continued

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Temp. at surface	Date	Station	Collector	Specimens	Cat. No.	Remarks
Florida, east side:										
Off Indian River	28 17 07	66 17 37	Surface		Jan. 14, 1884	Hyd. 38	*Albatross*	1♂ 3♀ 3 y	7746	
				°C.						
Off Biscayne Bay	25 33 00	80 03 00	do	21.75	Mar. 20, 1914	10204	*Bache*	1 y	61331	
Mid-ocean, Sargasso Sea	25 14 00	59 33 00	do				U. S. Fish Commission.	1 y	34181	On Sargasso weed.
Do	21 00 00	51 00 00	do				Dr. C. C. Craft	1♀	61326	
Gulf Stream			do				U. S. Fish Commission.	12 y	21395	
Do			do				J. D. Dana, U. S. Exploring Exped.	3	2368	
Bahamas:										
About 120 miles North by East of Abaco Island.			do		June 15, 1903		Bean and Riley, for Geogr. Soc., Baltimore.	1♂ 3♀ 7 y	31074	In *Sargassum*.
60 miles North of Abaco Island.			do		June 16, 1903		B. A. Bean, for Geogr. Soc., Baltimore.	2♂ 2♀	31078	Do.
Between Nassau and Elbow Bay.			do		July 21, 1903		do	12 y	31055	Do.
Between Nassau and Andros Island.			do				Frederick Stearns	Specimens returned to sender.		In floating gulf-weed.
Andros sponge banks							do	do	do	From sponges.
Opposite Mangrove Key, Andros Island.					June 27, 1903		B. A. Bean, for Geogr. Soc., Baltimore.	1♂	31073	
Open sea between Cat Island and Eleuthera.			Surface		July 18, 1903		do	1♀ 3 y	31076	In *Sargassum*.
				°F.						
Exuma Sound	24 30 43	76 23 45	do	73	Mar. 13, 1886	2632	*Albatross* (W. Nye, jr.)	2♀	11386	
Tongue of Ocean	23 34 30	76 34 00	do	74	Apr. 12, 1886	2650	do	1 y	11405	By electric light.
Florida, west side:				°C.						
Atlantic Ocean near Hillsboro lighthouse.	3½ miles offshore		do	25	May 1, 1915	8257	*Fish Hawk* (E. Danglade.	1 y	61329	In tow net.
Lignum Vitae Lake	¼ miles ESE. of Eagle Nest Key.		do	25	Feb. 4, 1903	7456	do	1♂ 6 y	61320	From *Sargassum*.
Cotton Key Lake					Feb. 5, 1903		do	1 y	61322	From seaweed.
Main ship channel, Key West.					Feb. 12, 1903		do	3 y	61323	

Loggerhead Key, Tortugas.					July 15, 1924		W. L. Schmitt, for Carnegie Institution.	1 y	61324	Under *Sargassum* on beach.
Do	Off pier		Surface		July 25, 1924		do	40 y	61319	From floating gulf weed. Collected by cook's boy.
Long Key, Tortugas					July 30, 1924		do	1 y	61325	
Tortugas			Surface				E. W. Gudger	1♀ 7 y	61318	In gulf weed.
Do					July 31, 1926		C. R. Shoemaker	15♂ 23♀	62487	From floating gulf weed.
Do					Aug. 5, 1926		do	1♂ 4♀ (2 ovig.) 2y.	62488	Do.
Do			Surface		July 8, 1906		Charles Zeleny	6	33498	Do.
Do					June 13, 1893		State Univ., Iowa, Bahama Exped.	100, returned to sender.		In gulf weed.
Alabama:				°F.						
Gulf of Mexico	28 00 15	87 42 00	Surface	66	Mar. 2, 1885	2379	*Albatross*	1 y	9661	
Do	28 02 30	87 43 45	do	69	do	2380	do	2	9666	
Louisiana: Grand Isle					July 7, 1928		E. H. Behre	2 y	returned	
Cuba:										
Gulf of Mexico	23 48 14	84 06 55	do		Apr. 14, 1884	Hyd. 419	*Albatross* (W. Nye, jr.)	1♀	9116	
Off eastern Cuba			do		1923		Williams Galapagos Exped.	1♂	57740	From *Sargassum*.
South of Cuba	19 55 55	75 48 03	do	79	Feb. 27, 1884	2133	*Albatross* (W. Nye, jr.)	1♂	7817	
Do	19 45 00	75 04 00	do	77	Feb. 25, 1884	2127	do	2♂ 1♀	7723	
Jamaica: Kingston Harbor					May–July, 1896		F. S. Conant	1♀ ovig	19598	
Porto Rico: Northeast of Porto Rico.	20 00 00	63 00 00					Dr. E. Kershner	1	6729	
St. Thomas					Jan. 17–24, 1884		*Albatross*	1♀	18548	
Trinidad: Monos Island			Surface		1884		do	1♂	7726	By electric light.
Guiana: Northeast of Guiana.	11 05 00	50 01 00					C. W. Furlong, *Kitty A.*, W. African Islands Exped.	2♀ ovig	53349	
Brazil								1♂	Berlin Mus.	Type of *Lupea pudica* Gerstaecker.
Bermuda					1876–1877		G. Brown Goode	10	42819	
Eastern Atlantic Ocean	30 00 00	36 00 00	Surface		1816		Tuckey's Congo Exped.	Specimens	Brit. Mus.	On a floating thalassiophyte. "*Lupa cranchiana* Leach," *nomen nudum*.
Kerguelen Island					Sept. 28, 1874		Dr. J. H. Kidder, U. S. Navy, Transit of Venus Exped.	1♂	6703	
(?)							Capt. W. Herrendean	2♂ 6♀ (large)	13883	Labeled "Galapagos Islands."

Merus of cheliped extending far beyond the carapace, armed with three spines on the inner margin. A strong spine at inner angle of carpus, a smaller spine near distal end of outer margin. Seven carinae on manus, a spine on outer surface at articulation with carpus, another spine at distal end of upper margin. First three pairs of legs flat, lamellate. Swimming legs unarmed.

Penult segment of male abdomen suboblong; terminal segment small, somewhat invaginated in the preceding.

Color.—Mottled olive green or purplish and variegated yellow-brown with white patches corresponding to their environment of gulf-weed encrusted with white colonies of bryozoa.

Measurements.—Male (13883), total length of carapace 29, total width 55.6, width at anterior base of lateral spine 47.7, fronto-orbital width 20.4, width of front between tips of inner orbital teeth 11.2 mm. Female (2368), total length of carapace 37.1, width of same 76.1, width at anterior base of lateral spine 62.7, fronto-orbital width 30, width of front between tips of inner orbital teeth 14.4 mm.

Habitat.—Normally in masses of floating gulf-weed in mid-ocean and especially along the Gulf Stream.

Range.—North Atlantic Ocean from Nova Scotia (43° N. lat.) south via Gulf of Mexico to Guiana; Brazil (Gerstaecker). Mid-Atlantic; Bermuda. Kerguelen Island, South Indian Ocean.

Material examined.—See table, pages 38–41.

PORTUNUS (PORTUNUS) ANCEPS (Saussure)

Plate 15

Lupea anceps SAUSSURE, Mém. Soc. Phys. Hist. Nat. Genève, vol. 14, 1858, p. 434 [18], pl. 2, fig. 11–11*b* (type-locality, Cuba; type in Geneva Mus.).

Neptunus anceps A. MILNE EDWARDS, Arch. Mus. Hist. Nat., Paris, vol. 10, 1861, p. 328 (not *Lupa bellicosa* Stimpson); Crust. Rég. Mex., 1879, p. 213.

Lupea duchassagni DESBONNE, in Desbonne and Schramm, Crust. Guadeloupe, 1867, p. 39, pl. 4, fig. 25 (type-locality, Guadeloupe; cotype (?) in Geneva Mus.).

Achelous anceps STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 10, 1871, p. 113 [23].—VERRILL, Amer. Journ. Sci., vol. 25, 1908, p. 378, text-fig. 26, pl. 20, figs. 1 and 2; pl. 27, fig. 4 (not *Neptunus ventralis* A. Milne Edwards).

Neptunus sulcatus A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 216, pl. 39, fig. 3–3*c* (type-localities, Guadeloupe and 11° 49′ S. lat., 37° 27′ W. long., 17 fathoms; cotype from latter locality in M.C.Z.).

Portunus ventralis RATHBUN, Bull. U. S. Fish Comm. for 1900, vol. 2, 1901, p. 45 (not *Neptunus ventralis* A. Milne Edwards).

Portunus (*Achelous*) *anceps* RATHBUN, in Boeke, Rapport Visscherij Kolonie Curaçao, pt. 2, 1920, p. 17 (not Amer. Nat., vol. 34, 1900, p. 14).

Diagnosis.—A spine at extremity of outer margin of arm. Subdistal spine of palm at distal fifth of upper margin. Median pair of frontal teeth very small.

Description.—A small species. Carapace about twice as wide as long, not very uneven, covered with fine depressed granules; the long branchial and the two gastric ridges low, the cardiac region with a median furrow. Of the four triangular and blunt frontal teeth the median are very small, much smaller than the outer ones, which are more advanced than the outer and inner supraorbital teeth. This last tooth is oblique with an obtusangular projection, scarcely a tooth, on its outer slope. Antero-lateral teeth 2 to 8 are very small, spine-tipped, similar, the first four directed forward, the last three narrower at base and directed more outward. Lateral spine as long as the space occupied by the 3 adjacent spines and directed outward or slightly backward,

The 4 or 5 teeth of the inner margin of the arm are slender and distant; a terminal spine on the outer margin. Two spines on carpus, the inner somewhat larger than the outer. Three spines on palm, two of which are on the upper margin, terminal and subterminal or at the distal fifth; 5 carinae on upper and outer surfaces. Postero-distal margin of merus of swimming-leg oblique, unarmed.

Color.—Grayish yellow with marblings or spots of yellowish, white and blackish; inner face of chelipeds reddish. (Desbonne.)

Measurements.—Male (15227), total length of carapace 14.1, width of same 26.3, width at base of lateral spine 21.7, fronto-orbital width 12.6, width of front 3.8 mm.

Habitat.—Lives on sandy shores where it ordinarily buries in the sand. (Desbonne.)

Range.—North Carolina to Brazil; Bermudas.

Material examined.—See table, pages 44–46.

PORTUNUS (PORTUNUS) VENTRALIS (A. Milne Edwards)

Plate 13, Figures 1 and 2

Neptunus ventralis A. Milne Edwards, Crust. Rég. Mex., 1879, p. 215, pl. 40, fig. 3–3*b* (type-locality, Guadeloupe; type in Paris Mus.). Not *Portunus ventralis* Rathbun, 1901.

Portunus sulcatus Rathbun, Bull. U. S. Fish Comm. for 1900, vol. 2, 1901, p. 45 (not *Neptunus sulcatus* A. Milne Edwards).

Portunus (*Portunus*) *sulcatus* Rathbun, Univ. Iowa Studies Nat. Hist., vol. 9, 1921, p. 67.

Diagnosis.—No spine at extremity of outer margin of arm. A spine at distal third of upper margin of palm. Four teeth of front about equally advanced.

Description.—Akin to *anceps*. Carapace short pubescent, granulation coarse and extensive forming an elaborate pattern. Frontal teeth of median pair smaller than those next but nearly or in small specimens quite as advanced; they are not triangular but almost semicircular or with arcuate edge; outer teeth subtriangular with blunt,

Material examined of Portunus (Portunus) anceps

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Cat. No.	Remarks
	° ′ ″	° ′ ″			° F.						
North Carolina:					Surface						
Off Currituck	36 20 24	74 46 30	Surface.	dk. gy. M. fne. S.	69	June 4, 1885	2425	*Albatross*	9 y	17942	
Off Cape Hatteras	35 22 50	75 25 00	7	crs. S. bk. Sp.		Oct. 29, 1884	2289	do	2 ♀	8855	
Do	35 22 40	75 25 30	7	crs. S. brk. Sh.		Oct. 20, 1884	2288	do	2 ♂ 5 ♀ (3 ovig.)	8842	
Do	35 22 30	75 26 00	7	crs. gy. S.		do	2287	do	1 ♀	8854	
Do	35 21 25	75 24 25	13	crs. gy. S.		Oct. 19, 1884	2285	do	1 ♂ 3 ♀	7233	
Do	35 21 05	75 22 05	16	gy. S. brk. Sh.		do	2281	do	1 ♂ 1 ♀	8852	
East of Cape Lookout.	34 35 15	75 52 00	25	wh. S. bk. Sp.		Oct. 18, 1885	2606	do	1 y	11228	
Bahamas:											
The Current, Eleuthera Island.						July 5, 1903		B. A. Bean, for Geogr. Soc., Baltimore.	11 ♂ 8 ♀ 7 y	31050	
Nassau, Hog Island						June 20, 1903		do	7 ♂ 5 ♀	31054	
Do						July 20, 1903		do	1 ♂	31052	
Riding Rock, Watlings Island.						July 11, 1903		do	1 ♂	31051	
Clarence Harbor, Long Island.						July 14, 1903 July 15, 1903		do	7 ♂ 4 ♀	31053	
Florida:											
Key West								D. S. Jordan	1 ♂	6366	
Tortugas								W. H. Longley	1 ♂	61301	
Loggerhead Key, Tortugas.						June 25, 1925		Fermin	1 ♂	61300	Gift of Carnegie Institution.
Off laboratory dock, Loggerhead Key.						Aug. 24, 1924		W. L. Schmitt	2 ♂	61302	Do.
Inside of North point of Loggerhead Key.						Aug. 12, 1924		do	3 ♂ 1 ♀	61299	Do.
South of Loggerhead Key toward old wreck.						June 19, 1925		Taylor	1 ♀	61307	Do.
Tortugas	Stomach of fish No. 281, gray snapper, *Neomaenis griseus* (L.).					June 13, 1925		W. L. Schmitt	1 ♀	61306	Do.
Do	Stomach of fish No. 318, gray snapper, *Neomaenis griseus* (L.).					do		do	1 cheliped	61305	Do.

Do	Stomach of fish No. 353, gray snapper, *Neomaenis griseus* (L.).					do		do	1 ♀	61304	Do.
Do	Stomach of fish No. 710, gray snapper, *Neomaenis griseus* (L.).					June 25, 1925		do	1 ♀	61303	Do.
Bird Key						1889		*Grampus*	1 ♂ 2 ♀	15227	
Mexico: Cozumel, Yucatan						Jan. 29, 1885		*Albatross*	1 ♂	15044	In seine.
Cuba:											
Cuba									Type specimen	Geneva Mus.	
Ensenada de Cajon, off Cape San Antonio.						May 22, 1914 May 23, 1914	11	Henderson and Bartsch. *Tomas Barrera* Exped.	5 ♂ 1 ♀	49158	
Between Cape San Antonio and Cape Cajon.				Pure sand to weedy.		May 24, 1914	12	do	2 ♂ 1 ♀	49184	
On reef flat between Cayo Hutia and Little Cayo northeast of Light.						May —, 1914 June —, 1914		do	2 ♂	49185	
Bahia Honda								do	1 ♀	49188	
On reef Lavesos Italienos, opposite Cayo Lavesos.				C.S.R.		June 2, 1914		do	1 ♀ ovig.	49187	
Cabañas				S. Sh. grass to M.		June 8, 1914 June 9, 1914	16	do	1 ♀	49186	
Southeast of Cuba	19 46 00	75 04 00	Surface.		77	Feb. 24, 1884	2127	*Albatross*	1 y 1 y	18440 18442	
Jamaica:											
Montego Bay				Coral reef		July 20, 1910		C. B. Wilson	1 ♂	42861	
Do				Sponges and algae *in brackish pond.*		July 2, 1910		do	1 y	42860	
Do								E. A. Andrews	3 y	42871	
Porto Rico:											
Mayaguez						Jan. 19, 1899		*Fish Hawk*	1 ♀	24500	
Off Puerto Real	Point Guaniquilla, S. ¼ E., 2 miles.		8.5		° C. 26	Jan. 25, 1899	6074	do	1 y	24504	
Boqueron Bay						Jan. 26, 1899		do	1 ♀	24501	
Ponce reefs						Jan. 30, 1899		do	1 ♂ 4 ♀	24502	
Ensenada Honda, Culebra Island.						Feb. 10, 1899		do	1 ♂	24503	
St. Thomas								Riise	1	Copenhagen Mus.	

Material examined of Portunus (Portunus) anceps—Continued

Locality	Bearings		Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
Leeward Islands:	° ′ ″	° ′ ″									
Saba	10 miles SW. of Saba		15			Aug. 12, 1905		J. Boeke	1♂ 3♀	Leiden Mus. or Amsterdam.	
St. Eustatius	W. of Oranjestad		4	sdy		Aug. 17, 1905		do	1♀	do	
Do	Near Tumble-Down Dick Bay.		4–6	stony		Aug. 21, 1905		do	1♀ ovig	42984	
Do	SE. of St. Eustatius		40			Aug. 9, 1905		do	2♀ ovig	Leiden Mus. or Amsterdam.	
Guadeloupe									1	Geneva Mus.	Perhaps cotype of *Lupea duchassagni*.
Panama:											
Porto Bello						Mar. 19, 1912		Meek and Hildebrand.	3♂	61298	
Colombia:											
Sabanilla						1884		*Albatross*	3 y	17941	
Brazil:											
Bahia Harbor								Andrea	1	Copenhagen Mus.	
East of Bahia	*Lat. S.* 11 49 00	37 27 00	17			Jan. 18, 1872		U. S. Coast Survey str. *Hassler*.	1♀	2963, M.C.Z.	Cotype of *Neptunus sulcatus*.

rounded tips, and more advanced than the outer and inner supraorbital teeth. This last is similar to that of *anceps*. Of the anterolateral teeth the second, fourth and sixth are smaller than the others; all are appressed and sharp-pointed, and directed obliquely inward except the last 2 or 3 which are directed forward or a little outward. Lateral spine broad at base, as long as the space occupied by the three adjacent teeth, and curved a little forward.

The 2 spines on the distal half of the inner margin of the merus of the cheliped are much longer and stronger than the pair on the proximal half; at the distal end of the outer margin there is no spine but a flattened plate (*lame* of A. Milne Edwards) or fold with a sharp edge which projects almost imperceptibly beyond the adjacent distal edge of the arm. The figure of the type shows, incorrectly, a projecting spine of good length. A longer, stronger spine at the inner angle of the wrist than on the outer side. Of the two spines on the upper margin of the palm the proximal one is high and laminar and situated at the distal third of the margin. Merus of swimming leg unarmed. Terminal segement of male abdomen longer than in *anceps*.

Color.—On the carapace a large postero-lateral area and a postorbital triangle are slate-color, as are also the greater part of the upper surface of the merus of the cheliped, the infero-proximal two-thirds of outer face of manus and the basal half of fingers; rest of surface a sort of ecru drab and buff pink; fingers distally almost salmon buff with extreme tips nearly white. Spines on inner margin of arm nearly white. The ambulatory legs have areas of gray on the middle portion of merus, carpus and propodus, these patches being much less extensive on the third ambulatory, where there is also a small patch of maroon on the same three articles; a maroon spot on merus and propodus of swimming leg; remainder of this propodus as well as the whole of the dactylus transparent. Some specimens are much lighter, slate areas on carapace considerably reduced and lighter, chelipeds with just a median spot of color, and other legs transparent instead of slate; light areas on carapace and legs almost white, cream with the slightest trace of pinkish buff. Eggs of female cadmium yellow. The blackest specimen had the black areas of the carapace united across posterior margin, the spots on the hind legs almost dragon's blood red and inside of base of fixed finger almost carmine; no drab area present. (Schmitt.)

Measurements.—Female (53763), total length of carapace 14.2, width of same 27.4, width at base of lateral spine 22.2, fronto-orbital width 11.8, width of front 4.1 mm.

Range.—Georgia or Florida to Brazil.

Material examined.—See table, page 48.

Material examined of Portunus (Portunus) ventralis

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Date	Station	Collector	Specimens	Cat. No.	Remarks
	° ′ ″	° ′ ″								
	Between									
Georgia: Off Satilla River	31 00 00	78 40 00						1♂	Copenhagen Mus.	
Florida: Off St. John County	and 29 30 00	79 00 00								
Tortugas, east side of Loggerhead Key				S	Aug. 17, 1924		Bender	4♂ 1♀ ovig	61334	Gift of Carnegie Institution.
Do			Beach		1924		do	1♀	62489	Do.
Tortugas, outer lighthouse reef	Stomach of fish No. 114, schoolmaster (*yellow snapper*), *Neomaenis apodus* (Walbaum).				June 7, 1925		W. L. Schmitt	1♀	61335	Do.
Tortugas, off North end Loggerhead Key.			About 4 feet		July 14, 1926	1	C. R. Shoemaker	1♂	62490	Do.
West Indies:										
Northwest of Cuba	23 48 14	84 06 55	Surface		Apr. 14, 1884	Hyd. 419	*Albatross*	1 y	18441	
Ensenada de Cajon, off Cape San Antonio, Cuba.					May 22, 1914 May 23, 1914		Henderson and Bartsch, *Tomas Barrera* Exped.	1♀ ovig	61336	
Robins Bay, Jamaica					1928		C. R. Orcutt	1♀	61361	
Mayaguez, Porto Rico					Jan. 20, 1899		*Fish Hawk*	1♂	24505	
Magens Bay, St. Thomas			Shore near small pool.		July 4, 1915		C. R. Shoemaker	1♀ ovig	53763	Do.
Caribbean Sea	15 02 00	67 13 30	Surface		Feb 7, 1884		*Albatross*	1 y	7724	
Bethsheba, Barbados					1918		Barbados - Antigua Exped., State Univ. of Iowa.	1 y.♂	58046	
Brazil: Off Cape Frio								1 y.♂	Copenhagen Mus.	

PORTUNUS (PORTUNUS) GIBBESII (Stimpson)

Plates 16 and 17

Lupa gibbesii STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1859, p. 57 [11] (type-localities, South Carolina and St. Augustine, Florida; types not extant).

Achelous gibbesii STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 222 [94]; as far north as Beaufort, N. C.

Neptunus gibbesii A. MILNE EDWARDS, Arch. Mus. Hist. Nat., Paris, vol. 10, 1861, p. 326, pl. 31, fig. 1–1*b*.

Portunus gibbesii RATHBUN, Amer. Nat., vol. 34, 1900, p. 140.

Diagnosis.—Carapace broad and rough. A round bare spot on the postlateral slope. Arms 5 or 6 spined. Merus of swimming legs spinulous.

Description.—Carapace very broad, moderately convex; surface uneven, coarsely granulate, granules irregularly disposed. Two transverse granulate gastric ridges and an oblique sinuous one, extending from the tip of the lateral spine across the branchial region; two short oblique branchial ridges; a broad transverse band of granules on the cardiac region, interrupted at middle, and forming a T with a median ridge behind it. Surface pubescent except on the elevations and on an iridescent round spot on the postlateral slope just above the insertion of the penult leg. Usually two small bare spots along the antero-lateral margin, a small spot at base of fourth tooth and a longer one at sixth and seventh teeth. Rostral distance narrow, the teeth of the median pair smaller than those of the outer pair and slightly more advanced. Inner orbital angle bidentate, the inner tooth nearly as advanced as the outer tooth of the front. Orbital fissures with V-shaped openings, the inner angle of the outer fissure, produced in a small denticle. Inner suborbital tooth very large, much more advanced than the superior teeth. On the antero-lateral margin the first or orbital tooth is broader and blunter than the others; the seven following teeth are subequal, outer margins convex, tips spined; lateral spine between 3 and 4 times as long as the preceding tooth, nearly transverse, tip curved forward.

Chelipeds very long, pubsecent, granulate on the carinae; merus armed with 5, sometimes 6, spines on the inner margin, and one at end of outer margin; outer half of lower-outer surface hairy. A spine at inner and at outer angle of carpus. Manus with 6 carinae, the one on inner edge of lower surface very blunt; a line of granules through middle of inner surface; a spine at articulation with carpus, another not far behind distal end of upper margin. Merus of swimming-leg nearly as broad as long, its postero-distal margin spinulous.

Second and third segments of male abdomen very broad, reaching past the middle of the coxae of the last legs; fifth, sixth, and seventh segments together subtriangular.

Color.—Brownish red, the transverse ridges on the carapace and the spines and margins of the chelipeds carmine red. (Hay and Shore.) Surface silvery wherever the hairs are rubbed off by friction (Verrill.)

Habitat.—Hay [10] says of this crab at Beaufort, "often taken in the deeper channels of the harbor."

Measurements.—Male (26104), total length of carapace 29, total width 56.4, width between anterior bases of lateral spines 46.4, fronto-orbital width 22.7, width across four frontal teeth 6.8 mm.

Variation.—In the young the teeth of the outer pair of the front are broader and blunter than in the adult, the lateral teeth show a reduction in size in the fourth and sixth and sometimes in the second. The bare, iridescent spots of the old are lacking.

Range.—From southern Massachusetts to Texas. Venezuela.

Material examined.—See table, pages 51–52.

PORTUNUS (PORTUNUS) XANTUSII (Stimpson)

Plate 18

Achelous xantusii STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 222 [94] (type-locality, Cape St. Lucas; cotypes in M. C. Z.).

Neptunus xantusii A. MILNE EDWARDS, Arch. Mus. Hist. Nat., Paris, vol. 10, 1861, p. 429; Crust. Rég. Mex., 1879, p. 213 (part), pl. 38, figs. 1–1*d*, not pl. 39, figs. 4–4*c*; San Diego, not Mazatlan and Chile.

Portunus xantusii RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 593.

Portunus (*Portunus*) *xantusii* RATHBUN, Bull. Amer. Mus. Nat. Hist., vol. 48, 1923, p. 620 (part).

Diagnosis.—Carapace twice as long as wide. Front not prominent; teeth acute. Lateral spine about 3 times as long as preceding tooth. Merus of swimming legs spinulous.

Description.—Carapace uneven. Surface of carapace and chelipeds pubescent except on the elevations. Gastric region with a median granulated ridge and two transverse ridges slightly concave forward; on the branchial region an arcuate granulated ridge begins at the lateral spine, curving forward and then inward opposite the seventh lateral tooth; behind it two short, oblique parallel ridges; on the cardiac region a transverse ridge interrupted at middle and forming a T with a lower median ridge. Frontal teeth thick and narrow, not projecting beyond the inferior orbital teeth, submedian teeth a little narrower and usually a little more advanced than those of the outer pair and a little further from them than from each other. Tooth at inner angle of orbit bidentate, outer tooth more advanced. Postorbital

[10] Bull. Bur. Fisheries, vol. 35, 1915–16 (1918), p. 428.

Material examined of Portunus (Portunus) gibbesii

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
	° ′ ″	° ′ ″			°F.						
Massachusetts: Woods Hole.						Nov. , 1885		V. N. Edwards, (U.S.F.C.)	4	11203	
New Jersey: Off New Jersey.								Joseph F. Reed	1♂	18046	
Maryland: Magothy Bay						July 22, 1916		*Fish Hawk*	1 y. ♀	61398	
Virginia:											
Off mouth of Chesapeake Bay.	37 10 00	75 08 00	18	S		Nov. 16, 1880	901	*Fish Hawk*	2 y. ♀	40273	
Chesapeake Bay, 2¼ miles W. ¾ S. from Cherrystone Light.	37 15 05	76 04 40	25	Sh. S. sft. gn. M.	68.2	Aug. 22, 1915	8339	do	2♀	58370	
North Carolina:											
Off Cape Hatteras	35 35 20	74 58 45	27	crs. gy. S		Oct. 20, 1884	2296	*Albatross*	1♂ 1 y. ♀	8812	
Do	35 21 25	75 24 25	13	crs. gy. S		Oct. 19, 1884	2285	do	4♂ 4 y	7232	
Do	35 19 30	75 15 20	16.5	fne. dk. gy. S. sm. Sh.		Nov. 9, 1883	2107	do	1♂ 2♀	5633	
Do	35 12 30	75 05 00	48	crs. gy. bk. S	77	Oct. 19, 1884	2269	do	1♀	7219	
Cape Lookout						Apr. 9, 1891		*Fish Hawk*	1♀	17199	
Off Cape Lookout	34 20 00	76 12 00	22	fne. gy. S		Oct. 19, 1885	2809	*Albatross*	1♂ 2♀	11218	
Do	34 20 00	76 12 00	22	wh. S. bk. Sp. brk. Sh.		do	2610	do	1♂	11217	
Do	25 miles E. S. E. of Lookout Lightship.					July 28, 1915		*Fish Hawk*	1 y	61315	
Bogue Sound						July 7, 1911		do	9 y	61308	
Middle Sound, near Wilmington.			12			Apr. 18, 1880		R. E. Earll, U.S. F.C.	1♂ 1♀	5277	
Off Cape Fear River	33 57 00	78 03 30	6	sft. M		July 13, 1915	8277	*Fish Hawk*	1 y	61314	
Off Cape Fear	33 48 15	77 59 15	3.5	M. S	73	Sept. 24, 1913	7980	do	1	51106	
South Carolina:											
Bull Creek								do	1 y	18207	
Charleston Harbor			7	stky	58	Mar. 13, 1891	1659	do	8♂ 9♀	17198	
Do						Mar. 14, 1891	4	do	3♂ 1♀	17300	In one male the front and merus of right maxilliped are deformed.
Charleston								L. Agassiz	1♂ 1♀ 2 y	5259, M. C. Z.	
Blackfish Bank, 12 miles off Charleston.			12			Mar. 8, 1880		E. E. Earll	1♂	5276	

Material examined of Portunus (Portunus) gibbesii—Continued

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
Florida:	° ′ ″	° ′ ″									
St. Mary's River, Fernandina.						Dec. 5, 1919		*Albatross*	1♂	61309	
Fernandina						Dec. 6, 1919		do	2♂ 2♀	61400	In shrimp trawl.
Straits of Florida	24 24 30	81 33 30		bn. M.		Dec. 4, 1919	20032	do	2♂ 3♀	61399	
Key West								do	2 y	17940	
Tortugas								W. H. Longley	1♂	61310	
Southwest of Cape Romano.	25 49 00	82 08 30	Surface.		°C. 22	Apr. 28, 1915	8256	*Fish Hawk* (E. Danglade).	3♀ (2 ovig.)	61395	7-8 p. m.
Marco								H. Hemphill	3♂ 1♀ 14y	17936	
Off Sanibel Island	Bell buoy off Light, N. E., 10-2½ miles.		4.75	Sh. wh. M.		Jan. 1, 1913	7795	*Fish Hawk*	1♂	61396	
Punta Rassa			1					H. Hemphill	2♀ 1 y	6663	
Anchorage, St. James City.						Dec. 31, 1912		*Fish Hawk*	8 y		Tidal tow, 4 ft. net, 5.15-6.45 p. m.
Charlotte Harbor								H. Hemphill	1♂	17937	Among grass, low tide.
Sarasota Bay			1-2					do	2 y	17939	
Egmont Key						Apr. 5, 1889		*Grampus*	1♀	15226	
Goodland Point								H. Hemphill	1 y	17938	
Off Port Tampa						Jan. 19, 1898		*Fish Hawk*	6♂ 10♀	26104	
Anclote section	28 08 00	82 53 30	3	sdy. brk. Sh.	°C. 13	Jan. 23, 1902	7228	do	1 y	61312	
Cedar Keys								H. Hemphill	4 y	17935	
Pepperfish Key section.	29 14 00	83 18 20	2.75	Sh. S.	13.5	Nov. 27, 1901	7168	*Fish Hawk*	1♀	61311	
Pensacola						July —, 1893		James E. Benedict.	1♂ 4♀	17922	
Texas: Alligator Head, Matagorda Bay.								J. D. Mitchell	1♂	22816	
Venezuela: Cumana						1858-59		Capt. J. P. Couthouy.	3♂ 2♀ 6 y	5262, M. C. Z.	

tooth larger than the next or second lateral tooth and about as advanced as the frontal teeth. Lateral teeth sharp, curving forward, and having a tendency to alternate in size, the second, fourth and sixth a little smaller; sinuses wide. Lateral spine about three times as long as the adjacent tooth. Orbital fissures V-shaped, the angles of the outer fissure thickened, subdentiform.

Merus of cheliped with 4 to 6 (most often 5) spines on the inner margin, and a distal spine on the posterior margin. Carpus with a longish spine at inner angle and a smaller spine at distal end of outer carina. Manus with 7 granulated ridges, a spine at the proximal end and another at the distal fifth of the inner margin of the upper surface. Infero-distal end of merus of swimming legs spinulous.

Measurements.—Male (21782), total length of carapace 28.6, width of same 57.1, width between anterior bases of lateral spines 45.6, fronto-orbital width 20.8, width across four frontal teeth 6.9 mm. Male (22026), total length of carapace 12.6, width of same 26, width at anterior base of lateral spine 18.7, fronto-orbital width 11, width of front 3.4 mm.

Young.—The carapace is a little narrower than in the full grown, the lateral spine relatively longer, as long as the width of the next four or five teeth, the frontal teeth wider. In the very young, 7 mm. long and smaller, the lateral spine is inclined more forward and is about as long as the width of three teeth, the frontal teeth are much shorter and broader, the antero-lateral teeth more unequal.

Range.—Puget Sound (accidental). From Santa Monica Bay, California, to Gulf of California, Mexico.

Material examined.—See table, pages 54–55.

THE *ACUMINATUS-ASPER-PANAMENSIS* GROUP

The species of this group have so much in common and the variation within the species is so great that is is difficult to determine whether they should be considered as forms of a single species or be recognized as three species, as described by Stimpson. The characters common to all are as follows: Carapace pubescent except on the elevated granulated ridges and patches; protuberances few in number and large, being on the gastric, cardiac, and inner branchial regions; marginal teeth granulated and pubescent; middle pair of frontal teeth smaller and more advanced than the outer pair, and the outer tooth of the orbit; inner orbital tooth bidentate; the antero-lateral teeth in general diminish in width from the first to the eighth, at the same time becoming longer and more spiniform. There is a small spine at distal end of outer margin of arm, no spine at distal end of upper margin of palm, but a spine is present behind the extremity. A spine at distal lower angle of merus of swimming leg terminates a row of spinules on the distal edge.

Material examined of Portunus (Portunus) xantusii

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
	° ′ ″	° ′ ″			°C.						
Washington: Puget Sound								*Albatross*	1♂	21783	
California:											
Santa Monica Bay	½ mile out between El Segundo and Pt. Del Rey.					Aug. 2, 1913		*Anton Dohrn*	2♂ 9♀ (1♀ soft shell).	50318	From Venice Marine Biol. Sta.
Do	2 miles S. by E. from Pt. Del Rey.					Aug. 8, 1913		do	1♂ 3♀ ovig.	50319	Do.
Do	3 miles S. of Venice		14			July 29, 1913		do	1♂ soft shell.	50314	Do.
Wilmington						1880		D. S. Jordan (U. S. Fish Comm.).	3♂	3084	
Near Rocky Point			12			May 10, 1924		Univ. Southern California.	3♂ 1♀	62493	
									1♂ 1 y.	62491	
Point Vincente			8			July 5, 1924		do	1♀	62494	
San Pedro								H. N. Lowe	3♀	23058	
Do								do	1♂	32963	
Anaheim Bay								E. P. Chace	1♂	53989	
S. side San Pedro Bay	600 feet W. of pier near inlet.			crs. yl. S.		Oct. 13, 1914		Univ. Southern California.	2♂ 1♀	Returned.	
Long Beach	Off inlet to Long Beach Harbor.		5			Mar. 24, 1912		*Anton Dohrn*	1♂	50315	From Venice Marine Biol. Sta.
Off Long Beach			12			Oct. 21, 1922		Univ. Southern California.	1♂	Returned.	
Do			5.5		19.5	May 16, 1925		do	8 y.	62692	
Between Long Beach and Seal Beach			5			Feb. 4, 1922		do	1 y.	62492	
Newport Bay						Nov. 26, 1914		do	1♂ 2♀	62687	
Do						Nov. 27, 1914		do	3♂	62495	
Balboa						Dec. 16, 1914		do	3♂ 3♀, all immature.	62496	
Laguna Beach								W. A. Hilton	1♀ ovig.	50625	
Santa Catalina Island						Apr. —, 1897		*Albatross*	4♂	20169	
Do	Entrance to Catalina Harbor.					Dec. 30, 1912		*Anton Dohrn*	1 y.	50317	From Venice Marine Biol. Sta.
Do	Catalina Harbor					Dec. 28, 1912		do	3♂ 1♀	50313	From Venice Marine Biol. Sta. By lamplight.
Do	do					do		do	1 y.	50316	Do.
Do	do		Beach.			1874		W. H. Dall	1♂ 1♀	14859	
Do	Island and harbor					1874		do	1♂	14860	
San Clemente Island						Jan. 23, 1889		*Albatross*	2♂	15550	
					°F.						
Near San Diego	Pt. Loma Light, S. 81° E., 5.5 miles.		Surface.		59	Mar. 16, 1904	4364	do	1♀	61337	

San Diego						Aug. —, 1880		D. S. Jordan	3♂ 2♀	3562	
Do								Rosa Smith	1♀	13910	
Do						Jan. 21, 1889		*Albatross*	1♂	15552	
Do						Mar. 9, 1898 Mar. 15, 1898		do	2♂ 1♀	21782	
Do								San Diego Soc. Nat. Hist.	1♂	53361	
San Diego Bay	North Island					Apr. 2, 1896		*Albatross*	7♂ 9♀	20170	
Do			3	fne. S. blk. Sh.		Mar. 21, 1894	3567	do	1 y	19349	
Do			1.5–12			Mar. 21, 1894 to Mar. 24, 1894	3573 3574 3575 3578 3580 3581 3588 3590 3591	do	24♂ 12♀	18969	
Do			3	R. oyster Sh.		Mar. 24, 1894	3589	do	1 y	19339	
South of San Diego Bay	32 35 00	117 13 30	22	gn. M. G.	66	Mar. 24, 1898	3679	do	1♂	21781	
Mexico: West coast Lower California—											
San Bartolome Bay						Apr. 11, 1889		do	5♂ 1♀	15549	
Point San Bartolome						Mar. 13, 1911		do	3♂ 5♀ 2 y	60018 60013	
Santa Maria Bay						Mar. 18, 1911		do	50	60016	
Off Abreojos Point	26 42 30	113 34 15	5.5	gn. M.		May 4, 1888	2835	do	6 y	22028	
Do	26 14 00	113 13 00	48	yl. M.	53.9	May 3, 1888	2834	do	1 y	22027	
Ballenas Bay						do		do	2♀ 1 y	22029	
Magdalena Bay	24 35 30 Sail Rock, Entrado Pt., S. 53° W.; Redondo Pt., S. 15° W.	111 50 35	13.5	S. brk. Sh.		Mar. 21, 1911	5678	do	1♂ 1♀	60012	
Do	24 32 00	111 59 00	12	fne. gy. S.		May 2, 1888	2831	do	1 y. ♂ 1 y. ♀	22026	
Do						1925		Hanna and Jordan, California Acad. Sci. Exped.	3♂ 1♀ 1 y 1♂ 1♀ 1 y	62707 Returned	
Off Santa Margarita Island	24 24 30	111 53 00	31	gy. S. brk. Sh.	65.5	Apr. 8, 1889	3038	*Albatross*	3♂	17441	
Cape San Lucas								John Xantus	5 sm	1627, M. C. Z.	Cotypes.
Mexico: Gulf of California—											
Agua Verde Bay, Lower California.						Apr. 1, 1911		*Albatross*	1 y	60015	
Concepcion Bay, Lower California.								do	1♂ 1♀	17433	
Gulf of California						Apr. 29, 1888		do	25 y	22030	

[1] At surface.

PORTUNUS (PORTUNUS) ACUMINATUS (Stimpson)

Plate 19

Achelous acuminatus STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 10, 1871, p. 112 [22] (type-locality, Panama; type not extant); not *Portunus* (*Portunus*) *acuminatus* Rathbun, Proc. U. S. Nat. Mus., vol. 38, 1910, pp. 538 and 577, pl. 49, fig. 4.

Neptunus acuminatus A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 219 (after Stimpson).

Diagnosis.—Lateral spine nearly two-thirds as long as the antero-lateral margin. Cheliped 2½ times as long as carapace. Superior spine of manus at distal fifth in male.

Description.—Carapace 2½ times as broad as long. The sinuous branchial ridge bends gradually forward and inward from the base of the lateral spine. The median pair of teeth are subtriangular, the outer pair less so. Of the lateral teeth only the second and sixth teeth show any reduction; the lateral spine is very long, as long as the width of the next five teeth, its carina nearly transverse, bent a little forward. Chelipeds of moderate length, 2½ times as long as carapace; the spine of the carapace nearly reaches the terminal spine of the arm. Spines on inner margin of arm 4 right, 5 left. Inner spine of wrist subequal to proximal spine of palm; subterminal spine of palm at distal fifth of upper margin. Sternum and abdomen of male relatively smooth and polished, terminal segment of abdomen a little over two-thirds as long as sixth segment.

Measurements.—Male (40270), total length of carapace 26.7, width of same 65.4, width to anterior base of lateral spines 44.3, fronto-orbital width 20.8, width of front 6.5 mm.

Range.—Known only from Panama.

Material examined.—Panama Bay; lat. 8° 38′ 00″ N., long. 79° 31′ 30″ W., 16 fathoms; gn. M.; March 30, 1888; station 2802, *Albatross*; 1 male (40270).

Remarks.—Stimpson's type was a young male only half an inch (about 13 mm.) long; the lateral spine of the carapace was as long as or even longer than in the large specimen described above, "nearly two-thirds as long as the antero-lateral margin." The second, fourth, and sixth teeth were somewhat smaller than the others. The frontal teeth were equal; this is not true of our specimen, which though larger is not mature.

PORTUNUS (PORTUNUS) ASPER (A. Milne Edwards), new combination

Plate 20, Figures 2 and 3; Plate 21; Plate 22, Figures 1 and 2

Neptunus asper A. MILNE EDWARDS, Arch. Mus. Hist. Nat. Paris, vol. 10, 1861, p. 325, pl. 30, figs. 3–3c, male (type-locality, Chili; types in Paris Mus.); not *Neptunus xantusii* A. Milne Edwards, 1879.

Achelous transversus STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 10, 1871, p. 111 [21] (type-locality, Manzanillo, Mexico; type not extant).

Neptunus xantusii A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 213 (part), pl. 39, figs. 4–4c; Mazatlan.
Neptunus transversus A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 220.
Portunus transversus RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 592.
Portunus (Portunus) transversus RATHBUN, Proc. U. S. Nat. Mus., vol. 38, 1910, p. 577.

Diagnosis.—Densely pubescent. Lateral spine as long as the width of the next four teeth. Superior spine of manus at distal fourth (in female).

Description of female (22025).—The largest specimen is a mature female. Carapace 2⅙ times as broad as long; surface pubescent. The long branchial ridge similar to that of *acuminatus*, the next short ridge is formed by a broad band of coarse granules. The lobule at the inner angle of the branchial region is deeply defined. Both pairs of frontal teeth are triangular, deeply separated, similar, those of middle pair somewhat smaller and more advanced than those of outer pair. Of the lateral teeth the third is the widest, its outer margin somewhat angled; the lateral spine is of good length, as long as the width of the next four teeth, its carina is directed a little forward.

The cheliped (the right is missing) is not more that 2⅓ times as long as carapace and is rather heavy, merus armed on inner margin with 7 spines, the proximal one very small, distal interval doubly wide. Inner spine of wrist subequal to proximal spine of palm; subterminal spine of palm at distal fourth of upper margin. Sternum and abdomen pubescent.

Measurements.—Female (22025), total length of carapace 34.7, width of same 77.2, width to anterior base of lateral spines 56.2; fronto-orbital width 26.1, width of front 8.5 mm.

Additional material.—The specimen next in size, a female (3267), is broken but is about 59 mm. wide. All the marginal teeth and spines are relatively narrower than in the specimen above described; the lateral spine is as long as the width of the next three teeth and is strongly curved forward. The merus of the left cheliped (the right is missing) bears only 5 spines.

A female cotype in the Paris Museum was loaned for comparison through the courtesy of Doctor Gravier. The abdomen is mature in form but the size small: Total length of carapace 19.3, width of same 39.4, width between base of lateral spines 30.6, fronto-orbital width 16.2, width of front 5 mm. Outer pair of frontal teeth definitely larger than inner pair; lateral teeth corresponding to those described for female No. 22025; lateral spine as long as the width of the next 3½ teeth; merus of cheliped armed with five inner spines; the wrist and palm are like those of the large female described. It should be noted that the right natatory foot of the specimen does not pertain to it and was attached by mistake. (See plate 2.) It is larger

than the corresponding left leg, its articles are of different shape, the ischium being absent, and appears to belong to another species.

The smaller specimens in the United States National Museum, five in number, four male and one female, are immature with the exception of one male. They resemble one another in most respects but differ from female 22025 in having the frontal teeth less triangular, more oblong and with arcuate margins, the sinuses correspondingly narrower. There is some variation in length of lateral spines; the smallest specimen (male 22025) 12 mm. long having the longest, straightest, and most transverse spines, 4 mm. long, as long as the four adjacent teeth. The mature male (61332), length 24.7 mm. has the most curved spine, curvature intermediate between the two mature females, length of spine 6.6 mm., a little longer than the width of the three adjacent teeth; meral spines 6 left, 5 right, terminal segment of abdomen about three-fourths as long as sixth segment. The four immature specimens show only 4 spines on the arm.

Range.—Mazatlan and Manzanillo, Mexico; Panama; Chile.

Material examined.—

PANAMA.—Capt. J. M. Dow; 1 female (3267).

Island at end of breakwater, Panama Bay; February 5, 1912; Meek and Hildebrand; 2 males (1 young) (61332).

Panama Bay; March 30, 1888; *Albatross:* Lat. 8° 51′ 00″ N., long. 79° 31′ 30″ W.; 7 fathoms; gn. M.; station 2800; 1 young male, 1 female (22025). Lat. 8° 38′ 00″ N., long. 79° 31′ 30″ W.; 16 fathoms; gn. M.; station 2802; 1 young male, 1 young female (61333).

CHILE.—Coast of Chile; Fontaines collector; 1 female cotype (Paris Mus.).

PORTUNUS (PORTUNUS) PANAMENSIS (Stimpson)

Plate 20, Figure 1; Plate 22, Figure 3; Plates 23 and 24

Achelous panamensis STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 10, 1871, p. 112 [22] (type-locality, Panama; type in M.C.Z.).

Amphitrite paucispinis LOCKINGTON, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 107 [13] (type-localities, Angeles Bay and Mulege Bay, both in the Gulf of California, and Magdalena Bay, west coast of Lower California; types not extant).

Neptunus panamensis A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 219.

Portunus panamensis RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 592.

Portunus (Portunus) acuminatus RATHBUN, Proc. U. S. Nat. Mus., vol. 38, 1910, pp. 538 and 577, pl. 49, fig. 4; not *Achelous acuminatus* Stimpson.

Portunus (Portunus) panamensis RATHBUN, Proc. U. S. Nat. Mus., vol. 38, 1910, pp. 577 and 610.

Diagnosis.—Lateral spine as long as two adjacent teeth and part of a third. Cheliped of male over 3 times as long as carapace. Superior spine of manus at distal sixth in male.

Description.—Covered with a very short pubescence. Carapace twice as broad as long and regardless of lateral spines is sensibly

narrower than the allied species and the antero-lateral border more arched. The branchial ridge runs obliquely forward from the lateral spine, then turns rather abruptly inward in an almost transverse direction, the line being a little concave forward. Frontal teeth small, triangular with blunt points, those of outer pair not much the larger, wider at base than those of the inner pair, and not quite so advanced. The second, fourth, and sixth lateral teeth are somewhat reduced. The lateral spine is about as long as the width of the next 2½ or 3 teeth, and curves a little forward. The margin of the carapace at the obtuse latero-posterior angles has a tendency to form a raised rim. Chelipeds very long, more than 3 times as long as carapace in male, more than 2½ times in female. Merus little enlarged, armed normally with 4 spaced spines (occasionally a fifth small one) on the anterior margin, and one very small spine at extremity of outer margin. Inner spine of wrist about twice as long as proximal spine of palm; outer spine of wrist much smaller than either. The male abdomen resembles that of *acuminatus*.

In this species the outer tooth of the orbit (first antero-lateral tooth) is wider than in *asper*, having a more decided angle on its outer margin; the intramedial area (that part of the gastric region behind the posterior of the gastric carinae) is shorter and broader than in *asper*, the intermediate of the gastric ridges is formed by a narrow irregular row of coarse granules instead of the band of coarse granules in *asper*.

Measurements.—Male (22023), total length of carapace 22.5, width of same 45, width from base of lateral spines 35.4, fronto-orbital width 17.7, width of front 5.6 mm.

Range.—From east and west coasts of Lower California, Mexico, to Peru. Chile (A. Milne Edwards).

Material examined.—

PANAMA.—Panama Bay; March 5, 1888; *Albatross:* Lat. 8° 10′ 30″ N., long. 78° 50′ 30″ W.; 18 fathoms; gy. S. brk. Sh.; station 2798; 1 female (22024). Lat. 8° 06′ 30″ N., long. 78° 51′ 00″ W.; 33 fathoms; gy. S. brk. Sh.; station 2797; 32 males, 11 females (22023, 25429).

Taboga Island; June, 1924; Elizabeth Deichmann; 1 male, 1 ovigerous female (61316).

Panama; March 15, 1860; A. Agassiz; 1 male (5271, M.C.Z.).

PERU.—Paita; October 7, 1926; W. L. Schmitt; 1 young (62486).

Bay of Sechura, W. of Matacaballa; 1907; R. E. Coker; gift of Peruvian Government: About 5 fathoms; April 8; 2 females (40440). 5–6 fathoms; April 10; 1 male (40439).

