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**Additional Central Pacific Crustaceans<sup>1</sup>**

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The discovery of *Lambracheus ramifer* in Hawaiian waters again links the fauna of the Indian seas with the central Pacific, and the appearance of that rare form *Glabropilumnus seminudus* among fouling on an ocean-going craft indicates a way by which the distribution of marine organisms may be brought about.

Of the seven species here recorded, four are believed to be reported for the first time.

FAMILY PANDALIDAE

Genus *Plesionika*

*Plesionika pacificus*, new species (fig. 1, *a-o*).

Type specimen a female 43 mm. long, not including rostrum. Length of carapace 12 mm., abdomen 24 mm., telson 7 mm. Body smooth. Rostrum long, swordlike, slightly turned upward; upper margin and crest of carapace bear numerous teeth, probably about 50; lower margin of rostrum with about 30 teeth, posterior one a little distance in front of eye. All teeth strongly directed forward. Teeth on crest of carapace number about six behind posterior border of orbit. A low ridge on dorsomedial border of carapace extends backward almost to posterior margin. Front margin of carapace bears a strong antennal and a smaller pterygostomial spine.

Peduncle of antennule with a broad, pointed stylocerite which extends almost to distal end of first segment; at basal extremity of stylocerite is a small process, bent forward; second and third segments of peduncle short; both flagella very long. Scaphocerite of antenna long and narrow, reaching beyond middle of rostrum, a small tooth at outer, distal border; flagellum about 10 times longer than carapace and slightly exceeding length of flagella of antennule.

Mandible with broad end of incisor process bearing six teeth, the lateral ones the stronger; molar process slightly expanded at end, terminating in a few blunt teeth; palp stout, terminal segment the largest. Third maxilliped slender,

<sup>1</sup> This paper is a supplement to "Some central Pacific crustaceans," published by Bernice P. Bishop Museum in 1951 [Occ. Papers 20 (13): 183-242].

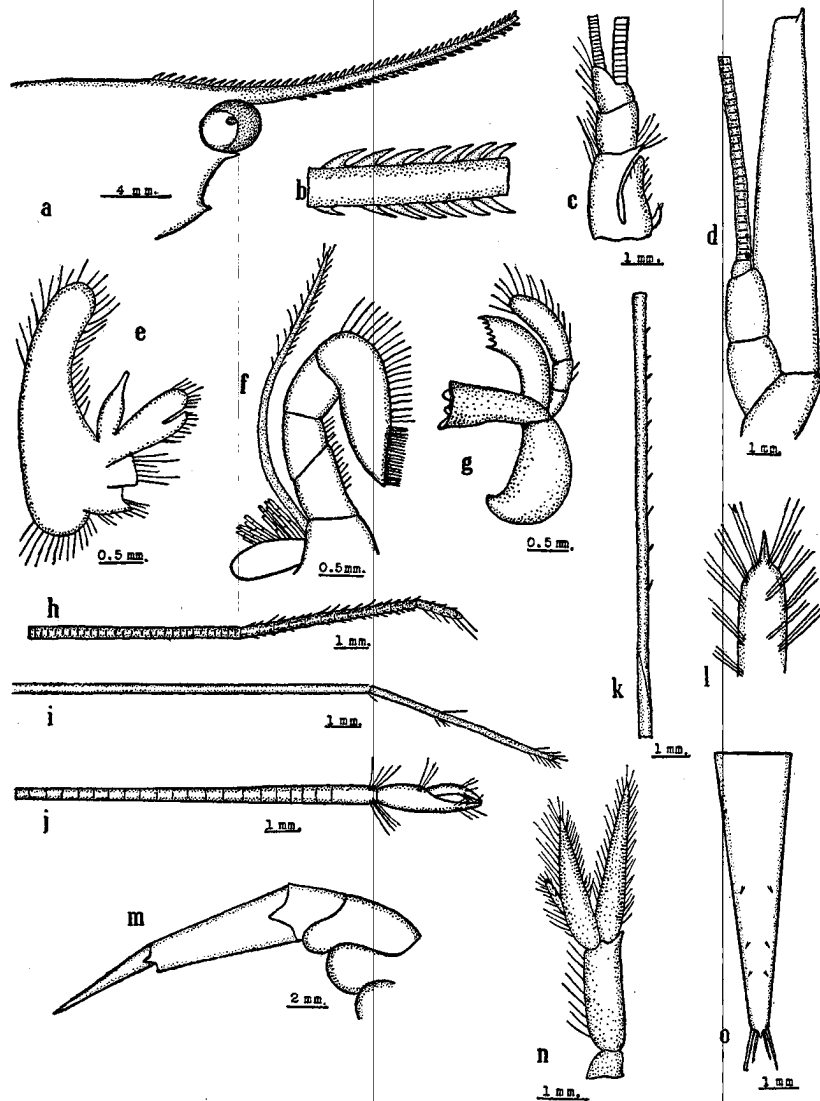


FIGURE 1.—*Plesionika pacificus*: a, anterior portion of carapace; b, portion of rostrum; c, peduncle of antennule; d, peduncle and scaphocerite of antenna; e, maxilla; f, second maxilliped; g, mandible; h, third maxilliped, carpus to dactylus; i, first leg, carpus to dactylus; j, second leg, carpus to dactylus; k, ischium-merus of fourth leg; l, tip of first leg; m, posterior portion of abdomen; n, second pleopod, female; o, telson, dorsal view (b and l greatly enlarged).

exceeding scaphocerite by length of its propodus and dactylus, as long as or a little shorter than second leg. First leg slender, exceeding length of third maxilliped and that of second leg; merus and carpus about equal in length, propodus one-half length of carpus, ending in an acute point which represents a rudimentary dactylus. No true chela evident. Second legs equal in size and length, exceeding scaphocerite in length by chela and distal one-third of carpus; carpus with about 22 segments, distal one-third slightly inflated; ischium and merus subequal in length, combined, a little longer than carpus and propodus. Third to fifth legs very long and slender, terminal segments broken off in specimen; posterior margin of merus of each bearing a few small spines, about 10 in number on merus of fourth leg.

