

SMITHSONIAN MISCELLANEOUS COLLECTIONS
VOLUME 98, NUMBER 6

DECAPOD AND OTHER CRUSTACEA
COLLECTED ON THE PRESIDENTIAL
CRUISE OF 1938

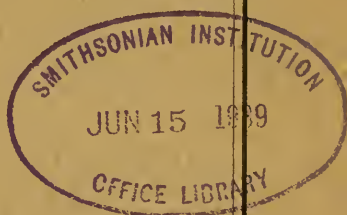
(WITH INTRODUCTION AND STATION DATA)

(WITH THREE PLATES)

BY

WALDO L. SCHMITT

Curator, Division of Marine Invertebrates,
U. S. National Museum



(PUBLICATION 3531)

CITY OF WASHINGTON
PUBLISHED BY THE SMITHSONIAN INSTITUTION
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INTRODUCTION

In July and August of 1938 the President of the United States, the Honorable Franklin D. Roosevelt, undertook an inspection cruise and fishing expedition from San Diego, Calif., to Pensacola, Fla., by way of the Panama Canal aboard the U.S.S. *Houston*. The Smithsonian Institution was honored with an invitation to participate, and it was a great privilege and my good fortune to be the Naturalist selected to accompany the expedition.

The cruise, which began on July 16 and ended on August 9, covered a total of 5,888 miles in the brief space of 24 days, during which 14 different collecting stops were made. These were distributed among the possessions of five different nations: Mexico (Lower California and Socorro Island), France (Clipperton Island), Ecuador (the Galápagos Islands), Costa Rica (Cocos Island), and Colombia (Old Providence Island in the Caribbean). No collecting was done in the Canal Zone or in the Republic of Panama.

All manner of collecting was undertaken, fishing, bird hunting, and botanizing, dredging, tide-pool and shore collecting—indeed, all kinds of endeavor that might yield something of interest to the Smithsonian Institution and our National Collections. The ichthyological collection, which perhaps took first place in the President's interest, is one of the most important that has ever come to the United States National Museum from that section of the Pacific.

In obtaining fish as scientific specimens, as well as for sport, the President was ably assisted by members of his personal party: Mr.

¹ For additional notes and illustrations, see "The Presidential Cruise of 1938" *in*: Explorations and Field-work of the Smithsonian Institution in 1938, pp. 1-14, 1939.

Stephen Early, Mr. Frederick B. Adams,² Mr. Basil O'Connor, Capt. Daniel J. Callaghan, U.S.N.,³ Col. Edwin M. Watson, U.S.A., and several of the officers of the *Houston*. Other specimens were taken by the crew with hand lines over the ship's side or were picked up ashore.

It is not possible to make adequate acknowledgment to all aboard the *Houston* who contributed in one way or another to make the expedition an unqualified success, from the Captain and Wardroom down through the whole ship's company. There are many more among the ship's officers and personnel to whom I am much indebted for many kindnesses and much real and helpful assistance than I am permitted to mention in this limited account. I should like to call them all by name. Jack Barron was detailed as my assistant, and I am grateful to Captain Barker for assigning so fine a seaman to me, and to Barron for all the helpful services that he rendered me. R. B. Thompson, of the paymaster's clerical force, an experienced amateur photographer, was kind enough to assist me in taking pictures, with the result that I am indebted to him for most of the photographs that I brought back to the Institution from the cruise. Unique among the photographs which he took are three of leaping porpoises, taken off Hood Island on July 28.

Under Lieutenant Commander Kelly's able direction, we made our successful landing on Clipperton. To Captain Barker and to his executive officer, Commander Bailey, in particular, all thanks are due for the wonderful cooperation extended me on all occasions throughout the cruise.

The scientific results of the Presidential Cruise have proved to be of extreme interest. Not only have a number of new records of occurrence been established and hitherto unrepresented species been added to the Museum's collections, but more than 30 new species, subspecies, and varieties have been discovered. These will be described in a series of scientific papers which are to follow.

The fact that the collections in the Galápagos were made at a time of the year when these islands have seldom been visited by investigators adds materially to their scientific interest and value. Likewise, the avifauna of Clipperton Island, not heretofore represented in the Museum collections, has now become well known to us.

² Mr. Adams took a number of very worth-while color photographs for the purpose of recording the color of the fresh specimens as they were landed in the fishing boats. These he has very generously contributed to the collections of the Smithsonian Institution.

³ I am indebted to Captain Callaghan for a number of notes.

In looking over the material brought back, one cannot help being imbued with an enthusiastic appreciation of the President as a man of broad biological interests and a generous patron of science. Throughout the cruise he took an active part and a live interest in all our collecting.

STATION DATA

LOWER CALIFORNIA, MEXICO

- | Station
No. | |
|----------------|---|
| 1-38. | July 17. Cedros Island. Shore collecting, both north and south of cannery east side of island. Amphipods and earthworms from under drifted kelp on gravel beach to north. Crabs from shore and "cliffs," and fossils from fallen portion of cliff to south. |
| 2-38. | July 17. Cedros Island. Bottom sample in 24-25 fathoms, about $\frac{1}{4}$ way from shore to anchorage. |
| 3-38. | July 18. Magdalena Bay. Dredging, boat dredge. Inside northern point of entrance to bay, between Belcher Point and anchorage, 10-15 fathoms, sandy, weedy bottom, myriads of amphipods. |
| 4-38. | July 18. Magdalena Bay; filamentous green algae from deeper end of preceding dredge hauls. |
| 5-38. | July 19. Cape San Lucas. Dredging, boat dredge, 6-10 fathoms, off Punta Gorda, off rocky shore to west end San Jose del Cabo Bay. |
| 5a-38. | July 19. At anchorage, San Jose del Cabo, alcyonarian from anchor; depth 48 fathoms. |

SOCORRO ISLAND, MEXICO

- | | |
|-------|--|
| 6-38. | July 20. Shore collecting, Braithwaite Bay, at "landing place." |
| 7-38. | July 20. Collecting up on land back of beach; soil put through Berlese funnel. Also scorpion, spiders, and a crab found under rock. |
| 8-38. | July 20. Dredging, boat dredge, two hauls, 7-8 fathoms, on sandy bottom, from off landing beach toward rocky point forming east side of cove where landing is located. |

- CLIPPERTON ISLAND (now a French possession)
- Station No. CLIPPERTON ISLAND (now a French possession)
- 9-38. July 21. Shore collecting at Clipperton on rocks to south of landing place.
- 10-38. July 21. Bucket of algae from Clipperton lagoon, back of landing.
- 11-38. July 21. Piece of Clipperton Rock.
- 12-38. July 21. Muck from anchor chain. Was coated with this material; looked like old waste; depth 72 fathoms.
- 13-38. July 21. Two specimens blue trigger fish caught by President.
- 14-38. July 21. Debris from two boobies' nests on lagoon shore back of landing.

