

PROCEEDINGS

OF THE

Washington Academy of Sciences

VOL. IV

1902

WASHINGTON
MARCH-OCTOBER 1902

CONTENTS.

	PAGE.
Organization and Membership of the Washington Academy of Sciences.	I
Hopkins Stanford Galapagos Expedition.—VII. Arachnida ; by Nathan Banks	49
Harriman Alaska Expedition.—XXVII. Apterygota ; by J. W. Folsom	87
Harriman Alaska Expedition.—XXVIII. Hymenoptera ; by W. H. Ashmead	117
Hopkins Stanford Galapagos Expedition.—VIII. Brachyura and Macrura ; by Mary J. Rathbun	275
Harriman Alaska Expedition.—XXIX. The Mosses of Alaska ; by J. Cardot and I. Thériot	293
Harriman Alaska Expedition.—XXX. Anemones with discussion of variation in Metridium ; by H. B. Torrey	373
Hopkins Stanford Galapagos Expedition.—IX. Shistocerca, Sphingonotus and Halmenus ; by R. E. Snodgrass	411
Hopkins Stanford Galapagos Exposition.—X. Mallophaga from Birds ; by Vernon L. Kellogg and Shinkai I. Kuwana	457
Hopkins Stanford Galapagos Expedition.—XI. The Birds of Clipperton and Cocos Islands ; by R. E. Snodgrass and E. Heller	501
Hopkins Stanford Galapagos Expedition.—XII. Echinodermata , by Hubert Lyman Clark	521
The Eyes of Rhineura Floridana ; by Carl H. Eigenmann	533
Hopkins Stanford Galapagos Expedition.—XIII. Marine Mollusca ; by H. A. Pilsbry and E. G. Vanatta	549
Index	561

ILLUSTRATIONS.

PLATES.

	FACING PAGE.
I-III. Galapagos Arachnida.....	82
IV-VIII. Alaska Apterygota.....	108
IX-XI. Alaska Hymenoptera.....	264
XII. Galapagos Brachyura.....	292
XIII-XXIII. Alaska Mosses... ..	348
XXIV-XXV. Alaska Anemones.....	408
XXVI. Map of the Galapagos Islands, showing relationships of <i>Shistocerca</i>	452
XXVII. Varieties of <i>Shistocerca</i> in the Galapagos.....	454
XXVIII-XXXI. Galapagos Mallophaga.....	492
XXXII-XXXIV. Eyes of <i>Rhineura Floridana</i>	544
XXXV. Marine Mollusca of the Galapagos.....	560

TEXT FIGURES.

	PAGE.		PAGE.
1. <i>Discias serrifer</i> , mandible.....	289	13. <i>Edwardsiella sipunculoides</i> , arrangement of mesenteries.....	382
2. <i>Discias serrifer</i> , outer maxilliped... ..	290	14. <i>Edwardsiella sipunculoides</i> , section.....	382
3. <i>Discias serrifer</i> , chela of pereopod.....	290	15. Possible relationship of the species of <i>Edwardsia</i> and Hexactiniæ.....	383
4. <i>Discias serrifer</i> , tail fan	291	16. <i>Harenactis attenuata</i> , arrangement of mesenteries	385
5. <i>Edwardsia</i> , type.....	376	17. <i>Harenactis attenuata</i> , section	386
6. <i>Edwardsia</i> , arrangement of mesenteries.....	376	18. <i>Charisea saxicola</i> , section.....	389
7. <i>Edwardsiella</i> , type.....	377	19. <i>Charisea saxicola</i> , mesenteries.....	389
8. <i>Edwardsiella sipunculoides</i> , portion of body wall.....	379	20. <i>Epiactis prolifera</i> , section.....	392
9. <i>Edwardsiella sipunculoides</i> , section.....	380	21. <i>Epiactis ritteri</i> , section	393
10. <i>Edwardsiella sipunculoides</i> , section.....	380	22. <i>Rhineura floridana</i> , side view of head.....	536
11. <i>Edwardsiella sipunculoides</i> , section... ..	381		
12. <i>Edwardsiella sipunculoides</i> , rudimentary mesenteries.....	381		

PROCEEDINGS
OF THE
WASHINGTON ACADEMY OF SCIENCES

VOL. IV, PP. 275-292. [PLATE XII.] JUNE 20, 1902.

PAPERS FROM THE HOPKINS STANFORD GALAPAGOS EXPEDITION, 1898-1899.

VIII.

BRACHYURA AND MACRURA.

BY MARY J. RATHBUN.

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

THIS collection though small is full of interest, yielding nine new species, one of which is the type of a new genus and family. Of the remainder more than half are additions to the fauna of the Galapagos Islands.

Suborder **BRACHYURA.**

Family **OCYPODIDÆ.**

Ocypode gaudichaudii Milne Edwards and Lucas.

Ocypode gaudichaudii MILNE EDWARDS and LUCAS, d'Orbigny's Voy. l'Amér. Mérid., VI, pt. 1, p. 26, 1843; IX, pl. XI, f. 4, 1847.

Black Bight, Albemarle Island, January 9, 1 male, 1 female.

Distribution.—Gulf of Fonseca to Valparaiso; Chatham Island, Galapagos (*Albatross*).

UCA GALAPAGENSIS sp. nov.

(Pl. XII, figs. 1 and 2.)

Carapace very convex in both the antero-posterior and transverse directions; H-shaped dorsal suture very shallow; sulcus behind the

orbit deeper; surface very finely granulate, and with small punctæ rather distant from one another. Front very broadly rounded, its width at base exceeding one third the distance between the anterior angles, and also exceeding the width of the eyebrow, or surface between the orbit and the anterior margin of the carapace. Antero-lateral angles blunt, almost a right angle; the width between them being slightly less than the width of the carapace a little behind that point. Carapace broad behind, as compared with other species of the genus.

