

**Article II.**—THE AMPHIPODA COLLECTED BY THE UNITED STATES FISHERIES STEAMER 'ALBATROSS' IN 1911, CHIEFLY IN THE GULF OF CALIFORNIA<sup>1</sup>

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While the collection of Amphipods procured on this cruise of the 'Albatross' is comparatively small, it has, nevertheless, been found to contain a large percentage of new forms. As this is the first collection of Amphipods to be worked up from this little-known region, it is not surprising that many new forms should appear. Among the one hundred and sixty-seven specimens of the collection, thirteen families, sixteen genera, and sixteen species are represented. Three genera and eight species are new to science.

The genus *Batea* was described in 1865 by Fritz Müller from the coast of Brazil, and it is now for the first time reported from the West Coast of North America. The hyperiid genera *Anchylomera*, *Symprone*, *Lycæa*, *Platyscelus*, *Tetrathyrus*, and *Amphithyrus* also are new records for the West Coast.

LIST OF SPECIES COLLECTED

<i>Heterophoxus pennatus</i> , new species.	Pichilique Bay.
<i>Paraphoxus spinosus</i> Holmes.	Carmen Island.
<i>Ædiceropsoides abyssorum</i> , new species.	Sta. D. 5689.
<i>Batea rectangulata</i> , new species.	San Francisquito Bay.
<i>Elasmopus</i> species.	Sta. D. 5678.
<i>Bemlos macromanus</i> , new species.	No definite locality.
<i>Vibilia californica</i> Holmes.	Agua Verde Bay.
" " "	Carmen Island.
" " "	Guadalupe Island.
<i>Hyperia</i> species.	San Josef Island.
" " "	Carmen Island.
<i>Anchylomera blossevillii</i> M.-Edw.	Cape San Lucas.
<i>Symprone anomala</i> , new species.	Cape San Lucas.
" " " "	Agua Verde Bay.
<i>Brachyscelus crusculum</i> Bate.	Carmen Island.
" " "	San Josef Island.
" " "	Cape San Lucas.
" " "	Agua Verde Bay.

<sup>1</sup>Scientific Results of the Expedition to the Gulf of California in charge of C. H. Townsend, by the U. S. Fisheries Steamship 'Albatross,' in 1911. Commander G. H. Burrage, U. S. N., commanding. XV. Published by permission of the U. S. Commissioner of Fisheries.

<i>Lycæa bajensis</i> , new species.	San Josef Island.
“ “ “ “	Cape San Lucas.
“ “ “ “	Carmen Island.
<i>Parascelus zebu</i> Stebbing.	Carmen Island.
<i>Platyscelus dubius</i> , new species.	Cape San Lucas.
“ “ “ “	Carmen Island.
“ “ “ “	San Josef Island.
“ “ “ “	Agua Verde Bay.
<i>Tetrathyrus sancti-josephi</i> , new species.	San Josef Island.
“ “ “ “	Agua Verde Bay.
“ “ “ “	Carmen Island.
<i>Amphithyrus orientalis</i> Stebbing.	San Josef Island.

## GAMMARIDEA

### Phoxocephalidæ

#### *Heterophoxus*, new genus

Body not very broad. Head with evenly vaulted hood, not carinate or deflexed. Eyes well-developed. Side-plates plumose, fourth broadly produced backward, fifth with oblique hind lobe. Eyes very large, oval, black. Antenna 1 in ♂, first joint very large, flagellum in ♂ with calceoli and sensory clubs. Antenna 2 in ♂, lower anterior corner of second joint produced into a prominent lobe, flagellum nearly as long as body, fifth joint and flagellum with calceoli. Mandible, cutting edge and spine-row well developed, accessory cutting plate present, molar feeble, tipped with three spine-teeth, palp linear with few setæ, third joint very little shorter than second. Maxilla 1, palp 1-jointed, well developed, inner plate well developed with two setæ. Maxilla 2, plates subequal. Maxilliped, outer plate reaching nearly to middle of second joint of palp, inner plate obtusely rounded at apex, third joint of palp not produced, fourth very short, tipped at apex with two long curved spines. Gnathopods and peræopods much as in *Harpinia*. Peræopod 3, second joint not expanded. Peræopod 4 much longer than the rest, second joint narrowed distally. Peræopod 5 rather small, second joint much expanded. Uropod 3 in ♂ well developed, outer ramus the shorter and both rami bearing long, plumose setæ. Telson rather short and broad, cleft a little over half its length, lobes broadly rounded apically.

#### *Heterophoxus pennatus*, new species

TYPE LOCALITY.—Pichilique Bay, Gulf of California, March 28–29, 1911, electric light; 2 specimens (1 ♂ type).

MALE.—Head with evenly vaulted hood, broadly rounded in front and reaching just beyond the end of the second joint of antenna 1, postero-antennal angles quadrate. Eyes large, oval, black, and nearly meeting at top of head. Antenna 1, first joint very large, provided on the lower anterior corner with numerous sensory bristles and several plumose setæ, second joint about half the length and width of first, third joint about half the length and width of second, flagellum about the length of the first joint of the peduncle and composed of eight joints which are provided with sensory clubs and a few calceoli, accessory flagellum half the length of the primary and composed of five joints. Antenna 2 nearly as long as the entire animal, second joint

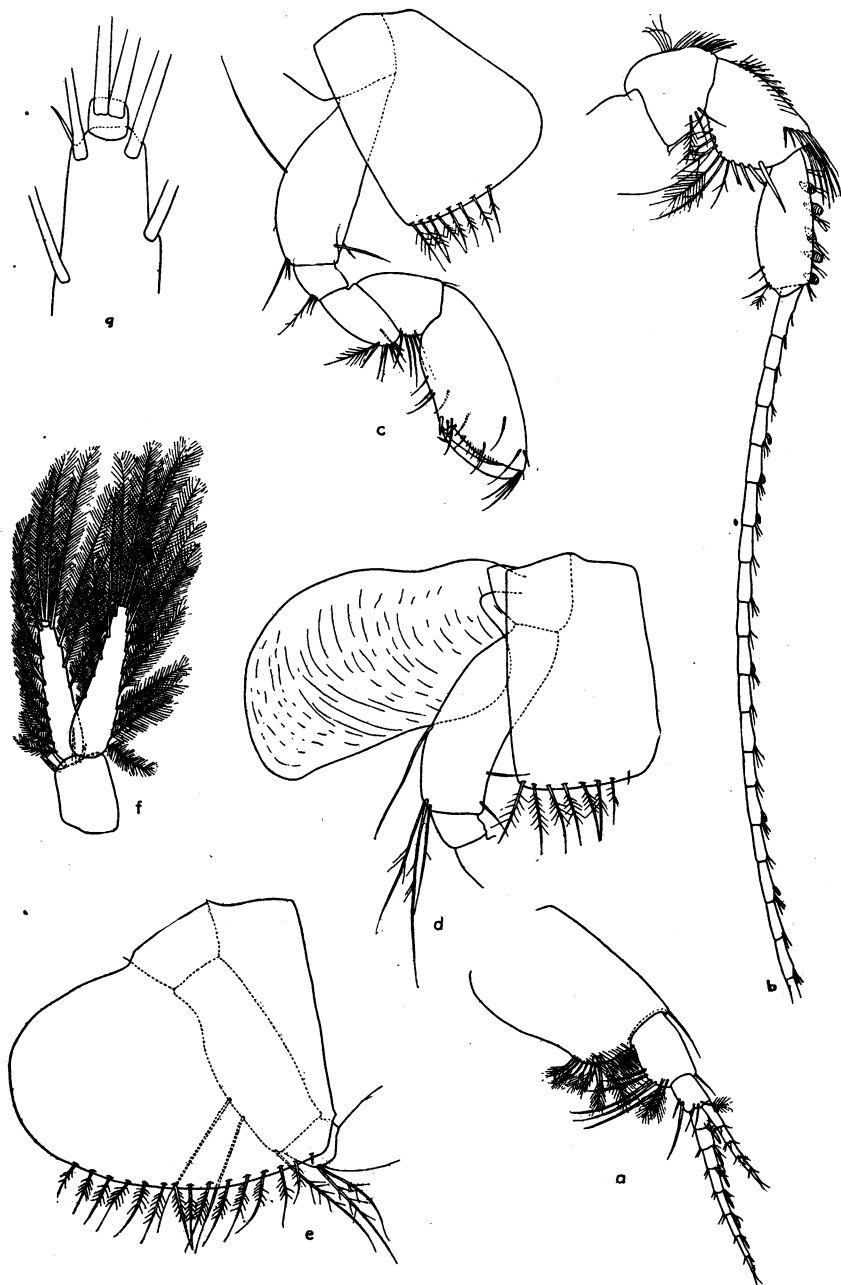


Fig. 1. *Heterophoxus pennatus*, new species

MALE.—a, antenna 1; b, antenna 2; c, gnathopod 1; d, gnathopod 2; e, peraeopod 2; f, uropod 3, right side; g, end of outer ramus of uropod 3 showing minute second joint.

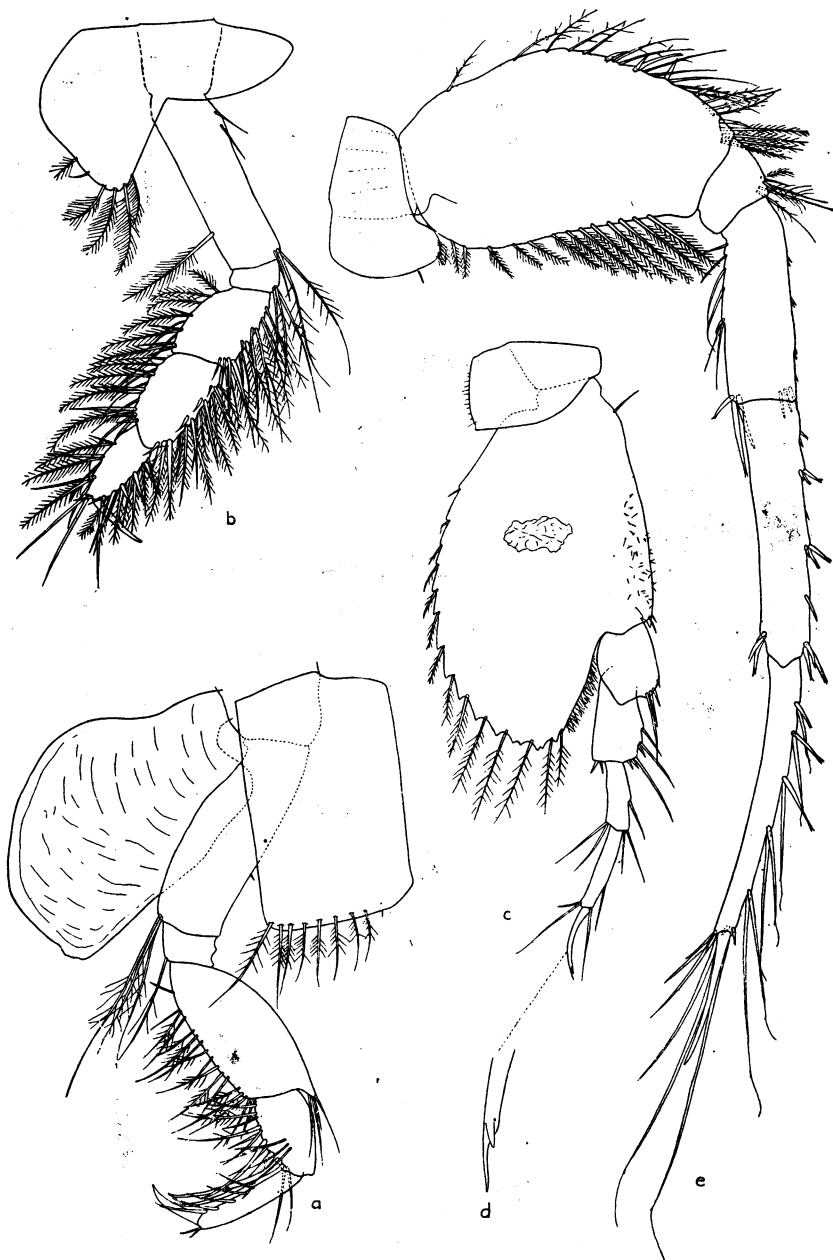


Fig. 2. *Heterophoxus pennatus*, new species

MALE.—a, peraeopod 1; b, peraeopod 3; c, peraeopod 5; d, end of dactyl of peraeopod 5; e, peraeopod 4.

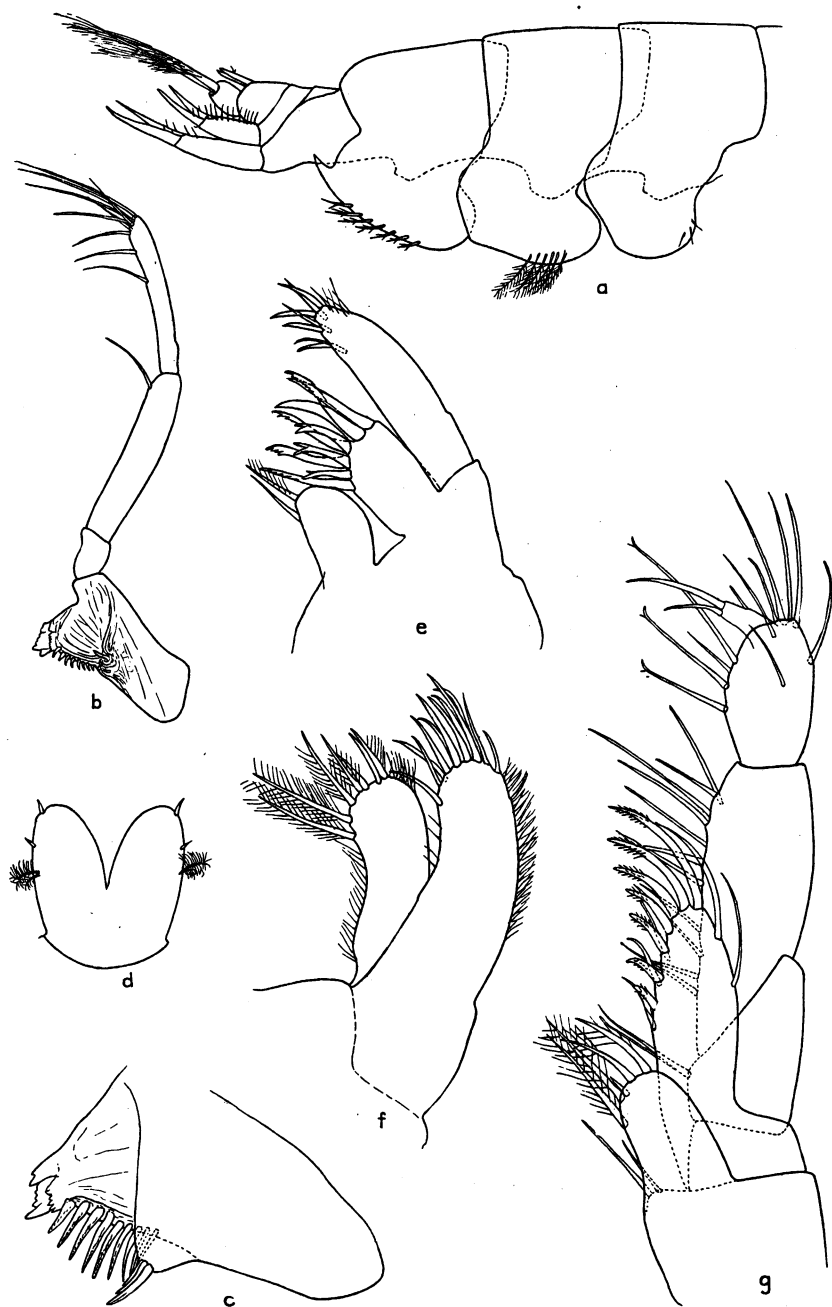


Fig. 3. *Heterophoxus pennatus*, new species

MALE.—a, abdomen, uropods and telson; b, mandible; c, cutting edge, spine-teeth and molar spine-teeth of mandible; d, telson; e, maxilla 1; f, maxilla 2; g, maxilliped.