PORTUNUS (PORTUNUS) VOCANS (A. Milne Edwards), new combination

Plate 25

Neptunus vocans A. MILNE EDWARDS, Bull. Soc. Philom. Paris, ser. 7, vol. 2, 1878, p. 225 [6] (type-locality, Cape Verde Islands; type in Paris Mus.).—A. MILNE EDWARDS and BOUVIER, Expéd. Sci. *Travailleur* et *Talisman*, 1880–1883, Crust. Déc., part 1, 1900, p. 68, pl. 14, figs. 6–9.

Neptunus (*Amphitrite*) *vocans* MIERS, *Challenger* Rept., Zool., vol. 17, 1886, p. 174.

Diagnosis.—Four large tubercles on gastric region. A slender spine at posterior angles of carapace; a stridulating ridge on lower surface. Chelipeds stout, ambulatory legs slender.

Description.—Carapace granulate and covered with a thin short pubescence. Four pointed granulate tubercles are arranged on the

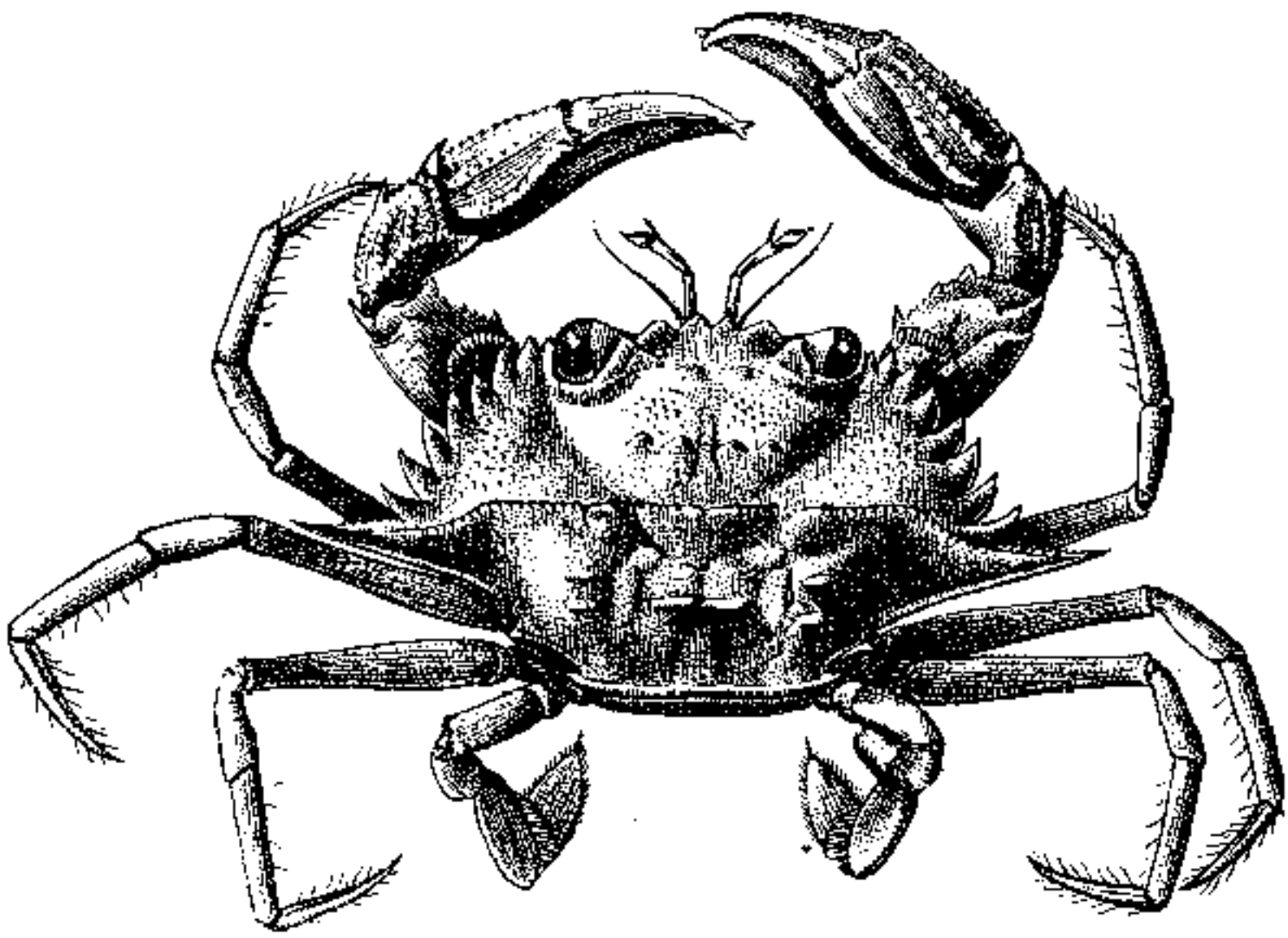

FIGURE 8.—PORTUNUS (PORTUNUS) VOCANS, MALE (6930). CARAPACE 23.5 MM. WIDE, DORSAL VIEW

gastric region in a light transverse curve concave forward. Behind these a transverse line of fine granules interrupted on the median line; beyond the cervical suture the granules are coarser, the line slightly sinuous for half the width of the branchial region where it turns diagonally backward and outward across the middle of the lateral spine. On this line of granules there is at the branchial angle a low elevation surmounted by a small tubercle, behind which are two broad transverse low and well separated tubercles. Cardiac region with a transverse granulate ridge widely interrupted at middle. Front arcuate, four broad teeth, those of median pair narrower, rounder, and more advanced than the lateral; median sinus narrower than lateral. Preorbital tooth acute, little prominent. Antero-lateral teeth denticulate, increasing in length and sharpness from the first to the eighth,

eighth narrower than seventh, first and second equally advanced, first very small, on a higher level than the second and bent so as to form part of the orbital margin. Lateral spine long and narrow, directed outward and upward; 20 to 25 denticles on its anterior margin. Posterior angles of carapace with a slender curved spine directed upward, forward, and outward.

Superior fissures of orbit open, V-shaped, as are also the two outer fissures; one of these is in line with the second antero-lateral tooth, the other is below, in the customary place; on the intervening lobe a stridulating mechanism begins and continues to a point opposite the penult lateral sinus, gradually curving away from the margin; the striae are about 24 and become progressively shorter, the last being only a granule. Inner suborbital tooth large, concave below; next it a smaller tooth, followed by an oblique margin cut into 6 or 7 symmetrical denticles, situated so as to form a continuation of the stridulating apparatus.

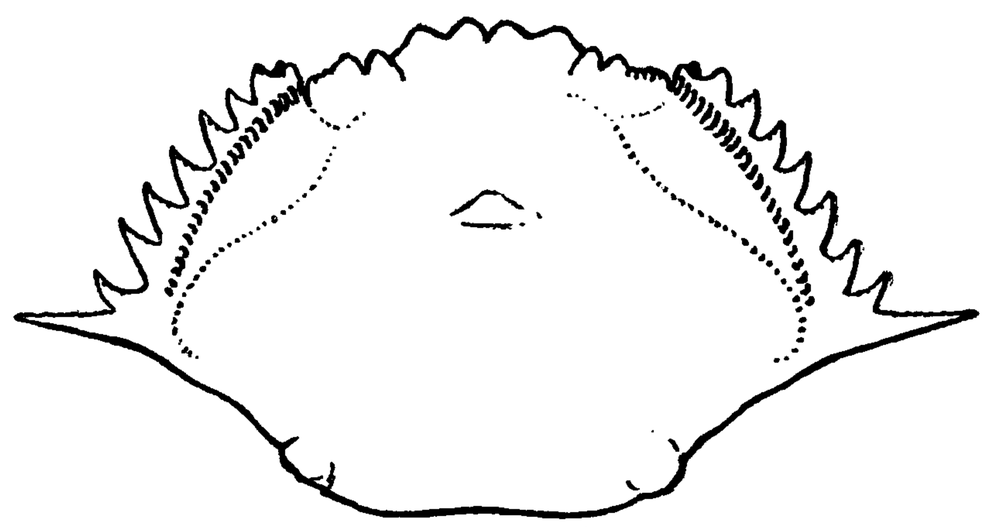

FIGURE 9.—PORTUNUS (PORTUNUS) VOCANS, MALE (6930), CARAPACE 23.5 MM. WIDE, VENTRAL VIEW TO SHOW STRIDULATING RIDGE

Chelipeds short and stout. Anterior margin of merus denticulate and with two spines and a tubercle, the proximal spine narrower and sharper than the other; a slender spine at postero-distal angle; the upper surface has a crescentic stridulating ridge halfway across its middle which plays against the ridge on the carapace. Carinae of carpus and manus prominent, denticulate; inner carpal spine large, outer small. Two spines on manus, the supero-subdistal one a little smaller than the prominent proximal one; 5 carinae on upper-outer surface; upper carina sinuous, overhanging inner surface. Fingers thick at base, the large tooth on each finger of the major chela strongly outstanding. Ambulatory legs long and very slender. Merus of swimming leg small, about three times as long as wide, slightly enlarged at middle, a slender spine at postero-distal angle; propodus and dactylus elongate, the latter with a terminal spine. Male abdomen after the third segment triangular, not constricted.

Measurements.—Male (6930), total length of carapace 11.8, width of same 23.5, width at anterior base of lateral spine 18, fronto-orbital width 10, width of front 4.4 mm. Holotype (carapace only) (Paris Mus.), length of carapace 22, width of same 43 mm. (A. Milne Edwards).

Range.—West Indies; east Atlantic (Cape Verde Islands); South Atlantic (Ascension Island).

Material examined.—See table, page 62.

Material examined of Portunus (Portunus) vocans

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Date	Station	Collector	Specimens	Catalogue No.
	° ′ ″	° ′ ″							
West Indies:									
Off Havana	23 10 48	82 19 15	121	fne. gy. Co.	Jan. 17, 1885	2330	*Albatross*	1 ♀	19867
Do	23 10 36	82 19 12	169	fne. wh. Co.	Jan. 19, 1885	2333	do	1 ♂	9506
Between Jamaica and Haiti	17 44 05	75 39 00	23	Co. brk. Sh.	Feb. 29, 1884	2138	do	1 ♂	6930
South Atlantic Ocean: Ascension Island.			20–30		Mar. 25, 1890		U. S. Eclipse expedition to West Africa, Wm. Harvey Brown, naturalist.	2 y.	19868

Subgenus ACHELOUS de Haan

Carapace narrow, the antero-lateral margin being the arc of a circle with short radius, whose center is near center of cardiac region. Last spine of antero-lateral margin usually not much if any larger than the others.

PORTUNUS (ACHELOUS) SPINIMANUS Latreille

Plates 26, 27 and 28

Cancer hastatus J. C. FABRICIUS, Entomologia Systematica emendata et aucta, vol. 2, 1793, p. 448, "in Americae Insulis"; not *C. hastatus* Linnaeus, 1767.

Portunus hastatus FABRICIUS, Supp. Entom. Systemat., 1798, p. 367; (a specimen in the Copenhagen Museum labeled "*Portunus hastatus*" may be a type).

? *Lupa banksii* LEACH, Trans. Linn. Soc. London, vol. 11, 1815, p. 319, according to White.[11]

Portunus spinimanus LATREILLE, Nouv. Dict. Hist. Nat., ed. 2, vol. 28, 1819, p. 47 (type-locality, American waters, common in Brazil; type not located); Encyc. Méth., Hist. Nat., Entom., vol. 10, 1825, p. 189; Cayenne, Brazil.

Lupa spinimana DESMAREST, Consid. Génér. Crust., 1825, p. 98; Brazil.

Portunus (*Achelous*) *spinimanus* DE HAAN, Fauna Japon., 1833, p. 8.—RATHBUN, Bull. Lab. Nat. Hist. State Univ. Iowa, vol. 4, 1898, p. 276.

Lupea spinimana MILNE EDWARDS, Hist. Nat. Crust., vol. 1, 1834, p. 452.

Achelous spinimanus WHITE, List Crust. Brit. Mus., 1847, p. 28.—A. MILNE EDWARDS, Arch. Mus. Hist. Nat., vol. 10, 1861, p. 341, pl. 32 (the locality "Chile" is incorrect, but the figures represent the Atlantic species); Crust. Rég. Mex., 1879, p. 230, pl. 39, figs. 2–2*a* (very young).

[11] Doctor Calman, who was consulted on the validity of the name "*banksii*," wrote as follows: "Our evidence on the subject of *Lupa banksii* Leach is a little unsatisfactory. There is only one specimen [in the British Museum] which might be one of his types, but the evidence from our register is not quite conclusive that it is so. Leach says that there are 5 branchial spines on the chelipeds, in this specimen there are 5 on one side and 4 on the other. The specimen seems to be identical with others which we have identified as *Achelous spinimanus*, but I think it would be a little hazardous to venture on an alteration of names on the unsatisfactory evidence provided by this specimen."

Achelous spinimana KINGSLEY, Proc. Acad. Nat. Sci. Philadelphia, 1878, p. 320 [5].
Achelous spinimanus smithii VERRILL,[12] Trans. Connecticut Acad. Sci., vol. 13, 1908, p. 387, text-figs. 32 and 33, pl. 19, figs. 2, 2*a*; pl. 21, fig. 2 (type-locality, off Hatteras, *Albatross* station 2285; type not yet returned to United States National Museum.

Diagnosis.—Lateral teeth 1 to 8 subequal; lateral spine not much longer than teeth in adult; two spines on manus; superior outer surface of manus with a longitudinal, tuberculate ridge; posterior distal angle of merus of swimming legs armed with a spine.

Description of large specimen.—Surface covered with a short close pubescence except on the elevated portions; and on the anterior surface of the merus of the ambulatory legs and on the sternum where the pubescence forms a regular pattern with the bare spaces. Carapace about 1⅗ times as broad as long. Besides the customary ridges on gastric, cardiac and branchial regions, there is a curved ridge beginning behind the orbit and continued along the base of the third to sixth lateral teeth. The teeth of the front and of the bidentate inner orbital angle form a regular arch. Frontal teeth spiniform, the sinuses U-shaped, the median sinus just equal to or a little narrower than the lateral; the lateral sinus is about the same width as but shallower than the sinus on the inner side of the inner orbital tooth; the inner branch of this tooth is spiniform, the outer branch an acute tooth. The upper margin of the orbit has a prominent denticle on the inner side of the outer fissure. Outer orbital tooth equilateral, suborbital fissure V-shaped, a marginal lobule on either side of it; inner infraorbital tooth more advanced than the front. The second to eighth antero-lateral teeth shallow, sharp-pointed, ninth or lateral spine half again as long as the preceding.

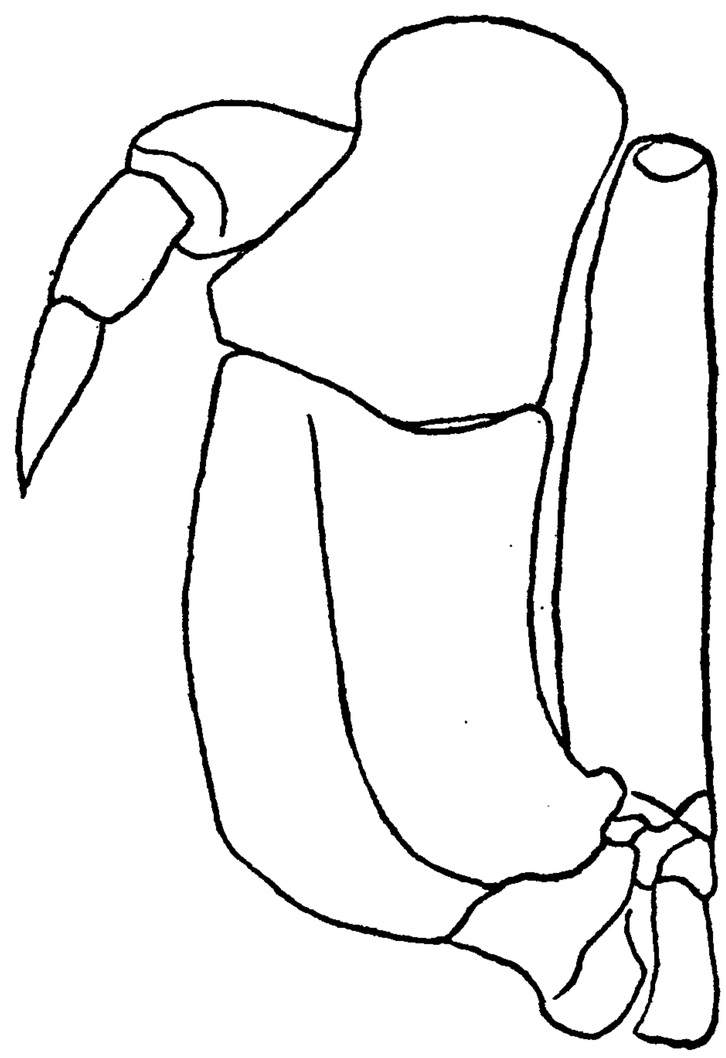

FIGURE 10.—PORTUNUS (ACHELOUS) SPINIMANUS, MALE (61277), OUTER MAXILLIPED, ×3

Chelipeds heavy; four or five strong teeth on inner margin of merus; a very small tooth at end of outer margin; inner spine of carpus equal to proximal spine of manus; outer spine of carpus small; one superior spine on manus situated at distal fourth. A very short blunt spine at posterior distal angle of merus of swimming leg, followed by a row of spinules on distal margin. Outer margin of male abdomen sinuous.

Age variation.—In the young (13 mm. long and under) the front is more advanced than in the old, the teeth are not spinous but lobiform

[12] Professor Verrill unfortunately compared his type material with the "très-jeune" figure of A. Milne Edwards, which is copied in the "Decapod Crustacea of Bermuda," with the caption "about ½ nat size."

Material examined of Portunus (Achelous) spinimanus

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
	° ′ ″	° ′ ″			°F.						
New Jersey: Near Brandywine Lightship.			10			Oct. 19, 1929	55	H. G. Richards	1 ♂	62958	
Virginia:											
Chincoteague						July —, 1913		Henderson and Bartsch.	1 y	46304	
Off mouth of Chesapeake Bay.	37 10 00	75 08 00	18	S		Nov. 16, 1880	901	*Fish Hawk*	1 y	40274	
Smith Island						Dec. 24, 1888		Wm. Palmer	1 y. ♀	22329	
North Carolina:											
Off Cape Hatteras	35 35 20	74 58 45	27	crs. gy. S		Oct. 20, 1884	2296	*Albatross*	1 y	7251	
Do	35 23 00	75 24 30	9.75	S. brk. Sh		do	2290	do	1 ♂	17569	
Do	35 20 50	75 19 50	16	gy. S. brk. Sh		Oct. 19, 1884	2277	do	1 y	17570	
Bogue Sound						July 7, 1911		*Fish Hawk*	3 y	51098	
South Carolina:											
Charleston Harbor			7.8	stky	58	Mar. 13, 1891	1659	do	3 ♂ 2 ♀	17196	
Do						Mar. 14, 1891	4	do	1 ♂	17195	
Charleston						Sept. —, 1880		C. C. Leslie	1 ♂	3140	
Blackfish Bank, 12 miles off Charleston.			12			Mar. 8, 1880		R. E. Earll	1 ♂	5265	
Broad River								*Fish Hawk*	1 y	18208	
Calibogue Sound						1891		do	1 ♂	17197	
South Carolina									2	2452	
					°C.						
Georgia: 16 miles off Sapelo Island Lighthouse.			(1)		23	May 3, 1915	8259	*Fish Hawk* (E. Danglade).	1 y. ♂	61393	8 to 9 p. m.
Bahamas:											
Great Bahama Bank						1893		State Univ. Iowa Exped.	1 ♀	S. U. I	
Bahama Banks						May 15, 1893 May 17, 1893		do	1 ♂ 4 ♀ 1 y	do	
Florida:											
Cape Florida						Oct. 29, 1896		B. W. Evermann	1 y	22255	
Lignum Vitae Lake	¼ miles ESE. of Eagle Nest Key.			From sargassum.		Feb. 4, 1903	7456	*Fish Hawk*	1 y	61297	
Straits of Florida	24 24 30	81 33 30		bu. M		Dec. 4, 1919	20032	*Albatross*	3 ♂ 3 ♀	61389	
					°F.						
Off Sand Key	Sand Key, W., 8½ miles.		31		74.5	Dec. 18, 1912	7787	*Fish Hawk*	2 ♀	61390	

Off Key West	24 25 30	81 47 45	50		74	Jan. 15, 1885	2316	*Albatross*	3♀	9462	
Do	24 26 00	81 48 15	37	Co		do	2315	do	6♀	9458	
Do						Apr. 15, 1884 to Apr. 27, 1884		do	1♀ 2 y	18542	
Do						Apr. 12, 1889		*Grampus*	3♂	15248	
Do						Mar. 26, 1886		*Albatross*	1♀	15047	By electric light.
Do						Dec. —, 1883		D. S. Jordan	2♂	5786	
Do	In fish trap off Curry's dock.					July 29, 1924		Mills	1♂	61279	Gift of Carnegie Institution.
Do			(2)			June 26, 1893	46	State Univ. Iowa Exped.	1♀	S.U.I.	
Do	About 1 mile from light		5.25			do	44	do	1 y	do	
Do	Inside reef. E. Martello Tower to Key West Light, 36°00′; to Sand Key Light, 52°36′.		5.25	co. S. Grs	°C 20	Feb. 13, 1902	7277	*Fish Hawk*	1♀	61280	
West Channel entrance to Key West.	Midchannel buoy, W. by S. ¼ S., ½ mile.		7.75	co. S	20	do	7271	do	1♀	61284	
Do	Beacon 2 to Sand Key Light, 48°20′; to Key West Light, 77°07′.		7.25	co. S. brk. Sh	20.2	do	7272	do	1♂	61289	
Northwest Passage to Key West.	5 miles off breakwater		6.5					J. B. Henderson	1♀	61286	
Tortugas			4					do	1 y	61290	
Do	From floating gulf weed.					July 31, 1926		C. R. Shoemaker	2 y	62481	
Do						1893		State Univ Iowa Exped.	2♂ 2♀	S.U.I.	
Do			(3)			1893		do	1 y	do	
1½ miles north of Loggerhead Key.	tomach of fish No. 249, yellow goat fish, *Upeneus martinicus* Cuv. and Val.					June 9, 1925		W. L. Schmitt	1 y	61293	Gift of Carnegie Institution.
Off north end of Loggerhead Key.	From conch shell					Aug. 10, 1924		do	1♂ 1♀ (Soft shell.)	61283	Do.
Cove at north end of Loggerhead Key.			Seined.			Aug. 21, 1924		do	1♂ y	61394	Gift of Carnegie Institution. Color note.
Loggerhead Key			(4)			July 15, 1924		do	1♀	61285	Gift of Carnegie Institution.
East of Loggerhead Key			5			June 11, 1925	213	do	1 y 1 arm	62482	Do.
About 11 miles Southwest of Loggerhead No. 10 buoy.			30	dk. bk. and gy. crs. co. S.		July 23, 1924	47	do	1 y	61296	Gift of Carnegie Institution. Color note.
West side Loggerhead Key.	Off laboratory dock			Sargassum		1924		W. L. Schmitt (Bender coll.).	1 y. Soft shell.)	62483	Gift of Carnegie Institution.
At head of White Shoal, Tortugas.	Stomach of fish No. 454, gray snapper, *Neomaenis griseus* (L.)					June 20, 1925		W. L. Schmitt	1 cheliped	61294	Do.

[1] Surface. [2] Shallow water. [3] Gulf weed. [4] Beach under sargassum.

Material examined of Portunus (Achelous) spinimanus—Continued

Locality	Bearings		Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
	Latitude N.	Longitude W.									
Florida—Continued.	° ′ ″	° ′ ″			°C.						
South of White Shoal						July 19, 1924	26	W. L. Schmitt	1 very young	62484	Gift of Carnegie Institution.
Near Fort Jefferson landing, Garden Key.	From bunch of dead eel grass between pipes					Aug. 17, 1924		do	1 y	61295	Do.
South Florida								Silas Stearns	1♂	5260	
Off Cape Sable	25 07 05	81 25 50	4.5	gy. S	23	Dec. 18, 1902	7360	*Fish Hawk*	1♀	61281	
			Feet								
2 miles west of Cape Romano.			15–18					Lieut. J. F. Moser, U. S. Navy.	1♂	13052	
Marco								H. Hemphill	5♂	17929	
Gordon's Pass						Feb. 27, 1889		*Grampus*	1♂	15249	
Sanibel Island						Feb. 22, 1928		O. C. Van Hyning	1♂	Fla. State Mus.	
Anchorage, St. James City			Surface.			Dec. 31, 1912		*Fish Hawk*	1 y. ♂	61392	5.15 to 6.45 p. m.
			Fathoms								
Off Gasparilla Island	Gasparilla Light, E. by S., 6¼ miles.		7	hrd. S. brk. Sh.		Jan. 4, 1912	7799	do	1 y	61391	
Sarasota Bay								H. Hemphill	1 y	17930	
Tampa Bay			3.5–6.5		20.4–20.7	Mar. 29, 1901	7109–7112	*Fish Hawk*	2♂	25580	
Just outside Tampa Bay						1901		do	2♂	25582	
Goodland Point								H. Hemphill	1 y	17931	
Anclote section	28 08 00	83 04 30	7.75	rky. grsy	13.5	Jan. 23, 1902	7230	*Fish Hawk*	1 y	61288	
North Key section	29 08 45	83 14 45	3	sdy	14.2	Nov. 27, 1901	7179	do	1 y	61292	
Pepperfish Key section	29 08 45	83 28 00	6.25	S. G	16	do	7170	do	1 y	61287	
Pensacola						July —, 1893.		J. E. Benedict	3♂ 2 y	17921	
West Florida								Henderson and Simpson.	1 y	17932	
Dollar Harbor								J. B. Henderson	1♂	45715	
Texas:											
Alligator Head, Matagorda Bay.								J. D. Mitchell	1♂	22815	
Pass Cabello			(5)					do	2 y	20594	
Jamaica:											
Jamaica								J. E. Duerden	Specimens returned to sender.		
Do								T. H. Morgan	1♂ 1♀	17218	
Do						1884		*Albatross*	1♂ 1♀	18276	
Do								C. R. Orcutt	2 chelipeds	62485	

Dominican Republic: Boca del Infierno, Samana Bay.						Feb. —, 1928		Gerrit S. Miller	2 y	61885	
Porto Rico:											
Mayaguez						Jan. 20, 1899		*Fish Hawk*	1♂	24485	
Mayaguez Harbor	Customhouse, E. by S., 2 miles.		7	stky. M	27	Jan. 19, 1899	6059	do	2♂ 3♀	24488	
Boqueron Bay						Jan. 25, 1899		do	1♂ 2♀	24486	
Puerto Real						Jan. 26, 1899		do	1♂	24487	
. Thomas:											
St. Thomas								A. H. Riise	1♂	2454	
Do						Jan. 17, 1884 to Jan. 24, 1884		*Albatross*	1♀	7649	
Buck Island						July 30, 1915		C. R. Shoemaker	3♂ 1 ovig. ♀	54316	
. Martin Island:											
Bay of Philipsburg						Aug. —, 1905		Doctor Shaw (for J. Boeke).	1♂	Returned to J. Boeke.	
Simsons Bay Lagoon			.5			Sept. —, 1905		J. Boeke	1♂	42966	
orth coast of South America:											
Paarden Bay, Aruba (lagoon).			(2)	sdy		June 15, 1905		do	1♂ large	Returned to J. Boeke.	
Off Trinidad	10 37 00 to 10 37 40	61 42 40 to 61 44 22		dk. slate-col. M.	°F. 73	Feb. 3, 1884		*Albatross*	1♀	18543	Frontal sinuses shallow.
azil:											
Plataforma, Bahia						1876–1877		R. Rathbun, Hartt explorations	1♀ ovig	40580	
									1♂ 1♀	40581	
Rio de Janeiro						do		do	1 ♂	40579	
Bay of Rio de Janeiro			3–4			do		do	1 y	19970	
Villa Bella, Ilha São Sebastião, São Paulo			Beach.			Sept. 23, 1925		W. L. Schmitt	3♂ 3♀	61278	
Do								H. Luederwaldt	6♂ 8♀	61277	
Barro, Santos			(6)			Sept. 12, 1925		W. L. Schmitt	2♂	61282	
Bahia Guanavara, Santa Catharina.						1923		C. Fernetz	3♂ 1♀ 4 y		Lent by Buenos Aires Museum.
ocality not given									1	Copenhagen Mus.	Labeled "*Portunus hastatus*," perhaps by Fabricius.

[2] Shallow water.

[5] On floating seaweed.

[6] In seine.

and broadly rounded at the end, the median sinus is very narrow; the superior inner and outer teeth of the orbit are subacute; the antero-lateral teeth are relatively longer and more outstanding; the lateral spine is more than twice as long as the adjacent tooth; the inner spine of the carpus is rather longer than the neighboring spine of the manus; the spine on the merus of the last leg is sharp and distinct. This form gradually changes to that of the adult and full grown.

Color.—Pubescence light yellowish, ridges russet. Lateral teeth reddish at base, white at tips. Fingers whitish, extremity red. (Desmarest.)

Young specimen white with a very faint tinge of vinaceous buff; another had a longitudinal median area of slate-color on the carapace. (Schmitt.)

Measurements.—Male (61277) total length of carapace 51.7, width of same 85.6, width at anterior base of lateral spine 77.7, fronto-orbital width 37.8, width of front 12 mm. Male (S. U. I.) from Bahama Banks, total length 58, width 95, length of cheliped 200 mm. A. Milne Edwards records a male with carapace 60 by 100 mm.

Range.—New Jersey to State of Santa Catharina, Brazil. Bermuda (rare).

Material examined.—See table, pages 64–67.

PORTUNUS (ACHELOUS) BREVIMANUS (Faxon)

Plates 29 and 30

Achelous spinimanus FAXON, Mem. Mus. Comp. Zoöl., vol. 18, 1895, p. 23; not *Portunus spinimanus* Latreille.

Achelous brevimanus FAXON, Mem. Mus. Comp. Zoöl., vol. 18, 1895, p. 23 (type-locality, near Cocos Island, 66 fathoms, station 3368, *Albatross;* 1 male cotype, Cat. No. 20608, U.S.N.M., and 1 male cotype in M. C. Z.).

Portunus (*Achelous*) *brevimanus* RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 593; vol. 38, 1910, p. 578 (part; not the Galapagos specimens).

Diagnosis.—Branchial ridge subparallel to lateral margin as far as the line of the anterior margin of the sixth lateral tooth where it turns inward. Inner spine of wrist reaching about half way to the proximal spine of the upper manus. Two spines at postero-distal angle of merus of swimming leg.

Description.—The Pacific analogue of *P. spinimanus*, from which it differs in being less pubescent, surface more uneven, the long branchial ridge more strongly arched forward, the two short branchial ridges more oblique, median lobe of superior orbital margin more advanced at outer angle, inner spine of wrist longer; merus of swimming legs also longer and armed with two spines at the postero-distal angle.

Measurements.—Male cotype (20608), total length of carapace 44.5, width of same 74, width at anterior base of lateral spine 63.8, fronto-orbital width 30.4, width of front 9.7 mm.

Range.—Revilla Gigedo Islands, Mexico, and Cocos Island, Central America.

Material examined.—San Benedicto Island, Revilla Gigedo Islands; A. W. Anthony; 3 males, 2 females (20696).

Off Cocos Island; lat. 5° 32′ 45″ N., long. 86° 54′ 30″ W.; 66 fathoms; rky.; temperature 58.4° F.; February 28, 1880; station 3368, *Albatross;* 1 male cotype (20608), 1 male cotype (4488, M. C. Z.).

PORTUNUS (ACHELOUS) STANFORDI Rathbun

Plate 31

Portunus (Achelous) brevimanus RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 593; vol. 38, 1910, p. 578 (part; the Galapagos specimens).

Portunus (Achelous) stanfordi RATHBUN, Proc. Washington Acad. Sci., vol. 4, 1902, p. 282, pl. 12, fig. 11 (type-locality, Tagus Cove, Albemarle Island; type, Cat. No. 24833, U. S.N.M.).

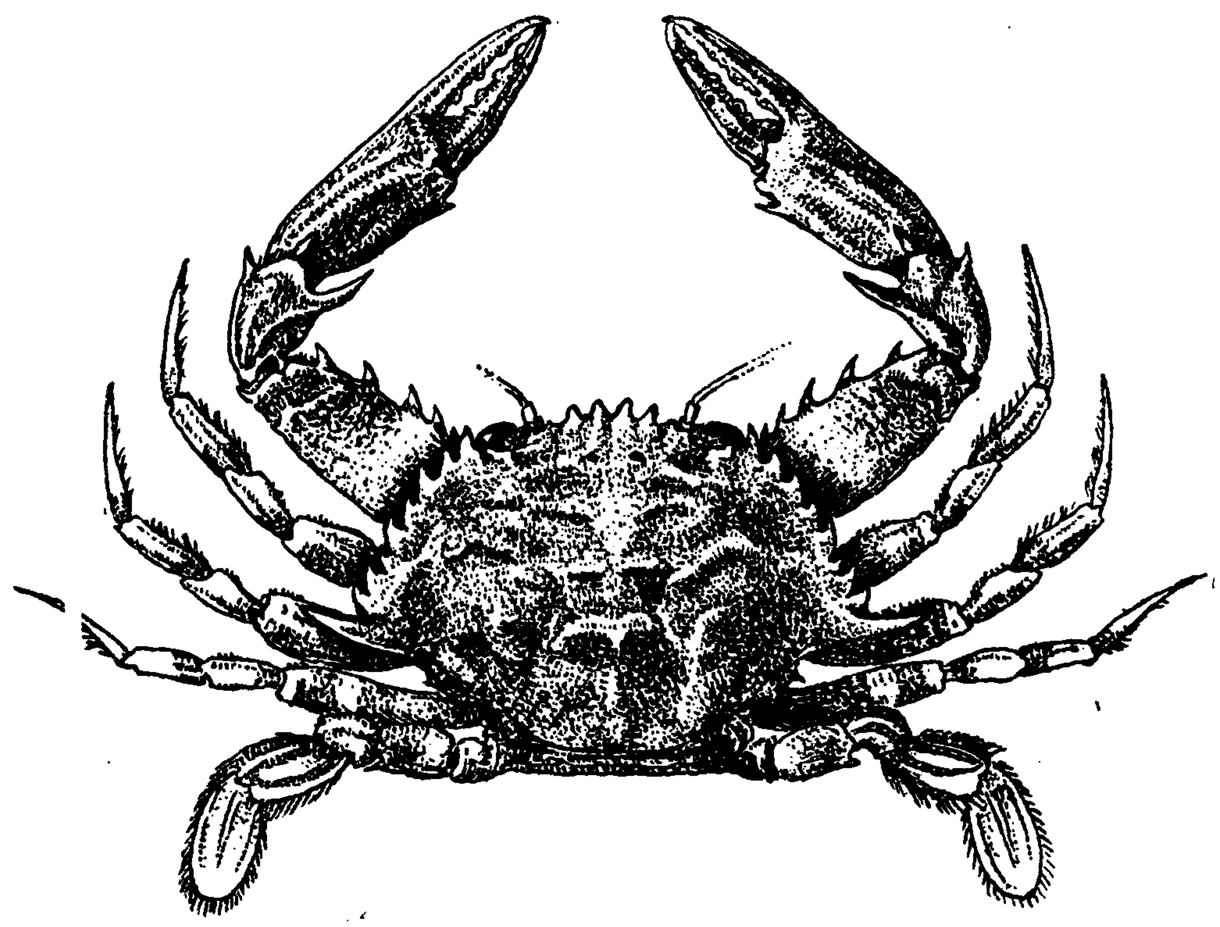

FIGURE 11.—PORTUNUS (ACHELOUS) STANFORDI, MALE, TYPE, DORSAL VIEW, × 1.5

Diagnosis.—Carapace lumpy in the middle. Five inner arm spines. No terminal spine on manus. A spine at postero-distal angle of merus of last leg.

Description.—Near *brevimanus*, with which it is easily confused when of good size. The configuration of front, orbits and antero-lateral teeth is similar, but the lateral spine is transverse, scarcely curved forward. Pubescence of carapace shorter and more fugitive, postero-median area more lumpy, with three large bosses in a triangle at inner angle of branchial region, and on the cardiac region two bosses and in the very young a third, median. Arms with five spines, sometimes six, on inner margin and one at extremity of outer margin. Inner spine of carpus longer than any other cheliped spine but about half as long as the same spine in *brevimanus*. Manus without terminal spine above, subterminal spine near the extremity, about at the distal fifth; carina below the superior carina less parallel to the latter than in *brevimanus*, approaching nearer the top in the proximal half. Merus of swimming leg half again as long as broad, a single spine at postero-distal angle. Terminal segment of male abdomen narrower than in the allied species.

Measurements.—Male (22032), total length of carapace 29, width of same 48, width to anterior base of lateral spine 40.7, fronto-orbital width 20, width of front 6.2 mm.

Range.—Galapagos Islands.

Material examined.—Reef N. of Tagus Hill, Tagus Cove, Albemarle Island; March 16, 1889; Stanford Galapagos Expedition; 1 male holotype, 1 young (24833), 1 male, 2 young (Stanford Univ.).

1888; *Albatross:* Albemarle Island; April 10; 1 young female (22033). April 7; off Hood Island: Lat. 1° 21′ 30″ S., long. 89° 39′ 45″ W.; 20 fathoms; co. S.; station 2812; 1 young male (22031). Lat. 1° 21′ 00″ S., long. 89° 40′ 15″ W.; 40 fathoms; co. S.; station 2813; 5 males, 8 females (22032).

PORTUNUS (ACHELOUS) ANGUSTUS Rathbun

Plate 32

Portunus (*Achelous*) *angustus* RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 594, pl. 44, fig. 2 (type-locality, off Hood Island, Galapagos, 20 fathoms' station 2812, *Albatross;* type, Cat. No. 21587, U.S.N.M.); Proc. Washington Acad. Sci., vol. 4, 1902, p. 282.

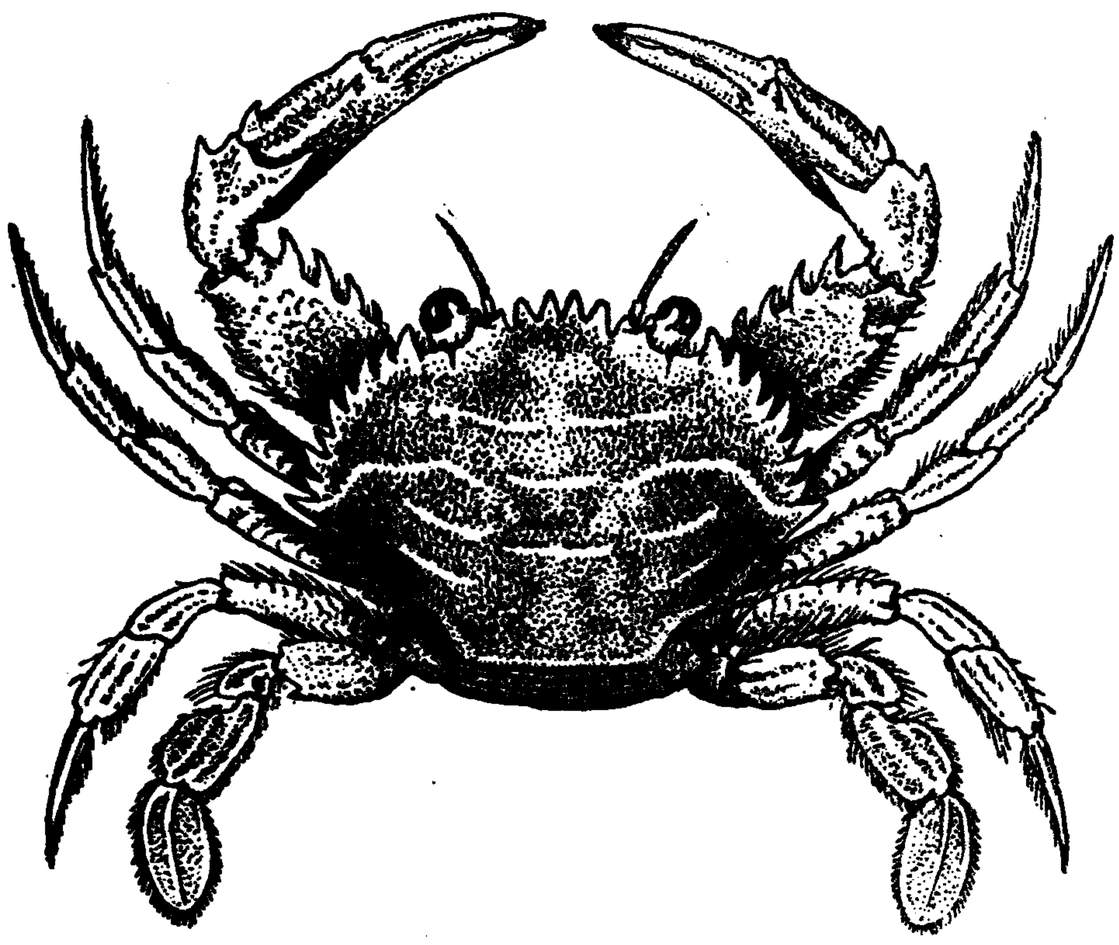

FIGURE 12.—PORTUNUS (ACHELOUS) ANGUSTUS, FEMALE, HOLOTYPE, CARAPACE 37.2 MM. WIDE, DORSAL VIEW

Diagnosis.—Antero-lateral teeth very unequal, four small ones, lateral tooth very short. One spine at postero-distal angle of merus of swimming feet.

Description.—Closely related to *P.* (*A.*) *brevimanus.* Carapace narrower, branchial ridges stronger, front more advanced, outer teeth broader at base than inner teeth from which they are separated by sinuses wider than the median sinus. Antero-lateral teeth alternately large and small, the second, fourth, sixth, and eighth teeth distinctly smaller than the others, as in *Cronius*, the ninth or lateral tooth or spine very little longer than the seventh. Inner suborbital tooth equally advanced with the second pair of frontal teeth. Outer spine of wrist smaller than in *brevimanus.* Merus of natatory feet more than half again as long as wide; postero-distal angle armed with a sharp spine. This is true of the two young specimens (25671) and of the left merus of the type female; the right merus of the type shows the base of a spine which has been broken and formed two small denticles.

Measurements.—Female holotype, total length of carapace 25.5, width of same 37.2, width to anterior base of lateral spine 33.5, fronto-orbital width 21, width of front 7.2 mm.

Range.—Galapagos Islands.

Material examined.—Reef N. of Tagus Nill, Tagus Cove, Albemarle Island; March 16, 1899; Stanford University Expedition; 2 young (Stanford Univ.), 2 young (25671).

Tagus Cove; 12 fathoms; 1899; 1 young (Stanford Univ.).

Off Hood Island; lat. 1° 21′ 30″ S., long. 89° 39′ 45″ W.; 20 fathoms; co. S.; April 7, 1888; station 2812, *Albatross;* 1 female holotype (21587).

PORTUNUS (ACHELOUS) ORDWAYI (Stimpson)

Plate 33

Achelous ordwayi STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 224 [96] (type-localities, Key Biscayne and Tortugas, Florida, and St. Thomas; types not extant).

Neptunus cruentatus A. MILNE EDWARDS, Arch. Mus. Hist. Nat., Paris, vol. 10, 1861, p. 326, pl. 31, figs. 2, 2*a* (type-locality, Antilles; type in Paris Mus.).

Neptunus ordwayi A. MILNE EDWARDS, Arch. Mus. Hist. Nat., Paris, vol. 10, 1861, p. 430; Crust. Rég. Mex., 1879, p. 217, pl. 40, figs. 2–2*b*.

Portunus aurimanus FORNS in Gundlach and Torralbas, An. Acad. Cien. Habana, vol. 37, 1900, p. 63 (type-locality, Cuba; type in Acad. Cien. Habana).

Portunus (*Achelous*) *ordwayi* RATHBUN, Bull. U. S. Fish Comm. for 1900, vol. 2, 1901, p. 46.

Diagnosis.—Chelipeds fringed with hair above. Upper outer surface of palm smooth, iridescent. Postero-distal margin of merus of swimming legs spinulous. Lateral spine of carapace in male twice as long as adjacent tooth.

Description.—Carapace narrow, covered with a short pubescence, and with granulation on raised portions and near lateral and anterior borders. Front prominent, the four teeth similar, narrow, subtriangular, acute or nearly so, the inner pair distinctly more advanced than outer pair. Inner orbital tooth with a sharp spiniform tip, separated from the front by a wide and very deep sinus, and having a slight hump but not an accessory denticle on its outer margin. Orbits and eyes large. Antero-lateral teeth a little longer than wide, spine-pointed, the first six directed forward, the others obliquely outward. Lateral spine narrow, curved forward, length in adults twice or a little more than twice as long as the adjacent tooth. Postero-lateral border near the spine almost transverse. Epistomial spine not developed.

Chelipeds short, a little more than twice as long as carapace, merus and manus both enlarged at middle; a small curved spine at distal end of outer margin of merus and a row of four spines on inner margin. The carpus is armed outside with a very small spine, and inside with a long spine reaching halfway to the manus spine, which is at the distal third (in the largest) or fourth of the upper margin or the widest part of the hand. The upper half of the outer face of the palm is smooth, shining and iridescent, widest at its middle. Inner margin of merus, distal margin of carpus and upper margin of manus and dactylus with a fringe of long hair. Merus of swimming legs a little longer than wide, its postero-distal margin spinulous.

Material examined of Portunus (Achelous) ordwayi

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
	° ′ ″	° ′ ″			°C.						
North Carolina: Between Capes Hatteras and Lookout.	34 35 30	75 45 30	32	wh. S. bk. Sp.		Oct. 18, 1885	2605	*Albatross*	2♂ 3♀ 2 y	11208	
Bahamas:											
Spanish Wells, Eleuthera Island.						July 4, 1903		B. A. Bean, for Geogr. Soc., Baltimore.	1♂	31048	
Green Cay						June 30, 1903		do	1♂	31049	In oyster dredge.
Bahama Banks						May 18, 1893		State Univ. Iowa Expd.	1 y	Mus. S. U. I.	
Florida:											
Off Miami			30					John B. Henderson	1 y	61187	
Off Miami in Gulf stream			25			1915		do	1♂	61174	
			Feet								
Off Biscayne Key			16–34			May 29, 1912		Paul Bartsch	1 y	61185	
Cape Florida						1859		George Wurdemann.	3♂ 3♀	5272, M.C.Z.	
Metacumbe Key			(1)	Grs		1885		Henry Hemphill	1	14977	
Bahia Honda Key			(2)	S				do	1♂	14090	
Inside Sombrero								William Stimpson	2	3051, M.C.Z.	
			Fathoms								
Hawk Channel	4¼ miles W. by N. of Elbow Reef Beacon.		2.75	barry; S	20.5	Feb. 19, 1903	7467	*Fish Hawk*	1 y	61190	
Do	½ mile SE. by S. of SE. end of Duck Key.		2.25	rky	24.5	Jan. 27, 1903	7429	do	1 y	61189	
					°F.						
Off Duck Key	Duck Key, N., 1.25 miles.		2.75	Co. Sh.	69.5	Dec. 20, 1912	7790	do	2♂ 1 y	61179	
Off Key West, inside the reef.	Key West Light to E. Channel Bar Buoy, 71° 53′; to Beacon A, 74° 46′.		5.25	co. S. Grs		Feb. 13, 1902	7278	do	1♂ 1♀	61178	
					°C.						
Do	E. Martello Tower to Key West Light, 36° 00′; to Sand Key Light, 52° 36′.		5.25	co. S. Grs	20	do	7277	do	2 y	61188	
West side Key West			25					*Eolis* (John B. Henderson).	1 ♀	62480	
Tortugas, in gulf weed						June 13, 1893		State Univ. Iowa Exped.	1 y	Mus. S.U.I.	

Tortugas		4					John B. Henderson	5 y	61186	
Do							W. L. Schmitt	1♀	61191	Gift of Carnegie Institution.
Off west side Fort Jefferson, Garden Key.	Between beach to south and moat entrance.				Aug. 19, 1924		do	1♂	61181	Do.
East side Bird Key Harbor.		*Feet* 10			Aug. 8, 1924		do	2 y	61196	Do.
¼ mile south of Bird Key Harbor.	Stomach of fish No. 491, gray snapper, *Neomaenis griseus* (L.).				June 21, 1925		do	3♀	61175	Do.
Do	Stomach of fish No. 504, gray snapper, *Neomaenis griseus* (L.)				do		do	1♀	61176	Do.
White Shoals, Tortugas					July 19, 1924	22	do	1♂	61198	Do.
Do					July 20, 1924	35, 36	do	1 y	61199	Do.
At head of White Shoals	Stomach of fish No. 455, gray snapper, *Neomaenis griseus* (L.).				June 20, 1925		do	1	61206	Do.
Rocks East side Loggerhead Key.					July 28, 1924		do	1♀	61195	Do.
South of Channel Buoy, Loggerhead Key.		*Fathoms* 20			Aug. 16, 1924	2	do	3 y	61182	Do.
About 11 miles south west of Loggerhead No. 10 buoy.		30	dk. bk. and gy. crs. co. S.		July 23, 1924	47	do	1♂ 1♀	61177	Do.
North side Loggerhead Bank.					July 16, 1924		W. R. Taylor	1 y	61194	Do.
1½ miles north of Loggerhead Key.	Stomach of fish No. 301, gray snapper, *Neomaenis griseus* (L.).				June 13, 1925		W. L. Schmitt	2	61204	Do.
Do	Stomach of fish No. 345, gray snapper, *Neomaenis griseus* (L.).				do		do	1♂	61205	Do.
Off north end of Loggerhead Key.	Stomach of fish No. 198, schoolmaster (yellow snapper) *Neomaenis apodus* (Walbaum).				June 9, 1925		do	1♂	61202	Do.
Do	Stomach of fish No. 217, gray snapper, *Neomaenis griseus* (L.).				do		do	1♀	61184	Do.
Do	Stomach of fish No. 249, yellow goat fish, *Upeneus martinicus* Cuv. and Val.				do		do	3 chelipeds of young.	61203	Do.
7 miles south of No. 2 buoy, Tortugas.		[3]20			July 22, 1924	40	do	1 y	61197	Do.
6 miles south of No. 2 buoy, Tortugas.		18			do	44	do	2♂1♀	61180	Do.