Larger cheliped with merus and carpus elongate, outer surface rugose, inner margin tuberculous. Palm with outer surface densely tuberculous, the tubercles coarse above, diminishing from above downwards; surface bent over superiorly to almost a horizontal position, and with a sulcus subparallel to the superior margin. This margin is marked by a raised line of tubercles. The inner surface of the palm has a very prominent oblique ridge extending from the lower margin upward and backward to a point above the middle, then turning distally until it joins a curved ridge which originates at the upper margin near the carpus; the oblique ridge is marked by a line of tubercles. A double row of depressed tubercles at the base of the dactylus. Space between this row and the oblique ridge in part finely granulous. Pollex almost straight; its prehensile tubercles in general increasing in size distally. Dactylus strongly curved, reaching when closed, beyond and below the pollex; only an occasional tubercle equaling those of the pollex. Outer surface of fingers finely granulate.

Ambulatory legs with meral joints of first three pairs dilated, those of the third pair about two and a half times as long as wide, those of the last pair with subparallel margins. Remaining joints slender. Legs long-hairy.

Dimensions.—Male, length 13.6 mm., anterior width 19.5, greatest width 19.8, width between posterior pair of legs 10, greatest posterior width (inferior) 16.5, length of propodus of large cheliped 35, length of dactylus 24.9, width of propodus 12.

Type Locality.—Indefatigable Island, Galapagos, April 12, 1888, U. S. Fish Commission steamer *Albatross*, 6 males (U. S. Nat. Museum Cat. No. 22319).

Additional Localities.—Nine small specimens, 6 male and 3 female, were taken by the Hopkins Stanford Expedition at South Seymour Island, near Indefatigable Island. James Island, April 11, 1888, 1 male, *Albatross*.

This species is readily distinguished by the very convex and smooth appearance of the carapace, the great width of the front, the character

of the inner surface of the palm in the male, and in full-grown specimens the sulcus on the upper surface of the palm.

UCA HELLERI sp. nov.

(Pl. XII, figs. 3 and 4.)

A small species. Carapace moderately convex, depressions shallow. Surface microscopically granulate, and with more distant punctæ. Front broad, but at base less than one third the width between the anterior angles; broadly rounded. Anterior margin sloping very abruptly backward from the front to the antero-lateral angles, scarcely sinuous. Antero-lateral angles prominent, rectangular; width of carapace greatest at these angles. Sides sloping strongly toward each other posteriorly; moderately sinuous, the posterior width about two thirds of the anterior. The eyebrow is for the most part visible from above; its width is about five times its length; the greatest width is about one third the distance from the inner end. Lower margin of orbit also visible in a dorsal view.

The merus and carpus of the large cheliped of the male are elongate; the outer surface is crossed by short, transverse lines of very fine granules; on the merus these cross the upper margin and extend a little way down the inner surface; the lower margin of the merus is armed with sharp granules which increase in size distally, becoming tubercles towards the end; two or three other rows of fine granules are close to the lower margin on the outer surface. The outer surface of the manus is covered with granules larger above and very fine on the outer surface, not distributed evenly, but somewhat reticulated, leaving small smooth patches. There is an irregular pit behind the union of the fingers. The upper margin has a distinct marginal tuberculated line on its proximal half only; on the distal half the outer surface rounds over to the inner. The inner surface has an oblique ridge extending at an angle of about 45 degrees upward and backward from the lower margin; at about the middle of the palm the ridge turns at a right angle or an obtuse angle and is continued upward to the margin; the ridge is formed by a line of large, irregular tubercles arranged for the most part in a single row. At the base of the dactylus there is a double row of tubercles which superiorly converges more or less towards the ridge at the middle of the palm. The surface between these rows of tubercles is almost smooth. The fingers are long and narrow; between them when closed, there is a gape wider than either finger. A depression on the proximal half of the outer surface of the pollex. Of the tubercles on the prehensile edges, there is one larger

one at the middle of the pollex; and usually also a larger one near the proximal third and another at the distal third of the dactylus. The outer surface of the fingers is smooth through the center, but along the margins more finely granulate than the palm. Proximal end of upper surface of dactylus coarsely granulate.

The merus, carpus and propodus of the ambulatory legs are ornamented with fine scabrous granules, which on the meral joints form transverse lines. The merus of the first three pairs is dilated and that of the third pair is nearly three times as long as wide. A few long hairs on the legs in the male; in the female there is in addition a dense coating of coarse hair on the upper surface of the propodus and a portion of the carpus of the third pair of ambulatory legs and on the posterior margins of the meri and propodi of the third and fourth pairs.

Dimensions.—Male, length 5.6 mm., anterior width 8.1, width between posterior pair of legs 5, greatest posterior width (inferior) 7; length of propodus of large cheliped of a male about 10.4 mm. wide 15.7 mm., length of dactylus of same 11.2, width of propodus 5.6. Oviparous female, length 6, anterior width 8.8, width between posterior pair of legs 5.4 mm.

Type Locality.—Mangrove Point, Narboro Island, March, 1899, 6 males and 3 females (U. S. Nat. Museum Cat. No. 24829). None of these males have the cheliped as fully developed as a single soft shell male from Black Bight, Albemarle Island, January 9.

Family GRAPSIDÆ.

Grapsus grapsus (Linnæus).

Black Bight, Albemarle Island, January 9, 1 male. Tagus Cove, Albemarle Island, February, 3 males, 1 female.

