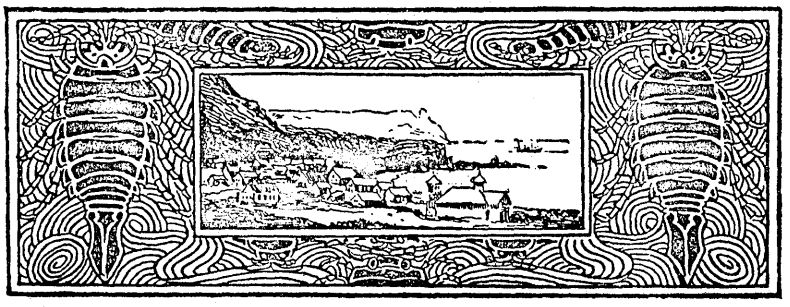

ISOPOD CRUSTACEANS OF THE NORTHWEST COAST OF NORTH AMERICA

BY HARRIET RICHARDSON

CONTENTS.

THE present paper contains a list of the Isopods collected by the Harriman Alaska Expedition, and in addition a number of species from California received from Dr. William E. Ritter, head of the Zoological Department of the University of California.[1] Five species are described as new. A little-known species, *Idotea gracillima* (Dana) is figured for the first time and described more fully than heretofore; and *Asellus tomalensis* Harford also is redescribed and figured.

FLABELLIFERA or CYMOTHOIDEA.

Family *CIROLANIDÆ*.

CIROLANA HARFORDI (Lockington).

Ægа harfordi LOCKINGTON, Proc. Calif. Acad. Sci., VII, Pt. 1, p. 46, 1877.
Cirolana californica HANSEN, Vidensk. Selsk. Skr., 6th ser., natur. og math. Afd., V, pp. 338, 339, pl. III, fig. 2, 2f, 1890.
Cirolana harfordi RICHARDSON, Proc. U. S. Nat. Mus., XXI, pp. 822, 823, 1899.

Locality.—Wilson Cove, California (Dr. Ritter and party).

[1] Science, XV, No. 367, Jan. 10, pp. 55–65, 1902.

Family *ÆGIDÆ*.

ROCINELA BELLICEPS (Stimpson).

Ægа belliceps STIMPSON, Proc. Acad. Nat. Sci. Phila., XVI, p. 155, 1864.
Ægа alaskensis LOCKINGTON, Proc. Calif. Acad. Sci., VII, Pt. I, p. 46, 1877.
Rocinela alaskensis RICHARDSON, Proc. Am. Phil. Soc., XXXVII, p. 11, 1898.
Rocinela belliceps RICHARDSON, Proc. U. S. Nat. Mus., XXI, p. 827, 1899.

Locality.—Yakutat, Alaska (Harriman Alaska Expedition).

Family *CYMOTHOIDÆ*.

LIVONECA VULGARIS Stimpson.

Livoneca vulgaris STIMPSON, Bost. Jour. Nat. Hist., VI, p. 508, pl. XXII, fig. 9, 1857; Proc. Bost. Soc. Nat. Hist., VI, pp. 88, 89, 1859.—SCHIŒDTE and MEINERT, Naturhistorisk Tidsskrift, XIV, pp. 344–349, pl. XIV, figs. 1, 2, 1883–84.—RICHARDSON, Proc. U. S. Nat. Mus., XXI, p. 830, 1899.

Locality.—San Francisco Bay (Dr. Ritter and party).

Family *SPHÆROMIDÆ*.

DYNAMENE TUBERCULOSA Richardson.

Dynamene tuberculosa RICHARDSON, Proc. U. S. Nat. Mus., XXI, p. 833, 1899.

Locality.—Bodega Bay, California (Dr. Ritter and party).

SPHÆROMA OREGONENSIS Dana.

Sphæroma oregonensis DANA, Proc. Acad. Nat. Sci. Phila., VII, p. 177, 1854–55; U. S. Expl. Exp., Crust., Pt. II, XIV, p. 778, pl. LII, fig. 4, 1853.—STIMPSON, Bost. Jour. Nat. Hist., VI, p. 509, 1857.—RICHARDSON, Proc. U. S. Nat. Mus., XXI, p. 836, 1899.

Localities.—Popof Island (from fresh water), Yakutat, and Glacier Bay, Alaska; Grenville Channel and Lowe Inlet, British Columbia (Harriman Alaska Expedition).

SPHÆROMA PENTODON sp. nov.

Type from Sausalito, California.

Body elliptical in outline; color dark brown; surface minutely but densely granular.

Head situated transversely, with a prominent ridge on the anterior margin. Eyes placed post-laterally, and composed of many ocelli. First pair of antennæ extend to the posterior margin of the head; flagellum eight-jointed. Second pair of antennæ reach the middle of the second thoracic segment; flagellum composed of fifteen joints.

Segments of the thorax about equal in length, with the exception of the first, which is somewhat longer than any of those following. The

lateral parts, which are not distinctly separated from the dorsal parts of the segments, are drawn out in acute processes in the first three segments. Those of the following segments are more nearly regular in outline.