Segments of abdomen smooth, rounded dorsally; pleurae of first four segments broadly rounded and produced posteriorly; that of fifth segment produced posteriorly as a broad acutely pointed process; sixth segment more than twice length of fifth, terminating posteriorly in a sharp tooth, also a small tooth at posterolateral angle. Telson narrow, a little shorter than sixth segment, three pairs of small spines on dorsal surface; distal extremity ending in a sharp point and bearing two pairs of spines, the lateral ones being the longer. Uropods narrow, longer than telson, the exopod exceeding endopod in length. Branches of pleopods narrow, acutely pointed; endopod of first pleopod short, without appendix interna, that of second nearly as long as exopod and bearing appendix interna.

Color of specimens, pink; gradually fading in alcohol. Several ovigerous female specimens smaller than the type among those examined.

Type, Bishop Mus. coll. no. 5772; cotypes, 5773.

The above description is based on one of several damaged specimens of the genus *Plesionika* recovered from the stomach of a fish, the *opakapaka* (*Pristipomoides* sp.), taken off the north Kona coast of Hawaii, August 15, 1951, by Shigeo Sugiyama and Mineo and Masao Koyanagi at little more than 100 fathoms. The specimens are distinguished from two sword shrimps previously taken about the Hawaiian Islands by the *Albatross*, *Plesionika martia* (A. Milne Edwards) and *Plesionika ensis* (A. Milne Edwards), by the complete serration of the upper margin of the rostrum. The new form, however, is very close to *Plesionika spinipes* Bate (3),<sup>2</sup> taken by the *Challenger* north of New Guinea at 150 fathoms. A few apparently significant differences have led me to designate the Hawaiian specimen as a new species. In *P. spinipes* the rostrum is very straight, whereas in the Hawaiian form it presents a distinct curve upward. The serration of the crest of the carapace is more extensive in *P. spinipes* than in the Hawaiian species; in *P. spinipes* it extends nearly half the length of the carapace, but in *P. pacificus* not more than six spines are behind the posterior border of the orbit. In *P. spinipes* the second legs

<sup>2</sup> Numbers in parentheses refer to Bibliography, page 86.

are unequal in size and length, the right being shorter and more slender than the left. This feature apparently applies to all of the eight specimens taken by the *Albatross*. In all of the Hawaiian specimens with the second legs intact, these legs are equal in size and length on the two sides.

FAMILY RHYNCHOCINETIDAE

Genus *Rhynchocinetes*

*Rhynchocinetes rugulosus* Stimpson, Philadelphia Acad. Nat. Sci., Proc. 12: 36, 1860 (fig. 2, a-h).

In 1902 the *Albatross* dredged a small specimen about 16 mm. long near French Frigate Shoal which was recorded by Rathbun (9) as

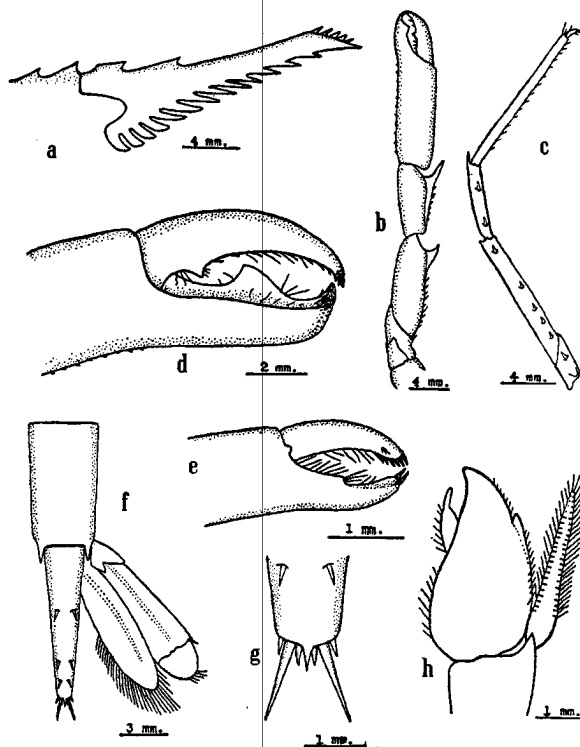


FIGURE 2.—*Rhynchocinetes rugulosus*: a, rostrum and teeth of carapace; b, first leg; c, fourth walking leg; d, fingers of first leg; e, fingers of second leg; f, telson, right uropod and sixth abdominal segment; g, tip of telson; h, first pleopod of male.

*Rhynchocinetes rugulosus* with this comment, "It may appear that the Hawaiian form represents an undescribed species." The specimen is now in the U. S. National Museum.

In Bishop Museum are three small and very similar specimens (largest 26 mm. long) which I consider to be juvenile forms of *R. rugulosus*. One was taken near Laysan Island and the other two near Sydney, Australia. Also in Bishop Museum are nine larger specimens taken in a fish trap off the southwest coast of Oahu during April 1950, at about 16 fathoms. Of these, five are males ranging in length from 50 to 64 mm. and four are females (all ovigerous) ranging in length from 53 to 63 mm., the measurements not including the rostrum. The nine larger specimens appear to be typical adult examples of *R. rugulosus*.