GALÁPAGOS ISLANDS, ECUADOR

- 15-38. July 24. Sullivan Bay, James Island. Shore and tide-pool collecting 3:30 to 5:00 p. m., tide beginning to run out.
- 16-38. July 25. Narborough Island. Shore collecting.
- 17-38. July 25. At anchorage off Tagus Cove, Albemarle Island. With electric light off gangway 11:00 p. m., dip-net.
- 18-38. July 26. At anchorage off Tagus Cove. From anchor chain, 10 a. m.; depth 50 fathoms.
- 19-38. July 26. Elizabeth Bay, Albemarle Island; landed in bay at south end of black beach north of mangroves, north of two "red" islands.
- 19a-38. July 26. Locality as for No. 19-38. Nest material of old flightless cormorant nest.
- 20-38. July 26. Locality as for No. 19-38. Taken off anchor chain; depth 24 fathoms.
- 21-38. July 27. Crew ashore at Post Office Bay, Charles Island; collected various things; also specimens of all plants seen in flower on road to Wittmer's place.
- 22-38. July 27. At anchorage off Gardner Bay, Hood Island. With electric light off gangway, 11:00 p. m., dip-net.
- 23-38. July 29. South Seymour Island, plateau-land section of island. Odds and ends picked up on beach and shore; sand sample, and sand washings.

- Station
No.
- 23a-38. July 29. South Seymour Island anchorage. With electric light from gangway, 11:00 p. m., dip-net.
- 24-38. July 30. James Bay, James Island. Bottom sample in about 24 fathoms.
- 25-38. July 30. Locality as for No. 24-38. Two octopi from rocks along shore.
- 25a-38. July 30. Mud and water sample from flamingo lagoon, James Bay, James Island.

COCOS ISLAND, COSTA RICA

- Aug. 1. Inland at Wafer Bay for rare palm; all day hike.
- Aug. 2. Ashore in a. m. at Wafer Bay, south side, for tree ferns; p. m. at Chatham Bay.
- Aug. 3. Forenoon in fishing boat with Messrs. Adams and Early for sailfish photos.

- 26-38. Aug. 3. Parasites from 116-pound sailfish; forenoon.
- 27-38. Aug. 3. Copepod found in dish in which two sucker fish from sailfish were killed in alcohol.
- 28-38. Aug. 3. At Chatham Bay anchorage. Bottom sample, mostly sand; depth 30 fathoms.
- 29-38. Aug. 3. Several dredge hauls off Chatham Bay.

OLD PROVIDENCE ISLAND, COLOMBIA (in the Caribbean)

- 30-38. Aug. 6. Shore, reef, and tide-pool collecting in early afternoon.
- 30a-38. Aug. 6. Bottom sample, at anchorage, in 8 fathoms.
- 31-38. Aug. 6. Dredge haul in about 7-8 fathoms, inside reef, Catalina Harbor.

DECAPOD AND OTHER CRUSTACEA⁴

The crustacean collection, though not large, contains several novelties: a new species, *Thalamita roosevelti*; and two new subspecies, *Callianidea laevicauda occidentalis* and *Crangon hawaiiensis clippertoni*. A West Indian species, *Callianassa hartmeyeri*, earlier reported by Hult (Arkiv Zool., vol. 30A, No. 5, p. 7, text figs. 1-4, pl. 1, figs. 1a, 1b, 1938) from the Galápagos, was found at Socorro Island. *Brachycarpus biunguiculatus*, another West Indian species, originally described from Bermuda and well known in the Mediterranean, with also a single record from the Red Sea, rather surprisingly turned up in the Clipperton Island material, a first truly Pacific record, for this species. An *Ogyrides*, the first representative of the genus from the west coast of America which was taken at Punta Gorda, as well as a *Crangon* from Socorro, a possible new variety of *Crangon paracrinitus* from Clipperton, and several species of *Petrolisthes*, have not been described for want of adequate material of each of them. Otherwise, there is a small residuum of very fragmentary specimens, juveniles, and larval forms, not satisfactorily determinable, that are not included in this report.

In this list we are able to enumerate approximately 100 different decapods, including 4 species of porcellanid or flat crabs; in addition, there is 1 leptostracan, a barnacle, and 8 species of copepods, making a total of 110 different kinds of Crustacea. The greatest number of species listed for any one station was 42 from Old Providence; next in order, 17 from Sullivan Bay, James Island, Galápagos.

Of the new forms described in this paper, two were collected at Clipperton Island, where, so far as I have been able to ascertain, little or no marine carcinological collecting has ever been done before. This coral atoll, which is unique in American waters, supports a remarkably interesting marine fauna, inasmuch as 7 of the 18 specifically identified species have strong Indo-Pacific ties, and 1, *Brachycarpus biunguiculatus*, a less strong tie. Indeed, four of those seven species are identical with species known from Hawaii and beyond.

⁴The amphipods and isopods will appear as separate reports by Clarence R. Shoemaker and J. O. Maloney, respectively, of the Division of Marine Invertebrates, U. S. National Museum.

SPECIFICALLY DETERMINED CLIPPERTON ISLAND DECAPODS

Indo-Pacific species	Species with Indo-Pacific ties	West American species
<i>Crangon pacificus</i>	<i>Crangon hawaiiensis clippertoni</i>	<i>Synalpheus nobili</i>
<i>Lysmata paucidens</i>	<i>Crangon paracrinitus</i> variety	<i>Pomagnathus corallinus</i>
<i>Pachygrapsus minutus</i>	<i>Brachycarpus biunguiculatus</i>	<i>Callianassa hartmeyeri</i>
<i>Percnon abbreviatum</i>	<i>Thalamita roosevelti</i>	<i>Petrolisthes marginatus</i>
		<i>Pachycheles biocellatus</i>
		<i>Gecarcinus planatus</i>
		<i>Platypodia rotundata</i>
		<i>Actea dorii</i>
		<i>Actea sulcata</i>
		<i>Micropanope xantusii</i>
		<i>Teleophrys cristulipes</i>

In keeping with the presence of the South Pacific genus of skink, *Emolis*, on Clipperton, where this genus is represented by *E. arundelii* (Garman), is our discovery of (1) the first New World *Thalamita*, (2) a new species of terrestrial amphipod (see footnote 4, p. 7) not far removed specifically from *Orchestia marquesana* Stephensen, of the Marquesas Islands, Oceanica, and (3) the littoral crab, *Pachygrapsus minutus* Milne-Edwards, originally described from New Caledonia.

In order to avoid needless repetition of station data, the species, together with pertinent remarks and descriptions of the new forms, have been listed in systematic order under the several localities at which they were taken.

I am greatly indebted to Dr. Mary J. Rathbun, Associate in Zoology, United States National Museum, Smithsonian Institution, for assistance in naming the brachyuran Crustacea; and to Steve A. Glassell, of Beverly Hills, Calif., for the identification of the representatives of the porcellanid genera *Petrolisthes* and *Pachycheles*, as well as of the pinnotherid crab, *Pinna. rodes*. Dr. C. B. Wilson, of Westfield, Mass., determined the free-swimming and parasitic copepods collected. A single leptostracan, *Nebalia bipes* (Fabricius), was sorted from the Magdalena Bay dredgings.

I shall always be grateful to President Roosevelt for the wonderful opportunity he afforded me for gathering the scientific material reported in the series of papers of which this is one.

ANNOTATED LIST OF THE CRUSTACEA

Cedros Island, Lower California, Mexico, July 17 (sta. 1-38); shore collecting, both north and south of cannery east side of island.
Pachygrapsus crassipes Randall.....44♂ 37♀ (11 ovig.)

Magdalena Bay, Lower California, Mexico, July 18 (sta. 3-38) ; boat dredge inside northern point of entrance to bay, between Belcher Point and anchorage, 10-15 fathoms, sandy, weedy bottom, myriads of amphipods.

Lepcophtheirus dissimulatus Wilson.....12♀

These parasitic copepods were not taken in the dredge, but were picked off a broom-tailed grouper, *Mycteroperca xenarcha* Jordan, taken in the Bay by the fishing parties.