The abdomen is somewhat broader than the thorax, although this expansion of the abdomen does not show in a dorsal view. The first segment is about equal in length to the last thoracic segment, and is marked on either side by two suture lines indicative of coalesced segments. The terminal segment is entire, and not produced, being evenly rounded in outline. The anterior portion of the segment is convex, with a longitudinal series of four small tubercles on either side of the median line, the two series being close together. The posterior extremity of the segment is marked by a prominent transverse elevation.

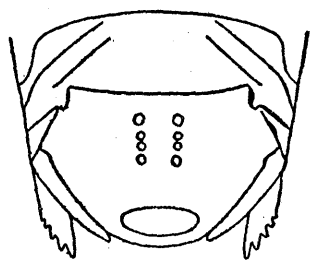

FIG. 96. Abdomen of *Sphæroma pentodon* sp. nov. (× 8).

The inner immovable branch of the uropoda is narrow, elongate, and pointed posteriorly; it extends to the extremity of the abdomen. The outer mobile branch is provided on its lateral margin with five strong teeth. Both branches are of equal length.

The first three pairs of legs are slender, and are furnished with long hairs. The other four pairs are somewhat stouter.

Ten specimens were collected at Sausalito, California, by Dr. Ritter and party.

This species is perhaps more closely allied to *Sphæroma sieboldii* Dollfus[1] from Japan than it is to any of the known species of the genus from the Pacific coast of North America. It differs, however, from that species in having a prominent transverse elevation on the posterior portion of the terminal segment, while in *S. sieboldii* the posterior part of the segment is distinctly concave; in having five teeth on the lateral margin of the outer uropod, while in *S. sieboldii* there are seven; in having fifteen joints to the flagellum of the second pair of antennæ, while this organ in *S. sieboldii* has a flagellum composed of only ten joints; in having two longitudinal series of four small tubercles, one on either side of the median line on the terminal abdominal segment, while in *S. sieboldii* the granulations on the caudal segment form, in the middle, two divergent lines; and in having the body covered with minute granulations, while in *S. sieboldii* the granulations are strong and more prominent.

The type is in the Museum of the University of California. The cotype is in the U. S. National Museum, Cat. No. 28,768.

[1] Notes from the Leyden Museum, XI, pp. 93, 94, pl. 5, 1889.

VALVIFERA or IDOTEOIDEA.

Family *IDOTEIDÆ*.

CHIRIDOTEA ENTOMON (Linnæus).

Oniscus entomon LINNÆUS, Syst. Nat., 12th ed., II, p. 1060, 1766.—PALLAS, Spicil. Zool., IX, p. 64, pl. V, figs. 1–6, 1772.
(?)Entomon pyramidale KLEIN, Rem. sur les Crustacés, figs. 1–3.
Squilla entomon DE GEER, Mém. pour servir à l'Hist. des Insectes, VII, p. 514, pl. XXXII, figs. 1–10, 1778.
Asellus entomon OLIVIER, Encycl. Méth., p. 253, 1789.
(?) Cymothoa entomon FABRICIUS, Ent. Syst., II, p. 505, 1793.
Idotea entomon BOSC, Hist. Nat. des Crust., II, p. 178, 1802.—LATREILLE, Hist. Nat. Crust. et Ins., VI, p. 361, 1803–4; VII, pl. LVIII, figs. 2, 3.—(?) LAMARCK, Hist. des Anim. sans Vert., 1st ed., V, p. 159, 1818.—(?) DESMAREST, Consid. Crust., p. 289, 1825.—RATHKE, Neuste Schriften der naturf. Gesellsch. in Danzig, I, p. 109, pl. IV, 1820.—KRÖYER, Vid. Selsk. Skrift., VII, p. 323, 1838.—MILNE EDWARDS, Hist. Nat. Crust., III, p. 128, 1840.—KRÖYER, Nat. Tidsskr., II, p. 402, 1847.—WHITE, List Cr. Brit. Mus., p. 93, 1847.—BRANDT, Cr. in Middendorff's Sibirische Reise, II, Pt. I, p. 145, 1851.—MEINERT, Nat. Tidsskr., 3d ser., XI, p. 84, 1877.—BRANDT, Comptes Rendus, p. 713, 1880; Ann. Mag. Nat. Hist., VI, p. 98, 1880.
(?) *Saduria entomon* ADAMS, in White, Sunderland's Voyage Baffin's Bay, etc., Appendix, p. ccvii, 1852.
Idotœya longicauda LOCKINGTON, Proc. Calif. Acad. Sci., VII, Pt. I, p. 45, 1877.
Glyptonotus entomon MIERS, Trans. Linn. Soc. London, XVI, pp. 12, 13, pl. I, figs. 1, 2, 1883. (See MIERS for above synonymy.)—RICHARDSON, Proc. U. S. Nat. Mus., XXI, p. 843, 1899.

Localities.—St. Michael, Alaska (Dr. Ritter); Yakutat Bay, Alaska (Harriman Alaska Expedition).

IDOTEA RESECATA Stimpson.

Idotea resecata STIMPSON, Bost. Jour. Nat. Hist., VI, pp. 504, 505, pl. XXII, fig. 7, 1857; Proc. Bost. Soc. Nat. Hist., VI, p. 88, 1859.—MIERS, Jour. Linn. Soc. London, XVI, pp. 45, 46, 1883.—RICHARDSON, Proc. U. S. Nat. Mus., XXI, p. 844, 1899.

