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The Isopod Crustacea of the Hawaiian Islands, II. Asellota

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INTRODUCTION

The superfamily Asellota (Aselloidea) of the crustacean order Isopoda is represented in Hawaiian waters by four new species, belonging to four genera and to three families. This article is my second in a monographic series on the Hawaiian Isopod Crustacea published by Bernice P. Bishop Museum. The first article (7)[1] deals with the superfamilies Chelifera and Valvifera and includes a key to the six superfamilies of the Isopoda represented in the Hawaiian islands.

Little taxonomic work has previously been done on the Isopoda of Hawaii and practically none on the Asellota. The only reference to this superfamily in Hawaii is by Edmondson (4), who mentions a small, unidentified asellid taken among sponges in Pearl Harbor, Oahu.

Asellote isopods are fairly abundant among the algae but infrequent among the corals of the reefs and shores. None of the specimens thus far collected exceeds 4 mm. in length. Because they are so small and difficult to collect, they have generally been overlooked. Most of the specimens were taken from various shore localities around the island of Oahu, but collections were also made along the shores of Kauai, Molokai, Lanai, Maui, and Hawaii. Although rather extensive collections have been made and large numbers of specimens have been taken from varied localities, only four species of this group have thus far been found. As a whole, the Asellota is a fairly large and diversified group with a large proportion of the known species recorded

[1] Numbers in parentheses refer to Literature Cited, p. 320.

from the temperate and frigid zones. These regions have been more intensively studied than the tropics.

I wish again to express my thanks to Dr. C. H. Edmondson for the Hawaiian isopods which he has collected and turned over to me. I am also grateful to Bishop Museum for facilitating this work in numerous ways.

The holotypes of all new species herein described have been deposited in Bishop Museum.

Illustrations in this paper are camera lucida drawings.

Superfamily Asellota (Aselloidea)

Richardson (11) gives the following description of this group:

> Legs of the first pair not cheliform. Uropoda terminal, biramous. Pleopoda exclusively branchial, the first pair in the female generally transformed into a single operculum covering the succeeding pairs. Epimera very small or obsolete. All the segments of the abdomen fused together, although occasionally one or two short segments are partially visible anterior to the terminal segment.
>
> Pleopoda in female reduced in number, only four pairs being present.

G. O. Sars (15) divides the Asellota into five families, Asellidae, Janiridae, Munnidae, Desmosomidae and Munnopsidae. Almost entirely on the basis of pleopod structure, Hansen (5) divides the Asellota into but three families. He retains the Asellidae, adds a new family, Stenetriidae, and lumps the remaining Asellota into the family Parasellidae. He then subdivides the Parasellidae into groups, some of which correspond to the families of Sars; for example, the groups Janirini, Munnini and Desmosomatini are equivalent to Janiridae, Munnidae and Desmosomidae, respectively. Other groups, such as the Ilyarachnini and Eurycopini, are monogeneric. Nordenstam (10) follows Hansen's system but he splits off the genus *Jaeropsis* from the Janirini forming a new group, the Jaeropsini; and he subdivides Hansen's group Munnini into four new subgroups. Richardson (11) accepts the family Stenetriidae but rightly criticizes Hansen's scheme of basing the classification only on the structure of the pleopoda. She says, "Although the structure of the pleopoda in this group forms excellent characters for a basis of classification, other characters must not be wholly disregarded, nor must all other characters be made subservient to this character alone. The Munnidae, Janiridae and Munnopsidae form distinct groups which differ in structures quite as essential as those recognized in other families of the order." In accord with

Richardson's criticism, I might add that the result of the creation of the Parasellidae with its numerous group and subgroup names as described above has been to make the system of classification unnecessarily complicated and cumbersome. For the reasons given, I shall not use Hansen's Parasellidae in this paper.

Three families of the Asellota are represented in Hawaiian waters, Stenetriidae, Munnidae, and Janiridae. As mentioned above, these families are separated from each other in the main, but not entirely, by characters exhibited by the abdominal appendages or pleopods. As in the Isopoda generally, the anterior two pairs of pleopods differ in the two sexes. The endopod or inner branch of the second pair of pleopods in the male is modified to form a geniculate, styliform copulatory organ. The second pair of pleopods is absent in the female. The first pair of pleopods is also sexually dimorphic but the third, fourth, and fifth pairs are similar in the two sexes. The diagnostic features of these appendages are given for both sexes in the following key along with other characters not limited to one sex.

Key to the Hawaiian Asellota

(Adapted from Richardson, 1905)

1. First pair of pleopoda in the male not coupled with second pair; the peduncles short and fused together. Second pair small and situated behind the first pair. First pair in female small. Third pair in both sexes forming a compound operculum. Eyes crescentic. (Family Stenetriidae)..... **Stenetrium medipacificum,** n. sp.