Nebalia bipes (Fabricius).....1

Penacopsis mineri Burkenroad.....1♂ 1♀

Periclimenes (Ancyllocaris) holmesi Nobili.....2

Pleuroncodes planipes Stimpson.....3

These are fragmentary specimens regurgitated by a large black sea bass caught in bay.

Paguristes species.....1♀ ovig.

Microphrys branchialis Rathbun.....1♂ 1 juv.

Cancer antennarius Stimpson.....1♀ juv.

Cape San Lucas, Lower California, Mexico, July 19 (sta. 5-38) ; boat dredge, 6-10 fathoms, off Punta Gorda, off rocky shore to west end San Jose del Cabo Bay.

Lepcophtheirus dissimulatus Wilson.....5♀

One of these five specimens was found in our dredged material; the other four were picked from the external surface and nostrils of a large gulf grouper, *Mycteroperca jordani* (Jenkins and Evermann), taken by the fishing parties this day.

Ogyrides species.....1

The first of the genus to be reported from the west coast of America. Though very probably a new species, the material at hand does not suffice for a description.

Periclimenes (Ancyllocaris) holmesi Nobili.....3

Arcnaeus mexicanus (Gerstaecker).....1♂ 1♀

Pliosoma parvifrons Stimpson.....4♂ 1♀ 1 juv.

South of Cape San Lucas, Lower California, approximately lat. 20° 53' N., long. 110° 14' W., 11 p. m., July 19, from port condenser tubes of the *Houston*.

Pleuroncodes planipes Stimpson.....50±

About 11:00 o'clock at night, Lt. H. K. Gates, one of the engineer officers, called me to the engine room to see a lot of bright red shrimp they had discovered in the suction side of one of the condensers opened for minor repairs. They proved to be the galatheid shrimp, *P. planipes*, very common in Lower California waters at certain seasons. At times they occur in such countless numbers that they color the water red for great distances. Huge windrows of the dead shells of these animals have been observed in the past as conspicuous red streaks along the shore line. Crustaceans of this type form an important whale food and without doubt this species played an important part in the former abundance of whales in the Lower Californian and Mexican waters. As noted above, a large black sea bass taken in Magdalena Bay during the day regurgitated several of these galatheids when hauled into the boat.

Socorro Island, Mexico, July 20 (sta. 6-38), shore collecting, Braithwaite Bay, at landing place.

Crangon species1

CALLIANIDEA LAEVICAUDA OCCIDENTALIS, n. subsp.

Holotype.—An ovigerous female (U.S.N.M. no. 77788) about 48 mm. long from rostral projection to end of telson, accompanied by a male approximately 35 mm. long and a very small male, perhaps juvenile, 18 mm. long. The upper margin of hand from posterior extremity to tip of movable finger measures about 17 mm. in the holotype and 13 mm. in the larger of the male specimens.

Description.—About 10 years ago I determined two specimens of *Callianidea laevicauda* from the Tres Marias Islands, Mexico, for Señor Carlos Stansch, at that time an agent of the Direccion Forestal y de Caza y Pesca of Mexico. In those specimens, as in these from Socorro, most, if not all, of the pleopod filaments are two-jointed. Moreover, Pacific specimens of *C. laevicauda* have the greater part of the length of the lower margin of the large chela more or less toothed or tuberculate and the ridge on the inner side of the fixed finger crenulate. Atlantic specimens which I have examined from Puerto Rico, Culebra, Barbados, and Curaçao have the lower margin of the large chela only very slightly roughened or, at most, obscurely crenulate at about midlength only, whereas the ridge on the inner side of the fixed finger is smooth. Otherwise, there seems to be little difference between the two forms, and such differences as I have

observed are no more than of subspecific rank. More material from both coasts of America is much to be desired. It is probable that Lockington's record of three specimens of *C. typha* from La Paz in the Gulf of California is based upon specimens identical with those from the Tres Marias Islands and Socorro.

<i>Petrolisthes</i> near <i>cinctipes</i> Stimpson.....	1♂
<i>Calcinus obscurus</i> Stimpson.....	3
<i>Coenobita compressus</i> Guérin.....	1
<i>Grapsus grapsus</i> (Linnaeus).....	1♂
<i>Leptodius cooksoni</i> Miers.....	1♀
<i>Ozius perlatus</i> Stimpson.....	1♂ 3♀

Socorro Island, Mexico, July 20 (sta. 7-38) on land, back of beach under rock.

<i>Gecarcinus planatus</i> Stimpson.....	1
--	---

Socorro Island, Mexico, July 20 (sta. 8-38), boat dredge, two hauls, 7-8 fathoms, sandy bottom, from off landing beach toward rocky point forming east side of cove where landing is located.

Callianassid	1 fragment
<i>Clibanarius panamensis</i> Stimpson.....	1

Clipperton Island (French possession), July 21 (sta. 9-38), shore collecting at Clipperton on rocks to south of landing place (on north-eastern shore of atoll).

CRANGON HAWAIIENSIS CLIPPERTONI, n. subsp.

Holotype.—Largest of eight specimens, a female approximately 13 mm. long, upper margin of palm of large hand 4.4 mm., chela, over all, 5.6 mm. (U.S.N.M. no. 77789).

Description.—This apparently new form differs but slightly from the description and figures given by Edmondson for his *C. hawaiiensis* (Bull. Bishop Mus., No. 27, p. 14, fig. 2, 1925); so slightly, indeed, that I asked Dr. Edmondson to reexamine his unique type in the light of the differences that I did discover.

In our Clipperton Island type and the specimens accompanying it the inner side or surface of the larger chela is smooth, as in the species proper; the outer side also appears smooth on casual inspection, but when excess moisture is removed, the presence of two not very conspicuous longitudinal grooves is revealed on the outer face

of the chela. The larger and deeper of these two inconspicuous grooves runs back from the articulation of the movable finger; the other, a little below the articulation, is shorter than the larger groove. The tip of the rostrum extends very little or scarcely in front of a line joining the anterior margins of the orbital hoods.

Dr. Edmondson writes me that he is unable to find any evidence of these longitudinal grooves on the outer side of the palm, and that the rostrum of his *C. hawaiiensis* is even longer and sharper than indicated in his figure, that it extends to a greater distance beyond the orbital hoods than is shown in the figure, and that the terminal portion of the rostrum is very narrow.

The specimens we have are certainly distinctively different from *C. hawaiiensis* on the basis of the character of the larger chela and the rostral length alone. Therefore, in spite of the close agreement between our specimens and the type of the species in almost all other points, I venture to refer to them as the Clipperton Island subspecies of Edmondson's species.

Crangon paracrinitus Miers variety.....4

These four specimens seem to bridge the differences existing between the species proper and its known variety *bengalensis* Coutière. As in that variety, our specimens lack the spine with which the minor chela of the type is armed. On the other hand, the proportions of the carpal joints of the second legs are more like those of the typical specimens than those of the varietal form. The rostrum of our specimens is small, there are no orbital grooves, and the hands and carapace are smooth. I do not feel justified at this time in giving these variants of *C. paracrinitus* a name.

Crangon pacificus (Dana).....2

Crangon species2

Synalpheus nobili Coutière.....28 (9 ovig.)

These specimens were of a brown-red color with darker transverse bands across the abdomen.

Pomagnathus corallinus Chace.....2

Lysmata paucidens Rathbun.....32 (3 ovig.)