with prominent, forward-pointing lobe on lower anterior corner, third joint short and thick, fourth joint a little longer than third, lower margin very convex and provided with several long plumose setæ and short blunt spines, fifth joint a little longer than fourth, lower margin evenly convex, upper margin provided with calceoli and short bristles, flagellum very long and slender and provided with calceoli on the upper anterior ends of the joints. Mandible, cutting edge narrow, accessory plate well developed, nine very well-developed spine-teeth, molar prominence surmounted by three strong spine-teeth, palp slender, third joint slightly shorter than second with oblique end provided with several long setæ, and several setæ on lower margin of joint near distal end. Maxilla 1, palp twice as long as outer plate with several spines on rounded apex, outer plate short and provided with nine curved spine-teeth, some of which are serrate and some bifurcate, inner plate nearly as large as outer and bearing on its rounded apex two plumose setæ. Maxilla 2, plates subequal, and bearing many curved spines and setæ on their rounded ends. Maxilliped, outer plate reaching nearly to the middle of second joint of palp and provided on its rounded end and inner edge with curved serrate spines, inner plate short with rounded end, provided with long plumose setæ, palp with third joint rather short, dactyl short and tipped with two long curved spines. Side-plate 1 expanded distally and provided on the posterior half of the lower edge with plumose setæ; side-plate 4 broadly expanded posteriorly, lower edge provided with plumose setæ; side-plate 5, posterior lobe oblique with plumose setæ on lower rounded edge. Gnathopods 1 and 2 as in *Harpinia plumosa* (Krøyer). Peraeopods 1-3 as in *Harpinia plumosa* (Krøyer). Peraeopod 4, second joint little expanded at proximal end and not at all at distal end, front margin convex, hind margin nearly straight and bearing a row of plumose setæ, fourth, fifth and sixth joints linear, sixth joint provided on front edge and distal end with long, slender spines, some of which are tipped with a very fine hair-like setule, dactyl long and slender. Peraeopod 5 short, second joint expanded backward and decidedly downward, hind margin serrate with plumose setæ between the serrations, third and fourth joints short and broad, fifth and sixth joints linear, dactyl very nearly as long as sixth joint and bearing a tooth near the apex. Pleon segment 3, lower posterior angle produced into an acute upward-pointing tooth above which the margin is slightly convex, lower margin convex and bearing a row of plumose setæ. Uropod 3 not extending backward as far as uropod 1, peduncle short and thick, rami knife-shaped and bearing on their margins and apices long plumose setæ, outer ramus a little shorter than inner with very minute second joint. Telson extending a little beyond the peduncle of uropod 3, about as long as broad, cleft a little beyond the middle, lobes rounded apically and each bearing a minute spinule at the outer distal edge, two minute plumose setules and a minute spinule on each other edge.

LENGTH.—5 mm.

### **Paraphoxus spinosus** Holmes

*Paraphoxus spinosus* HOLMES, 1903, American Naturalist, XXXVII, p. 276.

*Paraphoxus spinosus* HOLMES, 1905, Bulletin of the Bureau of Fisheries for 1904, XXIV, p. 477, text figure.

*Paraphoxus spinosus* KUNKEL, 1918, State of Connecticut. State Geological and Natural History Survey, Bulletin No. 26, p. 76, text fig. 13.

Carmen Island, southeast side, Gulf of California, electric light; 14 specimens.

This species was described by S. J. Holmes from the New England coast of the United States and it is now recorded for the first time from the western coast of America.

### **Ædicerotidæ**

#### **ÆDICEROPSOIDES, new genus**

**FEMALE.**—Rostrum or frontal process long and narrow. Eyes absent. Lateral lobes of head produced and truncated. Antenna 1 well developed, not short. Antenna 2 about half the length of the body, fourth joint of peduncle large, flagellum of many calceoliferous joints. Upper lip with margin evenly convex. Mandibular palp elongate. Maxilla 2, inner plate much wider than outer. Plates of maxillipeds rather broad in proportion to length. Side-plates 1-4 rather large, first expanded distally, fourth with hind margin slightly concave. Gnathopods 1 and 2 very much alike but 2 a little the larger, fifth joint large with prominent setose lobe, sixth joint longer than fifth, ovate, palm much longer than hind margin. Peræopods 1 and 2 rather feeble, 3 and 4 strong, 5 long. Pleon segments 1-3, postero-lateral corners very rounding. Abdominal segments 4-6 missing from the single specimen dredged.

#### **Ædiceropsoides abyssorum, new species**

**TYPE LOCALITY.**—Station 5689. East of Guadalupe Island: Hat Mt., N. 59° E.; St. Vincent Peak, N. 47° E. (29° 32' N., 116° 14' W.), 879 fathoms; 1 specimen.

**FEMALE.**—Head about as long as the first three segments of body, rostrum long, narrow, evenly rounded at apex, curved slightly downward and reaching just to the end of the first joint of antenna 1, lateral lobes prominently produced forward and obliquely truncated. Eyes absent. Antenna 1 reaching to the end of the fifth joint of antenna 2, flagellum equal in length to the peduncle. Antenna 2, fourth and fifth joints long, fifth about four-fifths as long as fourth, two long curved spines on inside margin and three at the distal end. Flagellum nearly as long as peduncle, composed of many short calceoliferous joints. Upper lip evenly rounded on lower edge. Mandible short and stout, cutting-edge with few teeth, small, dark tooth at base of cutting edge, eight teeth in spine row, molar very prominent with triturating surface concave, palp long, third joint nearly as long as second, second and third joints provided on their lower edges with a row of spines. Maxillæ 1 and 2 nearly as in *Ædiceropsis brevicornis* Lillj. Maxillipeds much as in *Æ. brevicornis* Lillj., except that the outer plate and the second joint of the palp are comparatively broader. The distal edge of the palp of maxilla 1, the distal edge of the inner and outer plates of maxilla 2, the inner edge of the outer plate of maxillipeds, and the inner edge of the second joint and the distal edge of the third joint of the palp of maxillipeds are provided with elongate, cylindrical appendages, which become very easily detached. Side-plate 1 greatly expanded and extended straight forward. Side-plate 2 comparatively narrow with sides nearly parallel. Side-plate 3 much broader than 2, with sides nearly parallel. Side-plate 4 deeper than 3, front margin convex and hind margin slightly concave. Side-plate 5 a little over half the depth of 4, front lobe much larger than hind lobe.

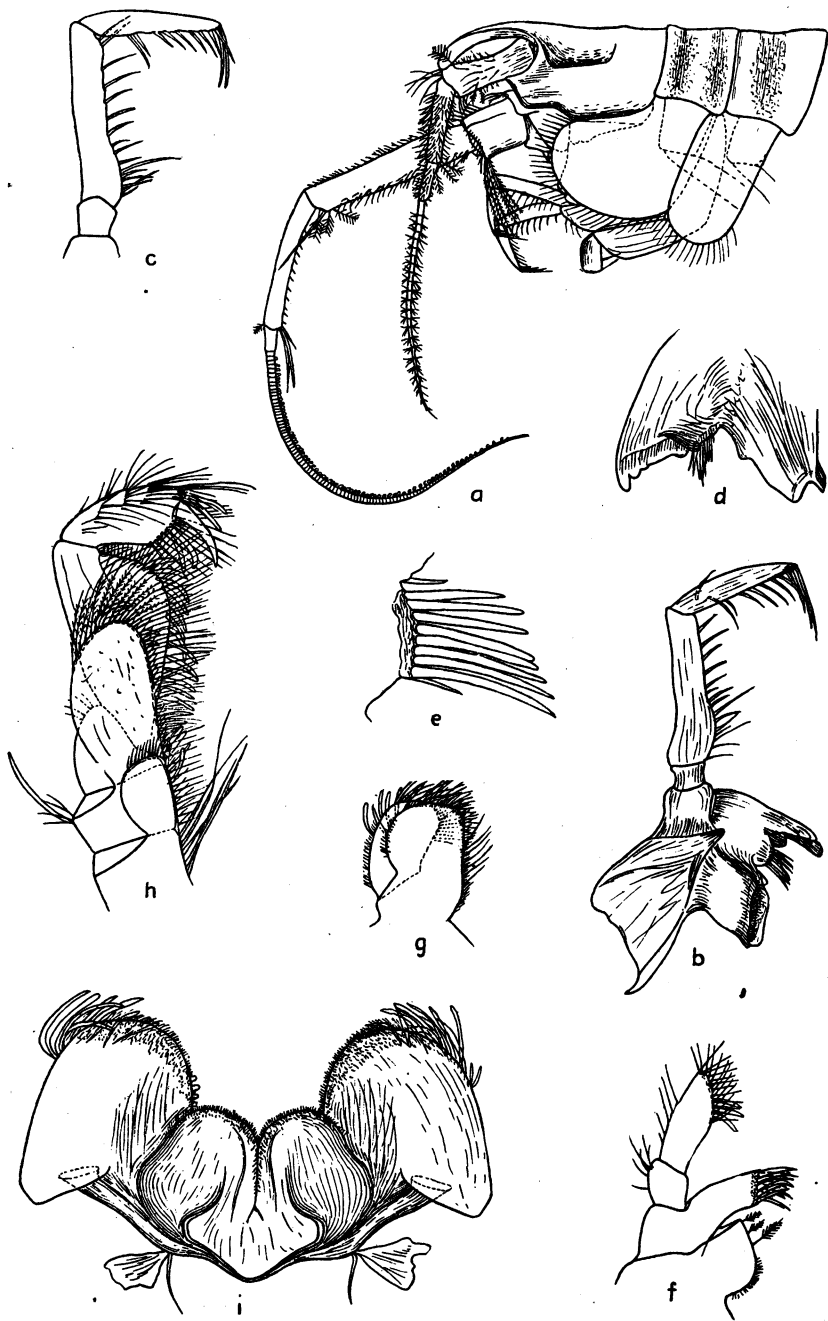


Fig. 4. *Ediceropsoides abyssorum*, new species

FEMALE.—a, head, first two thoracic segments, and antenna; b, mandible; c, mandibular palp; d, cutting edge, spine-teeth, and molar of mandible; e, spine-teeth of mandible; f, maxilla 1; g, maxilla 2; h, maxilliped; i, lower lip.



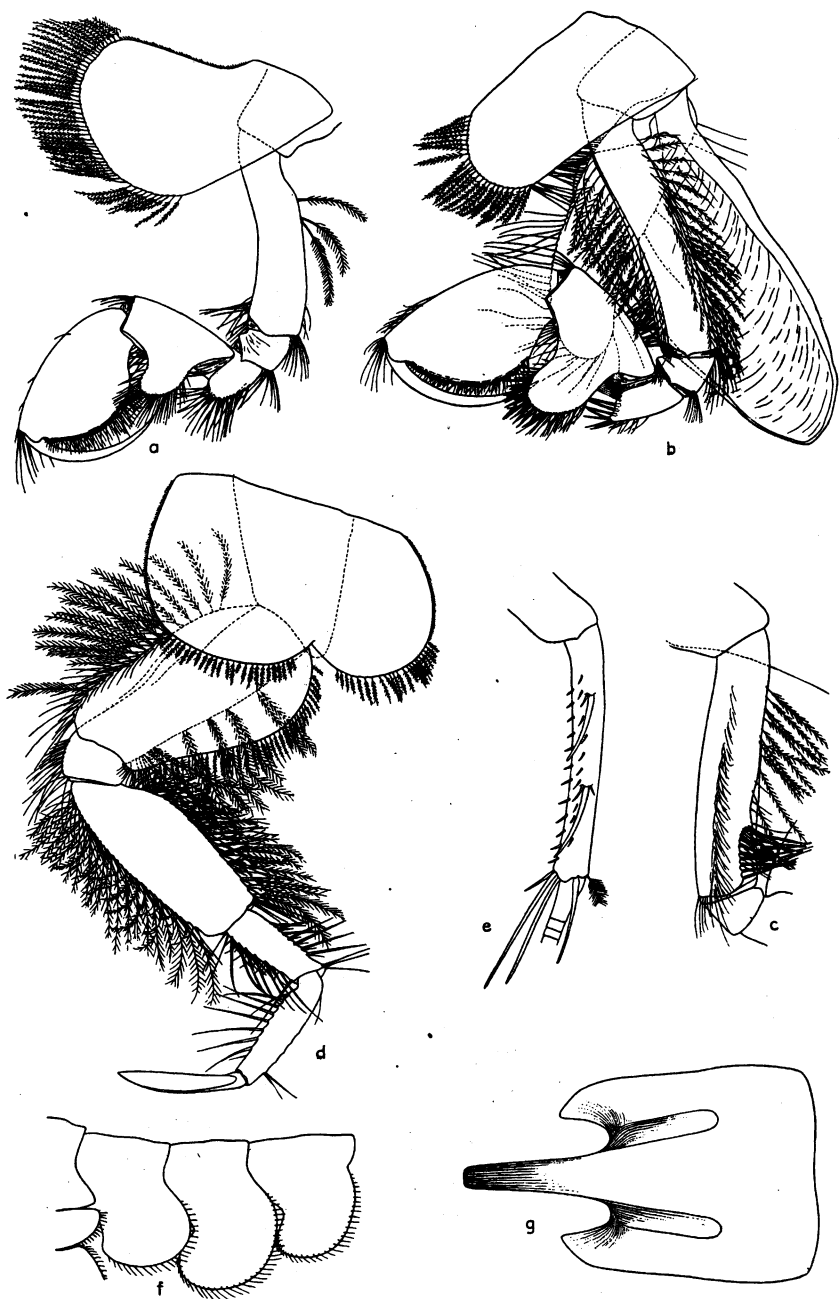


Fig. 5. *Ediceropsoides abyssorum*, new species

FEMALE.—a, gnathopod 1; b, gnathopod 2; c, inside view of second joint of gnathopod 2; d, pereopod 3; e, inside view of fifth joint of antenna 2; f, abdominal segments 1-3; g, dorsal view of head.