Members of the genus are characterized by a prominent, toothed rostrum completely or incompletely articulated with the carapace and capable of more or less up and down movement. Fine transverse or oblique striae usually mark the carapace and abdomen. First and second legs are chelate, the first stouter than the second. In older males the outer maxillipeds and first pair of legs are often massive.

Characters of the adult Hawaiian form are as follows:

Male. Largest of five specimens, 64 mm. long, not including rostrum. Rostrum with seven teeth above (five near tip) and 13 below. Two teeth on carapace behind rostrum. Outer maxilliped nearly four times length of carapace. First pair of legs long and stout; upper border of carpus with serrated crest; a broad tooth on cutting edge of fixed finger, and a smaller one on dactylus; fingers tipped with black, horny teeth. Endopod of first pleopod with a blunt lobe on outer border; appendix interna, a single segment. No teeth on posterior border of fourth and fifth abdominal segments. Posterior border of telson bears three spines on each side of a median tooth, which is longer than the adjacent spines; three pairs of spines on dorsal surface of telson.

Female. Largest of four specimens, 65 mm. long, not including rostrum. Most conspicuous differences from large male are the short and slender third maxillipeds and first pair of legs; teeth not developed on cutting edges of fingers as in large male; fingers tipped with black, horny teeth.

The remarkable development of the outer maxillipeds and the first pair of legs in large males of this and certain other groups of shrimps is considered as sexual dimorphism by some, whereas others believe it to be only a mark of old age. Kemp (8) noted that the increase in size of the limbs was in graded series, the small males having small appendages and the larger specimens acquiring more massive limbs. This gradation is clearly seen in the five Hawaiian male specimens

that I have examined. The smallest male, 50 mm. long, resembles a female in outer maxillipeds and the first pair of legs. In males 50 to 60 mm. long there is a marked increase in the development of these limbs; but in only two males, each exceeding 60 mm. in length, have the appendages acquired what may be considered huge proportions.

Gordon (5), in reviewing the genus *Rhynchocinetes*, includes a comprehensive key to the six species recognized by her. The species *R. rugulosus* falls within the group having the rostrum completely articulated with the carapace, a supraocular tooth, two teeth on the carapace behind the rostrum, and no teeth on the posterior border of the fourth and fifth abdominal segments.

Living specimens are ornamented with vivid color patterns. The carapace and the abdomen are traversed by stripes and lines of red and purple tints, forming irregular figures and ocular-like spots. The legs and other appendages are, for the most part, banded or otherwise marked by reddish tints.

The known range of *Rhynchocinetes rugulosus* is from Australian waters through the Pacific to Japan and Hawaii, including French Frigate Shoal and Laysan Island. Hiatt (7) records one specimen taken in a fish trap off Diamond Head, Oahu, at a depth of six fathoms. (Bishop Mus. coll. nos. 602, 1270, 5627.)

***Rhynchocinetes intermedius*, new species? (fig. 3, *a-k*).**

Male. Carapace and abdomen marked by conspicuous striae. Rostrum slightly curved upward, incompletely articulated with carapace; a short ridge on either side of base continuous with supraocular margin and front border of carapace, permitting limited up and down movement of rostrum. Rostrum with two teeth on upper border (number at tip not determined) and eight below. Three teeth on carapace behind rostrum, the posterior one the smallest. No supraocular tooth. Stylocerite of antennular peduncle acutely pointed, nearly reaching distal extremity of ultimate segment; spine of basal segment slightly exceeding distal extremity of penultimate segment. External maxilliped not excessively developed, exceeding antennal scale by about one-fourth its terminal segment; black, horny spines borne on extremity.

Both front legs missing but basal segments indicate appendages of considerable size. Second leg slender, falling short of distal extremity of antennal scale; chela with short fingers tipped with horny spines, two stout ones extending forward from the fixed finger and numerous ones terminating the dactylus. Third leg stouter and longer than second; merus and propodus subequal in length, carpus more than half length of propodus; a small spine on outer surface of ischium, six spines on lower border and outer surface of merus, and two on outer surface of carpus, in addition to the one at upper distal extremity; dactylus bearing four minute spines in addition to terminal claw. Fourth and fifth legs similar to third but shorter and more slender.

Posterior margin of both fourth and fifth segments of abdomen bears a tooth on each side. Endopod of first pleopod of male tapering to a narrow extremity; internal appendix a single segment. Posterior border of telson bearing three spines on each side of a median tooth which is shorter than adjacent spines. Three pairs of spines on dorsal surface of telson. The specimens of *intermedius* examined are almost completely decolorized in alcohol, with no color patterns discernible. Only the second legs of the male have retained a reddish hue.