Taken previously at the Galapagos; found also throughout the tropics.

Geograpsus lividus (Milne Edwards).

Clipperton Island Lagoon, November 23, 3 males, 3 females.

Distribution.—Florida Keys to Sabanilla, Colombia; Lower California to Chile; James Island, Galapagos Archipelago (*Albatross*).

Planes minutus (Linnæus).

On green sea-turtle at base of tail; about 200 miles north of Wenman Island, December 8, one large female.

Pachygrapsus crassipes Randall.

Tagus Cove, Albemarle Island, 12 fathoms, 2 males, 1 female.

Not before taken at the Galapagos. Known from Oregon to Gulf of California; Japan; Hawaiian Islands (Randall), doubtfully correct.

Pachygrapsus transversus Gibbes.

Tagus Cove, Albemarle Island, on reef north of Tagus Hill, March 16, 3 males.

Taken previously at the Galapagos; found also throughout the tropics.

Family PILUMNIDÆ.

PLATYPODIA GEMMATA sp. nov.

(Pl. XII, figs. 5 and 6.)

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

The upper border of the merus, carpus and propodus of the chelipeds and ambulatory legs is sharply cristate. The chelipeds are granulated on the outer surface, the granules larger than on the carapace and arranged on the lower half of the hand in four longitudinal rows. The ambulatory legs are partially granulate.

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

Type Locality.—On reef north of Tagus Cove, Albemarle Island, March 16; 1 male, 1 ovigerous female, 2 immature females (U. S. Nat. Museum Cat. No. 24850).

LEPTODIUS SNODGRASSI sp. nov.

(Pl. XII, figs. 7 and 8.)

Carapace moderately convex and deeply areolated in its anterior two thirds, flat and smooth in its posterior third. Behind each lobe of the frontal margin a small lobule; behind each of these a larger and very prominent rectangular lobule; still further back a transverse line of four high gastric lobules, the outer pair about one and a half times as wide as the inner; and behind these a granulated line extending nearly across each protogastric lobe. A transverse line of granules, interrupted at the middle, across the widest part of the mesogastric region. The lateral portions of the carapace have each four

prominent elevations, one of which is nodular and situated at the base of the fourth antero-lateral tooth, and three of which are surmounted by broad transverse ridges; of the three ridges the anterior is in a line with the third lateral marginal sinus, the second ridge is in a line with the fourth sinus, while the third is posterior to the last marginal tooth. Front not very prominent, but projecting beyond the inner angle of the orbit, from which it is separated by a notch; bilaminar, the lobes with a slightly concave margin, and most prominent at the inner end. Antero-lateral border cut into four well-marked teeth besides the orbital angle; the first tooth is blunt and situated below the level of the orbital tooth, with which it is connected by a blunt superior ridge; the remaining teeth are acute, the third and fourth very prominent. Lower surface of carapace, edges of upper surface of arm and edges of legs hairy, especially the lower edge of the propodus of the last pair.

Chelipeds very unequal in the male. Upper and outer surface of wrist deeply dimpled or wrinkled; a strong tubercle at inner angle of wrist. Hand with blunt longitudinal carinæ, two on the upper margin and three on the outer surface. The upper carina of the outer surface is broad and has a row of deep pits or dimples; the lowest carina is at the inferior third of the outer surface and is continued along the upper margin of the thumb. The upper part of the inner surface is also pitted. The entire surface of the chelipeds as well as of the carapace is finely and closely granulate and irregularly punctate. The fingers are carinated, the lower carina on the outer surface of the thumb is continued one third the length of the palm. The fingers are black and the color of the thumb is extended on the palm, ending in a zigzag line. The fingers of the large hand gape widely, those of the small hand slightly; dactylus of large hand with two large teeth and a small intermediate one; pollex with two large teeth; tips broadly hollowed out, fingers of small hand with wavy margins. Ambulatory legs flattened, and more or less granulate, the granules fine and forming rugæ. Carpal and propodal joints with a longitudinal groove. Dactylus furred along the edges as far as the nail. Abdomen of male five-jointed.

Dimensions.—Length 13.1 mm., width 20.4, fronto-orbital width 11.8, width of front 5.5.

Type Locality.—Black Bight, Albemarle Island, January 9, one perfect male, type; also a badly damaged remnant of a smaller male (U. S. Nat. Museum Cat. No. 24831).

Additional Locality.—Reef north of Tagus Cove, Albemarle Island, March 16, the lesser cheliped of a small specimen.

Actæa dovii Stimpson.

Actæa dovii STIMPSON, Ann. Lyc. Nat. Hist. N. Y., x, 104, 1871.—A. MILNE EDWARDS, Crust. Rég. Mex., 244, pl. XLV, f. 1, 1879.—FAXON, Mem. Mus. Comp. Zoöl., XVIII, 16, 1895.

Tagus Cove, Albemarle Island, on reef north of Tagus Hill, March 16, one small male. The male of this species is considerably narrower than the female; the width of the male is from 1.4 to 1.42 times its length; of the female from 1.53 to 1.55 times its length. The Galapagos specimen has eleven orange-red stripes extending backward from the frontal and antero-lateral margins and converging posteriorly.

Distribution.—San Salvador; Panama.

Xanthias politus Rathbun.

Micropanope polita RATHBUN, Proc. U. S. Nat. Mus., XVI, 238, 1893.
Panopeus tanneri FAXON, Bull. Mus. Comp. Zoöl., XXIV, 154, 1893; Mem. Mus. Comp. Zoöl., XVIII, 19, pl. III, f. 4, 4a, 1895.
Xanthias politus RATHBUN, Bull. Labor. Nat. Hist. State Univ. Iowa, IV, 271, 1898; Proc. U. S. Nat. Mus., XXI, 587, 1898.