[1] Below low tide. [2] Between tides. [3] About.

Material examined of Portunus (Achelous) ordwayi—Continued

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
Florida—Continued.	° ′ ″	° ′ ″									
4-5 miles south of No. 2 buoy, Tortugas.			[3]40	S.		July 22, 1924	38	W. L. Schmitt	3 y	61192	Gift of Carnegie Institution.
Between south and southeast of Southwest Channel buoy, Tortugas.			25			Aug. 16, 1924	8	do	1♂	61183	Do.
South of Southwest Channel buoy, Tortugas.						do	7	do	1 y	61193	Do.
Outer Tortugas reef	Stomach of fish No. 45, yellow grunt, *Haemulon sciurus* (Shaw).					June 5, 1925		do	Fragments of 1.	61201	Do.
Do	Stomach of fish No. 46, yellow grunt, *Haemulon sciurus* (Shaw).					do		do	do	61200	Do.
Southwest of Sanibel Island.	26 18 30	83 08 45	27	fne. gy. S. bk. Sp. brk. Sh.		Mar. 19, 1885	2412	*Albatross*	1♀ 1 y	15048	
Do	26 19 00	83 11 00	27	S. algae	°F. 68	Mar. 21, 1889	5108	*Grampus*	1 y	15251	
Captiva Key, Charlotte Harbor.						1859		George Wurdemann	1♀ ovig., 2 y.	5273, M.C.Z.	
Pensacola	Stomach of fish					1882		Silas Stearns	1♂	4605	
Mexico:											
Off Cape Catoche, Yucatan.	Stomach of fish	22 07 30 / 87 06 00	21	wh. R. Co.		Jan. 30, 1885	2363	*Albatross*	1♂	9575	
Off Cozumel Island, Yucatan.			(4)			Jan. 29, 1885		do	1	13935	
Caribbean Sea: Old Providence Island.			(5)					do	1♂ 1♀ 2 y	9128	By electric light.
Cuba:											
Cape San Antonio						1884		*Albatross* (W. Nye, jr.).	3♂ 3♀	7837	
Ensenada de Cajon, off Cape San Antonio.						May 22, 1914 May 23, 1914		Henderson and Bartsch, *Tomas Barrera* Exped.	2 y	49181	
Santa Lucia Bay, about ship's anchorage.			2-3			May 13, 1914	4	do	1 y	49175	
Dimas Bay				M. plants		May 17, 1914	5	do	2 y	49173	
Ensenada de Santa Rosa						May 19, 1914	7	do	1 y	49183	
On reef Lavesos Italienos			2-3	Co. S. R.		June 2, 1914	14	do	1 y	49174	

Jamaica:											
Salt Pond, Montego Bay						Aug. 1, 1910		E. A. Andrews	1 y	42869	
Montego Bay			40			Aug. 4, 1910		C. B. Wilson	1 y	42859	Dredged.
Porto Rico:											
Mayaguez			(4)			Jan. 19, 1899		*Fish Hawk*	1 ♀	24491	
Do						Jan. 20, 1899		do	1 y	24492	
					°C.						
Off Culebra Island	Pt. Mula Lighthouse, SW. ½ S., 8½ miles.		14.75	Co. S	25.5	Feb. 8, 1899	6086	do	4 y	24493	
Off Vieques Island	Culebrita lighthouse, NE. ⅜ E., 7¼ miles.		16	Co	25.2	Feb. 10, 1899	6092	do	1 y	24494	
Off Humacao	Humacao, N. ½ W., 3 miles.		12.5	Co	26.4	Feb. 14, 1899	6098	do	1 y	24495	
St. Thomas						Jan. 17, 1884 to Jan. 24, 1884		*Albatross*	1 y	18565	
Do								*Hassler* Exped	1♂ 1♀	5274, M.C.Z.	
St. Eustatius, west of Oranjestad.			4	sdy		Aug. 17, 1905		J. Boeke	1 s.♂	Leiden Mus.	
Saba Bank			21			1878–79	144	U.S.C.S. Str. *Blake*	1 y	2574, M.C.Z.	
Dominica:											
Roseau			15					A. H. Verrill	1 ♀	32513	
Roseau Harbor			10					do	1 ♀	32716	
Brazil: Abrolhos Islands						Dec. 27, 1887		*Albatross*	3♂ 1♀	22034	
Bermuda								F. V. Hamlin	1♂ 1♀	4025	From Wesleyan University.

[3] About. [4] In seine. [5] Surface.

Material examined of Portunus (Achelous) pichilinquei

Locality	Bearings: Latitude N.			Bearings: Longitude W.			Fathoms	Bottoms	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
Mexico															
Gulf of California:	°	′	″	°	′	″			°F.						
Off Cape Tepoca	30	37	30	113	07	00	7	gy. S. bk. Sp		Mar. 24, 1889	3020	*Albatross*	1♂ 1♀	17440	
San Luis Gonzales Bay, Lower California										Mar. 27, 1889		do	1 ♀	17432	
Southeast of Tiburon Island	28	28	00	112	04	30	29	gy. S	62.9	Mar. 23, 1889	3014	do	3 ♀	61248	
Off San Pedro Martir Island	28	23	45	111	58	00	14	gy. S. brk. Sh	65	do	3013	do	1 ♀	17439	
Pichilinque Bay, Lower California										Apr. 18, 1911		do	6♂ 1♀ ovig	60011	Types.
West coast of Lower California: Magdalena Bay	24	38	00	112	05	30	17	fne. gy. S	65	Apr. 9, 1888	3042	do	1♂	17442	

Color.—Pale reddish or brownish, mottled; gastric region usually deep crimson. (Stimpson.) Backs mottled with coral red, madder brown and rufous; legs banded, paddles transparent olive yellow; bands on fingers almost maroon; (61177). Another Tortugas specimen (61181) was darker, of a brownish-reddish color; carapace and chelipeds a grayish chestnut, with French gray caste in spots and ecru drab tinges and spots; ambulatory legs more tawny, articles of paddles transparent faint ocher yellow with ochraceous margins; fingers distally tawny with a white band, then a band of burnt carmine, largely crimson; median fifth white, basal two-fifths burnt carmine and crimson; spines of cheliped mostly white with a faint ring of burnt carmine near base and another near tip. (Schmitt.)

Measurements.—Female (7837), total length of carapace 33.3, width of same 47, width at anterior base of lateral spine 41.6, fronto-orbital width 26.5, width of front 8.6 mm.

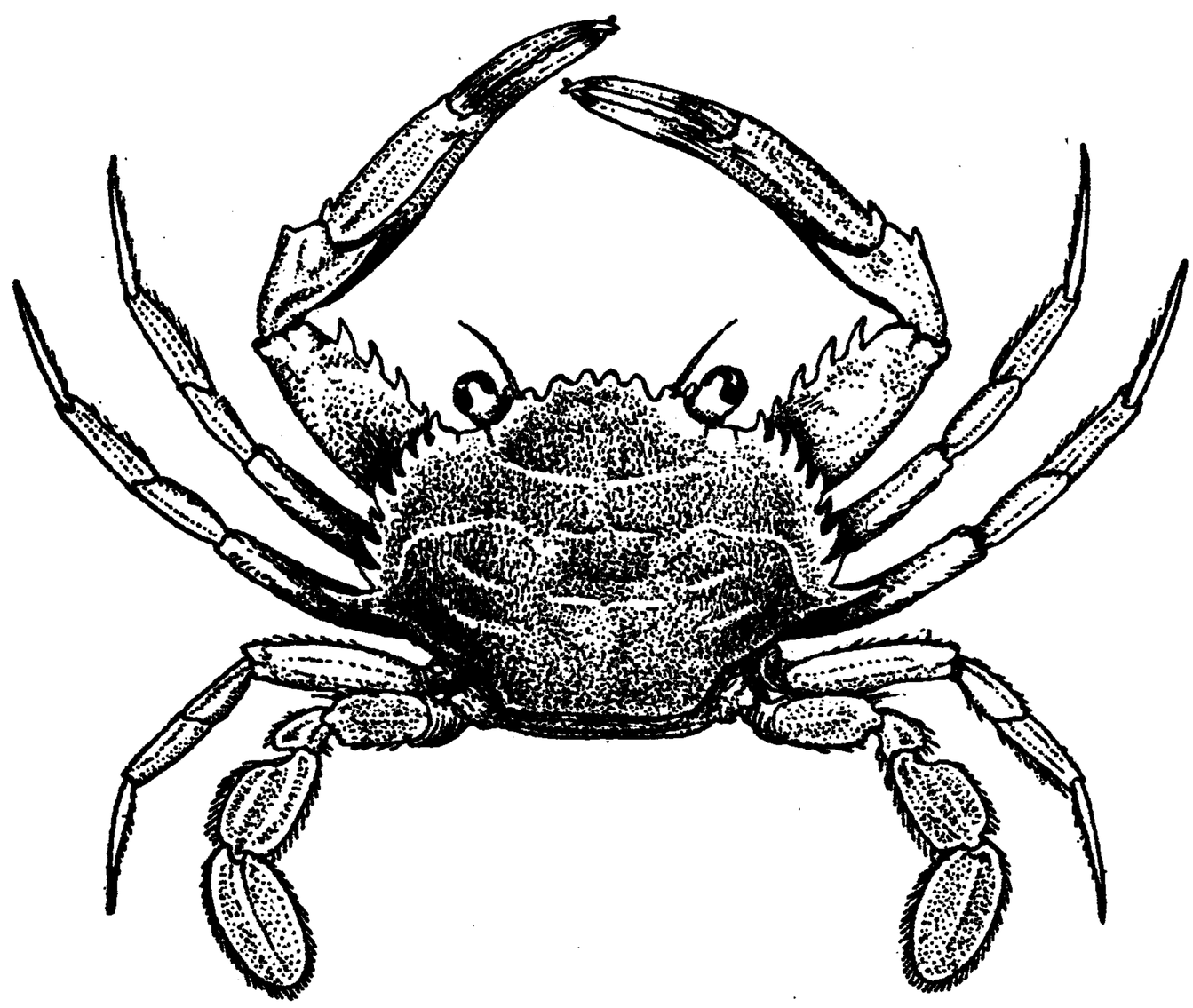

FIGURE 13.—PORTUNUS (ACHELOUS) MINIMUS, MALE, HOLOTYPE, CARAPACE 17 MM. WIDE, DORSAL VIEW

Range.—Vineyard Sound, Massachusetts (Sumner); North Carolina to the Abrolhos Islands, Brazil; Bermuda.

Material examined.—See table, pp. 72–75.

PORTUNUS (ACHELOUS) MINIMUS Rathbun

Plate 36

Portunus (Achelous) minimus RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 595, pl. 44, fig. 3 (type-locality, Gulf of California, 10 fathoms, station 2827, *Albatross*; Cat. No. 21588, U.S.N.M.); Proc. California Acad. Sci., ser. 4, vol. 13, 1924, p. 374.

Portunus (Portunus) xantusii RATHBUN, Bull. Amer. Mus. Nat. Hist., vol. 48, 1923, p. 620 (part).

Diagnosis.—Second, fourth, and sixth lateral teeth reduced; lateral spine twice as long as eighth tooth; four or five spines on anterior margin of arm; postero-distal margin of merus of swimming feet armed with spinules.

Description.—Surface of carapace resembling that of *P. (P.) xantusii*, but the carapace narrower; frontal teeth broader, triangular, extremities arcuate, sides more or less convex; median sinus V-shaped; antero-lateral teeth closely placed, sinuses narrow; second, fourth, and sixth teeth reduced in size, most markedly so in the half grown; lateral tooth twice as long as eighth tooth or as long as the width of

Material examined of Portunus (Achelous) minimus

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
Mexico											
Gulf of California:	° ′ ″	° ′ ″			°F.						
Mejia Island, Lower California.						1921		Fred Baker	1♂	Cal. Acad.	
Southeast of Tiburon Island.	28 28 00	112 04 30	29	gy. S	62.9	Mar. 23, 1889	3014	*Albatross*	2♂	18206	
50 miles South of Guaymas.			(1)			1891		do	7 y	21245	
Ballandra Bay, Carmen Island, Lower California.						Apr. 12, 1921		Fred Baker	2	58110	From California Acad. Sci.
San Jose Island, Lower California.						1921		do	1♀ ovig	Cal. Acad.	
Do						Mar. 31, 1911		*Albatross*	1♂ 1♀	60017	
Off San Jose Island, Lower California.	25 02 45	110 43 30	21	S. Sh. coralline		Mar. 17, 1889	3005	do	1♂ 2♀	17438	
Do	24 55 15	110 39 00	33	fne. gy. S. brk. Sh.	64.5	Mar. 16, 1889	3001	do	9♂ 7♀	17437	
Do	24 54 30	110 39 00	39	crs. S	63.6	do	2999	do	1♀	17436	
Do	24 51 00	110 39 00	40	S. brk. Sh	64	do	2998	do	1♂ 1♀	17435	
Pichilinque Bay, Lower California.						Apr. 18, 1911		do	1 y	60014	
Ceralbo Channel, Lower California.	24 12 00	109 55 00	9.5	Sh		Apr. 30, 1888	2826	do	1♀ ovig	22038	
Do	24 11 45	109 55 00	10	Sh		do	2827	do	1♂ 3♀	21588	Types.
Do	24 11 30	109 55 00	10	Sh		do	2828	do	1♂ 6♀ (1 ovig.)	22039	
Cape San Lucas, Lower California.						Mar. 23, 1911		do	5♂ 8♀ (2 ovig.)	60019	
Maria Madre Island, Tres Marias Islands.			4–10			1925		Hanna and Jordan, California Acad. Sci. Exped.	8 y 9 y	62705 Returned	

[1] Surface.

the next two teeth. Five spines, proximal one small, on anterior margin of arm of largest specimen, four spines only in smaller specimens; a small spine at extremity of outer margin of arm; inner wrist spine twice as long as proximal spine of palm; outer wrist spine small, slender; superior spine of palm about at distal fifth.

In small specimens, the lateral spine is about the same relative length as in large.

Measurements.—Largest male (Mejia Island), total length of carapace 21, width of same 35.5 mm. Male (18206), total length of carapace 16, width of same 28, width at anterior base of lateral spine 24, fronto-orbital width 13.7, width of front 4.7 mm. Male (60019), total length of carapace 12.2, width of same 21, width at anterior base of lateral spine 17.4, fronto-orbital width 11.3, width of front 3.7 mm.

Range.—Mexico: From Tiburon Island, Gulf of California to Tres Marias Islands.

Material examined.—See table, page 77.

PORTUNUS (ACHELOUS) PICHILINQUEI, new species

Plate 37

Portunus (*Portunus*) *xantusii* RATHBUN, Bull. Amer. Mus. Nat. Hist., vol. 48, 1923, p. 620 (part).

Type locality.—Pichilinque Bay, Lower California; holotype male, Cat. No. 60011, U.S.N.M.

Diagnosis.—Front advanced. Antero-lateral teeth spiniform, unequal; lateral spine long. Postero-distal margin of merus of swimming feet spinulous.

Description.—Another species allied to and easily confounded with *P.* (*P.*) *xantusii.* It differs as follows: The carapace is narrower; the front more prominent, its teeth flatter and blunt; antero-lateral margin straighter, less arched, teeth slenderer, very unequal, more spiniform and outstanding; lateral spine of good length, as long as the width of the next three teeth; abdomen of male more broadly triangular.

From *P.* (*A.*) *minimus,* this species may be recognized by its longer lateral spine, slender antero-lateral teeth and advanced front.

Measurements.—Male (holotype), total length of carapace 14.4, width of same 26; width at anterior base of lateral spine 21, fronto-orbital width 13.3, width of front 4 mm.

Range.—Mexico: From Magdalena Bay to the head of Gulf of California.

Material examined.—See table, page 75.

PORTUNUS (ACHELOUS) SEBAE (Milne Edwards)

Plates 34 and 35

Cancer marinis, scutiformis SEBA, Thesaurus, vol. 3, 1758, p. 52, pl. 20, fig. 9.
Portunus sanguinolentus LATREILLE, Tableau Encyc. Méth., pt. 24, Crust., 1818, pl. 272, fig. 6 (after Seba); (not *P. sanguinolentus* Herbst, 1783).
Lupea sebae MILNE EDWARDS, Hist. Nat. Crust., vol. 1, 1834, p. 455 (type-locality, Brazil; type in Paris Mus.).
Neptunus sebae A. MILNE EDWARDS, Arch. Mus. Hist. Nat., vol. 10, 1861, p. 329, pl. 28, figs. 2, 2*a*; Crust. Rég. Mex., 1879, p. 217.
Achelous sebae SMITH, Trans. Connecticut Acad. Arts and Sci., vol. 2, 1869, p. 34.—VERRILL, Trans. Connecticut Acad. Arts and Sci., vol. 13, 1908, p. 380, text fig. 27 (after A. Milne Edwards).
Lupa biocellata FORNS in Gundlach and Torralbas, An. Acad. Cien. Habana, vol. 37, 1900, p. 57, text fig. 78 (type-locality, Cuba; type in Acad. Cien. Habana).
Portunus (Achelous) sebae RATHBUN, Bull. U. S. Fish Comm. for 1900, vol. 2, 1901, p. 46.

Diagnosis.—An erect spine on basis, and a postero-distal spine on merus, of swimming paddle. A large round red spot above each postero-lateral margin. A longitudinal carina on manus just below upper margin.

Description.—Has much in common with *P.* (*A.*) *ordwayi*, namely, the elevations of the carapace, the shape of the front and orbit, the character of the lateral teeth, the fringes on the inner-upper margin of the cheliped, and the shape of the male abdomen. On the other hand, *sebae* attains a larger size; has a relatively wider carapace, not including the lateral spine; a large red spot on the postero-lateral slope, which persists in alcohol; all the spines except those of the front and inner orbit have a dark horny tip; the lateral spine is as long as the next 2½ teeth in the old; chelipeds more elongate, less enlarged at middle of merus and manus, one spine at extremity of ischium, six or five spines on inner margin of merus veiled by a fringe of long hair, posterior distal spine situated a little behind, not at, the extremity; inner carpal spine same length as proximal spine of manus; upper-outer surface of palm elongate, not enlarged or iridescent but bearing a granulated carina just below upper margin; all the carinae of the palm, 5 outside and 2 inside, more or less fringed with hair; two superior spines, one at distal third, a small one at extremity; on the basis of swimming paddles a curved spine directed upward, outward and forward; a spine at postero-distal angle of merus, and a second, smaller spine on the distal margin next to the articulation with the carpus.

Age variation.—As customary in the genus the lateral spine is longer in the young than in the old; in a specimen (24498) about 13 mm. long the spine is exceptionally long, length equal to width of next 5 teeth.

Color.—General color, lighter end of Mars brown and of burnt umber. Areolations picked out in red. Under parts white. Pubescence

light lemon yellow. Antero-lateral teeth margined and tipped with purple madder with a splotch of white on median dorsal surface. Branchial spots a cross between purple madder and Indian red, a dark deep rich color, margined or surrounded by a white ring. Fringe of anterior margin of merus of cheliped light brown ocher. Tips of fingers like dark end of purple madder; ridges on carpus, tips and bases of all spines same color; spines elsewhere white. Paddles and extremities of ambulatory legs tending toward middle of brown ochre. (Schmitt.)

Measurements.—Male (61249), total length of carapace 47, width of same 88, width to anterior base of lateral spine 71, fronto-orbital width 28, width of front 10.7 mm.

Range.—Gulf of Mexico [13] and Florida Straits to Brazil. Bermuda.

Material examined.—See table, page 81.

PORTUNUS (ACHELOUS) AFFINIS (Faxon)

Plates 38 and 39

Achelous affinis FAXON, Bull. Mus. Comp. Zoöl., vol. 24, 1893, p. 155, except the Mexican specimens (type-localities, off Panama, 56 fathoms, and Ecuador, 52 fathoms; cotypes in M.C.Z. and U.S.N.M., Cat. No. 20613); Mem. Mus. Comp. Zoöl., vol. 18, 1895, p. 23, pl. 4, figs. 1-1*b*.

Portunus (*Achelous*) *affinis* RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 595; Mem. Mus. Comp. Zoöl., vol. 35, 1907, p. 71.

Diagnosis.—Carapace 1.7 times as long as wide. Lateral spine or tooth very little longer than preceding tooth. Merus of swimming legs spinulous.

Description.—Carapace rather strongly convex, surface rugose, granulate and pubescent, but not so uneven as *P.* (*P.*) *xantusii.* Front not prominent, four triangular blunt teeth, the two submedian a little more advanced and separated from each other by a triangular notch, and by a much broader and shallower sinus from the outer tooth. Inner orbital angle bidentate, inner tooth more advanced. Antero-lateral teeth shallow, becoming progressively sharper from front to back; last tooth, at lateral angle, very little longer than the one before it. Normally five spines on inner margin of arm and a small one at end of outer margin. Inner spine of carpus about twice as long as proximal spine of manus; outer spine of carpus very small. Palm elongate, carinae similar to those of *xantusii*, the second area below the top narrowing at both ends; superior spine not far behind the extremity, or about the distal seventh. Distal end of merus of last leg spinulous.

Has much in common with *P.* (*P.*) *xantusii*, but is narrower and has a shorter lateral spine. It replaces that species in more southern waters.

[13] An earlier record "North Carolina" is erroneous.

Material examined of Portunus (Achelous) sebae

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimen	Catalogue No.	Remarks
Florida:	° ′ ″	° ′ ″			°C.						
Anclote section	28 20 15	83 12 15	10.25	S. Grs	13.5	Jan. 24, 1902	7241	*Fish Hawk*	1 y	61254	
Tortugas						Aug. 2, 1912		E. W. Gudger	3♂	48275	From T. W. Vaughan.
Do								W. H. Longley	1♂ soft shell	61251	Gift of Carnegie Institution.
1½ miles north of Loggerhead Key.	Stomach of fish No. 345, gray snapper, *Neomaenis griseus* (L.).					June 13, 1925		W. L. Schmitt	1 deformed cheliped	61255	Do.
Bird Key Reef						June 20, 1925		do	1♂1♀	61250	Do.
Do						July 16, 1924		do	1♂	61249	Do.
West Channel entrance to Key West.	Midchannel buoy, W. by S. ¼ S., ½ mile.		7.75	co. S		Feb. 13, 1902	7271	*Fish Hawk*	1 y	61252	
Key West			(1)			1885		*Albatross*	1♂1♀	9905	
			Feet								
Off Cape Sable	25 06 30	81 12 25	11.5	rky	22	Dec. 18, 1902	7356	*Fish Hawk*	1y	61253	
West Indies:											
Montego Bay, Jamaica						Aug. 8, 1910		E. A. Andrews	1♀	42870	
Porto Real, Porto Rico						Jan. 26, 1899		*Fish Hawk*	1♂	24498	
Boqueron Bay, Porto Rico						Jan. 27, 1899		do	1♂	24499	
St. Thomas						Jan. 17, 1884 to Jan. 24, 1884		*Albatross*	1♀	7836	
Pointe Michel, Dominica			15					A. H. Verrill	1♂	32713	Malformed. Left lateral spine and next three teeth wanting, instead a second color spot has developed on the margin.
North coast of South America:											
Aruba, beach			(2)			June 21, 1905		J. Boeke	1♂	Returned to sender.	
Curaçao: Rifwater			(2)			Aug. 23, 1905		do	1♂	do	
Bermuda						1876–1877		G. Brown Goode	1♀	42818	

[1] In seine.

[2] Shallow.

Measurements. Male (22035), total length of carapace 29, width of same 49, width at anterior base of lateral spine 44.4, fronto-orbital width 22.7, width of front 7.2 mm.

Variation.—Two specimens in a lot of 125 have a longer lateral spine than usual, but it is not twice as long as the preceding tooth.

Range.—Cape San Lucas, Mexico, to Ecuador.

Material examined.—See table, page 83.

PORTUNUS (ACHELOUS) FLORIDANUS, new species

Plate 40

Portunus (*Achelous*) *anceps* RATHBUN, Amer. Nat., vol. 34, 1900, p. 141; not *P.* (*P.*) *anceps* (Saussure).

Type locality.—Off Key West, Florida, 45 fathoms; holotype male, Cat. No. 15043, U.S.N.M.

Diagnosis.—Median teeth of front minute. Lateral spine of carapace short. Two spines on upper margin of palm. Postero-distal margin of merus of swimming legs entire.

Description.—Carapace narrow, without strong ridges but with an extensive pattern formed by bands of fine granules; branchial ridge short, starting well forward at the gastric region, trending obliquely backward and forming an obtuse angle opposite the seventh lateral tooth; pubescence short, inconspicuous. Frontal teeth triangular, very unequal, median pair acute, much smaller and much less advanced than the lateral, which are blunt; median sinus reaching farther back than lateral sinuses. Inner tooth of orbit obtusangled, anterior margin obliquely transverse; only one superior orbital fissure and that with a V-shaped opening; outer tooth narrow, viewed from above, very wide and flat viewed from the side, and furnished with a tuft of hair; outer sinus large, a little less than a right angle; inner tooth very broad and blunt. Antero-lateral teeth 2 to 8 small, similar, spiniform; sinuses U-shaped, the first the widest, the next three wider than the succeeding three. Lateral spine short, strong, much larger than the adjacent spines, tip curving obliquely forward.

Arm and chela expanded at middle; inner margin of merus armed with two larger spines on distal half and 1 to 3 smaller spines or spinules on proximal half; a small curved spine at distal end of outer margin. Inner spine of carpus larger and outer spine smaller than the propodal spine at the articulation. Two incurved spines on upper margin of manus, one at the extremity, the other not far behind. Merus of swimming leg longer than wide, postero-distal extremity unarmed. Proximal half of sixth segment of male abdomen with parallel sides, sides of distal half convergent.

Measurements.—Male holotype, total length of carapace 13, width of same 20.6, width at anterior base of lateral spine 17.6, fronto-orbital width 11.8, width of front 3.6 mm. Female paratype, total length of carapace 15.2, width 23.2 mm.

Material examined of Portunus (Achelous) affinis

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Speicmens	Catalogue No.	Remarks
	° ′ ″	° ′ ″			° F.						
Mexico:											
Cape San Lucas, Lower California.	17 20 00	101 32 00	Surface.			Mar. 23, 1911		*Albatross*	1♂	61173	
Off Acapulco	5 26 20	86 55 00	Surface.			Oct. 14, 1904	Near 4594	do	6	33371	From stomach of turtle.
Central America: Near Cocos Island.	8 27 00	79 35 00	Surface.			Mar. 1, 1891	3371	do	5♂	20610	
Panama:											
Bay of Panama	7 57 00	78 55 00	26	gn. M		Mar. 30, 1888	2803	do	1♀	22036	
Do	7 33 12	79 17 15	33	gy. S. bk. Sp. brk. Sh.	[2] 64.1	Mar. 5, 1888	2795	do	48♂ 77♀	22035	
Do	7 26 10	79 53 50	Surface.	fne. gy. S. G.	[1] 73	Mar. 8, 1891	3386	do	2 y	20612	
Do	7 12 20	80 55 00	56		[2] 62.6	Mar. 9, 1891	3390	do	1♂	20613	
Do	6 21 00	80 41 00	Surface.		[1] 81	Feb. 23, 1891	3355	do	2♂	20609	
Do	3 59 40	81 35 00	Surface.		[1] 75	Mar. 7, 1891	3382	do	3 y	20611	
Do			52	R		Mar. 5, 1891	3379	do	5♂ 4♀	4489, M.C.Z.	Cotype.
Do			Surface.			Mar. 7, 1891		do	50 sm	20636	Cotypes.
Ecuador:											
Off Ecuador	0 36 00	82 45 00	Surface.		[1] 81	Mar. 25, 1891	Hyd. 2627	do	9	20616	
Do	1 07 00	80 21 00	Surface.		[1] 84	Mar. 23, 1891	3398	do	25 y	20614	
West coast tropical America			Surface.			1891	Sur. 59	do	1 y	20615	
Galapagos Islands: Gardner Bay, Hood Island.			Surface.			1888	Anchorage 24	do	15 y	22037	

[1] Surface.

[2] Bottom.

Range.—Known only from the type lot of specimens.

Material examined.—Off Key West, Florida; lat. 24° 25′ 45″ N., long. 81° 46′ 00″ W.; 45 fathoms; coral; temperature 75° F.; January 15, 1885; station 2318, *Albatross;* 1 male holotype, 2 females paratypes (15043).

PORTUNUS (ACHELOUS) DEPRESSIFRONS (Stimpson)

Plate 41

Amphitrite depressifrons STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1859, p. 58 [12] (type-localities, South Carolina and Florida Keys; types not extant).

Achelous depressifrons STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 223 [95].—A. MILNE EDWARDS, Arch. Mus. Hist. Nat., Paris, vol. 10, 1861, p. 342; Crust. Rég. Mex., 1879, p. 230, pl. 40, figs. 4 and 4*a*.—VERRILL, Trans. Connecticut Acad. Arts and Sci., vol. 13, 1908, p. 391, text-fig. 36, pl. 20, fig. 3.

Neptunus (*Achelous*) *depressifrons* MIERS, *Challenger* Rept., Zool., vol. 17, 1886, p. 181.

Portunus (*Achelous*) *depressifrons* RATHBUN, Bull. Lab. Nat. Hist. State Univ. Iowa, vol. 4, 1898, p. 276.—HAY and SHORE, Bull. Bur. Fisheries, vol. 35, 1915-16 (1918), p. 430, pl. 33, fig. 7.

Diagnosis.—Lateral spine or tooth very little longer than those in front of it. Upper half of outer surface of palm granulate between the carinae. Upper margin of movable finger fringed with hair. Postero-distal margin of merus of swimming legs entire.

Description.—Size medium, shape suboblong, owing to the great fronto-orbital distance, the small lateral spine and the narrow inconspicuous front. Pubescence of carapace short and fugitive, granulated lines and patches low. Teeth of front small, triangular, those of inner pair a little the smaller and usually a little more advanced than those of outer pair. Inner tooth of orbit simple, a little behind line of front; fissures ending in V-shaped emarginations; inner lower tooth broad, well advanced. Antero-lateral teeth sharp-pointed, directed mostly forward, fourth and sixth teeth somewhat reduced, second not uniformly so; ninth or lateral tooth similar to the others in shape and curvature and very little longer. Posterior angles below the granulated marginal line bluntly angled.

Chelipeds stout, 2½ times as long as carapace. Merus broad, armed with 5 or 6 spines on inner margin and one small distal spine at end of outer margin; an outstanding fringe of short hair on inner surface below marginal spines. Inner spine of carpus full twice as long as proximal spine of palm; outer spine small. Upper carina of manus strong, reaching nearly to finger and ending in a large ascending spine; a smaller spine at extremity of margin; a fringe of hair projects downward from the inner lower edge of the carina. A strong ridge through the middle of the palm forms an oblong upper

half and a distally widening lower half; the upper half has a longitudinal compound row of distant spinules or granules above its middle, the lower half has a carina leading to the interdigital sinus. Above the proximal half of the lower margin there is an outstanding fringe of long hair. An erect fringe of hair on upper margin of dactylus. Postero-distal margin of merus of swimming leg unarmed.

Color.—Male, (61208) surface of carapace mottled and speckled or spotted with cream buff, olive buff, bice green or oil green + olive; upper surface of hands and carpus same, upper surface of merus more tawny olive, with tinge of gallatine yellow. Upper margin of hand in spots and middle third of carpal spine, and basal half of meral spines on inner margin maroon + crimson. Teeth of fingers and distal half of cutting edges and distal half of hairs on upper margin of movable finger rich dahlia purple; inside of tip of upper finger and inside of distal third of lower finger magenta shading into antwerp blue, on proximal third of finger and inside of hand shading into primrose yellow with tinging of olive buff. Hairs on proximal half of upper margin of movable finger ochraceous. Hairs on upper anterior margin of merus white gray. Ambulatory legs: Dactyls, propodi, and carpi antwerp blue, shading on proximal half into a pale grass green; near upper margin meri are green, shading into blue (but a light greenish one) on lower two thirds of merus, lower margin of merus white; dactyls margined with dahlia purple and propodi on upper margin and hairs on lower margin of first leg propodus dahlia purple. Corneae grayish.

Five small specimens of the same lot: The chelipeds near proximal and upper margin of propodus and distal half of merus are a sort of ochraceous. Distally the blue on the dactyls gets lighter and the purple more magenta just before the ochraceous corneous claw. Paddle joint pale transparent almost turquoise blue margined with ochraceous; next article, same blue and margins, but down the center has a tinged line of grass green which is a little stronger and diffused over a larger area near either articulation; rest of swimming foot like carapace but with same darker olive + oil green spots. (Schmitt.)

Measurements.—Male (61208), total length of carapace 25.2, width of same 40, width at base of lateral spine 37, fronto-orbital width 21.2, width of front 5.6 mm.

Range.—North Carolina (Coues) to Caribbean Sea. Bermudas.

Material examined.—See table, pages 86–89.

Material examined of Portunus (Achelous) depressifrons

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Cat. No.	Remarks
Florida:	° ′ ″	° ′ ″			°C.						
Pepperfish Key section.	29 15 30	83 27 30	5.5	sdy	16.2	Nov. 21, 1901	7166	*Fish Hawk*	1♂	61209	
St. Martin's section	28 34 30	83 15 45	7.5	rky. sdy	13	Jan. 15, 1902	7220	do	1 y	61225	
Anclote section	28 13 30	83 04 30	6.75	S. brk. Sh	13	Jan. 24, 1902	7244	do	1 y	61210	
Off Cape Sable	25 01 00	81 25 30	4.5	Sp. S. Sh	23	Dec. 19, 1902	7373	do	1♂	61211	
Tortugas			4					John B. Henderson.	1 y	61228	
Do								W. H. Longley	1♂ 1♀ ovig	61214	
Do	From floating gulf weed.					July 31, 1926		C. R. Shoemaker	2♂ 2♀	62476	
Do						1893		State Univ. Iowa Exped.	2♂ 1 y	Mus. S. U. I.	
Outer Tortugas Reef	Stomach of fish No. 16, gray snapper, *Neomaenis griseus* (L.).					June 5, 1925		W. L. Schmitt	1♂ 1♀	61234	Gift of Carnegie Institution.
Do	Stomach of fish No. 79, yellow goatfish, *Upeneus martinicus* Cuv. and Val.					do		do	1	61235	Do
Outer Lighthouse Reef, Tortugas.	Stomach of fish, No. 123, schoolmaster (yellow snapper) *Neomaenis apodus* (Walbaum).					June 7, 1925		do	4 y	61236	Do.
3 miles north of Loggerhead Key.	On shoals		*Feet* 10–45			June 17, 1925		Taylor and Dexter.	2 chelipeds	61233	Do.
1½ miles north of Loggerhead Key.	Stomach of fish No. 317, gray snapper *Neomaenis griseus* (L.).					June 13, 1925		W. L. Schmitt	1♂ 1♀	61237	Do.
Do	Stomach of fish No. 318, gray snapper, *Neomaenis griseus* (L.).					do		do	3 chelipeds	61238	Do.
Do	Stomach of fish No. 330, gray snapper, *Neomaenis griseus* (L.).					do		do	1♂	61220	Do.

Do	Stomach of fish No. 338, gray snapper, *Neomaenis griseus* (L.).				do		do	2 y	61239	Do.
Do	Stomach of fish No. 345, gray snapper, *Neomaenis griseus* (L.).				do		do	2 y	61240	Do.
Off north end of Loggerhead Key.	Stomach of fish No. 249, yellow goatfish, *Upeneus martinicus* Cuv. and Val.				June 9, 1925		do	1 y	61241	Do.
Do	Stomach of fish No. 266, gray snapper, *Neomaenis griseus* (L.).				do		do	1♂	61221	Do.
Inside of north point of Loggerhead Key.					Aug. 12, 1924		do	3♂ 2♀ 11 y	61215	Do.
Off west side of Loggerhead Key.			[1] 30		July 24, 1924	15–17	do	1 y	61229	Do.
South of Loggerhead Key, toward old wreck.					June 19, 1925		Taylor	1♂ 1♀ 1 y	61223	Do.
About 5½ miles south of No. 2 buoy.			*Fathoms* 16	shy. S. foraminifera.	June 11, 1925	214	W. L. Schmitt	1 y	61232	Do.
Head of White Shoal	Stomach of fish No. 471, yellow tail, *Ocyurus chrysurus* (Bloch).				June 20, 1925		do	2 chelipeds	61242	Do.
¼ mile south of Bird Key Harbor.	Stomach of fish No. 499, gray snapper, *Neomaenis griseus* (L.).				June 21, 1925		do	1♂	61243	Do.
Do	Stomach of fish No. 515, gray snapper, *Neomaenis griseus* (L.).				do		do	1♀	61244	Do.
Do	Stomach of fish No. 524, gray snapper, *Neomaenis griseus* (L.).				do		do	2♂ 1♀	61222	Do.
Do	Stomach of fish No. 534, gray snapper, *Neomaenis griseus* (L.).				do		do	1♂ 1♀	61245	Do.
Do	Stomach of fish No. 550, gray snapper, *Neomaenis griseus* (L.).				do		do	1♂	61246	Do.

[1] About.

Material examined of Portunus (Achelous) depressifrons—Continued

Locality	Bearings		Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Cat. No.	Remarks
	Latitude N.	Longitude W.									
Florida—Continued.	° ′ ″	° ′ ″			°C.						
¼ mile south of Bird Key Harbor.	Stomach of fish No. 571, gray snapper, *Neomaenis griseus* (L.).					June 21, 1925		W. L. Schmitt	1♀	61247	Gift of Carnegie Institution.
East side of Bird Key Harbor.			*Feet* 10			Aug. 8, 1924		do	1♂ 1♀ ovig. 1 y	61216	Do.
Bird Key						Apr. 8, 1889		*Grampus*	2♂ 2♀	15250	
Do						1889		do	1♂	17945	
Bird Key Reef						July 16, 1924		W. L. Schmitt	1♀	61230	Gift of Carnegie Institution.
Off west side of Fort Jefferson, Garden Key.						Aug. 19, 1924		do	1♂ 5 y	61208	Do.
Rocks off Fort Jefferson.						June 15, 1925		Dexter	1♂	61224	Do.
Long Key Shoal			3–4	Eel-grass		Aug. 7, 1924		W. L. Schmitt	2♂ 1♀ 1 y	61217	Do.
West of Long Key			5–6			Aug. 5, 1924		do	5♂	61207	Do.
Long Key						July 30, 1924		do	2 y (1 shedding)	61231	Do.
Do			(2)			June 6, 1925		do	1♂ 1♀ ovig	61219	Do.
South of Long Key			5–6			Aug. 5, 1924		do	1♂ 2♀	61218	Do.
Bush Key Reef, Tortugas.						July 15, 1926		C. R. Shoemaker	4♂ 1 y	62477	Do.
Do			[1] 6			Aug. 17, 1926	23	do	1♂ 1♀	62478	Do.
			Fathoms								
Off Northwest Channel.	24 40 45	81 53 40	6	hd. S	19	Feb. 24, 1902	7287	*Fish Hawk*	1 y	61227	
West Channel entrance to Key West.	Midchannel buoy, W. by S. ¼ S., ½ mile.		7.75	co. S	20	Feb. 13, 1902	7271	do	2 y	61226	
Off Key West			(3)			June 26, 1893	46	State Univ. Iowa Exped.	1 y	Mus. S. U. I.	
Key West						Dec. —, 1883		D. S. Jordan	6♂ 5 y	5790	
Do						Apr. 15, 1884 to Apr. 27, 1884		*Albatross*	123	7513	
Do			(4)			1886		do	2♂ 3♀	11376	By electric light.
Summerland Key						Dec. 6, 1906		B. A. Bean	1♂ 1♀ 1 y	33130	From Geogr. Soc., Baltimore.

Hawk Channel	1¾ miles S. ¾ E. of Pigeon Key.		3	S. G	23.5	Jan. 27, 1903	7426	*Fish Hawk*	1♂	61212	
Lower Metacumbe Key.						Dec. 4, 1906		Pine, Vandegrifft and Bean, Yacht *Orian*.	1 y	33137	From Geogr. Soc., Baltimore.
Ocean front, Broad Creek.						Dec. 17, 1096		Pine and Bean	1♂ 2 y	33128	Do.
Bahamas:											
Bahama Banks				Millepores		May 17, 1893		State Univ. Iowa Exped.	1 y	Mus. S. U. I.	
Spanish Wells, Eleuthera Island.						1893		do	1 ♂	do	
Governor's Harbor, Eleuthera Island.						July 7, 1903		B. A. Bean	1 ♀	31070	From Geogr. Soc., Baltimore.
Tarpum Bay, Eleuthera Island.						do		do	3	31068	Do.
Clarence Harbor, Long Island.						July 15, 1903		do	14♂ 9♀	31071	Do.
West Indies:											
Punta Colorado, Cuba			2–3	Sh. Grs		June —, 1914	10	Henderson and Bartsch, *Tomas Barrera* Exped.	1 y	49163	
Ensenada Honda, Culebra.						Feb. 10, 1899		*Fish Hawk*	3♂ 3♀	24496	
Culebra						Feb. 11, 1899		do	1 ♀	24497	
St. Thomas								Riise	specimen	Copenhagen Mus.	
Caribbean Sea:											
Old Providence						Apr. 4–9, 1884		*Albatross*	1 y	18443	
Aruba, lagoon			(3)	algae		Aug. 8, 1905		J. Boeke	1♀ ovig	Leiden Mus.	
Bermuda						1876–1877		G. Brown Goode	2 5	42784 42785	

[1] About. [2] Seined. [3] Shallow. [4] Surface.

PORTUNUS (ACHELOUS) BAHAMENSIS, new species

Plates 42 and 43

Type-locality.—The Current, Eleuthera Island, Bahamas; July 15, 1903; B. A. Bean; 5 males, 5 females; received from the Geographic Society of Baltimore; 1 male is type, Cat. No. 31069, U.S.N.M.

Diagnosis.—Lateral spine no longer than those in front of it. Upper half of outer surface of palm without granules between the carinae. Upper margin of movable finger fringed with hair. Postero-distal margin of merus of swimming legs entire.

Description.—Very close to *P.* (*A.*) *depressifrons.* Differs as follows: Antero-lateral teeth shorter, the fourth, sixth and eight teeth slightly reduced; the tooth at the lateral angle of the carapace is not enlarged, but is similar to the other lateral teeth. The outer orbital tooth is less advanced than in the related species and does not reach the line of the frontal teeth. Fronto-orbital distance greater in proportion to carapace-width. The posterior of the two granulated lines on the protogastric regions is less sinuous than in *depressifrons.* Chelipeds narrower, teeth of merus smaller; outer surface of palm just above median carina wrinkled, nongranulate. Merus of swimming foot shorter and broader.

Age variations.—In specimens smaller than the type the upper half of the palm shows transverse rows of fine spinules in the wrinkles, and in the space above there may be a single longitudinal line of scanty granules or spinules. Antero-lateral teeth sharper in the young than in the adult, the last or ninth tooth a little longer than the others in carapaces 15 mm. wide or less.

Color.—In alcohol the color pattern so persistent in *depressifrons* has disappeared. There is a trace of red on the fingers especially on the teeth, and a reddish spot on the condyle of the manus at the articulation with the dactylus.

Measurements.—Male type (31069), length of carapace to end of teeth of median pair 25, width of same 37.2, fronto-orbital width 22.1, width of front between antennae 6 mm.

Additional locality.—Bahama Bank, east of Cat Key; 3 feet; John B. Henderson; 2 young (61213).

PORTUNUS (ACHELOUS) TUBERCULATUS (Stimpson)

Plate 44

Achelous tuberculatus STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 223 [95] (type-locality, Cape St. Lucas; cotypes in Brit. Mus., M. C. Z., and U.S.N.M., Cat. No 19679).

Neptunus tuberculatus A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 221, pl. 39, fig. 1–1*b*.

Portunus (*Ach.*) *tuberculatus* RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 596.

Diagnosis.—Carapace tuberculated, a spine at posterior angles. Lateral spine very long. Merus of swimming feet unarmed.

Description.—A small species. Carapace very broad, lateral spine very long, an erect spine at posterior angles. Width of carapace two and a half times length. Two tubercles on mesogastric region form a quadrilateral with two on cardiac region which are farther apart; a protogastric tubercle is in oblique line with two branchial tubercles. Behind these but smaller and less evident is a tubercle at the beginning of a branchial ridge which is formed of a single row of granules. There is a low posterior median cardiac tubercle. The long branchial ridge running from the lateral spine to the inner angle is high, blunt and forms a single arch reaching forward to the level of the sixth tooth. A hepatic arch of granules nearly parallels the branchial ridge. Front arcuate, teeth triangular, blunt, similar, submedian more advanced, median sinus deepest. Inner end of upper margin of orbit oblique, divided into two low blunt teeth; upper fissures closed in large part; outer tooth large, subacute. Lateral teeth 2 to 8 sharp, the first 5 shallow, seventh and eighth longer and more outstanding; fifth larger than third; second, fourth and sixth smaller than their neighbors; lateral spine transverse, as long as the width of the five spines or teeth in front of it, its anterior margin fringed with hair. Posterior spines curved, directed upward, outward, and forward.

Four spines on anterior margin of arm and one terminal posterior spine. Outer spine of carpus of good size, shorter than inner spine and longer than proximal spine of manus; superior spine of manus at distal fourth of margin. Merus of last leg unarmed.

Measurements.—Male (22040), total length of carapace 12.4, width of same 31, width at anterior base of lateral spine 20.5, fronto-orbital width 10, width of front 3.6 mm.

Young.—Usually in this genus the lateral spine is longer proportionally in young or small specimens than in full grown. Such is not the case in *tuberculatus*; in one 14.4 mm. wide the spine is equal to the width of the next four teeth, and in one 12 mm. wide the spine is equal to the width of only two teeth.

Range.—From Cape St. Lucas, Mexico, to Panama.

Material examined.—Cape St. Lucas, Lower California; John Xantus; 1 male cotype (19679) from British Museum; 8 specimens, cotypes (1626, M. C. Z.); 7 specimens, cotypes (Brit. Mus.).

Maria Madre Island, Tres Marias Islands, Mexico; 4–10 fathoms; 1925; Hanna and Jordan, California Academy of Sciences Expedition; 1 young (Cal. Acad. Sci.) 1 young (62706).

Bay of Panama; 1888; *Albatross*: Lat. 8° 44′ 00″ N., long. 79° 09′ 00″ W.; 29½ fathoms; gn. M.; March 6; 1 male (22041). Lat. 8° 10′ 30″ N., long. 78° 50′ 30″ W.; 18 fathoms; gy. S. brk. Sh.; March 5; 1 male (22040).

PORTUNUS (ACHELOUS) SPINICARPUS (Stimpson)

Plate 45

Achelous spinicarpus STIMPSON, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 148 (six type-localities in Florida, namely, off Tortugas, off Carysfort Reef, off Conch Reef, off Alligator Reef, off Pacific Reef, off American Shoal, and one in Georgia, lat. 31° 31′ N., long. 79° 41′ W.; depths ranging from 13 to 150 fathoms; types not extant).

Neptunus (*Hellenus*) *spinicarpus* A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 221, pl. 40, fig. 1–1*b*; Bull. Mus. Comp. Zoöl., vol. 8, 1880, p. 11 (Saba Bank excepted).

Portunus (*Achelous*) *spinicarpus* RATHBUN, Bull. U. S. Fish Comm. for 1900, vol. 2, 1901, p. 47.

Diagnosis.—Inner spine of carpus of male longer than palm. No toothe at posterior angles of carapace. Marginal teeth narrow, spiniform. A spinulous lobe at postero-distal end of merus of swimming foot.

Description.—Surface pubescent, granules on elevations beadlike, not crowded. Teeth of front and antero-lateral margin narrow, spiniform, separated by broad U-shaped sinuses. Of the frontal teeth those of the median pair are more advanced than those of the outer pair, which in turn overreach those at the inner angle of the orbit. This angle is bidentate but the outer denticle is low and blunt. Supra-orbital fissures V-shaped, a spine on the inner side of the outer fissure. The orbit has a strong dorsal aspect, the lower outer emargination is a wide V. Lateral spine long, in the full grown as long as the width of the next four teeth. The second, fourth, and sixth teeth are somewhat reduced.

Chelipeds of male 3 times as long as carapace; merus with 4 or 5 slender spines on inner margin and one spine at extremity of outer margin. Carpus with a very small spine outside but a long flattened swordlike spine at inner angle; it is curved and is bordered on its lower concave margin with a fringe of hair; it is longer than the manus and in flexion fits between merus and manus. The superior spine of the manus is small and is about at the distal fifth of the article; the manus is dilated below the union of palm and finger. The postero-distal angle of the merus of the swimming legs is irregularly spinulous or denticulate, some of the denticles in the old male are situated on a shallow lobe pointing distad.

Sex and age variations.—The berried females examined run smaller than the males, their chelipeds are shorter, only about 2⅓ times as long as the carapace, the carpal spine does not reach beyond the superior spine of the manus.

In mature individuals the lateral spine is slightly curved forward; in the young and half grown it is straight or nearly so, transverse or directed slightly backward. It is longer than in the old, as long as five lateral teeth in the half grown, and as six teeth in the very young.