1a. First pair of pleopoda in the male coupled with second pair, the peduncles elongate and not fused to each other but each more or less fused with the distal branch. Second pair in the male large, the peduncles situated lateral to and coupled with the first pair forming a large operculum. First pair in female large and operculate. Third pair in both sexes not forming an operculum. Eyes round or oval ..... 2.

2. Last three segments of thorax progressively narrower than fourth, the last segment markedly so. Pleotelson small, subpyriform, more or less vaulted above. Eyes placed on lateral peduncle-like projections of head. (Family Munnidae)..... **Munna acarina,** n. sp.

2a. Last three segments of thorax not markedly narrower than fourth. Pleotelson large, shieldlike. Eyes not placed on projections of head. (Family Janiridae) ..... 3.

3. Second pair of antennae short, with articles of peduncle dilated; flagellum rudimentary. Uropods short, branches rudimentary, occupying notches on each side of tip of abdomen..... **Jaeropsis hawaiiensis,** n. sp.

3a. Second pair of antennae well developed, with multiarticulate flagellum. Uropoda well developed, biramous..... **Janira algicola,** n. sp.

An easily recognized distinction separating *Stenetrium* and *Janira* from *Munna* and *Jaeropsis* is the fact that in the former two the uropods are well developed, while in the latter two the uropods are rudimentary, more or less nodiform and unbranched. Since the loosely articulated uropods of *Stenetrium* and *Janira* are frequently broken off, and since this distinction is not as fundamental as the morphology of the pleopods, the character was not incorporated in the key.

STENETRIIDAE

Richardson (11) describes this family as follows:

Eyes present, large, sub-dorsal. Body depressed, elongate.

First pair of antennae with flagellum composed of several articles. Second pair of antennae with multiarticulate flagellum.

Mandibles with palp.

Lateral margins of thorax but little produced, not laciniate. First pair of legs in both sexes subcheliform; following pairs ambulatory, with dactylus bi-unguiculate.

Scale present outside of third joint of peduncle of second antennae.

First pair of pleopoda in female with appendages fused to form a small operculum. Second pair wanting. Third pair with the outer branches large, and forming, with the corresponding lamella of the opposite side, a sort of operculum. Fourth pair with two branches. Fifth pair consisting of a single branch.

First pair of pleopoda in male small, with the peduncles fused; branches single. Second pair situated below and not coupled with the first pair; branches attached to the distal part of the inner margin of the peduncle; inner branch geniculate, with distal joint narrow and without cavity in its obtuse end; outer branch very short, much shorter than inner one, and unjointed. Third, fourth, and fifth pairs similar to those of female.

Genus **STENETRIUM** Haswell

Only genus in the family, with characters of family.

Stenetrium medipacificum, new species (fig. 1).

Holotype female. Body four times longer than wide, 3.6 mm. by 0.9 mm. Color (in alcohol) yellowish brown. Extensive transverse bands and areas of black chromatophores on dorsal side of body (faded in type specimen). Lateral margins of body roughly parallel and beset with long setae.

Head with frontal margin between the bases of the first antennae slightly produced to form a broad but truncate rostrum. Lateral to rostrum on each side is a roundly triangulate process. Anterolateral angles of head produced in a small acute process. Eyes subdorsal, crescentic, each composed of about twenty ocelli.

First antennae short, with a triarticulate peduncle and a flagellum of six articles. First joint of peduncle slightly longer and broader than distal two; third joint as long as second but narrower. Basal joint of peduncle of second antenna without a distolateral process or tooth. A small rodlike scale attached

to distolateral part of third peduncular joint. Flagellum of second antenna multiarticulate, extending the entire length of the body.

Mandible well developed, with three-jointed palp, tridentate incisive process subtended by a tridentate lacinia mobilis and a brush of setae, and a strong molar process. Inner lamina of first maxilla tipped with three plumose setae; outer lamina with about ten stout setae the more median of which are irregularly knobbed. Second maxilla with the usual three distal branches tipped with setae. Maxilliped with palp of five articles the basal three of which are slightly expanded. Epipod acuminate, three times longer than greatest width.

Thoracic segments subequal. Anterolateral angles of first thoracic segment acutely produced forward along sides of head. Anterolateral angles of the second, third, and to a lesser extent the fourth segment also acutely produced in a pointed process. Epimera visible dorsally on last four segments. Epimera of fourth segment occupy a slight excavation in the middle of the lateral borders of that segment, those of the fifth, sixth, and seventh segments posterolaterally situated.

First leg shortest, subchelate, with broadly expanded hand (propodus). The straight distal or palmar margin of hand bears a row of six blunt denticles terminated by a digital spine. The clawlike finger (dactylus plus ungulus) when closed extends to digital spine. Margins of distal segments of leg fringed with setae. Second to seventh leg progressively longer with biunguiculate claw. In the only male of this species collected, the legs are essentially similar to those of the female except the first. First leg in male slightly narrower than in female, the tip of finger extending slightly beyond digital spine when flexed, denticulations on palmar margin fewer and more triangulate than in female, and distal projections of merus and ischium more pronounced. These differences between the first legs of male and female are slight when compared to the marked sexual dimorphism exhibited by this appendage in other species of the genus, particularly with respect to the propodus. In many such cases, however, the first leg of immature males is reported to be similar to that of the female. Possibly the male here described is immature and more extreme differences would be shown in the first leg of a mature male.