Tagus Cove, Albemarle Island, 12 fathoms, one male.

Previously taken off Hood Island, Galapagos, in 20 fathoms; near the Galapagos in 53 fathoms; near Cocos Island, 66 fathoms; and off Lower California in 31 to 36 fathoms.

Pilumnus spinulifer Rathbun.

Pilumnus spinulifer RATHBUN, Proc. U. S. Nat. Mus., XXI, 585, pl. XLII, figs. 6-8, 1898.

Tagus Cove, Albemarle Island, 12 fathoms, 2 males, 1 young female.

Tagus Cove, on reef north of Tagus Hill, March 16, 1 male.

These specimens are smaller than the types. The series indicates that the relative width increases with size. The types had a nearly naked carapace and chelipeds, remarkably so for a *Pilumnus*. The Galapagos specimens have however a downy coating of hair, thicker on the anterior portion of the carapace, where there are also a few tufts of longer and stouter setæ. The relative bareness of the large specimens may be due to age, environment or accident.

Distribution.—Off Cape St. Lucas, 31 fathoms.

PILUMNOIDES PUSILLUS sp. nov.

(Pl. XII, figs. 9 and 10.)

Carapace one fourth broader than long, slightly convex, somewhat lobulate, the protogastric region divided in two by a longitudinal furrow, the area adjacent to the antero-lateral margin broken up into four or five lobules; entire surface very finely granulate. Margin of frontal

lobes slightly convex except for a squarish tooth at the outer angle. Antero-lateral border distinctly marked, almost limbed, and furnished with four tuberculiform teeth besides the orbital which is small and little prominent. First, second and third teeth subequal, fourth tooth much smaller; from it a crest extends obliquely inward and backward on the carapace.

Chelipeds nearly equal. Outer and upper surface of carpus, and upper surface of manus nodulous. A granulated longitudinal ridge on the outer surface of the manus. Pollex with two carinæ, the lower of which extends back on the palm. Dactylus with a deep superior furrow. The fingers of the larger cheliped when closed leave a small hiatus at base; those of the smaller cheliped either have a smaller hiatus or fit tight together. Ambulatory legs sparsely hairy.

Dimensions.—Male, length 2.4 mm., width 3.

Locality.—Tagus Cove, Albemarle Island, on reef north of Tagus Hill, March 16, 2 males (U. S. Nat. Museum Cat. No. 24832).

Eriphia granulosa A. Milne Edwards.

Tagus Cove, Albemarle Island, on reef north of Tagus Hill, March 16, 1 male, 2 females, 3 young.

Distribution.—Chile (type locality); Chatham Island, Galapagos (Dr. W. H. Jones, U. S. N., collector).

Eriphides hispida (Stimpson).

Tagus Cove, Albemarle Island, Feb. 8, 1 male.

Previously taken at Albemarle Island by the *Albatross*; also occurs at Panama and west coast of Central America.

Family PORTUNIDÆ.

Portunus (Achelous) angustus Rathbun.

Tagus Cove, on reef north of Tagus Hill, March 16, 4 young.

Tagus Cove, 12 fathoms, 1 young.

Type Locality.—Off Hood Island, Galapagos, 20 fathoms.

PORTUNUS (ACHELOUS) STANFORDI sp. nov.

(Pl. XII, fig. 11.)

Carapace pubescent; ridges very prominent; those on the cardiac region especially high; two large tubercles at the inner angle of the branchial region. Fronto-orbital width about three fifths of the width of the carapace (exclusive of spines). Front prominent; eight teeth between the orbits, two small, above each antenna; the four middle teeth are subequal, subacute, the outer pair a little wider at base than

the inner, the inner pair more advanced and separated from each other by a **V**-shaped sinus and from those of the outer pair by a **U**-shaped sinus. The angle on the inner side of the outer of the superior orbital fissures is rather prominent. The tooth at the outer angle of the orbit is equally advanced with the outermost of the eight frontal teeth. Of the antero-lateral spines or teeth, the second, fourth and sixth, are smaller than the others and themselves diminish in the order named; the first and second are subacute, the rest sharp. The ninth spine (at the lateral angle) is about two and a half times as long as the eighth or preceding spine; it is directed outward and upward. The inner sub-orbital tooth is produced to the line of the median sinus of the front; outer sinus small, **V**-shaped.

The merus of the chelipeds bears five spines on its anterior margin, of which the proximal one or two are smaller; posterior margin terminating in a small curved spine. Carpus with a small outer spine and a long stout inner spine. Manus with two spines, one near the carpus and one near the distal end of the upper margin. Postero-distal angle of merus of swimming feet armed with a spine.

Dimensions.—Total length of carapace of a male 13.4 mm., width 23, width between last antero-lateral sinuses 17.9; exorbital width 10.8.

Type Locality.—Tagus Cove, Albemarle Island, on reef north of Tagus Hill, 2 males, 3 young (U. S. Nat. Museum Cat. No. 24833).

Affinity.—This species is near *Portunus (Achelous) minimus* from the Gulf of California, but may be distinguished by its more uneven carapace, advanced front, longer lateral spine and the spine on the merus of the swimming feet.

Family MAIIDÆ.

Stenorynchus debilis Smith.

Tagus Cove, Albemarle Island, 12 fathoms, 2 females.

Tagus Cove, on reef north of Tagus Hill, March 16, 1 male, 1 young female.

Distribution.—Lower California to Chile, from low water mark to 31 fathoms. Not before noticed from the Galapagos.

