

# INSECTS OF HAWAII, JOHNSTON ISLAND AND WAKE ISLAND

BY

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AND COLLABORATORS

BERNICE P. BISHOP MUSEUM

BULLETIN 31

TANAGER EXPEDITION

PUBLICATION No. 3

HONOLULU, HAWAII  
PUBLISHED BY THE MUSEUM  
1926.

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HYMENOPTERA<sup>8</sup>

By

P. H. TIMBERLAKE

The Hymenopterous fauna of the small leeward islands of Hawaii is evidently very meager and, except on Necker and Nihoa islands,<sup>9</sup> consists of a few nearly cosmopolitan species of ants and a few hardy parasitic species belonging to the Ichneumonoidea and Chalcidoidea that have been introduced in recent years, probably from Honolulu. On Nihoa Island is an endemic fauna of a few species closely allied to corresponding species of Kauai. The fauna of Necker Island has at least one endemic Eupelmid, which, however, is conspecific with one of the Eupelmidae found on Nihoa. Wake Island is so distant that its fauna shows no affinity whatever with that of Hawaii. Aside from several introduced ants only three species of Hymenoptera were found on Wake Island, these being a species of *Chelonus*, a *Eupelmus*, and an Aphelinoidea; none of these is known to occur in Hawaii, and presumably they were introduced to Wake Island from some other source.

## FORMICIDAE

1. *Ponera kalakauae* Forel.

French Frigate Shoals, June 22-26, 1923 (Bryan): 24 workers. Necker Island, June 19, 1923 (Bryan): 1 male. Laysan, April 9, 1923 (Fullaway): 10 workers, in woodwork of old shacks.

2. *Monomorium minutum* Mayr.

Midway Island, April, 1923 (Fullaway): 3 workers with the head, thorax and petiole yellowish brown and the gaster blackish. Necker Island, June 19-20, 1923 (Bryan): 4 workers, wholly blackish in color.

3. *Monomorium floricola* (Jerdon).

Nihoa Island, June 11-15, 1923 (Bryan): large series including 1 ergatoid female and 4 males collected on *Pritchardia*, *Euphorbia* and *Sida*. Wake Island, July 28-August 2, 1923 (Bryan): large series of workers, some of them found in a log.

<sup>8</sup> This paper is listed also as Paper No. 133, University of California Graduate School of Tropical Agriculture and Citrus Experiment Station, 1926.

<sup>9</sup> The Encyrtid, *Xanthoencyrtus laysanensis* Timberlake, collected on Laysan Island in December, 1912, by Mr. Fullaway, is probably endemic to that island. It, however, was not found by the Tanager Expedition, and may have become exterminated by the domestic rabbit, which in the meantime had stripped the island of almost all vegetation.

4. **Monomorium pharaonis** (Linnaeus).

French Frigate Shoals, June 22-26, 1923 (Bryan): large series of workers. Wake Island (including Peale and Wilkes islands), July 27 to August 2, 1923 (Bryan): large series of workers. Johnston Island, July 11-20, 1923 (Bryan): large series, including 10 females and 23 males, mostly from dead birds but also from a rotten log and bunch grass. The workers from Wake and Johnston islands are considerably darker than the typical form of *M. pharaonis*, and some of the specimens have the dorsal surface of the head distinctly brownish. The sculpture also appears to be considerably more distinct, although I believe this is largely if not wholly due to the dark coloration. Wheeler, who has examined specimens of this form from Johnston Island, believes that it should be separated as a new subspecies of *pharaonis*.

5. **Monomorium destructor** (Jerdon).

Laysan Island, April 9, 1923 (Fullaway): 1 worker, in woodwork of old shacks.

6. **Pheidole megacephala** (Fabricius).

Midway Island, April, 1923 (Fullaway): large series, including 4 soldiers and 2 wingless females.

7. **Cardiocondyla nuda**, var. **minutior** Forel.

Midway Island, April, 1923 (Fullaway): 3 workers. Necker Island, June 19, 1923 (Bryan): 2 workers. French Frigate Shoals, June 22-27, 1923 (Bryan): 14 workers and 3 females.

8. **Tetramorium guineense** (Fabricius).

Nihoa Island, June 11-15, 1923 (Bryan, Cooke and Thaanum): large series of workers, pupae, and 4 females. Necker Island, June 18-20 and 27, 1923 (Bryan): 16 workers, 6 females, and 1 male. Midway Island, April, 1923 (Fullaway): 22 workers. Laysan Island, April 9, 1923 (Fullaway): 1 worker. Pearl and Hermes Reef, April 27, 1923 (Fullaway): 18 workers. Ocean Island, April, 1923 (Fullaway): 28 workers.

Two of the workers from Nihoa Island, taken on June 11 (Bryan), are very small, but I believe that they belong to this species without doubt. One of the females from Necker Island is a very peculiar gynandromorph, being similar to the male in the structure of the head, but having the thorax and abdomen like those of the normal queen, with the sting well developed. (See description by Wheeler, pp. 44-45.)

9. **Tapinoma melanocephalum** (Fabricius).

Nihoa Island, June 11-15, 1923 (Bryan): 15 workers. Midway Island, April, 1923 (Fullaway): 4 workers. Ocean Island, April, 1923 (Fullaway): 6 workers.

10. *Prenolepis longicornis* (Fabricius).

Nihoa Island, June 11-15, 1923 (Bryan): 21 workers.

11. *Prenolepis bourbonica hawaiiensis* Forel.

Midway Island, April, 1923 (Fullaway): 7 workers. Wake Island, July 27 to August 5, 1923 (Bryan): 43 workers, 17 males, 4 females, on *Cordia* and *Pemphis* and found in a log.

## BETHYLIDAE

Bryan collected two specimens of a species of *Sclerodermus* on Nihoa Island which is closely allied to species found on the large island of Hawaii. In fact, it is very feebly differentiated from *S. immigrans* Bridwell, but owing to its isolated habitat, the chance of its being connected by intergradations seems remote. Bridwell considered *S. immigrans* to be an adventive species in Hawaii, but it seems to be too closely allied with certain other Hawaiian species for this view to be entertained, and I am consequently inclined to regard it as a true endemic species.

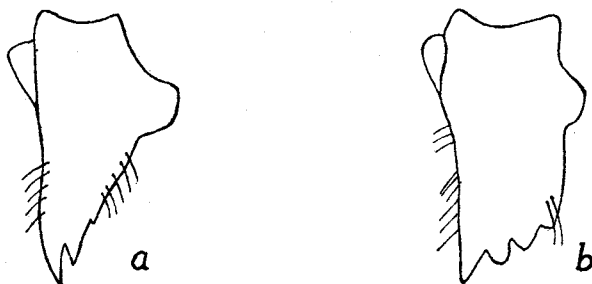


FIGURE 2. *a*, Mandible of *Sclerodermus immigrans* Bridwell (this figure will serve almost as well for *S. nihoaensis* Timberlake); *b*, mandible of *Sclerodermus semnoprepiæ* Bridwell.

The following key will separate most of the described Hawaiian species of *Sclerodermus* except certain ones described by Ashmead:<sup>10</sup>

- |  |   |
|--|---|
| 1. Mandibles with less than four teeth (fig. 2, <i>a</i> ).....  | 6 |
| Mandibles with four teeth arranged along the tolerably oblique apical margin, the sides of mandible subparallel from the base of the inner tooth to the basal condylar enlargement (fig. 2, <i>b</i> ); clypeus strongly produced in front of the antennal sockets ..... | 2 |
| 2. Thorax at least partly or wholly testaceous.....  | 3 |
| Wholly or nearly all black or piceous species .....  |   |
| ..... <b>polynesiæ</b> Bridwell (not Saunders).  |   |
| 3. Abdomen mostly or wholly testaceous.....  | 4 |
| Abdomen largely black or piceous, head very wide and not much longer than wide, clypeus strongly produced and tectiform, its anterior margin   |   |

<sup>10</sup> Ashmead, W. H., Hymenoptera parasitica: Fauna Hawaiianis, Vol. 1, pp. 283-286, 1901.

- distinctly angulate; head black, the rest of body, except prothorax, piceous with the mesonotum, disk of propodeum and dorsum of abdomen more or less shaded with dark castaneous brown, the prothorax, legs and scape testaceous; reticulate sculpture very fine but tolerably distinct.....**euprepes Perkins.**
4. Clypeus strongly tectiform, either emarginate or angulate at apex..... 5  
Clypeus weakly arched or almost flat across anterior margin, which is slightly rounded, the basal part tectiform; ocelli fully developed; whole body including head testaceous, but abdomen with brown or piceous markings along the sutures at the sides and especially at the apex; reticulation of the head very minute and indistinct....**manoa Bridwell.**
5. Clypeus angular in front; ocelli absent or represented by minute scars; head, mesopleura and pleura of propodeum brownish piceous, the side of abdomen suffused with brown; reticulate sculpture very delicate but distinct.....**chilonellae Bridwell.**  
Clypeus angularly emarginate in front; ocelli rudimentary or absent; head piceous, the thorax and abdomen testaceous, the latter with the sutures more or less fuscous or brown, reticulation of head extremely delicate, visible only at high magnification under favorable light ...**semnoprepiae Bridwell.**
6. Wholly black, piceous or dark castaneous species..... 7  
Species with at least the thorax in part testaceous or yellow..... 9
7. Clypeus but little or not at all emarginate..... 8  
Clypeus only shortly produced and rather deeply emarginate, tectiform; head about one-fourth to one-half longer than wide, very slightly narrowing anteriorly; eyes placed about two-thirds of the length of the head from the posterior margin; ocelli rudimentary or fully developed in the alate phase; legs brown to piceous; reticulate sculpture distinct and surface rather shiny; large species, about 3.0-4.0 mm. long.**perkinsi Ashmead.**
8. Large species of Oahu, about 3.5-4.0 mm. long; clypeus strongly tectiform and apparently about squarely truncate at apex; ocelli absent or present in alate phase; legs piceous; reticulate sculpture distinct.....**polynesialis Saunders.**  
Small species of Hawaii, about 3.0 mm. long, clypeus strongly tectiform and transverse at apex; ocelli absent; reticulation of thorax very distinct, but the head is smoother, more shiny and delicately reticulate.**muiri Bridwell.**
9. Clypeus only slightly produced in front of antennae, its length no greater than the thickness of the bulla or radicle of the scape..... 10  
Clypeus distinctly produced ..... 12
10. Head not more than one-third longer than wide; the eyes placed less than thrice their own length from the occipital margin..... 11  
Head fully one-half or a little more longer than wide; the eyes rather small, distinctly more than thrice their own length from the occipital margin and somewhat more than twice their own length or about four times their own width apart; head, thorax, legs and antennae brownish testaceous, the head suffused with piceous anteriorly, the abdomen piceous suffused with testaceous at the base and along the sutures; reticulate sculpture fine but considerably more distinct than in *S. immigrans*.....**sophorae Perkins.**
11. Eyes about two and one-half times their own length from the occipital margin and a little less than twice their own length apart; head and abdomen brown to piceous, the thorax testaceous with the mesothorax more or less suffused with brown or piceous; reticulate sculpture