Locality.—Tomales Bay, California (Dr. Ritter and party).

IDOTEA GRACILLIMA (Dana).

Stenosoma gracillimum DANA, Proc. Acad. Nat. Sci. Phila., VII, p. 175.—STIMPSON, Bost. Jour. Nat. Hist., VI, p. 505, 1857.
Idotea gracillima MIERS, Jour. Linn. Soc. London, XVI, p. 35, 1883.—RICHARDSON, Proc. U. S. Nat. Mus., XXI, p. 844, 1899.

Locality. — California (Dana).

The description of this species given by Professor Dana is very short and rather vague. He describes the body as extremely slender and

filiform, the thoracic segments subquadrate, head quadrate. He refers to the linear post-abdomen, which is truncated at the apex, three-jointed, and marked on either side with a suture. The antennæ are described as being a little shorter than half the body, with a ten- to twelve-jointed flagellum.

No figure of the form has ever been given.

A species of *Idotea* was sent to the U. S. National Museum by Dr. Ritter. The specimens, which are eight in number, were collected by him at Bolinas, California. They are more closely allied to *I. gracillima* than to any other known species of *Idotea* from the Pacific coast of North America. Until evidence can be given of their distinctness, I shall consider them identical with *I. gracillima* (Dana).

Body slender, about seven times longer than wide,[1] with the sides nearly parallel. Surface entirely smooth. Color in alcohol uniformly pinkish. A note referring to the color of the specimens in life states that they are green, brown, and striped.

Head quadrate, with rounded antero-lateral margins, and a slight median excavation in the anterior margin. Eyes situated at the extreme lateral edge and about the middle of the head; they are small but distinct. The first pair of antennæ are four-jointed, and extend a little beyond the extremity of the second peduncular joint of the second pair of antennæ. The second pair of antennæ are equal to half the length of the body; the last two joints of the peduncle are subequal; in the smaller specimens the flagellum is composed of ten joints; in the larger ones there are eighteen joints.

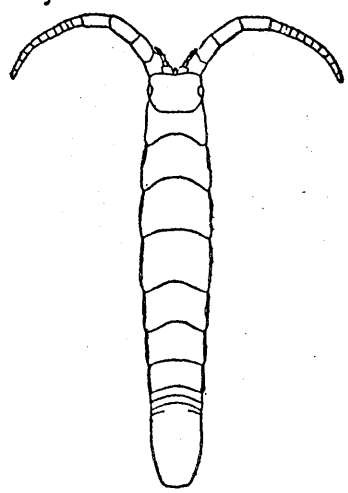

FIG. 97. *Idotea gracillima* (Dana) (× 5).

The first thoracic segment is short in the middle but is produced antero-laterally on either side; it is not wider than the head. The second, third, and fourth segments are subequal in length and are longer than the first segment. The fifth, sixth, and seventh segments gradually decrease in length. The epimera of all the segments are extremely narrow; those of the second and third segments extend but half the length of the segment; those of the fourth and fifth segments extend three fourths the length of the segment; those of the last two segments extend the entire length of the segment.

[1] The female is figured. The body is somewhat broader than in the male.

The abdomen consists of three distinct segments, with suture lines on either side of another partly coalesced segment. The third or terminal

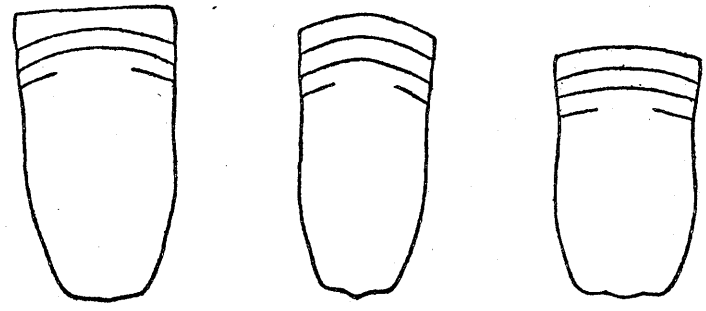

FIG. 98. *Idotea gracillima* (Dana). Abdomen, showing variations in form.

segment has subparallel sides to about the middle, where the segment gradually becomes narrower to a truncate extremity. On the posterior margin of the terminal segment is a faint indication of a double emargination on either side of an obtuse median point.

Legs small and slender and devoid of hairs.

The five small specimens and one large one agree in having the terminal segment as described above. The two larger specimens show the emargination more distinctly, one of the specimens more so than the other.

Figures showing all three variations are given.

The specimens agree in all other characters.

Dana's specimens were collected by Professor J. Le Conte on the coast of California.

IDOTEA WOSNESENSKII Brandt.

Idotea wosnesenskii BRANDT, Middendorff's Sibirische Reise, II, Pt. I, Crust., p. 146, 1851.
Idotea hirtipes DANA, U. S. Expl. Exp., Crust., XIV, Pt. II, p. 704, pl. XLVI, fig. 6, 1853.
Idotea oregonensis DANA, Proc. Acad. Nat. Sci. Phila., VII, p. 175, 1854.
Idotea wosnesenskii STIMPSON, Bost. Jour. Nat. Hist., VI, p. 504, 1857.
Idotea wosnesenskii SPENCE BATE, Lord's Naturalist in British Columbia, II, p. 281, 1866.—MIERS, Jour. Linn. Soc. London, XVI, p. 40, 1883.—RICHARDSON, Proc. U. S. Nat. Mus., XXI, p. 846, 1899.