PODOCHELA MARGARITARIA sp. nov.

(Pl. XII, fig. 12.)

Carapace about one and a third times as long as wide. Gastric and cardiac regions very high, each surmounted by a tubercle. Hepatic region with a prominent tubercle projecting downward below the lateral line. No postorbital lobe. Front long and hood-shaped, the pos-

terior part flat and thick, the anterior and outer part thin, hollow beneath and with a sharp median crest above. Marginal crests of the basal segment of the antennæ thin and finely denticulate. Pterygostomian region armed with a tubercle. Sternum and outer portions of the abdomen covered with pearly granules.

The palms of the chelipeds are strongly inflated; fingers narrowly gaping when closed. The ambulatory legs diminish rapidly and uniformly in length from the first to the fourth pair. The dactyli vary little in length; the distal portion of the propodi of last three pairs is slightly thickened and curved.

Dimensions.—Male, length 15 mm., width 11.

Type Locality.—Tagus Cove, Albemarle Island, 12 fathoms, one male (U. S. Nat. Museum Cat. No. 24834). Two smaller males and a female were taken at Tagus Cove on the reef north of Tagus Hill.

***Lissa aurivilliusi* Rathbun.**

Tagus Cove, Albemarle Island, on reef north of Tagus Hill, March 16, 1 male.

Distribution.—Off Lower California, 12 to 31 fathoms.

***Teleophrys cristulipes* Stimpson.**

Tagus Cove, Albemarle Island, on reef north of Tagus Hill, March 16, 1 male.

Distribution.—Lower California and Bay of Panama; Pernambuco and Maceio, Brazil; Fernando Noronha (Pocock).

***Mithrax bellii* Gerstæcker.**

Mithrax ursus BELL, Proc. Zoöl. Soc. London, III, 171, 1835; Trans. Zoöl. Soc. London, II, 52, pl. x, f. 2 and 3, 1836.—A. MILNE EDWARDS, Crust. Rég. Mex., 103, 1875. Not *Cancer ursus* HERBST.

Mithrax bellii GERSTÆCKER, Arch. f. Natur., XXII, pt. 1, 112, 1856.

Black Bight, Albemarle Island, one male; a fine specimen of a deep rich crimson. Length 63.6 mm. width 65.4. The chelipeds, as would be expected, are considerably larger than those of the female figured by Bell; the movable finger has a large tooth at its basal third. The rostral horns are shorter than in Bell's figure, being in our specimen no longer than the horns of the basal antennal segment.

Distribution.—Galapagos, 6 fathoms (type locality); Chile (Miers).

***Mithrax nodosus* Bell.**

Black Bight, Albemarle Island, Jan. 9, 2 males.

Tagus Cove, Albemarle Island, on reef north of Tagus Hill, March 16, 3 males, 2 females, 2 young.

Distribution.—Galapagos Islands (type locality; also collected by the *Albatross*); Chile (Miers).

Microphrys platysoma (Stimpson).

Tagus Cove, Albemarle Island, on reef north of Tagus Hill, March 16, 1 female.

Distribution.—Lower California; Porto Rico, 4 to 14 fathoms. New to the Galapagan fauna.

Microphrys branchialis Rathbun.

Microphrys branchialis RATHBUN, Proc. U. S. Nat. Mus., XXI, 577, pl. XLI, f. 5, 1898.

Two small males were collected at Tagus Cove, one in 12 fathoms, the other on the reef north of Tagus Hill. They vary from typical specimens from Lower California in the following particulars. The carapace bears fewer tubercles, the postero-lateral spine is reduced, the oblong branchial protuberance is more prominent, the rostral horns and the antero-external spine of the basal antennal joint are shorter. These variations are no greater than those afforded by *Microphrys bicornutus* (see A. Milne Edwards in Crust. Rég. Mex., pl. xiv, figs. 2-4).

M. branchialis was hitherto known from the Gulf of California and the west coast of Lower California in 12 to 48 fathoms.

Suborder MACRURA.

Family SCYLLARIDÆ.

PSEUDIBACUS PFEFFERI Miers.

Pseudibacus pfefferi MIERS, Proc. Zoöl. Soc. Lond., 1882, p. 542, pl. xxxvi, figs. 2 and 3.

Following is a description of the specimen in hand: Carapace about one third broader than long, concealing the legs. The surface is nearly smooth; there is a short tuberculated median crest on the gastric region; two similar longitudinal crests separated by a narrow median depression on the cardiac region; posteriorly these crests unite in one which is continued to the posterior margin of the carapace; a few depressed tubercles form a longitudinal line toward the inner side of each branchial region; a tuberculated ridge runs parallel and close to the outer margin of the branchial region. The lateral margin is arcuate, interrupted at the anterior third by a V-shaped notch, from which a short, smooth ridge extends inward on the carapace. The margin

is thin and cut in small shallow teeth, of which there are about seven in front of the notch and fourteen behind it. The orbits are situated about half way between the middle and the lateral angles; the inner margin of the orbit is erect. The margin of the front is nearly straight except outwardly where it is concave, curving forward to form a strong antero-lateral tooth with a spiniform tip pointing forward. The rostral lobe is divided half way to its base forming two narrow ascending horns separated by a closed fissure. The peduncle of the antennules reaches a little beyond the end of the penult segment of the antennæ; the inner flagellum is much thinner and a little longer than the outer. The leaf-like expansion of the antepenultimate segment of the antenna terminates in a sharp spine; its outer margin has two teeth, its anterior margin one tooth; the inner margin of this segment as well as of the succeeding segment is erect and bidentate; the terminal segment is sharp-pointed in front; the margins of the antennæ are finely denticulate or crenulate.