Pleotelson shieldlike, about as broad as long, with a single small tooth at the notch on the lateral margin on each side. Pleopoda as figured (fig. 1, *k-p*) and as described for the family Stenetriidae. Uropod a little more than half as long as abdomen, its outer branch three fourths as long as the inner.

Oahu: Pearl Harbor, Nov. 8, 1929, C. H. Edmondson. Waikiki, Jan., 1932, Edmondson. Hanauma Bay (type locality), Dec. 26, 1929, Edmondson; Nov. 19, 1939, M. A. Miller.

Maui: Hanamanioa, Feb. 8, 1940, Miller.

Twenty-four species of the genus *Stenetrium* have previously been described. This total does not include *S. inerme* Haswell which has been transferred to the genus *Notasellus* Pfeffer by Stebbing (16), nor *S. mediterraneum* Hansen which Richardson (13) relegates to the synonymy of *S. longicornis* (Lucas). Of the species described,

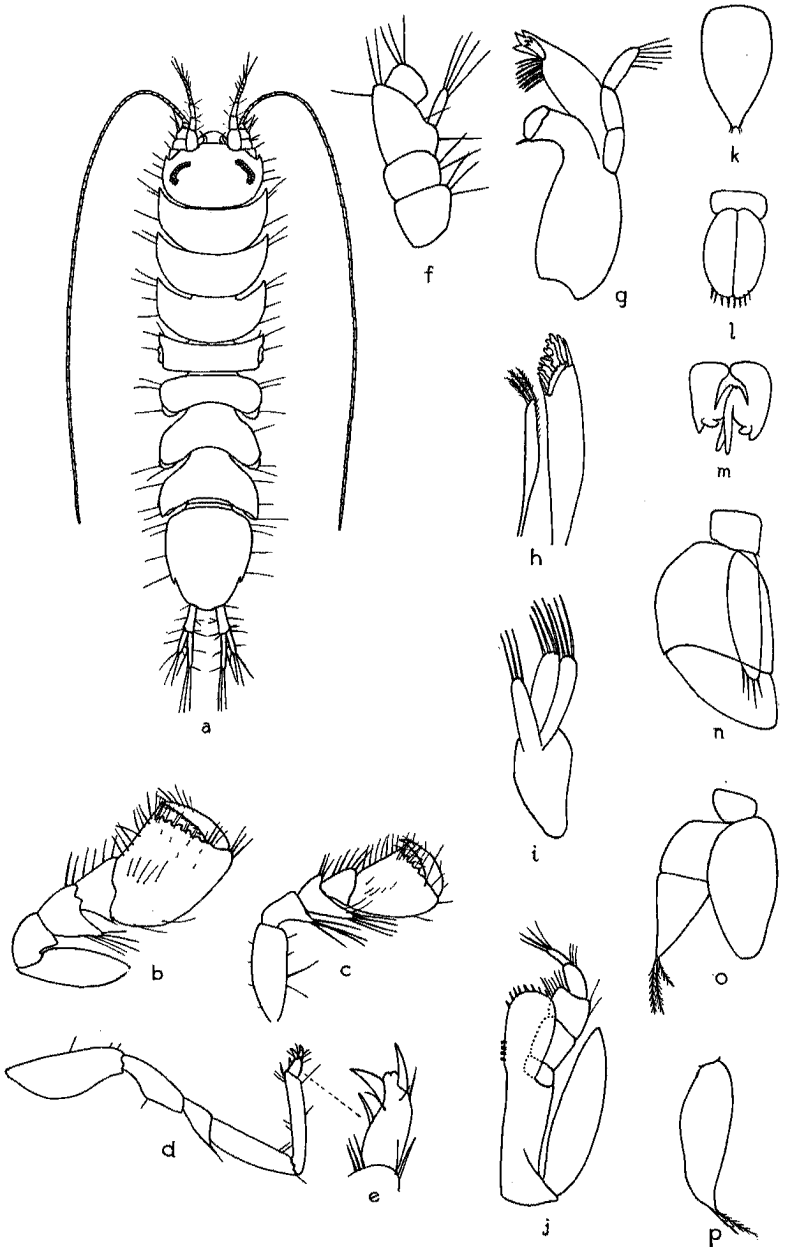

FIGURE 1.—*Stenetrium medipacificum*, n. sp.: **a**, female dorsal view; **b**, first leg of female; **c**, first leg of male; **d**, seventh leg of female; **e**, distal end of seventh leg; **f**, peduncle of second antenna; **g**, mandible; **h**, first maxilla; **i**, second maxilla; **j**, maxilliped; **k**, first pleopod of female; **l**, first pair of pleopoda of male; **m**, second pair of pleopoda of male; **n**, third pleopod of female; **o**, fourth pleopod of male; **p**, fifth pleopod of male.

only four are recorded from the Pacific area. Three of these were described by Nobili (8, 9) from the Tuamotu Islands as follows: *S. hanseni* from the lagoon of Fakahina, *S. euchirum* from Tearia and Gatavake, and *S. proximum* from Vahitahi. The fourth Pacific species is *S. fractum* Chilton (3) described from New Zealand.