Localities.—Dutch Harbor on Unalaska Island; Humboldt Bay on Popof Island; Yakutat; Glacier Bay; Garforth Island in Muir Inlet, and Sitka, Alaska (Harriman Expedition). Beaver Cove on Vancouver Island (Harriman Expedition). Lands End, Calif. (Dr. Ritter and party).

IDOTEA STENOPS Benedict.

Idotea stenops BENEDICT, Proc. Biol. Soc. Wash., XII, pp. 54, 55, 1898.—RICHARDSON, Proc. U. S. Nat. Mus., XXI, p. 846, 1899.

Locality not given (Dr. Ritter and party).

IDOTEA OCHOTENSIS Brandt.

Idotea ochotensis BRANDT, Middendorff's Sibirische Reise, II, Pt. I, Crust., p. 145, pl. VI, fig. 33, 1851.—MIERS, Jour. Linn. Soc. London, XVI, pp. 32–34, pl. I, figs. 8–10, 1883.—RICHARDSON, Proc. U. S. Nat. Mus., XXI, p. 846, 1899.

Localities.—Lands End and Fort Point, California (Dr. Ritter and party). Humboldt Bay on Popof Island, Alaska (Harriman Alaska Expedition).

SYNIDOTEA RITTERI sp. nov.

Type from Lands End, San Francisco, Calif.

Body ovate in outline. Color yellow, with markings of black; terminal segment almost entirely black.

Head with prominent rounded antero-lateral angulations, at base of which, and just above the eyes, is a conspicuous horn-like projection, hook-shaped, directed upward and forward, one on either side of the head. In the median excavation of the frontal margin on either side of the median line is a prominent tubercle. Between the eyes and in line with them on the posterior portion of the head are two low tubercles. The eyes are situated at the extreme lateral margins on the posterior portion of the head, and are somewhat elevated above the surface; they are black and conspicuous, and composed of many ocelli. The first pair of antennæ consist of four joints, the last joint clavate and fringed with hairs. The second pair of antennæ have a five-jointed peduncle and a flagellum composed of eight joints; the third joint of the peduncle has a prominent tubercle.

The first four segments of the thorax are longer than the last three. The lateral parts of all the segments are widely expanded, with margins well rounded. The lateral parts are not separated from the dorsal portion of the segments, but are firmly anchylosed.

FIG. 99. *a*. Head of *Synidotea ritteri* sp. nov. (× 14). *b*. Head of *Synidotea consolidata* (Stimpson) (× 14).

The abdomen consists of one segment, with suture marks, one on either side, indicative of another partly coalesced segment. The abdo-

men tapers gradually to a broadly rounded extremity, which is slightly excavate in the median line.

The seven pairs of legs are but sparingly furnished with hairs. The upper half of the opercular valve is black, the lower half yellow.

There are three longitudinal lines of low swellings on the body, one median, the other two placed one on either side of the median line.

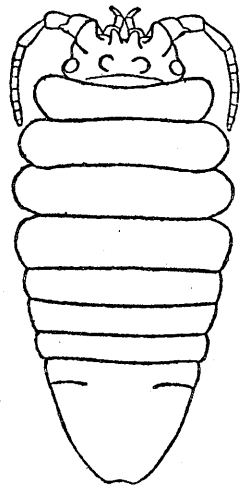

FIG. 100. *Synidotea ritteri* sp. nov. (× 10).

Only one specimen was taken at Lands End, California, by Dr. Ritter and party.

This species is closely allied to *Synidotea consolidata* (Stimpson),[1] but differs from that species in the shape and greater size of the tubercles in front of the eyes, the tubercles being hook-shaped and very prominent in *S. ritteri* and projecting far in front of the anterior margin of the head, while in *S. consolidata* they are small (Stimpson speaks of them as being minute), are not hooked, and do not project any considerable distance in front of the anterior margin of the head; in the greater size of the two median tubercles on the anterior division of the head (Stimpson does not mention these tubercles in his description, but in the specimens sent to the U. S. National Museum from Pacific Grove, California, by Mr. J. O. Snyder, and which Dr. James E. Benedict has identified with *S. consolidata* and figured in his paper on the genus *Synidotea*,[2] these tubercles are present, but very minute); in the shape of the terminal segment of the body, it being much broader, and tapering very gradually to a broadly rounded extremity, which has a slight median notch or excavation in *S. ritteri*, while in *S. consolidata* the terminal segment of the body is narrower and tapers to an extremity marked by two pronounced teeth or angulations separated by a deep median notch.