Color.—Half grown male (61265), sand gray and clay colored mottled carapace; general cast of carapace cream buff and pinkish buff,

under parts white. Corneae mottled white and cinnamon, mostly white. Proximal side of each spine of merus or arm with crimson spot; a crimson line parallels the posterior white ridge. The carpus has a spot of crimson at articulation; its long spine has a longitudinal splotch of color on the posterior surface, whereas on the anterior surface there is a clay colored one as though the color showed through; fringe of hair on this spine between crimson and pomegranate purple. Fingers marked inside with crimson, outside the corresponding spots are clay color. Extremity of dactyls of ambulatory legs crimson, most extensive on first one, diminishing progressively on second and third. Three crimson spots on the coxa-basis of swimming legs; a narrow crimson stripe on last two articles, one parallel to posterior edge of propodus, the other parallel to antero-distal quarter of dactylus.

Full grown specimens (61257) much as smaller one above. Carapace more buff pink with highest ridges touched with cinnamon rufous. Fingers bordered with crimson and maroon; two basal teeth of dactylus and margins of palm white, rest of chela maroon purple and lake red, same color on fringe of hair on carpal spine; ambulatories wine purple.

Two very young, the larger 6 mm. long (61270) have a large spot of vinaceous buff either side of the middle of the carapace; smaller one with darker spots of clay color.

Eggs (61256), those eyed are Prout's brown; those non eyed are a more compact mass, flame scarlet + Saturn red + salmon. (Schmitt.)

Measurements.—Male (61256), total length of carapace 28.3, width of same 52.5, width measured from base of lateral spine 43.2, fronto-orbital width 20.6, width of front 6.6 mm.

Range.—From North Carolina to the Province of São Paulo, Brazil; 5 to 208 fathoms.

Material examined.—See table, pages 94–96. It is worthy of note that whereas this species is abundant on the Florida Keys no remains were found among the contents of the hundreds of fish stomachs examined in recent years. This is attributable to the formidable armature of the chelipeds which is sufficient to ward off the enemy.

PORTUNUS (ACHELOUS) IRIDESCENS (Rathbun), new combination

Plate 46

Neptunus (*Hellenus*) *iridescens* RATHBUN, Proc. U. S. Nat. Mus., vol. 16, 1893, p. 240 (type-locality, Gulf of California, station 3017, *Albatross;* type, Cat. No. 17445, U.S.N.M.).

Diagnosis.—A tooth at posterior angles of carapace. Inner spine of carpus of male as long as palm. Postero-distal end of merus of swimming foot spinulous.

Description.—Closely related to *P.* (*A.*) *spinicarpus* from which it differs as follows: The posterior corners of the carapace have each a sharp, erect tooth; the principal regions are more prominent; the front

Material examined of Portunus (Achelous) spinicarpus

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
North Carolina:	° ′ ″	° ′ ″			°F.						
Off Cape Hatteras	35 42 00	74 54 30	43	gy. and bk. S.	57.3	Oct. 21, 1884	2307	*Albatross*	1♀	7254	
Do	35 38 00	74 53 00	49	bk.M.brk.Sh.	------	Oct. 20, 1884	2297	do	3 y	7260	
Do	35 11 30	75 05 00	59	crs.S.bk.Sp.	75	Oct. 21, 1884	2301	do	2♀	8796	
Do	35 10 40	75 06 10	68	gy. M.	71.3	Oct. 19, 1884	2268	do	1♂	7216	
Do	35 08 30	75 10 00	49	gy. S.	------	Oct. 17, 1885	2596	do	25	19087	
Off Cape Lookout	34 38 30	75 33 30	124	S. R.	------	Oct. 18, 1885	2602	do	1 y	17927	
South Carolina:											
East of South Carolina	33 {34 00 to 41 00}	76 41 00	62–105	S. Sh.	°C. 21.9	Dec. 12, 1919	20037	do	3♂ 1♀	61387	In otter trawl.
East of Winyah Bay	33 18 30	77 07 00	95	fne. gy. S.	°F. 65.8	Apr. 2, 1885	2417	do	1♂ 1♀	9863	
Louisiana: East of Delta of Mississippi River.	29 14 30	88 09 30	68	gy. M.	------	Feb. 11, 1885	2378	do	14♂ 5♀	9657	
Alabama: Off Mobile Bay	29 24 30	88 01 00	35	yl. S. bk. Sp.	------	Mar. 4, 1885	2388	do	1 y	15037	
Florida:											
Southwest of Cape San Blas.	29 14 00	85 29 15	25	Co.	------	Feb. 7, 1885	2373	do	1 y	15036	
South of St. George Island.	28 46 00	84 49 00	26	crs. S. Co.	------	Mar. 15, 1885	2406	do	1 y	15040	
South of Cape St. George.	28 45 00	85 02 00	30	gy. S. brk. Co.	------	do	2405	do	5 y	15039	
South of Bay San Blas.	28 44 00	85 16 00	60	gy. S.	------	do	2404	do	2♂ 2♀	9777	
Southwest of Cape San Blas.	28 42 30	85 29 00	88	gy. M.	------	do	2403	do	1♂ 1♀ 1 y	15038	
Off Charlotte Harbor	26 33 00	83 10 00	28	sdy.	66	Apr. 1, 1901	7123	*Fish Hawk*	1 y	25583	
Do	26 29 00	82 57 00	21	gy. S.	66	Mar. 22, 1889	5113	*Grampus*	1♂ 1♀	15235	
Southwest of Sanibel Island.	26 19 00	83 11 00	27	S. algae	68	Mar. 21, 1889	5108	do	1♂	15234	
Do	26 19 00	83 22 00	31	S. G. bk. Sp.	67.5	Mar. 18, 1889	5107	do	1♂	15233	
Do	26 19 00	83 33 00	36	S. Co.	69.5	do	5106	do	1 y	15232	
Do	26 18 30	83 08 45	27	fne. gy. bk. Sp. brk. Sh.	------	Mar. 19, 1885	2412	*Albatross*	1♂	17926	
West of Cape Romano	25 54 00	82 42 55	20.5	gy. M.	65.5	Mar. 15, 1889	5095	*Grampus*	1♂	15231	
Southwest of Cape Romano.	25 44 32	83 21 15	34	fne. S.	69	Mar. 11, 1899	5088	do	2 y	15230	
West of Ten Thousand Islands.	25 33 30	82 39 00	20	fne. S.	67	Mar. 3, 1889	5081	do	1♂	15229	
Northwest of Tortugas	25 04 30	82 59 15	26	fne. wh. S. brk. Sh.	------	Mar. 19, 1885	2414	*Albatross*	1 y	15041	

Do	25 00 31	83 03 00	29	mod. hrd., some Sh.	68	Feb. 16, 1889	5054	*Grampus*	1♂	15228	
Tortugas						1893		State Univ. Iowa Exped.	7♂ 5♀	Mus. S.U.I.	
Do	8 miles SW. of No. 10 buoy.			crs. S. few algae.		July 23, 1924	46	*Dohrn*, W. L. Schmitt.	1♂	61265	Gift of Carnegie Institution.
Do	4-5 miles S. of No. 2 buoy.		40	S		July 22, 1924	39	do	1 y	61269	Do.
Do	do		[1] 40	S		do	38	do	7 y	61268	Do.
Do	6 miles S. of No. 2 buoy.		18	sponge belt, crs. S.		do	44	do	18 y	61266	Do.
Do	7 miles S. of No. 2 buoy.		[1] 20			do	40	do	2 y	61270	Do.
Do	do		20			July 11, 1925	216	do	3 y	61275	Do.
Do	10 miles S. of No. 2 buoy.		50			July 22, 1924	42	do	3♂ 8♀ (4 ovig.)	61256	Do.
Do	About 11 miles S. of No. 2 buoy.		37			June 10, 1925	207	do	1 y	61276	Do.
Do	About 12 miles S. of No. 2 buoy.		50	sft. gy. Oz		do	208	do	1♀	61262	Do.
Do	About 13 miles S. of No. 2 buoy.		45			do	210	do	4♂ 1♀	61258	Do.
Do	About 15 miles S. of No. 2 buoy.		75			July 22, 1924	41	do	3♂ 3♀	61257	Do.
Do	S. of SW. Channel buoy.		20			Aug. 16, 1924	2	do	1 y	61271	Do.
Do	do		20			do	7	do	1 y	61272	Do.
Do	SE. of SW. Channel buoy.		20			do	9	do	1 y	61273	Do.
Do	Between black, mid-channel spar buoy and E. Channel red buoy.		10	muddy S., algae.		June 11, 1925	211	do	2 y	61274	Do.
South of Tortugas	24 {25 00 to 23 00}	82 {57 00 to 58 00}	*Meters* 87	wh. M		Nov. 26, 1919	20030	*Albatross*	2 y	61388	
Off Sand Key	Sand Key, W., 8½ miles.		*Fathoms* 31		74.5	Dec. 18, 1912	7787	*Fish Hawk*	3♂ 2♀	61386	
Do			40			May —, 1913		J. B. Henderson	1♂	46060	
South by east from Sand Key Light.			61					do	1♂ 3♀	61261	
Off Key West			(2)			June 26, 1893	46	State Univ. Iowa Exped.	4♂ 11♀	Mus. S.U.I.	
Do	Sand Key Light, W NW.; Key West Light, N.		60			June 19, 1893	24	do	1 y	do	
Key West			40			May —, 1913		J. B. Henderson	1♂ 1♀ y	46068	
South of Key West			60			May —, 1911		do	1♂ 2♀	61260	
10 miles south of Key West.			(3)					do	1♂	61264	

[1] About. [2] Shallow. [3] In floating gulf weed.

Material examined of Portunus (Achelous) spinicarpus—Continued

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
Florida—Continued	° ′ ″	° ′ ″			°F.						
Off Key West	24 25 45	81 46 45	45	Co	75	Jan. 15, 1885	2317	*Albatross*	1 ♀	15103	
Do	24 25 45	81 46 00	45	Co	75	do	2318	do	1 ♂ 2 y	14979	
Off Sombrero			54					William Stimpson.	1	M.C.Z.	
Ragged Key			75			May —, 1917	365	*Eolis*, J. B. Henderson.	1 y	50926	
Off Carysfort	25 11 30	80 10 00	60	co. S	69.2	Apr. 9, 1886	2641	*Albatross*	1 y	15042	
Off Fowey			90			Aug. —, 1916	352	*Eolis*, J. B. Henderson.	1 y	50925	
					°C.						
Gulf Stream off Cape Florida.	1 mile E. ¼ N. of Fowey Rock Light.		50	fne. gy. S. Co	20.5	Mar. 30, 1903	7516	*Fish Hawk*	1 ♀ ovig	61259	
Off Miami			30			May 12 ——		J. B. Henderson	1 y	61267	
Gulf Stream off Miami			25			1915		do	1 ♀	61263	
Cuba:											
San Antonio			5			1884		*Albatross*, W. Nye, jr.	1 y	7734	
Off Havana	23 10 39	82 18 48	130	fne. Co		Jan. 17, 1885	2320	do	1 ♂	9482	
					°F.						
Porto Rico: Mayaguez Harbor.	Pt. del Algarrobo, E., 2¾ miles.		75-76	rky. S. Co	68.5	Jan. 20, 1899	6063	*Fish Hawk*	2 ♀	24490	
North coast of South America:											
Sabanilla, Colombia						1884		*Albatross*	1 y. ♀	17928	
Near Trinidad	10 37 00 to 10 37 40	61 42 40 to 6 44 22	31-34	dk.slate-col.M	67-73	Feb. 3, 1884	2121-2122	do	4 ♂ 2 ♀ 1 y	18544	
Brazil:											
Rio de Janeiro								H. von Ihering	1 ♀ ovig	47836	From Mus. Nac. Rio de Janeiro.
Ilha Victoria, São Paulo						1907		Fr. Günther	1 ♂	S. Paulo Mus.	

Material examined of Portunus (Achelous) iridescens

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
	° ′ ″	° ′ ″			°F.						
West coast of Lower California: Off Santa Margarita Island.	24 27 00	111 59 00	47	fne. yl. S	68.5	Apr. 8, 1889	3039	*Albatross*	1♂ y	17447	
Gulf of California: Off La Paz Bay, Lower California	24 30 15	110 29 00	112	gn. M	56	Mar. 16, 1889	2996	do	1♂	17434	
Northwest of Guaymas	28 07 00	111 39 45	71	fne. gy. S. brk. Sh.	57.9	Mar. 23, 1889	3011	do	1♂ y	17444	
Off Cape Lobos	29 54 30	113 01 00	58	gn. M	61.8	Mar. 24, 1889	3017	do	1♀	17445	
Off Diggs Point, Lower California	30 50 45	114 29 45	18	gy. M	63.5	Mar. 27, 1889	3033	do	1♂ y	17446	Holotype.

less advanced, not reaching the line of the outer orbital teeth; the frontal teeth blunt, not sharp, at tip; the inner of the two teeth at the supra-orbital angle dentiform, not spiniform; merus of swimming leg a little longer, its postero-distal angle spinulous but not forming a lobe; long spine of wrist straight, not curved, in dorsal view, though sinuous in side view. The only full-grown specimen in hand lacks chelipeds except for a long carpal spine.

The type-specimen (female) is only half grown; it is very deeply areolated, presenting a very different appearance from the full-sized male. The antero-lateral teeth are wider, the lateral spine longer. The merus of the chelipeds has four inner spines and a broader postero-distal spine; the long inner carpal spine just reaches the distal third of the manus, outer spine smaller than proximal spine of manus; superior spine of palm at distal fifth of margin. Three smaller specimens (male) from as many localities agree substantially with the type.

FIGURE 14.—PORTUNUS (ACHELOUS) IRIDESCENS, FEMALE, TYPE, OUTER MAXILIPED, ×8

Measurements.—Male (17434), total length of carapace 26.4, width of same 51.8, width at anterior base of lateral spine 38.7, fronto-orbital width 20.6, width of front 6.5 mm. Female holotype, total length of carapace 15, width of same 35, width, at anterior base of lateral spine 22, fronto-orbital width 12, width of front 3.8 mm.

Range.—Mexico: West coast of Lower California and Gulf of California.

Material examined.—See table, p. 97.

Genus CALLINECTES Stimpson

Callinectes STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 220 [92]; type, *C. diacanthus* (Latreille) = *C. sapidus* Rathbun.

Differs from *Portunus* in having the abdomen of the male very narrow, ⊥-shaped, and the merus of the outer maxillipeds strongly produced outwardly at the antero-external angle. The different species agree also in being of large size; in having only four dorsal carinae, formed of single granules; two transverse, usually curved and subparallel lines on the gastric region and one sinuous oblique line on the branchial region leading inward from the lateral spine; eight strong antero-lateral teeth followed by a stout spine at the lateral angle; stout chelipeds, the manus with five external carinae, a supero-distal spine and a proximal spine at articulation with carpus; the carpus without an inner spine, an outer spine at widest part of article; merus with three (exceptionally 4) stout spines on inner margin and a small spine at postero-distal end; paddles without spines. Maximum size of female less than that of male; abdomen of immature female triangular from fourth segment to extremity.

Inhabits the shores of tropical and temperate America; West Africa; South Pacific islands.

KEY TO THE AMERICAN SPECIES OF THE GENUS CALLINECTES

A¹. Front bidentate between the teeth at inner end of orbits. Appendages of male abdomen reach end of terminal segment..... **sapidus**, p. 99.

A². Front quadridentate between the teeth at inner end of orbits.

B¹. Median pair of frontal teeth low, rudimentary.

C¹. Inner orbital fissure closed.

D¹. Appendages of male abdomen reach end of terminal segment. Antero-lateral teeth acuminate. Intramedial area[14] about twice as broad as long..... **sapidus acutidens**, p. 111.

D². Appendages of male abdomen do not reach beyond middle of penult segment. Antero-lateral teeth broad and shallow. Intramedial area about three times as broad as long. **ornatus**, p. 114.

C². Inner orbital fissure open. Appendages of male abdomen reach only to distal fourth of penultimate segment..... **bellicosus**, p. 112.

B². Median pair of frontal teeth well developed, even if small.

C¹. Lateral spine of carapace more than twice length of posterior margin of preceding tooth.

D¹. Intramedial region shorter than its posterior width.

E¹. Second to sixth antero-lateral teeth with anterior and posterior margins subequal. Tips of male appendages straight, reaching terminal fourth of penultimate segment. **danae**, p. 118.

E². Second to fifth or sixth antero-lateral teeth trending forward, their posterior margins convex and longer than anterior margins.

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[14] That part of the gastric region behind the posterior of the gastric carinae.

F[1]. Median frontal teeth one-third the size of outer pair. Anterior width of intramedial area twice its length. Appendages of male abdomen reach or nearly reach last segment, tips slightly curved..**arcuatus**, p. 121.

F[2]. Median frontal teeth very small. Anterior width of intramedial area more than twice its length. Appendages of male abdomen very short, overreaching third (or coalesced) segment but little if at all. **marginatus**, p. 123.

D[2]. Intramedial area longer than its posterior width. Frontal teeth large, typically blunt and rounded. Appendages of male abdomen reaching nearly to end of terminal segment. **toxotes**, p. 127.

C[2]. Lateral spine of carapace not more than twice length of posterior margin of preceding tooth.

D[1]. Antero-lateral region of carapace smooth, nongranulate. Frontal teeth typically broadly rounded. Appendages of male abdomen reaching end of terminal segment...**bocourti**, p. 128.

D[2]. Antero-lateral region granulate. Frontal teeth triangular. Appendages of male abdomen reaching middle of penultimate segment.....**exasperatus**, p. 130.

ANALOGOUS SPECIES ON OPPOSITE SIDES OF THE CONTINENT

Atlantic	Pacific
sapidus acutidens	*bellicosus*
danae	*arcuatus*
bocourti	*toxotes*

CALLINECTES SAPIDUS Rathbun

BLUE CRAB; COMMON EDIBLE CRAB

Plate 47

Lupa hastata SAY, Journ. Acad. Nat. Sci. Philadelphia, vol. 1, 1817, p. 65, in bays, etc. [east coast United States]; p. 443, St. John River, Florida. Not *L. hastata* Desmarest, 1823=*Cancer hastatus* Linnaeus, 1767, Adriatic.

Portunus diacantha LATREILLE, Encyc. Méth., Hist. Nat., Insectes, vol. 10, 1825, p. 190 (variety only) (type-localities of *diacantha*, North America, Antilles, Brazil, etc.; types not extant).

? *Lupea dicantha* MILNE EDWARDS, Hist. Nat. Crust., vol. 1, 1834, p. 451 (part).

Lupa dicantha GOULD, Invert. Massachusetts, 1841, p. 324.—DE KAY, Nat. Hist. New York, Zool., pt. 6, Crust., 1844, p. 10, pl. 3, fig. 3.

Callinectes hastatus ORDWAY, Journ. Boston Soc. Nat. Hist., vol. 7, 1863, p. 568.—A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 224 (variety of *C. diacanthus*).—R. RATHBUN, Fisheries and Fishery Industries of the U. S., sec. 1, 1884, p. 775, pl. 267.

Callinectes sapidus RATHBUN, Proc. U. S. Nat. Mus., vol. 18, 1895 (1896) p. 352, pls. 12; 24, fig. 1; 25, fig. 1; 26, fig. 1; 27, fig. 1.—HAY and SHORE, Bull. Bur. Fisheries, vol. 35, 1915–16 (1918), p. 432, pl. 35, fig. 1.—PIERS, Proc. Nova Scotia Inst., Halifax, vol. 15, 1923, p. 83; Cow Bay, near Halifax.

Diagnosis.—Frontal teeth two. Appendages of first segment of male abdomen reach extremity of abdomen.

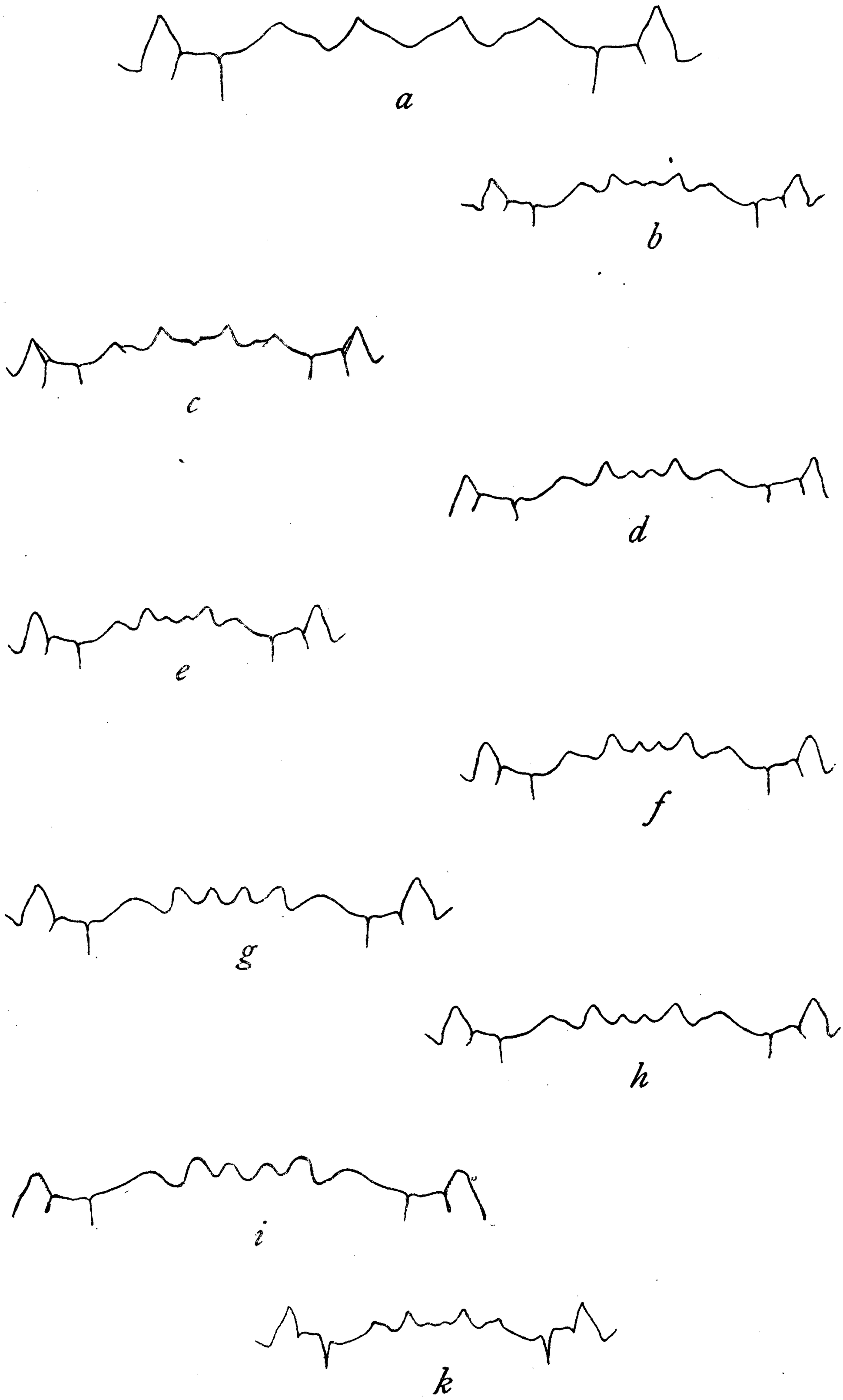

FIGURE 15.—CALLINECTES, FRONTAL OUTLINES. *a*. SAPIDUS. *b*. ORNATUS. *c*. SAPIDUS ACUTIDENS. *d*. DANAE. *e*. MARGINATUS. *f*. EXASPERATUS. *g*. BOCOURTI. *h*. ARCUATUS. *i*. TOXOTES. *k*. BELLICOSUS

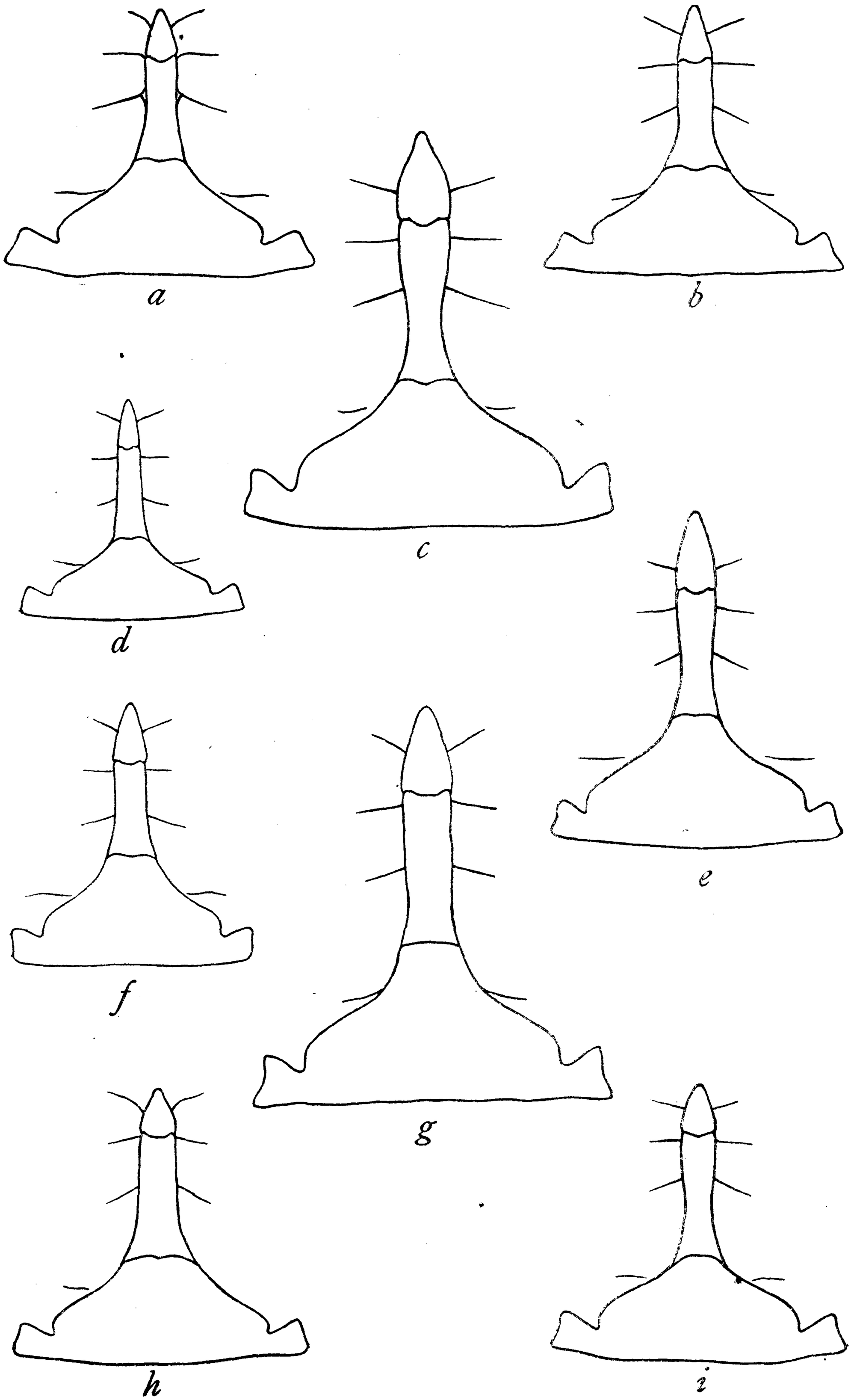

FIGURE 16.—CALLINECTES, ABDOMINAL OUTLINES OF MALE. *a*. ORNATUS. *b*. DANAE. *c*. SAPIDUS. *d*. MARGINATUS. *e*. BOCOURTI. *f*. EXASPERATUS. *g*. TOXOTES. *h*. ARCUATUS. *i*. BELLICOSUS

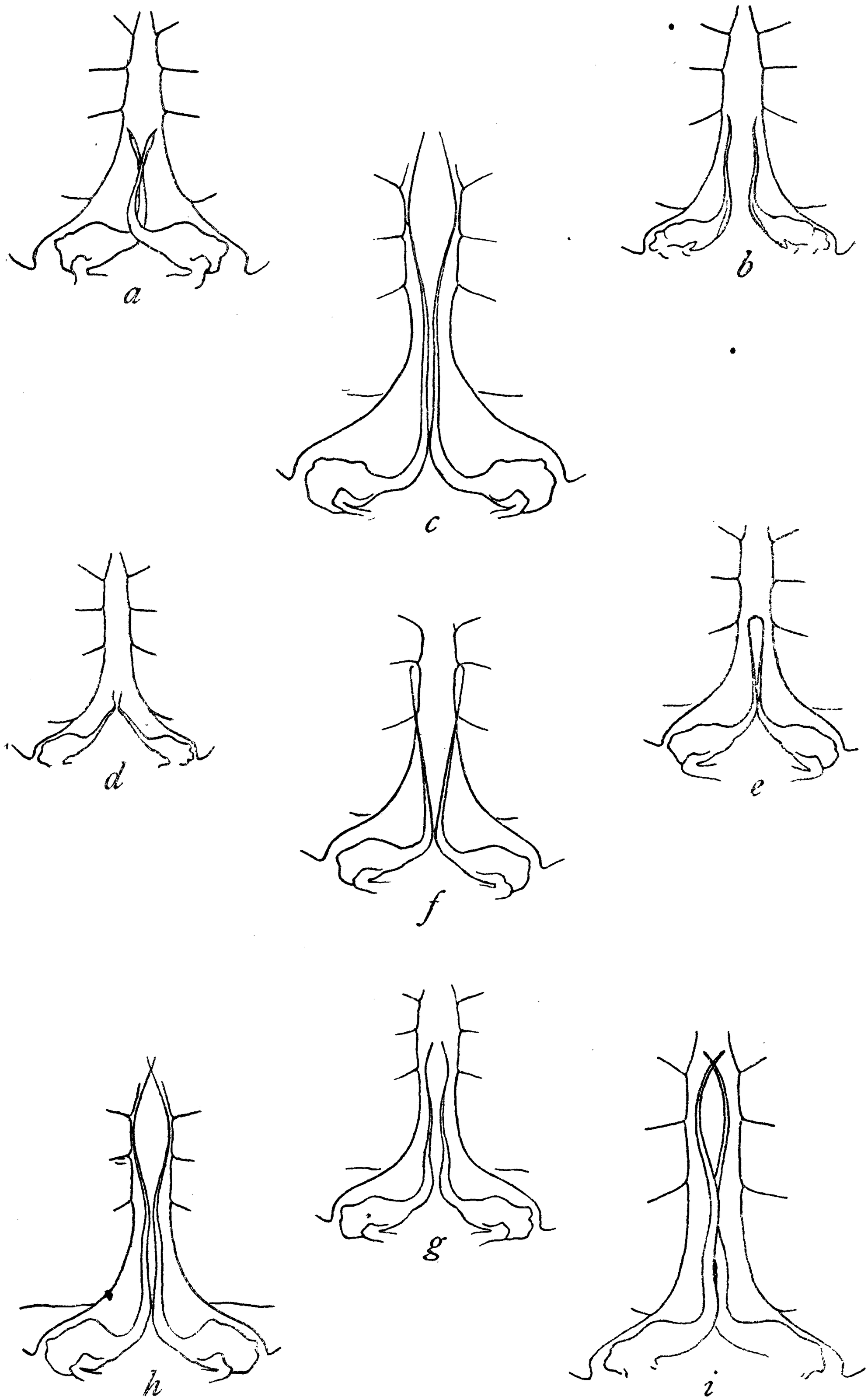

FIGURE 17.—CALLINECTES, ABDOMINAL APPENDAGES OF MALE. *a*. ORNATUS. *b*. DANAE. *c*. SAPIDUS. *d*. MARGINATUS. *e*. EXASPERATUS. *f*. ARCUATUS. *g*. BELLICOSUS. *h*. BOCOURTI. *i*. TOXOTES

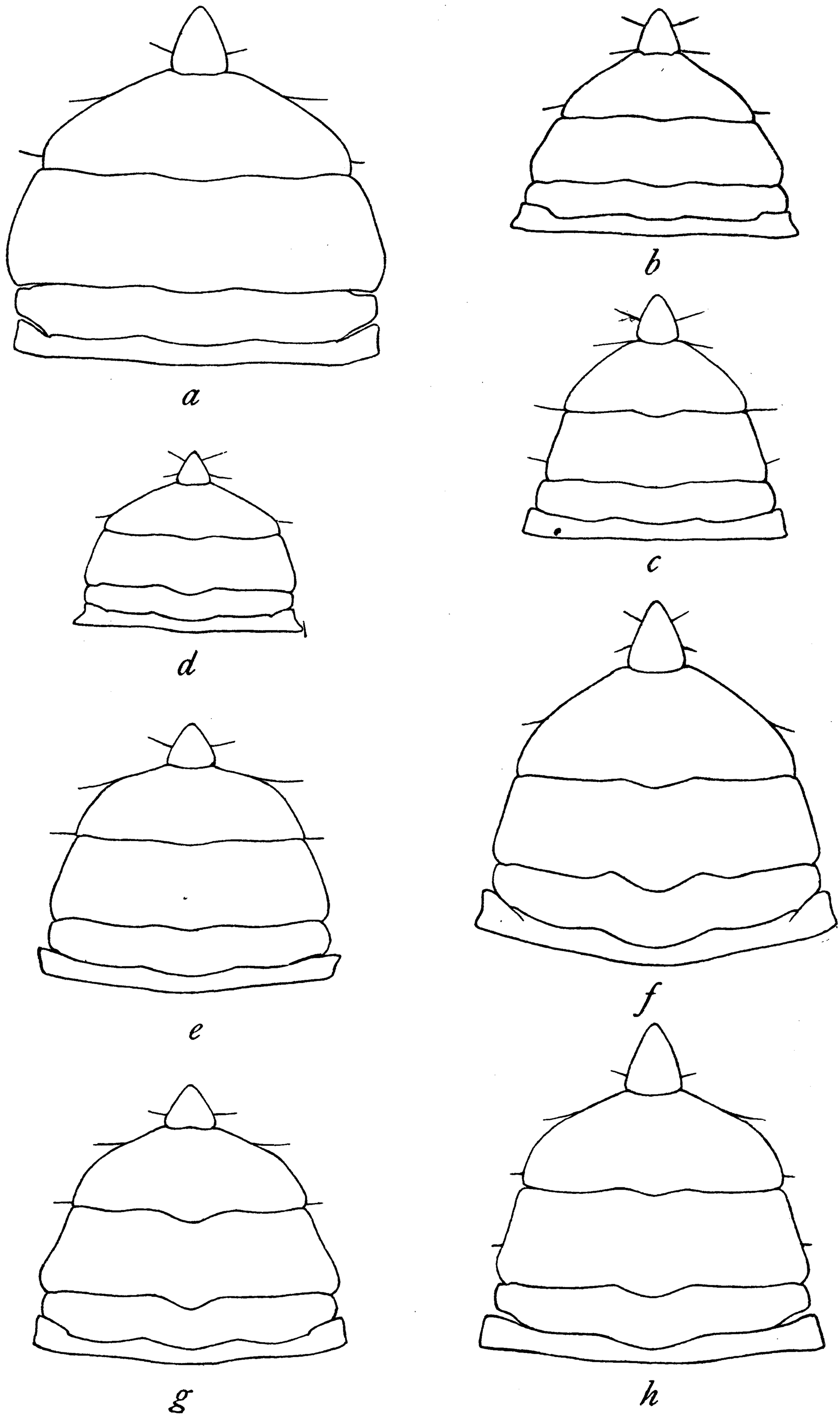

FIGURE 18.—CALLINECTES, ABDOMINAL OUTLINES OF FEMALE. *a*. SAPIDUS. *b*. ORNATUS. *c*. MARGINATUS. *d*. DANAE. *e*. EXASPERATUS. *f*. BOCOURTI. *g*. ARCUATUS. *h*. TOXOTES. (FOR BELLICOSUS, SEE FIG. 20, P. 113)

Description.—Carapace of adult male from 2⅙ to 2½ times as broad as long, moderately convex; granules of medium size, crowded on the cardiac and inner branchial regions, scattered and faintly marked on the anterior half of the carapace. Length of intramedial region about one-half or a little less than one-half its anterior width. Frontal teeth two, broadly triangular, subacute, extremities almost rectangular; faint indications of a median pair of denticles on their oblique inner margins sometimes present; median subfrontal spine conical and strong. Inner supraorbital tooth broad, faintly bidentate, less advanced than the front; of the superior fissures the outer is shorter than the inner, both are closed except at anterior extremity where there is a shallow V-shaped opening; outer tooth elongate-triangular, acute; inner suborbital tooth acute. Lateral teeth 2 to 8 acuminate, concave on both margins; lateral spine in males from two to about four times the length of preceding tooth. Costae of wrist and hand marked with depressed granules, often almost smooth to the eye; lower costa obsolete on greater part of palm.

Penultimate segment of male abdomen much constricted in its proximal half, widening at both extremities; terminal segment elongate, obtuse, lateral margins convex proximally, slightly concave or straight distally; appendages of first segment reaching nearly to or beyond the extremity of the abdomen, approximate for their basal half, with only a slight outward curve, distal portions widely divergent except at tips. Abdomen of adult female very broad, margins of third, fourth, and fifth segments separately convex; terminal segment longer than wide.

Age variation.—In small and medium sized specimens the granules are more distinct on anterior half of carapace and on costae of wrist and hand, the antero-lateral teeth broader, their margins more or less convex, inner suborbital tooth broader and obtuse, abdominal appendages shorter than in the old.

Color.—Grayish or bluish green of varying shades and tints relieved by more or less brilliant red on the spines of carapace and on the fingers. (Hay and Shore.) Occasional examples of albinism have been noted, either a claw (23840) or a wholly white crab (Maryland).

Size.—Adult males vary in width from 6¼ to 8¾ inches; adult females from 5 to 7 inches. Male (19051), total length of carapace 75.4, width of same 178, width at anterior base of lateral spine 139.2, fronto-orbital width 62.6, width of front 19.6 mm. Male (59885), total length of carapace 93.6, width of same 223, width at anterior base of lateral spine 169, fronto-orbital width 76, width of front 23 mm.

Habitat.—Muddy shores to deep water; brackish water of estuaries, and occasionally in fresh water. Common; used abundantly for food.

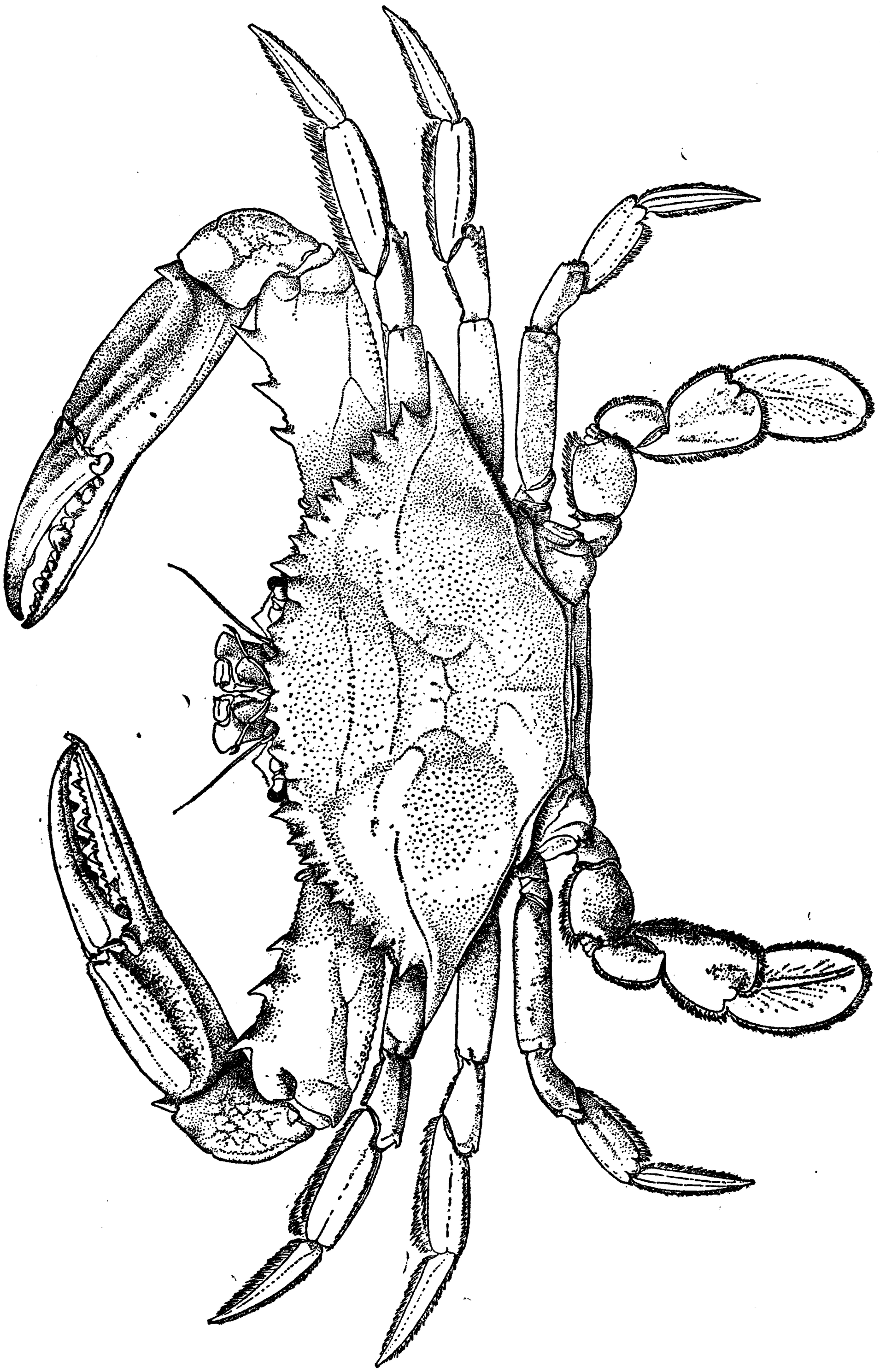

FIGURE 19.—CALLINECTES SAPIDUS, MALE, WOODS HOLE, DORSAL VIEW. AFTER R. RATHBUN

Range.—Nova Scotia to Uruguay; Bermudas.[15] Uncommon north of Cape Cod; occasionally in Massachusetts.

Material examined.—

MASSACHUSETTS.—U. S. Fish Commission: Vineyard Sound; 6 young (2249). Woods Hole: 1882, 3 large. (4946); 1883, 1 female (5860); August, 1885, 1 young (40788); surface, by electric light, September 5, 2 young (40723). Vicinity of Woods Hole; 1911; 1 specimen (43178).

RHODE ISLAND.—Newport; 1880; U. S. Fish Commission: 2 young (4537); shore, sand, 1 young male (36324); shore, 1 young (36327).

NEW YORK.—Hudson River at West Point; August 18, 1910; E. A. Mearns; 2 males (41457). Creek near West Point; E. A. Mearns; 6 young (19648). Sing Sing; brackish water; S. F. Baird; 1 male, 2 young (2449). Patchogue, Long Island; September 17 and 19, 1884; T. H. Bean; 8 specimens (8922). Great South Bay; 1898; T. H. Bean; 5 young (42566). Clam Pond Cove; October 8, 1898; T. H. Bean; 1 male (42565).

NEW JERSEY.—Great Egg Harbor; William Stimpson; 2 males (3218). Near Cape May; 1928; Horace G. Richards; 1 young, returned to sender.

MARYLAND.—(For *Fish Hawk* dredgings in Chesapeake Bay, see table, p. 108.) Fork Point; Thomas Stine; 1 deformed claw (41753). Magothy Bay; July 22, 1916; *Fish Hawk;* 1 young (61055). South Bend (an estuary of the Chesapeake about 12 miles below the Severn River); De Lancy Gill; 1 deformed claw (43351). Chesapeake Beach: September 27, 1905, Bureau of Fisheries, 2 specimens (47287); June 23, 1910, A. C. Weed and W. W. Wallis, 1 young male (40269); July 24, 1920, Earl D. Reid; 2 young (61057). Mouth of creek half way between Chesapeake Beach and Plum Point; May 30, 1912; William Palmer and A. C. Weed; 1 young (48872). Beach about 2 miles N. of Plum Point; Weed, Wallis, Palmer, and Hasbrouck: July 3, 1912, 2 young (44489); July 4, 1912, 1 young (44492). Plum Point; June 1, 1912; Palmer and Weed; 6 young (48865). Plum Point Creek; July 4, 1912; Weed, Wallis, Palmer, and Hasbrouck; 3 young (44491). Parker Creek; Weed, Wallis, and Palmer; 1 young (48871). Beach about 1 mile N. of Dare's Wharf, Calvert County; July 5, 1912; Weed, Wallis and Palmer; 3 young (44490). Near Barren Island; 20 fathoms; 1882; *Fish Hawk;* 1 specimen (5189). Rock Point, Neals Creek, Deans shore, Charles

[15] For its accidental occurrence at Rochefort, France, in fresh water, see Bouvier, Bull. Mus. Hist. Nat. Paris, vol. 7, 1901, p. 16.

County; September 5, 1927; A. A. Dean; 1 male (61370); Blackistone Island; November 4, 1897; Bureau of Fisheries; 3 young (48864). South side Piney Point; October 4, 1897; A. Marmaduke, Bureau of Fisheries; 4 young (48867). St. Georges Island; brackish pond; August 11, 1890; H. M. Smith, U. S. Fish Commission; 10 young (20113). Rock Hole Creek, Little Annemessex River; August 26, 1891; *Fish Hawk;* 1 male (26093), with oyster spat attached.

POTOMAC RIVER.—March 25, 1891; J. F. H. Sisson: 1 deformed claw (15624). Washington, D. C., market; Violet Dandridge; 1 male, 1 female (45656).

VIRGINIA.—(For *Fish Hawk* dredgings in Chesapeake Bay, see table, p. 108.) Back River; 1897; Capt. Wm. Thompson; 3 deformed claws (21694). Kinsale, Westmoreland County; Capt. J. H. Johnson; 1 male (33018), with oyster attached. Mathews Court House, Mathews Co.; January 15, 1893; Capt. Alex. James; 1 female (26092), with young oyster attached. Cape Charles City; October 25, 1897; U. S. Bureau of Fisheries; 4 specimens (48866). York River, Gloucester Point; April 3, 1894; *Fish Hawk;* 1 young (48869). Mouth of Hampton Creek; February 24, 1898; U. S. Bureau of Fisheries; 1 young (48868). Hampton Bar; N. Raynor; 1 female (23220; right claw white. Willoughby Point; January 21, 1880; M. McDonald; 2 deformed claws (3327, 3328). Lynnhaven Roads; in seine; July 16, 1916; *Fish Hawk;* 1 y. female (61383). Chincoteague; July, 1913; Henderson and Bartsch; 5 young (46283). Accomac; 1851; Samuel J. Adams; 3 claws (1 deformed) (2451). Cheriton, Northampton County; August 9, 1927; T. B. Smith; 2 males, 1 female, immature (61061). Off Hampton Roads; April 8, 1887; *Albatross:* 11 fathoms, 1 young female (12456). 12 fathoms, 1 young (12455).

NORTH CAROLINA.—Gallant Point, Beaufort; mud flats; September 13, 1928; Schmitt and Shoemaker; 3 young (62462).

SOUTH CAROLINA.—Near Charleston Harbor; 1–12 fathoms; March 20, 1880; R. E. Earll; 1 female (3153). 1891; *Fish Hawk:* Winyah Bay; 1 young (20114). Off North Island, Winyah Bay; 6 feet; January 6; 3 males, 3 females, 1 young (17192). Creek flowing into Ashley River between bridge and Wappoo cut; January 9; 4 young (18411). Jericho Creek; January 23; 1 young (17193). Coosaw River; February 18; 25 young (17190). Cat Island Creek, Port Royal; February 2; 1 specimen (17194). One mile inside May River; January 17; 1 female, 1 young (32275).