- extremely minute and delicate, the head appearing smooth and polished under considerable magnification.....**immigrans** Bridwell.
- Similar to *S. immigrans* but the reticulation much more distinct, the head and abdomen almost black, the thorax except mesothorax testaceous.....**nihoaensis** n. sp.
12. Head distinctly longer than wide by about one-fourth to one-third of the length, reticulate sculpture feeble yet distinct..... 13
- Head hardly longer than wide, piceous above and nearly black anteriorly, castaneous on sides and beneath, the thorax testaceous with the mesothorax and pleura of propodeum suffused with brown, the abdomen piceous black; reticulation more distinct.....**tantalus** Bridwell.
13. Head about one-fourth longer than wide, brown to piceous, the abdomen piceous, the thorax testaceous with the mesothorax and propodeum more or less brown or fuscous.....**poecilodes** Perkins.
- Head about one-third longer than wide; head, thorax, legs and antennae testaceous, the abdomen brown.....**chlorodes** Perkins.

## 12. *Sclerodermus nihoaensis* new species

Very similar to *S. immigrans* Bridwell and practically the same in all structural characters except sculpture.

### Female

Head about one-fifth longer than wide, the sides subparallel, the posterior corners strongly rounded; eyes small and a little less than twice their own length apart and nearly two and one-half times their own length from the posterior margin of head; ocelli absent; clypeus very shortly produced in front of the antennal sockets, about as long as the diameter of the sockets, and as seen perpendicularly from above appearing transverse, but as seen from in front and below appearing distinctly tectiform. Scape clavately expanded towards apex, a little more than three times as long as its greatest width and moderately arched beneath; joints of the flagellum short, transverse but increasing somewhat in size distad, the penultimate and antepenultimate joints not much wider than long, the apical joint or club about equal to the two preceding joints combined and a little longer than the pedicel. Mandibles with the inner margin strongly oblique as far as the subbasal condylar process and provided with three teeth including the apex, the other two teeth decreasing in size inward, the innermost one being very small.

Thorax of usual structure, the wings absent; propodeum slightly widening for two-thirds of its length from base toward apex and as seen from the side with the dorsal outline gently arcuate. Abdomen somewhat longer than head and thorax combined.

Integument rather duller than in *S. immigrans* and microscopically reticulate, more faintly on the head and most distinctly so on the thorax, this sculpture being discernible at a magnification of 30 diameters, which is hardly the case with *S. immigrans*; pronotum, pleura and basal half of propodeum more strongly reticulate than the other parts of thorax.

Head, mesothorax, and abdomen rather dark brownish piceous in the type, with the legs including coxae nearly as dark, the antennae, prothorax, and propodeum testaceous, the abdomen nearly uniformly dark with the apical margins of the tegites hardly paler, although the lateral corners of the basal tergite are somewhat testaceous. In the paratype the head is brownish and considerably more testaceous beneath than above, the mesothorax except the pleura not much darker than the rest of the thorax, the legs wholly testaceous, and the abdomen more brownish

piceous, with the basal tergite and apical margins of the other tergites distinctly paler and more or less testaceous.

Length of body, (2.21 to) 2.54 mm.; length of head, 0.511 mm.; width of head, 0.419 mm.; width of space between the eyes, 0.231 mm.

Described from 2 females (holotype and paratype) collected on Euphorbia, Nihoa Island, June 15, 1923 (Bryan).

This species and *S. immigrans* are very similar to *S. sophorae* Perkins, but *S. sophorae* has a much longer head. The sculpture is about the same in *S. sophorae* and *S. nihoaensis* and distinctly weaker in *S. immigrans*.

Type: Cat. No. 225, Bernice P. Bishop Museum.

## HYLAEIDAE

### 13. *Nesoprosopis perkinsiana* new species.

This species is closely allied to *N. hirsutula* Perkins of Kauai and hardly distinct except for appreciable differences in the male genitalia.

#### Male

Black, slightly shiny, the clypeus and supraclypeal area yellow, the yellow on the latter acutely angled dorsad and reaching just opposite to the middle of the antennal sockets, the yellow also usually extending (in three of four specimens) onto the face as a narrow mark along each side of the clypeus and extending from the puncture in the clypeal suture dorsad to the supraclypeal area; a minute dot on clypeus surrounding the puncture in the suture, and the narrow oral margin of clypeus, except medially, black. Flagellum duller black, sometimes becoming somewhat brownish beneath. Mandibles wholly black or sometimes a little reddish brown at apex. Legs black, the tarsi appearing somewhat browner, this paler appearance due for the most part apparently to the yellowish pubescence, the claws, however, distinctly brownish; the front tibiae more or less yellowish brown on the inner side; base of the hind tibiae with an indistinct, narrow, yellowish ring about its own width from the knee joint, or the ring may be reduced to a small yellowish spot on the anterior side, or wholly absent. Wings grayish, subhyaline, the veins blackish.

Cheeks extremely short, the eyes reaching almost to the base of the mandibles; supraclypeal plate somewhat wider than long, the lateral sutures being about three-fourths as long as the anterior suture; head somewhat wider than long, the face nearly as wide as in *N. hirsutula*, the width between the anterior ends of the eyes being somewhat greater than the length of the clypeus; the latter about as long as its greatest width. Scape gradually widening from base to apex, about thrice as long as the apical width and moderately arched beneath.

Integument on most parts of the body very finely or microscopically reticulate, but the sides of the face below the antennae are equally finely and obliquely lineolate with the lines more or less wavy; head, except face below antennae, and most of the thorax punctured, the punctures being rather deep and very close on the frons, but sparser and shallower on the thorax, the puncturation being nearly of the same character as in *N. hirsutula* although slightly closer and a little more deeply impressed on the mesoscutum and scutellum; propodeum rugose with longitudinal wrinkles on the anterior part, the sides sparsely and shallowly punctured like the rest of the pleura; abdomen rather more shiny than the rest of the body, micro-



scopically reticulate, and impunctate except for extremely minute or microscopic setiferous punctures.

Pubescence about as in *N. hirsutula*, being rather long and dense, but rather browner on the thorax, although appearing sufficiently grey in some aspects.

Genitalia very similar to *N. hirsutula*, with the stipites produced far beyond the sagittae; the stipites, however, are distinctly narrower than in *N. hirsutula*, more vertical in position, with the inner margin straight and the apex rounded, not angulate; the seventh and eighth ventrites as in *N. hirsutula*.

Length of body, 6.0-7.0 mm.; length of head (in largest specimen), 1.73 mm.; width of head, 1.90 mm.; width of face between lower ends of eyes, 0.77 mm.; greatest width of clypeus, 0.69 mm.; length of clypeus, 0.70 mm.

#### Female

Similar to the male except in the usual sexual characters, the face and legs wholly black, the face and clypeus with sparse, very shallow punctures, the sixth segment of abdomen with rather dense mostly fuscous pubescence; also extremely similar to the female of *N. hirsutula* and hardly distinguishable except in having the wings subhyaline grayish instead of fuscous.

Length of body, 7.0-7.5 mm.; length of head (of larger specimen), 1.87 mm.; width of head, 2.16 mm.; width of face between lower ends of eyes, 1.02 mm.; greatest width of clypeus, 0.87 mm.; length of clypeus, 0.82 mm.

Described from 4 males and 2 females (holotype male, allotype, and paratypes), Nihoa Island, June 13-14, 1923. One male was taken by Cooke on June 13, and the other specimens by Bryan on the following day. They were found on *Sida* at the summit and presumably were visiting the flowers of *Sida*. One of the males has a few pollen grains adhering to the propodeum.

Type: Cat. No. 226, Bernice P. Bishop Museum.

### ICHNEUMONIDAE

#### 14. *Angitia blackburni* (Cameron)

Nihoa Island, June 11-14, 1923 (Bryan and Grant): 7 females and 1 male. One of the females was reared from an unidentified caterpillar on *Chenopodium*.

### BRACONIDAE

#### 15. *Ischiogonus pallidiceps* Perkins

Nihoa Island, June 13, 1923 (Bryan): 1 female.

#### 16. *Chelonus blackburni* Cameron

Midway Island, April, 1923 (Fullaway): 6 females. Pearl and Hermes Reef, April 27, 1923 (Fullaway): 4 females.

#### 17. *Chelonus* sp.

Wake Island, July 27 to August 3, 1923 (Bryan): 3 females and 1 male.

## ENCYRTIDAE

18. *Pauridia peregrina* Timberlake

Midway Island, April, 1923 (Fullaway): 1 female.

19. *Anagyrus swezeyi* Timberlake

Midway Island, April, 1923 (Fullaway): 8 females and 11 males.

## EUELMIDAE

On Nihoa, Bryan collected three species of Eupelmids which are undoubtedly endemic to the island, and one of these species in a slightly modified form was also taken on Necker Island. Five male Eupelmids were also taken on Nihoa Island by Bryan, representing apparently two species. As it is impossible to associate them with the proper females, I have passed them over in the following descriptions.

20. *Eupelmus nihoaensis* new species

The antennae of the unique type were unfortunately lost during remounting of the specimen, but not until it was noted that the scape was obscurely paler or yellowish at base and that the flagellum was similar to the great majority of Hawaiian species. The species runs, therefore, to either *E. oreias* or *E. xanthodorus* in Perkins' table of the Hawaiian species and, except in the much less distinctly yellowish base to the scape, is decidedly more like *E. xanthodorus*.