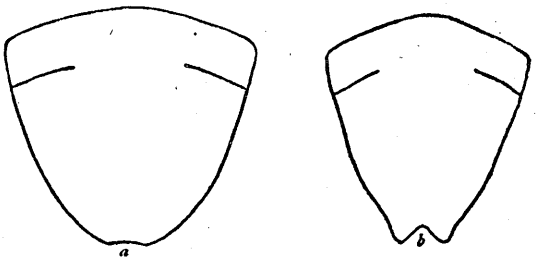

FIG. 101. *a*. Abdomen of *Synidotea ritteri* sp. nov. (× 14). *b*. Abdomen of *Synidotea consolidata* (Stimpson) (× 14).

Specimens of the same size were taken in making the above comparisons.

[1] Proc. Calif. Acad. Sci., I, p. 97, 1856; Bost. Jour. Nat. Hist., VI, p. 503, 1857.
[2] Proc. Acad. Nat. Sci. Phila., p. 393, 1897.

ASELLOTA or ASELLOIDEA.

Family *JANIRIDÆ*.

JANIROPSIS KINCAIDI sp. nov.

Type from Yakutat Bay, Alaska.

Color of body light brown, profusely and densely covered with black markings.

Head wider than long; frontal margin nearly straight, with lateral angles rounded. Eyes large, black, situated some little distance from the lateral margin. First pair of antennæ short; flagellum consisting of only eight joints in the female, of ten in the male. Second pair of antennæ lost in all the specimens. Maxillipeds with palp consisting of five joints, the first three of which are very much dilated.

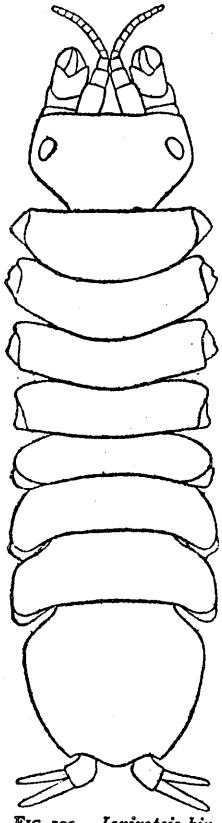

FIG. 102. *Janiropsis kincaidi* sp. nov. (× 27).

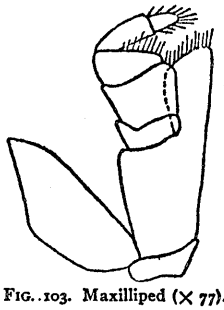

FIG. 103. Maxilliped (× 77).

First segment of thorax with lateral margins straight; epimera rather bilobed, and occupying most of the lateral margin of the segment. Second, third, fourth, and fifth segments with antero-lateral angles produced into rounded lobes. Epimera of second and third segments situated about the middle of the lateral margin; those of the fourth and fifth segments occupying more of a posterior position on the lateral margin. Epimera of the last two segments situated at the post-lateral angles of the segments.

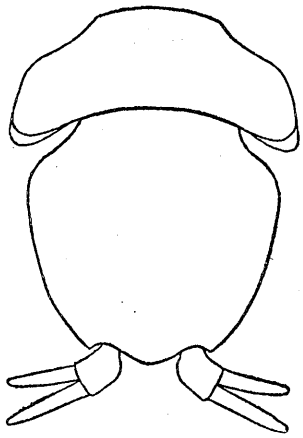

FIG. 104. Last thoracic segment, abdomen, and uropoda (× 41).

Abdomen broad, gradually becoming somewhat narrower toward the posterior extremity. Posterior margin produced in three lobes, two lateral lobes, one on either side of a broadly rounded median lobe; the two lateral

lobes are acute. The uropoda are short, not longer than half the length of the terminal segment of the body; the basal segment is broad, quadrate in shape, and shorter than either branch; the inner branch is somewhat longer than the outer one. The middle piece of the operculum in the male is very similar to the figure given by Sars[1] of the type species of the genus, *Janiropsis breviremus*. It is produced and greatly dilated at the distal extremity.

FIG. 105. Uropod (× 77).

Nine specimens were obtained by the Harriman Expedition at Yakutat, Alaska. They were collected by T. Kincaid, after whom the species is named. Five females and four males were collected. The legs of the first pair in the male are not greatly longer than the others; they are longer in the type species of *Janiropsis*.

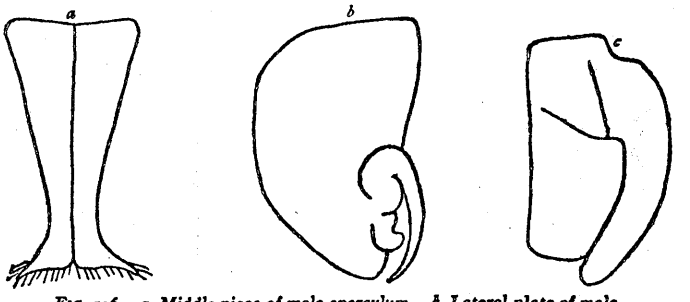

FIG. 106. *a*. Middle piece of male operculum. *b*. Lateral plate of male operculum. *c*. Second pleopod of male. (All × 55).

The very short superior antennæ with few articulations, the greatly dilated joints of the maxillipeds, the form and shape of the middle piece of the male operculum, with its dilated tip, and the shortness of the uropoda, which are only half the length of the terminal segment of the body, are characters which undoubtedly place this species with *Janiropsis* Sars.

Type in the U. S. Nat. Museum, Cat. No. 28,717.