Material examined of Callinectes sapidus from Chesapeake Bay survey

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.
Chesapeake Bay, Maryland:	° ′ ″	° ′ ″			°F.					
½ mile ENE. from Sandy Point Light	39 01 12	76 22 30	9.5	hrd. brk. Sh	43.9	Dec. 10, 1915	8401	*Fish Hawk*	1 y	58344
2¾ miles ENE. of Thomas Point Shoal Lighthouse.	38 55 09	76 23 12	23	hrd. bk. M	65.5	Oct. 27, 1915	8361	do	1 y	58343
Thomas Point Light, NW. by N., 2½ miles			13	bk. M. Sh		Mar. 11, 1882	1073	do	1 y	14459
Thomas Point Light, N. by E. ½ E.; Bloody Point Light, E. ⅞ S.	38 50 15	76 27 16	5	hrd. S. brk. Sh	50.5	Apr. 26, 1916	8529	do	2 y	58346
Governors Run Wharf, W. ¼ S., approx. ⅞ mile	38 30 15	76 28 45	5	hrd. brk. Sh	51.8	Apr. 25, 1916	8526	do	1 y	58345
Point No Point, W. by S.; Hooper Island Light, NW. by N.; Holland Island Bar Light, SSE.	38 09 20	76 09 06	4	hrd. fne. gy. S	63.7	Oct. 25, 1915	8351	do	1 y	58342
Chesapeake Bay, Virginia:			*Meters*		°C.					
Smith Point Light, NW. by N.; buoy, NNW			43.92	G. Sh	10	Dec. 6, 1920	8911	do	1 y	58347
Smith Point Light, 270°; Great Wicomico Light, 236°.			12.81		11	Mar. 31, 1921	8975	do	1 y	58348
½ mile SE. of Tangier Light	37 47 00	75 58 00	*Fathoms* 12			Jan. 18, 1914	8018	do	2 y	61053
No. 2 B Buoy, N. by W. ⅜ W.; N. 3 B Buoy W. ¼ N.			*Meters* 11.44			July 9, 1920	8830	do	4♂ 3♀	55733

FLORIDA.—1879; J. W. Milner; 2 young (18245). St. Mary's River, Fernandina; December 5, 1919; *Albatross;* 1 young (61056). Salt Springs, Marion County; November 19, 1926; Edward J. Brown,[16] 3 males (59885). Indian River at Titusville; January 14, 1896; U. S. Fish Commission; 5 young (20110). Indian River Inlet; January 23, 1896; U. S. Fish Commission; 1 female (20109). Stuart, St. Lucie River; January 29, 1896; U. S. Fish Commission; 2 young (20111). Lantana; February 12, 1892; H. M. Smith; 2 young (20112). Cocoanut Grove; shallow water at edge of bay; November 1923; James Silver, U. S. Biological Survey; 1 male, soft shell, 2 females, all young (58425). Bamboo Key, Florida Bay; January 23, 1903; *Fish Hawk;* 1 young (48881). Key West; H. Hemphill; 10 young (13827). Boca Grande, just inside of Pass; surface; April 27, 1915; 7.30–8.30 p. m.; *Fish Hawk* (E. Danglade); 1 young male, 2 young females (61381). Tortugas; W. L. Schmitt; gift of Carnegie Institution: June 13, 1925, Dexter collector, 1 male (61058); Long Key beach, from sand, August 20, 1924, 1 young (61005); Long Key, in 50-foot seine, July 30, 1924, 1 female (61004). Cape Sable Creek; February 19, 1889; *Grampus;* 6 females, 1 young (15244). Marco; H. Hemphill; 2 young (15030). Marco; February 25, 1889; *Grampus;* 9 specimens (15236). Gordon's Pass; February 27, 1889; *Grampus;* 1 male (15243). Puntarasa; 1 fathom; February 1884; H. Hemphill; 1 young male (23283). Naples; April 4, 1928; O. C. Van Hyning; 2 males, 2 females, returned to Florida State Mus. Fort Thompson, Caloosahatchie River; in fresh water; 1 male (21332) St. James City, anchorage; surface; December 31, 1912; 5.15 to 6.45 p. m.; *Fish Hawk;* 1 young female (61382). Big Gasparilla Pass; March 5 and 16, 1889; *Grampus;* 5 males, 3 females (15240). Little Gasparilla Pass; March 17, 1889; *Grampus;* 1 male, 2 females (15239). Punta Gorda; *Fish Hawk;* 2 young (15245). Little Sarasota Bay; May, 1884; H. Hemphill; 2 males (6957). Tampa Bay; 3½–6½ fathoms; March 29, 1901; stations 7109–7112, *Fish Hawk;* 1 male (25581). Off Port Tampa; 4 fathoms; mud; January 19, 1898; *Fish Hawk;* 3 young females (61059). Clearwater; July 14, 1879; S. T. Walker; 1 young (3280). Cedar Keys; December, 1883; H. Hemphill; 6 young females (15033). Apalachicola Bay, vicinity of New Inlet; 1915; *Fish Hawk;* 1 young male (61384). St. Vincent Sound, Apalachicola; April 7, 1915; E. Danglade, Bureau of Fisheries 1 male (61054).

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[16] "The country is a rolling one and in a depression the waters from the spring emerge from the ground forming a basin 100 feet or more across and making quite a considerable stream flowing into Lake George, fresh water, 6 miles away. The water emerges from openings in the rock bottom of the basin with considerable force, one "boil" especially resembling a turbulent kettle in action over a hot fire, and the water so deep in several of the "boils" that bottom could not be seen. Here we secured the crabs. We took a sample of the water from the most active "boil" and could hardly class it as salt. I doubt if sodium chloride is present in any quantity. Lake Kerr, about half a mile from Salt Springs, is fresh water". (Edward J Brown.) These specimens have attained a remarkable size, the result perhaps of their unusual environment. The three specimens in the National Museum are from 8 to 8¾ inches (206 to 223 mm.) in width.

MISSISSIPPI.—Biloxi; specimens in Copenhagen Mus.

LOUISIANA.—Lake Pontchartrain; November 9, 1882; Dr. R. W. Shufeldt, U. S. A.; 3 males, 2 females (5280); purchased in New Orleans market. New Orleans; 1883; Dr. R. W. Shufeldt, U. S. A.; 7 specimens (13795). Near oyster bank in bay, St. Bernard Parish; 3 feet; mud; February 7, 1898; *Fish Hawk;* 1 young female (26094). West of island at S. end of Nine Mile Bayou; 2–3 fathoms; hard bottom; *Fish Hawk;* 1 young (49225). Cameron; R. P. Cowles; 1 female (30567).

TEXAS.—1891; B. W. Evermann, U. S. Fish Comm.: Galveston Bay, November 4, 1 male (17105); jetty, Galveston, November 5–15, 1 young male (17104); Swan Lake, Galveston, 2 young (17107); Dickinson's Bayou, November 14, 1 young male (17109); Corpus Christi, November 27–30, 1 male, 3 females, all young (17106); Shamrock Point, Corpus Christi, November 27–30, 1 young female (17108). Virginia Point; Vernon Bailey, U. S. Biological Survey; 1 male (23654). Matagorda Peninsula; February 15, 1892; William Lloyd, Department of Agriculture; 1 male (17710). Near Indianola; 8 males,. 9 females, 10 young (2069). J. D. Mitchell: Matagorda Bay, 1 male with abnormal abdomen (25035), approaching subspecies *acutidens;* Old Indianola, Matagorda Bay, November 3, 1903, 2 specimens (29325), showing injuries received in soft shell; near Bat Dupuy Lake, Jackson County, 1 full grown, immature (21647); cove, Sand Point, Port Lavaca Bay, 1 male, 2 females (19051); Keller's Bay, Calhoun County, 2 large, immature females (23089), 1 deformed claw, 1 carapace (23090), 1 male with left albino claw (23840); Big Dam Lake, O'Connor's Ranch, Calhoun County, 1 male with deformed abdomen, 3 deformed claws (25234). Espiritu Santo Bay; J. Forestier; 1 deformed claw (21630).

EAST COAST OF NORTH AMERICA.—S. I. Smith; 2 deformed claws (40862).

CUBA.—Santiago Harbor; January 30, 1913; John T. Nichols; 1 young (45976).

JAMAICA.—March, 1884, *Albatross,* 1 male (7679). C. R. Orcutt, 1 cheliped, varying toward *sapidus acutidens* (62464). Big River of Twin Rivers, Lucea; July 27, 1910; E. A. Andrews; 1 specimen (42866). Montego Bay; November 12, 1910; E. A. Andrews; 3 males (1 soft shell) 1 female (42867). Montego Bay; July 10, 1910; C. B. Wilson; 1 female (42857). Kingston Harbor: 1893, R. P. Bigelow, 1 female (17976); May 31, 1927, C. R. Orcutt, 1 male, varying toward *sapidus acutidens* (62463). Mouth of Rio Cobre (fresh water); R. P. Bigelow; 1 young (18244).

NICARAGUA.—1892; Charles W. Richmond; specimens varying toward *sapidus acutidens:* Escondido River; September 6; 1 male (18630). Greytown; March 27; 1 male, 3 females (18246).

BRAZIL.—Rio Grande do Sul; 1 old male (Brit. Mus.).

URUGUAY.—F. Felippone: Cape Polonio, Rocha; 1 male (61369), right cheliped malformed. Twenty miles off Punta del Este; 1923; 1 male (57566).

CALLINECTES SAPIDUS ACUTIDENS Rathbun

Plate 48

Callinectes sapidus acutidens RATHBUN, Proc. U. S. Nat. Mus., vol. 17, 1895 (1896), p. 354, pl. 13; pl. 24, fig. 2 (type-locality, Santa Cruz, Brazil; type, Cat. No. 4696, M. C. Z.); Bull. U. S. Fish Comm. for 1900, vol. 2, 1901, p. 47.

Diagnosis.—Teeth of carapace acuminate, spiniform. A pair of small median frontal teeth.

Description.—Carapace wider, prominences more strongly marked than in typical *sapidus*. Areolations separated by deeper depressions, granules more raised, gastric carinae stronger and more sinuous. There is also a transverse granulate ridge on each cardiac lobe. Frontal teeth narrower and more acute, and there are also two small intermediate teeth. Subfrontal and suborbital spines acuminate. Lateral teeth of carapace broad at base, narrowed abruptly to long, acuminate tips, margins granulate; seventh and eighth teeth very long, adding to the effect of width and making the antero-lateral margin less arcuate. Costae of cheliped very prominent and strongly granulate; two spines on carpus, one at outer angle and a shorter one close to the propodal spine.

Measurements.—Type male, total length of carapace 50.8, length to median sinus of front 49, width of carapace 121, length of lateral spine 16, of preceding tooth 5 mm. Male (43921), total length of carapace 67, width of same 148.6, width at anterior base of lateral spine 122, fronto-orbital width 55, width of front 16.4 mm.

Range.—From the east coast of Florida to Rio de Janeiro, Brazil. This is the tropical form of *C. sapidus*, which prevails in both the north and south temperate zones.

Material examined.—

FLORIDA.—St. Johns River, Palatka; January 25, 1897; W. C. Kendall, U. S. Fish Commission; 1 male (22276).

LOUISIANA.—Lake Palourde, Morgan City; April 21, 1897; H. R. Center, U. S. Fish Commission; 2 males (22275).

PORTO RICO.—1899; *Fish Hawk*: Arroyo; February 4; 1 young male (24469). Mayaguez Harbor; Custom House, E. by S., 2 miles; 7 fathoms; stky. M; temperature 27° C; station 6059; 1 female (24470).

PANAMA.—Canal Zone; 1911; Meek and Hildebrand, Smithsonian Biological Survey: Toro Point: April 12, 1 male (43922), 1 male (Field Mus.); May 20, 1 female (43920). Fox Bay, Colon: January 20, 1 immature male (Field Mus.); January 27, 2 males (1 soft shell), (59290). French Canal, Mindi, January 19, 1 immature

female, soft shell (Field Mus.). Mindi Cut, Mindi: January 28, 1 young (43918), 2 young (Field Mus.); February 3 and 4, 1 male (43921). Creek near Gatun, January 19, 1 male, 2 females (43919), 1 male, 2 females (Field Mus.).

BRAZIL.—Santa Cruz, State of Bahia; Thayer Expedition; 1 male holotype (M.C.Z.). São João da Barra, State of Rio de Janeiro; November 11; E. Garbe collector; 1 immature female (returned to H. von Ihering). Rio de Janeiro; Thayer Expedition; 1 male paratype (19083), 1 male paratype (M.C.Z.).

CALLINECTES BELLICOSUS Stimpson

Plate 49

Lupa bellicosa (Sloat, MS.) STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1859, p. 57 [11] (type-locality, Guaymas; type not extant).

Callinectes bellicosus ORDWAY, Journ. Boston Soc. Nat. Hist., vol. 7, 1863, p. 577.—A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 227 (var. of *C. diacanthus*).—RATHBUN, Proc. U. S. Nat. Mus., vol. 18, 1895 (1896), p. 365, pl. 22; pl. 24, fig. 10; pl. 25, fig. 8; pl. 26, fig. 8.—HOLMES, Occas. Papers California Acad. Sci., vol. 7, 1900, p. 73.

Lupa bellicosa? LOCKINGTON, Proc. California Acad. Sci., vol. 7, 1876 (1877), p. 105 [11].

Diagnosis.—Middle pair of frontal teeth rudimentary. Inner orbital fissure open. Outer-upper carina of palm rough with short sharp tubercles. Lateral spine of carapace short.

Description.—Carapace rather evenly convex, furrow at inner angle of branchial region deeply impressed, gastro-cardiac furrow shallow, cardiac region not medially divided. Granules fine, closely set except on the antero-lateral region where they are scanty and in the old absent. Transverse carinae low, the gastric ones much curved; all become indistinct with age especially on the inner half of the branchial region. Median length of intramedial region less than half its anterior width and only ¾ or ⅔ of its posterior width. Front with two slender sharp spiniform outer teeth and between them a pair of very faintly marked broad, shallow teeth. Submedian tooth sharp, longer than the lateral frontal pair. Inner supraorbital tooth acute; inner fissure open, often throughout its length; orbital border outside the fissure advanced beyond that portion inside the fissure. Suborbital tooth slender, sharp and well advanced. Antero-lateral teeth shallow, margins more or less concave and tipped with sharp white spines. Lateral spine very short; about twice the length of the preceding tooth in adults, longer in the young. Merus of chelipeds armed with four spines on inner margin; a fifth spine less sharp but grading in size and position with these, is situated on the condyle of the ischium. Ridge on outer upper margin of manus very prominent, marked with large tubercles which are sharp or spiniform; other carinae less strongly marked, often almost smooth. Terminal segment of male abdomen half again as long as wide; appendages of first segment

forming a double curve, tips straight, reaching to distal fourth of penultimate segment.

Color.—Almost brown above, cream-colored below, tubercles and ridges of manus tinged with red. (Lockington.)

Measurements.—Male (57909), total length of carapace 78.3, width of same 152.8, width at anterior base of lateral spine 136, fronto-orbital width 54, width of front 11.5 mm.

Range.—From Point Loma, California (Holmes), to Gulf of California, Mexico.

Material examined.—

CALIFORNIA.—San Diego; C. R. Orcutt; 1 male (51111).

MEXICO.—Pichilinque Bay, Gulf of California, *Albatross*, April 29, 1888, 1 male, 3 females (22047), March 29, 1911, 1 young male (48863). Magdalena Bay; 1925; Hanna and Jordan; 1 young, returned to Calif. Acad. Sci. 1889; *Albatross:* San Bartolome Bay, 3 males (15442); Magdalena Bay, April 8, 2 males, 4 females (15441); La Paz Harbor, March 12, 1 male, 2 females (15436); San Josef Island, March 16, 5 males, 2 females (15435); Carmen Island, March 18, 2 males, 4 females (15439); Concepcion Bay, mouth of Rio Mulege, March 19, 7 males, 2 females, mostly young (15440); Guaymas, March 21, 6 males, 1 female (15444); San Luis Gonzales Bay, March 27, 5 males, 2 females (15438); St. Georges Bay, March 25, 1 male, 2 females (15443); Shoal Point, Colorado River, March 26, 5 males, 8 females (15437). 1911; *Albatross:* Point San Bartolome, with boat dredge, March 13, 3 males, 2 females (6007), in seine, March 14, 4 young (6005); Abreojos Point, March 16, 2 females (60010); Ballenas Bay, March 16, 2 young males, 1 young female (Amer. Mus.); S. end of Magdalena Bay, March 20, 10 males, 2 females (Amer. Mus.); Pichilinque Bay, by electric light, March 27, 6 young (Amer. Mus.), March 29, 1 young male (Amer. Mus.); Agua Verde Bay, April 2, 2 immature females (60008); Mulege, at mouth of river, in 100-foot seine, April 4, 1 male (60006); Ricason Island, Concepcion Bay, April 7, 5 males, 2 females (60009). Turtle Bay; August 1, 1896; A. W. Anthony; 6 males, 7 females (19514). Magdalena Bay; 1925; Hanna and Jordan; 1 young (Cal. Acad. Sci.). La Paz; L. Belding; 2 males, 3 females (4630). Santo Domingo; 1899; C. R. Orcutt; 1 young male (51108). Guaymas, inner harbor; February 23, 1891; P. J. Jouy; 1 young male (17291). Angeles Bay; 1921; 1 male (57909), from California Academy of Sciences.

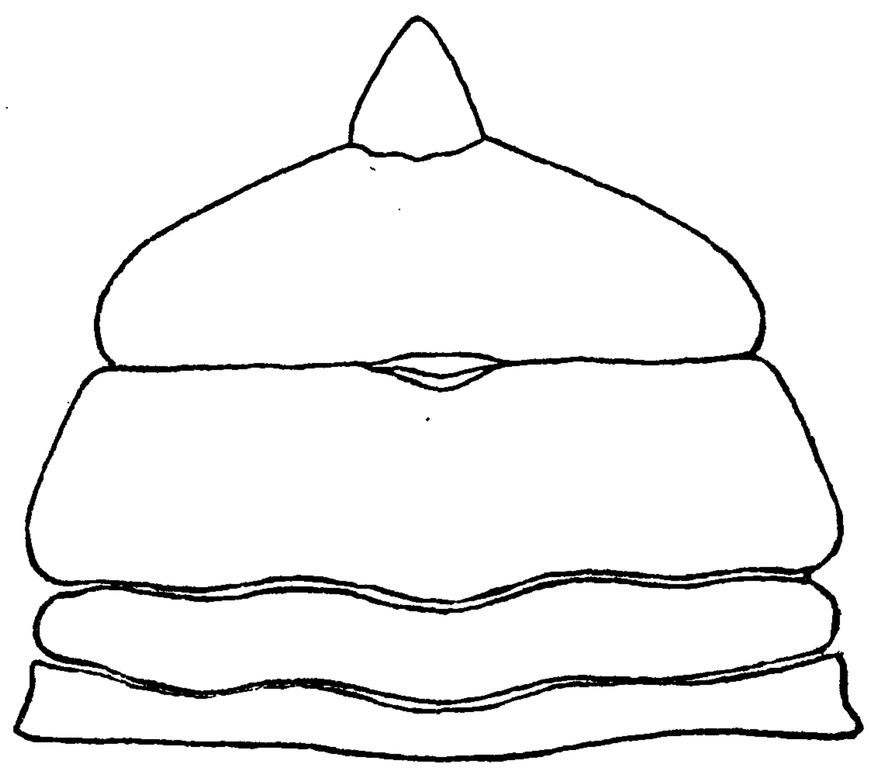

FIGURE 20.—CALLINECTES BELLICOSUS, FEMALE ABDOMEN

CALLINECTES ORNATUS Ordway

SHELLIGS (ANTIGUA)

Plate 50

Callinectes ornatus ORDWAY, Journ. Boston Soc. Nat. Hist., vol. 7, 1863, p. 571 [6] (type-localities, Cumana, Hayti, Bahamas, Tortugas and Charleston Harbor; cotypes in M.C.Z. from Cumana, Hayti (5137) and Charleston).—A. MILNE EDWARDS, Crust. Rég. Mex. 1879, p. 225 (var. of *C. diacanthus*).—RATHBUN, Proc. U. S. Nat. Mus., vol. 18, 1895 (1896), p. 356, pl. 15; pl. 24, fig. 3; pl. 25, fig. 2; pl. 26, fig. 2; pl. 27, fig. 2.

Diagnosis.—Submedian teeth of front much broader than long, rudimentary. Intramedial area very short, three times or nearly three times as broad as long. Antero-lateral teeth broad and shallow.

Description.—Carapace rather convex; depressions shallow; length of intramedial area much less than half, sometimes a third of its anterior width. Surface finely and rather evenly granulated. Frontal teeth four, the two outer subtriangular, blunt, margins slightly concave; inner teeth very small, tuberculiform, almost rudimentary, broader than long, margin arcuate. Subfrontal tooth a prominent spine; inner suborbital tooth a more prominent, broad, subtriangular lobe. Lateral teeth broad and shallow; margins convex at base, concave in terminal half; posterior margins longer than anterior; tips acute in first five or six teeth, acuminate in remainder. Lateral spine 2.5 to 3 times the length of preceding tooth, directed obliquely forward. Abdomen of male with penultimate segment widest at proximal end, its margins slightly concave; the appendages reach or nearly reach the middle of the penultimate segment; proximally they curve inward and touch or overlap each other; distal portions straight and divergent, widening a little behind the slender tip. Abdomen of female very broad at proximal end (to third segment), tapering more rapidly to the terminal segment, and appearing more triangular, than in any other species.

Color.—General color of half grown male (61002) a sort of sage green and hair brown with porcelain white patches, wax yellow teeth, whitish behind white tips, top and front dragons blood red. Chelipeds largely the same as the general color of the carapace, hair brown with greenish tinge, spines nearly all porcelain white, their hind margin and margin of carpus between them shiny clove brown; inner face of hand and carpal articulation china blue, fingers all white. A sort of cinnamon with white between ambulatories; dactyls of the latter coral red to scarlet; propodus, carpus, and merus china blue, stippled on merus stronger from distal end to middle of merus. Swimming legs like chelipeds, margins of articles salmon near the articulations; proximal half of paddle and adjacent propodus white, distal half of paddle a sort of raw sienna and gall stone yellow; the paddle transparent. Under parts whitish. (Schmitt.)

Measurements.—Males attain a width of 5 inches, females 4¼ inches. Male (48394), total length of carapace 60.2, width of same 125.7, width at anterior base of lateral spine 103.7, fronto-orbital width 46, width of front 14 mm.

Range.—New Jersey; North Carolina to State of São Paulo, Brazil; Bermudas. Exceptionally in fresh water (Brues).

Material examined.—

NEW JERSEY.—1928; Horace G. Richards; specimens returned to sender: Avalon; August 29; 1 young male. On floating Zostera, 4 miles off Cape May; August 28; 1 young female.

NORTH CAROLINA.—Off Cape Hatteras; lat. 35° 21′ 15″ N., long. 75° 23′ 15″ W.; 14 fathoms; gy. S.; October 19, 1884; station 2283, *Albatross;* 1 male (8863). Shackleford Banks (inside), Beaufort; September 12, 1928; Schmitt and Shoemaker; 1 young (62460). Off Cape Fear River; 6 to 7 fathoms; July 13, 1915; stations 8278–8280, *Fish Hawk*; 1 young (58366).

SOUTH CAROLINA.—Winyah Bay; lat. 33° 49′ 45″ N., long. 78° 04′ 00″ W.; 7 fathoms; hrd.; temperature 80.5° F.; July 12, 1915; station 8275, *Fish Hawk*; 2 young (51029). Off E. end of Sullivan's Island, Charleston Harbor; on oyster bed; Whiteside and Leslie; 1 young female (3185). Charleston; L. Agassiz; 3 male and female, cotypes (5128, M.C.Z.).

BAHAMAS.—Andros Bank and Island, in sponges, Frederick Stearns (specimens returned to sender). 1903, B. A. Bean, gift of the Geographic Society of Baltimore: Eleuthera Island: Spanish Wells, July 4, 1 young (31087), 3 males, 7 young (31088); Governor's Harbor, July 7, 1 male, 3 young (31090); Tarpum Bay, July 7, 1 male, 6 young (31089). Long Island: Clarence Harbor, July 14, 1 male (soft shell), 1 young (31086).

FLORIDA.—Baker collector; 5 males, 4 females (2076). Miami; G. M. Gray; 1 young (42135). Bonefish Banks, SW. end Biscayne Bay; November 26; B. A. Bean; 1 young (33132). Broad Creek; November 24, 1906; B. A. Bean; 2 young (33133). Bamboo Key; January 23, 1903; *Fish Hawk;* 1 young male (48879). Big Pine Key; H. Hemphill; 3 males (14889). Summerland Keys; December 6, 1906; B. A. Bean; 1 specimen (33127). Key West: December, 1883, D. S. Jordan, 6 males, 12 females, 12 young (5847); 1884, *Albatross*, 7 males, 1 female, 5 young (18229); H. Hemphill, 8 young (18230), 11 males, 4 females (10053). Marco; H. Hemphill; 1 young (18231). Punta Rassa; April, 1883; C. W. Ward; 6 males (5753). Tortugas; 1924; W. L. Schmitt; gift of Carnegie Institution: Long Key, July 30, 5 young (60996); near Fort Jefferson landing, Garden Key, from bunch of dead eel grass between pipes, August 17, 3 young (60997); off W. side Fort Jefferson, between beach to south and moat entrance, August 19, 1 male, soft shell (60998). Bird Key; April 8, 1889; *Grampus;* 1 male (15246).

LOUISIANA.—Mouth of Mississippi River; Northeast Pass tower, NW. by W. ⅞ W.; Pass a Loutre Light, NW. by N.; 12 fathoms; sft. M.; temperature 72° F.; June 24, 1913; station 7916, *Fish Hawk;* 1 young male, 1 young female (61428).

TEXAS.—San Antonio Bay; in middle of bay (E. and W.) and about 10 miles S. of mouth of Guadalupe R., between Mosquito Point and Little Bird Island; about 5 feet; J. D. Mitchell; 1 female (21631).

CUBA.—1914, Henderson and Bartsch, *Tomas Barrera* Expedition: Ensenada de Cajon, off Cape San Antonio, May 22–23, 2 young (49167); Cape Cajon, May, 3 specimens (47921, 48401), 6 males from traps (48394); Cayo Punta Colorado, 2–3 fathoms, station 10, May 21, 17 young (48408, 48409); Los Arroyas, station 8, May 20, 24 young (48412); Ensenada de Santa Rosa, 1 to 3 fathoms, sand, shell, mud and sponge bottom, station 7, May 19, 23 young (49156, 49164, 49168, 48389); off Santa Lucia, May 12, 2 young (49166); Cayo Arenas, 2 fathoms, station 3, May 12, 1 young (48399); Bahia Honda, June 7, 2 young (49160), 1 young male, by submarine light (48398). Mariel; May 10, 1900; Palmer and Riley; 1 young (23834).

JAMAICA.—Dr. Smith; 1 male (2448). 1884; *Albatross;* 3 males, 4 females (18227). C. R. Orcutt; 1 male (62461). February 4, 1928; C. R. Orcutt; 1 young male (61365). Montego Bay: 1910, C. B. Wilson: June 24, 1 female, soft shell (42856), 2 males, 1 female (42855); from coral reef, July 20, 1 young male (42854). Montego Bay, November 12, 1910, E. A. Andrews; 4 males, 2 females (42865).

HAITI.—Gonaives; 1860; A. Hilchenbach; 1 male cotype (5137, M.C.Z.).

PORTO RICO.—1899; *Fish Hawk:* Mayaguez, January 19, 1 female (24431), January 20, 1 young (24432); Mayaguez Harbor, Custom House, E. by S., 2 miles, 7 fathoms, stky. M., temperature 27° C., January 19, station 6059, 3 females (24441); Boqueron Bay, January 26–27, 5 males, 3 females (24433); Porto Real, January 26, 4 young males, 5 young females (24434); Guanica, January 28, 2 young (24435); Playa de Ponce, January 31, 1 female (24436); Arroyo, February 4, 1 female (24437); Hucares, February 13, 1 male, 1 young (24439); Fajardo, February 17, 1 male (24440); Ensenada Honda, Culebra Island, February 10, 1 male (24438).

ST. THOMAS.—A. H. Riise, 1 male (2457); January 17–24, 1884, *Albatross*, 1 male, 7 young (18546); in lagoon, July 9, 1915, C. R. Shoemaker, 4 young (53761).

ST. CROIX.—Specimens in Copenhagen Museum.

ST. MARTIN.—Simsons Bay lagoon, shallow water, sandy, September, 1905, J. Boeke, 1 female (returned to sender). St. Eustatius; 1905; J. Boeke: NW. of Jenkins Bay, 30 fathoms, dredged, August 15, 1 young male (returned to sender); Tumble Down Dick

Bay, 40 fathoms, sandy, in beam trawl, September 17, 1 young male (42967).

GUADELOUPE.—Specimen in Paris Museum.

ST. LUCIA.—Port Castries; November 30, 1887; *Albatross*; 6 males, 4 females, 3 young (22043).

MEXICO.—Cozumel, Yucatan; shore, in net; 1 male, 5 females (9557).

BRITISH HONDURAS.—Belize; Harry J. Huwe, S. J.; 1 female (50949).

PANAMA.—Fox Bay, Colon; March 31, 1911; Meek and Hildebrand, Smithsonian Biological Survey; 1 young male, 1 young female (43915).

COLOMBIA.—Cartagena; A. Schott; 1 male (M.C.Z.). Sabanilla; 1884; *Albatross*; 1 young female (18228).

VENEZUELA.—1905; J. Boeke: Aruba: Paarden Bay, shallow water, June 2, 1 adult male (returned to sender); lagoon, very shallow water, July 3, 1 young male (returned to sender). Curaçao: Rifwater (lagoon), 1 fathom, July 26, 1 young male, fifth left tooth reduced, 1 young male (returned to sender). Bonaire: Lagoon, very shallow, stony, June, 1 immature female (42948).

VENEZUELA.—Curaçao; February 10–18, 1884; *Albatross*; 4 males, 5 females (7584). Cumana; 1859; Capt. Couthouy; 1 male cotype (5136, M. C. Z.).

TRINIDAD, EAST OF.—From lat. 10° 37′ 00″ to 10° 37′ 40″ N., long. 61° 42′ 40″ to 61° 44′ 22″ W.; 31–34 fathoms; dk. slate-col. M.; temperature 67°–73° F.; stations 2121–2122, *Albatross*; 2 males, 1 female (6900).

BRAZIL.—State of Maranhão: Maranhão; Lieut. F. E. Sawyer, U. S. Navy; 1 female (18232). Rio Poty, Thayer Expedition, 1 male (M.C.Z.). State of Espirito Santo: Victoria; specimens in M.C.Z. State of Rio de Janeiro; 1925; W. L. Schmitt: São Francisco, Nictheroy, August 25, in 50-meter seine, 1 young (61001); Paqueta, Bay of Rio de Janeiro, mud flats, August 19, station 1, 1 young (61060). State of São Paulo; 1925; W. L. Schmitt: Villa Bella, Ilha São Sebastião, beach, September 23, 1 young female (61000), weeds from rock in front of hotel, September 24, 1 young male (61002); Ilha São Sebastião, September, H. Luederwaldt collector, 2 young (60999), Barro, Santos, in seine, September 12, 1 male, 1 female (61003).

BERMUDAS.—J. Walter Fewkes; 1 male (M.C.Z.). G. Brown Goode; 1 young female (3175). F. V. Hamlin, Wesleyan University; 2 males, 1 young (4028). Hungry Bay; July–September; F. G. Gosling; 1 male, 1 female, 1 young (25445).

CALLINECTES DANAE Smith

Plate 51

? *Ciri Apoa* MARCGRAVE, in Piso and Marcgrave, Hist. Nat. Brasil., 1648, p. 183, text-fig. [17]

Lupa dicantha DANA, U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 272; atlas, 1855, pl. 16, fig. 7*a–c*. Not *Lupea dicantha* Milne Edwards, 1834.

Callinectes diacanthus ORDWAY, Journ. Boston Soc. Nat. Hist., vol. 7, 1863, p. 575.

Callinectes danae SMITH, Trans. Connecticut Acad. Sci., vol. 2, 1869, p. 7 (type-locality, Pernambuco; cotypes in M. C. Z. (5143) and P. M. Y. U.).—RATHBUN, Proc. U. S. Nat. Mus., vol. 18, 1895, p. 357, pl. 16; pl. 24, fig. 4; pl. 25, fig. 3; pl. 26, fig. 3; pl. 27, fig. 3.

Callinectes diacanthus A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 226 (var. of *C. diacanthus*).

Diagnosis.—Frontal teeth small, unequal, acute. Tips of appendages of first segment of male abdomen straight and reaching terminal fourth of penultimate segment.

Description.—Intramedial region wider behind than in *sapidus*, its length less than half the anterior width. Front with two distinct submedian teeth, small, subacute; lateral teeth narrow, acute. Of the antero-lateral teeth of the carapace, the second to sixth, inclusive, do not trend forward, posterior margin of each tooth not much longer nor more convex than anterior margin; all teeth acute, the seventh and eighth especially so; eighth tooth directed forward. Lateral spine 3½ to 4 times length of preceding tooth in the old male. Inner suborbital tooth prominent and rather narrow. Penultimate segment of abdomen of male very broad at proximal end. The appendages reach to middle or terminal third of penultimate segment and taper regularly to the tips; they sometimes touch each other proximally, but more often are separated. Abdomen of female similar to that of *C. ornatus* but wider in its fifth and sixth segments. Costae of chelipeds very closely set with fine granules interspersed with larger ones. Two sharp tubercles or spinules on wrist between outer spine and the spine at proximal end of palm.

Color.—Specimens from Rio olive green, eight posterior legs in part bluish, arm and hand blue with some reddish purple. (Dana.)

Measurements.—Males attain a size of 5½ inches, females 4 inches. Male (2371), total length of carapace 57.5, length to median sinus of front 55.5, greatest width 131.5, width at anterior base of lateral spine 101.2, fronto-orbital width 45.8, width of front 13.5 mm.

Range.—From Indian River Inlet, Florida, to State of Santa Catharina, Brazil.

Material examined.—

FLORIDA.—Indian River Inlet; January 23, 1896; U. S. Fish Comm.; 3 young (20115). Florida, 1859; G. Wurdemann; 2 males, not typical (M.C.Z.).

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[17] As *Callinectes danae* is perhaps the commonest swimming crab in Brazil, it is likely that Marcgrave's species is identical with it, in spite of his grotesque figure.

TEXAS.—Alligator Head, Matagorda Bay; J. D. Mitchell; 1 male (22817).

CUBA.—1914; Bartsch and Henderson, *Tomas Barrera* Expedition: Cayo Punta Colorado, 2–3 fathoms, algae covered broken shell bottom, May 21, station 10, 1 male (48407). Los Arroyas, May 19, station 8, 1 female (48400). Bahia Honda; 1898; Biol. Exped. State Univ. Iowa; 1 male (Mus. S.U.I.). Marianaõ Playa; C. F. Baker; 2 females (31892). Cardenas Bahia; shallow water; April, 1927; Melbourne Ward; 1 male (61050).

JAMAICA.—1884; *Albatross*; 3 males, 1 female (18237). Montego Bay; November 12, 1910; E. A. Andrews; 2 males, 1 female (42862). Kingston; 1928; C. R. Orcutt; 2 males, 1 immature female, 1 young, 2 large chelipeds (62456–62459). Kingston Harbor and Port Royal; P. W. Jarvis; specimens returned to sender. Bull Bay; C. R. Orcutt; 1 male (62455).

DOMINICAN REPUBLIC. — 1928; Gerrit S. Miller, jr.; Samana: February 22; 2 males, 4 females, 3 young (61887). On flats at low tide; March 15; 6 males (2 soft shell), 1 female, 2 young (61886).

PORTO RICO.—1899; *Fish Hawk*: San Juan; 1 young female (24423); Rio Bayamon, above Palo Seco, January 16, 5 males (24424); Mayaguez, in seine, January 19, 4 males, 4 females (24425); Mayaguez Harbor, Custom House, E. by S. 1½ miles, 7¼ fathoms, sticky mud, temp. 26° C., January 19, station 6058, 1 female (24428); Mayaguez Harbor, Custom House, E. by S., 2 miles, 7 fathoms, sticky mud, temperature 27° C., January 19, station 6059, 1 female (24429); Hucares, February 13, 1 male, 1 young (24427). Arecibo; April 1, 1900; C. W. Richmond; 1 young (23664).

ST. THOMAS.—(Specimens in Copenhagen Mus.).

MARTINIQUE.—(Specimens in Paris Mus.).

Port Castries, St. Lucia; November 29, 1887; *Albatross*; 5 males, 6 females (22044).

BARBADOS.—F. G. Beckford; 2 small males (Brit. Mus.).

HONDURAS.—Near Belize; W. A. Stanton; 1 male, 1 female (21379).

PANAMA.—Colon; 4 fathoms; 1884; Willard Nye, jr., *Albatross;* 5 females (18239); "caught at night with a small hoop net baited and set a little way from the ship." Meek and Hildebrand, Smithsonian Biological Survey: Toro Point, C. Z.: May 19, 1911, 3 males, 2 females (43930), 2 males, 2 females (Field Mus.); May 20, 1911, 1 male (43923), 1 male (Field Mus.); January 25, 1912, 4 males (Field Mus.). French Canal, Mindi, C. Z.: January 19, 1911, 1 young male (43929). Mindi Cut, Mindi, C. Z.: January 28, 1911, 1 male (Field Mus.); February 3–4, 1911, 5 males, 3 females (Field Mus.), 5 males, 4 females (43925). Fox Bay, Colon: January 3, 1911,

1 male, 1 young female (43927); January 11, 1911, 5 males, 3 females (Field Mus.), 3 males, 2 females (1 soft shell) (43924); March 25, 1911, 4 males, 3 females (43931); March 31, 1911, 9 males, 3 females (Field Mus.), 6 males, 1 female (43928); January 22, 1912, 1 male (59284); January 27, 1912, 5 males, 2 females, 7 young (Field Mus.); March 22, 1912, 8 young, some with internal parasites (59286). Porto Bello: April 24–28, 1911, 3 males (Field Mus.), 2 males (43926); March 19, 1912, 2 males, 5 females (Field Mus.), 2 males, 1 ovigerous female (59285).

COLOMBIA.—Old Providence Island, Caribbean Sea (east of Nicaragua); 1884; *Albatross;* 1 young female (18238). Sabanilla; March, 1884; *Albatross;* 1 male, 19 females, 25 young (7559).

VENEZUELA.—Puerto Cabello; 1 ovigerous female (Copenhagen Mus.).

TRINIDAD.—1884; *Albatross;* 2 males, 1 female (7636).

BRAZIL.—State of Parahyba; 1899; A. W. Greeley, Branner-Agassiz Expedition: Mamanguape stone reef, 1 young female (Stanford Univ.); Rio Parahyba do Norte, Cabedello, on mangroves, June 20, 1 male, 1 young female (25746), June 21, 1 young (25747). State of Pernambuco: Pernambuco, 1867, C. F. Hartt, cotypes in Peabody Museum, Yale University, and in Museum of Comparative Zoölogy (1 male, 1 female, Cat. No. 5143). State of Bahia: Bahia, June, 1896, Bisego collector, 1 male, from H. von Ihering, returned to sender; Plataforma, Bahia, 1876–77, R. Rathbun, Hartt Explorations, 2 males, 1 ovigerous female (40591); Porto Seguro, specimens in M.C.Z. State of Espirito Santo: San Matheos, specimens in M.C.Z. State of Rio de Janeiro: São Francisco, Nictheroy, August 25, 1925, W. L. Schmitt, 6 males (1 soft shell), 5 females (2 ovigerous) (60983), 3 young (60982), taken in 50-meter sardine seine. Paqueta, W. L. Schmitt, August 19, 1925, 3 males, 2 females (60988), August 29, 1925, 1 young (60984). River on Ilha Governador, Bay of Rio de Janeiro, August 27, 1925, W. L. Schmitt, 6 males (60987). Rio de Janeiro: J. D. Dana, U. S. Exploring Expedition, 1 male (2371) 1 male (4278, M.C.Z.); Thayer Expedition, 1 male, 2 females (19427), received from Museum of Comparative Zoölogy; 1876–1877, R. Rathbun, Hartt Explorations, 1 male (40589). State of São Paulo: 1925, W. L. Schmitt: Villa Bella, Ilha São Sebastião, in dip net, September 20, 1 young female (60980); Ilha São Sebastião, September, H. Luederwaldt collector, 2 males, 1 young (60979); Barro, in seine, September 12, 7 males, 5 ovigerous females (60990); between canals 4 and 5, Estuario, September 13, 3 males, 3 females, 6 young (1 soft shell) (60981). Santos, 1901, H. von Ihering (specimens returned to sender). Ilha Casquerintia, Santos, September, 1910, C. Maas, 1 female (47863), received from H. von Ihering. Matuba, 1905 E. Garbe, 1 male (47844), received from H. von Ihering. State of

Parana: Paranagua; October 3, 1925; W. L. Schmitt; 2 young (60986). State of Santa Catharina: Saco São Francisco, 1923, Dr. C. Fernetz, 2 males, 1 female, lent by Buenos Aires Museum. 1925, W. L. Schmitt: Praia Inglese, São Francisco, November 1, 1 male (60989); Florianopolis, Praia de Fora, November 5, 1 male, 1 female, 1 young (60985).

CALLINECTES ARCUATUS Ordway

Plate 52

Callinectes arcuatus ORDWAY, Journ. Boston Soc. Nat. Hist., vol. 7, 1863, p. 578 [13] (type-locality, Cape St. Lucas; type, Cat. No. 61833, U.S.N.M.—A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 228 (var. of *C. diacanthus*).—RATHBUN, Proc. U. S. Nat. Mus., vol. 18, 1895 (1896), p. 362, pl. 20; pl. 23, fig. 1; pl. 24, fig. 8; pl. 25, fig. 7; pl. 26, fig. 7; pl. 27, fig. 7.

Callinectes pleuriticus ORDWAY, Journ. Boston Soc. Nat. Hist., vol. 7, 1863, p. 579 [14] (type-locality, Panama; cotypes, Cat. No. 4701, M.C.Z.).—A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 228 (var. of *C. diacanthus*).

Callinectes species SMITH, Third Ann. Rept. Peabody Acad. Sci., 1869 (1871), p. 91, Gulf of Fonseca.

Callinectes dubia KINGSLEY, Proc. Boston Soc. Nat. Hist., vol. 20, 1879, p. 156 (type-locality, Gulf of Fonseca, west coast of Nicaragua; type, Cat. No. 5178, M.C.Z.).

Callinectes nitidus A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 228 (var. of *C. diacanthus*) (type-locality, Tanesco, on the borders of the Estéros, Guatemala; cotypes in U.S.N.M. (20269) and Paris Mus.).—RATHBUN, Proc. U. S. Nat. Mus., vol. 18, 1895 (1896), p. 366.

Callinectes diacanthus var. *C. nitidus* A. MILNE EDWARDS, Crust. Rég. Mex., 1879, explanation of pl. 41.

Callinectes diacanthus A. MILNE EDWARDS, Crust. Rég. Mex., 1879, pl. 41.

Diagnosis.—Penult segment of male abdomen mostly with parallel sides; appendages about reaching terminal segment. Frontal teeth narrow. Antero-lateral teeth chiefly with convex margins, lateral spine longish.

Description.—Carapace very convex, finely granulate, granules very numerous in the median region. Length of intramedial area about one-half its anterior width and much less than its posterior width; length greater than in *C. danae*. Front with four stout triangular blunt teeth with concave sides, the middle pair about one-third the size of the outer pair; subfrontal spine produced well beyond the lateral frontal teeth. Suborbital tooth rounded. Antero-lateral margin very arcuate; teeth large, well separated, their posterior longer than their anterior margins, the first four or five teeth with more or less convex margins and subacute tips, the succeeding ones becoming regularly sharper and more spiniform. Lateral spine about two and a half to three times length of adjoining tooth. Costae of manus coarsely and closely granulate. Spine at extremity of outer carina of carpus well developed. Penultimate segment of male abdomen broad at base, but for the greater part of their length the margins are subparallel. The appendages of the first segment

reach or nearly reach the last segment and are slightly curved at the tip in the adult. Abdomen of female with fifth segment much narrower distally than proximally, and shorter than sixth.

Color.—Carapace violet blue. Under parts grayish yellow except abdomen of female which is rose with a broad band of black on each segment. Chelipeds violet above, inner surface of chelae bluish. Ambulatory legs tinged with blue, ends of dactyls and fingers red. Swimming feet mostly yellowish, paddle mostly blue. (After A. Milne Edwards.)

Measurements.—Male with short lateral spine (15432), total length of carapace 59, width of same 119, width at anterior base of lateral spine 99, fronto-orbital width 45.3, width of front 14.6 mm. Male with long lateral spine (40442), total length of carapace 52, width of same 120.5, width at anterior base of lateral spine 90.5, fronto-orbital width 39, width of front 11.5 mm. A. Milne Edwards's Plate 41,[18] of this species under the name *nitidus*, shows a very large specimen, carapace 71 by 165 mm.

Range.—Southern California to Chile (A. Milne Edwards).

Material examined.—

CALIFORNIA.—Anaheim Slough; 1928; Lena Higgins; 1 ovigerous female (62050).

MEXICO.—Magdalena Island, Lower California; December 5, 1905; Nelson and Goldman, U. S. Department of Agriculture; 1 male (33417). Turtle Bay, L. Cal.; August 1, 1986; A. W. Anthony; 1 small male (19515). Cape St. Lucas, L. Cal.; John Xantus; 1 male, type (61833), 1 half grown (5174, M. C. Z.). San Jose del Cabo, L. Cal.; A. W. Anthony, 4 males (20693); March 2, 1911, *Albatross*, 2 males, 1 female, immature (60004). 1889, *Albatross:* San Bartolome Bay, 1 male (15433); Concepcion Bay, mouth of Rio Mulege, March 19, 1 male, 1 female (15432); Algodones Lagoon, March 31, 17 males, 10 females (15431); Horseshoe Bend, Colorado River, 1 male (15434). Guaymas; H. F. Emeric; 2 specimens (14854). Mazatlan; Nov., 1920; U. S. Bureau of Fisheries; 1 male, returned to sender. Acapulco; *Hassler* Expedition; 2 half grown (M. C. Z.).

GUATEMALA.—Tanesco, on the borders of the Estéros; 1 male cotype (20269), received from Paris Museum; 1 male, 1 female, cotypes (Paris Mus.).

SALVADOR.—El Cutaco; February 14, 1924; Hildebrand and Foster; 3 males, 2 females, all young (58175). El Triunfo; Feb. 10, 1924; Hildebrand and Foster; 1 young male (58176). Gulf of Fonseca J. A. McNiel; 1 male type of *C. dubia* Kingsley (5178, M. C. Z.).

NICARAGUA.—Realejo; 1 young (Copenhagen Mus.).

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[18] Crust. Rég. Mex., 1879.

COSTA RICA.—Punta Arenas; Örsted collector; 2 males (Copenhagan Mus.). Rio Punta Mala; Mar., 1892; H. Pittier; 1 small male (Brit. Mus.).

PANAMA.—Cotypes in M. C. Z. C. F. Davis; 3 males (18511), received from Museum of Comparative Zoölogy. J. Zetek: June, 1914, 2 males (48778); July 27, 1915, 7 males (48808). Meek and Hildebrand, Smithsonian Biological Survey: Balboa, Canal Zone; tidewater, May 5, 1911, 1 male (43899), January 31, 1912, 47 males, 6 females, all young (59277), 48 males, 5 females (Field Mus.), tide pool, February 8, 1912, 1 young male, soft shell (59279); Chame Point, February 14, 1912, 1 male (47905), 3 males (1 young), 1 young female (59280); Island at end of breakwater, Panama Bay; February 5, 1912; 1 male, 2 females, 2 young (59278); Taboga Island, May 11–15, 1911, 2 males, 4 females immature, 17 young (43900), 1 male, 3 females, 18 young (Field Mus.). Panama, March 24, 1912, 2 males (1 soft shell), 1 female (Field Mus.), tide pools, March 21, 1912, 1 young female (Field Mus.). 1888; *Albatross:* Panama, March 15, 8 males, 1 female, all young (22045); off Taboga Island, March 7, 1 young male (22046).

ECUADOR.—Salinas; September 17, 1926; W. L. Schmitt; 3 males (60977).

PERU.—Tumbes; R. E. Coker; 2 photographs. Paita; October 8, 1926; W. L. Schmitt; 1 male (61425). Oyster beds of Matapalo, near Capon; February 3; R. E. Coker; 2 males, 1 female (40442), received from Peruvian Government. On the beach at Las Vacas, near Capon; January 23, 1908; R. E. Coker; specimens returned to Peruvian Government. Pacasmayo; Stolzman; 1 male (Brit. Mus.)

CALLINECTES MARGINATUS (A. Milne Edwards)

Plate 53

Neptunus marginatus A. MILNE EDWARDS, Arch. Mus. Hist. Nat., Paris, vol 10, 1861, p. 318, pl. 30, fig. 2 (type-locality, Gaboon; types in Paris Mus.).

Callinectes larvatus ORDWAY, Journ. Boston Soc. Nat. Hist., vol. 7, 1863, p. 573 [8] (type-localities, Key West, Tortugas, Bahamas, and Hayti; types from each in M. C. Z.—A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 225 (var. of *C. diacanthus*).—RATHBUN, Proc. U. S. Nat. Mus., vol. 18, 1895, p. 358, pl. 18; pl. 24, fig. 5; pl. 25, fig. 4; pl. 26, fig. 4; pl. 27, fig. 4.

Callinectes africanus A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 229 (var. of *C. diacanthus*) (type-locality, Cape Verde Islands; types in Paris Mus.).

Callinectes larvatus var. *africanus ?* BENEDICT, Proc. U. S. Nat. Mus., vol 16, 1893, p. 537.

Callinectus marginatus RATHBUN, Proc. Biol. Soc. Washington, vol. 11, 1897, p. 149; Proc. Washington Acad. Sci., vol. 2, 1900, p. 142; Bull. U. S. Fish Comm. for 1900, vol. 2, 1901, p. 48; Bull. Amer. Mus. Nat. Hist., vol. 43, 1921, p. 395, text-fig. 2, pl. 19, fig. 1; pl. 20, fig. 1.—DE MAN, Mém. Soc. Zool. France, 1900, p. 41, pl. 1, figs. 5, 5*a* (female not male).— BOUVIER, Bull. Mus. Hist. Nat., Paris, 1901, p. 16.

Callinectes marginatus var. *larvatus* VERRILL, Trans. Connecticut Acad. Arts and Sci., vol. 13. 1908, p. 368, text-fig. 22*b*, pl. 18, fig. 1.

Diagnosis.—Appendages of first segment of male abdomen very short, reaching about to penult segment. Lateral spine short, not more than 2.5 times length of preceding tooth. Carapace coarsely granulate, lateral teeth long.

Description.—Regions well marked; surface speckled with coarse granules rough to the touch; length of intramedial area a little less than half its anterior width. Front four-toothed; median teeth small, thick, more prominent than in *C. ornatus;* outer teeth oblong-triangular, extremities broader and more arcuate, tip curved upward. Antero-lateral margin little arched; sinuses deep and rounded; teeth long (from base to tip), trending forward, anterior margins concave, the second to fifth, inclusive, having convex posterior margins; first three or four teeth obtuse, the remainder sharp. Lateral spine between 2 and 2.5 times the length of the preceding tooth. Costae of manus prominent, with medium granules. Terminal portion of abdomen of male unusually slender; penultimate segment wider at proximal than at distal end, margins slightly concave; appendages very short, overreaching the third (or coalesced) segment but little or not at all. Abdomen of female much narrower than in any other species; terminal segment much longer than wide.