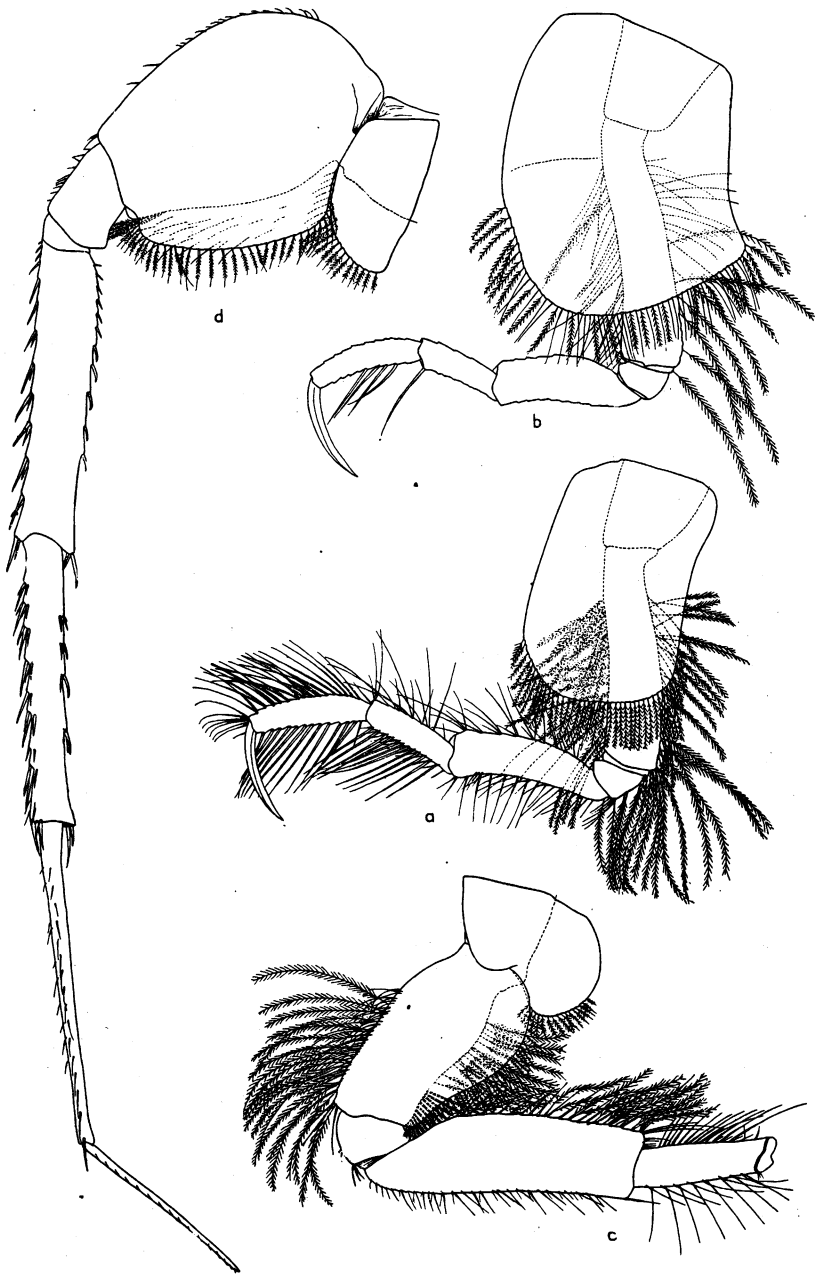


Fig. 6. *Ediceropsoides abyssorum*, new species  
 FEMALE.—a, pereopod 1; b, pereopod 2; c, pereopod 4; d, pereopod 5.

Side-plate 6 shallower than 5, hind lobe much deeper than front lobe. Side-plate 7 shallow, widest at upper margin. All side plates fringed with plumose setæ. Gnathopods 1 and 2 very much alike, 2 a little the stouter. Gnathopod 1, second joint slender, slightly curved, and with an oval depression surrounded by stout bristles on the inner distal end, fourth joint short with lower margin evenly convex and furnished with many bristles, fifth joint as wide as sixth and about two-thirds as long, lower margin produced into a prominent lobe, the edge of which is provided with many bristles, sixth joint stout, more or less oval, palm very convex, much longer than hind margin, defined by a prominent bristle and furnished throughout with many fine bristles, finger long, slender, smooth, and of about the curvature of the palm. Gnathopod 2, second joint slender, provided on front and hind margins with plumose setæ, and on the inside distal end with an oval depression surrounded by stout bristles, fourth joint short with lower margin produced into a blunt point, fifth joint wider than sixth and about two-thirds as long, lower margin produced into a very prominent lobe which is edged with many stout bristles, sixth joint and finger as in gnathopod 1 but a little stouter. Peræopods 1 and 2 long and slender, first joint provided on front and hind margins and inner surface with many long, plumose setæ, fourth, fifth and sixth joints are provided on their front and back margins with many long stout spines, dactyls flat, and nearly as long as sixth joints. Peræopod 3, stout, second joint widest above, hind margin evenly convex above and nearly straight below, both front and hind margins provided with long plumose setæ, fourth joint densely clothed on inner surface and front and hind margins with long plumose setæ, fifth joint about one-half as long as fourth and two-thirds as long as sixth, fifth and sixth joints provided on their front and hind margins with many stout bristles, dactyl broad and flat, and equal in length to sixth joint. Peræopod 4 with sixth joint and dactyl missing, in general outline much like peræopod 3, but longer, and less plumose on fourth joint. Peræopod 5 long and slender, second joint widest through the upper third, hind margin slightly convex and provided with plumose setæ, fourth joint very slightly longer than fifth, sixth joint very slightly longer than fourth, dactyl nearly two-thirds as long as sixth joint. Abdominal segments 1-3 with lower margins evenly rounded and provided with a fringe of plumose setæ, segment 2 the deepest. Fourth, fifth, and sixth segments missing.

LENGTH.—From tip of rostrum to end of third abdominal segment 24 mm.

### **Bateidæ**

#### ***Batea rectangulata*, new species**

TYPE LOCALITY.—San Francisquito Bay, Gulf of California, electric light; 1 specimen.

FEMALE.—This single female specimen is the first of this genus to be described from the west coast of America, all previous records having been from Brazil, West Indies, and the east coast of the United States. There are several very definite characters which differentiate it from the east coast species. Antennæ missing excepting the first few joints of the peduncles. Eyes too badly distorted for any definite outline to be discerned. Head with rostrum strongly curved downward and acutely pointed. Mandibles with five spine-teeth on left and four on right, third joint of palp about two-thirds as long as second, and provided on distal half of inner margin with many long, curved minutely-plumosed setæ, and near the proximal end of outer

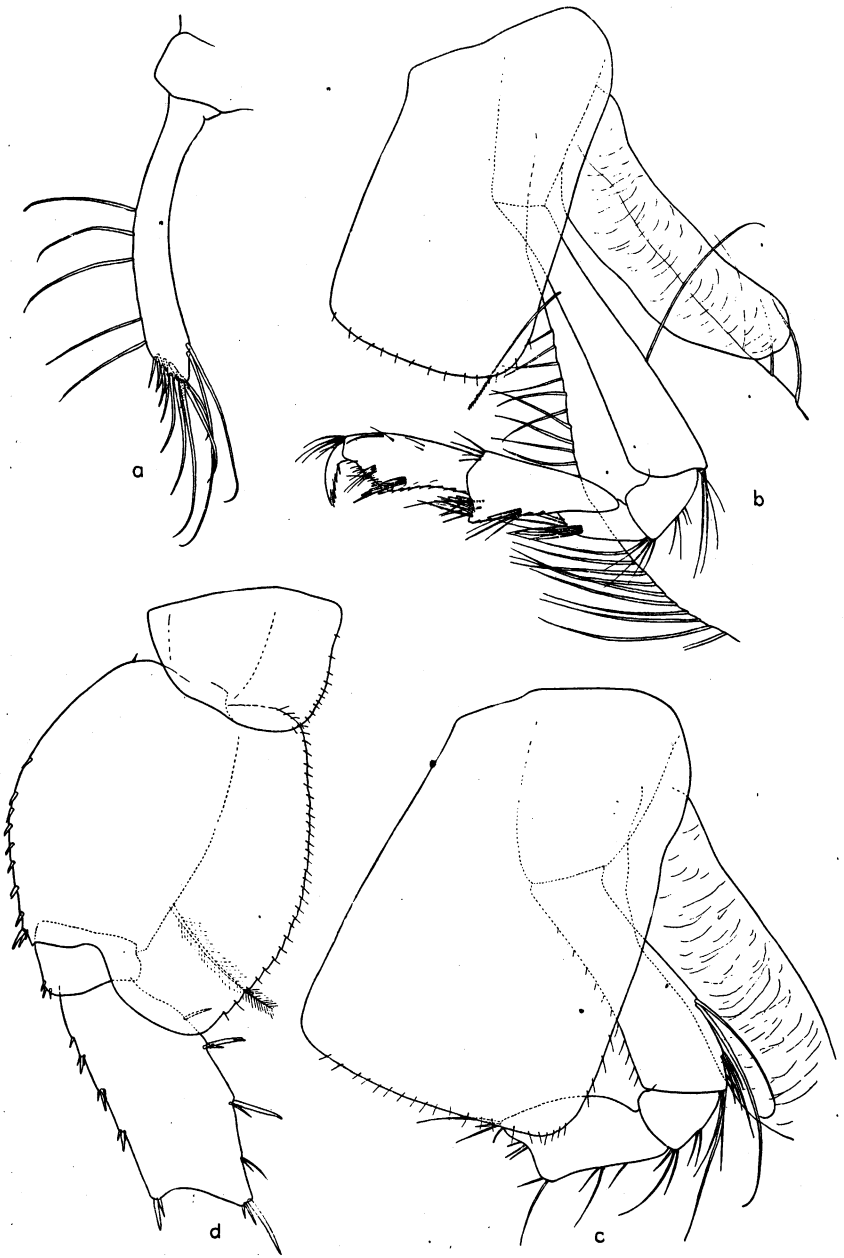


Fig. 7. *Batea rectangularata*, new species  
FEMALE.—a, gnathopod 1; b, gnathopod 2; c, pereopod 1; d, pereopod 5.

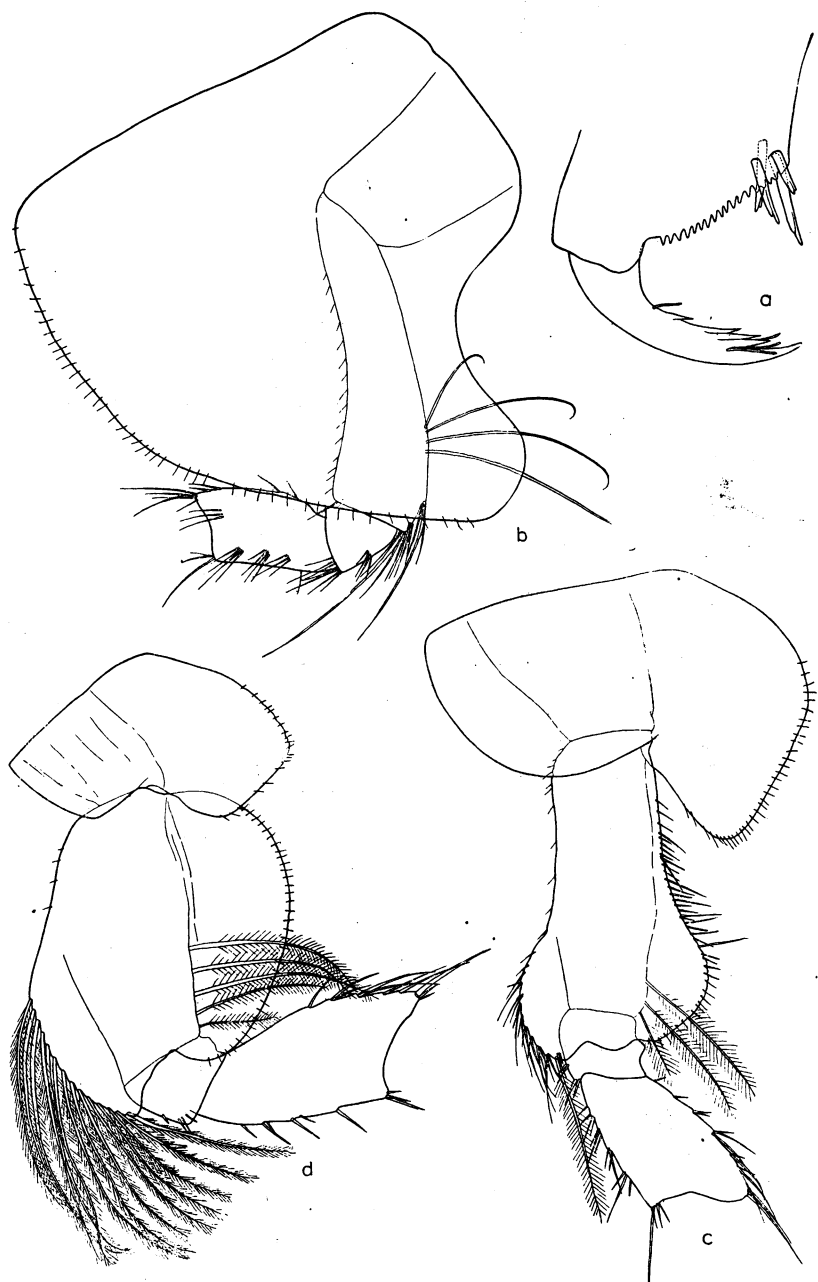


Fig. 8. *Batea rectangularata*, new species

FEMALE.—a, gnathopod 2 showing teeth of palm and finger; b, peræopod 2; c, peræopod 3; d, peræopod 4.



Fig. 9. *Batea rectangularata*, new species

FEMALE.—a, head and first two thoracic segments; b, left mandible; c, palp of left mandible; d, right mandible; e, palp of right mandible; f, maxilla 1; g, maxilla 2; h, maxilliped; i, lower lip.

margin with two long, curved, minutely-plumosed setæ. One of the distal spines of the third joint of palp is much enlarged, making it appear quite dactyl-like. Second joint of palp with stout setæ on distal half of inner margin. Lower lip without inner lobes, or at best only a mere suggestion of them. Maxilla 1, inner plate with seven plumose setæ, below which are several setules, outer plate provided with ten or eleven very stout, curved, toothed spine-teeth, palp with first joint about two-thirds the length of second, second joint evenly rounded distally and provided with many short spines. Maxilla 2 with both plates evenly rounded distally, inner plate furnished with two plumose setæ and many long, sharp spines, outer plate furnished distally with many long, sharp, curved spines. Maxillipeds, inner plate reaching to about the middle of the first joint of the palp, armed on truncated end and along inner margin with long, plumose setæ, one sharp spine-tooth among the setæ on the truncated end of this plate could be discerned, but if others were present they were completely hidden by the mass of surrounding plumose setæ, outer plate reaching beyond the second joint of palp and provided on the inner edge with twelve tooth-like spines, no plumose setæ at distal end of this plate, outer edge provided with a row of fine setules. The three joints of the palp all of equal length, dactyl stout with downward-pointing tip. Gnathopod 1 with the terminal spines of second-joint much as in *B. catharinensis*, front margin with five or six long setæ, and two long curved setæ near the distal end of hind margin. Gnathopod 2 proportionately longer and more slender than in *B. catharinensis*, second joint very slender and nearly as long as the third, fourth, fifth and sixth joints combined, fifth joint slender and slightly longer than sixth, sixth joint slender, palm oblique, about two-thirds the length of hind margin and minutely serrate throughout its length, dactyl slightly curved and bearing four forward-pointing teeth and several setules on inner margin. Peræopod 1, fifth and sixth joints missing, second joint with a row of short, slender spines on front margin and two groups of long bristles near the distal end of hind margin. Peræopod 2, fifth and sixth joints missing, second, third and fourth joints about as in peræopod 1. Peræopod 3, second joint with lobe of hind margin rounding and without any downward dip. Peræopod 4, second joint not wider above than below, but about the same width throughout, hind margin evenly convex. Peræopod 5, second joint about as broad as long, lower posterior margin not forming as deep a lobe as in *B. catharinensis*. Side-plates all much deeper than in *B. catharinensis*. Side-plate 2 rectangular in outline, front and back margins nearly parallel, lower margin transverse, slightly convex and provided with a row of setules. Side-plate 3 extending slightly beyond the second joint of the peræopod, sides nearly parallel but slightly wider below, lower margin transverse, very slightly convex and bordered by a row of minute setules. Side-plate 4 with hind margin not so deeply excavated as in *B. catharinensis*, lower margin bordered by a row of minute setules. Side-plate 5, hind lobe deeper and more acute than in *B. catharinensis*. Side-plates 6 and 7 differing very slightly from those of *B. catharinensis*. Posterior lateral margin of abdominal segment 3 bearing a greater number of serrations than that of *B. catharinensis*. Uropods about as in *B. catharinensis*. Telson proportionately shorter and broader than in *B. catharinensis*, lobes with apices acute and inside margins concave, each lobe with two setules near the apex, and each side of telson bearing three setules near the base.