From *E. xanthodorus* it differs in having the head considerably thinner fronto-occipitally, the frontovertex not much more than one-third longer than wide instead of about twice as long as the least width; coloration very similar throughout except that the hind femora are dark metallic green except at base and apex, and the ovipositor is mostly brownish although yellowish at extreme apex, black at base and fuscous above.

## Female

Head considerably wider than long, moderately thin fronto-occipitally, the greatest thickness equal to about one-half the width; frontovertex about one-third longer than wide, the inner orbits only slightly diverging anteriorly and strongly diverging behind the ocelli; ocelli in an equilateral triangle, the posterior pair very slightly behind the middle of the frontovertex and about their own diameter from the eye margins; scrobal impression moderately deep, broad and oval, not much narrowed above nor triangular as in *E. xanthodorus*, the facial prominence between antennae oval and convex. Mandibles with three nearly equal teeth, the middle tooth the most acute, the inner one somewhat shorter and blunt.

Thorax of the usual structure, the abdomen somewhat longer than the thorax and head combined, depressed above, elongate elliptical in shape, not much narrowed at the base, the sides nearly parallel, the apex rounded, the venter strongly compressed especially towards the base; ovipositor protruded for a length somewhat less than that of the hind tarsi. Wings long and narrow, the disk densely pubescent throughout, the speculum very obscure; marginal vein distinctly longer than the

submarginal, the stigmal and postmarginal veins about equal, the former curved and clavate.

Frontovortex rugulously reticulate, the sides of the face more coarsely rugulose, the face below the scrobes and the cheeks smoother and reticulate, the cheeks exterior to the genal suture being more coarsely and longitudinally reticulate; prominence between antennae and lower part of the scrobes next to the antennal sockets smooth; upper part of the scrobal impression transversely, rugulose wrinkled but not so densely as in *E. xanthodorus*; frontovortex and sides of the face also with fine punctures which are not so prominent as in *E. xanthodorus*; thorax and abdomen rather finely scaly-reticulate; the mesopleura coarsely reticulate at posterior end and with a central smoother area where the reticulations change gradually to extreme fineness as in apparently most if not all of the Hawaiian *Eupelmus*.

Coloration, nearly uniformly, very dark metallic green; scrobal impression rather distinctly greenish, the face and cheeks with a brassy and greenish luster or somewhat coppery in certain aspects; frontovortex in direct view rather dull, but viewed obliquely it shows a rather strong brassy luster and a reddish luster along the orbits; notum rather strongly brassy and coppery, the pleura and sternum more greenish and mostly with a greenish luster; basal tergite of abdomen bright green or coppery in some aspects, the last two tergites, including the parts reflexed onto the venter beyond the apical ventrite, coppery or rosy, the rest of the abdomen dark metallic purplish black. Ovipositor fuscous above and black at base, the sides and under surface distinctly brownish except at base, and somewhat paler or yellowish at extreme apex. Antennae blackish, the base of the scape obscurely yellowish for a short distance. Front and hind coxae and hind femora except at base and apex concolorous with body, the remainder of the legs brownish yellow, with the first joint of the middle and hind tarsi and apex of hind tibiae paler yellowish; apex of the last joint of the tarsi fuscous. Wings nearly hyaline, the veins yellowish.

Length of body, 2.62 mm.; length of head, 0.634 mm.; width of head, 0.815 mm.; thickness of head, 0.401 mm.; width of vertex at ocelli, 0.273 mm.; width of mesoscutum, 0.589 mm.; length of ovipositor sheaths, 0.457 mm.; length of fore wing, 1.918 mm.; width of fore wing, 0.680 mm.

Described from 1 female (holotype) collected from Sida, June 14, 1923, Nihoa Island (Bryan).

Type: Cat. No. 227, Bernice P. Bishop Museum.

## 21. *Eupelmus pacificus* new species

This species from Wake Island is very similar to Hawaiian species in structure but differs from all species that I have seen from Hawaii in having a part of the yellow coloration of the legs and ovipositor of a purer, brighter tone.

### Female

Head distinctly wider than long, moderately thick fronto-occipitally, the greatest thickness being hardly more than one-half of the width; frontovortex about two-thirds longer than the width at the ocelli, the inner orbits very slightly diverging anteriorly and strongly diverging behind the ocelli; ocelli in an equilateral triangle, the posterior pair about at the middle of the frontovortex and hardly more than their own diameter from the eye margins; scrobal impression moderately deep, triangular, the facial prominence between the antennal sockets oval, convex, and reaching about half way from the sockets to the upper limit of the scrobal impression. Antennae moderately long and slender; the first funicle joint as long as wide, the second about twice as long as the first and somewhat shorter than the pedicel,

the following joints gradually shortening and increasing somewhat in thickness; the club about as long as the last two funicle joints combined and indistinctly jointed. Mandibles with three teeth, the two outer teeth acute, the inner one not distinctly visible in the type.

Thorax of the usual structure; apex of scutellum rounded and gradually sloping down to the level of the metanotum; the latter transverse, very short at the middle, its anterior margin broadly and roundly emarginated; propodeum short and transverse, provided with a convex prominence on each side which bears the spiracle and is bounded on the inner side by a longitudinal sulcus; middle portion of the propodeum thus set off is about four times as wide as long and bears near the posterior margin a curved carina which touches the margin at the middle; propodeal spiracles proportionately rather large and nearly circular. Abdomen depressed above, compressed and tectiform beneath in the basal two-thirds, narrowly oval in shape as seen from above and somewhat more than twice as long as wide or as long as the head and thorax combined; first five tergites with the usual median emargination on the posterior margin; length of protruded part of ovipositor about equal to the length of the hind tarsi.

Wings rather short and moderately wide for an *Eupelmus*; the disk densely pubescent, the speculum very narrow but distinct and extending not more than one-half the distance to the posterior margin; marginal vein about one-fifth longer than the submarginal, the stigmal and postmarginal veins subequal, the former not attenuated toward the base and but little enlarged at apex which is slightly curved toward the costal margin; setae on the submarginal vein a little longer than the width of the costal cell.

Head finely rugulose sculptured with fine distinct reticulations on the frontovertex at and in front of the ocelli, and on the cheeks and lower part of the occiput; scrobal impression of face smoother and finely subhexagonally reticulate, the facial prominence still smoother yet reticulate; clypeal margin with two distinct small foveae about two-thirds as far apart as the antennal sockets. Thorax above finely rugulose reticulate much like the head, the axillae and scutellum more smoothly reticulate, the metanotum and propodeum smooth and somewhat polished; pleura and sternum finely reticulate, the areoles on anterior part of the mesopleura fine and very uniform in size and mostly subquadrate in shape, medially they become very minute and posteriorly they become very much coarser and longitudinally lengthened especially next to the dorsal margin, where it is very evident that the reticulation is formed by raised lines. Abdomen mostly with reticulation similar to that of the anterior part of the mesopleura, but the basal half of the first tergite and the first ventrite are smooth and polished, and the fifth ventrite is very finely transversely lineolate.

Eyes bare; head otherwise with sparse, very fine inconspicuous pubescence; thorax with fine, whitish, rather thin pubescence, moderately conspicuous and present on pronotum, mesoscutum, prepectus and sides of the anterior part of the mesosternum; axillae and scutellum with a few similar setae, the metapleura with much denser longer setae, the angles of the triquetrous hind coxae also provided with fine white hair; abdomen bare above, but the reflexed sides of the tergites and the ventrites provided with numerous white retrorse setae about like those of the mesoscutum.

General color aeneous green, this color being most evident on the head and anterior half of the thorax; scrobal impression of face and the prominence between the antennae shining purplish blue, face below antennae and the cheeks next to the mouth with a golden and rosy luster, the same luster also apparent on the elevated parts of the mesoscutum; posterior half of the notum including the axillae darker and not at all greenish, the axillae and scutellum with a dark reddish luster;

mesopleura dark greenish but gradually changing to nearly piceous at the posterior end, the metapleura bright green; mesosternum especially on the sides of the anterior part metallic bluish. Abdomen blackish or about concolorous with posterior half of the thorax, with a weak reddish and golden luster especially on the dorsal parts of the first three tergites, but the polished basal half of the first tergite with a brilliant green, golden and reddish luster, the fifth tergite also with a greenish and aeneous luster and the first ventrite not metallic although shiny; ovipositor piceous, provided with a broad yellow ring which is closer to the base than to the apex and about equal to the dark apical part, the yellow on the dorsal side being brighter colored. Antennae black, the scape with an evident greenish luster; mandibles black; palpi yellow. Front and hind coxae metallic green, the middle coxae fuscous, not metallic; all trochanters brownish yellow; all femora dark, shading into brownish yellow narrowly at base and apex, the front pair appearing brown to piceous in different aspects, the middle pair piceous on the outer side and brownish to brownish yellow on the inner surface, the hind pair metallic bluish; tibiae and tarsi mostly brownish yellow, the apical joint of all the tarsi fuscous, the front tibiae largely fuscous except narrowly at base and rather broadly at apex, the dark part appearing metallic bluish on dorsal side, the middle tibiae slightly darker or more brownish in the middle, and the hind tibiae with a distinct fuscous ring at the middle, nubilous at the margins and occupying about one-third of the length of the tibiae, the yellow basad of the dark ring of a purer bright tint than on the rest of the legs. Wings hyaline, slightly tinted with fuscous, the veins yellowish.

Length of body, 2.72 mm.; length of head, 0.598 mm.; width of head, 0.764 mm.; thickness of head, 0.399 mm.; width of vertex at ocelli, 0.255 mm.; length of antenna, 1.193 mm.; width of mesoscutum, 0.516 mm.; length of ovipositor sheaths, 0.765 mm.; length of fore wing, 1.764 mm.; width of fore wing, 0.669 mm.