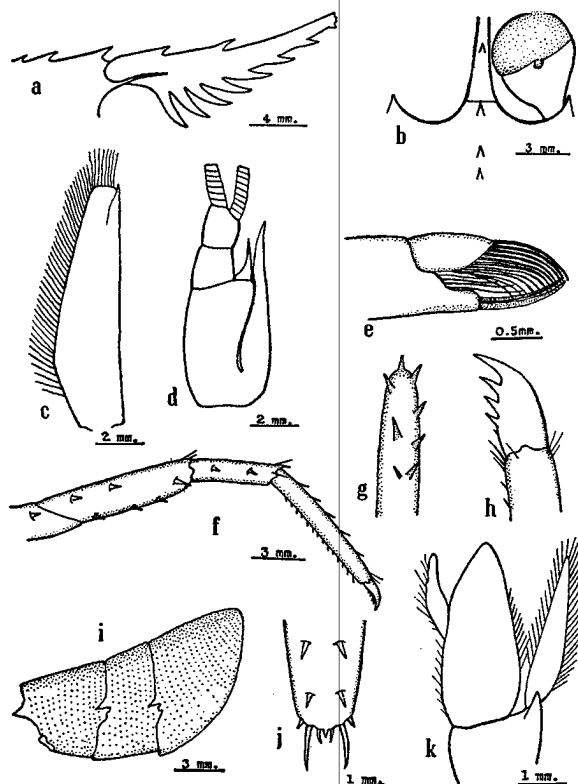


FIGURE 3.—*Rhynchocinetes intermedius*: a, rostrum and teeth of carapace; b, front border of carapace, from above; c, scale of antenna; d, peduncle of antennule; e, fingers of second leg of male; f, third leg; g, tip of outer maxilliped; h, dactylus of third leg; i, fourth, fifth, and sixth segments of abdomen; j, tip of telson; k, first pleopod of male (g and h, enlarged).

Bishop Mus. coll. no. 5766.

Two specimens of this doubtful, possibly new, species were taken in a fish trap off the southwest coast of Oahu at about 16 fathoms and associated with *Rhynchocinetes rugulosus*. One was a male 56 mm.

long, the other an ovigerous female 43 mm. long, not including the rostrum. Although the specimens were somewhat damaged, each having lost the tip of the rostrum and the male having lost the first pair of legs and some other appendages, enough characters were discernible to make clear most of the principal features.

The Hawaiian specimens fall within the group of the genus bearing three teeth on the carapace behind the rostrum and lacking a supraocular tooth. Up to now this group includes but two known species: *R. hendersoni* Kemp (8; see figure 5, *b*), an Indo-Pacific form, and *R. rigens* Gordon (5), described from Atlantic waters. In both species the rostral teeth, except possibly those of the upper distal extremity, compare favorably with those of the Hawaiian specimens. However, the doubtful form is more closely allied to *R. rigens* in certain characters than to *R. hendersoni*.

In the small but well-defined ridge fusing the lower portion of the rostrum with the carapace, together with teeth on the fourth and fifth abdominal segments, the Hawaiian specimens approach the Atlantic species. In the Hawaiian form this ridge is short, merging with the surface of the rostrum at a level with the basal tooth of the upper border, instead of extending far forward on the side of the rostrum as in *R. rigens*. Owing to this ridge, the up and down movement of the rostrum is greatly restricted as compared with that in *R. rugulosus*, where the articulation of rostrum with carapace is complete.

Differences are seen in the antennular peduncle between the Hawaiian form and both *R. rigens* and *R. hendersoni*, chiefly in the relative length of spine and stylocerite. The outer flagellum of this appendage in the female specimen is, however, very slender in its distal third, as has been recorded for *R. rigens*. The first pleopod of the male Hawaiian specimen closely resembles that of *R. hendersoni*. Unfortunately, defects in the Hawaiian specimens include the absence of the first legs of the male; and although the basal segments remaining indicate limbs of good size, their character is unknown. Because of an apparent median position of this form between *R. rigens* and *R. hendersoni*, I suggest the name *intermedius*.

Gordon (6), after examining a specimen submitted to her, states that the species is certainly not *rigens*. Hiatt (7) reports *R. rigens* to have been taken off Diamond Head, Oahu, some specimens at the surface by aid of a light and a dip net, others in a fish trap at six fathoms.



**Rhynchocinetes marshallensis**, new species (figs. 4, *a-h*; 5, *a, c-h*; 6).

Holotype a male; length of carapace 9 mm., abdomen 26 mm., rostrum 14 mm. Rostrum sharply turned up, partially fused to carapace, five teeth on upper border, two on basal half, two near tip and one a little more proximal of tip; eight teeth on lower border of rostrum. Three teeth on carapace behind rostrum, the posterior one the smallest. Lower border of base of rostrum fused to carapace by means of a ridge curving about orbital margin and extending a little distance on side of rostrum.

Carapace and abdominal segments, including telson, marked by fine transverse lines, often interrupted and irregular, and ranging from six to eight per mm. Posterior borders of abdominal segments four to six bearing a tooth. Lower posterior border of fourth segment rounded, of fifth acutely pointed, of sixth obtusely pointed.

Eyes large, cornea globular, stalk narrow; lower orbital border produced into a sharp antennal tooth. Basal segment of antennular peduncle broad, con-

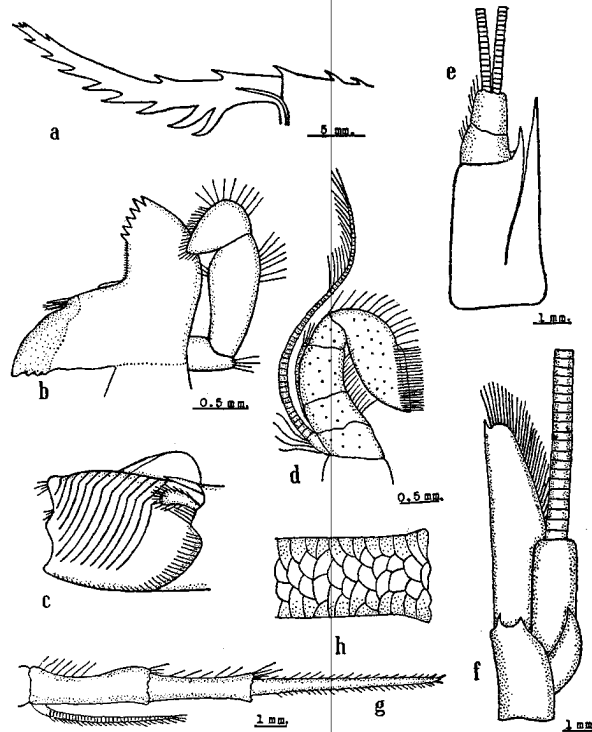


FIGURE 4.—*Rhynchocinetes marshallensis*: a, rostrum and upper front portion of carapace; b, mandible; c, chitinous tip of molar process of mandible, upper (anterior) surface; d, second maxilliped; e, peduncle of antennule; f, peduncle of antenna; g, third maxilliped; h, section of penultimate segment of third maxilliped showing scabrous surface (*c* and *h* greatly enlarged).