LENGTH.—♀ 6 mm.

### Gammaridæ

#### *Elasmopus* species

Station 5678. 24° 35' 20" N. 111° 59' 35" W. Magdalena Bay, western coast of Lower California, March 21, 1911, 13½ fathoms; 1 specimen.

A single female specimen was taken at this station. As the females of the genus *Elasmopus* show but poorly the specific characters and the species of this genus belonging to the west coast of America are but imperfectly known, a specific identification of this specimen would be of very doubtful value.

### Aoridæ

#### *Bemlos*, new genus

Characters of this new genus are in general like those of *Lembos*. Gnathopod 1 in male has the fifth joint short and broad, and the sixth broader and three times longer than the fifth, palm transverse, short and toothed, finger overlapping palm. Inner plate of maxillipeds with three teeth on upper edge. Female as in *Lembos*.

#### *Bemlos macromanus*, new species

TYPE LOCALITY.—Lower California, no definite locality given; 13 specimens (1 ♂ type).

MALE.—Antenna 1 slender and nearly as long as the body, accessory flagellum composed of seven long and one short joint and reaches just beyond the sixth joint of the primary flagellum. Antenna 2 normal. Mandible with 9 spines in spine-row, molar with small accessory process, third joint of palp about one-third longer than second, and bearing many long bristles, and on the front edge also a comb of fine short bristles, second joint with bristles on front edge. Maxilla 1, inner plate with one plumose seta, outer plate normal, palp normal, but bearing an oblique row of slender bristles on outside. Maxilla 2 normal. Maxilliped, outer plate reaching a little beyond the middle of the second joint of palp and bearing eleven odontoid spines on inner edge, inner plate, upper end truncated and bearing three short teeth at inner corner, inner edge bearing a row of long plumose setæ. Lower lip with long, thin, pointed mandibular processes, inner lobes very large and tumid. Side-plates shallow, first produced very slightly forward. Gnathopod 1, second joint stout, excavated along the front margin, lower anterior corner produced to a point, fifth joint stout, broader than long and somewhat triangular, sixth joint very stout, three times as long and one-third broader than the fifth, widest through the middle, palm with a broad, stout, setose tooth in the middle, a strong, straight tooth continuous with the hind border of the joint defines the palm, the strong, curved finger overlaps the palm. Gnathopod 2 normal, with fifth joint slightly longer than sixth, sixth with palm oblique, slightly convex and very finely toothed throughout, finger fitting palm and having a row of small teeth and a few setæ on the inner edge, fifth and sixth joints provided with many long bristles. Peræopods 1 and 2 normal. Peræopods 3 and 4, side-plates with front half produced downward into a lobe, second joints slightly expanded, upper hind margin produced into an angular point, second joint of fourth peræopod bearing



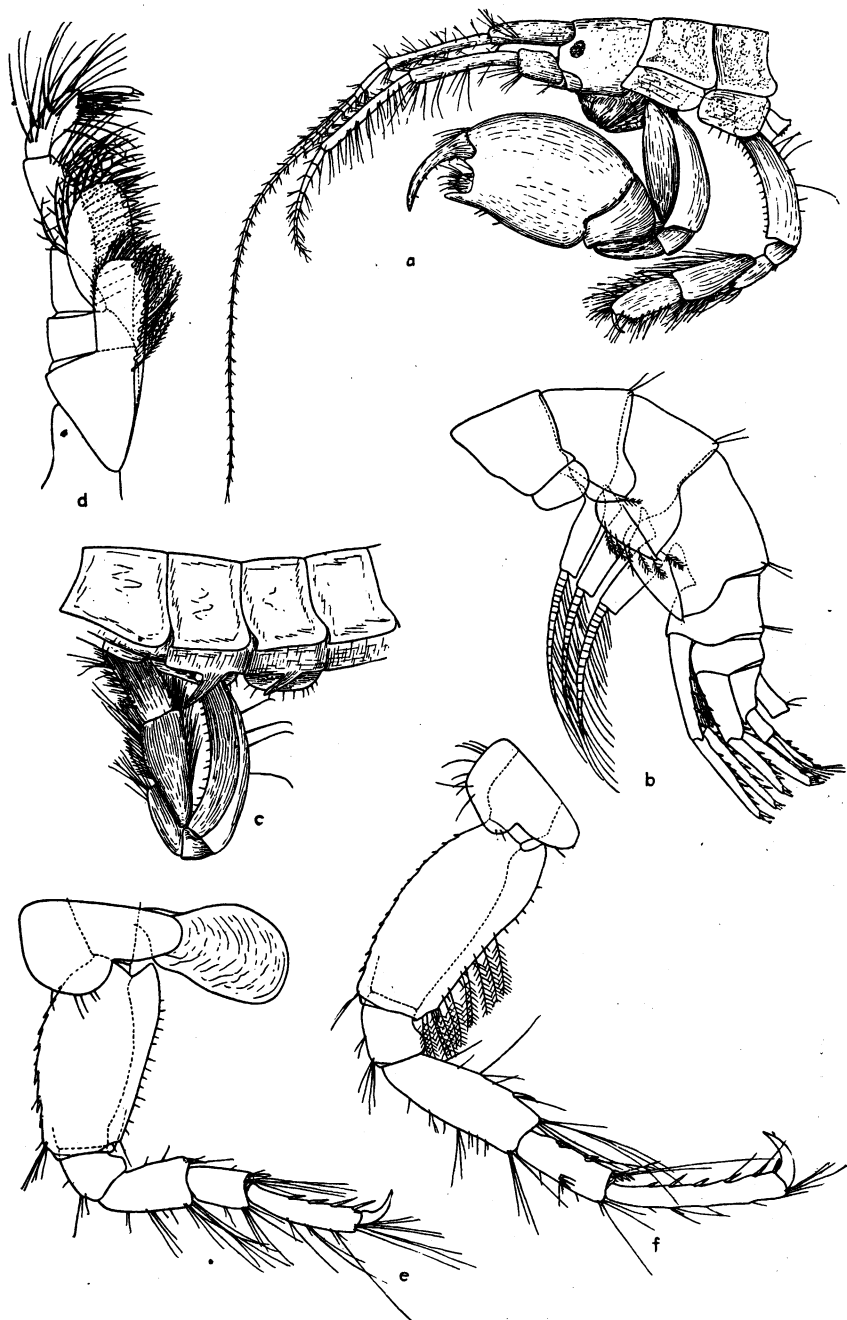


Fig. 10. *Bemlos macromanus*, new species

MALE.—a, head, first two thoracic segments, gnathopods and antennæ; b, abdomen, uropods and telson; c, conical appendages on the ventral surface of second and third thoracic segments; d, maxilliped; e, peræopod 3; f, peræopod 4.

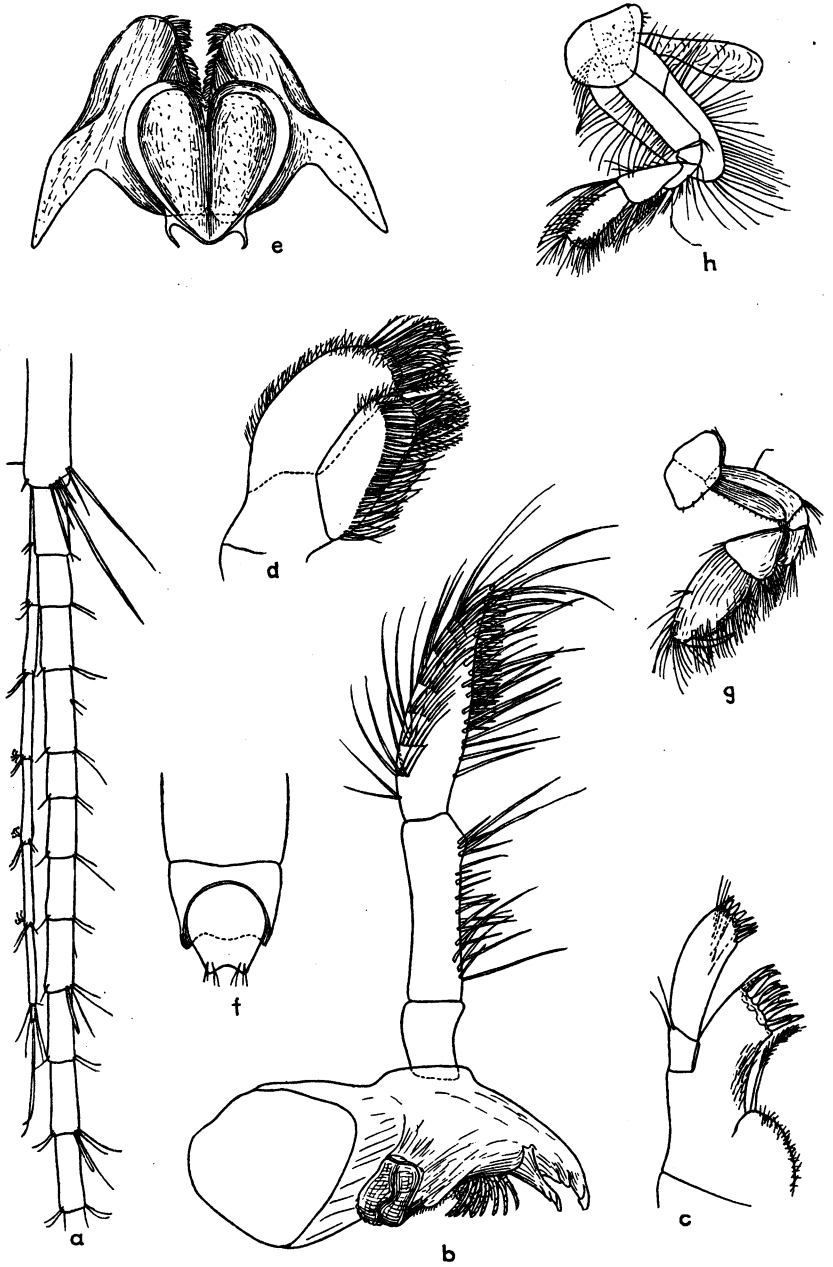


Fig. 11. *Bemlos macromanus*, new species

MALE.—a, antenna 1 showing accessory flagellum; b, mandible; c, maxilla 1; d, maxilla 2; e, lower lip; f, telson.

FEMALE.—g, gnathopod 1; h, gnathopod 2.

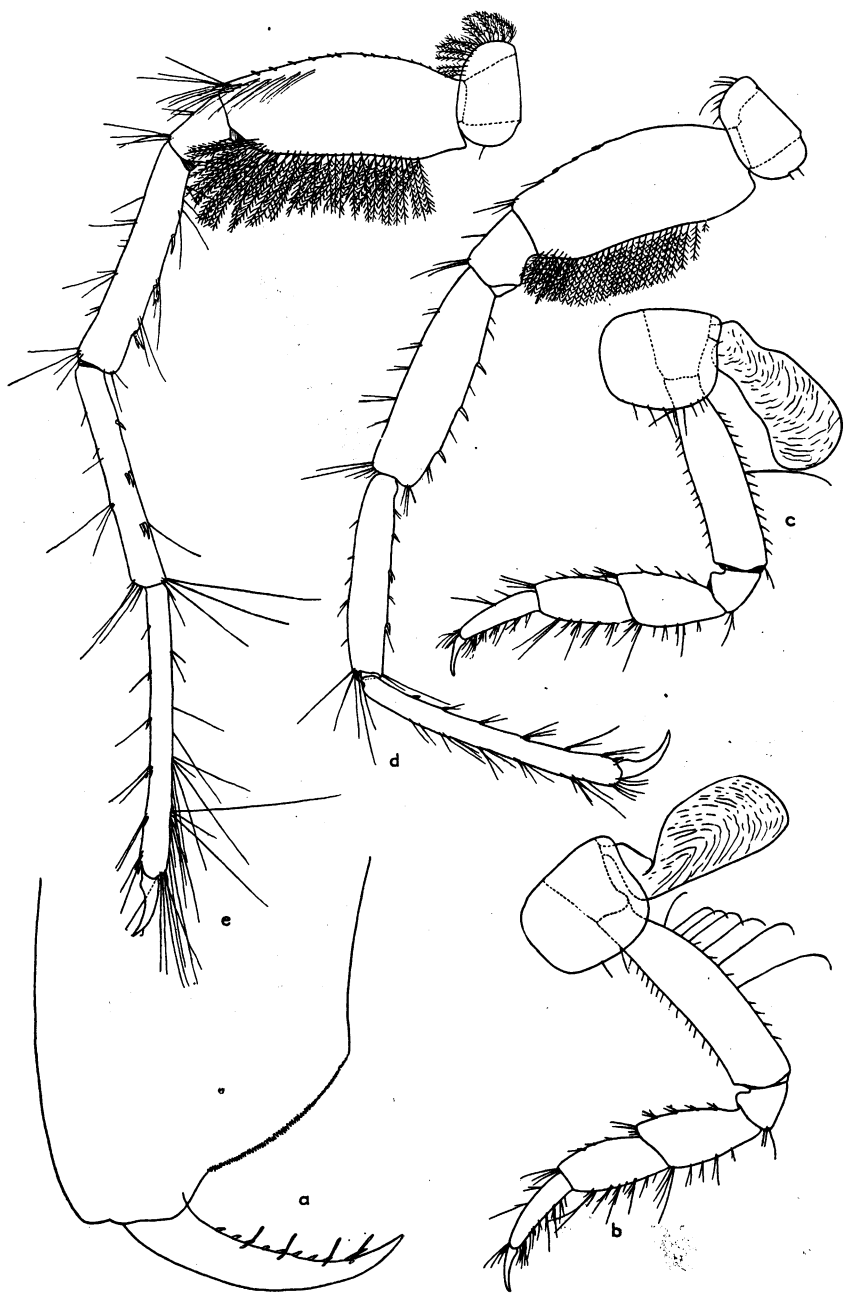


Fig. 12. *Bemlos macromanus*, new species

MALE.—a, gnathopod 2 showing teeth of palm; b, pereopod 1; c, pereopod 2; d, pereopod 5.

FEMALE.—e, pereopod 5.