This species was originally described from the Hawaiian Islands (Rathbun, Bull. U. S. Fish Comm. for 1903, vol. 23, pt. 3, p. 913, pl. 24, fig. 4 (1906)) and is common about Oahu and other islands and shoals in the Hawaiian area.

Nearly all of our specimens have four dorsal rostral teeth, of which two, usually, were on the carapace and two on the rostrum proper; one specimen had five teeth above; and one with an unusually short and certainly abnormal rostrum had only three teeth above; below there is mostly but a single tooth, sometimes two.

Outer antennular flagellum has 7-11 (usually 8-9) free joints and 5-7 fused, the free portion is longer than the fused, except in very young and small specimens.

The multiarticulate carpus of the second pair of legs may have from 20-25 articulations.

As compared with *L. galapagensis* Schmitt, *L. paucidens* has fewer dorsal rostral teeth, and a relatively longer rostrum which is normally longer than the eyes by that portion which lies anterior to the ventral tooth and which reaches about or even beyond the middle of the second joint of the antennular peduncle. The first pair of legs, the chelipeds, are relatively more slender, the second pair noticeably longer; and there are consistently more joints to the free portion of the outer antennular flagellum. The ambulatory legs and the body habitus of the two species are very much alike.

Brachycarpus biungiculatus (Lucas).....1♀

Kemp (Rec. Indian Mus., vol. 27, pt. 4, p. 312, 1925) has discussed this species and given rather full synonymy. He very probably correctly regards Nobili's *B. advena* from the Red Sea (Ann. Sci. Nat., Zool. (9), vol. 4, p. 75, pl. 4, fig. 1, 1906) as a synonym of *B. biungiculatus*.

It was somewhat of a surprise to find a single small female of *B. biungiculatus* about 20.3 mm. in length among the Crustacea collected at Clipperton. In fact, it was not until a drawing of the telson was completed that it was suspected that we were dealing with a *Brachycarpus* at all. In most, if not all, particulars our specimen seems to fit the characterization of the species as set forth by Kemp, except in the number of segments in the fused basal portion of the outer antennular flagellum, which appears to have but seven segments. Kemp gives a range of from 15 to 23 segments in specimens which he examined, which included some from the West Indies. I examined our West Indian and Bermuda specimens and found that the larger specimens, both male and female, from Bermuda, Puerto Rico, and Barbados, upward of 40 mm. in length, had 15 to 21 segments in the fused basal portion of the outer flagellum, and about the same number in the thicker, free portion. On the other hand, the small specimens, mostly from 25 to 27 mm. in length (one 39 mm.),



FIG. 1.—*Brachycarpus bimaculatus*, female. *A*, Lateral view of carapace and rostrum $\times 6$; *B*, first leg $\times 6$; *C*, left second leg $\times 6$; *D*, right second leg $\times 6$; *E*, third leg $\times 6$; *F*, same, dactyl $\times 16$; *G*, antennule $\times 7$; *H*, antennal peduncle and scale $\times 7$; *I*, mandible $\times 15$; *J*, maxillule $\times 15$; *K*, maxilla $\times 15$, the tip of the endopodite appears roughened, perhaps only kinked or slightly damaged; *L*, *M*, *N*, first, second, and third maxillipeds $\times 15$; *O*, *P*, first and second left pleopods $\times 15$; *Q*, telson $\times 15$. (The magnifications are approximate.)

from Barbados, off Jamaica, and Puerto Rico, had 8, 9, or 10 fused segments and from 10 to 13 free segments.

I do not find any characters that would indicate that the small specimens are other than *B. biunguiculatus*, although several of them are ovigerous. I have seen no small specimens with the segment count of the fully developed large ones, and therefore believe that this species varies considerably in the segmentation of the fused and thicker free portion of its outer antennular flagellum.

The rostrum of our Clipperton Island specimen has $\frac{7}{3}$ teeth, of which the first two dorsal teeth are on the carapace, the next two are above the ocular peduncle, the last three are anterior to the eye; the anteriormost is very close to the tip of the rostrum; the ventral teeth are about as strong as the dorsal; the proximal tooth is placed just proximal to the anterior margin of the cornea, not beyond or anterior to it. The rostrum is slightly longer than the antennular peduncle and slightly shorter than the antennal scale.

The outer anterior angle of the basal joint of the antennular peduncle is armed with a well-developed spine, the tip of which exceeds the second joint of the peduncle. The spine of the antennal scale reaches to the end of the sixth article for the fused part of the outer antennular flagellum, the anterior margin of the blade to the end of the fifth article. The free portion of the shorter ramus of the outer antennular flagellum is a little longer than the fused portion; each appears to be composed of about seven articles.

On the anterior margin of the carapace the antennal spine projects well in front of the suborbital projection or angle; the hepatic spine is placed not much below the level of the antennal spine and is less than the length of that spine behind the anterior margin of the carapace; the hepatic spine is also less than half the size of the antennal spine.

The right second chela is very slightly larger than the left; it exceeds the antennal scale by the entire propodus. The fingers of either chela of this pair are slightly shorter than the corresponding palm or merus; the carpal joints are a little more than half the length of the corresponding palms.

Callianassa hartmeyeri Schmitt.....1♂ 1♀

Our specimens agree with those figured and described by Hult (Arkiv Zool., vol. 30A, No. 5, p. 7, figs. 1-4, pl. 1, 1938). On the chelae of these specimens there were bright ochraceous to orange ochraceous (Ridgway) irregular color markings; both fingers toward

their distal china-white tips were of this golden yellowish brown, the palms showed an irregular pattern of color and the upper surfaces of carpus and merus were likewise suffused with it, the color being more concentrated and stronger on the merus than on the carpus. It struck me as a bit unusual that burrowing shrimps such as these, so often referred to as ghost shrimps, should show any particular color markings at all other than very light shades of blues, pinks, or very light flesh color.

Petrolishes marginatus Stimpson.....21

Pachycheles biocellatus (Lockington).....19

THALAMITA ROOSEVELTI, n. sp. 2♂ 1♀

Fig. 2

Holotype.—A male (U.S.N.M. no. 77787), the largest of three specimens, measures 19.6 mm. in greatest width across the tips of the

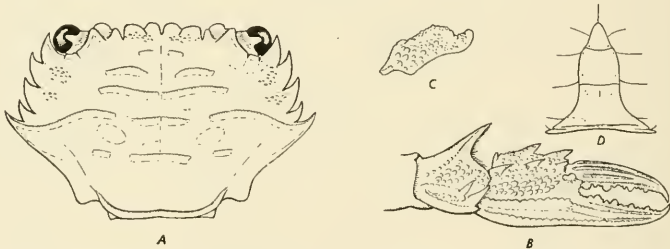


FIG. 2.—*Thalamita roosevelti*, male. A, Dorsal view of carapace $\times 2$; B, outer face of right chela and carpus $\times 2$; C, basal joint of antenna $\times 4$; D, distal segments of abdomen $\times 2$. (The magnifications are approximate.)

fifth pair of lateral spines marking the posterolateral angle of the carapace, and 13.4 mm. long from the posterior margin to the anterior border of the median lobes of the front. The movable fingers of either chela are approximately of the same length, about 7 mm. each; the left hand a shade less than 5 mm. in dorsal length of palm, the right one just about 5 mm. long. The left palm is also a little, but not very noticeably, stouter than the right.

The other two known specimens of the species are both immature, a male and a female of approximately the same size and measuring about 11.2 mm. in greatest width; the female is scarcely larger than the male.