cave on upper surface, slightly narrower distally; a strong tooth on outer distal border reaches slightly beyond middle segment, and a long, sharp, lateral process extends almost to extremity of peduncle; outer flagellum of antennule thicker and shorter than inner one.

Terminal segment of peduncle of antenna the longest; scale extends beyond extremity of peduncle by half its length, the narrow distal border bearing a sharp spine. Flagellum of antenna about six times as long as rostrum. Incisor process of mandible provided with six or seven teeth at extremity; molar process stout, upper (anterior) surface of chitinous tip with numerous transverse ridges; palp three-jointed, broad, second segment the longest. Second maxilliped with large terminal segment; exopodite long, narrow. Third maxilliped slender, extending beyond antennal scale, but falling short of distal extremity of carpus of first leg; exopodite does not reach middle of penultimate segment; terminal segment the longest, tipped by a number of short, black spines.

First legs very long; propodus exceeding in length merus and carpus combined, broadened and somewhat flattened distally, the truncate extremity provided with three blunt teeth, one of which is larger than the others. Dactylus curved, closing over blunt end of propodus. Outer border of dactylus and lower margin of propodus ornamented with low tubercles. Second leg slender, chela falling short of middle of carpus of first leg; propodus shorter than carpus; fingers short. Following walking legs more slender than second leg; propodus more than twice as long as carpus; dactylus toothed on inner border.

First pleopod with exopodite shorter and narrower than the oval endopodite, which bears a short, broad appendix interna. Telson long and narrow, the posterior margin provided with five spines, the submedian pair being the longest; dorsal surface with three pairs of spinelets.

General color of specimen uniformly red, retaining color fairly well after more than two years in alcohol. Microscopic surface markings of a reticulate or scabrous nature are evident on many parts of the body, including rostrum, appendages, and abdominal somites. Minute bright red spots also ornament some appendages and the abdominal segments.

Type locality, Ebenina, Eniwetok, Marshall Islands; collected by Spencer W. Tinker, August 13, 1949 (Bishop Mus. coll. no. 5637).

The Eniwetok specimen falls within the group of *Rhynchocinetes* in which there are three teeth on the carapace behind the rostrum and no supraorbital spine. Two previously known species are so characterized: an Atlantic form, *R. rigens* Gordon (5), and *R. hendersoni* Kemp (8), described from the Gulf of Manaar and also taken at Tuticorin and possibly at Fiji.

In rostral features the Eniwetok specimen bears considerable resemblance to *R. rigens*. In both, the rostrum is strongly curved up and the lower basal portion is fused with the carapace by a ridge curving about the orbital margin and extending on the side of the rostrum. This ridge, however, is very strong in *R. rigens*, extending for more than half the length of the rostrum, whereas in *R. marshallensis* it is short, not reaching a level with the dorsal basal tooth. The first legs

show an even greater difference between the species. In both sexes of *R. rigens* the first legs are short, not reaching the end of the antennal scale, the chelae being of normal shape. In *R. marshallensis* (male) the first legs are greatly elongated terminating in a subchelate hand, and the third maxilliped shows greater development than in *R. rigens*.

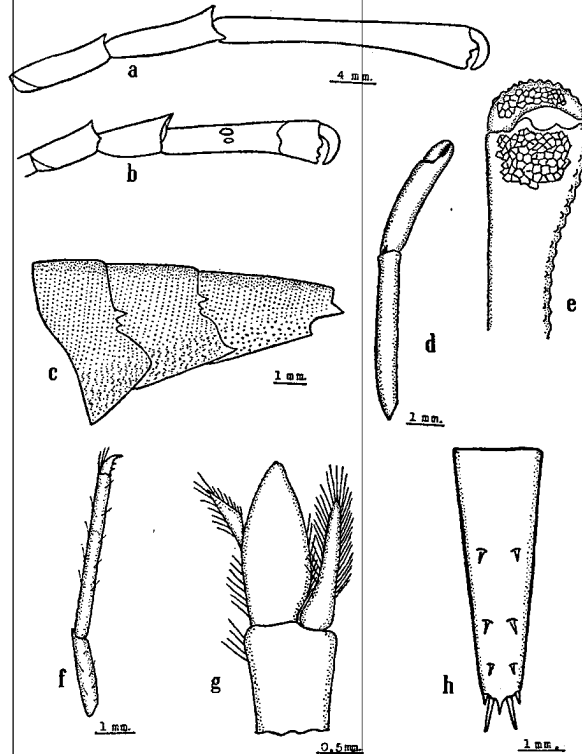


FIGURE 5.—*Rhynchocinetes marshallensis* (a, c-h); *R. hendersoni* (b): a, cheliped from sketch by Isabella Gordon; b, cheliped from sketch by Isabella Gordon drawn to same scale as a; c, fourth to sixth segments of abdomen, lateral view; d, carpus and hand of second leg; e, extremity of cheliped; f, last three segments of fifth leg; g, first pleopod; h, telson (e enlarged).