Color.—Dull brown, with areas of bluish black; claw brown above, blackish blue and on inner side; last segments of swimming feet a brighter brown.

Measurements.—Male (42863), total length of carapace 48.7, width of same 107, width at anterior base of lateral spine 87.4, fronto-orbital width 39, width of front 12.6 mm.

Range.—Bahamas and Florida Keys to State of São Paulo, Brazil. Bermudas. West Coast of Africa, from Cape Verde Islands to Lobito, Angola.

Material examined.—

BAHAMAS.—Mangrove Key, Andros Island; May 11, 1912; Paul Bartsch; 1 male (45546). New Providence Island; 1886; *Albatross;* 1 male (17948). Clarence Harbor, Long Island; July 14, 1903; B. A. Bean; 3 males, 1 female, 3 young (31091), from Geographic Society of Baltimore. Bahamas; Dr. H. Bryant; 3 males, cotypes of *C. larvatus* (5152, M. C. Z.).

FLORIDA.—Ocean front, Broad Creek; December 17, 1906; Pine and Bean; 2 young (33131). Caesars Creek; 1901; J. E. Benedict, 1 male (25657). Near Indian Key; H. Hemphill; 3 males (14032). Lower Metacumbe Key; December 4, 1906; B. A. Bean; 1 young female, soft shell (33153). Conch Keys; January 28, 1903; *Fish Hawk*; 3 males (33456). Knights Key; December 16, 1908; Bean, Pine and Vandergrift, Yacht *Orian;* 3 young (39191). Summerland Keys; December 6, 1906; B. A. Bean; 1 young female (33129). Key West: J. E. Mills; 3 male and female cotypes of

C. larvatus (5151, M.C.Z.); H. Hemphill, 7 males, 1 female (10052). Tortugas: J. E. Mills; 1 male, cotypes of *C. larvatus* (M.C.Z.); C. F. Holder, 2 males, 1 female (2142). Tortugas; W. L. Schmitt; gift of Carnegie Institution: June 13, 1925, Dexter collector, 4 males (61052); Long Key, July 30, 1924, 10 males, 10 females (60992); beach off Fort Jefferson, Garden Key (not in moat, outside, dock side), June 3, 1925, W. R. Taylor, collector, 1 male (61051); off west side Fort Jefferson, between beach to south and moat entrance, August 19, 1924, 1 male, soft shell (60994); Bird Key reef, July 28, 1924, Bender collector, 1 young female (60993).

LOUISIANA.—Cameron; L. R. Cary; 1 young (33103).

CUBA.—On reef flat between Cayo Hutia and little Cayo NE. of Light; May, 1914; Henderson and Bartsch, *Tomas Barrera* Expedition; 1 male, 1 female (48384). Bahia Honda; 1877–78; U.S.C.S. Str. *Blake;* 1 male (M.C.Z.). La Esperanza, Pinar del Rio; 1924; Mario Sanchez Roig; 1 male (returned to sender), 1 young female (58665). Mariel; from branches hanging in river mouth; May 10, 1900; Palmer and Riley; 1 male, 1 female (23833). Cienfuegos; J. Aviles; 1 female (M.C.Z.). Baracoa; W. O. Crosby; 1 female (56780), received from Boston Society of Natural History.

JAMAICA.—1884; *Albatross;* 3 males, 1 female (18240). February 4, 1928; C. R. Orcutt; 2 young females (61364). Montego Bay; November 12, 1910; E. A. Andrews; 1 male (42863). Umbrella Point, near Montego Bay; July 14, 1910; E. A. Andrews; 3 males (42864). Kingston Harbor; J. E. Duerden; specimens returned to sender. Port Royal; P. W. Jarvis; specimens returned to sender.

HAITI.—Jeremie, Haiti; Dr. D. F. Weinland; 2 males, cotypes of *C. larvatus* (5155, M.C.Z.). Dominican Republic; 1878; W. M. Gabb; 3 males (4172).

PORTO RICO.—1899; *Fish Hawk:* San Antonio Bridge, San Juan; January 12; 12 males, 4 females (24443). Mayaguez; January 19; 1 male (24444), 8 males, 2 females (24445). Puerto Real, January 26; 3 young (24446). Reefs at Ponce; January 30; 3 males, 3 females (24447). Playa de Ponce; January 31; 1 male (24448). Playa de Ponce reef; February 1; 1 male (24449). Hucares; February 13 and 14; 3 males, 7 females (24451). Fajardo; February 17; 7 males, 9 females, 3 young (24454). Ensenada Honda, Culebra Island; February 9; 1 male, 2 females (24450).

ST. THOMAS.—A. H. Riise; 1 male (2446). January, 1884; *Albatross;* 1 female (7648). Shore near town; July 10, 1915; C. R. Shoemaker; 3 young (53762), gift of Carnegie Institution.

ST. CROIX.—K. Levinsen; specimens in Copenhagen Museum.

GUADELOUPE.—Specimens in Paris Museum.

DOMINICA.—Roseau; 10 fathoms; A. Hyatt Verrill; 1 female (32514).

MEXICO.—Vera Cruz; 1926; C. R. Orcutt; 1 male (60079). Cozumel Island, Yucatan; shore, in net; 1885; *Albatross;* 1 female (14893).

NICARAGUA.—Old Providence Island, Colombia [E. of Nicaragua]; 1884; *Albatross;* 5 males, 1 female (18241).

PANAMA.—Meek and Hildebrand, Smithsonian Biological Survey: Toro Point, Canal Zone: May 19 and 20, 1 male, 4 females (43908), 1 female with Rhizocephalid parasite (43905), 5 females (Field Mus.); January 25, 1912, 1 female with Rhizocephalid (62684). Fox Bay, Colon: January 3, 1911, 1 male, 2 females (43907), 1 male, 2 females (Field Mus.); January 11, 1911, 1 male, 1 female (43903), 1 male (Field Mus.); March 31, 1911, 1 female with Rhizocephalid parasite (43904); January 20, 1912, 1 male (59287), 2 females with Rhizocephalid parasite (62685), 2 males, 3 females (Field Mus.); January 27, 1912, 1 male, 1 female (Field Mus.); March 22, 1912, 3 females (59288). Porto Bello: April 24–28, 1911, 1 young male, 1 female with Rhizocephalid (43906), 2 females (1 with Rhizocephalid) (Field Mus.); March 19, 1912, 1 female, soft shell, 1 young female (59289), 5 females with Rhizocephalids (U.S.N.M.), 3 females (Field Mus.).

Margarita Island; low tide, coral rocks; June, 1924; E. Deichmann; 2 females, with Rhizocephalids (61427).

COLOMBIA.—Sabanilla; 1884; *Albatross;* 1 male (9915), 4 young females (17947).

VENEZUELA, islands off.—Aruba, playa, July 2, 1905, J. Boeke, 1 young male (returned to sender). Curaçao: February 1884, *Albatross,* 6 males, 1 female (7582); Rifwater, shallow water, muddy bottom, September 4, 1905, J. Boeke, 1 ovigerous female (returned to sender); Spanish Water, April 3, 1920, C. J. van der Horst, 1 immature female (56782); Spanish Port, C. J. van der Horst, April 10, 1920, 1 male, May 20, 1920, 1 young female, both returned to sender.

BRAZIL.—State of Rio Grande do Norte, specimens in M.C.Z. 1899; A. W. Greeley, Branner-Agassiz Expedition: State of Parahyba: Mamanguape stone reef, June 20 and 23, 4 young (25748); Rio Parahyba do Norte, on mangroves, June 21, 2 young (25749). State of Pernambuco: Rio Goyanna stone reef, 1 male (Stanford Univ.); Pernambuco stone reef, 1 male (Stanford Univ.). State of Alagoas: Maceio coral reef, July 25, 4 males, 1 young female (25750).

State of Bahia: Porto Seguro, Thayer Expedition, 2 males (M.C.Z.); Rio Vermelho, 1876–77, R. Rathbun, Hartt Explorations, carapace of a young one (19969).

State of Rio de Janeiro: Rio de Janeiro; specimens in Copenhagen Mus.

State of São Paulo: Villa Bella, Ilha São Sebastião; September 23, 1925; W. L. Schmitt; 1 young (60995).

BERMUDAS.—Hungry Bay; F. G. Gosling; 1 male (25444).

AFRICA.—Cape Verde Islands: 2 large males (Paris Mus.), types of *C. africanus* A. Milne Edwards. Porto Grande, St. Vincent; November 11, 1889; W. H. Brown, U. S. Eclipse Expedition to Africa; 1 young (14880). La Praya, Santiago; end of July, 1883; *Talisman;* 1 male (22950), received from Paris Museum.

Liberia; 1 immature female (Berlin Mus.).

Ashanti: Baya River, Elmina; November 27, 1889; W. H. Brown, U. S. Eclipse Expedition to Africa; 1 male (14878).

French Congo (Gabon); 3 immature females, types of *Neptunus marginatus* (Paris Mus.).

Belgian Congo; Herbert Lang, American Museum of Natural History: Moanda, July, 1915, 2 immature males (Amer. Mus.). Banana, July, 1915, 1 female (54255), 7 males, 6 females, 1 young (Amer. Mus.); August, 1915, 5 males, 4 females (54256), 5 males, 5 females (Amer. Mus.).

Portuguese West Africa: St. Paul de Loanda: December 11, 1889, W. H. Brown, U. S. Eclipse Expedition to Africa, 2 males (14877); September 23, 1915, Herbert Lang, American Museum of Natural History, 1 young female (Amer. Mus.).

CALLINECTES TOXOTES Ordway

Plate 54

Callinectes toxotes Ordway, Journ. Boston Soc. Nat. Hist., vol. 7, 1863, p. 576 [11] (type-locality, Cape St. Lucas; cotypes, Cat. No. 2413, U.S.N.M., Cat. No. 5182 and 5183, M.C.Z.).—A. Milne Edwards, Crust. Rég. Mex., 1879, p. 227 (var. of *C. diacanthus*).—Rathbun, Proc. U. S. Nat. Mus., vol. 18, 1896, p. 363, pl. 21; pl. 24, fig. 9; pl. 25, fig. 9; pl. 26, fig. 9; pl. 27, fig. 8; Proc. U. S. Nat. Mus., vol. 38, 1910, p. 536, pl. 55.

Callinectes robustus A. Milne Edwards, Crust. Rég. Mex., 1879, p. 227 (var. of *C. diacanthus*) (type-locality, Colombia; type in Paris Mus.).

Diagnosis.—Intramedial area longer than posterior width. Lateral spine between two and three times as long as preceding tooth. Male abdominal appendages reaching nearly to end of abdomen. Frontal teeth large, typically blunt and rounded.

Description.—Carapace very convex and uneven, coarsely granulate; cervical groove deep except at outer end; branchial lobes very high; two sharply marked lobules at inner angle of branchial region. Cardiac region distinctly divided into two lobes by a median furrow. Intramedial area narrow, its length greater than its posterior width and also exceeding half its anterior width. Front slightly upturned, having four broad rounded lobes, the inner pair the smaller and slightly less advanced or in the young equally advanced with the outer pair. Submedian tooth small, not overreaching front. Inner suborbital tooth obtuse, very prominent. Antero-lateral margin

little arched, teeth triangular, margins denticulate, the second to seventh inclusive with anterior margins partly concave, or in the case of the first few, sometimes straight; posterior margins a little wider than anterior, tips acute; eighth tooth narrow, spiniform; in general the teeth, after the fourth, are progressively longer and sharper. Lateral spine from 2⅓ to 3 times as long as preceding tooth. Costae of manus coarsely and rather sparingly granulate. Sternum flat. Penultimate segment of male abdomen constricted in its proximal half, appendages reaching almost to end of abdomen.

Measurements.—Male (43916), largest male known, total length of carapace 91.3, width of same 196, width at anterior base of lateral spine 157.2, fronto-orbital width 63.2, width of front 21.5 mm. This old male has sharper marginal teeth than the typical form, with the exception of the outer right frontal tooth which is broad and bifid at tip.

Range.—From Cape San Lucas, Mexico, to Juan Fernandez Islands, Chile.

Material examined.—

MEXICO.—Cape San Lucas, Lower California; John Xantus; 1 male cotype (2413), 2 males, 5182, and 1 male, 5183, cotypes (M. C. Z.). Acapulco; *Hassler* Expedition; 2 males, 1 female (18507), received from Museum of Comparative Zoölogy.

COSTA RICA.—Boca Jesús Maria; J. Fid. Tristan; specimen returned to sender. Santo Domingo, Gulf of Dolce; April, 1896; H. Pittier; 1 young male, 1 young female (19438).

PANAMA.—Meek and Hildebrand, Smithsonian Biological Survey: Chame Point; February 14, 1912; 1 male, soft shell (59291). Rio Chorrera, Chorrera; April 3, 1911; 1 male (43916). Corozal, Canal Zone; April 20 and 21, 1911; 1 male (43917), 2 males (Field Mus.).

ECUADOR.—W. L. Schmitt: Salada, Guayaquil; September 30; 1 male (61429). Purchased in market, "Mercado del Sur," Guayaquil; September 21 and 22; 3 males, 8 females (61006). Guayaquil; Prof. James Orton; 1 male (P. M. Y. U.). Punta Salinas; 3 males, 1 female (61008).

PERU.—Mouth of River Tumbes; January 15, 1908; R. E. Coker; 1 male (40443), gift of Peruvian Government.

CHILE.—Juan Fernandez Islands; 1926; W. L. Schmitt; 1 male, 8 females (61007).

CALLINECTES BOCOURTI A. Milne Edwards

Plate 55

Callinectes bocourti A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 226 (var. of *C. diacanthus*) (type-locality, Mullins River, 20 miles S. of Belize, British Honduras; 2 male cotypes in Paris Mus.).—RATHBUN, Proc. U. S. Nat. Mus., vol. 18, 1895 (1896), p. 360, pl. 19; pl. 24, fig. 7; pl. 25, fig. 6; pl. 26, fig. 6; pl. 27, fig. 6; Proc. Biol. Soc. Washington, vol. 11, 1897, p. 151 (part; not African specimens); Bull. U. S. Fish Comm. for 1900, vol. 2, 1901, p. 49; not Proc. U. S. Nat. Mus., vol. 22, 1900, p. 290 (*C. latimanus*).

Callinectes cayennensis A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 226 (var. of *C. diacanthus*) (type-locality, Guiana; 2 male cotypes in Paris Mus.).

Diagnosis.—Antero-lateral region smooth, non-granulate. Lateral spine less than twice as long as preceding tooth. Male abdominal appendages as long as abdomen. Six prominent bosses at middle of carapace. Frontal teeth typically broadly rounded.

Description.—Carapace very convex; deeply furrowed about the middle; two prominent bosses at inner angle of each branchial region; a deep median cardiac groove; surface coarsely granulate, except along the lateral margin and on the hepatic region, where the carapace is smooth. Intramedial region very long, length about equal to posterior width and barely half of anterior width. Front with four large, bluntly rounded teeth, the median pair the smaller and a little less advanced than or quite as advanced as, the lateral pair. Suborbital tooth short, triangular, narrow, obtuse. Antero-lateral teeth broad, triangular, their posterior margins a little longer than the anterior, tips acute, the last two or three teeth spiniform. Lateral spine short, usually less than twice the length of the preceding tooth. Costae of chelipeds rough with depressed granules, often appearing almost smooth to the naked eye. Outer distal spine of merus and carpus usually normal, though sometimes in old specimens reduced to blunt projections. A short stout tooth or spine on anterior margin of carpus just below inner angle. Penultimate segment of male abdomen constricted in its proximal portion, widening at both extremities; terminal segment long; appendages reaching to end of abdomen, and doubly curved, tips crossing. The sternum has a deep longitudinal groove in front of abdomen. Abdomen of female very long, especially the penult segment; terminal segment longer than wide.

Color.—The carapace may be variegated with green, yellow, red, brown, and blue, spotted with yellow or red; chelipeds purplish brown.

Measurements.—Male (18234), total length of carapace 74, width of same 140, width at anterior base of lateral spine 121.8, fronto-orbital width 59.8, width of front 21 mm.

Variety.—Occasional specimens (42852 and 43913) present a striking variation from type in the form of the marginal teeth of the carapace. Those of the front are triangular, and pointed instead of rounded at tip, approaching *exasperatus;* those of the sides are much shallower than in true *bocourti* and have rapidly convergent margins and narrow spiniform tips, resembling *sapidus;* in other respects the specimens are typical.

Range.—West Indies to State of Santa Catharina, Brazil.

Material examined.—

JAMAICA.—1928, C. R. Orcutt; 1 female (61340). Montego Bay; caught in seine near shore; June 24, 1910; C. B. Wilson, 1 male, variety (42852).

PORTO RICO.—1899; *Fish Hawk:* Cataño, San Juan Harbor; January 4, 1 male (24455); January 13, 5 females (24456). Rio Bayamon, above Palo Seco; January 16; 1 female (24457). Aguadilla; January 18; 3 males (24458). Mayaguez; on coral reef; January 20; 1 female (24459). Hucares; February 13 and 14; 1 female, 2 young (24460).

BRITISH HONDURAS.—Near Belize; W. A. Stanton; 1 male, 1 female (21377). Mullins River, 20 miles S. of Belize; 2 males, cotypes (Paris Mus.).

NICARAGUA.—1892; C. W. Richmond: Bluefields; April 29; 1 young (17949). Greytown; March 27; 1 male (18234).

PANAMA.—Meek and Hildebrand, Smithsonian Biological Survey: Toro Point, Canal Zone, January 24, 1912, 1 immature female (Field Mus.). Creek at Mindi, Canal Zone, January 14, 1911, 1 young male (43910). Mindi Cut, Mindi, January 28, 1911, 7 males, 5 females (43912); 6 males, 6 females (Field Mus.); February 3, 1911, 1 male (43914). French Diversion, New Gatun, Canal Zone, January 19, 1 male, variety (43913). Colon, in ditch at slaughterhouse, March 19, 1912, 1 male, 2 females (Field Mus.), 1 female shedding (59282). Fox Bay, Colon, January 11, 1911, 1 male (43911); March 25, 1911, 1 young female (43909); January 20, 1912, 1 male (Field Mus.); January 27, 1912, 2 females (59281), 1 ovigerous, 1 abnormal, having the median sinus of the front unusually wide, the submedian teeth correspondingly nearer to the lateral teeth.

COLOMBIA.—Turbo (specimen in M.C.Z.). Cartagena; 1857; Dr. A. Schott, Atrato Expedition; 1 male (2460). Sabanilla; 1884; *Albatross;* 1 male, 3 females (18235).

GUIANA.—British Guiana; 2 males (Brit. Mus.). Cayenne, French Guiana; 2 males (Paris Mus.), cotypes of *C. cayennensis.*

BRAZIL.—Para; specimens in M.C.Z. Maranhão; Lieut. F. E. Sawyer, U. S. Navy; 5 males (18233). Pernambuco; Thayer Expedition; 1 male (M.C.Z.). Cannavierias; specimens in M.C.Z. Caruca, Rio Maria; Thayer Expedition; 7 males, 2 females (M.C.Z.). Itabapuana; specimens in M.C.Z. Rio de Janeiro; specimens in Copenhagen Museum. Praia Inglese, São Francisco, State of Santa Catharina; November 1, 1925; W. L. Schmitt; 1 ovigerous female (60978).

CALLINECTES EXASPERATUS (Gerstaecker)

Plate 56

? *Lupa trispinosa* LEACH, Trans. Linn. Soc. London, vol. 11, 1815, p. 319 (type-locality not given; type said to be in Mus. Brit., but can not now, 1928, be positively determined).

? *Amphitrite trispinosa* WHITE, List Crust. Brit. Mus., 1847, p. 27; Jamaica.

Lupea exasperata GERSTAECKER, Arch. f. Naturg., vol. 22, pt. 1, 1856, p. 129 (type-locality, Puerto Cabello, Venezuela; type in Berlin Mus.).

Callinectes tumidus ORDWAY, Journ. Boston Soc. Nat. Hist., vol. 7, 1863, p. 574 [9] (type-localities, Key West and Hayti; types from both localities in M.C.Z.).—A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 226 (var. of *C. diacanthus*).—RATHBUN, Proc. U. S. Nat. Mus., vol. 18, 1895 (1896), p. 359, pl. 18; pl. 24, fig. 6; pl. 25, fig. 5; pl. 26, fig. 5; pl. 27, fig. 5.

Callinectes exasperatus RATHBUN, Proc. Biol. Soc. Washington, vol. 11, 1897, p. 150; Bull. U. S. Fish Comm. for 1900, vol. 2, 1901, p. 49.

Diagnosis.—Lateral spine of carapace less than twice as long as preceding tooth. Male abdominal appendages reaching to middle of penultimate segment. Frontal teeth triangular.

Description.—Carapace very convex; depressions in center of carapace deep; length of intramedial area no more than half its anterior width. Frontal teeth four, triangular, tips rounded, the two median larger and more prominent than in *ornatus* or *marginatus* but not so far advanced as the lateral pair. Median epistomial tooth short, exceeding the front but little if at all. Suborbital lobe broadly rounded. Antero-lateral margin very arcuate; teeth broad, the first six with very convex posterior margins and obtuse or subacute tips, the fifth tooth the largest; next two teeth acute or acuminate. Lateral spine less than twice the length of preceding tooth. Spine at outer distal end of arm and outer spine of wrist almost obsolete, being replaced by blunt prominences. A blunt tooth or lobe on distal margin of the carpus just below the inner angle. Costae of manus coarsely and sparingly tuberculate. Penultimate segment of male abdomen similar in shape to that of *C. ornatus*, but much shorter; appendages reaching to about middle of penultimate segment, tips incurved. In the female abdomen the sixth segment is shorter than the fifth and its margins are very arcuate.

Measurements.—Males attain a width of 4⅞ inches. Male (61426), total length of carapace 62.7, width of same 117.5, width at anterior base of lateral spine 113.2, fronto-orbital width 52.2, width of front 17 mm.

Range.—From Florida Keys to State of Parana, Brazil. Bermudas.

Material examined.—

FLORIDA.—Long Key; along shore; H. Hemphill; 1 male, 1 female (14087). Key West; J. E. Mills; 2 males, cotypes of *C. tumidus* (5159, M.C.Z.). Tortugas; C. F. Holder; 1 male (2143).

CUBA.—Mariel; from branches hanging in river mouth; May 10, 1900; Palmer and Riley; 1 female (23832).

JAMAICA.—1884; *Albatross;* 1 male (18236). Montego Bay; July 10, 1910; C. B. Wilson; 1 male (42853), with spine on right side bifid.

HAITI.—Gonaives; 1860; A. Hilchenbach; 1 female, cotype of *C. tumidus* (5162, M.C.Z.).

PORTO RICO.—1899; *Fish Hawk*: San Antonio Bridge, San Juan; January 12; 1 male (24462). Cataño, San Juan Harbor, January 4,

2 males (24461); January 13, 1 male, 10 females (24463). Rio Bayamon, above Palo Seco; January 16; 8 females (24464). Mayaguez, in seine, January 19, 3 females (24465); January 20, 1 male (24466). Porto Real; January 27; 1 male, 1 female (24467). Hucares; February 13 and 14; 1 male, 1 female (24468).

ST. MARTIN.—Simsons Bay lagoon; shallow water; coral rocks; September 7, 1905; J. Boeke; 1 ovigerous female (returned to sender).

MEXICO.—Mexican Commission, World's Columbian Exposition; 1 young male, 2 young females (18631).

BRITISH HONDURAS.—Near Belize; W. A. Stanton, S. J.; 1 male (21378).

OLD PROVIDENCE ISLAND.—(E. of Nicaragua); April 4–9, 1884; *Albatross;* 2 males (7541).

PANAMA.—Meek and Hildebrand, Smithsonian Biological Survey: Toro Point, Canal Zone; April 12, 1911; 1 ovigerous female (43901). Fox Bay, Colon; March 31, 1911; 1 male (43902), 1 female (Field Mus.).

VENEZUELA.—Puerto Cabello; Schibbye collector; specimens in Copenhagen Museum.

BRAZIL.—State of Rio Grande do Norte; specimens in M.C.Z. State of Bahia: Cannavieiras, specimens in M.C.Z.; Porto Seguro, Thayer Expedition, 3 females (M.C.Z.). State of Espirito Santo: San Matheos, specimens in M.C.Z.; Victoria, Hartt and Copeland, Thayer Expedition, 1 large male (19428), from M.C.Z. State of Rio de Janeiro: Rio de Janeiro, 1 male (18736), from Paris Museum; River on Ilha Governador, Bay of Rio de Janeiro, August 27, 1925, W. L. Schmitt, 1 male (61426), with encrusting barnacles. State of São Paulo: Santos; Thayer Expedition; 1 female (M.C.Z.). State of Parana: Paranagua; October 3, 1925; W. L. Schmitt; 1 female (60991).

BERMUDAS.—Bickmore collector; 1 female (M.C.Z.).

Genus LUPELLA Rathbun

Lupa DE HAAN, Fauna Japon., Crust., 1833, p. 11. Not *Lupa* Leach, 1814, which is a synonym of *Portunus*.

Lupella RATHBUN, Proc. Biol. Soc. Washington, vol. 11, 1897, p. 155; type, *L. forceps* (Fabricius); Bull. U. S. Fish Comm. for 1900, vol. 20, part 2 (1901), p. 49.

Closely allied to *Portunus*. Inner suborbital angle remarkably prominent and firmly united with a prolongation from the basal article of the antenna. The outer maxillipeds extend far beyond the front; merus rounded anteriorly, its outer angle obtuse and strongly produced; last two segments of palpus flattened and laminate. Abdomen of male narrow, third segment narrowing rapidly toward distal end. Transverse sutures of posterior half of sternum interrupted either side of the abdomen, under which they do not pass. The median suture of the sternum crosses the four posterior segments.

Contains but one species.

LUPELLA FORCEPS (Fabricius)

Plate 57

Cancer 4 (larger long-shanked crab) BROWNE, Hist. Jamaica, 1756, p. 421, pl. 41, fig. 2.

Cancer pelagicus LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 626 (part).

Xaiva de horquilla PARRA, Desc. difer. piezas hist. nat., Havana, 1787, p. 138, pl. 51, fig. 3.

Cancer forceps FABRICIUS, Entom. Syst. emend. et auct., vol. 2, 1793, p. 449 (type-locality; "*in Oceano*"; a specimen in the Copenhagen Mus. may be the type).

Lupa forceps LEACH, Zool. Misc., vol. 1, 1814, p. 123, pl. 54.—A. MILNE EDWARDS, Arch. Mus. Hist. Nat., Paris, vol. 10, 1861, p. 352, pl. 28, figs. 1–1*g*.—VON MARTENS, Arch. f. Naturg., vol. 38, 1872, p. 95 (not *L. anceps* Saussure).

Lupella forceps RATHBUN, Proc. Biol. Soc. Washington, vol. 11, 1897, p. 155; Bull. U. S. Fish Comm. for 1900, vol. 20, pt. 2 (1901), p. 50.

Diagnosis.—Chelipeds and legs long and narrow; fingers of male filiform, much longer than palm. Lateral spine of carapace several times as long as adjacent tooth.

Description.—Carapace rather flat, hexagonal, granulate. Epigastric and epibranchial lines rather well marked. Posterior margin very wide, arcuate, meeting the postero-lateral margin at an obtuse angle. Antero-lateral margin armed with eight very small, sharp teeth, separated by wide sinuses; lateral spine long, slender, and extending directly outward. The front (between antennae) is four-toothed, teeth triangular, middle pair small and subacute, outer pair longer and blunt. Inner orbital teeth broad, subtruncate; epistomal tooth slender. Chelipeds smooth and remarkably long and slender. Anterior border of arm with four to six slender spines; posterior border with a spine at extremity. Wrist with a spine at inner angle, another on outer surface. Hand prismatic, widening distally, with a spine above articulation with carpus and another subdistal. Fingers very slender, filiform in male, with numerous small teeth on their occludent edges, tips acuminate. Ambulatory legs very compressed; merus of swimming pair short, almost orbicular, armed above and below with a terminal spine; propodus elongate; dactylus oval. Chelipeds of females shorter and wider than those of males. In young males the fingers are shorter than in adult males, and in females still shorter.

Measurements.—Male (19360) length of carapace to median sinus of front 24, extreme width 59.7, width at sinus between lateral spine and next tooth 42, length of propodus of cheliped 66.8, length of dactylus of same 45.2 mm. Female (18290), length of carapace to median sinus of front 33, extreme width 76.6, width at sinus between lateral spine and next tooth 57.6, length of propodus of cheliped 56.6, length of dactylus of same 30.6 mm.

Range.—West Indies.

Material examined.—

CUBA.—1914; Henderson and Bartsch, *Tomas Barrera* Exped.: Ensenada de Cajon, off Cape San Antonio; station 11, May 22–23; 1 young (49169). Dimas Bay; station 5; bottom, mud and plants; May 17; 1 male (49170).

JAMAICA.—1884; *Albatross;* 1 female (18290). T. H. Morgan; 1 male (17217). Montego Bay; caught in fish-pot; C. B. Wilson; 1 male (42872). Kingston: Surface, by electric light, 1884, W. Nye, jr., *Albatross*, 7 males, 2 females, (7838); April 7, 1928, C. R. Orcutt, 6 males, 5 females (62474). Kingston Harbor; P. W. Jarvis; 1 male, 1 female (19360).

HAITI.—Specimens in Paris Museum.

PORTO RICO.—1899; *Fish Hawk:* San Juan Harbor between Palo Seco and Cataño; January 13; 1 arm (24506). Mayaguez; in seine; January 19; 1 female (24507). Mayaguez Harbor; 7 fathoms; station 6059; 7 males (24509). Mayaguez Harbor; 7¼ fathoms; station 6058; 4 males (24508). Off Puerto Real; 8½ fathoms; station 6074; 1 male (24510).

ST. THOMAS.—Dredged; January 17–24, 1884; *Albatross;* 1 male, 2 females (18547).

MARTINIQUE.—Specimens in Paris Museum.

Genus ARENAEUS Dana

Arenaeus DANA, Amer. Journ. Sci., ser. 2, vol. 12, 1851, p. 130; type, *A. cribrarius* (Lamarck).

Euctenota GERSTAECKER, Arch. f. Naturg., vol. 22, pt. 1, 1856, p. 131; type, *E. mexicana* Gerstaecker.

Allied to *Portunus*. Differs in having the palate smooth or without a longitudinal ridge; the two superior fissures of the orbit open throughout their length, V-shaped; male abdomen narrower but not ⊥-shaped as in *Callinectes*.

Contains only two species.

KEY TO THE SPECIES OF THE GENUS ARENAEUS

A¹. Four frontal teeth. One spine at distal end of manus.....**cribrarius**, p. 134.
A². Two frontal teeth. Two spines at distal end of manus....**mexicanus**, p. 137.

ARENAEUS CRIBRARIUS (Lamarck)

SPECKLED CRAB; SIRI DA ARÊA (Brazil)

Plate 58, Figures 2 and 3; Plates 59 and 60

? *Ciri Obi* MARCGRAVE, in Piso and Marcgrave, Hist. Nat. Brazil., 1648, p. 184.

Portunus cribrarius LAMARCK, Hist. Nat. Anim. sans Vert., vol. 5, 1818, p. 259 (type-locality, Brazil; type in Paris Mus.).

Lupa maculata SAY, Journ. Acad. Nat. Sci. Philadelphia, vol. 1, 1818, p. 445 (type-localities, Georgia and Florida; types not extant).

Lupea cribraria MILNE EDWARDS, Hist. Nat. Crust., vol. 1, 1834, p. 452.—DESBONNE and SCHRAMM, Crust. Guadeloupe, 1867, p. 38.

Lupa cribraria MILNE EDWARDS, Hist. Nat. Crust., explanation of plates, p. 15, pl. 17, figs. 1–4.

Arenaeus cribrarius DANA, U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 290; atlas, 1855, pl. 18, figs. 2*a*, 2*b*.—RATHBUN, Bull. U. S. Fish Comm. for 1900, vol. 2, 1901, p. 50.—SUMNER, Bull. Bur. Fisheries, vol. 31, pt. 2, 1911, p. 672.—HAY and SHORE, Bull. Bur. Fisheries, vol. 35, 1915–16 (1918), p. 434, pl. 34, fig. 3.

Neptunus cribrarius A. MILNE EDWARDS, Arch. Mus. Hist. Nat. Paris, vol. 10, 1861, p. 324; Crust. Rég. Mex., 1879, p. 211.

Diagnosis.—Four frontal teeth. One spine at distal end of manus. Outer and inner spines of wrist subequal.

Description.—Carapace more than twice as wide as long, almost smooth to the naked eye, but through the lens closely covered with fine granulation. Front narrow, much less advanced than the outer orbital angles and armed with four small teeth (between the orbital teeth) the two median more prominent and more widely separated from each other than from the outer ones, with which they are partly coalesced; median sinus U-shaped, outer sinuses nearly rectangular. Inner tooth of orbit bluntly triangular; superior border divided by two wide incisions, the inner deeper than the outer, intermediate lobe narrow, subtruncate; inferior border forming a broad sinus between outer and inner tooth. Antero-lateral teeth wide, covered below with a fringe of hair which screens the interspaces; teeth very unequal, the first five narrower than the next three, the seventh widest. Lateral horn strong, as long as the space occupied by the last two teeth. Pterygostomian and antennal regions and epistome covered with hair.

Chelipeds short and stout. Three or four spines on anterior border of merus; a short spine or tubercle, sometimes obsolete, on the posterior border at the sinus and another at distal end a little above or in front of the posterior border. Wrist with two short spines, one inside, the other outside; two denticles on the outer distal margin; and one or two on the dorsal surface terminating longitudinal carinae. Five tuberculate longitudinal carinae on the manus, the upper-inner one terminating in a spine. Ambulatory legs wide. Swimming legs also very wide, the merus arcuate and unarmed below. Sixth segment of abdomen of male narrow; margins of last segment sinuous, extremity very narrow.

Color.—Grayish formed by a multitude of small white or light yellow spots on a background of fawn or light brown. (Desbonne.) Light vinaceous brown or olive brown thickly covered over the dorsal surface with small, rounded, white spots; tips of walking legs yellow. (Hay and Shore.) The spots on the dorsal surface of the chelipeds are larger than those of the carapace. The color pattern persists in alcohol.

Measurements.—Male (32710), total length of carapace 55, width of same 121, width at anterior base of lateral spine 91.3, fronto-orbital width 36, width of front (4 teeth) 6.7 mm.

Habitat.—Lives in rather shallow water close to the shore but is sufficiently adroit as a swimmer to escape the dangers of the tumbling surf. (Hay and Shore.)

Range.—From Vineyard Sound, Mass., to State of Santa Catharina, Brazil.

Material examined.—

MASSACHUSETTS.—Vineyard Sound; in gulf-weed; October 10, 1905; Bureau of Fisheries; 10 young (33125).

NEW JERSEY.—South Cape May; October 20, 1928; H. G. Richards; 1 male (61997) from Univ. Penna.

VIRGINIA.—Smith's Island; October 1, 1897; Charles W. Richmond and William Palmer; 5 specimens (20588); common off shore; the red drum comes in to feed on them. Cape Charles; sandy beach; August 20–21, 1921; W. C. Schroeder, Bureau of Fisheries; 2 males, 2 females, all immature (57151).

NORTH CAROLINA.—Off Cape Hatteras; surface; June 5, 1885; *Albatross;* 1 young (15029). Shackleford Banks (inside), Beaufort; September 12, 1928; Schmitt and Shoemaker; 2 specimens (62453).

FLORIDA.—4 specimens (2029). Indian River; 3 male and female (2079). Norris Cut, Miami; April, 1901; J. E. Benedict; 4 males (25560). Lignum Vitae Lake, 1¼ miles ESE. of Eagle Nest Key; from Sargassum; February 4, 1903, station 7456, *Fish Hawk* 1 young (61049). Sarasota Bay, in Longboat Pass, S. end of Anna Maria Key; close to shore; July 7, 1929; Wm. W. Wallis; 1 female (62736). Tortugas; from floating gulf weed; July 31, 1926; C. R. Shoemaker; 1 young (62454). Pensacola; from fish stomach; 1882; Silas Stearns; 1 male, 2 females (4508). Off Pensacola, near the Life Saving Station; Benjamin Harrison; 1 female (17994).

TEXAS.—Galveston; M. A. Davey; 1 specimen (18905). San Bernardo River; New York Aquarium; 1 male (returned to sender). Corpus Christi Bay; November 27–30, 1891; B. W. Evermann; 5 males, 1 female (17110).

JAMAICA.—Montego Bay; caught in seine near shore; June 24, 1910; C. B. Wilson; 1 male (42851). Kingston Harbor; 1893; R. P. Bigelow; 1 male (17978).

PORTO RICO.—1899; *Fish Hawk:* Palo Seco, San Juan Harbor; January 13; 3 young males, 1 young female (24471). Between Palo Seco and Cataño, San Juan Harbor; January 13; 2 young males, 3 young females (24472). Mayaguez; in seine; January 19; 4 males, 2 females, 1 young (24473). Mayaguez; on coral reef; January 20; 4 males, 7 females (24474). Boqueron Bay; January 27; 1 young male, 1 young female (24475). Playa de Ponce; January 31; 1

male (24476). Arroyo; February 4; 1 young (24477). Vieques Island; February 8; *Fish Hawk;* 2 young females (24478).

DOMINICA.—A. Hyatt Verrill; 1 male (32710).

ST. LUCIA.—Port Castries; December 2, 1887; *Albatross;* 1 male (22042).

MEXICO.—Vera Cruz; 1926; C. R. Orcutt; 1 male (60078).

BRITISH HONDURAS.—Stann Creek; shallow water; Rev. W. A. Stanton; 1 male (22595); common.

NICARAGUA.—Gorda Point; beach 1 mile N. of Point; March 7, 1915; Charles G. Holland, U. S. S. *Leonidas;* 1 male (61380). Greytown; Charles W. Richmond; 1 female (17909).

PANAMA.—Fox Bay, Colon; March 31, 1911; Meek and Hildebrand; 2 young (Field Mus.), 3 young (44202); received from Smithsonian Biological Survey.

COLOMBIA.—Sabanilla; 1884; *Albatross;* 3 young (17946).

CURAÇAO.—Bay of Wacao; shallow water; stony bottom; October 6, 1905; J. Boeke; 1 large male (returned to sender).

BERMUDAS.—Hungry Bay; July–September; F. S. Gosling; 1 male (25446).

BRAZIL.—1876–1877; R. Rathbun, Hartt Explorations; 1 young (40586). Mamanguape stone reef, State of Parahyba; June 23, 1899; A. W. Greeley, Branner-Agassiz Expedition; 1 male, 1 female (25751). Copacabana, Rio de Janeiro; out of sand with forked stick; week of September 1, 1925; Carlos Moreira; 2 females (1 ovigerous) (60974); received through W. L. Schmitt. Conceição de Ytanham, near Santos, State of São Paulo; June, 1914; H. Luederwaldt; 1 male (48303); received from H. von Ihering. Iguape, State of São Paulo; R. Krone; 1 male (47839); received from H. von Ihering. Saco, São Francisco, State of Santa Catharina; 1923; Dr. C. Fernetz; 1 male; lent by Buenos Aires Museum.

ARENAEUS MEXICANUS (Gerstaecker)

Plate 58, Figure 1; Plate 61

Euctenota mexicana GERSTAECKER, Arch. f. Naturg., vol. 22, pt. 1, 1856, p. 131, pl. 5, figs. 3 and 4 (type-locality, Mexico; type in Berlin Mus.).

Arenaeus bidens SMITH, Rept. Peabody Acad. Sci., 1869, p. 90 (type-locality, Corinto, Nicaragua; types in Mus. Comp. Zoöl.).

Neptunus mexicanus A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 212, pl. 42, fig. 3–3*e*.

Arenaeus mexicanus FAXON, Mem. Mus. Comp. Zoöl., vol. 18, 1895, p. 22.—RATHBUN, Proc. U. S. Nat. Mus., vol. 38, 1910, p. 537, pl. 37, fig. 2.

Diagnosis.—Two frontal teeth. Two spines at distal end of manus. Outer spine the smallest of the wrist spines.

Description.—Bears a strong resemblance to *A. cribrarius*. Interregional furrows in center of carapace deeper and inner branchial lobule more prominent. Only two frontal teeth (between the orbital teeth),

which are small, blunt or subtruncate. Orbit with two teeth above beside those at the extremities, one between the sinuses narrower than in *cribrarius*, the other small but well developed and lying further inward, close to the sinus. Antero-lateral teeth longer and narrower than in *cribrarius*, seventh and eighth teeth of subequal width, eighth considerably longer.

Three spines on anterior border of merus, one tooth at distal end just above posterior border. The outermost of the carpal spines is the smallest. Both superior carinae of the manus terminate in a spine, the outer the smaller. The merus of the swimming foot is a little longer in proportion to width than in *cribrarius*.

Color.—The color pattern of the carapace is similar to that of the preceding species but the light spots are less uniformly round. The spotting of the chelipeds is very much reduced or altogether absent.

Measurements.—Male (60975), total length of carapace 40, width of same 91, width at anterior base of lateral spine 70, fronto-orbital width 28.8, width of front (two teeth) 5 mm.

Range.—Lower California, Mexico, to Peru.

Material examined.—

MEXICO.—Lower California: Ballenas Bay; March 16, 1911; *Albatross;* 1 male, 1 female (60003). Magdalena Bay; San Diego Society of Natural History; 1 male (returned to sender). Carmen Island, Gulf of California; 1889; *Albatross;* 1 young (17448).

NICARAGUA—Corinto: J. A. McNiel; 2 males, cotypes of *A. bidens* (5315, M.C.Z.). C. F. Baker; male (29316).

PANAMA.—Cocos Island, off Bay of Panama; Feb. 28, 1891; *Albatross;* 3 males (20607). Taboga Island, Bay of Panama; May 11–15, 1911; Meek and Hildebrand; 1 male (Field Mus.), 1 male, 1 female (44203); received from Smithsonian Biological Survey.

PERU.—Salavery; October 21, 1926; collected from surf by men and boys for W. L. Schmitt; 11 males, 56 females (60975). Ancon; sand beach; February 13; R. E. Coker; 1 male (40441); received from Peruvian Government.

Genus CRONIUS Stimpson

Cronius STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 225 [97]; type, *C. ruber* (Lamarck).

Charybdella RATHBUN, Proc. Biol. Soc. Washington, vol. 11, 1897, p. 166; substituted for *Cronius*, preoccupied, according to a rule then valid, by *Cronia* H. and A. Adams, 1858; Bull. U. S. Fish Comm. for 1900, vol. 2, 1901, p. 51.

Allied to *Portunus*, differing chiefly in the orbit more nearly circular, the basal lobe of the antenna prolonged into the orbital hiatus and the flagellum more remote from the orbital cavity. Carapace narrow;

interorbital space wide; antero-lateral teeth very unequal, alternating large and small; chelipeds heavy.

Contains only two species.

KEY TO THE SPECIES OF THE GENUS CRONIUS

A[1]. Four spines on manus. A spine at postero-distal angle of merus of swimming feet ..... **ruber**, p. 139.

A[2]. Two spines on manus. A row of spinules but no spine on postero-distal margin of merus of swimming feet ..... **tumidulus**, p. 142.

CRONIUS RUBER (Lamarck)

Plates 62 and 63

Portunus ruber LAMARCK, Hist. Nat. Anim. sans Vert., vol. 5, 1818, p. 260 (type-locality, Brazil; type not located).

Lupa rubra MILNE EDWARDS, Hist. Nat. Crust., vol. 1, 1834, p. 454.—STREETS, Proc. Acad. Nat. Sci. Philadelphia, ser. 3, vol. 1, 1871, p. 239; Isthmus of Panama.

Cronius ruber STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 225 [97].

Achelous ruber A. MILNE EDWARDS, Arch. Mus. Hist. Nat., Paris, vol. 10, 1861, p. 345, pl. 33, fig. 1–1*b*.

Goniosoma millerii A. MILNE EDWARDS, Nouv. Arch. Mus. Hist. Nat., Paris, vol. 4, 1869, p. 54, pl. 18, figs. 1–3 (type-locality, Cape St. Vincent, Cape Verde Islands; type in Paris Mus.).

Amphitrite edwardsii LOCKINGTON, Proc. California Acad. Sci., vol 7, 1876 (1877), p. 43 [3] (type-locality, Mazatlan; type not extant); p. 106 [12], Lower California.

Cronius milleri A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 232.

Cronius edwardsii A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 232.

Charybdella rubra RATHBUN, Proc. U. S. Nat. Mus., vol. 22, 1900, p. 291.

Charybdella edwardsii RATHBUN, Proc. U. S. Nat. Mus., vol. 38, 1910, p. 611.

Diagnosis.—Two gastric, one branchial ridge. Upper inner orbital angle distinctly divided into two teeth. All spines black-tipped. Four spines on wrist, 4 on hand. A strong spine at postero-distal angle of merus of swimming foot.

Description.—Carapace hexagonal, smooth and pubescent. A sinuous branchial ridge, two gastric ridges, the anterior one bi-arcuate. Front proper cut into four teeth, the two median more advanced, larger, and with convex sides; those of second pair more pointed, directed slightly outward and separated from the antennal tooth by a deep cut; this pair narrow, sharp, directed forward, and not deeply separated from the inner orbital angles and are subrectangular and carinate. Orbit nearly circular. The basal article of the external antennae bears a spine below the insertion of the movable portion. Of the antero-lateral teeth or spines the ninth is scarcely longer than the seventh; intermediate spines strikingly smaller. Merus of chelipeds armed in front with from four to six spines of unequal size, one of which is terminal, and at extremity of its posterior border with a very small spine. Wrist with granulous crests, a large spine inside and

Material examined of Cronius ruber

Locality	Bearings		Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
	Latitude N.	Longitude W.									
Atlantic coast of America											
South Carolina:	° ′ ″	° ′ ″			°C.						
Charleston Harbor			1–12			Mar. 20, 1880		R. E. Earll, U. S. Fish Commission.	1♀	3157	
Florida:											
Hawk Channel	½ mile SE. by S. of S. end of Duck Key.		2.25	rky	24.5	Jan. 27, 1903	7429	*Fish Hawk*	1♀	61063	
South of southwest Channel buoy, Tortugas.			20			Aug. 16, 1924	7	*Dohrn*, W. L. Schmitt.	1♂	61009	
Mexico:											
Campeche Snapper Banks.			[1]26					Joseph Lee	1♂	44322	
West Indies:											
Jamaica—Port Royal								C. R. Orcutt	1 right chela	62511	
Porto Rico—											
San Antonio Bridge, San Juan.						Jan. 12, 1899		*Fish Hawk*	1♂	24480	
San Juan Harbor						Jan. 13, 1899		do	1♂	24481	In fish trap.
Mayaguez				coral reef		Jan. 20, 1899		do	5♂ 4♀	24483	
Do						Jan. 19, 1899		do	1♂	24482	In seine.
Arroyo						Feb. 4, 1899		do	1♂ 1♀	24484	
St. Thomas								A. H. Riise	1♂	2445	
St. Martin	Shore near Philipsburg.					June, 1905		Dr. Shaw for J. Boeke.	1♀	Returned to sender.	
St. Eustatius	W. of Oranjestad		4	sdy		Aug. 17, 1905		J. Boeke	1 y. ♂	do	
Dominica—Pointe Michel			40					A. Hyatt Verrill	1♂	32709	
Panama:											
Exact locality not given.						1862		C. F. Davis	1♀	21325	From Mus. Comp. Zöol.
Fox Bay, Colon						Jan. 27, 1912		Meek and Hildebrand.	1♂	59294	From Smithsonian Biological Survey.
Porto Bello						Apr. 24–28, 1911		do	1♂ 1♀, soft shell	44190 Field Mus.	Do.
Do						Mar. 19, 1912		do	2♂ 2♀ (1 ovig.) 1♂ 1♀ ovig	59292 Field Mus.	Do.
Rio Casjal, Porto Bello.						Mar. 17, 1912		do	2♂	do	Do.

Brazil:											
Rio de Janeiro						1876–1877		R. Rathbun	1♀	40583	Hartt Explorations.
Do								Selenka	1♂	Berlin Mus.	
Villa Bella, Ilha São Sebastião, State of São Paulo.						Sept. 20, 1925		W. L. Schmitt	1♂	61010	In dip net.
Do						Sept. 23, 1925		do	1♂	61385	
Ilha São Sebastião								H. Luederwaldt	2♀	61013	
Iguape, State of São Paulo.						1902		R. Krone	1♀ immature.	47846	From H. von Ihering.
Saco, São Francisco, State of Santa Catharina.						1923		Dr. C. Fernetz	2♂ 3♀	Returned to sender.	Lent by Buenos Aires Museum.
Pacific coast of America											
Mexico:											
Point San Bartholome, Lower California.						Mar. 4, 1911		*Albatross*	1♂ 1♀	60020	
Maria Madre Id., Tres Marias Islands.			4–10			1925		Hanna and Jordan	2 y 2 y	62698 Returned	From California Academy Sciences.
Do						Mar. to May, 1927		Sec. Agr. y Fomento, Mexico.	3 y	61139	
Acapulco									1	M. C. Z.	
Central America:											
San Salvador								John M. Dow	1♂	2447	
Punta Arenas						Jan. —, 1907		P. Biolley	1♀	39087	From J. Fid. Tristan.
Panama:											
Panama								John M. Dow	1 y	3271	
Panama City								J. Zetek	1♂	48793	
Do						Oct. 3, 1914		do	1♂ 1 y. ♀	48801	
Do			(2)			Mar. 21, 1912		Meek and Hildebrand.	1♀ ovig	59293	
Do						Mar. 24, 1912		do	1♂ 1♀	Field Mus.	
Naos Island								G. M. Gray	1♂	42137	
Ecuador:											
Off Eden Island, northwest of Indefatigable Island, Galapagos Islands.			5			Apr. 1, 1923		Williams Galapagos Expedition.	1 y	57728	From New York Zoological Society.
Salinas						Sept. 12, 1926 Sept. 13, 1926		W. L. Schmitt	6♂ 1♀ 8 y	61011	
Do						Sept. 17, 1926		do	2♂	61012	
Peru: Paita						Oct. 8, 1926		do	1♂ soft-shell	62473	
Eastern Atlantic Ocean											
Cape Verde Islands:											
Cape St. Vincent									1♀	Paris Mus.	