#### Male

Of the usual Eupelmid structure; head subhemispherical, rather thick fronto-occipitally, somewhat wider than long; eyes nearly circular and strongly convex; frontovertex about as long as wide and fully one-half as wide as the whole head; ocelli in a slightly obtuse angle, the posterior pair a little more than their own diameter from the eye margins and the anterior ocellus about the same distance from the anterior margin of the frons; scrobal impression of face broadly semi-oval, reaching well upward between the eyes, its margin broadly rounded above; prominence between antennae small and extending but a short distance above the sockets; the latter small, circular and placed a short distance below the ocular line; face below the sockets strongly arched from side to side. Scape, short, reaching but little beyond the scrobal impression, fusiformly thickened, convex on inner side, flattened on the ventro-exterior surface and a little excavated near apex; pedicel about thrice as long as thick and a little longer than the two following joints combined; funicle eight-jointed, thinner at base than the diameter of the pedicel and increasing somewhat in thickness distad, the first joint as long as wide, the second about twice as long as wide, the following joints gradually shortening, the eighth as long as wide; club solid, somewhat longer than the last two funicle joints combined, sunken in on the ventro-exterior surface, rounded at apex but appearing rather acutely pointed when seen from the side.

Thorax widest across the middle or at the posterior margin of the mesoscutum; parapsidal furrows very shallow but complete; scutellum about three-fourths as long as the mesoscutum, strongly convex, rounded at apex where it is well elevated above the metanotum, the sides also elevated and strongly declivous; propodeum transverse, about three times as wide as long, provided with a median carina which forks at a point a little more than one-half the distance from the base to the apex;

spiracles of propodeum small, circular and situated close to the basal margin; mesopleura with a shallow, broad rather indefinite, longitudinal furrow next to the ventral margin. Abdomen nearly as long as the thorax and distinctly narrower, strongly depressed and somewhat concave above, oval in shape as seen from above and about two and one-half times longer than wide.

Legs slender, the femora moderately thickened; spur of middle tibiae very slender and about as long as the first tarsal joint. Wings similar to those of the female except that the speculum is represented by a large broad hairless area beneath the basal half of the marginal and apex of the submarginal vein; the area beneath the rest of the submarginal vein nearly bare but with a row of setae at a point half way from the vein to the posterior margin; setae on submarginal vein no longer than the width of the costal cell.

Head smoothish except on the sides of face bounding the scrobal impression where there is a rather coarse reticulation formed by raised, mostly longitudinal lines, and on the vertex behind ocelli and on the upper part of the occiput where there is similar reticulation with transverse lines; cheeks finely reticulate; mesoscutum coarsely reticulate with strongly raised lines producing a rugulose effect; axillae, scutellum and hind coxae finely reticulate; mesopleura smooth except in the longitudinal furrow which is minutely shagreened; propodeum and abdomen smoothish.

Body in general shiny blackish or piceous with a slight greenish and bronzy luster on the lower part of the face and the cheeks and to a less extent on the posterior part of the vertex; pronotum and mesoscutum with a comparatively strong green and brassy luster; propodeum and base of abdomen slightly greenish. Antennae piceous, the scape shiny but without a distinct metallic luster. Coxae and the femora on the dorso-exterior surface bluish, femora otherwise piceous except next to the articulations; trochanters, extreme base and apex of femora except apex of hind pair, base and apex of tibiae except apex of hind tibiae and basal joint of the tarsi, brownish yellow, but the basal joint of middle tarsi somewhat whitish; remainder of tibiae and tarsi fuscous. Wings faintly tinted with fuscous or almost hyaline, the veins brownish yellow.

Length of body, 1.13 mm.; length of head, 0.326 mm.; width of head, 0.386 mm.; thickness of head, 0.221 mm.; width of vertex at ocelli, 0.192 mm.; length of antenna, 0.631 mm.; width of mesoscutum, 0.307 mm.; length of fore wing, 0.867 mm.; width of fore wing, 0.378 mm.

Described from 1 female (holotype) collected July 31, 1923, and 1 male (allotype) collected August 3, 1923, Wake Island (Bryan). This male is presumed to belong with the female as there seems to be little or no reason to believe that more than one species of *Eupelmus* inhabit Wake Island.

Type: Cat. No. 228, Bernice P. Bishop Museum.

#### LEPIDEUELMUS new genus

This genus is closely allied to *Eupelmus* Dalman, but the expanded scape, very robust form and the squamiform pubescence will distinguish it. It is apparently endemic to the Hawaiian islands and is probably strictly autochthonous.

Genotype: *Eupelmus setiger* Perkins.

#### Female

General form very robust. Head thin frontooccipitally, the face strongly inflexed; in dorsal view appearing very broadly elliptical, nearly three times as wide as thick,

transverse in front and broadly shallowly emarginate along the occipital margin, as seen from the side appearing lenticular, with the greatest thickness at the middle, or a little above the middle in *L. bryani*; as seen from in front a little wider than long, well rounded on the sides above, the vertical margin transverse, the cheeks strongly converging towards the mouth; eyes more or less strongly protuberant below, rather large, very broadly oval, being about one-third to one-half longer than wide, their inner orbits strongly diverging below; occiput moderately concave; frontovertex in dorsal view of head about as long as wide and varying from a little narrower to a little wider than the eyes, the occipital margin rounded; ocelli in a nearly equilateral triangle, the posterior pair remote from the occipital margin and somewhat less than their own diameter from the eye margins; cheeks somewhat shorter than the width of the eyes, yet well developed and provided with a distinct genal suture; scrobes shallow and converging above where they unite more or less perfectly to form a common scrobal impression; antennal sockets situated moderately far apart, about half way between the oral margin and the ocular line.

Antennae thirteen-jointed, the scape large, with a moderately wide ventral exfoliation, the pedicel about two and one-half to three times as long as thick, as long or longer than the following two joints combined; flagellum slightly clavately cylindrical; funicle eight-jointed, the first joint shortest and about as long as thick, the third and fourth joints longest and nearly twice as long as wide, the following joints gradually becoming shorter and wider, the eighth about as wide as long; club three-jointed, shorter than the three preceding joints but longer than two of them combined. Mandibles tridentate, the two outer teeth acute, the inner one somewhat blunt. Maxillary palpi moderately long, four-jointed, the apical joint subfusiform and a little shorter than the three preceding joints combined; labial palpi three-jointed, the middle joint small, the apical joint oval and nearly as long as the other two combined.

Thorax of normal Eupelmid structure; axillae separated from the scutellum by a distinct suture, fully as long as wide and having the form of a right-angled triangle with the hypotenuse against the sides of the scutellum; the latter slightly longer than wide, its very acute base contiguous to the posterior margin of the mesoscutum, its apical margin more or less broadly rounded; propodeum rather short medially, longer at the sides and there slopingly declivous, the median part with a transverse carina just in front of the apical margin, the area basad somewhat excavated; spiracles of propodeum oval and rather large; sternopleural suture complete.

Abdomen as long as the thorax, or fully as long as the head and thorax combined in *L. bryani*, depressed and oval; apical ventrite reaching to apical third, the ovipositor protruded less than one-half of the length of abdomen; first four tergites incised medially on apical margin, the fifth entire, the sixth concealed by the preceding, the seventh divided medially above the base of ovipositor.

Legs short, stout and practically as in Eupelmus, the middle tarsi very strongly incrassate at base. Wings typically deeply infuscated except at base, but wholly dark in *L. bryani*, the discal setae very dense and rather long, the speculum obsolete or very obscure; marginal vein considerably longer than the sub-marginal, except in *L. bryani* which has abbreviated wings, the stigmal and postmarginal veins sub-equal.

Sculpture throughout densely reticulato-punctulate with only the middle of the propodeum and base of first tergite smoothish, the abdomen above, however, except around the margins, is reticulate. All parts of the body except scrobes, mesopleura, mesosternum and dorsum of abdomen excepting the margins, covered with numerous short, white scale-like setae, which are not dense enough to obscure the surface; eyes rather densely hairy.

Male unknown or not distinguished from the males of *Eupelmus*.

From the genotype species, *L. setiger* (Perkins), I am unable to separate *L. subsetiger* (Perkins) satisfactorily and believe that the small differences noted by Perkins are due to local variations. Besides the types of both species I have seen the following additional material: 1 female, Kalihi, Oahu, about 300 ft., June 15, 1919 (Timberlake); 1 female, Kolekole Pass, Oahu, about 1700 ft., on *Artemisia*, Nov. 19, 1922 (Swezey); 1 female, Olokele Canyon, Kauai, about 1500 ft., Sept. 5, 1920 (Swezey); and 1 female, Kokee, Kauai, on *ohia lehua*, Aug. 25, 1921 (Swezey).

The three species of *Lepideupelmus* known to me may be distinguished as follows:

1. Wings fully developed or reaching to or slightly beyond apex of abdomen and deeply infuscated except at base.....2  
Wings small or reaching only to the middle of abdomen and wholly infuscated; antennae short, the flagellum wholly black, thorax dark coppery green, the abdomen reddish coppery; scale-like pubescence somewhat denser than usual and present over most of the abdomen.....**bryani n. sp.**
2. Flagellum wholly dark although the first five funicle joints are light metallic green, mostly on the dorso-exterior side, beneath a dense silvery white pubescence; legs for the most part dark metallic.....**setiger (Perkins)**.  
First five funicle joints pale brownish yellow and covered with a fine white pubescence; legs except coxae wholly brownish yellow; body dark coppery or reddish coppery.....**robustus n. sp.**

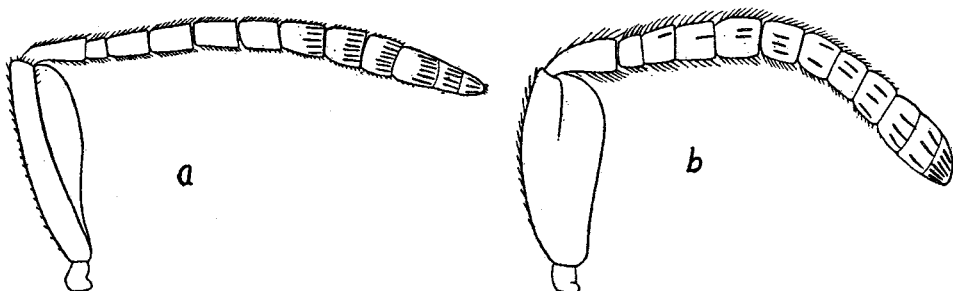


FIGURE 3. *a*, Antenna of female *Lepideupelmus robustus* Timberlake; *b*, antenna of female *Lepideupelmus bryani* Timberlake.

## 22. *Lepideupelmus robustus* new species

Female (fig. 3, *a*.)