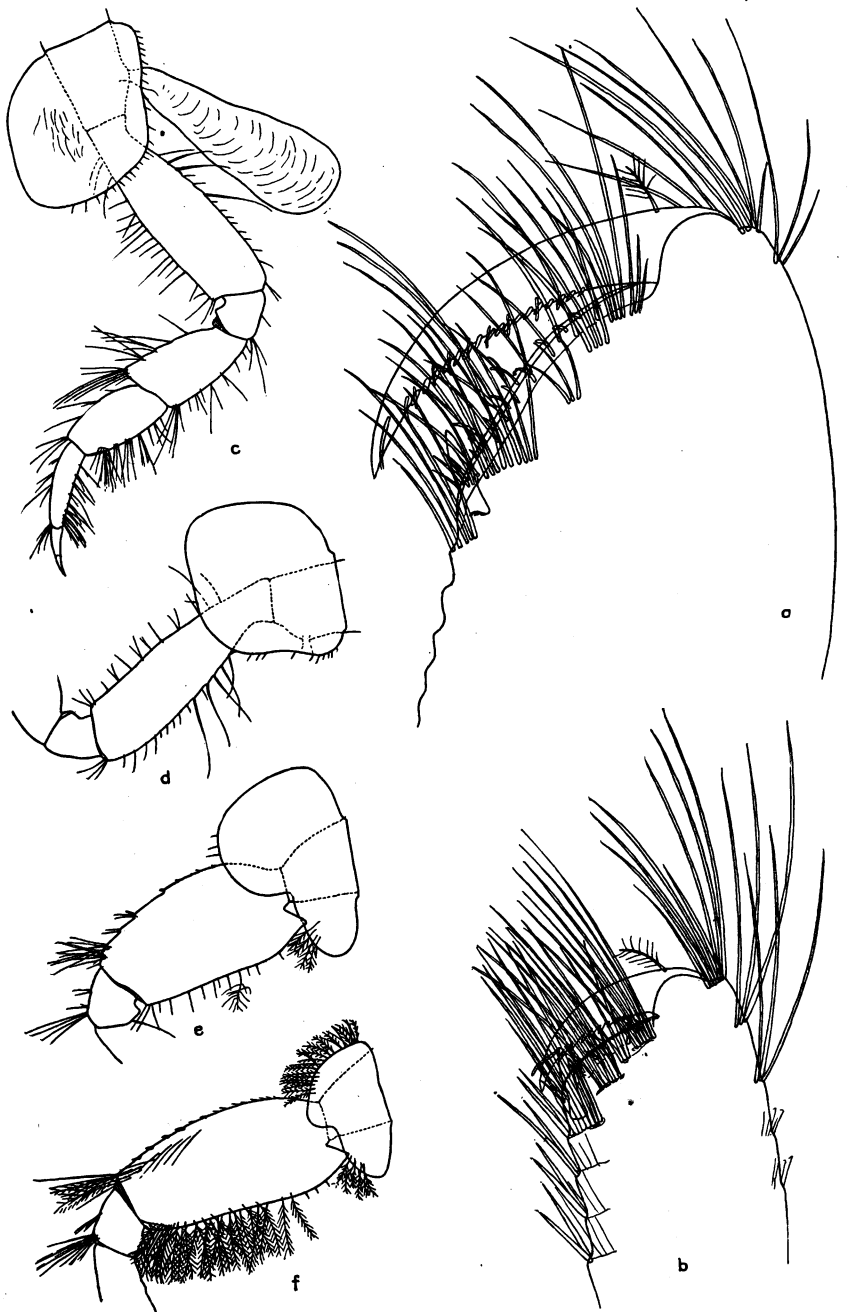


Fig. 13. *Bemlos macromanus*, new species

FEMALE.—a, gnathopod 1 showing palm and teeth of finger; b, gnathopod 2, showing fine teeth of palm and teeth of finger; c, peræopod 1; d, peræopod 2; e, peræopod 3; f, peræopod 4.

a few plumose setæ on hind margin. Peræopod 5 the longest, second joint little expanded, hind margin bearing many plumose setæ. The posterior lateral margins of the abdominal segments 1-3 are evenly convex and their lower posterior angles produced into minute points, lower margins slightly convex. Uropods about as in *Lembos*. Uropod 3 with outer ramus slightly shorter than inner. Telson very little longer than wide, narrow hind margin slightly excavate with each of the blunt lobes bearing a few setæ.

**FEMALE.**—Side-plates comparatively narrower and deeper than in male. Gnathopod 1 with second joint excavate on front margin, lower anterior corner produced into a point, fifth and sixth joints subequal in width, fifth a little over half the length of the sixth and triangular in general outline, sixth with edges slightly convex and narrowing slightly toward the distal end, palm convex, oblique and smooth, dactyl fitting palm and bearing a row of small teeth on the inner edge. Gnathopod 2 much as in the male, fifth and sixth joints subequal in length, palm less oblique and very finely toothed throughout, dactyl fitting palm and bearing a row of small teeth on the inner edge. Peræopods as in male; the second joints of peræopods 4 and 5, however, are more densely furnished with plumose setæ on their hind margins.

**LENGTH.**—♂ 9 mm., ♀ 10 mm.

The second and third thoracic segments of the male bear on the center of their ventral surfaces a forward-pointing, slightly conical process probably of the same nature as those which have been observed on several fresh-water amphipods by Sars, Smith, Haswell, Chilton, Tattersall and others. These processes, the function of which is not known, appear to have been very seldom observed in marine species.

## **HYPERIIDÆ**

### **Vibiliidæ**

#### ***Vibilia californica* Holmes**

*Vibilia californica* HOLMES, 1908, Proc. U. S. National Museum, XXXV, p. 490.

Guadalupe Island, Gulf of California, March 3, 1911, electric light; 1 specimen. Agua Verde Bay, Gulf of California, electric light; 1 specimen. Carmen Island, Gulf of California, electric light; 8 specimens.

This species was described by S. J. Holmes from two specimens dredged by the Steamer 'Albatross' off Point Loma, Southern California.

### **Hyperiidæ**

#### ***Hyperia* species**

San Josef Island, Gulf of California, electric light; 1 specimen.

Carmen Island, Gulf of California, electric light; 2 specimens.

These specimens are all quite young, so that it is hardly possible to identify them specifically.

## Phrosinidæ

**Anchylomera blossevillii** Milne-Edwards

*Anchylomera blossevillii* MILNE-EDWARDS, 1830, Ann. des Sci. Nat., XX, p. 394 (extr., p. 43).

*Hæraconyx abbreviatus*, ♂, GUERIN, 1836, Magasin de Zoologie, Classe VII, p. 5, Pl. XVII, figs. 2, 2a-2f.

*Cheiropristis Messanensis*, ♂, DE NATALE, 1850, Crost. del porto di Messina, tav. i, fig. 2.

*Anchylomera purpurea*, ♂, DANA, 1853, 'U. S. Explor. Exped.,' XIII, Pt. 2, p. 1001, Pl. LXVIII, figs. 9a-m.

*Anchylomera thyropoda*, ♀, DANA, 1853, 'U. S. Explor. Exped.,' XIII, Pt. 2, p. 1004, Pl. LXVIII, figs. 10a-g.

*Anchylomera antipodes* SPENCE BATE, 1862, 'Brit. Mus. Catal. Amph. Crust.,' p. 322, Pl. LI, figs. 9, 10.

*Anchylomera Blossevillii* SPENCE BATE, 1862, 'Brit. Mus. Catal. Amph. Crust.,' p. 323, Pl. LII, fig. 1.

*Anchylomera Hunteri* SPENCE BATE, 1862, 'Brit. Mus. Catal. Amph. Crust.,' p. 324, Pl. LII, fig. 2.

*Anchylomera abbreviata* SPENCE BATE, 1862, 'Brit. Mus. Catal. Amph. Crust.,' p. 324, Pl. LII, fig. 3.

*Anchylomera purpurea* SPENCE BATE, 1862, 'Brit. Mus. Catal. Amph. Crust.,' p. 325, Pl. LII, fig. 5.

*Anchylomera thyropoda* SPENCE BATE, 1862, 'Brit. Mus. Catal. Amph. Crust.,' p. 325, Pl. LII, fig. 6.

*Anchylomera abbreviata* BOVALLIUS, 1887, 'Arctic and Antarctic Hyperids, Vega-Exped.,' IV, p. 571.

*Anchylomera antipodes* BOVALLIUS, 1887, 'Arctic and Antarctic Hyperids, Vega-Exped.,' IV, p. 572.

*Anchylomera blossevillii* STEBBING, 1888, 'Challenger Amphipoda,' p. 1433, Pl. CLXXVII.

*Anchylomera blossevillii* CHEVREUX, 1900, 'Rés. Camp. Sci., Monaco,' Fasc. 16, p. 147.

*Anchylomera blossevillii* CHILTON, 1912, Trans. Roy. Soc. Edinburgh, XLVIII, Pt. 2 (No. 23), p. 516.

Cape San Lucas, Lower California, ship's anchorage, March 24, 1911, electric light; 2 specimens.

This species is very widely distributed, both in the Atlantic and Pacific Oceans, but the present record is the first for the western coast of North America.

## Pronoidæ

**Symprone anomala**, new species

LOCALITIES.—Cape San Lucas, Lower California, ship's anchorage, electric light; 2 specimens. Cape San Lucas, Lower California; 1 specimen. Agua Verde Bay, Gulf of California, electric light; 6 specimens (1 ♂ type).

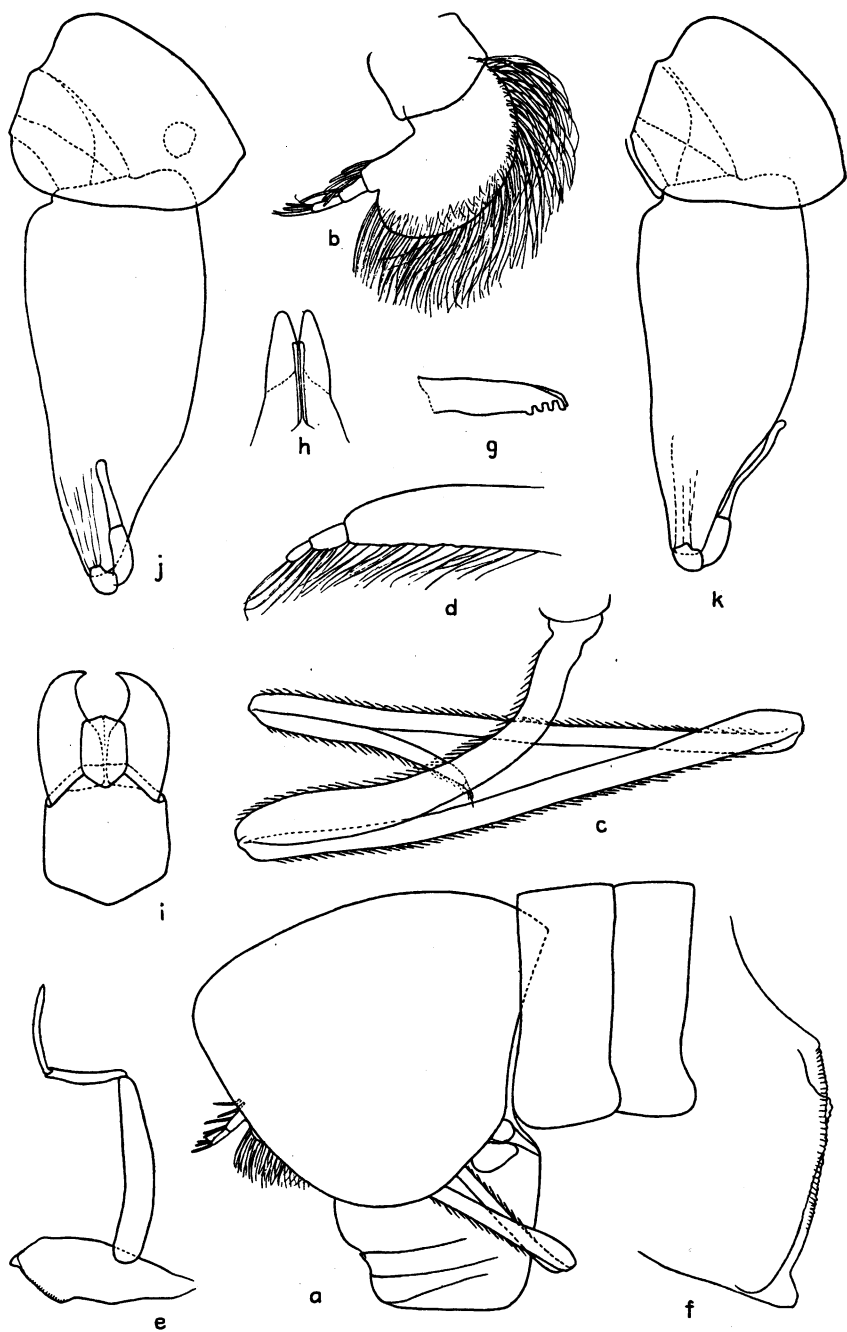


Fig. 14. *Symprone anomala*, new species

MALE.—a, head and first two thoracic segments; b, antenna 1; c, antenna 2; d, end of flagellum enlarged; e, mandible; f, cutting edge of mandible; g, maxilla 1; h, maxilla 2; i, maxillipeds; j, peraeopod 5; k, peraeopod 5 of another specimen.

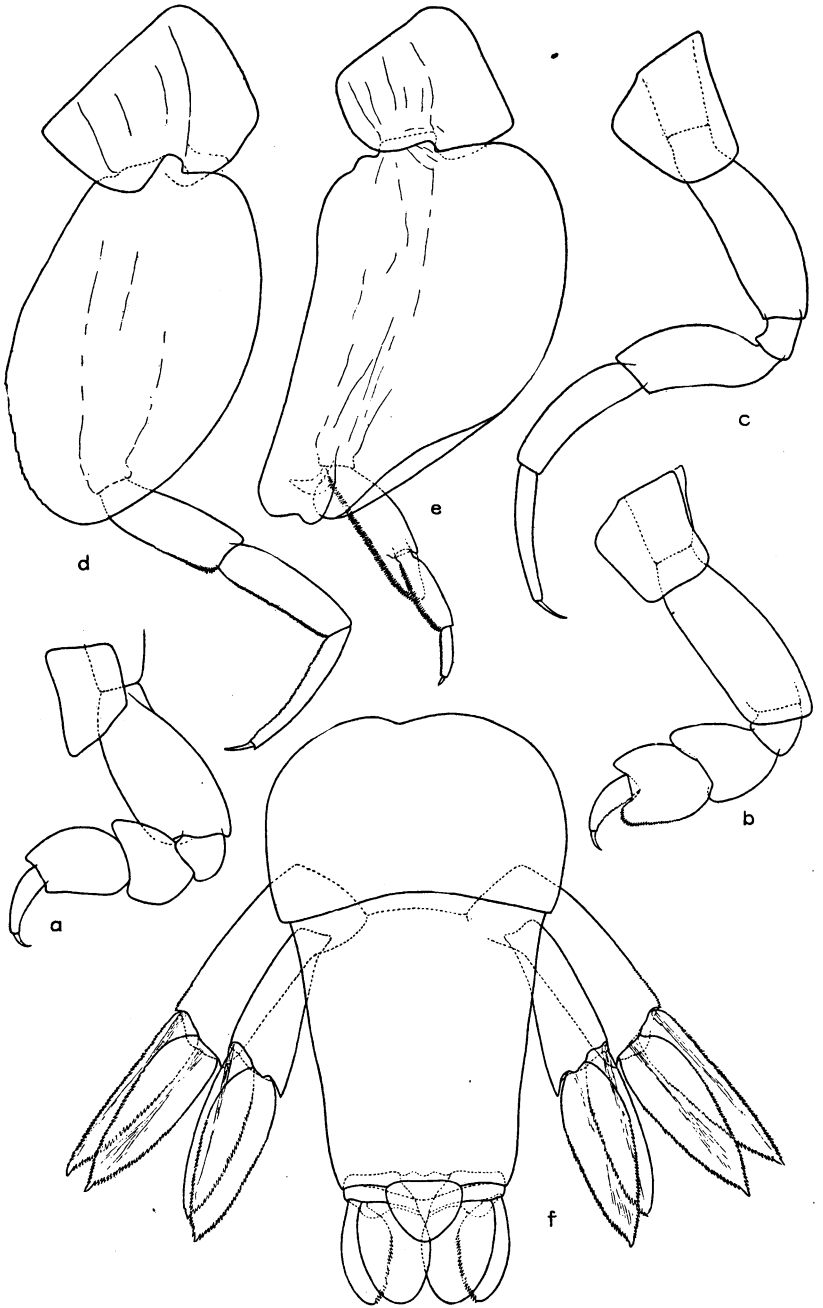


Fig. 15. *Symprone anomala*, new species

MALE.—a, gnathopod 1; b, gnathopod 2; c, peraeopod 2; d, peraeopod 3; e, peraeopod 4; f, uropod and telson.