[1] About.

[2] Tide pools.

three small spines on outer face. Hand crossed by granulous carinae inside and out and armed above with four spines alternately placed, two on inner border and two on outer border of upper surface. A strong spine followed by a deep sinus and a small spine at postero-distal end of merus of swimming foot.

Color.—Violet red or deep purple red more or less marbled with a lighter shade or white. Extremity of all spines black.

Young.—The front is less advanced, the median pair of teeth subtruncate. In specimens 7 mm. wide the front is arcuate, cut into shallow lobes, the four small antero-lateral teeth are scarcely distinguishable.

Measurements.—Male (48801), total length of carapace 50.2, width of same 75, fronto-orbital width 40.4, interorbital width 26.5, width of front 13.7 mm.

Range.—Charleston Harbor, South Carolina, to the State of Santa Catharina, Brazil. Lower California, Mexico, to Peru and the Galapagos Islands. West Africa from Cape Verde Islands to Loanda.

Material examined.—See table, pages 140–141.

CRONIUS TUMIDULUS (Stimpson)

Plate 64

Achelous tumidulus STIMPSON, Bull. Mus. Comp. Zoöl., vol. 2, 1871, p. 149 (type-localities, West of Tortugas, 37 fathoms, and off Conch Reef, 40 fathoms; types not extant).

Neptunus tumidulus A. MILNE EDWARDS, Crust. Rég. Mex., 1879, p. 218.

Cronius bispinosus MIERS, *Challenger* Rept., Zool., vol. 17, 1886, p. 188, pl. 15, fig. 2–2*b* (type-locality, Bahia; type in British Museum).

Charybdella tumidula RATHBUN, Bull. U. S. Fish Comm. for 1900, vol. 2, 1901, p. 51.—VERRILL, Trans. Connecticut Acad. Arts and Sci., vol. 13, 1908, p. 393, pl. 19, fig. 1.

Cronius tumidulus RATHBUN, in Boeke, Rapport Vischerij Kolonie Curaçao, part 2, 1920, p. 18.

Diagnosis.—Two gastric, three branchial and one cardiac ridge. Upper inner orbital angle feebly bidentate. Spines not black tipped. Two spines on wrist, two on hand. A row of spinules but no spine on lower half of distal end of merus of swimming foot.

Description.—Carapace narrower than in *C. ruber*, pubescent, granulated toward margins. Two short granulate carinae behind the long branchial carina, also a transverse carina on the cardiac region. Last spine of antero-lateral border half again as long as seventh spine. The small alternate spines are unequal, diminishing in the following order: Second, fourth, sixth, eighth. Front convex, prominent, projecting much beyond level of outer angles of orbits; teeth rounded, the two middle ones being smaller than the second pair and most prominent, separated from second pair by a rather broad, shallow sinus; a narrow sinus between second pair and the antennal tooth or inner angle of orbit; this angle is very

slightly bidentate. The separation of the antennal flagellum from the orbit by a process from the basal article is not so well marked as in *C. ruber*. Chelipeds rather short and stout; merus armed with three large and one small spine on the front edge; spine of outer extremity of posterior edge of merus minute, almost obsolete. Inner spine of carpus long, reaching about a third the length of palm. Only one spine on superior margin of hand at distal third; another at articulation of carpus. On the merus of the swimming legs there is a denticulated postero-distal margin, but no spine.

Color.—Variegated hazel and rufous. (Schmitt.)

Young.—Carapace narrower and more tumid than in the old, front less advanced, teeth shallower, interspaces shorter. The outer denticle at the upper inner angle of the orbit is very slight. The four small intermediate teeth of the antero-lateral margin are minute and closely appressed. Lateral spine not much longer proportionately than in the adult.

Measurements.—Male (14053), total length of carapace 21, width of same 30.7, width at anterior base of spine 27.2, fronto-orbital width 18.3, width of front (4 teeth) 6.7 mm. Verrill records a larger specimen, carapace of male 27 by 41 mm.

Range.—Bahamas and Florida Keys to the State of Bahia, Brazil. Bermuda.

Material examined.—See table, pages 144–146.

Subfamily PODOPHTHALMINAE

Orbits occupying the whole of the anterior border of the carapace except for a very narrow front; eyes on very long stalks.

Genus EUPHYLAX Stimpson

Euphylax STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 225 [97]; type, *E. dovii* Stimpson.

Carapace transversely oval, convex; antero-lateral margin short, rounded, sparingly dentate; fronto-orbital distance about ⅘ of width of carapace. Orbits very long, outwardly deeply cut, outer angle a tooth or spine closing orbit outside; inner suborbital lobe extensive, smooth above, margin crenulate. Eyes large, stalk slender, greatly elongate, compressed; cornea stout. Front very narrow between bases of eyestalks but anteriorly strongly dilated and deflexed, and with a median tooth on the anterior or lower margin. Peduncle of antennae embedded between outer extremity of the front and the adjoining lower margin of the orbit, basal article short, movable part about half as long as orbit. Antennules close together, folded horizontally but not completely retractile. Epistome linear, well defined, armed in front with a spine which projects between the antennules. Merus of outer maxillipeds obliquely quadrate, little

Material examined of Cronius tumidulus

Locality	Bearings		Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
	Latitude N.	Longitude W.									
	° ′ ″	° ′ ″			°F.						
Bahamas:											
New Providence Island						1886		*Albatross*	1♀	17943	
East end of Hog Island, Nassau.						July 20, 1903		B. A. Bean	1♂	31041	From Geogr. Soc. Baltimore.
Florida:											
Key Largo			(1)	Grs				H. Hemphill	1♂	14053	
Lower Metacumbe Key			(1)	Grs		1885		do	1♀	15049	
Crawfish Bar, Key West						Oct. 21, 1896		B. W. Evermann, U. S. Fish Commission.	1♂ 1♀	22274	
Tortugas—											
Off west side Fort Jefferson, Garden Key.	Between beach to south and moat entrance.					Aug. 19, 1924		W. L. Schmitt	1♂	61016	Gift of Carnegie Institution.
Off north end Loggerhead Key.				Seaweed		Aug. 10, 1924		do	1♂	61014	Do.
6 miles south of No. 2 buoy, Southwest Channel.			18			July 22, 1924	44	do	1♂	61015	Do.
Outer Tortugas Reef	Stomach of fish No. 54, yellow grunt, *Haemulon sciurus* (Shaw).					June 5, 1925		do	Fragments of 1	61064	Do.
Outer Lighthouse Reef	Stomach of fish No. 114, school-master (yellow snapper, *Neomaenis apodus* (Walbaum).					June 7, 1925		do	2♂ 1♀	61065	Do.
Off north end of Loggerhead Key.	Stomach of fish No. 184, school-master (yellow snapper), *Neomaenis apodus* (Walbaum).					June 9, 1925		do	1♀	61066	Do.
Do	Stomach of fish No. 198, school-master (yellow snapper), *Neomaenis apodus* (Walbaum).					do		do	1♂ 1♀	61067	Do.

Do	Stomach of fish No. 209, gray snapper, *Neomaenis griseus* (L.).					June 9, 1925		W. L. Schmitt	1 cheliped, 1 leg.	61008	Do.
1½ miles North of Loggerhead Key.	Stomach of fish No. 330, gray snapper, *Neomaenis griseus* (L.).					June 13, 1925		do	1♂	61017	Do.
Do	Stomach of fish No. 419, yellow goatfish, *Upeneus martinicus* Cuv. & Val.					do		do	1 cheliped	61069	Do.
¼ mile south of Bird Key Harbor.	Stomach of fish No. 496, gray snapper, *Neomaenis griseus* (L.).					June 21, 1925		do	1♀	61070	Do.
Do	Stomach of fish No. 550, gray snapper, *Neomaenis griseus* (L.).					do		do	1♂ 1♀	61071	Do.
Tortugas	Stomach of fish					June 13, 1925		do	3 y	61072	Do.
West Florida			19					U.S.C.S. str. *Bache*	1♀	2969, M.C.Z.	
Cuba:											
San Antonio Point						1884		*Albatross*	1♂	18545	
Ensenada de Cajon						May 22, 1914 May 23, 1914	11	Henderson and Bartsch, *Tomas Barrera* Exped.	1 y	49157	
Reef Lavesos Italienos, opposite Cayo Lavesos.			2–3	Co. S.R.		June 2, 1914	14	do	1 ♀ ovig. 1 y	49162	
Southeast of Cuba	19 55 55	75 48 03	(2)		79	Feb. 27, 1884	2133	*Albatross*	1y	18444	
Off Cuba			(2)	In sargassum.		1923		Williams Galapagos Exped.	1 y	57729	From New York Zool. Soc.
Jamaica:											
Montego Bay; off bathing beach.						July 19, 1910		E. A. Andrews	1♀ ovig	42868	
Montego Bay; off Salt Pond						Aug. 1, 1910		do	1♂ y	42873	
Do			40			Aug. 4, 1910		C. B. Wilson	1♀ y	42858	
Port Antonio								J. E. Duerden	1	Returned to sender.	
Porto Rico:											
Mayaguez						Jan. 20, 1899		*Fish Hawk*	1♂ 1♀	24511	
Mayaguez Harbor						do		do	1♂	24512	
Boqueron						Jan. 25, 1899		do	1♂	24513	

[1] Below low tide.

[2] Surface.

Material examined of Cronius tumidulus—Continued

Locality	Bearings		Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
	Latitude N.	Longitude W.									
Porto Rico—Continued.	° ′ ″	° ′ ″			°C.						
Off Vieques Island	Pt. Mula lighthouse, SSW. ⅜ W., 5¾ miles.		14	Co. S	25.6	Feb. 8, 1899		*Fish Hawk*	1 y♂	24514	
St. Thomas, Virgin Islands						Jan. 17, 1884 to Jan. 24, 1884		*Albatross*	1 y	18570	
St. Eustatius; west of Oranjestad			4	sdy		Aug. 17, 1905		J. Boeke	1♂ 1♀	Returned to sender.	
Aruba, lagoon			(3)	algae		Aug. 8, 1905		do	1♀	do	
Curacao:											
Lagoon			(3)	do		May 26, 1905		do	1♂ 3♀ (1 ovig)	do	
Do			(3)			Sept. 28, 1905		do	1♀ ovig	42968	
Old Providence Island, Caribbean Sea.						1884		*Albatross*	1♂ 1 y	17944	
Brazil:											
Northeast of Bahia	11 49 00	37 27 00	12–17			Jan. 18, 1872		U.S.C.S. Str. *Hassler*.	1♂ 1♀	2968, M.C.Z. 237, M. C. Z.	
Porto Seguro, State of Bahia									1	M.C.Z	

[3] Shallow.

longer than broad, margins not incised, outer angle broadly rounded. Chelipeds long, hand strongly compressed. Posterior feet natatory; dactylus ovate. Dactylus of first 3 pairs broadly lanceolate.

Contains two species from middle America.

KEY TO THE SPECIES OF THE GENUS EUPHYLAX

A[1]. Antero-lateral margin of carapace armed with 5 small teeth or spines. Carapace smooth ..... **dovii**, p. 147.

A[2]. Antero-lateral margin of carapace armed with 3 large spines and one small one. Carapace with granulated lines and elevations ..... **robustus**, p. 148.

EUPHYLAX DOVII Stimpson

Plate 65

Euphylax dovii STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 226 [98], pl. 3 [not 5], figs. 5, 5*a* (type-locality, western coast of Central America; type not extant).—A. MILNE EDWARDS. Crust. Rég. Mex., 1879, p. 204, pl. 38, figs. 2–2*d*.

Diagnosis.—Five small teeth or spines on antero-lateral margin. Carapace and lower orbital plate smooth. Front narrow, broadly T-shaped. Eyes very long. Palms carinated.

Description.—Carapace more than half again as broad as long, smooth and glabrous, minutely punctate, unevenly convex, cardiac region more protuberant than gastric. Antero-lateral margin much shorter than the postero-lateral, undulated and obscurely 5-toothed including the angle of the orbit, which is much larger and more prominent than either of the other teeth; posterior tooth minute, subspiniform; intermediate ones very minute, indistinct and unequally distant. Margins of orbit crenulated; two small fissures above. Suborbital lobe large and very prominent, with polished superior surface; distance between its anterior and posterior margins much exceeding width of eye-peduncle. Front nearly three times as wide at its anterior extremity as at its base between the eyes; with a supra-marginal crest interrupted at the middle. Chelipeds rather large, nearly smooth above; merus broad, armed with 3 or 4 very small spines anteriorly and one small terminal one posteriorly; carpus one-spined within, and with a crenulated outer margin usually indistinctly one-toothed or spined; hands ornamented outside with four slight longitudinal ridges sparsely granulated or short-spinulated, besides the ridge on the upper and on the lower margin, also a superior distal spine and a proximal spine at carpal articulation; on inner side of palm a few elongated tubercles forming a short row along middle of distal end, and above that and behind base of dactylus a spine with one or two granules on its slope; fingers much compressed, not gaping, strongly toothed within and with crenulated exterior margins.

Color.—Rosy with zones of a deeper red on the front of the carapace and on the arm. The shell has iridescent reflections which are very apparent on inner face of chela. (A. Milne Edwards.)

Measurements.—Male (17290), length of carapace 46.5, width of same 76, fronto-orbital width 60, greatest width of front 12 mm.

Range.—West coast of Mexico? (A. Milne Edwards). Central America to Chile.

Material examined.—

PANAMA.—1 male (17290), purchased from H. A. Ward.

Montuosa Islet, N. 12° W., 12 miles; lat. 7° 17′ N., long. 82° 11′ W.; surface; October 20, 1904; station 4619, *Albatross*; 1 female (33369).

PERU.—Paita, *Hassler* Exped., 9 females (21320), received from the Museum of Comparative Zoölogy.

CHILE.—Talcahuano, specimen in M.C.Z.

EUPHYLAX ROBUSTUS A. Milne Edwards

Plates 66 and 67

Euphylax robustus A. MILNE EDWARDS, in Les fonds de la mer, by Fischer, Folin and Périer, vol. 2, 1874, p. 249 (type-locality, Mazatlan; type in Paris Mus.); Crust. Rég. Mex., 1879, p. 205, pl. 37.

Diagnosis.—Three strong spines on antero-lateral margin. Carapace with granulated lines and prominences. Lower orbital plate granulated. Otherwise as in *E. dovii.*

Description.—A granulated epigastric line; a similar line runs from the base of the lateral spine transversely inward, not reaching the branchio-cardiac suture. Prominent parts of carapace granulated, granules little apparent. Supra-orbital border more granulate than in *dovii.* The upper surface of the advanced lower orbital plate is ornamented with distinct granules. Lateral border of carapace granulated and with three strong spines, the first most developed, and a small spine in the first interspace. (After A. Milne Edwards.)

Color.—Carapace greenish; chelae same color above and yellowish inside and below; ambulatory legs reddish yellow. (A. Milne Edwards.)

Measurements.—Female, holotype, length of carapace 56, width of same 90, fronto-orbital width 79 mm. (A. Milne Edwards.)

Range.—Known only from the unique type from Mazatlan, Mexico.

Relation.—Perhaps conspecific with *E. dovii.* Its peculiarities may be due to its greater size.

Family ATELECYCLIDAE

Atelecyclidae (p. 421) + *Cheiragonidae* (p. 419) ORTMANN, Zool. Jahrb., Syst., vol. 7, 1893; Bronn's Thier-Reich, vol. 5, pt. 2, 1898, p. 1169.

Atelecyclinae (p. 99) + *Corystidae*, part (p. 103), ALCOCK, Journ. Asiat. Soc. Bengal, vol. 68, 1899.

Atelecyclidae BORRADAILE, Ann. Mag. Nat. Hist., ser. 7, vol. 19, 1907, p. 481.

The antennules fold lengthwise. The movable part of the antennae is either well developed and hairy or rudimentary or altogether

absent. Carapace never very broad, but either subcircular, suboval, oblong, or pentagonal.

KEY TO THE AMERICAN SUBFAMILIES OF THE FAMILY ATELECYCLIDAE

A[1]. Movable part of antennae, or that part succeeding the basal article, stout, provided with a flagellum. Antennules folding within their cavity. Front, between the antennae, cut into two, three, or four teeth or spines. **Atelecyclinae**, p. 149.

A[2]. Movable part of antennae absent or rudimentary. Antennules stout, too large to retract within their cavity. Carapace rotund. Front between the antennae entire or subentire..... **Acanthocyclinae**, p. 170.

Subfamily ATELECYCLINAE

Carapace suboval, oblong or pentagonal. Movable part of antennal peduncle well developed, stout, provided with a flagellum. Antennules folding normally within their cavity. Front, between the antennae, cut into two, three, or four spines.

KEY TO THE AMERICAN GENERA OF THE SUBFAMILY ATELECYCLINAE [19]

A[1]. Orbits transverse. Lateral margins of carapace well defined by a more or less sharp edge. Legs stout.

B[1]. A triangular projection from the basal antennal article fills the inner hiatus of the orbit. Lateral margins of carapace cut into 6 or 7 large teeth. Surface of body and appendages covered with short bristles which give them the name "horse crabs." Genital openings of female very large, not covered by the appressed abdomen.

C[1]. Carapace pentagonal; lateral teeth 6; frontal denticles 4. Legs spinulous..... **Telmessus**, p. 150.

C[2]. Carapace oblong; lateral teeth 7; frontal teeth 2 in old, sometimes 4 in young. Legs coarsely spined..... **Erimacrus**, p. 155.

B[2]. Basal antennal article without a projection filling the orbital hiatus. Lateral margins cut into spines or shallow teeth edged with spinules.

C[1]. Carapace oval or oblong-oval and without a long lateral spine; surface smooth or granulous..... **Peltarion**, p. 160.

C[2]. Carapace with long lateral spines.

D[1]. Carapace orbicular, smooth except near the margins, and covered with a fine velvet, like *Dromia*..... **Trichopeltarion**, p. 167.

D[2]. Carapace pentagonal, tuberculate..... **Trachycarcinus**, p. 164.

A[2]. Orbits and eyes pointing forward. Carapace oval; lateral margin not defined except by a few long spines. Legs slender..... **Pliosoma**, p. 169.

NOMEN NUDUM

Atelecyclus dilatatus PHILIPPI, Zool. Anzeiger, vol. 17, 1894, p. 264; Chile.

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[19] Milne Edwards (Hist Nat. Crust., vol. 2, 1837, p. 143) makes a species *Atelecyclus chilensis*, which according to the description is so closely allied to *A. cruentatus* Desmarest (in Guérin, Iconographie du Règne Animal, vol. 2, pl. 2, fig. 2–2c) that it is but a variation of it. Milne Edwards gives as a possible synonym the *Cancer undecimdentatus* of Herbst (Naturg. d. Krabben u. Krebse, vol. 1, 1783, p. 181, pl. 10, fig. 60). I am able to confirm its identity, as there lies before me a photograph of one of Herbst's three type-specimens in the Berlin Museum which are labeled "Am. bor."; also a photograph of a female of the same species in the Copenhagen Museum and labeled "ex Ind. or. Daldorf." Both of the photographs agree with Desmarest's figure (*loc. cit.*); therefore the valid name of the European species is *Atelecyclus undecimdentatus* (Herbst, 1783) = *A. rotundatus* (Olivi, 1792, Zool. Adriat., p. 47, pl. 2, fig. 2) = *A. cruentatus* Desmarest (1825, Consid. Génér. Crust., p. 89). The localities Chile, North America, and East Indies should be considered erroneous.

Genus TELMESSUS White

HORSE CRABS

Cheiragone? LATREILLE, Fam. Nat., 1825, p. 270.

Cheiragonus? BERTHOLD, Latreille's Nat. Fam. Thierreichs, 1827, p. 256; *nomen nudum.*

Telmessus WHITE, Ann. Mag. Nat. Hist., vol. 17, 1846, p. 497; type, *T. serratus* White.—BENEDICT, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 223, and synonymy.

Platycorystes BRANDT, Bull. Phys.-Math. Acad. St. Pétersbourg, vol. 7, 1848, p. 179; type, *P. ambiguus* Brandt.

Cheiragonus BRANDT, Middendorff's Sibirische Reise, vol. 2, Zool. pt. 1, 1851, p. 147; type, *C. hippocarcinoides* Brandt.

Carapace broader than long, pentagonal. Lateral margins dentate. Front between the antennae projecting, its anterior edge cut into four small denticles. A broad tooth at inner angle of orbit. Basal article of antenna short, broad and flattened; a triangular winglike projection from it fills the inner hiatus of the orbit. Epistome with a triangular point extending forward on the median line between the antennules. Chelipeds short; ambulatory legs moderately long. Sternum of female thickened and sculptured around the genital openings; lateral margins of sixth abdominal segment broadly incised leaving the openings fully exposed. Abdomen of male narrow triangular from the fourth segment to tip.

California to Bering Sea; Siberia to Japan.

TELMESSUS CHEIRAGONUS (Tilesius)

Cancer cheiragonus TILESIUS, Mém. Acad. Impér. Sci. St. Pétersbourg, vol. 5, 1812 (1815), p. 347, pl. 7, fig. 1 (type-locality, Awatscha, Kamchatka; type, Mus. St. Petersburg [Leningrad]).

Telmessus serratus WHITE, Ann. Nat. Hist., vol. 17, 1846, p. 497 (type-locality, not given; type in Brit. Mus.); List Crust. Brit. Mus., 1847, p. 124.

Platycorystes ambiguus BRANDT, Bull. Phys.-Math. Acad. St. Pétersbourg, vol. 7, 1848, p. 179 (type-localities, Okhotsk Sea, Kamchatka, and Aleutian Islands, Alaska; types, Mus. St. Petersbourg [Leningrad]).

Platycorystes cheiragonus BRANDT, Middendorff's Sibirische Reise, vol. 2, pt. 1, 1851, p. 85.

Cheiragonus hippocarcinoides BRANDT, Middendorff's Sibirische Reise, vol. 2, part 1, 1851, p. 147; substituted for *Platycorystes cheiragonus.*—STIMPSON, Boston Journ. Nat. Hist., vol. 6, 1857, p. 465.

Telmessus cheiragonus BENEDICT, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 224, pl. 25, pl. 26, figs. 2–4.—RATHBUN, Harriman Alaska Exped., vol. 10, 1904, p. 179.

Cheiragonus cheiragonus ORTMANN, Zool. Jahrb., Syst., vol. 7, 1894, p. 420.

Telemessus cheiragonus HOLMES, Occas. Papers California Acad. Sci., vol. 7, 1900, p. 69, and synonymy.

Diagnosis.—Carapace broader than long. Epistome produced to a point on the median line. Lateral margins of sixth segment of female abdomen deeply incised. Lateral teeth of carapace six.

Description.—Surface of carapace set with large granules, forming lines in the posterior regions; from the granules arise numerous short

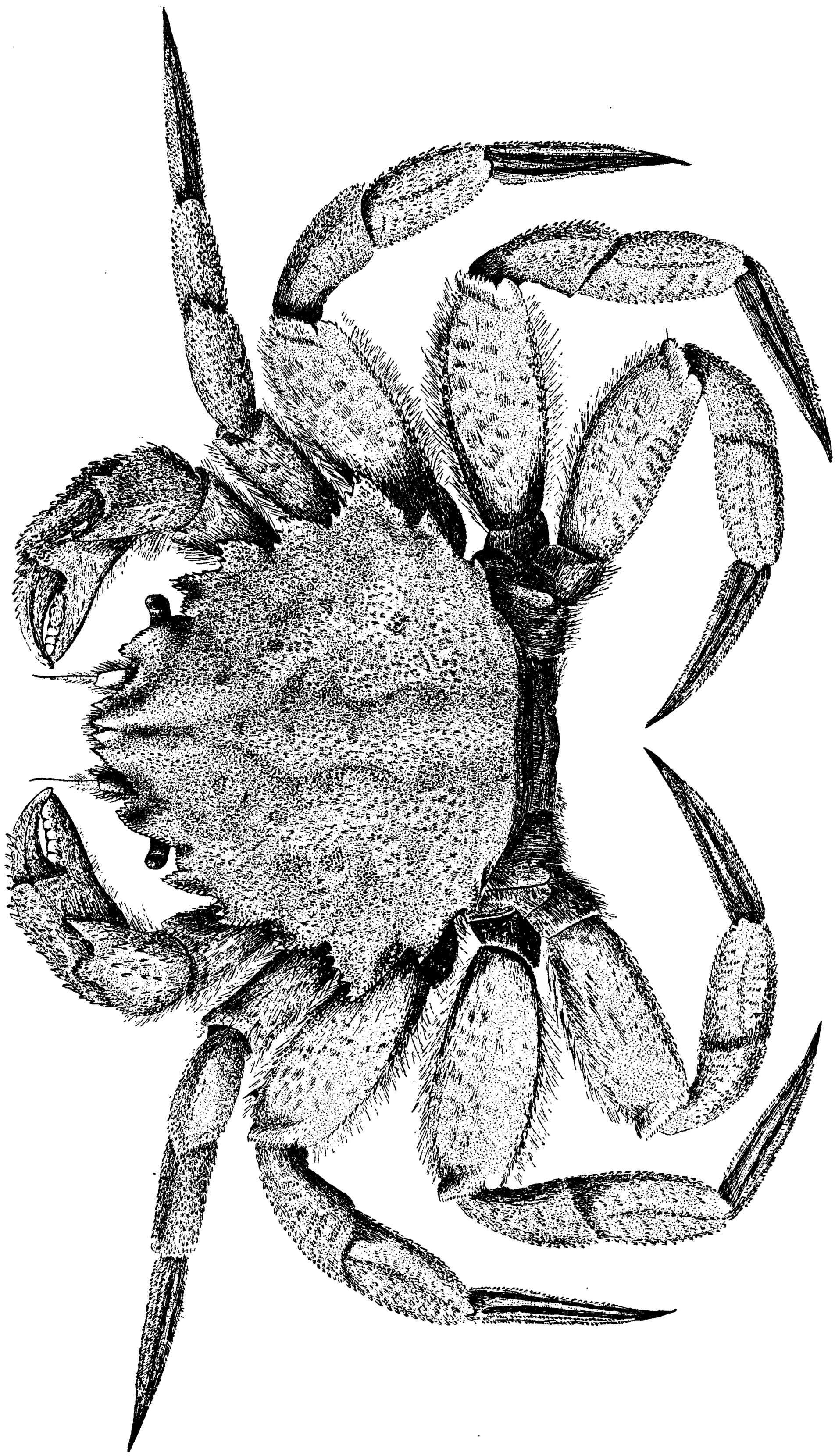

FIGURE 21.—TELMESSUS CHEIRAGONUS, MALE, DORSAL VIEW, REDUCED. AFTER BENEDICT

bristles of even length which bend forward and are enlarged at the end. Regional furrows deep. Denticles of the front often wanting in old worn specimens. Inner supraorbital tooth triangular, its anterior end forming a right angle. Lateral teeth six including the outer orbital tooth; fourth tooth much the largest, situated at the lateral angle; the post-lateral teeth are the smallest, especially the hinder one; margins of all the teeth armed with stout acute denticles which are applied against the upper surface along the posterior margins but are larger and project forward normal to the anterior margins.

The chelipeds are granulate and hairy, the granules ranged in longitudinal rows on chelae. The merus has three nearly equal surfaces; the carpus has a groove along its outer distal margin, its inner angle is produced in a long flat spine. Fingers deeply grooved, prehensile edges armed with stout tuberculiform teeth. Ambulatory

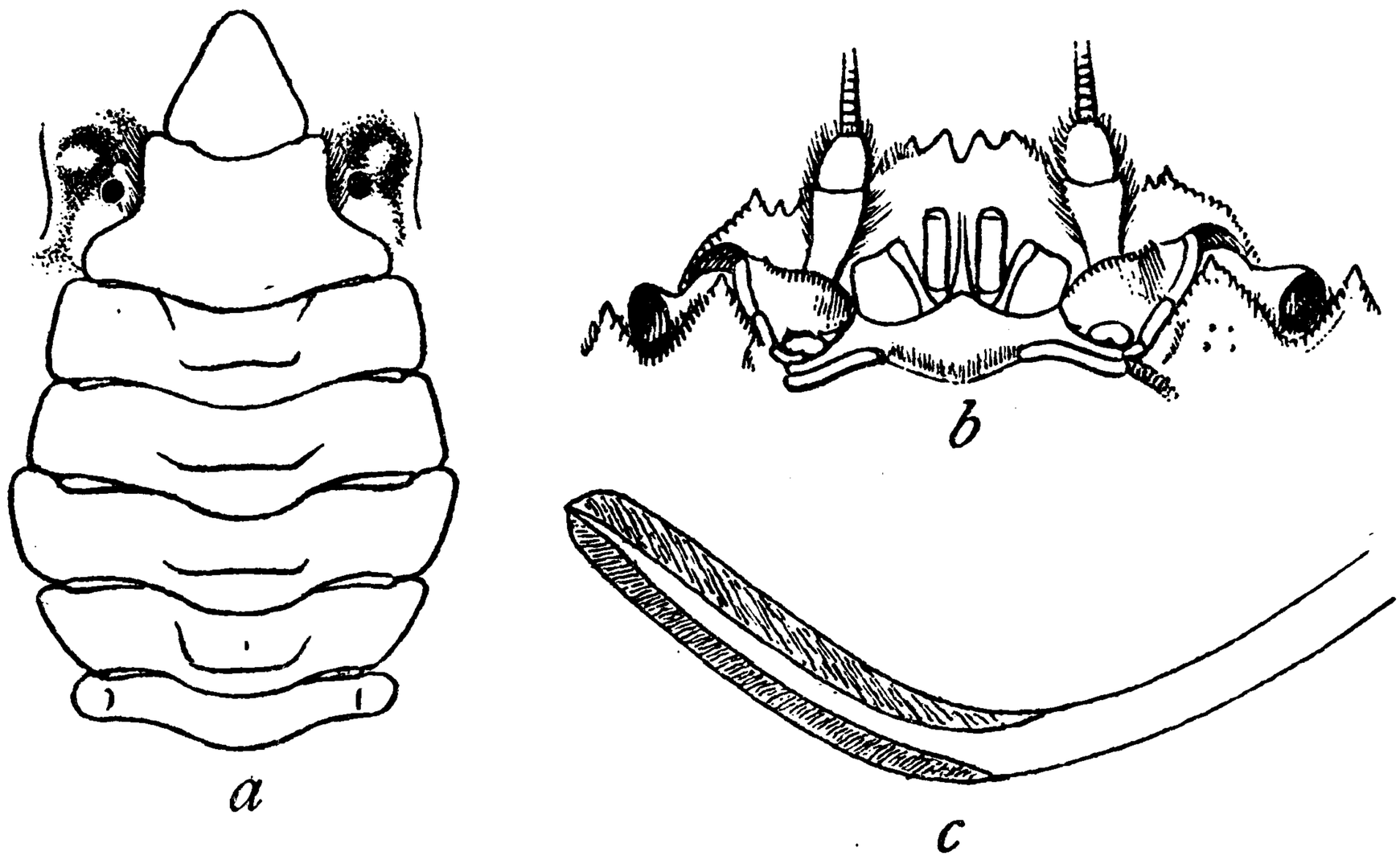

FIGURE 22.—TELMESSUS CHEIRAGONUS. *a*. FEMALE ABDOMEN AND STERNUM. *b*. EPISTOME. *c*. BRISTLE FROM CARAPACE, ENLARGED. AFTER BENEDICT

legs much compressed and bearing short transverse lines of granules bearing coarse bristles; the dactyls have horny tips, two longitudinal grooves on each side and one groove above which is bordered on either side by two rows of small spinules and a fringe of bristles; a double row of spinules with accompanying bristles on the lower margin.

Color.—Yellowish with purple spots (Steller).

Measurements.—Male (47965), length of carapace 83.5, width of same 97, fronto-orbital width 54, width of front at base, between antennae, 21.3 mm.

Range.—Off northern California (Stimpson) to Bering Sea and southward from Siberia to Japan.

Material examined.—

WASHINGTON.—Port Orchard, Puget Sound; July, 1889; O. B. Johnson; 6 males, 11 females (14965).

Kilisut Harbor, near Port Townsend; July 1, 1903; *Albatross;* 3 females (31629).

Quarantine Dock, near Port Townsend; June 28, 1903; *Albatross;* 2 males, 1 female (31628).

Puget Sound; 1880; D. S. Jordan, U. S. Fish Comm.; 2 males (3110).

Port Angeles; Sept. 3, 1891; *Albatross;* 2 males, 1 female (17092).

Straits of Fuca: 1 young female (3398). 1880; D. S. Jordan, U. S. Fish Comm.; 1 male (3065).

Sucia Islands; May 6, 1894; *Albatross;* 5 specimens (18974).

BRITISH COLUMBIA.—Alert Bay, Vancouver Island; *Albatross;* 1 specimen (19320).

ALASKA.—Metlakahtla, Annette Island; *Albatross;* 3 males, 1 female (21785).

Loring; June 16, 1904: Chamberlain and Aller, Bureau of Fisheries; 1 female (50507).

Observation Island, Cordova, Clarence Strait; June 27, 1914; Bur. Fisheries, 1 male (48835).

Hunters Bay, Prince of Wales Island; April 18, 1897; *Albatross;* 2 males (32218).

Kasa-an Bay, Prince of Wales Island; Dr. T. H. Streets, U. S. Navy; 5 males, 5 females (14824).

Reid Harbor, Stewart Island; May 5, 1892; *Albatross;* 1 female (18976).

Sitka; December 23, 1880; L. A. Beardslee, U. S. Navy; 1 female (3168).

Freshwater Bay, Chichagof Island; 1903; *Albatross;* 1 male (31631).

Hooniah, Chichagof Island; San Diego Soc. Nat. Hist., 1 specimen (53362).

Cordova Bay, Prince William Sound; August 24, 1897; *Albatross;* 1 female (21784).

Refuge Cove, Port Chatham; July 6, 1880; W. H. Dall; 1 male (14815).

Coal Point, Kachemak Bay, Cook Inlet; W. H. Dall; 1 male (31498).

Chugachik Bay, Cook Inlet; 20–60 fathoms; sdy. M.; June 30, 1880; W. H. Dall; 6 young (12509).

Litnik (now Afognak) Bay; shore; *Albatross:* August 13, 1900; 1 male (25209). August 3, 1903; 1 male, 1 young (31630).

Chiniak Bay, Kodiak; July 12, 1880; W. H. Dall; 4 young (12533).

Chajafka Cove, Kodiak; 12–14 fathoms; 1874; W. H. Dall; 2 young males (14814).

Chignik Lagoon; tide flats west of A. P. A. Cannery; July, 1911; *Albatross;* 1 male (61371), 1 specimen (50494).

Popof Strait; 6 fathoms; 1872; W. H. Dall; 2 young males, 5 young (14813).

Coal Harbor, Unga; 3–9 fathoms; 1872; W. H. Dall; 26 males, 9 females (14812).

Issannakh (now Isanotski) Strait; July 15, 1894 (?); *Albatross;* 1 male (18975).

New Morzhovoi; July 17, 1894; *Albatross;* 4 specimens (18973).

Off Unimak Island; lat. 55° 06′ 00″ N., long. 163° 28′ 00″ W.; 9 fathoms; fne. dk. vol. S.; temperature 40° F.; June 26, 1894; station 3600, *Albatross;* 7 specimens (18971).

Unalaska Island: July 28; Bur. Fisheries; 1 male, deformed (47318). May 20, 1892; *Albatross;* 2 males, 2 females (18984.) Off village, Iliuliuk; 5–15 fathoms; sand; 1871; W. H. Dall; 4 young (13115). Dutch Harbor; May 25–27, 1906; *Albatross;* 1 female, 4 young (47964).

Nazan Bay, Atka Island: 10–16 fathoms; sand; 1873; W. H. Dall; 3 males, 2 females (14817). Shore; May 30, 1906; *Albatross;* 1 male, 1 female (47963).

St. Paul Island, Bering Sea: *Albatross;* 1 specimen (19313). 1890; William Palmer; 9 large (15342). October 1911; M. C. Marsh, Bur. Fisheries; 1 female (45507).

Bristol Bay; lat. 58° 23′ 45″ N., long. 157° 42′ 45″ W.; 7¼ fathoms; S. P.; temperature 44.5° F.; June 2, 1890; station 3233, *Albatross;* 10 specimens (15997), "about 40 discarded."

Off Cape Newenham; lat. 58° 40′ 45″ N., long. 162° 08′ 30″ W.; 17 fathoms; P. St.; temperature 40.6° F.; June 13, 1890; station 3247, *Albatross;* 1 specimen (16002).

Southwest of Hagemeister Island; lat. 58° 31′ 20″ N., long. 161° 13′ 00″ W.; 11½ fathoms; S. P.; June 9, 1890; station 3245, *Albatross;* 4 young (16001).

Anchorage, Hagemeister Island; beach; 1874; W. H. Dall; 1 male (14819).

Kouloulak Bay; lat. 58° 44′ 30″ N., long. 160° 08′ 45″ W.; 11 fathoms; bk. M.; June 8, 1890; station 3242, *Albatross;* 3 specimens (15998).

St. Michael: October 26, 1874; L. M. Turner; 1 male (3258). "This specimen was found on the beach after a hard south wind; the only one ever seen here, though the natives catch them on their fishing lines, as was told me by a Malemut woman." 1878; E. W. Nelson; 1 female (14820).

Port Clarence; beach; July 31, 1913; Canadian Arctic Exped.; 2 carapaces (54165).

SIBERIA.—Bering Island, Commander Islands: 1882–1883; L. Stejneger; 2 young (13406), 1 female (14821). Nikolski; low water; July, 1897; L. Stejneger; 1 young (21248). *Albatross:* 1 male (18985); shore, June 15, 1906, 10 males, 4 females (47962).

Petropaulski Harbor, Avatcha Bay, Kamchatka: September 1, 1895; L. Stejneger; 2 males (19043). August 13, 1896; *Albatross;* 8 males, 2 females (32220). 7 fathoms; taken in crab net; June, 1900;

Albatross; 3 males (33459). Shore; June 19, 1906; *Albatross;* 2 males (47965).

Rakovaya Bay, Avatcha Bay, Kamchatka; August 13, 1896; *Albatross;* 4 males, 2 females (32219).

Tareinski Harbor, Kamchatka; 9 fathoms; taken in crab net; June 21, 1900; *Albatross;* 3 males, 1 female (32229).

JAPAN.—Shana Bay, Yatorup Island, Kurile Islands; September 4, 1896; *Albatross;* 6 specimens (20124).

Nemoro, Hokkaido; August, 1914; Fred Baker; 2 males (48846).

Mororan, Hokkaido; 1900; Jordan and Snyder; 2 males, 5 females, 8 young (26247); from Stanford University.

Genus ERIMACRUS Benedict

HORSE CRABS

Podacanthus BRANDT, Bull. Phys.-Math. Acad. St. Pétersbourg, vol. 7, 1848, p. 180; subgenus of *Platycorystes* Brandt; type, *Platycorystes* (*Podacanthus*) *isenbeckii* Brandt. *Podacanthus* used by Gray in 1833 for a genus of Orthoptera.

Erimacrus BENEDICT, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 229; substituted for *Podacanthus*.

Carapace longer than broad, oblong-oval. Lateral margins arcuate, armed with seven teeth. Front between the antennae cut into two teeth. A tooth at inner angle of orbit. Antennae as in *Telmessus*. Epistome with a nearly straight anterior margin. Chelipeds stout; ambulatory legs very broad and spinous. The genital openings of the female occupy the posterior wall of a deep depression in the sternum and are not covered by the abdomen. The side margins of the sixth segment of the abdomen are not deeply incised. Abdomen of male triangular from the third segment.

Contains only one species.

ERIMACUS ISENBECKII (Brandt)

Plate 68

Platycorystes (*Podacanthus*) *isenbeckii* BRANDT, Bull. Phys.-Math. Acad. Impér. Sci. St. Péterbourg, vol. 7, 1848, p. 180 (type-locality, Unalaska; type, Mus. St. Petersburg [Leningrad]).

Platycorystes isenbeckii BRANDT, Middendorff's Sibirische Reise, vol. 2, pt. 1, 1951, p. 83.—RICHTERS, Abh. Senck. Natur. Gesell., Frankfurt, vol. 13, part 4, 1884, p. 402, plate, figs. 1 and 2.

Cheiragonus isenbeckii BRANDT, Middendorff's Sibirische Reise, vol. 2, pt. 1, 1851, p. 147.

Erimacrus isenbeckii BENEDICT, Proc. U. S. Nat. Mus., vol. 15, 1892, p. 229, pl. 26, figs. 5–7, and pl. 27.

Diagnosis.—Carapace longer than broad. Epistome with nearly straight anterior margin. Lateral margins of sixth segment of female abdomen not deeply incised. Lateral teeth of carapace seven.

Description.—Carapace covered with short bristles and acute tubercles which form also about nine small elevations, 5 gastric,

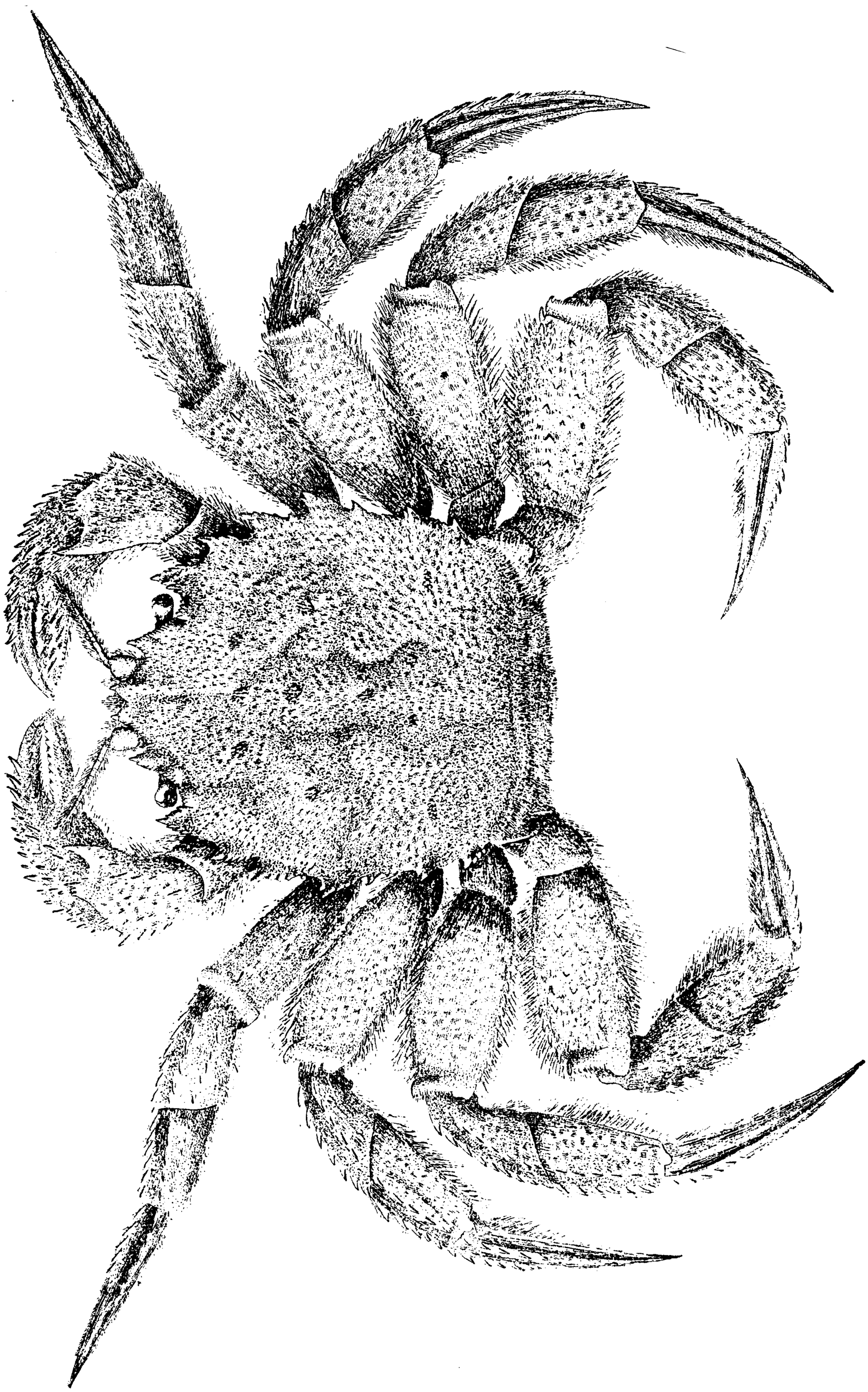

FIGURE 23.—EBRIMACRUS ISENBECKII, MALE, DORSAL VIEW, REDUCED. AFTER BENEDICT

2 cardiac, and 2 branchial. Crescentic furrows at center of carapace deep. Margins denticulate. The two frontal teeth are broad, each tipped with an acute denticle; in the young, however, there are two extra teeth, one each side of the median line; eventually their tips break off, leaving between the outer teeth a transverse margin broken by the median suture. Inner orbital tooth narrow, acute. The fourth lateral tooth of the carapace is midway of its length, is very little larger than the preceding but projects farther laterally; the next three teeth are small, but the sixth is larger than the other two.

Chelipeds spinous; 6 longitudinal rows of spines on the outer-upper surface of the palm, two rows continued part way on each finger. Ambulatory legs thick, armed with stout spines, which are longer and stronger on the last three articles where they border each side of the

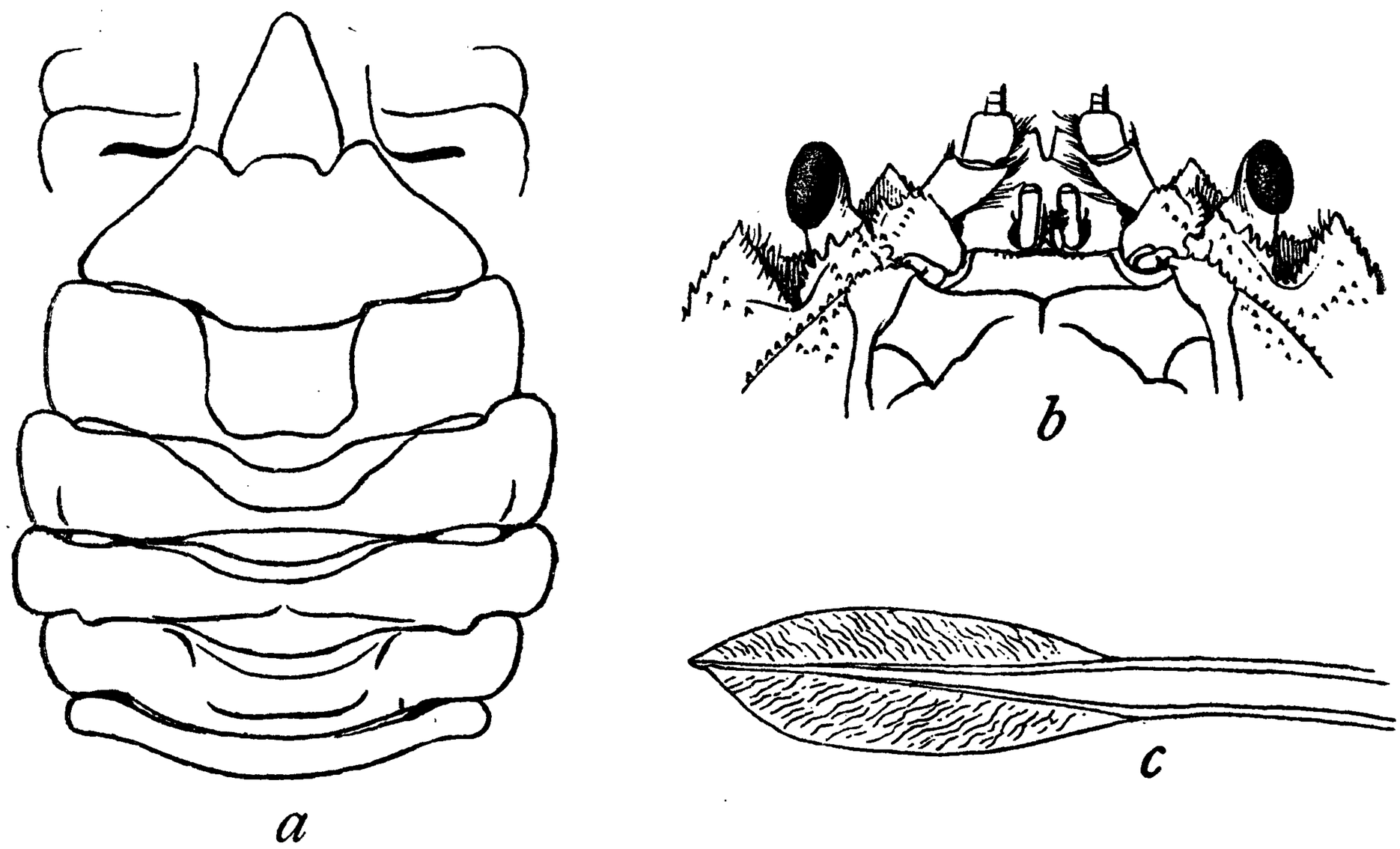

FIGURE 24.—ERIMACRUS ISENBECKII. *a*. FEMALE ABDOMEN AND STERNUM. *b*. EPISTOME. *c*. BRISTLE FROM CARAPACE, ENLARGED. AFTER BENEDICT

upper surface as far as the middle of the dactylus; a row of spines on anterior surface of carpus and propodus, on lower margin of propodus and base of dactylus. Dactyli twice as long as propodi, having a deep groove through the middle of each side, a finer groove higher up which disappears toward the proximal end, and a superior groove broad and shallow on the proximal half only. The crab is hairy all over, the hair longest on the maxillipeds, anterior sternum, inner surface of chelipeds, and lower margins of legs.