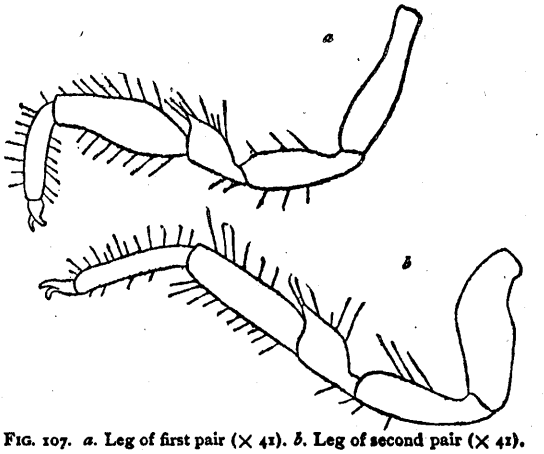

FIG. 107. *a*. Leg of first pair (× 41). *b*. Leg of second pair (× 41).

[1] Crustacea of Norway, II, p. 102, 1899.

JANIROPSIS CALIFORNICA sp. nov.

Type from Sausalito, California.

Body narrow, elongate; surface smooth; color uniformly whitish.

Head with a prominent rounded median lobe on the anterior margin; lateral angulations rounded; lateral margins straight and converging toward the base. Eyes black, distinct, but small and simple in structure. First pair of antennæ are composed of six joints and extend nearly to the middle of the fifth joint of the peduncle of the second pair of antennæ. Second pair of antennæ are about equal to one third the length of the body; the flagellum is composed of nineteen or twenty joints.

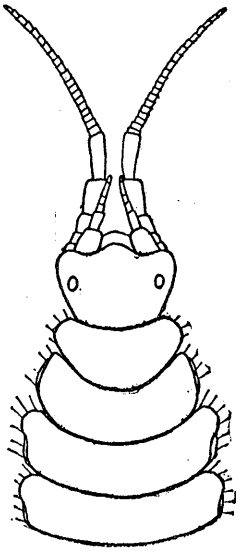

FIG. 108. *Janiropsis californica* sp. nov. Anterior part of body (× 41).

The first thoracic segment is but little wider than the head; the margins are entire, lateral lobes rounded. The second segment has the lateral margin straight, with the epimeron showing slightly along the edge. The third and fourth segments have the antero-lateral lobe rounded, the posterior margin straight, with the epimeron showing as a rounded lobe. The fifth, sixth, and seventh segments have rounded lateral margins, with epimera showing on the posterior part of the segments.

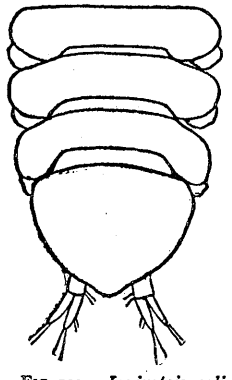

FIG. 109. *Janiropsis californica* sp. nov. Terminal part of body (× 41).

Terminal segment rounded posteriorly with smooth margins, and a median lobe between the uropoda.

Uropoda very short, about half as long as the terminal segment. Branches about equal in length and twice as long as the peduncle.

Legs simple, ambulatory, similar in shape and size and bi-unguiculate.

Only two good specimens, both females, were taken at Sausalito, California, by Dr. Ritter and party. Two imperfect specimens also are from the same locality.

Until now the only other known species of this genus was *Janiropsis breviremus* Sars.[1] As that author has pointed out, this genus differs from *Janira*, to which it is very closely related, in the much shorter uropoda;

[1] Crustacea of Norway, II, p. 98, 1899.

in the shorter second pair of antennæ; in the structure of the first pair of antennæ, which have the flagellum composed of only a restricted number of articulations; in the structure of the first pair of legs in the male, these being "remarkably developed, prehensile, much longer than any of the other pairs, with the carpal joint fusiformly dilated"; in the female, however, this pair does not differ from the other legs, all being ambulatory in character.

JANIRA OCCIDENTALIS Walker.

Janira occidentalis WALKER, Trans. Liverpool Biol. Soc., XII, pp. 280, 281, pl. XV, figs. 7–10, 1898.—RICHARDSON, Proc. U. S. Nat. Mus., XXI, p. 859, 1899.

Locality.—Puget Sound (Harriman Alaska Expedition).

Family *ASELLIDÆ.*

ASELLUS TOMALENSIS Harford.

Asellus tomalensis HARFORD, Proc. Calif. Acad. Sci., VII, pp. 54, 55, 1877.

Locality.—Tomales Bay, California (Harford).

The description of this form is given in the following concise manner: "Head a little transverse, narrower than the body. Upper antenna not reaching to the extremity of the peduncle of the lower. Flagellum of lower antennæ longer than its peduncle. Body narrow in front, gradually increasing in width towards the tail. Peduncle of caudal appendages more than half the length of the terminal filaments. Length $\frac{6}{20}$ inch."

The description is from a single specimen.