MALE.—These specimens agree very closely with *Symprone parva* (Claus) and *Symprone propinqua* Stebbing, but differ from both of these species in a few well-marked characters. The front angle of the head is a little more acute. Antenna 1, first joint of flagellum somewhat wider and produced into more of a lobe distally; second and third joints subequal in length, fourth joint very slender and a little longer than third. Antenna 2, fifth joint of peduncle a little shorter than fourth, first joint of flagellum over half the length of the third joint of peduncle and less than half the length of the fifth, second joint of flagellum very small, third joint of flagellum shorter and narrower than second. Maxillipeds much shorter proportionately than in *S. parva*. Other mouth-parts agreeing with those of *S. parva*. Gnathopod 1, joints shorter and broader proportionately than in either *S. parva* or *S. propinqua*. Gnathopod 2 with upper distal end of fifth joint somewhat produced. Peræopod 4 with second joint not distally rounded, but slightly emarginate. Peræopod 5 with second joint as in *S. parva*, but with three narrow terminal joints instead of two, the first of these joints short, the second longer and somewhat narrower, and the third narrower and longer than the second, this last joint varies in length being in some cases little longer than the preceding and in others nearly twice as long. Uropods and telson much as in *S. parva* except that the telson is obtusely pointed and is one-fourth wider than long.

LENGTH.—7 mm.

### **Brachyscelidæ** Stephensen, 1923

#### **Brachyscelus crusculum** Spence Bate

*Brachyscelus crusculum* SPENCE BATE, 1861, Ann. and Mag. Nat. Hist., (3) VIII, p. 7, Pl. II, figs. 1, 2.

*Brachyscelus crusculum* SPENCE BATE, 1862, 'Brit. Mus. Catal. Amph. Crust.,' p. 333, Pl. LIII, figs. 2, 3.

*Thamyris crusculum* BOVALLIUS, 1887, 'Systematical List of Amph. Hyper.,' Bihang till K. Svensk. Vetensk.-Akad. Handl., XI, No. 16, p. 31.

*Thamyris mediterranea* CLAUS, 1887, 'Platysceliden,' p. 60, Pl. XVI, figs. 11–18.

*Brachyscelus crusculum* STEBBING, 1888, 'Challenger Amphipoda,' p. 1544, Pl. CXCv, specimen a.

*Brachyscelus crusculum* CHEVREUX, 1893, Bull. Soc. Zool. France, XVIII, pp. 70–74, text figs. 1–9.

*Brachyscelus crustulum* NORMAN, 1900, Ann. Mag. Nat. Hist., (7) V, p. 134.

*Brachyscelus crusculum* + *B. mediterraneus* CHEVREUX, 1900, 'Rés. Camp. Sci. Monaco,' Fasc. XVI, p. 153, 154.

*Brachyscelus mediterraneus* SENNA, 1903, Ann. Mus. Zool. Napoli, (N. Ser.) I, No. 6, p. 5.

*Brachyscelus crusculum* TATTERSALL, 1906, Fisheries, Ireland, Sci. Invest., 1905, No. 4, Pt. 8, p. 26.

*Brachyscelus crusculum* HOLMES, 1908, Proc. U. S. Nat. Mus., XXXV, p. 490.

*Brachyscelus crusculum* STEPHENSEN, 1923, 'The Danish Ingolf-Exped.,' III, 'Crust. Malacos.,' V (Amphipoda. 1), p. 37.

Cape San Lucas, Lower California, ship's anchorage, electric light; 5 specimens. Carmen Island, southeast side, Gulf of California, electric light; 1 specimen. San Josef Island, Gulf of California, electric light;

2 specimens. Agua Verde Bay, Gulf of California, electric light; 15 specimens.

This is a very widely distributed species and was reported off Point Loma, southern California, by S. J. Holmes in 1908.

### Lycæidæ

#### *Lycæa bajensis*, new species

LOCALITIES.—San Josef Island, Gulf of California, electric light; 23 specimens (1 ♂ type). Cape San Lucas, Lower California, ship's anchorage, electric light; 4 specimens. Cape San Lucas, Lower California, ship's anchorage, electric light; March 24, 1911, 1 specimen. Carmen Island, southeast side, Gulf of California, electric light; 3 specimens.

MALE.—Head globular. Antenna 1, upper edge of first joint of flagellum nearly straight, there being a very shallow angle near the peduncle, the upper distal extremity of this joint forming nearly a right angle, second joint longer than third or fourth, which are subequal. Antenna 2 as in Stebbing's figure of *L. vincenti*, except that the fifth joint of the peduncle is very slightly shorter than fourth and the flagellum reaches very nearly to the end of the fifth joint. Maxillipeds as in *L. vincenti*. Mandibular palp with third joint slightly longer than second. Gnathopods 1 and 2' as in *L. vincenti*, but the lower distal angle of fifth joint not so sharply produced. Peræopod 2 as in *L. vincenti* except the rear edge of sixth joint is without minute teeth. Peræopod 3 much as in *L. vincenti*, but with the hind margin of second joint more convex. Peræopod 4, front margin of second joint having a decided hump in the middle. Peræopod 5, second joint, strikingly widest through the middle, hind margin not evenly convex, succeeding joints and dactyl as in *L. vincenti*. The posterior lateral corners of abdominal segments 1-3 evenly rounded. The rami of all the uropods are straight and their edges finely pectinate except the outer edge of the outer ramus of uropods 2 and 3. Telson with sides evenly convergent, except at the basal fourth, where they are constricted, and about parallel.

LENGTH.—7 mm.

FEMALE.—Thorax quite tumid, narrowing suddenly to the slender abdomen. Head not so long as in male, but just as deep. Antenna 1, first joint of flagellum not expanded, second joint short, third joint a little longer than second. Gnathopod 1, as in male, except there are no fine teeth on the fifth or sixth joints and the lower distal corner of the fifth joint is not so sharply produced. Gnathopod 2 as in male, but without the fine teeth on fifth or sixth joints. Peræopods as in male. Posterior lateral corners of abdominal segments 1-3 as in male. Uropods as in male. Telson with sides nearly straight and evenly convergent, not constricted at base.

LENGTH.—7 mm.

### Parascelidæ

#### *Parascelus zebu* Stebbing

*Parascelus zebu* STEBBING, 1888, 'Challenger Amphipoda,' p. 1496, Pl. CLXXXV.

Carmen Island, southeast side, Gulf of California, electric light; 2 specimens.

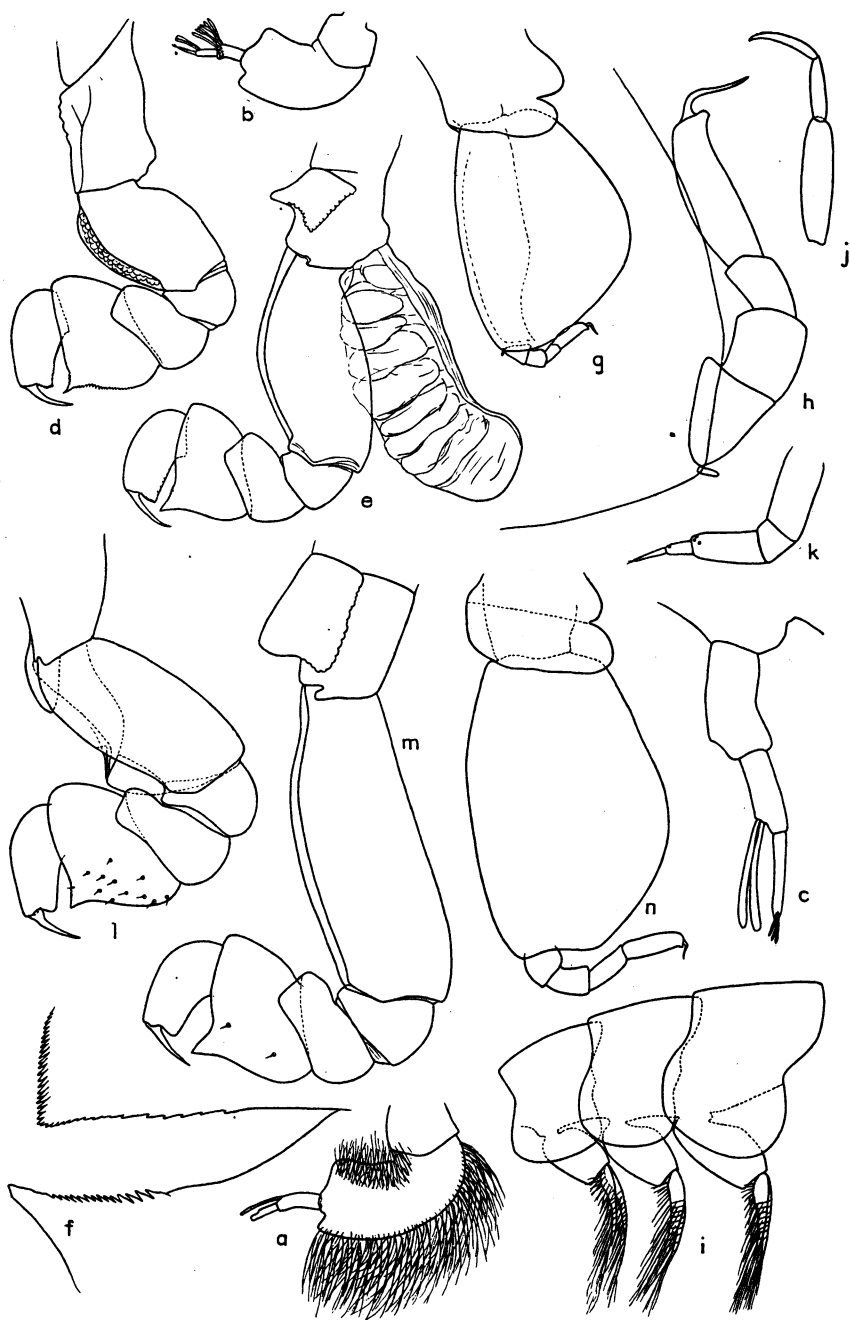


Fig. 16. *Lycæa bajensis*, new species

MALE.—*a*, antenna 1, fourth joint of flagellum missing; *b*, antenna 1 of another specimen showing fourth joint of flagellum; *c*, second, third, and fourth joints of flagellum enlarged; *d*, gnathopod 1; *e*, gnathopod 2; *f*, fifth and sixth joints of gnathopod 2 enlarged; *g*, peræopod 5; *h*, third, fourth, fifth, and sixth joints of peræopod 5 enlarged; *i*, abdominal segments 1-3; *j*, palp of mandible.

FEMALE.—*k*, antenna 1; *l*, gnathopod 1; *m*, gnathopod 2; *n*, peræopod 5.

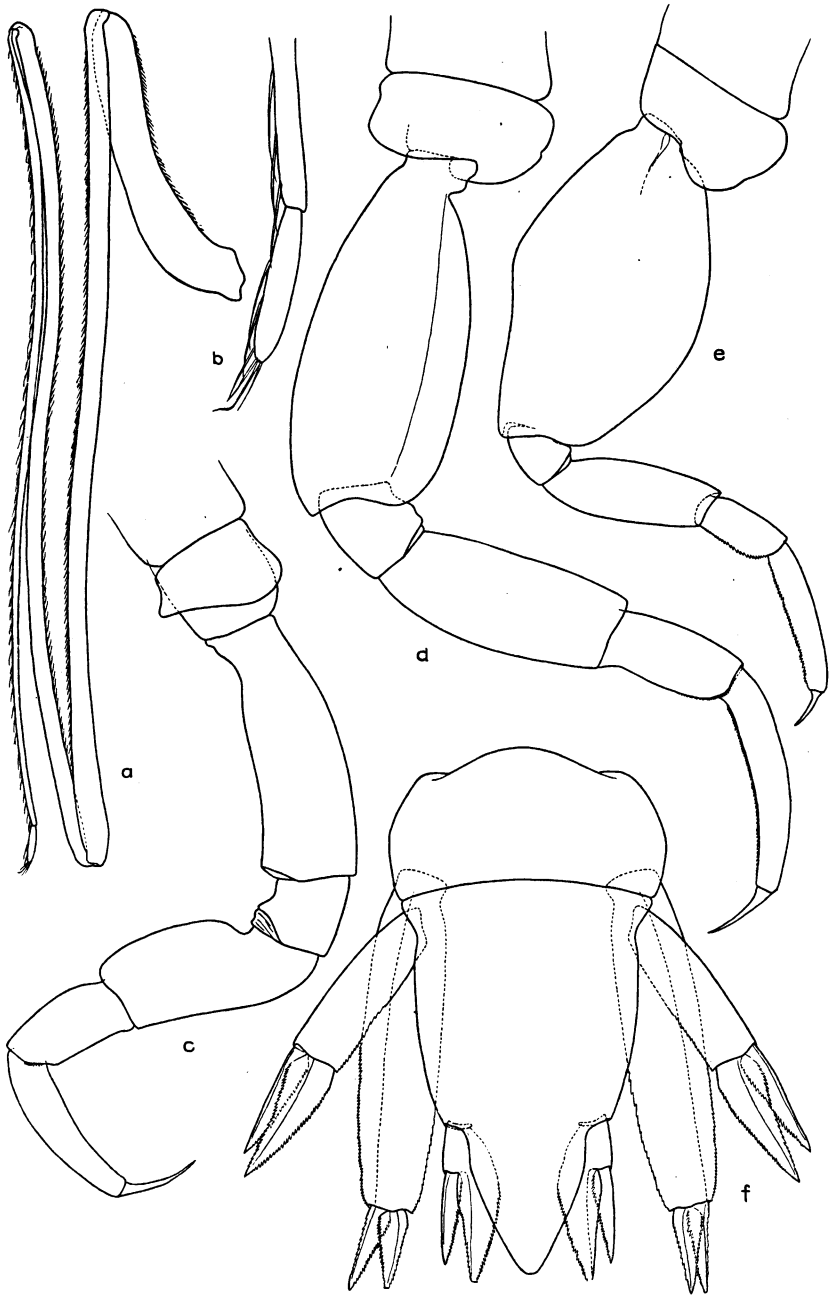


Fig. 17. *Lycæa bajensis*, new species

MALE.—a, antenna 2; b, end of flagellum of antenna 2 enlarged; c, pereopod 2; d, pereopod 3; e, pereopod 4; f, uropods and telson.



Fig. 18. *Parascelus zebu* Stebbing

MALE.—a, head; b, antenna 1; c, first, second, and third joints of flagellum enlarged; d, antenna 2; e, end of second joint of flagellum of antenna 2 enlarged; f, mandibles; g, maxilla 1; h, maxilla 2; i, maxillipeds; j, gnathopod 1; k, gnathopod 2; l, peræopod 2; m, peræopod 3; n, peræopod 4; o, third, fourth, fifth, and sixth joints of peræopod 4 enlarged; p, peræopod 5; q, uropods and telson.