In structure practically identical with *L. setiger* (Perkins) and agreeing with the generic description; antennal scrobes in the form of shallow grooves separated below by the triangular prominence between the antennal sockets, converging and uniting above and reaching somewhat more than one-half the distance from the sockets to the anterior ocellus; antennal sockets placed somewhat further apart than the distance from either to the oral margin, and about as far apart as the distance from either to the nearest point of the eye; frontovertex, or space between



the eyes in dorsal view of head, about as long as wide and slightly narrower than width of eyes.

Mesoscutum shallowly impressed medially on the posterior half, the sides of the impression very obscurely carinated, the triangular area in front depressed or hardly preceptibly convex and reaching to the middle; this triangular area and the posterior impression not separated by sutures but by very slightly impressed, indistinct, rather wide grooves, which converge toward the middle of the scutum but do not meet, then extend more faintly to the posterior margin, and which are sometimes rendered more distinct by a difference in the metallic luster and by being bare of the squamiform setae. Abdomen as in *L. setiger* except that the ovipositor is slightly longer. Discal pubescence of wings very dense and somewhat longer on the pale area at base; costal cell rather densely pubescent; the only bare area of wings situated on the posterior margin at the base; submarginal vein, including the apical thickened part, about four-fifths as long as the marginal; postmarginal short, about one-fifth as long as the marginal; stigmal vein slightly longer than the postmarginal, a little curved and widened towards the apex, the spur on the dorsal side near apex slender and bearing four minute pustules in a line and a fifth and smaller pustule out of alignment with the others; setae of submarginal vein about ten in number, rather shorter than the width of the costal cell (as long or longer than width of cell in *L. setiger*); hind wings rather broad, the costal cell very narrow, the marginal fringe short, the discal pubescence of ordinary density.

Sculpture as in *L. setiger*, the mesoscutum with dense reticulate punctures nearly uniform in size (more or less coarser medially in *L. setiger*); mesopleura much more finely punctulate in the middle and distinctly more coarsely punctulate on the posterior third; head more finely punctulate than the thorax and rather distinctly transversely shagreened on the vertex behind the ocelli; front and hind coxae punctulate like the body, the middle coxae finely and delicately reticulate. Pubescence showing the same distribution and rather greater density than in the type of *L. setiger* (but agreeing closely with other specimens of *L. setiger*) and distinctly less squamiform.

In the type and paratype from Nihoa Island the body is very strongly and nearly uniformly reddish coppery, rather bright reddish in one specimen and dark, more purple red in the other; in the two paratypes from Necker Island the body is colored as in *L. setiger*, or much darker and more greenish coppery, but one of these is reddish coppery, or shows a reddish luster, on the axillae, scutellum, mesosternum, mesopleura and on the sides, apex and venter of abdomen. Base of first tergite of abdomen with a brilliant red and golden luster; ovipositor pale yellow but very briefly fuscous at extreme base of the protruded part and briefly brownish at apex; front and hind coxae concolorous with body, the remainder of the legs nearly uniformly brownish yellow, the tarsi sometimes paler with the apical joint more or less fuscous. Palpi yellowish, the apical joint of the maxillary pair fuscous in the two specimens from Nihoa. Scape brownish yellow, gradually changing to dark brown or fuscous more or less extensively at apex; pedicel fuscous; next five joints pale brownish yellow, the last one of these sometimes considerably infuscated, all five covered with fine appressed whitish pubescence; last three funicle joints and club blackish. Wings practically as in *L. setiger*, being dark fuscous from the break or apical thickening of the submarginal vein to the apex, the base yellowish white, but the callosity at the extreme base of wing half way between the posterior margin and the vein is more or less infuscated; discal pubescence fuscous on the dark part of disk, pale brownish on the pale area at base; veins yellowish, the setae on the submarginal vein pale in color (fuscous or black in *L. setiger*); hind wings wholly hyaline, the veins yellow.

Length of body, 2.57 to 3.09 mm.; length of head, 0.825 mm.; width of head, 1.044 mm.; thickness of head, 0.443 mm.; width of vertex, 0.306 mm.; length of

antenna, 1.69 mm.; width of mesoscutum, 0.773 mm.; length of ovipositor, 0.537 mm.; length of fore wing, 1.91 mm.; width of fore wing, 0.855 mm.

Described from 2 females (holotype and paratype) from Nihoa Island, one on Euphorbia, June 12, 1923, the other at light on June 14 (Bryan); and 2 females (paratypes) from Necker Island, June 19 and 29, 1923 (Bryan).

Type: Cat. No. 229, Bernice P. Bishop Museum.

### 23. *Lepideupelmus bryani* new species

Female (fig. 3, b.)

In general structure very similar to *L. robustus*, eyes much smaller, the fronto-vertex in dorsal view of head wider than the eyes and somewhat wider than long; cheeks as long as the width of the eyes; head as seen from the side thickest a little above the middle; scrobes confluent in the form of a small shallow depression, reaching a little above the lower corners of the eyes and less than half way to the anterior ocellus; antennal sockets placed somewhat further apart than distance from either to the oral margin or to the nearest point of the eyes. Antennae much shorter than in *L. setiger* or *L. robustus*; scape excluding radicle not much more than twice as long as wide, about as long as pedicel and first four funicle joints combined; pedicel about twice as long as thick; first funicle joint much shorter and narrower than the following; the seven following joints about equal, the third to fifth slightly longer than wide and the last two a little wider than long; club as long as the two and one-half preceding joints combined, slightly wider than the preceding joint, and obliquely rounded at apex.

Thorax with the mesoscutum much less impressed medially than in the other species, the anterior triangular prominence faint, the grooves which are faintly discernible in *L. robustus* and *L. setiger* not apparent in this species. Abdomen as in the other species except that it is much less depressed, more cylindrical and rather narrower than the thorax, the ovipositor about as long as the first four joints of the hind tarsi.

Wings small, reaching about to the middle of the abdomen or slightly beyond the middle, yet normal in shape and with the venation fully developed; submarginal and marginal veins equal in length, the former distinctly broken just before joining the marginal; stigmal and postmarginal veins equal, each about one-third as long as the marginal; submarginal vein provided with rather coarse setae, the marginal and postmarginal veins with finer, shorter setae; disk of wing hardly developed beyond the apex of the venation and rather densely covered with extremely short fine pubescence. Hind wing not developed beyond the hooklets, the apex broadly rounded, the costal cell almost absent.

Dense reticulate puncturation nearly uniform throughout, except that it is distinctly finer at the center of the mesopleura and much coarser at the posterior margin of the same, the front and hind coxae with similar punctures. Head and other parts of the body except mesopleura and the sternum rather densely covered with squamiform pubescence, the setae being much flattened and widened towards apex; dorsal, outer anterior and ventral margins of the hind coxae with similar but somewhat longer setae, the femora with similar but distinctly finer setae, sternum with rather sparse very fine normal setae.

Head and body generally for the most part rich dark reddish coppery, the head except face sometimes greenish, the pleura usually distinctly green at least in part; the coppery coloration most distinct on the abdomen, where it is varied in part

with greenish and dark purplish fuscous; in some specimens the latter color is evident on the sternum, on the ventral margin of the mesopleura and on the venter of abdomen medially; the coloration although rich is not at all brilliant on account of the dense puncturation and pubescence. Scape and pedicel concolorous with the face, the flagellum black and not covered in part with glistening pubescence as in the other species. Palpi yellow, the apical joint of maxillary pair black. Mandibles very dark or reddish piceous. Legs mostly dark; the front pair with the coxae concolorous with body, otherwise fuscous, hardly or not at all metallic, the trochanters and knee joints brown or yellowish brown, the second and third tarsal joints yellowish brown; middle legs similar but with the femora, except the dorsal margin, the base of tibiae and the tibial spur, brownish yellow, the tarsi wholly dark; hind legs mostly concolorous with the body, but the tibiae less metallic than the femora, the trochanters, knee joints, tips of tibiae narrowly and the second and third tarsal joints brownish yellow, the remainder of the tarsi blackish. Ovipositor wholly blackish. Wings deep fuscous, mottled with paler spots or areas as follows: a slender streak directly beneath the marginal vein along its whole length, another below the submarginal vein; two somewhat oval or elongate oval spots at apex of stigmal vein, one extending basad from the vein, the other extending toward and almost reaching the apex of wing; another spot between stigmal and postmarginal veins and extending beyond them; rest of disk not quite uniform in tint but the principal paler areas are as given above; setae on submarginal vein black, these on the marginal and postmarginal veins somewhat paler. Hind wings rather less deeply fuscous and paler beneath the vein at base and on the apical half. Pubescence of body glistening white, the fine pubescence of mesosternum whitish.

Length of body, 1.68 to 2.14 mm.; length of head, 0.573 mm.; width of head, 0.740 mm.; thickness of head, 0.311 mm.; width of vertex, 0.287 mm.; length of antenna, 1.081 mm.; width of mesoscutum, 0.452 mm.; length of ovipositor, 0.394 mm.; length of fore wing, 0.851 mm.; width of fore wing, 0.311 mm.

Described from 6 females (holotype and paratypes) collected on Euphorbia, Nihoa Island, June 12, 14, and 15, 1923 (Bryan).

Type: Cat. No. 230, Bernice P. Bishop Museum.

## EULOPHIDAE

### 24. *Secodella metallica* (Ashmead)

Nihoa Island, June 13, 1923 (Bryan): 1 male. This species, described as *Omphale metallica*, is very common on all of the larger islands of Hawaii and appears to be an adventive species.

### 25. *Elachertus advena* new species (fig. 4)

This species is apparently very distinct from any other described species of *Elachertus*, as I find no mention in the literature of any species possessing such peculiar subflabellate antennae in the male sex, although I am acquainted with a similar species from California. Unquestionably *E. advena* is a recent immigrant to Hawaii and was first taken on Oahu in 1917.