Stenetrium proximum and *S. fractum* can easily be distinguished from our new species, *S. medipacificum,* and the other above-named Pacific species by the fact that they each bear a spinous process on the outer distal angle of the basal article of the second antenna. *S. medipacificum, S. hanseni,* and *S. euchirum* belong in section B a β of Hansen's key (5), since they lack a spinous process or tooth on the basal joint of the second antenna, since the anterolateral angles of the head are acute, and since they have but a single tooth on the lateral margin of the pleotelson. These three related species are clearly distinguished from each other, however, by the form of their gnathopods and in other minor respects. Our *S. medipacificum* is more like *S. euchirum* than *S. hanseni.*

MUNNIDAE

Richardson (11) gives the following account of this family:

Body ovate, short and stout, with the three posterior segments of the thorax sharply marked off from the four anterior ones and much smaller, and gradually becoming narrower. Terminal segment of body vaulted above, sub-pyriform.

Eyes, when present, placed on the tips of lateral peduncle-like projections of the head. First pair of antennae placed widely apart, with flagellum multi-articulate. Second pair of antennae without scale.

First pair of legs much shorter than the following pairs and prehensile. Succeeding pairs more or less rapidly increasing in length, simple, ambulatory. Uropoda small, somewhat separated.

Pleopoda as in the *Janiridae.*

Genus **MUNNA** Krøyer

Richardson (11) provides the following description of this genus:

Body sub-pyriform, vaulted, with the last three segments of the thorax very small. Terminal segment of body narrow, sub-pyriform.

First pair of antennae short. Second antennae very much elongated, with the last two articles of the peduncle long and slender.

First pair of legs subcheliform, comparatively small in female, but well developed in male. Last six pairs of legs ambulatory and rapidly increasing in length. Dactylus bi-unguiculate.

Uropoda small, simple.

Munna acarina, new species (fig. 2).

Holotype ovigerous female. Body minute, about half as broad as long, 0.85 mm. by 0.4 mm. Shape roughly ovoid tapering anteriorly and posteriorly from fourth thoracic segment. Color (in alcohol) yellowish brown, white in life.

Head produced anteriorly into a broad, blunt rostrum and laterally into pedunculate processes bearing the eyes. First antenna short with two-jointed peduncle. Flagellum composed of three articles, two short proximal ones and an elongated distal one bearing a long rodlike seta at its tip. Second antenna as long as body, with a four-jointed peduncle and flagellum composed of nine subequal articles.

Mouthparts as shown in figure 2, *h-k*. Incisive process of mandible and lacinia mobilis beneath it each possess four blunt teeth. The expanded condition of the epipod of the maxilliped is correlated with the presence of embryos in the brood pouch as it is narrower in males and non-ovigerous females.

Lateral margins of thorax arcuate contributing to the oval outline of body. Fourth segment widest. First four segments of thorax with posterior margins nearly straight as compared to last three whose lateral parts are sharply produced posteriorly. First pair of legs much the shortest, the succeeding pairs slender, becoming progressively longer to seventh. Seventh leg as long as body and a little less than three times as long as first leg.

Abdomen small, sub-pyriform, and strongly convex or vaulted. Lateral margins smooth, without spines or setae. Uropoda rudimentary, barely visible as knoblike projections from the posterolateral margins of abdomen. First pleopoda of female united to form a single shieldlike operculum covering the remaining pleopods. First and second pleopods in male coupled to form a compound operculum. The peduncles of the second pair attached lateral to and coupled with peduncles of first pair. First pleopods in male with peduncles elongate and fused with distal branch. Inner branch (endopod) of second pleopod attached to inner margin of peduncle, geniculate and terminating in a blunt point just posterior to tip of first pleopoda.

Oahu: Kawela Bay (type locality), July 23, 24, 1938, Miller. Hanauma Bay, Aug. 25, 1938, Miller. Black Point, Feb. 20, 1939, Miller. Kaneohe Bay, Jan. 3, 1940, Miller.