Description.—*Thalamita roosevelti* is one of a group of three very closely related species, which includes *T. alcocki* de Man (Abh. Senckenb. Ges., vol. 25, p. 646, 1902) and *T. gardineri* Borradaile (Fauna Maldives and Laccadive Archip., vol. 1, p. 205, fig. 36, 1902).

The length of the carapace is very nearly two-thirds its greatest width, the posterior margin just about a third. The transverse ridges or keels on the carapace are well defined and finely crenulate on their anterior margins; in number, position, ornamentation, and arrangement they are not unlike those of *T. gardineri* as figured by its author. I cannot make out from Borradaile's drawing whether the entire surface of the carapace is finely granulate, or whether just its dense pubescent investiture is indicated. Except for the keels and several small patches of granules, the carapace of *T. roosevelti* is covered with a short, thick pubescence that hides its surface. This was found to be smooth and finely punctate where the pubescence was scraped off with a needle. Just behind the bases of the adjacent portions of the median and submedian lobes of the front, and also toward the bases of the second and third lateral teeth of the carapace, there is a small scattering of granules which rise at least to the level of the top of the short pubescent covering of the carapace and are not at all obscured by it.

In both *T. gardineri* and *T. alcocki* the anterolateral margin is described as more oblique than in *T. cretastica* Alcock (Journ. Asiatic Soc. Bengal, vol. 48, p. 86, 1899), and so is it also in our species.

The median lobes of the front are separated by a distinct, narrowly U-shaped sinus which runs backward behind the level of the anterior margins of the submedian lobes as far as, or even a little farther than, the sinus either side of the median lobes which separates them from the submedian lobes. In *T. alcocki* the median sinus of the front runs back only to the level of the anterior margins of the submedian teeth, much as in *T. cretastica*; in *T. gardineri* this sinus is like that of *T. roosevelti* in depth. The median lobes are distally rounded off; the right one is a little wider than the left; in the front the median lobes are placed at a slightly lower level than the submedian lobes; these slightly yet definitely overlap the median lobes. In *T. gardineri* there is no overlapping of the median lobes by the submedians. The anterior margins of the submedian teeth, though lightly convex, are in general transverse, more so in the young, immature specimens than in the larger type specimen. In *T. alcocki* the anterior margin of the submedian lobes is said to be very straight and transverse. The outer lobes of the front above the antennae are separated from the submedian lobes by a sinus about the size and shape of the median sinus of the front, only a little deeper; the lobes of this outer pair are narrowly triangular, distally blunt.

Of the teeth of the anterolateral margin, the first (extraorbital) is the largest, though not quite the longest measured along its outer

margin; the second and third teeth are very much alike in size and shape, the third is slightly less stout than the second, both are more or less subequal in length of outer margin and both are longer than the first; the fourth tooth is the smallest, perhaps half the size of the third, but in no sense rudimentary; fifth not shorter than any of the others, but more slender, and so appearing rather long.

The lateral, as well as the frontal teeth of our species in relative size are very similar to the other two species with which it is compared.

The basal antennal joint is about as long as the orbit is wide. It is provided with a high, prominent crest, plainly visible in dorsal view. This crest, to all appearances, is fairly smooth and unarmed, but, on close inspection with considerable magnification, is seen to be slightly roughened or obsolescently nodulated with low, irregularly placed swellings of its upper margin, more to one side or the other than actually on the margin itself; the crest is neither denticulate nor spined, it might be called obscurely granulate, but it is more lumpy than granulate; either side of the crest, lower down, the surface of the joint is small tuberculate; these little, more or less low conical tubercles, are larger on the proximal end of the joint than distally. I am of the opinion, although I have seen no specimens of *T. alcocki*, that the crest of its basal antennal joint may be much like that of *T. roosevelti* here described. This crest in *T. gardineri*, as it is not contrasted with *extastica* in Borradaile's remarks, must, by implication, be, as in that species, very plainly denticulate, for, as figured, it appears more or less saw-toothed.

Either hand of the nearly subequal chelae has a blunt squamose ridge on its inner face; the inner upper margin is armed with two stout spines, of which the posterior, arising behind middle of palm is larger, longer, and stronger, the anterior spine is a little behind the distal margin of the palm; on the outer margin of the upper surface of the palm is another strong spine about the size of the anterior one on the inner margin; on the outer margin, just behind the distal border of the palm, is a blunt, conical tubercle; there is another strong, stout, sharp spine on the palm at the carpal articulation, the fourth of those arming the chela; on the outer surface of the palm is a low, squamose ridge running from below this last mentioned spine to the articulation of the movable finger; below this ridge are two other better defined, crenulate ones; the upper one is the stronger, with larger crenulations, anteriorly it bends downward a little, to be continued on to the outer side of the fixed finger as a more or less smooth, noncrenulate carina; the crenulations of the lower ridge, as it runs on to the finger, become progressively smaller until they fade out, so that the

anterior third of that portion of the ridge traversing the finger is smooth. The under surface of the hand is smooth; between the ridges there are scattered granules and small squamiform tubercles and some slight pubescence; above the low, squamiform ridges either side of the palm and on its upper surface are a number of low, squamiform tubercles, more or less concealed by the thicker pubescence here, some are a little more conical than others and raised a little above the pubescence. The armature and ornamentation of the hands seems to be about as described for *T. alcocki* and, in general, not so very unlike the somewhat sketchy drawing of *T. gardineri*, although in the latter species, in place of the anterior conical tubercle on the outer margin of the upper surface of the palm, a spine as strong as the one behind it or opposed to it on the inner margin is shown.

The movable finger, measured in a chord from tip to the middorsal point of the anterior border of the palm, exceeds, by about $2/7$ of its length, the dorsal length of the palm measured back from the same point. The two chelae are about of the same size and have their fingers more or less of the same length; the right movable finger is very slightly the shorter. De Man states that the fingers of *T. alcocki* are shorter than the palm; in *T. gardineri*, as drawn, the movable fingers, at least, in the given dorsal view are longer than the upper margin of the palm, while in the figure presenting the outer face of the chela the finger is shorter than the dorsal length of the palm; as this figure has been especially drawn to show the character of the chela, it undoubtedly portrays the correct relation of finger to palm.

The carpus of the cheliped has a long, strong spine at the inner angle about twice the length of the palmar spine at the carpal articulation. There is a curved crenulate line back of this spine; upper surface of carpus granulate or low tuberculate; there are three spines toward the outer side of the carpus, the inner of these is the sharper, the next or middle one the larger, more produced, and subacute, the outer one is blunter, low, and more or less conical, a low ridge runs back from the first and third of these spines; the ridge behind the first of the three spines is fine-crenulate, the other ridge behind the third spine is apparently finely and almost obscurely denticulate.

The merus of the cheliped has three spines on the anterior border, the distalmost is the larger and placed at a lower level than the others, the proximal the smallest; there are several small denticles or tuberculiform teeth before the proximal spine, one between it and the second spine, and two or three, little larger than granules, bunched between the second and third; the anterodistal angle of the merus forms a

flattened, roughly rounded lobe with denticulate or small tuberculate margin.

The posterior border of the propodus of the fifth or swimming leg is armed with spinules. As viewed from above there are four short, stout, acute spinules—one could well call them spines—on the right propodus this side of the close-set fringe of long hair that marks the anterior (upper) margin of the joint and a single one the other side, behind the fringe of hair, inserted proximal to the proximalmost of the four spinules dorsal to the fringe of hair; on the left propodus there are eight spinules above or dorsal to the fringe of hair and three behind, these three are inserted distal to the second of the spinules of the upper side; the first two spinules on the upper side of the fringe of hair on the left propodus are colorless, small, and relatively inconspicuous for that reason; the other spinules for the most part show more or less reddish color. In *T. alcocki* the hinder margin of the propodus of the fifth pair of legs is armed with 5 sharp spinules; in *T. gardineri* with 10.