The second to fifth abdominal segments have a convex tuberculated median carina; that on the fourth segment has posteriorly a curved backward-pointing spine; a similar but smaller spine is on the fifth segment; the sixth segment has a tubercle either side of the median line and a small posterior median spine; the seventh segment has a median tubercle on its anterior portion. The lateral margins of the second to seventh segments are divided into several triangulate lobes or teeth; on the second to sixth segments there is a large compound tubercle at the junction of the dorsal surface with the pleura. The meral and carpal joints of the legs have each a superior distal spine.

Dimensions.—Length of body from the tip of the antennæ 39 mm., length of carapace 13.2, width of carapace 18, length of antepenult segment of antenna 7, width of same 8. As the specimen has a very thin soft shell the measurements are only approximately accurate.

Locality.—One specimen was taken from the stomach of a green turtle, 200 miles north of Clipperton Island, December 8.

This specimen differs from Miers's description of specimens from Mauritius, chiefly in having a wider carapace, and also a wider antepenultimate antennal segment, this segment being broader than long instead of longer than broad, as in the figure given by Miers; the segment is also more strongly dentate in our specimen. Considering the state of the type specimens, dried cast shells, and the half digested condition of the West American example it seems best to consider them probably identical.

Family PALINURIDÆ.

Panulirus penicillatus (Olivier).

Wenman Island, December, 2 specimens.

Tagus Cove, Albemarle Island, 1 specimen.

Distribution.—Recorded from the Red Sea, via Indian Ocean to the South Pacific at Tahiti, Fijis, etc. Honolulu (*Albatross*); Waiawa Kanai, Hawaiian Islands (Valdemar Kundsén, collector); Chatham Island, Galapagos (Dr. W. H. Jones, U. S. N., collector).

Family PENÆIDÆ.

Penæus brevirostris Kingsley.

Penæus brevirostris KINGSLEY, Proc. Acad. Nat. Sci. Phila., 98, 1878.

Penæus canaliculatus HOLMES (not Olivier), Proc. Cal. Acad. Sci. (2), IV, 581, 1895.

Penæus californiensis HOLMES, Occas. Papers Cal. Acad. Sci., VII, 218, pl. IV, f. 64-69, 1900.

Tagus Cove, Albemarle Island, Feb. 8, 1 male.

This species differs from *P. brasiliensis* Latreille in its shorter and higher rostrum; in full grown *P. brasiliensis* the rostrum exceeds the antennular peduncle; in *P. brevirostris* it does not. The dorsal grooves reach nearer the posterior margin of the carapace in *P. brevirostris*, and posteriorly they are parallel, not as in *P. brasiliensis* somewhat convergent. The thoracic feet are shorter and a little stouter in *P. brevirostris*. The form of the petasma and thelycum is also specifically different from that in *P. brasiliensis*.

P. canaliculatus Olivier differs from *P. brevirostris*, according to Kishinouye,¹ in having only one tooth under the rostrum, in the median dorsal groove of the carapace being nearly equal in breadth to the lateral grooves, in the first pair of feet unispinose, and the different shape of the thelycum.

Distribution.—A huge female, 17.8 cm. long, was taken at San Diego, Cal., by Dr. D. S. Jordan, February, 1880; a smaller male, by the *Albatross* off Santa Monica, Cal. San Francisco Bay and near Anaheim, Cal. (Holmes). This is undoubtedly the species recorded by Kingsley from the west coast of Nicaragua and by Mr. Richard Rathbun under the name of *P. brasiliensis*, as being brought to the San Francisco markets in 1879; the latter notes the large size (7 inches). There are many specimens in the National Museum, ranging from Lower California to Panama.

¹Jour. Fisheries Bureau, Tokyo, Japan, VIII, pp. 6 and 11, pl. I, and pl. VII, fig. 1, 1900.

PARAPENÆUS KISHINOUEI sp. nov.

(Pl. XII, figs. 13-15.)

Carapace covered with a very fine pubescence easily rubbed off and arising from crowded irregular pits. A median gastric spine at about the anterior third; median carina scarcely continued behind this spine. Upper margin of rostrum arched, the distance of the teeth from the lateral rib diminishing from the proximal to the distal end; teeth 7 to 9, continued to the tip; lateral rib also curved; lower margin entire and ascending, nearly straight. Rostrum reaching just beyond the end of the first antennular segment. The second antennular segment is twice the length of the third.

The basis and ischium of the first pair of pereopoda are each armed with a spine. A pair of spines on the sternum between the second pereopoda. The surface of the abdomen is pubescent and punctate like the carapace though less completely so. The posterior two thirds of the third segment is carinated, also the whole length of the fourth, fifth and sixth segments; the sixth segment is twice as long as the fifth; the lateral margins of the telson have each three spines increasing in size posteriorly; near the posterior pair is a pair of shorter fixed spines.

The petasma is not bilaterally symmetrical; its left half is the longer and its distal portion is ovate and at the anterior end quite narrow. The central plate of the thelycum is semicircular; the lateral plates are broad and fused.

Dimensions.—The length of the largest specimen is about 33 mm.

Locality.—The types were taken at Tagus Cove, on the reef north of Tagus Hill, Albemarle Island, March 16; 4 males, 3 females (U. S. Nat. Museum Cat. No. 24835). 2 males and 2 females were also taken in 2 fathoms in Tagus Cove.

Allied to *P. velutinus* (Dana? Bate). In that species the rostrum has fewer teeth and is less arched, the second abdominal segment is carinated, the petasma and thelycum are different.