Twenty-six species of the genus *Munna* have previously been described. A perusal of the available descriptions indicates several convenient characters which might serve for separating species or groups of species within the genus. Among these are the following: presence or absence of fixed spines on the lateral margins of the pleotelson, smooth or serrated apical plates on the pleotelson, presence or absence of a denticle in front of the eye, spiny or smooth body, and presence or absence of eyes. Our species, *M. acarina,* would belong in the group characterized by lack of spines and serrated apical lamellae on the pleotelson, by lack of a preocular denticle, by smooth body and presence of eyes. Within this group it most closely resembles *M. nana* Nordenstam and *M. limicola* G. O. Sars. From the former it differs in pos-

sessing narrower eye peduncles and no coxal plates visible from the dorsal side. It differs from *M. limicola* in that its distal two peduncular segments of the antennae are much shorter, it lacks scattered stout bristles on the lateral margins of the pleotelson, and its eyes are smaller and are placed on shorter ocular peduncles.

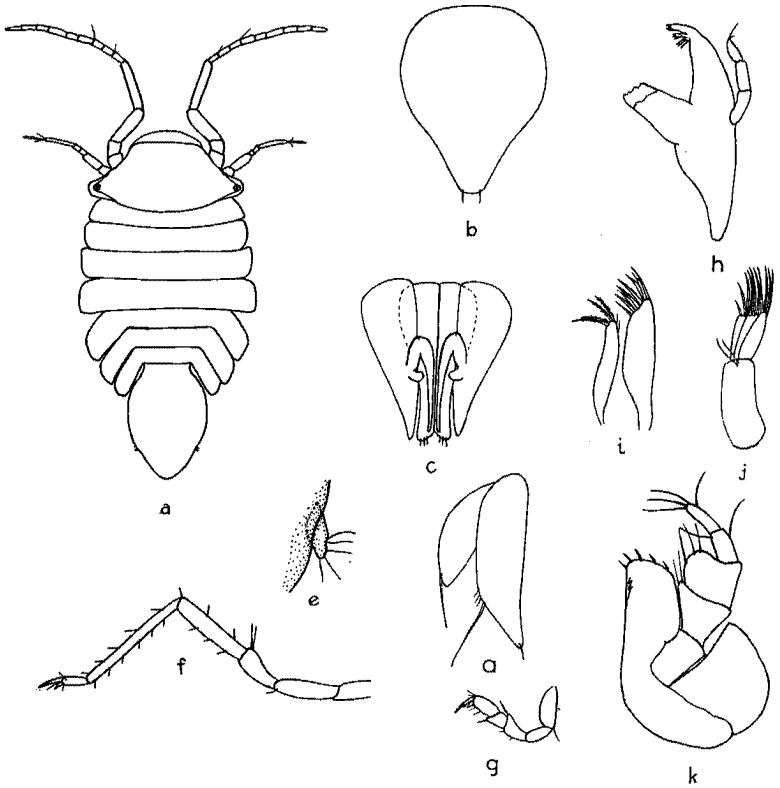

FIGURE 2.—*Munna acarina,* n. sp.: **a,** female, dorsal view; **b,** first pleopoda of female; **c,** first and second pleopoda of male, posterior view; **d,** third pleopod of male; **e,** uropod of female; **f,** seventh leg; **g,** first leg; **h,** mandible; **i,** first maxilla; **j,** second maxilla; **k,** maxilliped.

JANIRIDAE

The characteristics of this family as given by Richardson (11) are:

Lateral parts of head lamellarly expanded. Eyes, when present, usually subdorsal. First pair of antennae sometimes well developed with multiarticulate flagellum, sometimes small with rudimentary flagellum. Second

antennae generally with small scale outside of third joint of peduncle; peduncle composed of six articles.

First pair of legs sometimes prehensile, sometimes not differing from the six following pairs, which are ambulatory; dactylus generally bi- or tri-unguiculate.

First pair of pleopoda in female transformed into a single large opercular plate, undivided; second pair wanting; outer lamellae of two succeeding pairs, third and fourth pleopoda, narrow and confluent with basal part; both branches well developed; fifth pair with only a single branch.

First pair of pleopoda in male coupled with the second pair and forming a sort of compound operculum. The peduncles of the first pleopoda are fused, are very long, with immovable single branches. Second pair with the distal joint of the peduncle situated outside of and coupled with the first pair of pleopods; the branches are attached to the inner margin of the peduncle; the inner branch is geniculate, two-jointed, the distal joint containing a cavity and being produced to a point; the outer branch is very short, two-jointed, and hook-shaped. The third, fourth, and fifth pairs of pleopoda are similar to those of the female.

Genus **JAEROPSIS** Koehler

Richardson (11) characterizes the genus *Jaeropsis* as follows:

Eyes present. Both pairs of antennae extremely small; flagellum of first pair obsolete; flagellum of second pair rudimentary. Articles of peduncle of second antennae dilated. Epignath of maxillipeds narrow, produced to a tapering extremity. Apex of mandibles produced in five teeth.

Segments of thorax separated at the sides, not forming an unbroken continuous lateral line.

Legs simple, similar in structure; dactylus bi-unguiculate.

Uropoda short, extremely small.

Jaeropsis hawaiiensis, new species (fig. 3).