Female (fig. 4, a)

Head somewhat wider than the thorax, moderately thick fronto-occipitally, considerably wider than long; occiput moderately concave; frontovertex about twice as

wide as long, the occipital margin acute and distinctly rimmed; ocelli in an obtuse angle, the posterior pair close to the occipital margin and remote from the eye margins; eyes large, ovate, much narrower at the lower end, the inner orbits parallel in frontal view, but strongly divergent posteriorly in dorsal view of head, the outer orbits strongly rounded and protuberant; cheeks short or distinctly less than one-

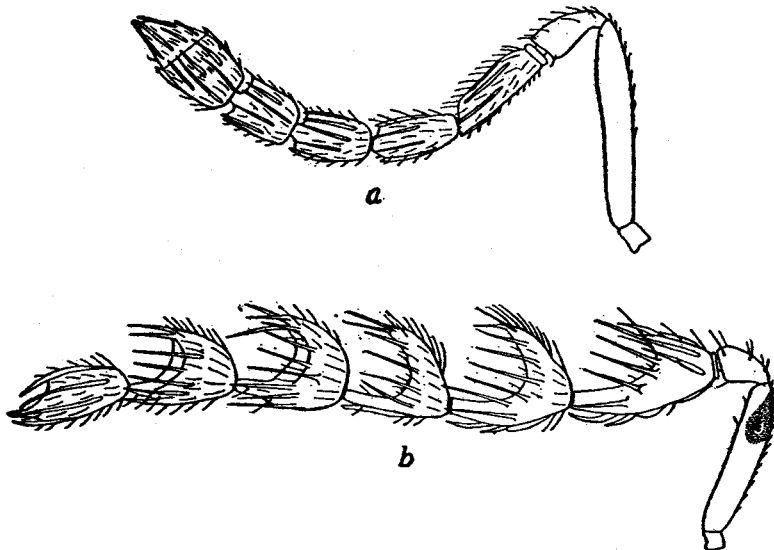


FIGURE 4. a, Antenna of female *Elachertus advena* Timberlake; b, antenna of male.

half the width of the eyes; face longitudinally concave or grooved to form a common scrobal impression; antennal sockets situated slightly above the ocular line, rather close together, yet not far distant from the oral margin, the space between them equal to about one-half of the distance from either to the oral margin; the latter slightly emarginate medially thus producing a short rounded lobe on each side.

Antennae nine-jointed; scape slender, cylindrical and about as long as the following four joints combined; pedicel about twice as long as thick at apex, considerably shorter than the first funicle joint; one very short ring joint present; funicle four-jointed, the first joint much the longest and about three times as long as wide, the following joints gradually decreasing in length and increasing in width distad, the fourth about one-fourth longer than wide; club two-jointed, slightly wider than the preceding joint and as long as the last two funicle joints combined, the basal joint somewhat longer than the apical joint and about equal to the third funicle joint; flagellum clothed with fine, short setae, numerous but not dense; the club and funicle joints each provided with several linear, elongate, raised and corneous sensoria, which shortly project as sharp points at the apices of the joints.

Mandibles with two acute, subequal outer teeth which are deeply divided and followed by an inner obliquely truncate margin which is minutely crenulate with twelve bluntly rounded denticles somewhat decreasing in size inwardly. Maxillary and labial palpi two-jointed and one-jointed, respectively.

Thorax somewhat more than twice as long as wide; pronotum well developed, subconical, nearly as long as wide, its posterior margin concavely arcuate. Parapsides

convex, the middle lobe of the scutum about as long as its anterior width, the parapsidal sutures distinct, separated at their posterior ends by about one-third of the total width of the scutum, and anteriorly running into a strong depression at each corner of the scutum, the posterior margin of the scutum straight for the most part but curved backward on each side for a short distance toward the tegula; axillae of moderate size and well separated. Scutellum slightly longer than the mesoscutum and slightly convex, the dorsal grooves slightly bowed in close to the base of the scutellum, then diverging somewhat as they approach the apex where they abruptly curve inward but do not quite meet; metanotum very short and transverse. Propodeum somewhat shorter than the scutellum, much longer medially than at the sides as it is produced into a distinct neck; medially there is a distinct carina with four or five oblique carinae branching from it on each side herringbone-like; sublaterally provided with a rather deep, irregular longitudinal depression or groove, broadest at the anterior end and curving somewhat mesad at the other end where it is continuous with the lateral margin of the neck; propodeal spiracles minute and oval, situated close to the basal margin on a prominence just exterior to the sublateral groove.

Abdomen oval or narrowly oval, varying somewhat in different specimens, acute at apex, depressed and about as long as the head and thorax combined; its petiole very short or about as wide as long; basal tergite of gaster convex and about one-half as long as the following tergites combined.

Wings moderately narrow; discal setae fairly dense and short on the apical half and gradually becoming sparser and longer toward the base, the speculum absent; marginal fringe short but dense. Submarginal slightly shorter than the marginal vein, the apex of the latter placed considerably beyond the middle of the wing; postmarginal vein about one-half as long as the marginal but much attenuated distad and forming a very acute angle with the stigmal; the latter long and slender yet distinctly shorter than the postmarginal vein, triangularly knobbed at apex, and provided with a prong which is directed toward the costal margin and which bears four pustules; setae borne by the submarginal, marginal and postmarginal veins rather numerous (about 12, 13, and 8, respectively) but not much coarser or longer than the discal setae at base of the wing. Costal cell rather narrow, the setae composing its marginal fringe much longer than those in the fringe at the apex of wing, yet as fine, the cell also provided with a few fine discal setae.

Legs slender; hind coxae conico-triquetrous and rather large, or more than twice as large as the middle coxae and more than one-half as long as the hind femora; apical spur of all the tibiae single, slender, small on front and hind legs, and about two-thirds as long as the first tarsal joint on the middle pair; tarsi slender, cylindrical, about two-thirds as long as their respective tibiae, the first three joints of the middle and hind pairs subequal to each other, the fourth or apical joint shorter.

Head finely subrugulose reticulate, the bottom of the scrobal impression smooth in its dorsal half; pronotum and mesoscutum rather rugulose, reticulately wrinkled and provided with minute setigerous punctures; axillae and scutellum smoother, being finely hexagonally reticulate with depressed lines, the axillae more finely sculptured; dorsal grooves of scutellum with deep close punctures, and the posterior margin of the metanotum medially provided with a row of close punctures; propodeum smooth for the most part excepting the herringbone carinae and a fine rugosity on each side of the neck close to the apex. Pleura mostly smoothish, but the rugosity of the pronotum extends in the form of oblique rugae onto the propleura; a large depressed area on the side pieces of the prepectus is sculptured much like the axillae and the same is true for the area just above the middle and hind coxae.

Eyes densely pubescent with fine erect short setae; head otherwise with numerous moderately long suberect fine setae most prominent on the frontovertex and on

the dorsal and lateral parts of the occiput. Dorsum of thorax with similar but somewhat longer reclinate hairs, among which are scattered some much longer setae or bristles as follows: a fringe on the posterior margin of pronotum, the lateral pair of which is very conspicuous, two pairs on the posterior margin of the mesoscutum, one pair of these on the middle lobe and one bristle on each parapsis, and two pairs on the exterior margin of the dorsal grooves of scutellum. Exterior margin of propodeum also bears a fringe of long setae; abdomen mostly bare except on the apical third and along the lateral margins; legs provided with fine setae, densest on the tibiae and tarsi.

Head and thorax very dark aeneous green, with sometimes a slight purple tinge on the scutellum and lateral margins of the propodeum; face with a distinct golden and sometimes reddish luster in part, except at the bottom of the scrobal impression; abdomen piceous, shining but not metallic, the basal half or a little more, both dorsally and ventrally, distinctly brownish except at the lateral margins, the brown and piceous parts shading indefinitely into each other. Scape yellow, pedicel yellowish brown, flagellum brownish on the two basal joints and gradually becoming fuscous at apex. Legs including coxae wholly yellow. Wings hyaline, the veins yellowish.

Length of body, (1.27 to) 2.25 mm.; length of head, 0.495 mm.; width of head, 0.636 mm.; width of vertex at anterior ocellus, 0.327 mm.; length of antenna, 0.943 mm.; width of mesoscutum, 0.530 mm.; length of fore wing, 1.515 mm.; width of fore wing, 0.643 mm.

Male (fig. 4, b)

Similar to the female but the head is somewhat thinner fronto-occipitally, the frontovertex proportionately wider, the ocelli considerably larger; the abdomen much smaller, not much more than one-third as long as the thorax, suboval, depressed and truncate at apex as the apical segments become retracted. Antennae decidedly different and longer; the scape similar but shorter or no longer than the pedicel and first funicle joint combined, and provided near its apex and near dorsal margin on the inner side with a round pore bearing several pustules; pedicel about one-half longer than thick; ring joint absent, although the pseudanellus has a large discoid capitulum; flagellum six-jointed and subflabellate, each joint except the apical one provided with a short stout basal expansion or branch, longest on the second, third and fourth joints (fig. 4), the sixth also somewhat expanded on the dorsal side and provided with rather long spur or nipple at apex; flagellum provided with rather long setae and spine-like sensoria especially on the margin of the branches as shown in the figure.

Coloration as in the female, but the abdomen is concolorous with the thorax and without a basal pale spot; antennae yellowish brown with the flagellum slightly dusker.

Length of body, (1.06 to) 1.61 mm.; length of head, 0.471 mm.; width of head, 0.561 mm.; width of vertex at anterior ocellus, 0.337 mm.; length of antenna, 1.28 mm.; width of mesoscutum, 0.499 mm.; length of fore wing, 1.52 mm.; width of fore wing, 0.683 mm.

Described from 11 females and 6 males (holotype female, allotype, and paratypes) collected in April, 1923, on Midway Island (Fullaway); 1 female (paratype) collected on Mt. Tantalus, Oahu, June 10, 1917 (Bridwell); 1 female (paratype) collected at Waihee, Maui, September 4, 1919 (Bryan); 1 female (paratype) reared from *Hypothenemus* larvae in monkey-pod twigs, Honolulu, about June, 1918 (Crawford); and 1 female

(paratype) reared July 4, 1922, from an unknown host on sugar-cane collected in the upper part of Manoa Valley, Oahu (Swezey and Fullaway).

Type: Cat. No. 231, Bernice P. Bishop Museum.

#### PSEUDOPHELIMINUS Girault.

As here recognized *Pseudopheliminus* is equivalent in part to *Sympiesis* of Ashmead's<sup>11</sup> classification (1904) and of other authors but not of Förster. In *Pseudopheliminus* the antennae are nine- or ten-jointed, with only one true ring joint, the funicle compressed and four-jointed, the basal joints much longer than wide, the club usually two-jointed; and in the male the antennae are ramose and typically Eulophine. The male of *Sympiesis* Förster has the antennae eight-jointed, non-ramose, the funicle five-jointed with the first three of these joints shorter than the following and about as wide as long or even transverse as is given in Ratzeburg's<sup>12</sup> figure of *S. laticornis*. The female has antennae similar to the male but slenderer according to some of the European authorities, but according to Masi's<sup>13</sup> description the female is hardly distinguishable from the same sex of *Pseudopheliminus*.