The species is dedicated to Dr. Kishinouye who has recently monographed the Penæids of Japan.

Family ALPHEIDÆ.

Alpheus malleator Dana.

Alpheus malleator DANA, Crust. U. S. Expl. Exped., I, 557, 1852; pl. xxxi, f. 9, 1855.

Alpheus pugillator A. MILNE EDWARDS, Bull. Soc. Philom., Paris (7), II, 229, 1878.

Tagus Cove, Albemarle Island, on reef north of Tagus Hill, March 16; one small specimen 12.5 mm. long.

Distribution.—Rio Janeiro? (Dana); Cape Verde Islands (A. Milne Edwards).

Synalpheus neptunus (Dana).

Alpheus neptunus, DANA, Crust. U. S. Expl. Exped., I, 553, 1852; pl. xxxv, f. 5, 1855.

Synalpheus neptunus COUTIÈRE, Ann. Sci. Nat. (8), Zoöl., IX, 15, 1899.

Two specimens were taken at Tagus Cove, Albemarle Island, on the reef north of Tagus Hill. In these specimens the rostral spine is longer than the orbital, but still not reaching the end of the first antennular segment. The antennular scale reaches one half the length of the second antennular segment. The blade of the antennal scale reaches just beyond the middle of the third antennular segment; the spine of the scale scarcely reaches the end of the antennular peduncle. The basal spine of the antenna exceeds the first antennular segment a little. The antennal peduncle is longer than the antennular.

Distribution.—Sulu Sea, 6½ and 9 fathoms, and Fiji Islands (Dana); Red Sea (Heller, Paulson); Bermudas; Porto Rico, 10 fathoms.

Family DISCIDÆ fam. nov.

Monocarpinea in which the animal is smoothly rounded, not carinated; the rostrum short, depressed; the antennules biflagellate, the outer flagellum with a thickened basal portion; the antennal scale short and broad; the mandible furnished with a molar process and palp; the external maxillipeds provided with an exognath; all the pereiopods with exopods; first pair of pereiopods much larger than the second; both pairs with extremity of merus cup-shaped and articulating at its lower angle only, with the carpus; carpus short; dactylus of first pair circular; pollex slender; fingers of second pair normal; feet of last three pairs diminishing regularly in length, and having dactyli spinulous beneath.



FIG. 1. *Discias serrifer*, mandible, much enlarged.

This family is allied to the Atyidæ and the Oplophoridæ (= Acanthephyridæ). The Atyidæ inhabit fresh water; they have the first two pairs of pereiopods similar, with spoon-shaped fingers, and the mandible without a palp. In the Oplophoridæ the animal is dorsally carinated, the antennal scale is long and rigid, the first two pairs of pereiopods are long, slender and similar.

Genus *Discias* gen. nov.

Characters of the family.

DISCIAS SERRIFER sp. nov.

Adult female.—Carapace stout, somewhat compressed, the height greater than the width and more than two thirds of the length; smooth, punctate. Rostrum resembling that of *Atya*, deflexed, depressed, with a smooth median carina; lateral margins thin, finely denticulate; extremity acute, not reaching the end of the first antennular segment. A large spine at the lower angle of the orbit. Antero-lateral angles obliquely rounded, unarmed. Eyes large. Second and third antennular segments very short, the third a little the longer; the flagella are broken off; the inner one is at least as long as the peduncle. The antennal peduncle extends to the end of the first segment of the antennular peduncle; scale oval, exceeding the antennular peduncle by a distance equal to the length of the last two segments of that peduncle; it has a midrib, its outer margin is thin and without a spine, inner margin finely denticulate; flagellum half the length of the body.



FIG. 2.
Discias serrifer, outer maxilliped (×17).

The outer maxilliped does not quite reach the end of the antennal scale; the terminal segment is narrowly oval and its margins are spinulous.

The first pair of chelipeds exceed the scale by about the length of the fingers; the merus is triquetral and widens toward the distal end which is hollowed out and at its lower angle articulates with the carpus. The carpus is reduced to a flat round plate articulated against the lower surface of the propodus, a proximal prolongation of which conceals it. The carpus is not visible in Fig. 3. The propodus is oblong, narrowest at the proximal end, the palmar portion less than twice as long as broad and having on its upper surface a broad longitudinal depression; pollex slender, strongly curved, fitting closely against the dactylus which is subcircular or broadly ovate, slightly obtusely pointed at the extremity.



FIG. 3.
Discias serrifer, chela of the first pereiopod (×20).

The chelipeds of the second pair fall short of the end of the palm of the first pair; they are much smaller; the merus is similar to that of

the first pair; the carpus is well developed, but small and rounded, the palm is oblong, twice as wide as long; the fingers resemble each other, are moderately broad, longitudinal in direction, curved and cross at the tips.

The third pair of feet are a little longer than the second; the fifth pair reach the end of the merus of the third.

The postero-inferior angles of the fifth and sixth segments of the abdomen are subacute; sixth segment about one and a third times as long as the fifth; the telson is one and three fifths times as long as the sixth segment and has two pairs of lateral spinules, the extremity is rounded and armed with about ten or twelve spinules; the uropods are scarcely longer than the telson, oval, the outer is the broader and along its outer margin is cut into from ten to twelve teeth, becoming gradually a little smaller and closer towards the posterior extremity.

The eggs are rather large, measuring a millimeter in the lesser diameter.

Type Locality.—Three ovigerous females were taken at Tagus Cove, Albemarle Island, on the reef north of Tagus Hill, March 16, 1899 (U. S. Nat. Museum Cat. No. 24836).

Dimensions.—Female, length about 15 mm., length of carapace and rostrum 5 mm.