Holotype male. Body four times longer than wide, 1.6 mm. by 0.4 mm. Shape rectilinear but rounded at both ends. Color white or very light brown with anterodorsal half of head black due to dense aggregation of chromatophores. Also a sparse scattering of black chromatophores on dorsal parts of thorax and abdomen. In one specimen from Kawela Bay, the head and first four thoracic segments are black. Other specimens from Kawela Bay and from different localities colored as in type. Some specimens, long preserved in alcohol, are a uniform brown, possibly faded.

Head relatively large. Front produced into two triangular processes. A lobe fills in the excavation between the two triangular processes in such a way that the front of the head appears to be produced in a large, rounded, median rostrum. Anterolateral angles of head acutely produced. Eyes dorsal but near lateral margins of head. Both pairs of antennae short and with rudimentary flagella. The second or inferior pair of antennae about a third longer than first but less than length of head.

Incisive process of mandible with five teeth; lacinia obsolete but a row of nine spines subtends incisive process. Molar process also absent. Mandibular palp triarticulate. Inner lamina of first maxilla with three setae, outer with six stout serrate setae and a few smooth ones. Second maxilla with

three distal branches tipped with setae, the inner branch half the length of outer two. Maxilliped bears palp of five articles counting a small terminal knob as an article. Epignath tapering, narrow and relatively short.

Segments of thorax more or less similar. Anterolateral parts of first three slightly bent forward, those of the last three slightly bent backward. Lateral parts of segments separated by deep incisions giving thorax a loosely articulated aspect. No indication of epimera. All legs similar, biunguiculate, the last leg only slightly longer than first.

Pleotelson shieldlike, a fourth wider than long, broadly rounded. Posterior margin deeply notched on each side of an acute median terminal projection for reception of uropods. The nodiform, unbranched uropods do not extend beyond tip of median projection. Pleopoda as described for family Janiridae (fig. 3, *f-i*).

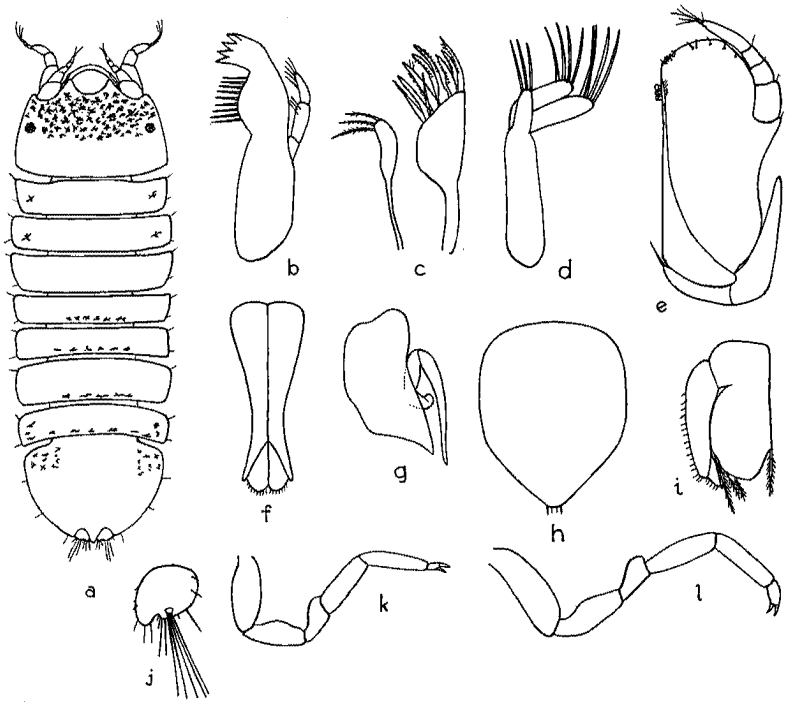

FIGURE 3.—*Jaeropsis hawaiiensis*, n. sp.: **a**, male, dorsal view; **b**, mandible; **c**, first maxilla; **d**, second maxilla; **e**, maxilliped; **f**, first pair of pleopoda of male; **g**, second pleopod of male; **h**, first pleopod of female; **i**, third pleopod of female; **j**, uropod; **k**, first leg; **l**, second leg.

Kauai: Nawiliwili, April 13, 1941, Henry Kawasaki.

Oahu: Pearl Harbor, 1927, T. Dranga. Waikiki, Jan., 1932, Edmondson. Kawela Bay, July 23, 1938, July 1939, Miller. Hanauma Bay (type locality), Aug. 25, 1939, Miller.

Maui: Mala, Dec. 28, 1940, Donald Abbott.

Hawaii: Kailua, Dec. 30, 1940, Miller.

Ten species of the genus *Jaeropsis* are now known, only two of which have previously been reported from the Pacific area. The two Pacific species formerly known are *J. lobata* Richardson from California and *J. curvicornis* (Nicolet) which has been reported from Chile, New Zealand and Ceylon. *J. neo-zealandica* Chilton is a synonym of the rather widely distributed *J. curvicornis* according to Stebbing (16) and Barnard (1).