FEMALE.—r, gnathopod 1; s, gnathopod 2; t, peræopod 5; u, antenna 2; v, head from below.

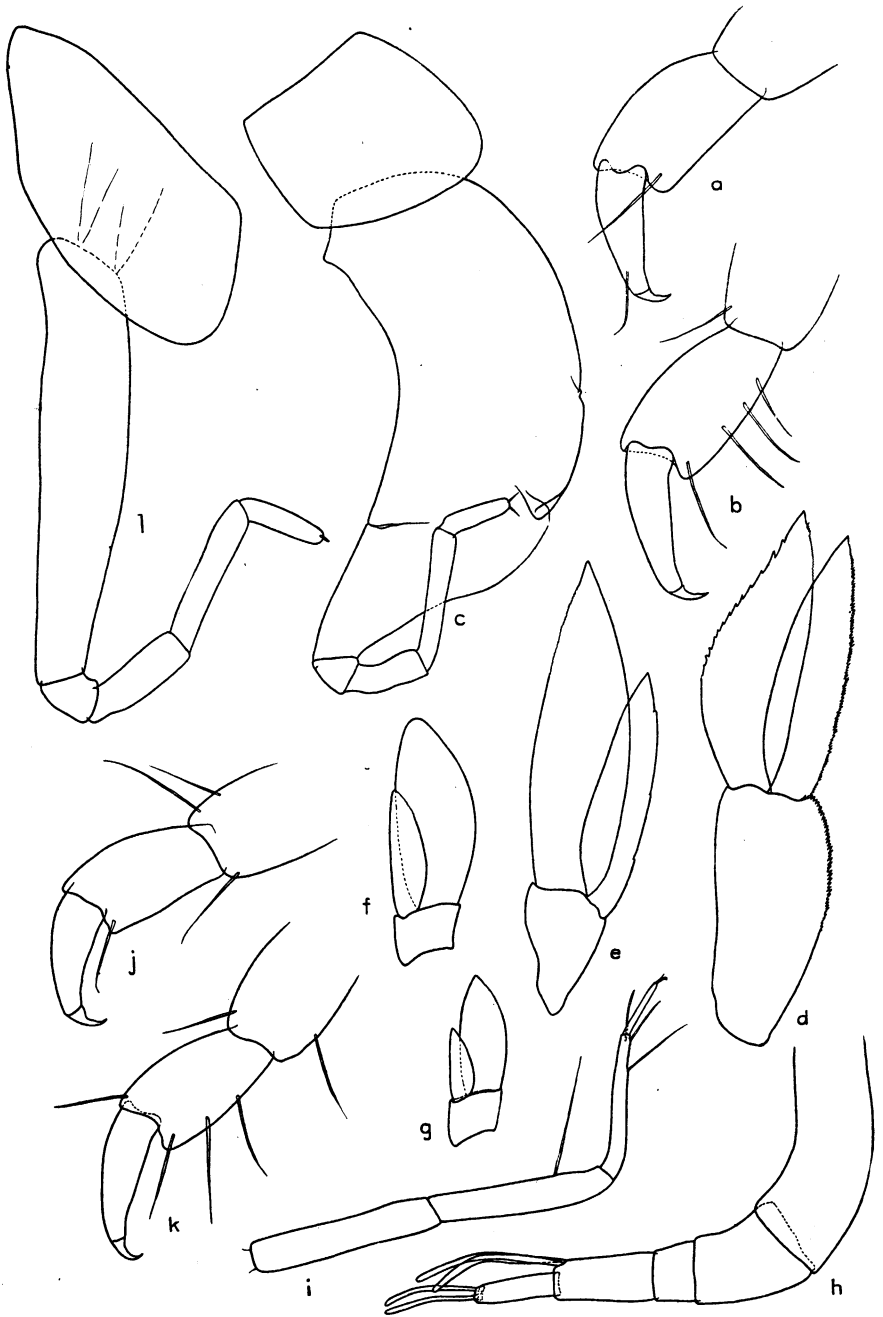


Fig. 19. *Parascelus zebu* Stebbing

MALE.—a, gnathopod 1; b, gnathopod 2; c, pereopod 5; d, uropod 1; e, uropod 2; f, uropod 3.  
 FEMALE.—g, uropod 3; h, antenna 1; i, antenna 2; j, gnathopod 1; k, gnathopod 2; l, pereopod 5.

These specimens, of which one is male and the other female, agree quite well with Stebbing's figures. The inner ramus of uropod 3 in the male is not pointed as in his figure, but is bluntly rounded; this, however, may be an individual peculiarity, as that of the female is much more like Stebbing's figure. Peræopod 5 of female with second joint not expanded as in male, and with the succeeding portion of the limb proportionately longer. Length of the specimens, 6 mm.

### Platyscelidæ

I am here using the name *Platyscelidæ*, which was established by Bate in 1862. Stebbing points out that, the genus *Typhis* having been preoccupied, *Platyscelus* remains its earliest synonym. Then by right of priority the family must become *Platyscelidæ* from the earliest genus *Platyscelus*. The family is much more restricted now and does not include the *Pronoinæ* (Dana) as when established by Bate.

#### *Platyscelus dubius*, new species

LOCALITIES.—Cape San Lucas, Lower California, ship's anchorage, electric light; 19 specimens (1♂ type). Carmen Island, southeast side, Gulf of California, electric light; 2 specimens. San Josef Island, Gulf of California, electric light; 3 specimens. Agua Verde Bay, Gulf of California, electric light; 3 specimens.

MALE.—Head with a depression just above the rostrum. Rostrum prominent. Eyes arranged in four groups. Antenna 1, first joint of flagellum tumid with upper edge short, and lower distal angle rounded and produced, second joint twice as wide as third, but equalling it in length, fourth joint a little longer and a little narrower than third. Antenna 2, third joint nearly straight, fourth a little longer than fifth, first joint of flagellum a little less than half the length of the fifth peduncular joint, second joint of flagellum a little longer than first. Maxillipeds, outer plates short and broad with inner edges slightly concave. Mandible, cutting edge oblique and provided with two rows of small blunt teeth, first joint of palp nearly straight and longer than second, second curved and longer than third, third slightly curved. Gnathopod 1 shorter than 2, the produced lobe of the fifth joint serrated on both edges, sixth joint serrated on inner edge. Gnathopod 2, the produced lobe of the fifth joint serrated on both edges and extending a little beyond the sixth joint, sixth joint serrated on inner edge. Peræopods 1 and 2 normal, sixth joint with 2 small teeth just above the dactyl. Peræopod 3, lower edge of second joint evenly rounded; fourth, fifth and sixth joints very nearly equaling one another in length and all with very fine serrations on the front margin. Peræopod 4, second joint with low, blunt tooth near the proximal end of front margin, lower margin oblique and nearly straight, fourth joint widest at distal end and twice as long as fifth, both fourth and fifth with conspicuous serrations on front margin, sixth joint very short and curved. Peræopod 5 nearly as that figured by Claus for *Eutyphis ovoides*,<sup>1</sup> second joint curved, third joint reduced to a mere knob,

<sup>1</sup>'Die Platysceliden,' Taf. I, fig. 9.

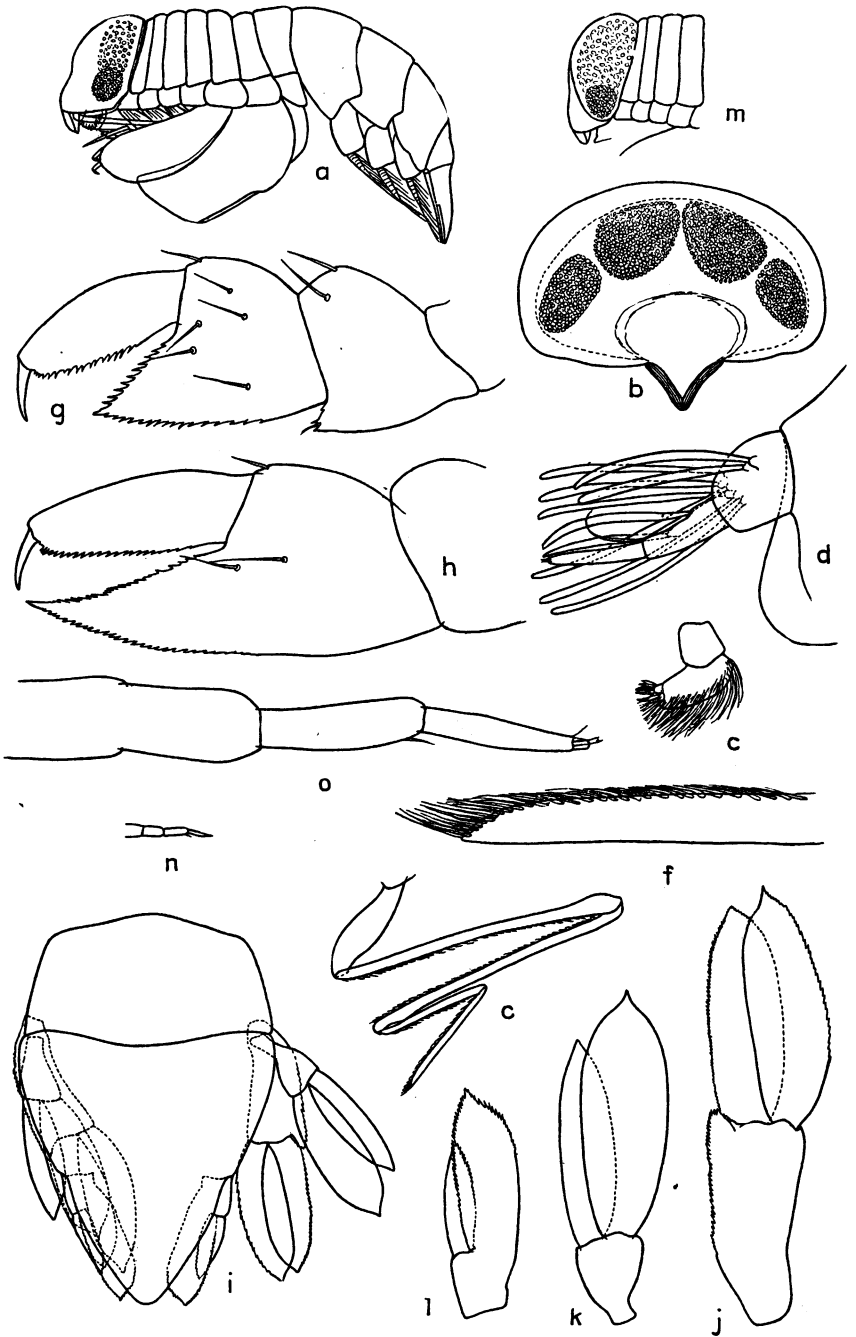


Fig. 20. *Platyscelus dubius*, new species

MALE.—a, entire animal; b, front of head; c, antenna 1; d, first, second, third, and fourth joints of flagellum of antenna 1 enlarged; e, antenna 2; f, end of flagellum of antenna 2 enlarged; g, gnathopod 1, h, gnathopod 2; i, uropods and telson; j, uropod 1; k, uropod 2; l, uropod 3.

FEMALE.—m, head; n, antenna 2; o, antenna 2 enlarged.



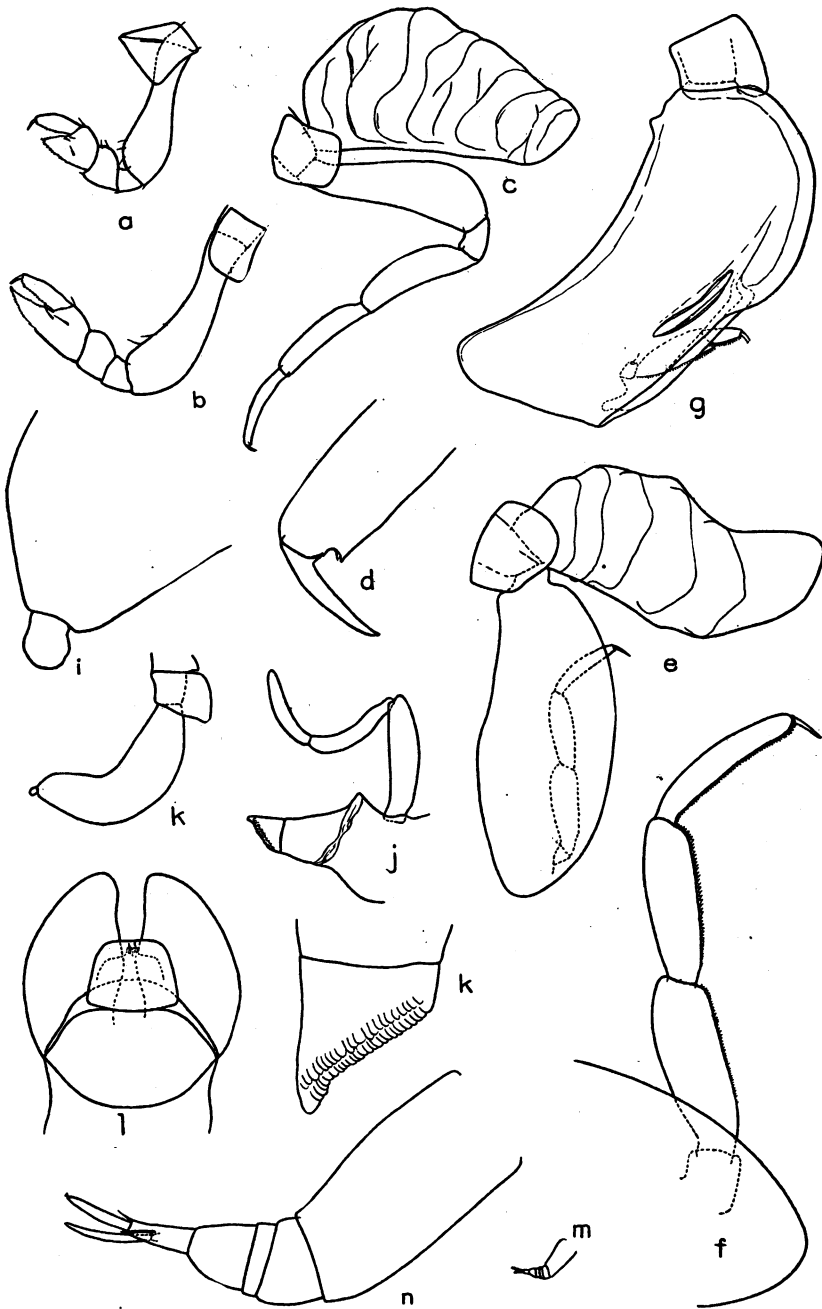


Fig. 21. *Platyscelus dubius*, new species

MALE.—a, gnathopod 1; b, gnathopod 2; c, pereopod 2; d, end of sixth joint and dactyl of pereopod 2 enlarged; e, pereopod 3; f, third, fourth, fifth, and sixth joints of pereopod 3 enlarged; g, pereopod 4; h, pereopod 5; i, end of second and small third joint of pereopod 5 enlarged; j, mandible; k, cutting edge of mandible enlarged; l, maxillipeds.

FEMALE.—m, antenna 1; n, antenna 1 enlarged.

the rest of the limb suppressed. Uropod 1, outer margin of outer ramus, and inner margin of inner ramus finely serrate. Uropod 2, rami without serrations. Uropod 3, outer ramus with inner edge serrate, inner ramus with outer margin and upper part of inner margin serrate. Telson with edges nearly straight, slightly constricted at base.