The Eniwetok specimen differs from *R. hendersoni* in that the rostrum of the latter species is completely articulated with the carapace and, in the male, is straight instead of curved upward. Also, *R. marshallensis* has an additional tooth on the dorsal border of the rostrum a little distance from the tip, a feature not seen in *R. rigens* or *R. hendersoni*. Slight variations in number of rostral teeth, however,

may not amount to specific differences. A more significant difference between *R. marshallensis* and *R. hendersoni* is seen in a lateral view of the abdominal somites. Like *R. rigens*, both the fourth and fifth somites of the new species bear a well-developed tooth on the lateral posterior border, whereas in *R. hendersoni* the fourth somite lacks such a tooth. In the type specimen of *R. hendersoni* only one of the first legs remains and it lacks the chela, so that a comparison of these appendages with those of *R. marshallensis* cannot be made with certainty.

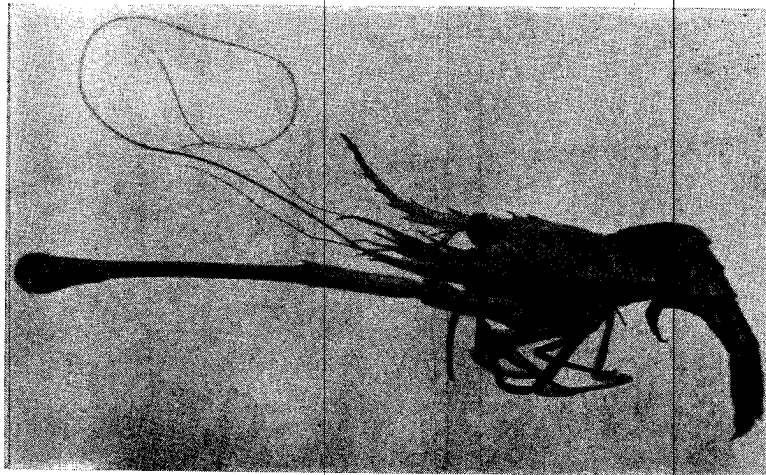


FIGURE 6.—*Rhynchocinetes marshallensis*.

In the British Museum is a damaged specimen collected at Fiji and believed by Kemp (8) to represent *R. hendersoni*. The rostrum of this specimen is broken off at the base, but a first leg is intact. A general resemblance of this appendage to the corresponding leg of the Eniwetok specimen is seen in the reproduction (fig. 5) of sketches made by Gordon (6), who, however, expresses uncertainty that the two specimens are of the same species. The specimens from Fiji and Eniwetok are of about equal size, but the cheliped of the Fijian form is much shorter and somewhat stouter. Although the relationship between these two specimens cannot be fully established without further material for comparison, the evidence appears to be sufficient to support the conclusion that *R. hendersoni* and the Eniwetok form are distinct, which authorizes the designation of the latter as a new species.

## FAMILY PAGURIDAE

Genus *Aniculus****Aniculus maximus***, new species (figs. 7, a-f; 8).

Total length of carapace of type specimen 68 mm.; length of anterior portion, rostrum to cervical groove, 32 mm.; greatest breadth of anterior portion 28 mm. Pattern of carapace distinct, an elongate quadrangle outlined in middle of anterior portion. Lateral regions of carapace pitted and grooved, from which depressions arise tufts of long hairs; similar tufts are carried in pattern lines, on borders of carapace, appendages, and abdominal segments, giving the specimen a shaggy appearance. Posterior portion of carapace somewhat calcified about cervical groove and also characterized by a wedge-shaped plate extending backward from the groove.

Front border of carapace with three lobes, the median one (rostral) low and bluntly rounded, the lateral ones also rounded and lower than rostrum. Eyestalks exceeding in length breadth of anterior border of carapace; ocular scales broad at base, terminating in acute point. Peduncle of antennule as long as eyestalk, not including cornea. Peduncle of antenna a little shorter than eyestalk, its penultimate segment very short; acicle a narrow, acutely pointed triangle, reaching to middle of terminal segment of peduncle.

Chelipeds equal, outer surface, for most part, quite smooth, ornamented with transverse scutes the front edges of which are fringed with short hairs; merus short and high, inner surface with few scutes; carpus and propodus encircled

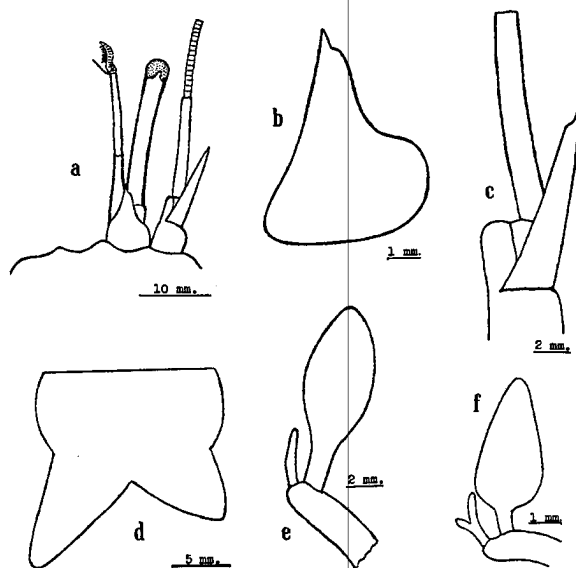


FIGURE 7.—*Aniculus maximus*: a, front border of carapace, eyestalk, antennule, and antenna; b, ocular scale; c, peduncle of antenna; d, telson; e, abdominal appendage; f, abdominal appendage of juvenile specimen.

by scutes; numerous minute black spinules borne on fingers and upper palm; upper and lower borders of chelipeds well-clothed in long hairs which become denser on propodus and fingers. Broadly spooned fingers horny, black.