Jaeropsis hawaiiensis seems to be more similar morphologically to *J. rathbunae* Richardson from Bermuda than to either of the two Pacific species mentioned above. *J. rathbunae* is described as being uniformly light, almost white, but in *J. hawaiiensis* the anterodorsal half of the head is black and other parts of the body may also be pigmented. As there is some variation in coloration and as pigmentation may fade in specimens long preserved, too much reliance should not be placed on this character alone. There are also slight differences between the two species in the antennae, mandibles, maxillipeds, and uropods as far as I can judge from Richardson's descriptions and figures. These differences, coupled with the vast distance between them, indicate specific separation.

Between *J. hawaiiensis* and the other two Pacific species the following differences are noted. *J. hawaiiensis* differs mainly from *J. lobata* in that the median lobe of the head is much less produced, the median lobe of the telson is acute instead of rounded and the coloration is markedly different. From *J. curvicornis,* our new species differs mainly in that the eyes are not so large, the uropods lack the rudimentary branches, and the posterior part of the telson is deeply incised for the reception of the uropods.

Genus **JANIRA** Leach

Richardson (11) diagnoses this genus as follows:

> Body oblong, depressed. Lateral parts of head not produced or but slightly produced. Eyes distinct, sub-dorsal. Front of head obtuse or produced in a comparatively small rostrum.
>
> First pair of antennae well developed, with the flagellum multi-articulate. Second antennae very much elongated, with scale outside of third article of peduncle. Maxillipeds with the second and third articles of the palp not expanded.
>
> Segments of thorax with lateral parts not produced into lappets.

The distal extremity of the peduncle and the branch of the first pleopoda of the male not dilated at the tip.

Uropoda largely developed.

First pair of legs prehensile in both sexes; dactylus in all the legs triunguiculate.

Terminal segment of the body rounded, not expanded laterally.

Janira algicola, new species (fig. 4).

Holotype male. Body narrow, rectilinear, about four times longer than wide, 1.8 mm. by 0.5 mm. Color nearly white.

Head with lateral and posterior margins somewhat rounded. Frontal margin slightly produced in a small obtuse median lobe. Eyes oval, twice as long as wide, on dorsal side of head near lateral margin. In life, the eyes are reddish in color but the pigment dissolves in alcohol. First antenna slightly longer than head, flagellum composed of nine articles. Second antenna well-developed, exceeding the body in length.

Mandible with three-jointed palp and moderately developed molar process. Incisive process and lacinia mobilis with four and three teeth, respectively. Lacinia subtended by a brush of setae. Inner lamina of maxilla with four plumose setae, outer with numerous ctenoid setae. Second maxilla with three distal rami tipped with long setae. Maxilliped with palp of five articles, the basal three slightly expanded.

Thoracic segments subequal in length and width, loosely articulated. Epimera indicated on all segments. Beginning anterolaterally, the epimera become progressively more and more posteriorly located on succeeding thoracic segments. First pair of legs sexually dimorphic. In the male, the strongly subchelate first leg features a greatly enlarged carpus which bears two spinous processes on the distal palmar margin. The finger (propodus plus dactylus) longer than carpus and slightly curved to parallel the palm. In the female, the first pair is similar to the succeeding pairs in general morphology and only slightly shorter.

Pleotelson shieldlike, slightly excavated above the insertion of the uropods resulting in the production of a rounded, median, terminal lobe. First pleopoda in female fused to form a broad operculum bearing a small knoblike process on each side at the distolateral margin. Pleopoda as described for the family Janiridae and as figured (fig. 4, *d*, *g-k*). Uropoda biramous, exopod as long as peduncle and three fourths as long as endopod. Uropods as long as pleotelson.

Kauai: Nawiliwili, April 13, 1941, Kawasaki. Moloaa, April 13, 1941, Kawasaki.

Oahu: Pearl Harbor, 1927, Dranga. Waikiki (type locality), Jan. 1932, Edmondson; Oct. 9, 1938 and July 31, 1939, Miller. Kawela Bay, July 23 and 24, 1938 and July 1939, Miller. Hanauma Bay, Aug. 8, 1938 and Nov. 17, 1939, Miller. Black Point, Feb. 20, 1939, Miller. Kaneohe Bay, Jan. 2, 1940, Miller.

Molokai: Laau Point, Feb. 14, 1940, Miller.

Maui: Hanamanioa, Feb. 8, 1940, Miller. Hana, Feb. 9, 1940, Miller. Mala, Dec. 28, 1940, Abbott.

Lanai: Manele Bay, Nov. 11, 1940, Douglas Denton.

Hawaii: Honaunau, Dec. 29, 1940, Miller. Kailua, Dec. 30, 1940, Miller.

Janira algicola is the most common aselloid in Hawaiian waters. Therefore it is probable that the unidentified asellid referred to by Edmondson (4, p. 205) belongs to this species.