Color.—Of the alcoholically preserved type: Granulations showing through the pubescence of the carapace, and the crenulations of the keels or ridges ornamenting it are reddish.

The movable finger of the chelae is white-tipped, followed by a brownish transverse band, then a white band of about the same width. Neither band is as wide as the white portion of the tip, and both together occupy about as much space as the reddish brown basal portion of the finger. The middle third of the fixed finger is brownish, distal and proximal thirds white.

The lateral spines of the carapace are red tipped and there is a fleck of the same color near the base on the outer margin of each of the lateral teeth except the fourth; behind the corresponding fleck on the fifth lateral spine there is a second spot of color farther down or posterior to the first fleck, a little more removed from that fleck than it is from the colored tip of the spine; the tubercles and granules of the chelipeds are also of a reddish color; the spines arming the hands are color-marked like the lateral spines. The ambulatory legs are dull blackish brown barred; there are two transverse bars of this dark color on the dactyl, a very wide one around the middle of the propodus, a similar one around the carpus, and two narrow ones about the merus.

Remarks.—From the species of *Thalamita* that fall within the purview of Alcock's group II.A (Journ. Asiatic Soc. Bengal, vol. 68, p. 73, 1899) ours is at once distinguished from *T. investigatoris* and *imparimanus*, and I believe also from *T. tenuipes*, by the fact that in these species the hinder margin of the propodus of the last pair, or

swimming pair, of legs is smooth, not armed with spinules. *T. exetastica* and most of its subspecies and varieties are also distinguished from our species by the absence of these propodal spinules which are, however, present in at least one variety of *exetastica*. All the *exetastica* forms differ from *T. roosevelti* and most if not all other *Thalamites* in possessing a small accessory tooth or spine on the outer side of the first lateral, extraorbital tooth of the carapace. There is no trace of such an accessory tooth in *T. roosevelti*.

The basal antennal joint in our species is not wholly smooth, as it has been described for *T. alcocki*, or low and almost indistinguishable, as in *imparimanus*; neither is the crest what one would in any sense call denticulated, which it plainly is in *T. investigatoris*, *exetastica*, *gardineri*, and *kükenthali*, or armed with two large and prominent teeth fused at the base as in *T. tenuipes*. In *T. roosevelti* the basal joint, as described above, has a well-formed high crest visible in dorsal view, rather smooth appearing and at most no more than obscurely denticulated, revealing, under the magnifier, small, low, irregularly placed swellings or obsolescent small tubercles.

With respect to the character of the basal joint and the armature of its hands, *T. roosevelti* stands near *T. alcocki*; in the equality of the chelipeds, proportions and general appearance of the front, carapace, and lateral teeth, near *T. gardineri*. From the former our species differs in having a relatively wider and deeper incision or sinus between the median lobes of the front, in having the fingers longer instead of shorter than the palmar portion of the hand, and in being armed with nearly twice as many or more than twice as many spinules on the hinder margin of the propodus of the last pair of legs. From *T. gardineri* our species differs by virtue of the fact that the submedian lobes of the front overlap the median lobes in not having a truly or plainly denticulated crest on the basal antennal joint, and in the relatively longer fingers.

Even if Miss Gordon's recently described *T. malaccensis* (Bull. Raffles Mus., No. 14, p. 176, figs. 2, 3, 1938) is to be considered one of the species possessing a six-lobed front, the fact that the outer lobes of the front are marked off from the submedian lobes by a mere convexity of the anterior margin instead of a well-marked sinus or incision sets it well apart from the one we have here described.

<i>Platypodia rotundata</i> (Stimpson)	2♂ 2♀
<i>Actea dovii</i> Stimpson	1♀
<i>Actea sulcata</i> Stimpson	1♀
<i>Micropanope xantusii</i> (Stimpson)	1♂ 4♀ (3 ovig.) 5 juv.

Tleophrys cristulipes Stimpson 2♀ (1 ovig., 1 juv.)
Pachygrapsus minutus Milne-Edwards 1♀ ovig., 20 juv.

In the figure given by Milne-Edwards for *P. minutus* (Nouv. Arch. Mus., Paris, vol. 18, p. 292, pl. 14, fig. 2, 1873) the posterior border of the merus of the last pair of legs is without armature except at the postero-distal angle.

The merus of the last pair of legs of *P. murrayi*, as Calman states (Proc. Zool. Soc. London, 1909, p. 708, pl. 72, figs. 4, 5, 1909), "has two smaller teeth [besides those at the postero-distal angle] side by side near the proximal end." One could perhaps better describe these two small, yet somewhat elongated, juxtaposed teeth as a bidentate, tuberculiform tooth. From between the two denticles of this bidentate tooth a stiff hair or seta arises; proximal to this tooth are two or three little denticles on the inner, ventral margin of the joint. The upper margins of the ambulatory legs are furnished with a close-set fringe of "feathered" setae, thickest on the propodi of the last pair of legs, and probably present on all joints. The hairs of this fringe are easily broken off, at least in preserved material, as they are more or less wanting on certain legs and joints. Such a fringe is not mentioned by Dr. Calman nor shown in his figure of the type. The front of our specimens is about, or a little more than, half the width of the carapace; otherwise Calman's description of *murrayi* fits them almost exactly.

Because of this apparent difference I was inclined to believe Calman's species other than the one briefly described by Milne-Edwards. However, the view of a number of authors that the former is identical with the latter is fully substantiated in a communication which I recently received from Prof. L. Fage, of the Muséum National d'Histoire Naturelle, Paris, to whom I am more than grateful:

Je viens d'examiner les cinq échantillons de *Pachygrapsus minutus* qui ont servi à la description de Milne-Edwards. Ils possèdent la petite épine géminée au bord postérieur du merus de la dernière paire de pattes.

J'ai comparé ces échantillons avec la fig. du *Sesarma murrayi* et je n'ai trouvé aucune différence.

La synonymie n'est pas douteuse.

Percnon abbreviatum (Dana) 2 juv. (♂♀)

A first eastern Pacific record for the species, originally described from Tahiti and taken since that time in the Indian Ocean, and at Hawaii, Fanning, Ocean, and Wake Islands.

In the absence of an available key to the valid species of *Percnon*, the following tentative one is offered.