Measurements.—Male (47266), total length of carapace 127.6, width of same 125, fronto-orbital width 70.7, width of front at base, between antennae, 25 mm.

Range.—From Cooks Inlet, Alaska, westward and northward to the Pribilof Islands (Bering Sea) and Kamchatka, thence southward to Korea and southern Japan.

Material examined.—See table, pages 158–159.

Material examined of Erimacrus isenbeckii

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
Alaska:	° ′ ″	° ′ ″			°F.						
Coal Point, Kachemak Bay, Cooks Inlet.								W. H. Dall	1 y	45568	
Off Round Island, Coal Harbor, Unga.			6–8	M		1872		W. G. Hall	1	14830	
East of Amak Island	55 29 15	162 58 00	25	bk. S	41.9	June 26, 1890	3271	*Albatross*	2 1	16009 16016	
South of Amak Island	55 19 00	163 04 30	16	fne. gy. S. brk. Sh.	42.3	June 25, 1890	3269	do	1 1	16008 16015	
North of Amak Island	55 31 40	163 07 00	31	bk. & rd. S	42	June 27, 1890	3272	do	1	16017	
West of Amak Island	55 29 00	163 13 00	26	bk. S. G	41.2	June 25, 1890	3268	do	1	16007	
Unimak Pass	54 20 00	165 30 00	50	bk. S. P. Sh	39.7	May 22, 1890	3222	do	1 y	16006	
Captains Bay, Unalaska						1872		W. H. Dall	1 ♀	14832	
Do								do	1 y	19501	
Port Levashef, Unalaska						1880		do	1 y	14833	
Iliuliuk Harbor, Unalaska	53 59 36	166 29 43	85	gn. M	41	Aug. 15, 1890	3311	*Albatross*	1 y	16014	
Off Rocky Point, Iliuliuk			10	S. G		1871		W. H. Dall	4 y	13141	
Nazan Bay, Atka			10–16	S		1873		do	6 y	14828	
		Long. E.									
Off Semisopochnoi Island	52 11 00	179 49 00	52–43	fne. G		June 5, 1906	4777	*Albatross*	1 y	48273	Thin shell.
Off Rat Islands	52 05 00	177 40 00	55	rky. fne. S. Sh		June 9, 1894	3599	do	1 y	18954	
Kiska Harbor, Kiska Islands			6–12			1873		W. H. Dall	1 ♀ 2 y	14831	
		Long. W.									
Off Cape Strogonof, Bristol Bay	57 16 45	159 03 30	30	bk. G	41	July 18, 1890	3294	*Albatross*	2 y	16013	
Off Seal Islands	56 44 30	159 16 00	16	bk. S		do	3289	do	1 y	16012	
Off Kudobin Islands	56 14 00	161 41 15	36	gy. S. bk. Sp		June 28, 1890	3281	do	1	16018	
Do	55 58 45	161 46 30	18	G. S. R	43.2	do	3277	do	1	16011	
St. George Id., Pribilof Islands						May 2, 1914		G. D. Hanna, Bur. Fish.	4 ♂ 4 ♀	48287	
Do						July 4, 1914		do	1 y	48290	From stomach of cod.
St. Paul Id., Pribilof Islands						1872		H. W. Elliott	2	14834	
Do			Beach.			June 17, 1890		Wm. Palmer	6	15344	
Do						1890		do	8	15345	
Off Pribilof Islands	56 31 00	169 17 00	48	gy. S. bk. Sp	40.7	Sept. 3, 1893	3561	*Albatross*	2 ♀	18306	
Do	56 57 00	169 27 00	34	fne. gy. S. bk. Sp.	37.8	July 28, 1893	3504	do	1 ♂ 2 y	18302	
Do	57 00 00	169 43 00	35	fne. gy. S. Sh	40.8	July 31, 1893	3509	do	1 y	18303	
Do	57 24 00	169 56 00	36	gy. S. P	40.3	Aug. 4, 1893	3524	do	5 sm	18304	

Do	57 21 00	170 05 00	29	bk. S. Sh	41.6	do	3525	do	1♂	18305	
Do	57 06 30	170 28 00	32	crs. G	39	July 18, 1896	3637	do	1 y	20125	
Do	57 07 30	170 28 15	33	G	38.7	do	3638	do	1 y	20126	
Do	57 06 00	170 35 00	41	fne. bk. S	44	Aug. 3, 1891	3439	do	1 y	17089	
Siberia:		*Long. E.*									
Off Kamtchatka	52 47 00	158 43 00	48	S. P. Sh		June 20, 1906	4796	do	1♂	48268	Covered with *Balanus*.
Okhotsk Sea								Madoka Sasaki.	2♂	54483	Thin shell.
Gulf of Tartary, off southwest coast of Sakhalin Island.	47 38 20	141 39 00	31	gy. M. gn. S	42.5	Sept. 23, 1906	4999	*Albatross*	1♂	48266	With a few *Balanus*.
Japan:											
Etrup Island, Kuril Group								Madoka Sasaki.	1♂	54484	Soft shell.
Sapporo market, Hokkaido								do	1♂	54526	
South coast of Hokkaido	42 16 30	142 04 00	140–61	br. M. fne. bk. S. Co. S.	41.1	Oct. 3, 1906	5041	*Albatross*	2 y	48274	
Miyagi Prefecture, Honshiu								Madoka Sasaki.	1♀	54482	
Sea of Japan	N. point Sado Island, S. 31° W., 15 m. 38 33 00	138 40 00	176–200	fne. br. M?	34.9	July 18, 1906	4812	*Albatross*	1♂ 1♀	48272	
Do	Sudzu Misaki Light, N. 60° W, 12 m. 37 25 00	137 32 00	114	fne. gy. S. bk. Sp.	42.5	July 21, 1906	4826	do	1♂	48270	
Northwest of Nagasaki	Nomo Zaki, N. 64° E., 20.5 m. 32 26 00	129 22 00	100			Aug. 8, 1906	4889	do	1♂	48267	Soft shell.
Korea: Sea of Japan	36 32 00	129 45 00	150	gn. M. fne. gy. S.		Aug. 1, 1906	4868	do	1♂	48269	

Genus PELTARION Jacquinot

Peltarion[20] JACQUINOT, d'Urville's Voy. au Pole Sud 1837–1840, atlas, Crust., 1847 (?),[21] pl. 8, figs. 1–3; type, *P. magellanicus;* text, Zool., vol. 3, 1853, p. 80.—WHITE, List Crust. Brit. Mus., 1847, p. 52.—DANA, U. S. Expl. Exped. vol. 13, Crust., pt. 1, 1852, p. 298; pt. 2, 1853, p. 1425.—STEBBING, Proc. Zool. Soc. London, 1900, p. 519, and synonymy.

Hypopeltarium MIERS, *Challenger* Rept., Zool., vol. 17, 1886, p. 210; type, *H. spinulosum* (White).—RATHBUN, Proc. Biol. Soc. Washington, vol. 11, 1897, p. 165.

Hypopeltarion ORTMANN, Zool. Jahrb., vol. 7, 1893, p. 421.

Carapace suborbicular or broad oval; anterior half broader; very convex, strongly deflexed anteriorly; surface rough, median sutures deep. Rostrum horizontal, triangulate, tridentate, median tooth larger and more advanced than lateral. Anterior and lateral margins dentate, teeth shallow, edges spinulous. Orbits 4-toothed. Eye stalks slender, curved, capable of concealment within the orbits. Basal article of antenna very short, next article longer. Merus of outer maxilliped somewhat longer than wide, broadly truncate at insertion of palp. Chelipeds stout. Carpus and propodus of legs of subequal length. Abdomen of male small, narrow.

South and middle America.

KEY TO THE SPECIES OF THE GENUS PELTARION

A[1]. Carapace as broad as long or nearly so. Chelipeds equal. Third, fourth, and fifth segments of male abdomen fused ..... *spinulosum*, p. 160.

A[2]. Carapace distinctly longer than broad. Chelipeds very unequal. No abdominal segments fused ..... *dextrum*, p. 161.

PELTARION SPINULOSUM (White)

Plate 69, Figures 1 and 2

Atelecyclus spinulosus WHITE, Ann. Mag. Nat. Hist., ser. 1. vol. 12, 1843, p. 345 (type-locality, Falkland Islands; type in Brit. Mus.).

? *Atelecyclus chilensis* NICOLET in Gay, Hist. Chile, Zool., vol. 3, Crust., 1849, p. 175 (type-locality, Bay of Valparaiso; type not extant). Not *A. chilensis* Milne Edwards, 1837.

Peltarion magellanicus JACQUINOT, d'Urville's Voy. au Pole Sud 1837–1840, atlas, Crust., 1847 (?), pl. 8, figs. 1–3; text, Zool., vol. 3, 1853, p. 83 (type-locality, Sts. of Magellan; type in Paris Mus.).

Peltarion spinulosum (=*Corystes spin.*) WHITE, List Crust. Brit. Mus., 1847, p. 52.—DANA, U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 304; atlas, 1855, pl. 18, fig. 6*a* and *b;* southern Patagonia.—CUNNINGHAM, Trans. Linn. Soc. London, vol. 27, 1871, p. 494; Sts. of Magellan.—MIERS, Proc. Zool. Soc. London, 1881, p. 68.—A. MILNE EDWARDS, Miss. Sci. du Cap Horn 1882–1883, vol. 6, zool., Crust, 1891, p. F. 17.—STEBBING, Proc. Zool. Soc. London, 1900, p. 519, and synonymy.—BOUVIER, in A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 306.

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[20] *Peltarion* not to be displaced by *Peltarium* Fischer de Waldheim, 1844. See International Rules of Zoological Nomenclature, Art. 36, Recommendations, in Proc. Biol. Soc. Washington, vol. 39, 1926, p. 87.

[21] As White in 1847 cites the atlas of Hombron and Jacquinot, it must have been issued as early as 1847.

Hypopeltarium spinulosum MIERS, *Challenger* Rept., Zool., vol. 17,1886, p. 211; (Chiloe, etc.).

Hypopeltarion spinulosum ORTMANN, Zool. Jahrb., vol. 7, Syst., 1893, p. 421.—LENZ, Zool. Jahrb., Suppl. 5, vol. 2, part 3, 1902, p. 758.

Diagnosis.—Carapace as broad as long or nearly so. Chelipeds subequal. Third, fourth, and fifth segments of male abdomen fused.

Description.—Carapace suborbicular, broader than long, or sometimes longer than broad in the young and half grown; covered with crowded, unequal granules, most prominent on posterior part, and becoming lower and less apparent with age. Lateral teeth 4 or 5 besides the orbital tooth; 3 are antero-lateral, the third being at the widest part of the carapace; one, and sometimes two, are postero-lateral. Median tooth of front narrow, gradually diminishing to a bidentate tip; lateral teeth slender, about half as long as median and longitudinally placed. Cornea black. Basal article of antenna less advanced than suborbital tooth; next two articles stout. Merus of outer maxilliped equal in its greatest width to distal end of ischium, distal half of margin spinulous. Upper margin of chelipeds spinous, surface rough with stout, sharp spinules which become tubercles or granules in the old and which form about 5 longitudinal rows on outer surface of palm. Fingers compressed, subtriangular, narrowly gaping. Legs spinulous above, especially on carpus and propodus, the former with a longitudinal row of spinules on outer surface in the first three pairs, and two rows in the last pair; dactyli long and slender. Ambulatory legs fringed with long silky hair, also upper margin of chelae, lower surface of carapace and sternum and margins of abdomen and maxilliped. Terminal segment of male abdomen slightly longer or shorter than breadth, and deeply invaginated in the preceding segment.

Color.—Above red spotted with white, beneath entirely white (White).

Measurements.—Male (61098), length of carapace 50, width of same 52.6 mm. Male (22061), length of carapace 37.2, width of same 36 mm.

Range.—From Uruguay by way of the Straits of Magellan to the Island of Chiloe, Chile. Bay of Valparaiso (Nicolet). Falkland Islands. Shallow water to 77.5 fathoms.

Material examined.—See table, page 162.

PELTARION DEXTRUM (Rathbun), new combination

Plate 69, Figure 3

Hypopeltarium dextrum RATHBUN, Bull. Lab. Nat. Hist. State Univ. Iowa, vol. 4, 1898, p. 277, pl. 6, fig. 2 (type-locality, off Cozumel, Yucatan, 231 fathoms; Cat. No. 9558, U.S.N.M.).

Material examined of Peltarion spinulosum

Locality	Bearings: Latitude S.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.	Remarks
	° ′ ″	° ′ ″			°F.						
Uruguay, off Cape Santa Maria.						July —, 1925		*Undine*	2♂	61099	From Buenos Aires Museum.
Argentina (Patagonia):											
Off Gulf of San Matias	40 03 00	58 56 00	52	fne. dk. S		Jan. 13, 1888	2767	*Albatross*	3♂	40628	
Do	42 24 00	61 38 30	43	dk. S. bk. Sp		Jan. 14, 1888	2768	do	2♂	22054	
Puerto Madryn			15–20					M. Doello-Jurado	4 y	Buenos Aires Mus.	
San Julian						May 6, 1927		W. L. Schmitt	1♂	61094	
Off Cape Virgins	52 23 00	68 31 30	17	S. G		Jan. 18, 1888	2774	*Albatross*	1♂	22055	
Falkland Islands:											
Teal Inlet						Apr. 2, 1927; Apr. 4, 1927		W. L. Schmitt	1♂	61091	
Port William						Apr. 9, 1927		do	3♂ 3♀	61095	
Between Pembroke lighthouse and Tussuck Island.			10–15			Apr. 22, 1927		do	2♂ 2♀	61093	
Straits of Magellan, Chile:											
Gregory Bay						Jan. 18, 1888		*Albatross*	1♂ 3♀	22061	
Do	52 41 00	69 55 30	21	S. G		do	2776	do	1♂ 3♀	22056	
South of Elizabeth Island.	53 01 00	70 42 15	61	gy. S. bk. Sp	47.9	Jan. 23, 1888	2778	do	1 y	22057	
Do	53 06 00	70 40 30	77.5	gn. Oz	46.9	do	2779	do	25	22058	
Laredo Bay						Jan. —, 1888		do	1♂	17431	Shed shell.
Punta Arenas or Sandy Point.						Jan. 24, 1888		do	3♂ 4♀	22063	
Do								*Hassler*	2♂ 2♀	18508	From Mus. Comp. Zoöl.
Do						Feb. 2, 1927		W. L. Schmitt	3♂	61097	
Do						Feb. 3, 1927		do	19♂ 23♀ (3 soft shell).	61098	
Do						Feb. 4, 1927		do	1♂ 1♀	61096	
Do									1♂	61100	From Buenos Aires Museum.
Port Churruca						Feb. 2, 1888		*Albatross*	2♀	22062	
Chile:											
Otter Bay, Smyth Channel.						Feb. —, 1888		do	1♂ 1♀	40629	
Port Grappler						Feb. 8, 1888		do	1♀	22064	
Off Port Otway	46 47 30	75 15 00	61	gn. M	53.9	Feb. 9, 1888	2787	do	3♂ 2♀; 25 y	22059; 22060	

Diagnosis.—Carapace distinctly longer than broad. Chelipeds very unequal. No segments of male abdomen fused. A spine on eye stalk.

Description.—Carapace elongate-oval, covered with numerous well-separated, small, white, beadlike tubercles which posteriorly become subacute or spiniform. Surface between tubercles covered with very short, light-colored setae. Lateral teeth three besides the orbital tooth; two are antero-lateral, one postero-lateral. Lower surface of carapace spinulous. Median tooth of front oblong, twice as

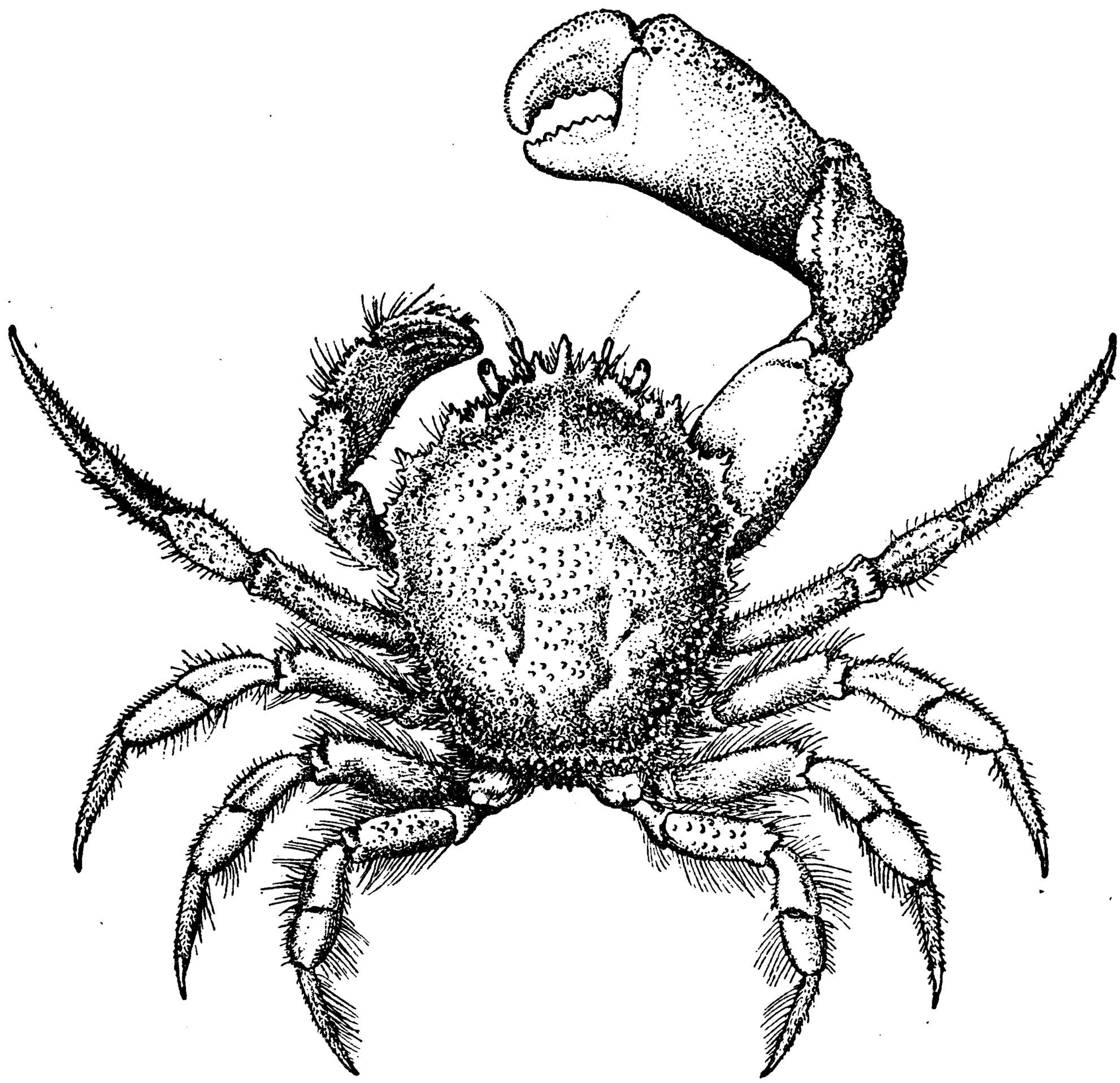

FIGURE 25.—PELTARION DEXTRUM, MALE, HOLOTYPE, DORSAL VIEW, × 15/16

long as lateral, which are divergent, each tooth tipped with a sharp spine and having two or more spinules near the tip. Cornea imperfectly developed, light brown; a small spine on anterior or inner surface of eye stalk about one-third the distance from tip. Basal article of antenna attaining end of suborbital tooth, next two articles successively much slenderer. Ischium of outer maxilliped wider distally than the merus, its antero-internal angle produced; inner angle of merus spinulous. Chelipeds very unequal, the right the larger (in the single specimen); surface finely granulate. Merus very thick, trigonal, spinulous on upper and outer margins and toward distal

end. Carpus with outer surface tuberculate, inner margin thick, rough with sharp spinules; inner angle prominent, rectangular. Manus very deep distally, upper surface spinulous and tuberculate; fixed finger short, triangular; dactylus wide, upper margin arcuate, spinulous. Smaller cheliped very spinulous, upper margin spinous, fingers proportionally longer and more slender, gaping slightly at base. Merus of legs spinous above, and in last pair spinulous on hinder surface; carpus spinulous in first three pairs; dactyli very long and slender. Legs fringed with long silky hair, also upper margin of left cheliped, lower margin of carapace, and margins of abdomen, sternum, and maxilliped. Sternum granulate. Terminal segment of male abdomen broader than long, not invaginated in the preceding segment. Median third of abdomen spinulous, spinules diminishing in size from first to sixth segment.

Measurements.—Male holotype, length of carapace 42.5, width of same 36.5, length of right cheliped 72, of left one 37.5 mm.

Range.—East coast of Mexico, deep water.

Material examined.—Off Cozumel Island, Yucatan, 231 fathoms, station 2359, *Albatross;* one male holotype (9558).

Genus TRACHYCARCINUS Faxon

Trachycarcinus Faxon, Bull. Mus. Comp. Zoöl., vol. 24, 1893, p. 156; type, *T. corallinus* Faxon; Mem. Mus. Comp. Zoöl., vol. 18, 1895, p. 25.—Alcock, Journ. Asiat. Soc. Bengal, vol. 68, 1899, p. 100.

Carapace pentagonal, very convex, antero-lateral margins long, nearly straight, toothed. Front narrow, produced, three toothed or spined. Orbits large, with forward aspect, imperfect; two hiatuses above, one below, and one at inner angle; lower wall formed chiefly by the carapace. Anterior margin of buccal cavity not distinctly defined, epistome short, ridges of endostome developed. Sternum long and rather narrow. Abdomen of male narrow. Eyestalks very small, retractile within orbits; eyes dull and faintly pigmented. Antennules longitudinally folded. Antennae lying in inner hiatus of orbit, basal segment but slightly enlarged, not filling hiatus at inner angle of orbit nor attaining to the front, subcylindrical, unarmed, imperfectly fused with carapace; second article longer and slenderer than first, the third article about equal to the second in length but slenderer; all are furnished with long, coarse setae; antenna less than half as long as carapace. Ischium of outer maxillipeds produced at antero-internal angle; merus rounded at antero-external angle, obliquely truncated without emargination at antero-internal angle. Legs of moderate length; dactyli styliform, straight, slender, longer than the penult article.

Inhabits deep water off middle America, and Japan, the Indian Ocean and the East Indies.[22]

KEY TO THE AMERICAN SPECIES OF THE GENUS TRACHYCARCINUS

A[1]. Tubercles of carapace furnished with smooth, flat, white granules. Chelipeds of male very unequal ..... **corallinus, p. 165.**

A[2]. Tubercles of carapace rough with acute or spine-tipped granules. Chelipeds subequal ..... **spinulifer, p. 166.**

TRACHYCARCINUS CORALLINUS Faxon

Plate 72

Trachycarcinus corallinus FAXON, Bull. Mus. Comp. Zoöl., vol. 24, 1893, p. 156 (type-localities, Bay of Panama, 546 and 695 fathoms, and off Acapulco, 660 fathoms; cotypes in M.C.Z. and U.S.N.M.); Mem. Mus. Comp. Zoöl., vol. 18, 1895, p. 26, pl. A.—RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 599.—Not *T. corallinus* BALSS, Arch. f. Naturg., vol. 88, 1922, p. 99, which may be called *T. balssi*.

Diagnosis.—Protuberances of carapace large, covered with smooth, flat tubercles; chelipeds of male very unequal; outer surface of hands smooth.

Description.—Antero-lateral margin longer than postero-lateral. General surface densely clothed with a dark brown coat consisting of a multitude of close-set club-shaped setae; underneath this the shell is smooth and white. Regions well marked; on the prominent parts of each are groups of flattened, ivory white tubercles. The principal groups are: two antero-lateral and one posterior median on the gastric region; four in two pairs on the cardiac; five or six on each branchial; and one crescentic on each hepatic region. Front with three acute teeth, median twice as long as lateral. Preorbital tooth subrectangled, edge denticulate. Behind the postorbital spine there are three prominent teeth increasing in length successively; a minute tooth just back of the largest lateral tooth. Posterior margin denticulate, concave at middle.

The end of the antennal peduncle does not quite reach the end of the rostrum. Chelipeds of male very unequal, the larger may be right or left; large chela smooth and ivory white; merus with a few small teeth along upper margin, mostly near the two ends of the article, and there are also a few still smaller teeth along the postero-inferior margin; carpus inflated, upper margin armed with one strong tooth and denticulate along its whole length; propodus somewhat swollen, the finger bent down at an obtuse angle with the lower border of the palm; usually two or three small tubercles or teeth on upper margin of propodus, besides a tubercular process at articu-

[22] If the three genera *Peltarion*, *Trichopeltarion*, and *Trachycarcinus* be retained, then *Trichopeltarium alcocki* Doflein (in Chun, Aus den Tiefen des Weltmeeres, vol. 2, 1903, p. 531, text-fig.) should be removed from *Trichopeltarion* and be known as *Trachycarcinus alcocki*.

Material examined of Trachycarcinus corallinus

Locality	Bearings: Latitude N.	Bearings: Longitude W.	Fathoms	Bottom	Temperature	Date	Station	Collector	Specimens	Catalogue No.
	° ′ ″	° ′ ″			°F.					
Mexico: Off Acapulco	16 33 00	99 52 30	660	br. S. bk. Sp.	39	Apr. 11, 1891	3418	*Albatross*	1♂	20618.
Panama: Bay of Panama	7 09 30	81 08 30	546 695	sft. bu. M gn. M	40.1 39	Feb. 23, 1891	3356 3353	do do	5♂ 4♀ (2 ovig.) 1♀	M.C.Z. 20619.
Galapagos Islands: Off Chatham Island	7 06 15	80 34 00				do				
	Latitude S. 0 36 30	89 19 00	634	co. S	39.9	Apr. 4, 1888	2808	do	1♀	22065.

lation of carpus; dactylus strong, downcurved, granules on upper border, both fingers armed with large, blunt, prehensile teeth. The smaller chela is furnished with setae, is slenderer than the large one, has proportionally longer fingers and is sparsely granulate. Chelipeds of female approximately equal, resembling smaller one of male. Legs covered with coarse setae, dactyls tipped with a small, acute, horny nail. Third, fourth, and fifth segments of male abdomen partially fused, divisions plainly indicated.

Color.—Wood brown. Larger cheliped of male, and tubercles of carapace ivory white.

Measurements.—Male cotype (20618), length of carapace 27.5, width of same 30.4, length of left cheliped 48.7, length of right cheliped 23.7 mm.

Range.—From Acapulco, Mexico, to Galapagos Islands. 546 to 695 fathoms.

Material examined.—See table, p. 166.

TRACHYCARCINUS SPINULIFER Rathbun

Plates 70 and 71

Trachycarcinus spinulifer RATHBUN, Bull. Lab. Nat. Hist. State Univ. Iowa, vol. 4, 1898, p. 278, pl. 6, fig. 1, (type-locality, off the Delta of the Mississippi, 324 fathoms; type, Cat. No. 9639, U.S.N.M.).

Diagnosis.—Protuberances of carapace small, spinulous; chelipeds subequal, outer surface of hands rough.

Description.—Shape much as in *T. corallinus*, antero-lateral margins more arcuate. Surface covered with a thin, fine, light-colored pubescence. Regions well marked, elevations small and numerous, covered with small conical tubercles, many spiniform; slender spinules scattered on carapace, especially on posterior half and near lateral margins. Lateral spines long and slender,

armed with spinules; antero-lateral spines three, third the longest; postero-lateral two; small spines along posterior margin. Front with three slender spines of equal width at base, directed forward (tips broken off). Orbital spines very slender, spinuliferous, preocular having a small spine at base on outer side. Segments of male abdomen all distinct; first and second with a few small spines or spinules.

Chelipeds small, nearly equal, the right large; setose; arm not exceeding carapace, lower and outer margin spinulous; outer surface of wrist and hand spinulous, larger spines at inner angle of wrist and along upper margin of hand. Legs rather long and slender, pubescent, bearing spinules except on the dactyli.

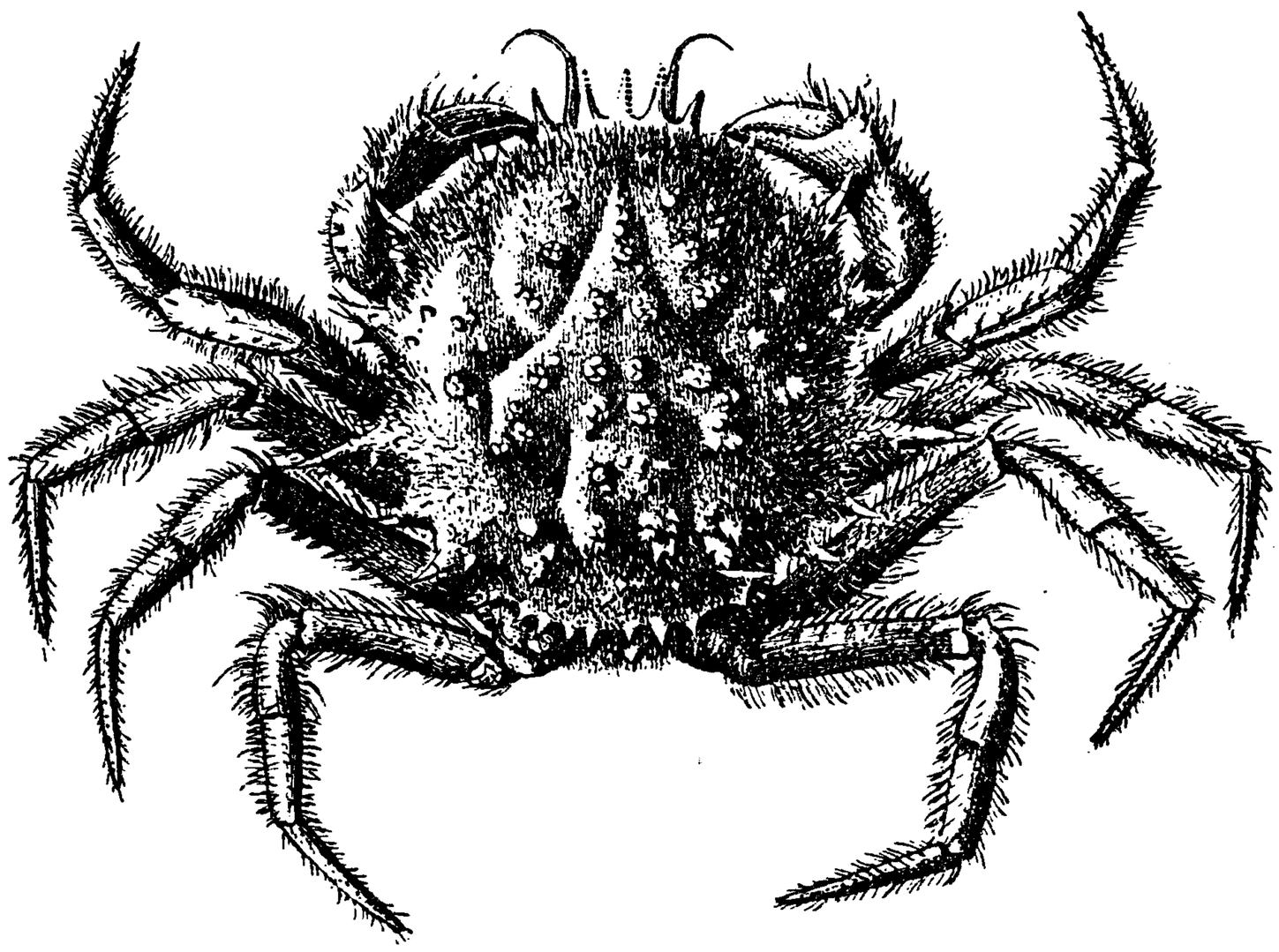

FIGURE 26.—TRACHYCARCINUS SPINULIFER, MALE, HOLOTYPE, DORSAL VIEW. × 1⅛

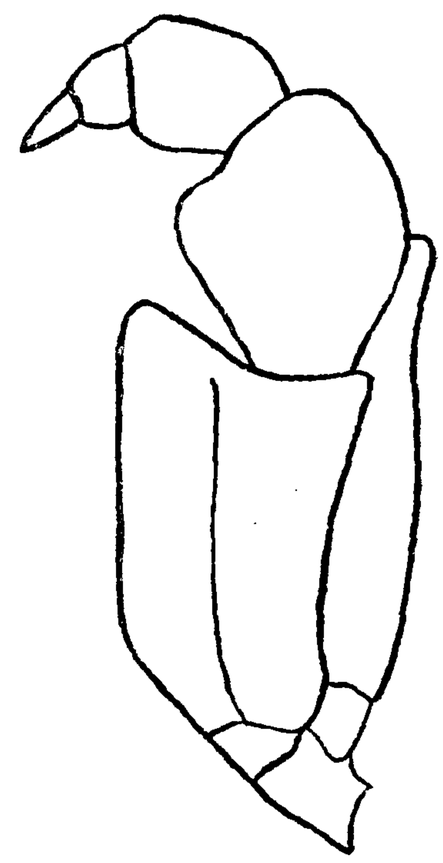

FIGURE 27.—TRACHYCARCINUS SPINULIFER, MALE, HOLOTYPE, OUTER MAXILLIPED, × 5

Measurements.—Male, holotype, length to base of frontal spines 26, width exclusive of spines 23.3, width inclusive of spines 34 mm. Larger carapace (20596), length to base of frontal spines 40.6, width exclusive of spines 38.6, width inclusive of spines (tips broken off) 50.4 mm.

Range.—Gulf of Mexico, 324 to 347 fathoms.

Material examined.—Gulf of Mexico; 1885; *Albatross:* SE. of Pensacola, Florida; lat. 28° 36′ 15″ N., long. 86° 50′ 00″ W.; 347 fathoms; gy. M.; temperature 44.1° F.; March 13; station 2395, 1 carapace (20596). S. of Alabama; lat. 29° 03′ 15″ N., long. 88° 16′ 00″ W., 324 fathoms; gy. M.; temperature 46.5° F.; February 11; station 2376; 1 male, holotype, and 1 carapace (9639).

Genus TRICHOPELTARION A. Milne Edwards

Trichopeltarion A. MILNE EDWARDS, Bull. Mus. Comp. Zoöl., vol. 8, 1880, p. 19; type, *T. nobile* A. Milne Edwards.—FAXON, Mem. Mus. Comp. Zoöl., vol. 18, 1895, p. 25.

Trichopeltarium ALCOCK, Journ. Asiat. Soc. Bengal, vol. 68, 1899, pp. 96 and 99.

Carapace subcircular, broader than long or nearly as broad as long, strongly convex, borders spinate. Front prominent, not very broad, cut into three sharp teeth or spines. Orbits shallow, defined by spines separated by wide gaps; inner suborbital angle spiniform. Eye-stalks slender. Basal article of antenna short, subcylindrical; flagellum coarse, stout, setaceous. Epistome of fair length, fairly well defined, sunken, and overlapped by the external maxillipeds. Buccal orifice square-cut, longer than broad, not completely covered by the outer maxillipeds, which are somewhat elongate and have the merus a little narrower than the ischium. Efferent branchial channels defined by ridges which do not reach the epistome. Chelipeds massive and unequal in the male. Legs stout, hairy, more or less spiny, ending in stout, styliform dactyli; they are longer and nearly as massive as the female chelipeds. (After Alcock.)

Caribbean Sea and Indian Ocean, in deep water.

TRICHOPELTARION NOBILE A. Milne Edwards

Plate 73

Trichopeltarion nobile A. MILNE EDWARDS, Bull. Mus. Comp. Zoöl., vol. 8, 1880, p. 20, pl. 2 (type-locality, off St. Lucia, 151 fathoms; type in Mus. Comp. Zoöl).

Diagnosis.—Carapace broader than long; surface thickly velvety as in *Dromia*. Median frontal spine shorter than the lateral ones.

Description.—Carapace broader than long, much swollen, covered with a short thick velvet through which the bare spines protrude; a prominent median carina. Of the frontal spines the median is shorter than the lateral. Second movable article of antenna reaching nearly as far as outer frontal spines. Superior orbital border emarginate, armed inwardly by a spine enlarged at base, followed by a smaller middle spine, and an outer, somewhat larger spine; orbit shallow, eye very slender, much reduced and curved; inner suborbital angle triangular, spine-pointed, directed slightly inward. Orbital and lateral spines bordered with spines. Antero-lateral borders armed with three large spines or teeth, bifurcate or trifurcate; the strongest is at the middle of the branchial region; posterior border ornamented with pointed tubercles or small spines. Other similar tubercles are found in the metabranchial and intestinal regions as well as along the postero-lateral margins. Branchio-cardiac furrows very deep. Chelipeds very unequal; the major (right) one enormous and almost entirely smooth; some spinules on the posterior margin of the arm, the inner border of the wrist and the superior border of the palm. Minor cheliped very small, compressed, hairy and spinous. Legs hairy, rather long, armed above with a row of spines or spinules which are strongest on the first leg and diminish on the succeeding legs.

Measurements.—Male holotype, length of carapace 66, width of same including spines 77, width without spines 65, length of right cheliped 96, of left cheliped 55 mm.

Range.—Known only from the unique type, taken off St. Lucia, in 151 fathoms, temperature 57° F., station 219, U.S.C.S.S. *Blake* (3054, M.C.Z.).

Genus PLIOSOMA Stimpson

Pliosoma STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 227 [99]; type, *P. parvifrons* Stimpson.

Body rotund-ovate, longer than wide. Fronto-orbital region very narrow, tumid. Front shallow, rostrum medially fissured. Eyes small, retractile, longitudinally extended. Orbits deep, directed anteriorly, external angle prominent, upper margin with one fissure. Basal article of antenna just filling the inner hiatus of the orbit; movable part of medium size, excluded from orbit. Epistome very short, almost obsolete, concealed by the apex of the outer maxillipeds. These last are elongate; distal inner part of ischium produced, merus notched at inner angle; exognath large, narrowing toward the apex, armed inwardly with a tooth. Chelipeds very long in well developed male. Legs slender, first and second pairs cylindrical, first pair much the longer; third and fourth pairs compressed toward the extremity and ciliate; dactylus of last pair almost natatory. Sternum anteriorly very broad, narrowing behind.

Contains only one species.

PLIOSOMA PARVIFRONS Stimpson

Plate 74

Pliosoma parvifrons STIMPSON, Ann. Lyc. Nat. Hist. New York, vol. 7, 1860, p. 228 [100], pl. 3, fig. 6 (type-locality, Cape St. Lucas; types, Cat. No. 2084, U.S.N.M.; Cat. No. 1242, M.C.Z.).—RATHBUN, Bull. Amer. Mus. Nat. Hist., vol. 48, 1923, p. 621, pl. 26; p. 636 (*megalops*), pl. 36, fig. 2.

Diagnosis. Carapace longer than broad. Orbits and eyes directed forward. Chelipeds and first two legs long and slender. Last two legs subnatatory.

Description.—Carapace convex, pubescent; median regions well separated from the hepatic and branchial ones. Upper surface armed with erect blunt spines, as follows: Four large and seven small ones on the gastric region, the large ones on its posterior part; one on the cardiac, and one on the intestinal region, curved forward; two on the inner part of the branchial, and two longer ones on the anterior part of its lateral margin; two or three small ones on the hepatic region. In the old, well developed individual the dorsal spines are reduced in size, the gastric, hepatic, and two inner branchial prominences being scarcely more than tubercles. There is also a spine on the middle of the pterygostomian ridge. The fronto-orbital region occupies about

one-third the width of the carapace in the old, but is proportionally narrower in the immature. In the old male, the first leg is nearly twice as long as the carapace; the cheliped is stronger than the legs and one and two-thirds times as long as the carapace; surface finely granulate except on distal half of fingers; merus subcylindrical, carpus subspherical; propodus a little compressed, increasing in width gradually and regularly almost to the fingers where the lower margin bows outward, giving the fixed finger a sinuous edge and making a considerable gape between the proximal halves of the fingers, into which a very low, broad tooth projects from the dactylus; meeting edges crenulate.

Color.—Brownish or buff (Stimpson).

Measurements.—Male (60021), length of carapace 20, width of same 18.8, fronto-orbital width 6, width of front 2.2, length of cheliped 34.4, of first leg 39.4 mm.

Range.—Cape San Lucas; ? Carmen Island.

Material examined.—Cape San Lucas, Lower California, Mexico: J. Xantus; 175 immature cotypes (2084); 12 males, 6 females, cotypes (1242, M. C. Z.). March 23, 1911; *Albatross;* 1 male (60021). A megalops (60065), thought to be this species, was taken on southeast side of Carmen Island by the *Albatross*, 1911.

Subfamily ACANTHOCYCLINAE

Cyclinea or *Cancroidea Corystidica* (*Acanthocyclidae*) + *Bellidea* (*Bellidae*) DANA, U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, pp. 145, 294, and 403; pt. 2, 1853, pp. 1424 and 1428.

Brachyura orbata STRAHL, Monats. k. Pr. Akad. Wiss. Berlin, 1861 (1862) p. 717.

Bellinae BOUVIER, in A. Milne Edwards & Bouvier, Mem. Mus. Comp. Zoöl., vol. 47, 1923, p. 309.

Outer antenna much reduced, with or without movable peduncle and flagellum; the latter if present are insignificant; the first article forms the antennal gland, the second is dentiform, lies close to the outer frontal tooth, and forms a boundary wall closing the inner end of the orbit. Antennules strongly developed, unable to retract within their basal cavity. Carapace subcircular or suboblong. Front ending in a subtriangular point. Epistome very short, sunken.

KEY TO THE GENERA OF THE SUBFAMILY ACANTHOCYCLINAE

A[1]. Carapace broader than long. Antennae terminating at basal article. **Acanthocyclus**, p. 171.

A[2]. Carapace longer than broad. Antennae with two or more articles beyond the basal article.

B[1]. Anterior half of carapace wider than posterior half. Pterygostomian region not advanced beyond line of front ..... **Corystoides**, p. 173.

B[2]. Anterior half of carapace not wider than posterior half. Pterygostomian region advanced beyond line of front ..... **Bellia**, p. 175.

Genus ACANTHOCYCLUS Milne Edwards and Lucas

Acanthocyclus MILNE EDWARDS and LUCAS, d'Orbigny's Voy. l'Amér. Mérid., vol. 6, pt. 1, 1844, p. 29; type, *A. gayi* Milne Edwards and Lucas.

Plagusetes HELLER, Verh. k. k. zool.-bot. Ges. Wien, vol. 12, pt. 1, 1862, p. 522 [4]; type, *P. elatus* Heller.

Carapace slightly broader than long, rotund, sides dentate, teeth extending a little way on the postero-lateral margin. Orbit small; eye short, peduncle stout. Pterygostomian region not prominent. Front heavily margined, teeth rounded, median tooth much larger than lateral. The antennae terminate with the basal article. Merus of outer maxilliped subcircular, with a very shallow distal emargination. Chelipeds stout, very unequal. Dactyli of legs curved, acuminate. Male abdomen small, narrow.

Three species inhabit the South American coast, so nearly related that they may easily be mistaken for one another. The differences are arranged below in tabular form as most convenient for quick determination.

Characteristics of the species of Acanthocyclus

A. gayi	*A. albatrossis*	*A. hassleri*
Narrow; width 1.05 to 1.08 times length.	Width intermediate, 1.08 to 1.13 times length.	Wide; width 1.16 times length.
Lateral teeth intermediate	Teeth prominent, acute	Teeth appressed.
Front entire	Front faintly bilobed	Front entire.
Dactyli of ambulatory legs short, much curved from base.	Dactyli long, little curved	Dactyli short, much curved.
End of basal antennal article swollen in a wide, smooth, round protuberance curving, over on to the front.	Antennal article not swollen at the very end, but furnished with a blunt, projecting tooth, between which and the front a narrow furrow runs.	Antennal article as in *albatrossis*
Abdomen of male narrow; sides of fourth, fifth, and sixth segments subparallel.	Abdomen wide; sides of the sixth segment convex, of fifth concave, of third and fourth converging distally.	Abdomen intermediate; sides of the sixth segment convex, of fifth straight, of third and fourth converging distally.
Both carapace and legs very hairy	Less hairy	Less hairy.
Carapace almost smooth	Carapace tuberculate or granulate	Carapace tuberculate.
Ischium joints of maxillipeds with inner margins subparallel, but leaving a wide hiatus.	Ischium joints with inner margins in contact.	Ischium joints with inner margins diverging anteriorly; gape less than in *gayi*.
Merus joints of maxillipeds with their outer margins subparallel and continuous with the outer margins of the ischium joints.	Merus joints divergent, i. e., their outer margins make quite an angle with the outer margin of the ischium joint.	Merus joints similar to those of *gayi*.
Orbit viewed from above less than twice as wide as deep.	Orbit viewed from above less than twice as wide as deep.	Orbit viewed from above more than twice as wide as deep.

ACANTHOCYCLUS GAYI Milne Edwards and Lucas

Plate 75; Plate 76, Figure 4

Acanthocyclus gayi MILNE EDWARDS and LUCAS, d'Orbigny's Voy. l'Amér. Mérid., vol. 6, pt. 1, 1844, p. 30; atlas, vol. 9, 1847, pl. 15, fig. 1–1*f* (type-locality, coasts of Valparaiso; cotype in Paris Mus., and in Mus. Phila. Acad. Sci.).—NICOLET, in Gay's Hist. Chile, Zool., vol. 3, 1849, p. 176.—DANA, U. S. Expl. Exped., vol. 13, Crust., pt. 1, 1852, p. 295; atlas, 1855, pl. 18, figs. 4*a–c*.—HELLER, Reise Fregatte *Novara*, vol. 2, pt. 3, Crust., 1865, p. 70.—?CUNNINGHAM, Trans. Linn. Soc. London, vol. 27, 1871, p. 494; Lota.—KINGSLEY, Proc. Acad. Nat. Sci., Philadelphia, 1880, p. 37.—RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 597.—LENZ, Zool. Jahrb., suppl. 5, vol. 2, 1902, p. 753; Tumbes, Talcahuano, Cavancha.

Acanthocyclus villosus STRAHL, Monats. Akad. Wiss. Berlin, 1861 (1862), p. 714, plate, 1 fig. (type-locality, Chile; type in Berlin Mus.).

Plagusetes elatus HELLER, Verh. k. k. zool.-bot. Ges. Wien, vol. 12, pt. 1, 1862, p. 522 [4] (type-locality, Chile; type in Vienna Mus.).

Description.—See page 171.

Color.—Male (61569), dark blackish olive, lighter behind, where it is suffused with tawny olive; legs tawny olive, especially propodi; carpi and meri darker; all articulations whitish; dactyli with blackish olive spot on upper margin; under side of crab and lower two thirds of palms white. (Schmitt.)

Measurements.—Male (17617), length of carapace 21.5, width of same 23.2 mm.

Range.—Tumbes, Peru, to Lota, Chile.

Material examined.—

PERU.—Salavery; Oct. 19, 1926; W. L. Schmitt; 2 females, 2 young (60843).

San Lorenzo Island; Dr. H. E. Ames, U. S. Navy; 1 male (17617).

Mollendo; J. Orton; 1 ovigerous female (61991), received from Boston Society of Natural History.

Peru; 1 male (M.C.Z.).

CHILE.—Tocopilla; November 14, 1926; W. L. Schmitt; 2 males, 2 females (60842).

Antofagasta: November 1914; J. N. Rose; 1 carapace (49060), from Carnegie Institution of Washington. W. L. Schmitt; November 15, 1 female (61568); November 16, 1 male (61569).

Valparaiso: 1 female, cotype (Mus. Phila. Acad. Nat. Sci.). *Hassler* Exped.; 1 male (M.C.Z.). January 6, 1927; W. L. Schmitt; 1 immature female (61993).

Talcahuano; 1 female (M.C.Z.).

Lota; January 16, 1927; W. L. Schmitt; 1 ovigerous female (61994).

Chile: 1838–1842; U. S. Exploring Expedition; 1 female (Mus. Phila. Acad. Nat. Sci.). 1 specimen, cotype of *A. villosus* (Berlin Mus.).

ACANTHOCYCLUS ALBATROSSIS Rathbun

Plate 76, Figures 2, 3, 5, and 6; Plate 77

Acanthocyclus gayi STRAHL, Monats. Akad. Wiss. Berlin, 1861 (1862), p. 713, plate, 2 figs.; not *A. gayi* Milne Edwards and Lucas, 1844.—?MIERS, Proc. Zool. Soc. London, 1881, p. 69; Isthmus Bay, Sts. Magellan.

Acanthocyclus gay TARGIONI-TOZZETTI, Zool. *Magenta*, vol. 1, 1877, p. 95, pl. 7, fig. 1*a-f;* west coast of Patagonia.

Acanthocyclus albatrossis RATHBUN, Proc. U. S. Nat. Mus., vol. 21, 1898, p. 599 (type-locality, Port Otway; type, Cat. No. 21589, U.S.N.M.).—LENZ, Zool. Jahrb., suppl. 5, vol. 2, 1902, p. 753; Cavancha and Almirantazgo, Tierra del Fuego.—STEBBING, Proc. Zool. Soc. London, 1914, p. 344; Roy Cove, Falkland Islands.

Description.—See page 171.