The opinions of Vanhöffen (18) and Hansen (6) differ widely concerning the proper classification of *Janira* and closely allied genera. Hansen divides the species of *Janira* taken by the Ingolf Expedition

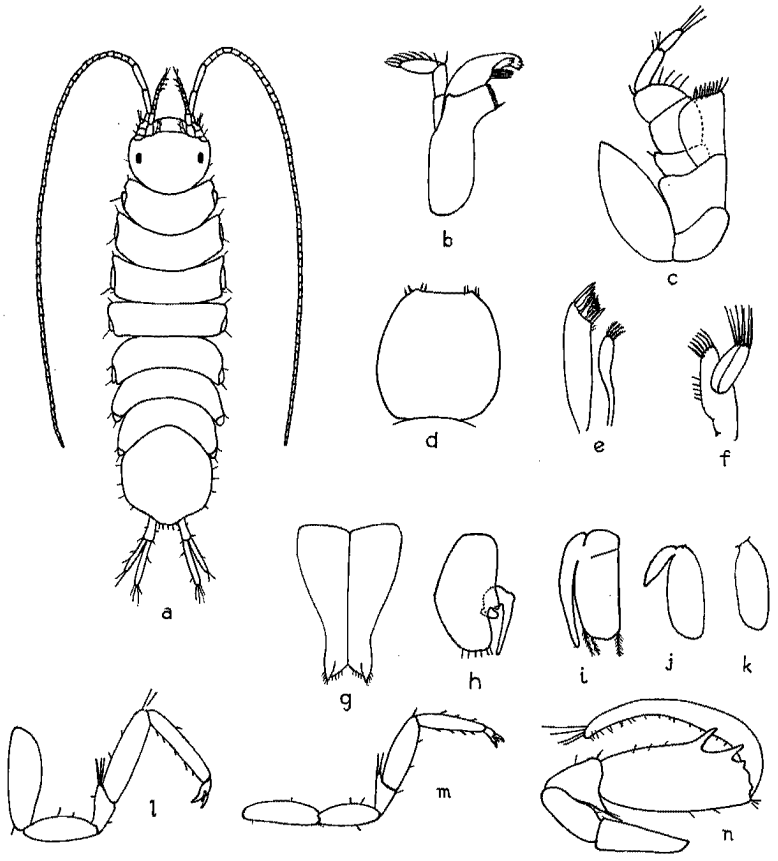

FIGURE 4.—*Janira algicola*, n. sp.: **a**, male, dorsal view; **b**, mandible; **c**, maxilliped; **d**, first pleopod of female; **e**, first maxilla; **f**, second maxilla; **g**, first pair of pleopods of male; **h**, second pleopod of male; **i**, third pleopod of female; **j**, fourth pleopod of male; **k**, fifth pleopod of male; **l**, seventh leg of female; **m**, first leg of female; **n**, first leg of male.

into three groups which correspond to the genera *Janira, Ianthopsis* and *Iolella* as used by Vanhöffen. In the same paper, Hansen relegates *Iolella* to the synonymy of *Janira* and implies that *Ianthopsis,* together with several other allied genera, should be given similar treatment. Vanhöffen, however, places *Iolella* and *Ianthopsis* and five other genera in a separate family, Iolellidae. This controversy does not concern the disposition of our *Janira algicola,* since it belongs to *Janira* either in the broad sense of Hansen or the restricted sense of Vanhöffen.

Approximately twenty-one species of *Janira* have been described, not counting those now in synonymy. The following five species have previously been described from the Pacific area: *J. abyssicola* Beddard (2) from Fiji, *J. longicauda* Chilton (3) from New Zealand (also reported there by Tattersall, 17), *J. caudata* Richardson (14) from the Philippine Islands, *J. japonica* Richardson (12) from Japan, and *J. occidentalis* Walker from Puget Sound, Washington (Richardson, 11). As far as can be determined from the available descriptions, the new *J. algicola* more closely resembles *J. minuta* Richardson from Bermuda than any of the other species in the genus including those from the Pacific area. Both species can be distinguished from a large number of other species in the genus by the fact that the anterior margin of the head is not produced in a median sharp point or an acute rostrum. *J. algicola* differs from *J. minuta* mainly in the carpal joint of the first leg of the male. In *J. minuta,* the enlarged carpal joint is produced on the inner distal side in three long acute processes, the more proximal of which is twice as long as the other two. In *J. algicola,* however, the enlarged carpus of the male bears only two such spinous processes which are subequal in length.

SUMMARY

Four new species belonging to four genera and to three families represent the isopod superfamily Asellota (Aselloidea) in the Hawaiian islands. The four new asellote species herein keyed, described, and figured are *Stenetrium medipacificum* (family Stenetriidae), *Munna acarina* (family Munnidae), *Jaeropsis hawaiiensis* and *Janira algicola* (family Janiridae).

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The author is responsible for all statements in this paper.