*Dimmockia* Ashmead, *Asympiesiella* Girault, *Notanisomorphella* Girault, and *Notanisomorphomyia* Girault are all closely allied to *Pseudopheliminus* and so far as known all have ramose antennae in the male. On account of the very numerous species belonging to this group it would not be surprising if all these genera were ultimately found to be linked together by annectant forms, in which case perhaps only the oldest genus, *Dimmockia*, could be recognized. Until this intergradation is proved, however, by a thorough revision of the group, I believe it would be better to recognize these genera as separate entities. *Pseudopheliminus* is used therefore for those *Sympiesis*-like species which have the abdomen moderately long and pointed at apex, and the propodeum without carinae and sculptured about like the rest of the thorax, and which have ramose antennae in the male sex.

#### 26. *Pseudopheliminus vagans* new species (fig. 5)

This species is very close to (*Sympiesis*) *P. substigmatus* (Girault) and *P. stigmatus* (Girault) but it is more similar to *P. stigmatus*. It differs from *P. substigmatus* in having the scape entirely dark metallic and the abdomen longer, the sixth tergite in *P. substigmatus* being no longer than the basal width, but considerably longer in both *P. stigmatus* and *P. vagans*.

<sup>11</sup> Ashmead, W. H., Classification of the Chalcid flies. . . .: Pub. Carnegie Museum, ser. 21, Carnegie Museum Mem. vol. 1, no. 4, pp. 225-551, 1904.

<sup>12</sup> Ratzeburg, J. T. C., Die Ichneumoniden der Forstinsecten in forstlichen und entomologischen Beziehung, vol. 2, p. 162, 1848.

<sup>13</sup> Masi, L., Contribuzioni alla conoscenza dei Calcididi Italiani: Lab. Portici Boll. vol. 1, p. 255, 1907.

The legs of *P. vagans* are much darker than those of *P. stigmatus*, with a slightly larger metallic green spot at the base of hind coxae, and with the middle coxae metallic on the dorso-posterior surface, whereas in *P. stigmatus* the middle coxae have only a slightly metallic streak on the outer side. The abdomen also has much less extensive yellow markings in *P. vagans*. About the only structural difference between *P. vagans* and *P. stigmatus* is that *P. stigmatus* has a much more definite sulcus on the propodeum extending backward from the spiracles, the inner margin of the sulcus somewhat simulating a lateral carina or fold.

It appears that *P. vagans* is a very recent immigrant to Hawaii, as it was first detected as late as November, 1922. Yet it must have been present for

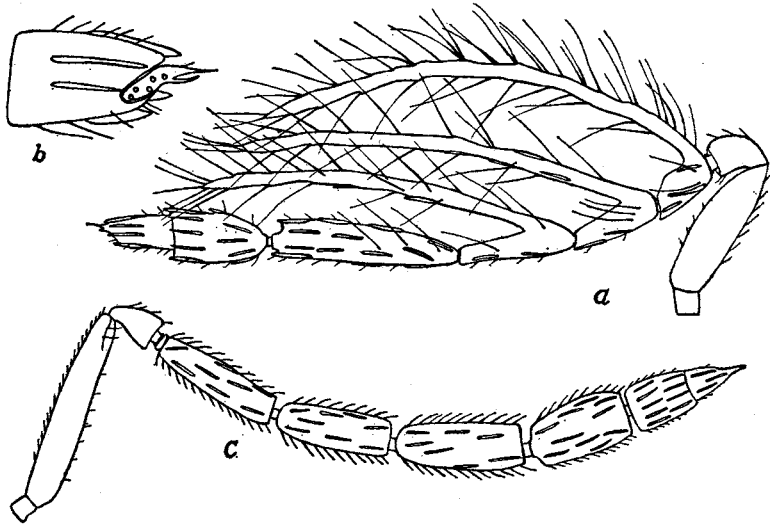


FIGURE 5. a, Antenna of male *Pseudopheliminus vagans* Timberlake; b, apex of club, more enlarged; c, antenna of female.

several years before that date to account for its distribution, as it was taken almost simultaneously on Oahu and Maui and but a few months later on Kauai and Nihoa.

#### Female

Head distinctly broader than long, if not shrunken; as seen from above it appears transverse, with a deep triangular emargination between the eyes, the sides broadly rounded, the occipital margin nearly straight; as seen from the side it is sublenticular, as seen from in front it has the dorsal margin slightly rounded, the sides including outline of the eyes fully rounded, each eye appearing as a semicircle, and the cheeks converging strongly towards the broad oral margin. Eyes rather strongly protuberant, moderately large, a little longer than wide, their margin fully rounded dorsally and on each side and much more acutely rounded anteriorly, vertex much broader than long, comprising slightly more than one-half of the whole



width of the head; ocelli in a small and obtuse-angled triangle, the posterior pair placed slightly nearer to the eye margins than their own distance apart. Face above the antennae provided with a deep impression which emarginates the frons and reaches almost to the anterior ocellus, the sides of the impression sloping gradually upward and outward from the median line towards the inner margin of the eyes, the face below the antennae moderately strongly convex from side to side; antennal sockets small, almost circular and placed close together just above the ocular line; cheeks short or no longer than half the width of the eyes, the genal suture fine but distinct.

Antennae nine-jointed; scape slender, cylindrical, as long as the pedicel, first funicle joint and nearly one-half of the second funicle joint combined, and reaching to the ocelli; pedicel about one-half longer than thick and not more than one-third as long as the first funicle joint; ring joint transverse, the capitulum closely joined to it and extremely thin; first funicle joint nearly four times as long as wide, the next two subequal, each about a fifth shorter than the first, the fourth about a third shorter than the first, somewhat wider and about two and one-third times longer than wide; club about equal to the fourth funicle joint in length but considerably narrower, tapering to the acute apex, the basal joint comprising nearly two-thirds of the length, the apical spur or nipple short, small and not articulated; all parts of the antennae including scape rather densely provided with short stiff very sharply pointed setae. Right mandible with five teeth, the left with six.

Thorax about twice as long as wide, widest at the base of the mesoscutum and tapering forward to the neck, the dorsum rather depressed; pronotum shortly conical, the collar not discrete; mesoscutum with very faint indication of parapsidal lines anteriorly; scutellum nearly as broad as long, strongly depressed, its surface continuous with that of the elevated median part of the metanotum; the latter about one-fourth as long medially as the scutellum; propodeum medially about one-half as long as the scutellum, provided with a fine only slightly raised but distinct median carina, but otherwise without carinae or sulci excepting a small transverse depression on each side close to the apical margin, which extends obliquely forward as a very shallow furrow to the spiracle.

Abdomen considerably narrower than the thorax and not quite twice as long, strongly acuminate at apex, strongly depressed on the whole, but with the venter slightly convex from side to side especially towards the base, the tergum sunken in behind the first tergite (or third morphological segment) excepting on the two apical segments and a part of the fifth; ovipositor shortly protruded at apex, the length of the protruded part about equal to the length of the seventh tergite.

Legs long and slender, the hind tibiae with two distinct apical spurs. Wings with submarginal vein somewhat shorter than the marginal, the stigmal nearly one-third as long as the marginal vein and the postmarginal vein about one-half as long as the marginal.

Head smooth and polished; almost the whole thorax with a rather fine close thimble-like puncturation, but a small triangular area on each mesopleuron beneath the hind wings and also a small, almost foveated, transversely oval area on each side of the metanotum at the posterior margin just in front of the propodeal spiracles are smooth and highly polished; puncturation of thorax on the whole very uniform in size yet becoming distinctly coarser on the middle of the mesoscutum and on the prepectus; mesosternum posteriorly with the same sculpture but anteriorly the punctures become shallower and gradually change into equally fine reticulations, the areoles of which are in part somewhat transverse; hind coxae above at base with a fine puncturation like the thorax, but the sculpture of the remaining part of these and of the other coxae inclines more to reticulation; abdomen throughout very finely reticulate.

Head with a few small black setae around the margins of the occiput and along the occipital margins of the cheeks and a few shorter ones on the anterior surface of the cheeks and sides of face; posterior margin of the pronotum with about five rather long black setae, the mesoscutum with about five pairs of similar setae and the scutellum with two pairs situated near the anterior and posterior corners; lateral margins of the propodeum with a sparse fringe of fine whitish hair; sides of abdomen and apical half of dorsum provided with rather short fine hair, most abundant towards the apex where it is blackish but becoming whitish on the sides towards the base.

Face, cheeks and frons metallic purple; rest of the head and the thorax rather dark metallic green, the thorax with a brassy luster which is strongest on the propodeum, abdomen metallic green, the apical tergite usually somewhat purplish, an elongate spot on each side of dorsum just in from the margin and covering the second to fourth and base of the fifth tergite yellowish, the intervening medial area nearly twice as wide and more or less purplish; venter of abdomen brownish yellow on the basal two-thirds, except medially where it is more or less fuscous, the last two segments and sides of the preceding segment dark metallic green. Scape metallic green, the pedicel and flagellum dull blackish. Legs brownish yellow; a small spot at the base of hind coxae above metallic green; the exterior surface of middle coxae usually more or less distinctly and extensively metallic green but sometimes yellowish; tibiae more or less distinctly brown or even fuscous on dorsal surface or entirely so towards apex, the tarsi fuscous; the spurs of middle and hind tibiae whitish or pale yellowish. Wings hyaline except for a small roundish fuscous spot at apex of the stigmal vein, which varies considerably in size and intensity; veins of wings fuscous, the submarginal much paler. Mandibles dark brown. Protruded part of the ovipositor sheaths almost black with a purplish luster.

Length of body, (1.80 to) 3.15 mm.; length of head, 0.514 mm.; width of head, 0.702 mm.; width of vertex at posterior ocelli, 0.344 mm.; length of antenna, 1.56 mm.; width of mesoscutum, 0.589 mm.; length of fore wing, 2.16 mm.; width of fore wing, 0.832 mm.