LENGTH.—5.5 mm.

FEMALE.—Like the male generally but with the thorax much broader proportionately. Head with front perpendicular, and rostrum short and broad. Antenna 1, first joint about as long as all the rest combined, second joint twice as long as third, flagellum with three joints of about equal length but successively narrower. Antenna 2, fourth joint slightly shorter than fifth, fifth equal in length to the flagellum which consists of one joint with a few setules near the distal end.

LENGTH.—5 mm.

### *Tetrathyrus sancti-josephi*, new species

LOCALITIES.—San Josef Island, Gulf of California, electric light; 1 specimen (1 ♂ type). Agua Verde Bay, Gulf of California, electric light; 1 specimen. Carmen Island, southeast side, Gulf of California, electric light; 25 specimens.

MALE.—In general this species closely resembles *Tetrathyrus moncoeuri* Stebbing; but in a few characters it differs from that species. In the second antenna the fifth joint extends only to the smallest degree beyond the fourth. Peræopod 5 consists of only the first and second joints; the second joint is curved, about three times as long as wide, and terminates in a small knob. Uropods agreeing very closely with those of *T. moncoeuri* except that no division can be observed between the inner ramus and peduncle of uropod 2, thus forming a coalition as in uropod 3. Telson without terminal spinules.

LENGTH.—4 mm.

FEMALE.—Front of head perpendicular, not sloping at all forward as in the male. Antenna 1, flagellum equal in length to the peduncular joint, first joint of flagellum very short, second joint about three times as long as first and bearing a group of four setæ about the middle of the upper edge and one at the distal end, third joint about two-thirds as long as second and bearing two short spinules about the middle of the upper edge, one on the under edge near the distal end and one at distal end of upper edge, fourth joint a very little more than one-half the length of the third and bearing one or two minute spinules at the distal end. Gnathopods very closely resembling those of male; the lower distal angle of the sixth joint is not so much produced but is rather blunt and bears a single spinule. Peræopods 1–3 as in male. Peræopod 4 with second joint proportionately broader and the rest of the limb proportionately shorter than in male. Peræopod 5, second joint proportionately much narrower than in male and tapering off distally into an acute point. In one female examined the second joint of this peræopod ended less acutely and appeared to have a very minute third joint or an enlarged terminal spine as shown in the figure. Telson and uropods as in male except the rami end in more acute angles. Uropod 2 as in male has the inner ramus united with the peduncle.

LENGTH.—4.5 mm.



Fig. 22. *Tetrathyrus sancti-josephi*, new species

MALE.—a, head and antennæ; b, end of flagellum of antenna 2; c, antenna 1; d, gnathopod 1; e, gnathopod 1 enlarged; f, gnathopod 2; g, gnathopod 2 enlarged; h, pereopod 1; i, pereopod 3; j, pereopod 4; k, third, fourth, fifth, and sixth joints of pereopod 4 enlarged; l, pereopod 5; m, pereopod 5 enlarged; n, uropods and telson; o, uropod 1; p, uropod 2; q, uropod 3.

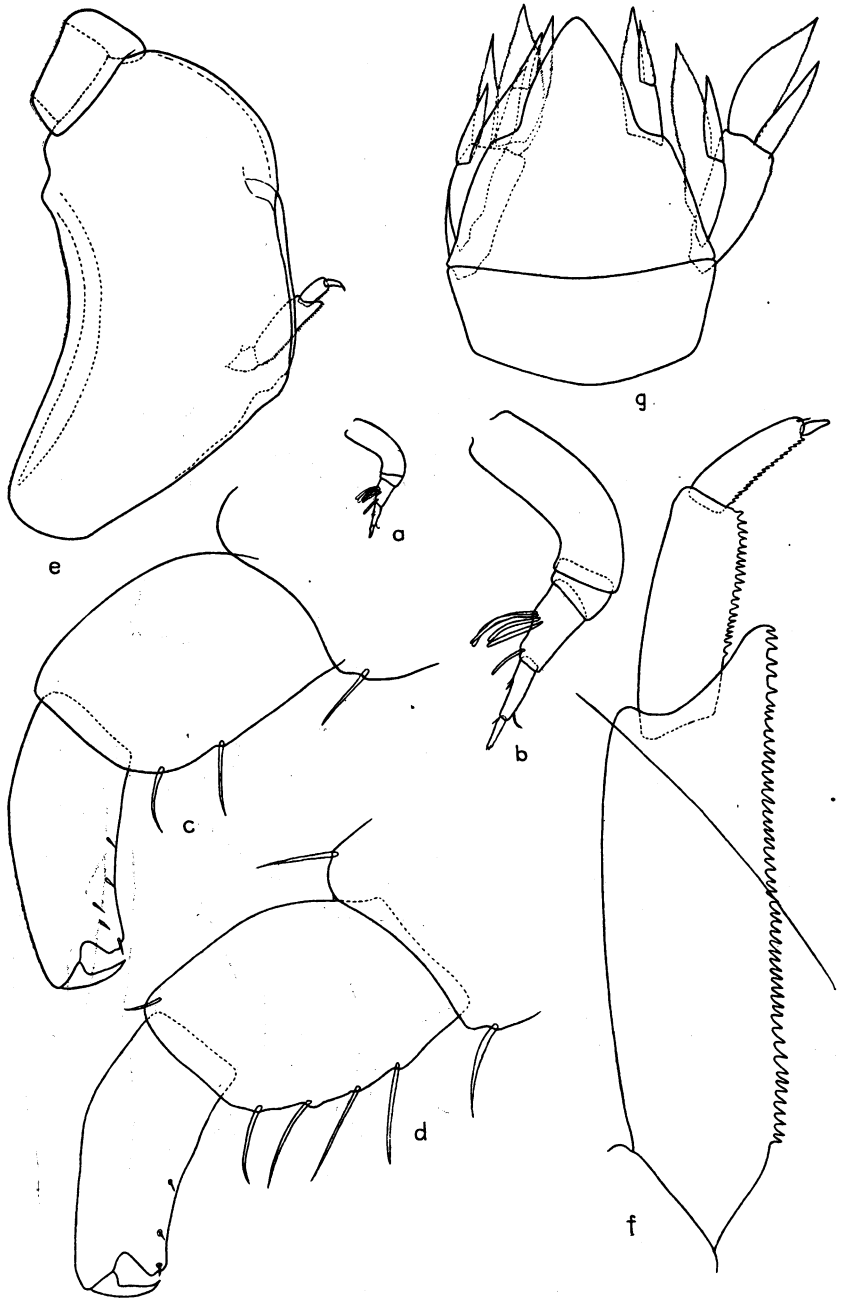


Fig. 23. *Tetrathyrus sancti-josephi*, new species

FEMALE.—a, antenna 1; b, antenna 1 enlarged; c, gnathopod 1; d, gnathopod 2; e, pereopod 4; f, fourth, fifth, and sixth joints of pereopod 4 enlarged; g, uropods and telson.



Fig. 24. *Tetrathyrus sancti-josephi*, new species

FEMALE.—a, gnathopod 1; b, gnathopod 2; c, pereopod 2; d, pereopod 3; e, sixth joint of pereopod 2 enlarged; f, pereopod 5; g, end of pereopod 5 enlarged; h-i, pereopod 5 of another specimen showing small third joint or an enlarged spine. j-o, pereopod 5 of other specimens showing variation in end of second joint.

**Amphithyrus orientalis** Stebbing

*Amphithyrus orientalis* STEBBING, 1888, 'Challenger Amphipoda,' p. 1485.

San Josef Island, Gulf of California; 2 specimens.

These specimens agree quite closely with Stebbing's description of this species in the 'Challenger Amphipoda.' He says, however, that the telson forms in outline an inverted arch with apex acute, but in the present specimens the apex is narrowly rounded as I have shown in the figure.

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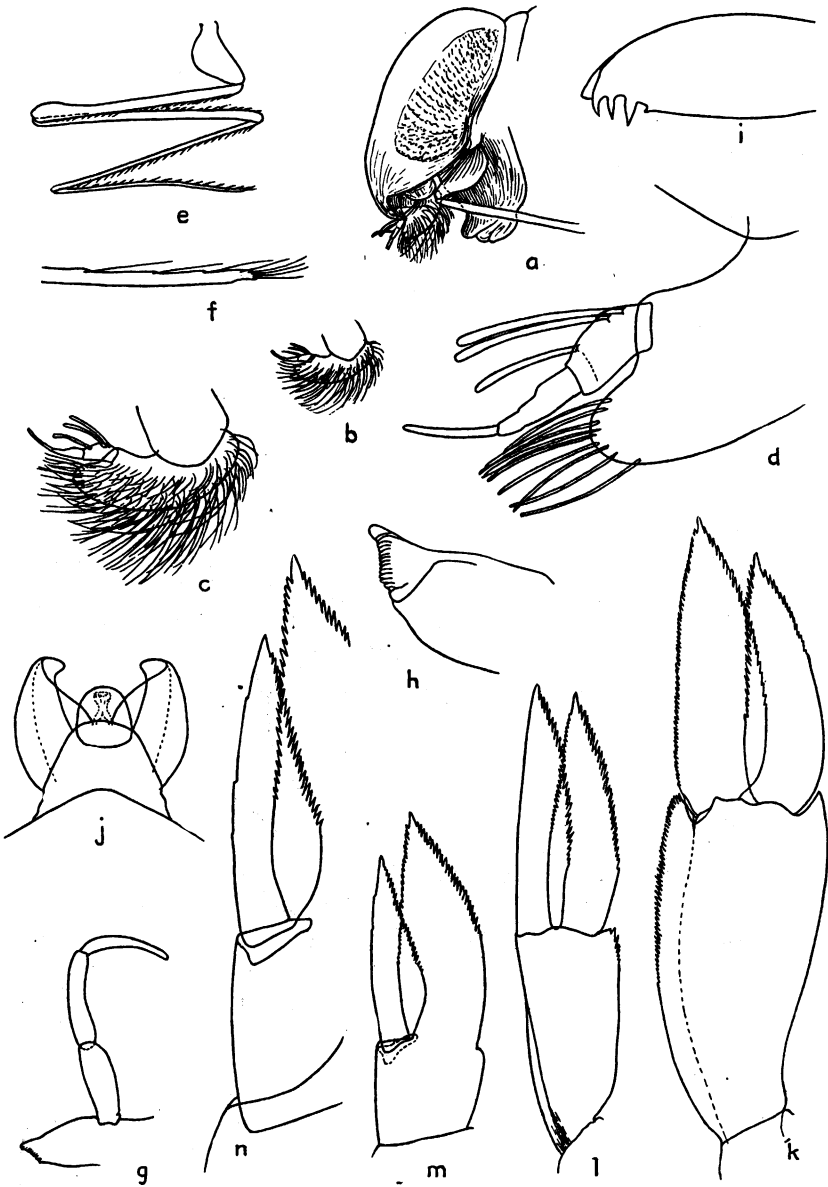


Fig. 25. *Amphithyrus orientalis* Stebbing

MALE.—a, head; b, antenna 1; c, antenna 1 enlarged; d, flagellum of antenna 1 enlarged; e, antenna 2; f, end of flagellum of antenna 2 enlarged; g, mandible; h, cutting edge of mandible; i, maxilla 1; j, maxillipeds; k, uropod 1; l, uropod 2; m, uropod 3; n, uropod 3 enlarged.

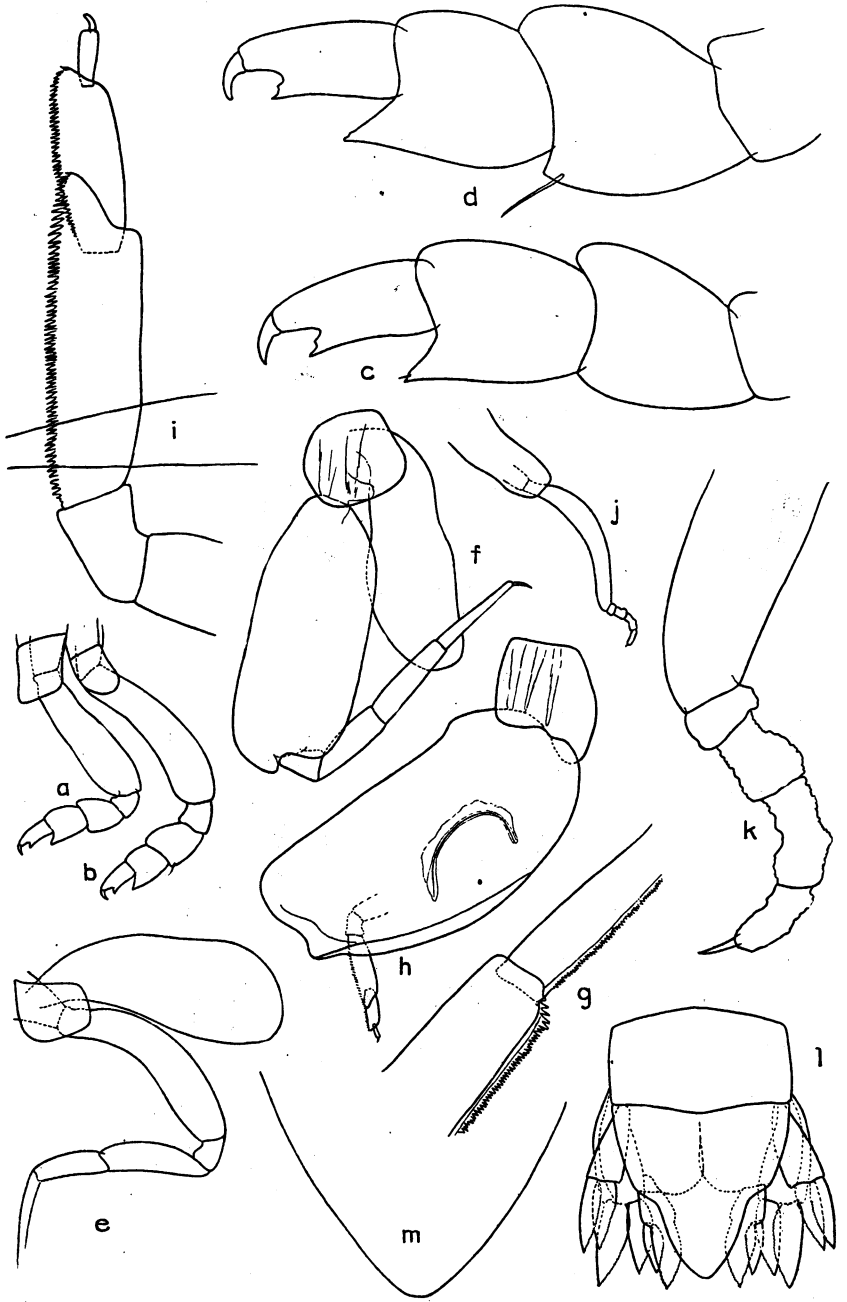


Fig. 26. *Amphithyrus orientalis* Stebbing

MALE.—a, gnathopod 1; b, gnathopod 2; c, gnathopod 1 enlarged; d, gnathopod 2 enlarged; e, peraeopod 2; f, peraeopod 3; g, fifth and sixth joints of peraeopod 3 enlarged; h, peraeopod 4; i, third, fourth, fifth, and sixth joints of peraeopod 4 enlarged; j, peraeopod 5; k, third, fourth, fifth, and sixth joints of peraeopod 5 enlarged; l, uropods and telson; m, apex of telson enlarged.



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