Second and third pairs of legs similar on the two sides of body; second leg exceeding by one half its dactylus the tip of cheliped; third leg falling a little short of second. Scutes on inner surface of merus of second and third legs wanting and interrupted on inner surface of carpus and propodus; dactyli longer than propodi, without scutes but densely haired except for black, acutely pointed tips.

Four small abdominal appendages on left side, each biramous, one branch leaflike, the other narrow, short, with a slight elbow on outer border. Uropods and deeply incised terminal lobe of telson better developed on left side than on right.

In alcoholic specimens the general surface of greater portion of carapace, thoracic appendages, and telson a deep orange-yellow color. Borders of carapace pattern and anterior edge of scutes red, with mottling of same color on carapace and some appendages. Two narrow longitudinal lines of red traverse eyestalks. Long hairs of carapace, abdomen, and appendages pale yellow. Bristles at tips of chelipeds and second and third legs dark red.

Type specimen, Bishop Mus. coll. no. 5639.

The genus *Aniculus* is apparently confined to the Indian and Pacific Oceans where few species have been recognized. Although the new Hawaiian form bears some likeness to each of the three larger representatives of the genus now known, it differs from each in certain salient features, regardless of size.

In the widely distributed *A. aniculus* Fabricius, as described by Alcock (1), the rostral lobe is pointed; the ocular scale is bifid at the tip, and the eyestalks and acicle of the antenna are relatively shorter than in the new species. Also in *A. aniculus* the dactyli of the second and third legs are shorter, not longer, than the propodi, and the telson is not deeply cleft on the posterior border.

Thompson (11) describes *A. chiltoni* from New Zealand, a species in which the pattern of the carapace differs from that of the Hawaiian form, and the lateral lobes of the front have spiny tips. Also the ocular scales in *A. chiltoni* have a series of spines at their extremities, the eyestalks are relatively shorter than those in the Hawaiian species, and the acicle of the antenna is bifid at the apex and its surface is spiny.

Boone (4), in describing *A. elegans* Stimpson, from Panama, indicates a species with a pointed rostrum and a carapace pattern less complete than in the new species. The acicle and terminal segment of the antennal peduncle are relatively shorter in *A. elegans*.

No recorded example of either of the three species mentioned above is nearly the size attained by the Hawaiian form. Spencer W. Tinker, Superintendent of the Honolulu Aquarium and donor of the specimens, states that one unpreserved example had a carapace exceeding six inches in length.



FIGURE 8.—*Aniculus maximus*.

In juvenile specimens of the new species the biramous abdominal appendages are seen to differ from those of the adults in that the short outer branch is forked, one arm being much shorter than the other. The elbow on the outer border of this element in the adult would suggest that the forked character of the branch is eliminated in successive molts from juvenile to adult stage.

In the shoal waters of Hawaii the genus is represented by *A. strigatus* Herbst, a small species with a greatly flattened carapace. There are no records of *A. aniculus* from Hawaii, but there are specimens in Bishop Museum from Wake Island, Rarotonga, and five localities about the Line Islands.

FAMILY PARTHENOPIDAE

Genus **Lambrachaeus**

**Lambrachaeus ramifer** Alcock, Asiatic Soc. Bengal, Jour. 64 (2): 168-169, pl. 3, fig. 1, 1895. (See figure 9, *a-d*.)

Characters of species: Carapace consists of a posterior portion (branchial) joined to a narrower (ocular) region by a neck. From the ocular region extends a long, slender, spinous rostrum. There are no definite orbits although a dorsal eave partially shields non-retractile eyestalk.

Chelipeds unequal, very long, slender, segments spinous, somewhat resembling those of a typical *Lambrus*. Fingers with cutting edges toothed but not in contact when closed; tips crossing. Walking legs slender, shorter than chelipeds.

In 1917 D. Kuhns dredged a typical example of this rare species from a depth of 30 to 50 fathoms off Waikiki, Oahu. Unfortunately the specimen was greatly mutilated, but enough remained to make certain of the determination. (Bishop Mus. coll. no. 919.)

The genus and type are described by Alcock (1, pp. 94-96) from Port Blair, Andaman Islands; and a specimen is reported by Rathbun

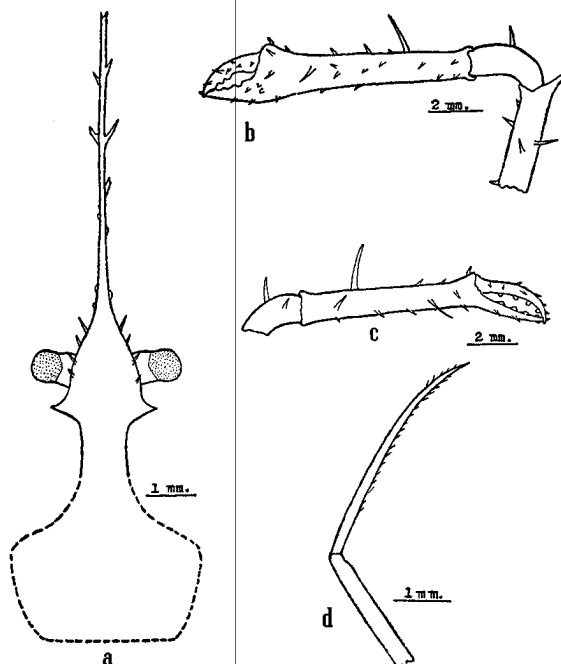


FIGURE 9.—*Lambrachaeus ramifer*: a, outline of carapace from above, partially restored; b, left cheliped; c, right cheliped; d, walking leg.