#### Male

Similar to the female except in regard to the antennae and abdomen, and except that the legs are darker and the wings without a substigmal spot.

Antennal sockets situated just above the ocular line and placed about their own diameter apart. Antennae nine-jointed and triramose, scape considerably shorter and wider than in the female, yet still linear and reaching to the ocelli; pedicel a little longer than thick and distinctly shorter than the first funicle joint; capitulum distinct and discoidal but no true ring joint present; funicle four-jointed, the first joint about twice as long as wide, the following joints greatly increasing in length successively, the third about twice as long as the first, the fourth about equal to the second and third combined; first three funicle joints provided with a long dorsal ramus, the first one inserted at the base of the joint, the third at about one-third of the length of the joint from the base, the second about intermediate in this respect between the first and third; the rami with numerous but well scattered long setae which are somewhat longer than the first funicle joint, the joints themselves, especially the fourth joint, provided with a few similar but somewhat shorter setae; the rami also decreasing successively in length, the first one reaching about to the base of the club, the third reaching almost to the middle of the basal club joint; club elongate oval, distinctly but not greatly shorter than the fourth funicle joint, three-jointed, the basal joint much thicker than the following joint and comprising somewhat more than one-half the whole length of club; apical joint composed of a small nipple with its basal expansion imbedded in the apex of the second joint; flagellum provided with rather numerous, linear, projecting, corneous sensoria which are most numerous

on the fourth funicle joint and on the first two joints of the club, and are present also on the second and third ramus but not on the first.

Abdomen about as long as the thorax and considerably narrower, somewhat narrowed towards the base, the venter distinctly plicate medially, the apex except for exerted genitalia somewhat rounded.

Coloration similar to that of the female but a little darker and duller, the abdomen with a rather large subbasal yellowish spot both above and beneath. Legs considerably darker, the coxae concolorous with the thorax, or the front and middle pair more or less piceous; front and middle femora except at apex, hind femora, apical half of hind tibiae and the hind tarsi more or less piceous or blackish, the hind femora also with a more or less distinct greenish luster; front tibiae near middle and middle tibiae near apex with a suffused and faintly dusky ring; front and middle tarsi except the basal joint more or less piceous especially above; trochanters, apex of front and middle femora and remaining parts of the tibiae and tarsi brownish yellow, the tibial spurs whitish or pale yellowish. Wings wholly hyaline, the veins fuscous, with the submarginal paler.

Length of body, (1.07 to 1.95), 1.70 mm.; length of head, 0.377 mm.; width of head, 0.497 mm.; width of vertex at posterior ocelli, 0.268 mm.; length of antenna, 1.09 mm.; width of mesoscutum, 0.424 mm.; length of fore wing, 1.367 mm.; width of fore wing, 0.610 mm.

Described from 7 females and 19 males (holotype female, allotype and paratypes) reared from *Gracilaria marginestrigata* Walsingham, on *Sida cordifolia*, Kaimuki, Oahu, January 25 to March 3, 1924 (Timberlake); 1 female and 2 males (paratypes) from the same caterpillar on *Sida*, Pearl Harbor Peninsula, Oahu, March, 1923 (Timberlake); 1 male (paratype) collected on Waialae ridge, Oahu, Nov. 26, 1922 (Swezey); 1 female (paratype) collected on lantana blossoms, Wailuku, Maui, Dec. 9, 1923 (Swezey); 1 female (paratype) reared from *Gracilaria hauicola* Swezey on hau tree, Hanalei, Kauai, May 16, 1923 (Swezey); and 1 female (paratype) collected on Nihoa, June 14, 1923 (Bryan). Paratypes in the collection of the author, of the Hawaiian Entomological Society and of the United States National Museum.

Type: Cat. No. 232, Bernice P. Bishop Museum.

## TRICHOGRAMMATIDAE

### 27. *Aphelinoidea oceanica* new species (fig. 6)

#### Female

Antennae nearly as in *A. semifuscipennis* Girault and *A. xenos* Timberlake; the pedicel considerably longer than the basal joint of the club; the latter with a transverse groove on the ventral side slightly beyond the middle of the joint, the suture between the two joints of the club nearly straight, not deeply angularly emarginate on the outer surface as in *A. semifuscipennis*.

Fore wing more as in *A. semifuscipennis* than in *A. xenos*, the marginal fringe shorter than in either, the longest setae being about one-eighth as long as the greatest width of the disk; the latter proportionately slightly wider than in *A. semifuscipennis* but the discal setae of about the same density, there being approximately 25 to 28 lines of setae across the widest part of the disk. Marginal vein distinctly

fusiform, being considerably wider at the middle than at either end, the stigmal vein very inconspicuous because of its transparency but about as long as wide; submarginal vein distinctly broken and with a short branch projecting obliquely basad from the distal portion, this probably representing a vestigial basal vein; submarginal provided with four coarse setae, two of these being on the distal part beyond the break; the marginal vein provided with five similar setae, of which one is placed at base and apex respectively and two opposite each other at the middle, and with several much smaller setae.

Upper part of occiput with close very fine transverse lineolations, the fuscous part of occiput with sparser, more irregular longitudinal lines; pronotum transversely lineolate, with a few coarse reticulations near the middle; sculpture otherwise appar-

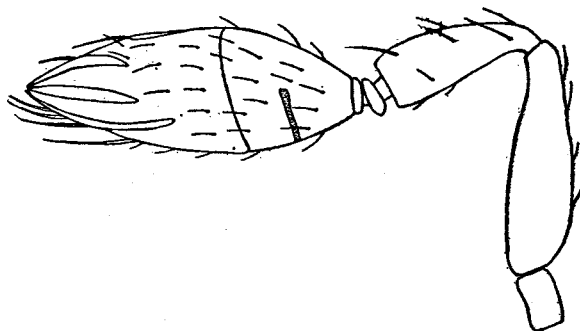


FIGURE 6. Antenna of female *Aphelinoidea oceanica* Timberlake.

ently wholly microscopically alutaceous.

General color rather bright orange yellow in balsam mounts, the scutellum, metanotum, a triangular basal mark on propodeum, and sometimes a part of the mesoscutum appearing whitish by reflected light; lower half of the occiput and the cheeks fuscous, the lower part of the face more dilutely fuscous or dusky; prothorax including prosternum also fuscous; antennae and legs concolorous with body, the front coxae and base of hind coxae dusky. Eyes and ocelli bright carmine. Wings hyaline, the area beneath the venation only slightly clouded with fuscous, except in a vertical band suspended from the stigmal vein and apex of the marginal, which is much more distinctly fuscous; within this more infuscated area lies a vertical, extremely narrow, slightly curved hyaline line; submarginal vein pale yellowish, the marginal fuscous, the stigmal nearly colorless. Hind wings without a distinct clouded area across the base; the veins yellowish, but the apex of the marginal slightly dusky.

In dry mounts the coloration is about the same but in some specimens two oval, pale brownish spots are apparent, placed longitudinally on the anterior half of the mesoscutum.

Length of body, 0.562 to 0.695 mm.; length of antenna, 0.267 mm.; length of scape, 0.097 mm.; length of pedicel, 0.053 mm.; length of pedicel and flagellum, 0.169 mm.; length of club, 0.105 mm.; length of basal joint of club, 0.038 mm.; length of fore wing, 0.475 mm.; width of fore wing, 0.209 mm.; length of marginal fringe of fore wing, 0.027 mm.

#### Male

Very similar to the female, the antennae slightly shorter and slenderer, the coloration usually but not always somewhat darker, with the under parts of the thorax, the coxae and lateral margins of the abdomen more or less infuscated, the femora

except at apex somewhat dusky; wings practically as in the female except that the marginal fringe is somewhat longer.

Length of body, (0.545 to) 0.669 mm.; length of antenna, 0.223 mm.; length of scape, 0.081 mm.; length of pedicel, 0.042 mm.; length of pedicel and flagellum, 0.133 mm.; length of club, 0.080 mm.; length of basal joint of club, 0.037 mm.; length of fore wing, 0.466 mm.; width of fore wing, 0.196 mm.; length of marginal fringe of fore wing, 0.034 mm.

Described from 8 females and 9 males collected on Wake Island, July 28 and August 3, 1923 (Bryan).

Type: Cat. No. 233, Bernice P. Bishop Museum.

This species belongs to a group containing *A. semifuscipennis* and *A. xenos*, which is distinguished by having the fore wings comparatively narrow, and provided with setae on the disk only as far basad as the apex of the venation; the hind wings very narrow, acuminate at apex and provided with only three lines of discal setae. The species belonging to this group may be separated as follows:

1. Antennae unicolorous, the basal joint of club not conspicuously paler ..... 2  
Antennae with the basal joint of club whitish, forming a conspicuous pale ring;  
wings narrow, with about eighteen lines of discal setae at widest point, the  
basal cloud not extending into the pubescent area of disk...**weismanni Girault.**
2. Wings deeply infuscated at base, the cloud extending more or less into the  
pubescent area of disk. .... 3  
Wings more faintly clouded at base, the cloud not extending into the pubescent  
area of disk, except at the posterior margin, where not more than three or  
four setae lie in the infuscated area; coloration of body almost wholly  
yellow, the legs and antennae practically concolorous. ....**oceanica Timberlake.**
3. Wings broader with denser discal setae, the marginal fringe equal to about one-  
seventh of the width of the disk; body mostly piceous in color. .... 4  
Wings comparatively narrow with about twenty discal hair lines at the widest  
point; marginal fringe equal to about one-fifth of the width of the disk;  
body mostly yellowish brown .....**xenos Timberlake.**
4. Wings with about twenty-five lines of discal setae at widest point; general color  
piceous, with upper part of face, antennae, legs in part, parapsides, meta-  
notum, base and apex of abdomen dusky yellow, the vertex and upper part  
of occiput brighter yellow. ....**semifuscipennis Girault.**  
Like *semifuscipennis* but with the antennae and legs paler and more yellowish,  
the marginal fringe of fore wing finer and shorter, and the discal setae  
somewhat denser. ....**semifuscipennis albipes Girault.**

## MYMARIDAE

### 28. *Polynema reduvioli* Perkins

Midway Island, April, 1923 (Fullaway): 2 females. Ocean Island,  
April, 1923 (Fullaway): 1 female.