Eight specimens of a species of *Asellus* were collected by the Harriman Alaska Expedition at Lake Washington, Seattle. I have referred them to the above species, being unwilling to describe a new species of *Asellus* from a locality so close to that from which *A. tomalensis* was found, when so little is known about *A. tomalensis.* Some of the specimens were sent to Dr. William E. Ritter for comparison with the type and only specimen of *A. tomalensis* in the collection of the California Academy of Sciences. The result of his comparison is given in the following quotation from his letter: "About the only difference that I am able to make out is in the fact that the inner ramus of the sixth pleopods (uropods ?) of *A. tomalensis* is about half as long as the exopodite, and that neither is armed with a tuft of hairs at the tip. This is the case with the one appendage present, but its mate is gone. It is possible that the hair-tuft may have been broken off, but the tips of the rami themselves are perfectly smooth. They show no evidence of having lost anything. The fact, however,

that the general hairiness of the Academy specimen is about the same as that of your specimen makes me suspicious that the tuft referred to has been removed. The antennæ and antennules differ in no essential respect, so far as I can see. The chelipeds of the type specimen I am, unfortunately, unable to find."

Description.—Body narrow, elongate, gradually widening somewhat from the anterior to the posterior extremity.

Head but little narrower than the first thoracic segment and about twice as wide as long; frontal margin slightly excavate and without median process between the antennæ; lateral margins straight, with a small lobe on either side near the base of the head. Eyes lateral, situated in the median transverse line. First pair of antennæ reach the extremity of the peduncle of the second pair of antennæ; flagellum contains about ten joints. Second pair of antennæ are about two thirds the length of the body; the flagellum consists of about 55 joints.

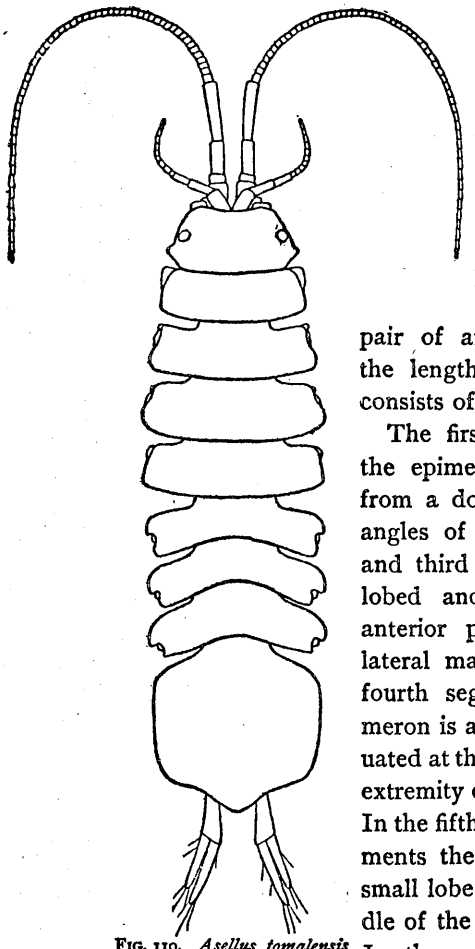

FIG. 110. *Asellus tomalensis* Harford (× 14).

The first segment of the thorax has the epimeral lobes distinct and visible from a dorsal view at the antero-lateral angles of the segment. In the second and third segments the epimera are bilobed and occupy the anterior portion of the lateral margins. In the fourth segment the epimeron is a small lobe situated at the antero-lateral extremity of the segment. In the fifth and sixth segments the epimeron is a small lobe about the middle of the lateral margin. In the seventh segment it has more of a posterior position on the lateral margin.

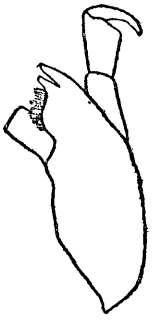

FIG. 111. Mandible of *Asellus tomalensis* Harford.

The abdomen is broad, with the sides nearly parallel. Posteriorly it is

produced in the center in a large triangularly shaped lobe with rounded apex. The uropoda are slender appendages; the peduncle is somewhat shorter than the branches. The inner branch is about a fifth longer than the outer branch. The margins of all the segments, the uropods, and the legs are fringed with hairs.

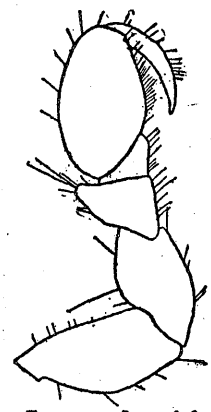

FIG. 112. Leg of first pair of *Asellus tomalensis* Harford (× 28).

The legs of the first pair are cheliform; the propodus is elliptical in outline, with the inferior margin straight. The other legs are similar and ambulatory in character.

The color of the species is a light brown, somewhat mottled.

Family *MUNNIDÆ*.

MUNNA sp.

A very much mutilated specimen of a species of *Munna* was taken by the Harriman Alaska Expedition at the Pribilof Islands. The Munnidæ have not heretofore had any representatives from the Pacific coast. Although it is very probable that the present specimen is the type of a new species, it is not, however, in a sufficiently complete condition to warrant a description.

ONISCOIDEA.

Family *LIGIIDÆ*.

LIGIA OCCIDENTALIS Dana.