KEY TO THE SPECIES OF THE GENUS PERCNON

- A¹. Pilose groove along upper margin of chelae about or nearly as long as the upper margin of palm.
- B¹. Anterior margin of epistome armed with three spines, one median and one at either end.
- C¹. Second of lateral teeth of carapace, counting the one at anterolateral angle, inconspicuous, very much smaller than third or indeed any of the others (this character holds for even the smaller specimens). Carapace squarish, scarcely if at all longer from notch in extremity of rostrum to posterior margin than wide; rostral notch shallow, the spines forming it widely spread.....*abbreviatum* (Dana).
(Proc. Acad. Nat. Sci. Philadelphia, vol. 5, p. 252, 1851; Crustacea U. S. Explor. Exped., vol. 1, p. 373, 1852, atlas, pl. 23, fig. 11, 1855.)
- C². Second lateral tooth at most only slightly smaller or shorter measured on the outer margin than third. Carapace longer from rostral notch to posterior margin than wide; rostral notch not noticeably shallow nor spines forming it particularly widespread
pilimanus (A. Milne-Edwards).^o
(Nouv. Arch. Mus. Hist. Nat. Paris, vol. 9, p. 300, pl. 14, fig. 5, 1873.)
- B². Anterior margin of epistome with but a single, the median, spine. Second of lateral teeth of the carapace, counting the one at the anterolateral angle, of good size, but smaller than third, measured on the outer margin only about two-thirds as long as the third. Carapace more or less rounded or narrowed anteriorly, longer than wide....*demani* Ward.^o
(Bull. Raffles Mus., No. 9, p. 24, pl. 3, fig. 3, 3a, 1934.)
- A². Pilose groove on upper margin of chela relatively short, never more than half the length of the palm, often much less. Pubescence on palm other

^oThis species, at least in well-developed males, is characteristically distinguished from all other Percnons by the conspicuous, thick, felted patch of hair on the inner side of the palm, and on the inner upper surface of the merus. In some females that I have seen, the pilose patch is not only reduced in size, but the hairs forming it are shorter and less conspicuous than in the male. I have examined three specimens lent me by the Museum of Comparative Zoölogy through the kindness of Dr. Fenner A. Chace, Jr., in which the second lateral tooth is a little smaller and shorter than the third, if only slightly so. In Milne-Edwards' figured type the reverse seems true; the second tooth, as drawn, is definitely larger and stouter than the third.

^oIn the U. S. National Museum collections I have discovered four specimens, two small females from the Philippines and a small male and medium-sized female from the Celebes, which I believe represent the species which de Man had questionably assigned to *P. abbreviatum* (Dana) and on which Ward quite rightly bestowed a new name, *demani*. De Man was influenced in his tentative determination by the reduced size of the second lateral tooth of the carapace, which, however as he remarked, can in no sense be described as inconspicuous. It is very inconspicuous in true *abbreviatum*. In Ward's halftone illustration of *demani* the second lateral tooth appears at least as large or as long as the third, if not longer. Unless this second tooth is noticeably smaller than the third in the specimen itself, the figure represents a species other than *demani*.

than in groove slight or wanting. Anterior margin of epistome armed with three spines, median and pair of laterals.

- B¹. Groove very short, inconspicuous, scarcely a sixth of the length of the upper margin of palm or less.....*planissimum* (Herbst).⁷
(Naturges. Krabben u. Krebse, vol. 3, pt. 4, p. 3, pl. 59, fig. 3, 1804. Alcock, Journ. Asiatic Soc. Bengal, vol. 69, p. 439, 1900.)
- B². Groove longer, about a third (from a fourth to a half) the length of the upper margin of the palm.....*gibbesi* Milne-Edwards.
(Ann. Sci Nat., ser. 3, Zool., vol. 20, pp. 180, 146, 1853. Rathbun, Bull. 97, U. S. Nat. Mus., p. 337, pl. 105, 1918.)

Gecarcinus planatus Stimpson.....1♂

One of the few land crabs seen. In former years this species was exceedingly abundant on Clipperton. It is possible that the drove of wild pigs loose on the island has so reduced their numbers that they now seem scarce.

Sullivan Bay, James Island, Galápagos, July 24 (sta. 15-38); shore and tide-pool collecting.

Lepeophtheirus dissimulatus Wilson.....1♂ 5♀
Crangon cylindricus Kingsley.....1
Crangon malleator (Dana).....2
Synalpheus nobili Coutière.....3

One of three specimens assigned to this species is but tentatively placed here. In many respects it resembles a closely related species, *S. sanlucasi*. As it does not have the stout legs characteristic of that species, this specimen has been placed here as a variant perhaps of *S. nobili*.

⁷ This species of *Percnon* and the next are very close and very similar. There is some variation in the length of the pilose groove of the upper margin of the hand. The characteristically short groove of *planissimum* holds for all specimens of more than three-fourths of an inch in width. In some smaller or immature specimens, chiefly females, the groove appears relatively longer than in larger, better-developed individuals. Specific distinctions are best exhibited in well-developed males.

There is another character not referred to in the key that seems to hold for many specimens of either of these two species of *Percnon*, but not for all unless I am mistaken in some of my identifications. In *P. planissimum* the teeth of the lateral margin of the carapace, at least those following the one at the anterolateral angle, are more or less subequal; the second and third teeth, counting the extra orbital tooth, measured on their outer margins are about of equal length. In *P. gibbesi* the outer margin of the second lateral tooth, counting the one at the anterolateral angle of the carapace, measured on the outer margin is in general or in many specimens appreciably a little shorter than the third.

<i>Pachycheles biocellatus</i> (Lockington)	.....1♂
<i>Calcinus obscurus</i> Stimpson	.....1
<i>Dynomene ursula</i> Stimpson	.....1♀
<i>Platypodia gemmata</i> Rathbun	.....1♂
<i>Actea dovii</i> Stimpson	.....2♀
<i>Leptodius cooksoni</i> Miers	.....1♂ 2♀ (1 ovig.)
<i>Eriphia granulosa</i> A. Milne-Edwards	.....3♂ 4♀ (2 ovig., 3 juv.)
<i>Eriphides hispida</i> (Stimpson)	.....3♀
<i>Grapsus grapsus</i> Linnaeus	.....1♂
<i>Pachygrapsus transversus</i> (Gibbes)	.....1♂
<i>Percnon gibbesi</i> (Milne-Edwards)	.....1 juv.
<i>Mithrax nodosus</i> Bell	.....6♂ 9♀ 3 juv.
<i>Teleophrys cristulipes</i> Stimpson	.....3♂ 1♀ 3 juv.

Narborough Island, Galápagos, July 25 (sta. 16-38), shore collecting, east side, opposite Tagus cove.

<i>Palaemon ritteri</i> Holmes4
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Rostral teeth $\frac{8}{2-3}$; in three of the specimens the first two teeth of upper series are definitely on the carapace.

<i>Petrolisthes</i> species	.....4
<i>Calcinus obscurus</i> Stimpson	.....1
<i>Leptodius cooksoni</i> (Miers)	.....10♂ 3♀ (2 ovig.) 2 juv.
<i>Ozius perlatus</i> Stimpson	.....2♂ 1♀
<i>Ozius tenuidactylus</i> (Lockington)	.....2♂ 4♀
<i>Geograpsus lividus</i> (Milne-Edwards)	.....1♂ 1♀
<i>Mithrax nodosus</i> Bell	.....1♂

Tagus Cove, Albemarle Island, Galápagos, July 26 (sta. 18-38), from anchor chain at anchorage, 10 a. m., 50 fathoms.

<i>Munida mexicana</i> Benedict28
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The specimens are all about the size of or slightly smaller than the material mentioned in Benedict's description of the species. Though first taken by the United States Fish Commission Steamer *Albatross* from 65 fathoms in Panama Bay in 1888, the species was based on the type which was obtained the same year by the same vessel while operating in 78½ fathoms off Charles Island in the Galápagos. Additional specimens from that particular cruise were taken off Chatham Island, Galápagos, in the Gulf of California, and off Magdalena Bay, in depths ranging from 9½ to 151 fathoms. All told, the *Albatross*

captured 23 specimens, including the type. Until our own 28 specimens were found sitting on the anchor chain by Lieutenant Commander Kelly as the anchor was being hoisted prior to leaving our anchorage off Tagus Cove, the species had been reported only once since the *Albatross* collected it. Heller and Snodgrass obtained a single specimen from a rocky reef north of Tagus Cove, March 3, 1899.