(10) from Amirante, taken at a depth of 30 fathoms. These two examples are the only previously known representatives of the species, so far as I have been able to discover.

FAMILY PILUMNUS

Genus *Glabropilumnus*

*Glabropilumnus seminudus* (Miers)? (figs. 10, *a-e*; 11).

*Pilumnus seminudus* Miers, Crustacea, IN Report of Zoological Collections, H.M.S.S. "Alert," 222-223, pl. 21, fig. C, London, 1884.

Characters of Hawaiian form: Greatest breadth of carapace (male) 12 mm., front 4 mm.; slightly broader than long, not very convex antero-posteriorly and less so laterally. A narrow zone of short dense pile about front and anterolateral borders, with a transverse row of longer, stouter hairs between orbits and extending on eyestalks. Greater part of upper surface of carapace smooth and

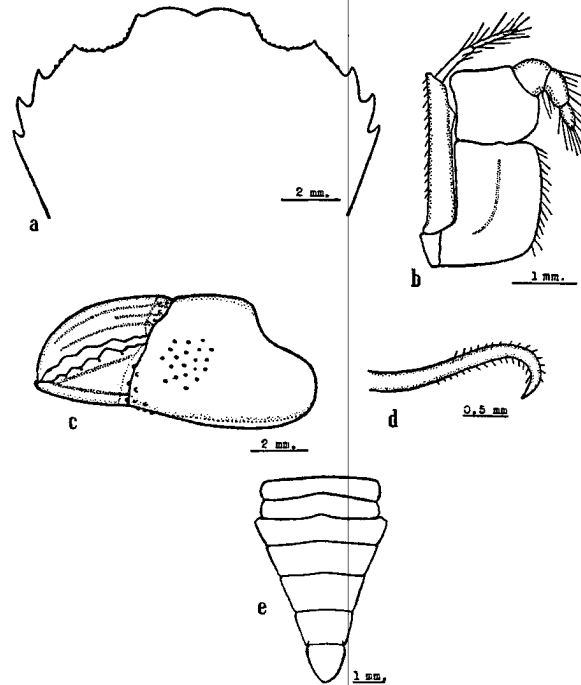


FIGURE 10.—*Glabropilumnus seminudus*: a, outline of carapace; b, outer maxilliped; c, left chela, outer surface; d, first pleopod, male; e, abdomen, male.

shiny; areas unmarked except for a shallow furrow separating gastric from cardiac regions.

Front consisting of two convex lobes separated in middle by a shallow notch and laterally by a slight groove from a minute tubercle which represents inner orbital angle. Upper orbital border minutely serrate, with one obscure notch. Anterolateral border bearing three stout, acutely pointed teeth behind outer orbital angle, which is a small pointed tubercle. Several minute tubercles on border between orbital angle and first tooth.

Basal segment of antenna not touching front; flagellum exceeding in length that of orbit in which it rests. Merus of external maxilliped squarish, its length more than one half that of ischium; exopodite stout.

Chelipeds unequal, the left the larger, stout, carpus and propodus inflated; sharp inner margin of ischium and merus bearing a few teeth; a subdistal tooth on upper border of merus and a stout distal process which almost touches propodus on lower border. Outer surface of carpus and palm of hand covered with rounded tubercles some of which are large on upper and lower margins of latter segment. Fingers stout, pointed, crossing at tips when closed, deeply sulcate, tuberculate at base; cutting edges provided with strong teeth. Short, dense pile of carapace extends over chelipeds, especially outer surface of carpus and propodus. Lower margin of hand more completely covered by pile in smaller cheliped than in larger one. In both, pile extends over upper border and clothes a portion of inner surface of hand.

Walking legs slender, unarmed; segments, carpus to dactylus, of first legs densely clothed with short and long hairs, this condition decreasing progressively to fourth leg. Abdomen with seven separate segments. Second pleopod a curved hook with pointed extremity.

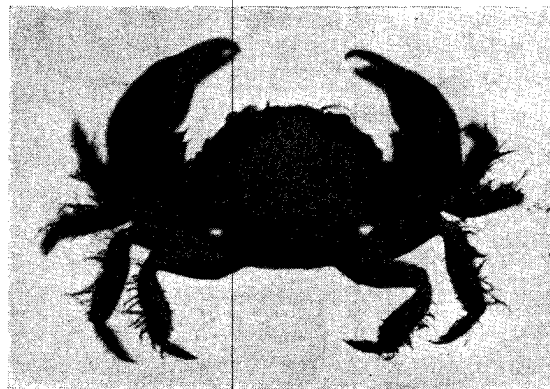


FIGURE 11.—*Glabropilumnus seminudus*.

Bishop Mus. coll. no. 5640.

The genus *Glabropilumnus* was established by Balss (2) to accommodate a number of species of *Pilumnus*, among them *P. seminudus* Miers, with which the Hawaiian form described above compares quite

favorably. The Hawaiian specimen may differ from that species, however, in the following respects: The row of long, coarse hairs crossing the postfrontal region is not mentioned in descriptions of *P. seminudus*, and the tubercles on the outer surface of the palm are not disposed in a longitudinal series as indicated by Miers for *P. seminudus*; otherwise there is close agreement.

The distribution of *Glabropilumnus seminudus* includes the Celebes, Port Denison, Queensland, Torres Straits, and Hongkong. The Hawaiian form was recovered from fouling on the hull of a barge in dry dock in Pearl Harbor, Oahu, where it had been for two years after service in Guam.

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