Family PALÆMONIDÆ.

PALÆMON sp.

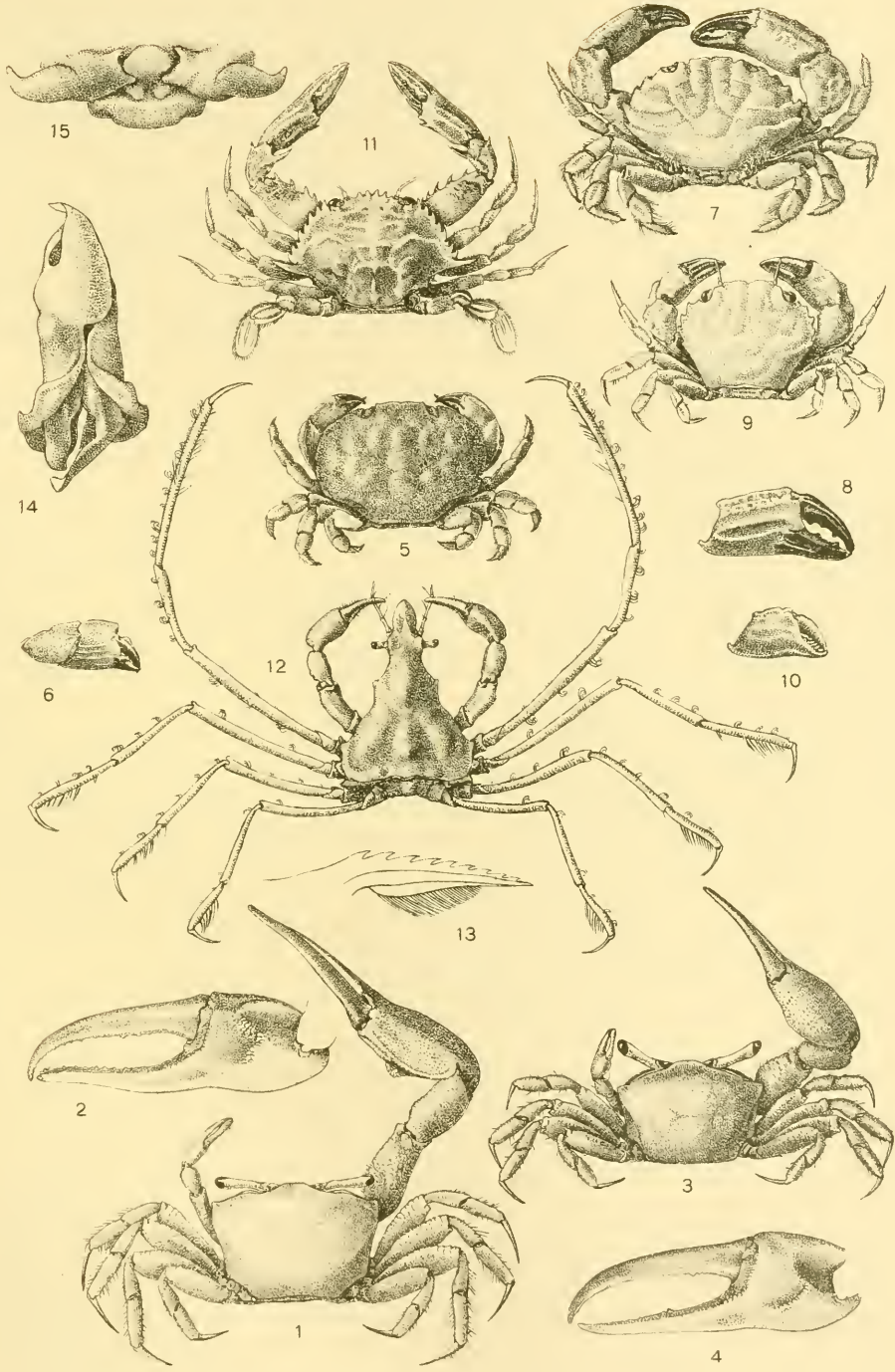
Clipperton Island Lagoon, Nov. 23, 1898, one specimen, 27 mm. long, the large pair of chelipeds missing. Very near *P. ritteri* Holmes, but differs from specimens of that species from Lower California, in being more slender, the rostrum a little more ascending, and slightly arched above the extremity of the eyes, the eyes black in alcohol instead of pale, the sixth abdominal segment a little longer (twice as long as fifth). The first pair of chelipeds and the antennæ correspond to *P. ritteri*.



FIG. 4. *Dis-cias serrifer*, tail fan ($\times 14$).

PLATE XII.

- FIG. 1. *Uca galapagensis* ($\times 1\frac{1}{2}$).
 2. " " inner view of large chela ($\times 1\frac{1}{2}$).
 3. *Uca helleri*, type ($\times 3$).
 4. " " from Black Bight, inner view of large chela ($\times 3$).
 5. *Platypodia gemmata* ($\times 3$).
 6. " " wrist and chela ($\times 3$).
 7. *Leptodius snodgrassi* ($\times 1\frac{1}{2}$).
 8. " " larger chela ($\times 1\frac{1}{2}$).
 9. *Pilumnoides pusillus* ($\times 7$).
 10. " " larger chela ($\times 7$).
 11. *Portunus (Achelous) stanfordi* ($\times 1\frac{1}{2}$).
 12. *Podochela margaritaria* ($\times 2$).
 13. *Parapenæus kishinouyei* rostrum ($\times 6\frac{1}{2}$).
 14. " " petasma, much enlarged.
 15. " " thelycum, " "



A. HOEN & CO. BALTIMORE