Elizabeth Bay, Albemarle Island, Galápagos, July 26 (sta. 19-38), landed in bay at south end of black beach north of mangroves, north of two red islands.

Crangon strenuus (Dana).....1

The antennular peduncles of this one specimen are stouter than what may be considered typical for the species; the larger chela is a little less massive and has its proximal portion behind the notches in the dorsal and ventral margins of the hand slightly longer than usual. For want of more and sufficient material, this specimen has been identified as *C. strenuus* with reservations.

Callianidea laevicauda occidentalis Schmitt.....1

Only the anterior portion of this specimen seems to have been obtained.

Petrolisthes species6

Clibanarius sp.9

Calcinus obscurus Stimpson.....6

Leptodius cooksoni (Miers).....14♂ 4♀

Pinnaxodes chilensis (Milne-Edwards).....1

This is the first time this species has been observed in the Galápagos Islands. Austin H. Clark, who has reported upon the echinoderms collected, discovered this pea-crab in one of several sea-urchins, *Caenocentrotus gibbosus* (L. Agassiz and Desor).

Grapsus grapsus (Linnaeus).....1♀ ovig.

Pachygrapsus transversus (Gibbes).....1♂ 5♀ (3 ovig.)

Mithrax nodosus Bell.....1♂

Post Office Bay, Charles Island, Galápagos, July 27 (sta. 21-38), specimens gathered ashore by members of the crew.

Eriphides hispida (Stimpson).....1♂

Off Gardner Bay, Hood Island, Galápagos, July 27 (sta. 22-38), at anchorage, with electric light off gangway, 11 p. m., dip net.

A number of each of three species of free-swimming copepods:

Temora stylifera (Dana)

Centropages furcatus (Dana)

Undinula caroli Scott

South Seymour Island, Galápagos, July 29 (sta. 23a-38), at anchorage, with electric light from gangway, 11 p. m., dip net.

A number of each of three species of free-swimming copepods:

Eucalanus attenuatus (Dana)

Pleuromamma piscki Farran

Undinula caroli Scott

James Bay, James Island, Galápagos, July 30 (sta. 24-38), from bottom sample taken in 24 fathoms.

Proccsa canaliculata Leach.....2

Chatham Bay, Cocos Island, August 2, shore.

Callianassid1

A small specimen in poor condition.

Coenobita compressa Guérin.....2

Wafer Bay, Cocos Island, August 2, in vicinity of treasure hunter's camp.

Cardisoma crassum Smith.....1♂

Off Chatham Bay, Cocos Island, August 3 (sta. 26-38 and sta. 27-38 respectively), parasites from 116-pound sailfish caught by F. B. Adams; and copepod found in dish in which two sucker fish, *Echeneis remora* Linnaeus, taken from the sailfish had been placed.

Gloiopotes ornatus Wilson.....2♂ 9♀

All but one young female were removed from the sailfish (26-38); this specimen (27-38) was found in dish with the sucker fish.

Pennella instructa Wilson.....1

To this *Pennella* (26-38) was attached a single fleshy barnacle, *Conchoderma*, very probably *C. virgatum* (Spengler). The *Penella*

was not wholly complete, and apparently not a fully developed specimen, but Dr. C. B. Wilson, who made the determination, believes that it may safely be called *P. instructa*.

Old Providence Island, Colombia, August 6 (sta. 30-38), shore, reef, and tide-pool collecting.

<i>Trachypenaecus similis</i> (Smith)	4
<i>Crangon candei</i> (Guérin)	7
<i>Crangon formosus</i> (Gibbes)	2
<i>Crangon cristulifrons</i> (Rathbun)	1
<i>Crangon bahamensis</i> (Rankin)	11
<i>Crangon heterochaelis</i> (Say)	2
<i>Crangon</i> species	1
<i>Synalpheus fritzmülleri</i> Coutière	1
<i>Synalpheus</i> near <i>rathbuni</i> Coutière	1

The poor condition of this small specimen precludes a more positive determination or even an adequate description should it prove to be new. The ambulatory legs and the large chela remind one strongly of *S. rathbuni*. The conical tubercle of the chela anteriorly carries the suggestion of a tiny spinule. There are only four articles to the carpus of the second legs. The frontal appendages appear to be much as in the type of *S. rathbuni*; the posterior pair of spines on the dorsum of the telson are not quite so large.

<i>Lysmata moorei</i> (Rathbun)	2
<i>Thor paschalis</i> (Heller)	1
<i>Brachycarpus biunguiculatus</i> (Lucas)	4
<i>Macrobrachium olfersii</i> (Wiegmann)	1
<i>Palaemon tenuicornis</i> Say	1 ♀ ovig.
<i>Gnathophyllum americanum</i> Guérin	1 ♀ ovig.
<i>Stenopus semilaevis</i> v. Martens	5
<i>Petrolisthes galathinus</i> (Bosc)	1 ♂
<i>Petrolisthes tridentatus</i> Stimpson	1 ♂
<i>Petrolisthes</i> near <i>quadratus</i> Benedict	2 juv.
<i>Calcinus tibicen</i> (Herbst)	8
<i>Clibanarius tricolor</i> (Gibbes)	36
<i>Dardanus venosus</i> (H. Milne-Edwards)	2 ♂
<i>Pagurus marshi</i> Benedict	1
<i>Hippa cubensis</i> (Saussure)	1 ♂
<i>Dromia erythropus</i> (George Edwards)	1 ♀
<i>Pitho aculeata</i> (Gibbes)	1 ♂ 2 ♀ (1 ovig.)

<i>Mithrax acuticornis</i> Stimpson.....	3♂
<i>Mithrax sculptus</i> (Lamarck).....	1♀
<i>Mithrax coryphe</i> (Herbst).....	3♂ 2♀ ovig.
<i>Mithrax ruber</i> (Stimpson).....	2♂ 1♀ 1 juv.
<i>Macrocoeloma diplocanthum</i> (Stimpson).....	1♀ ovig.
<i>Macrocoeloma subparallelum</i> (Stimpson).....	1♂
<i>Microphrys bicornutus</i> (Latreille).....	1♀ 2 juv.
<i>Portunus ordwayi</i> (Stimpson).....	1♂
<i>Paraliomera dispar</i> (A. Milne-Edwards).....	6♂ 6♀
<i>Actea setigera</i> Milne-Edwards.....	2♂ 1♀
<i>Xanthodius denticulatus</i> (White).....	4♂ 6♀
<i>Micropanope barbadensis</i> (Rathbun).....	6♂ 5♀ (2 ovig.) 1 juv.

All these except the largest, best-developed male have the palms more or less completely granulated as in one of the females among the 13 specimens examined by Miss Rathbun.

<i>Chlorodiella longimana</i> Milne-Edwards.....	1♂ 1♀
<i>Pilumnus holosericus</i> Rathbun.....	3♂ 3♀
<i>Eriphia gonagra</i> (Fabricius).....	1♀
<i>Grapsus grapsus</i> Linnaeus.....	1♂ 1 juv.



THE CLIPPERTON ATOLL FROM THE NORTHWEST. TAKEN FROM THE FORETOP OF THE U.S.S. "HOUSTON"
(FROM PHOTOGRAPHS BY J. P. M. JOHNSTON)



1. CLIPPERTON ISLAND LANDING FROM THE NORTHEAST





LEAPING PORPOISES, HOOD ISLAND, JULY 28
(PHOTOGRAPHS BY R. B. THOMPSON)