Ligia occidentalis DANA, U. S. Expl. Exp., Crust., XIV, Pt. II, p. 742, pl. XLIX, fig. 7; Proc. Acad. Nat. Sci. Phila., VII, p. 176.—STIMPSON, Bost. Jour. Nat. Hist., VI, p. 506, 1857.—HARFORD, Proc. Calif. Acad. Sci., VII, p. 116, 1877.—BUDDE-LUND, Crust. Isop. Terrestria, p. 264, 1885.—RICHARDSON, Proc. U. S. Nat. Mus., XXI, p. 866, 1899.

Localities.—Sausalito, California, and San Bartolomé Bay, Lower California (Dr. Ritter and party).

LIGIA PALLASII Brandt.

Ligia pallasii BRANDT, Bull. Soc. Impér. des Natur. de Moscou, VI, p. 172, 1833.
Ligia dilatala STIMPSON, Bost. Jour. Nat. Hist., p. 507, pl. XXII, fig. 8, 1857.—S. I. SMITH, Rept. Prog. Geol. Survey Canada, 1878–79.
Ligia septentrionalis LOCKINGTON, Proc. Calif. Acad. Sci., VII, Pt. I, p. 46, 1877.
Ligia stimpsoni MIERS, Proc. Zool. Soc. London, p. 671 (see footnote), 1877.
Ligia pallasii BUDDE-LUND, Crust. Isop. Terrestria, pp. 261, 262, 1885.

Locality.—Lowe Inlet, British Columbia (Harriman Alaska Expedition).

Family *TRICHONISCIDÆ.*

TRICHONISCUS PAPILLICORNIS sp. nov.

Type from Seldovia, Cook Inlet, Alaska.

Body covered with low tubercles. Color light brown.

Head with sides produced at the antero-lateral angles in large lobes; front triangularly produced with a slight emargination at the apex of the triangle. Eyes situated on the lateral margins at the base of the antero-lateral lobes; they are small and black and apparently simple in structure. The peduncle of the antennæ consists of five stout joints, the last three of which have the inner margins beset with numerous strong tubercular-like papillæ, each surmounted with a tuft of short stiff hairs or bristles; the fifth joint is also produced at the outer distal angle in an acute process. The flagellum is composed of about seven joints, the joints being rather indistinctly defined; the last joint is tipped with a bunch of hairs. The buccal mass is very prominent below.

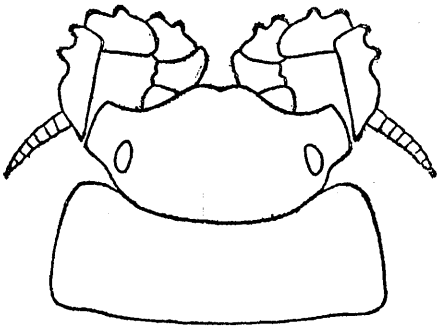

FIG. 113. Head and first thoracic segment of *Trichoniscus papillicornis* (× 41).

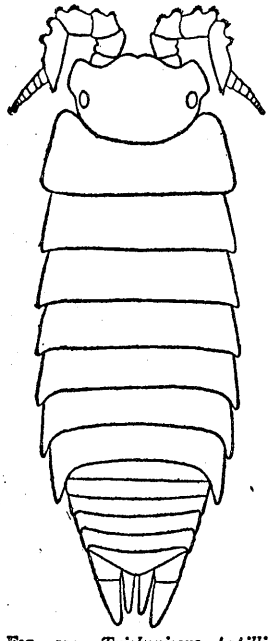

FIG. 114. *Trichoniscus papillicornis* sp. nov. (× 23).

The segments of the thorax are about equal in length. The post-lateral angles of all the segments, except the first, are produced backward, very slightly in the case of the second, third, and fourth, but becoming gradually more so, until the last two segments show this character very markedly.

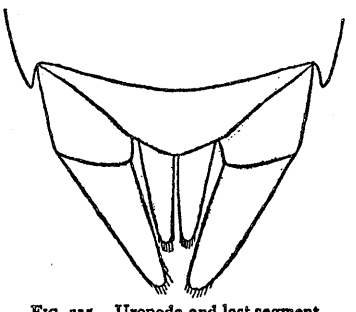

FIG. 115. Uropoda and last segment of abdomen (× 77).

The abdomen is narrower than the thorax. All the segments are visible in entirety, not being covered laterally by the last thoracic seg-

ment. The terminal segment is triangularly produced, with the apex somewhat rounded. The uropoda are short, styliform; the outer branch is the stouter and extends a little beyond the extremity of the inner branch. Both branches are tipped with a few hairs.

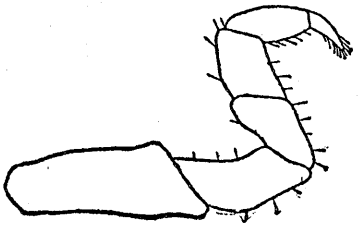

FIG. 116. Leg of first pair (× 23).

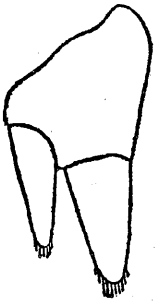

FIG. 117. Uropod of left side (× 77).

Only a single specimen was obtained by the Harriman Alaska Expedition. It was found on the beach at Seldovia, Cook Inlet.

The type is in the U. S. National Museum, Cat. No. 28,772.

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