HOMOPTERA

FULGOROIDEA AND JASSOIDEA OF GUAM

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The present paper is a report on the Homoptera collected by O. H. Swezey and R. L. Usinger. As was to be expected, the collection is quite extensive and interesting. The fauna of Guam, as an isolated Pacific island, is of great interest to students of zoogeography. In addition to the forms of economic importance, most of which are widely distributed species, which have already been reported by Swezey (30, pp. 150-182),[1] the species described below give Guam a sizeable homopterous fauna. And when this fauna is properly correlated with the faunas of the adjacent regions, we should have a much better understanding of the zoogeography of this part of the world. My thanks are due Mr. Swezey for the opportunity to examine this interesting and valuable collection. To make the present paper as complete as possible, I have appended notes on the known distribution of the economic species previously reported by Mr. Swezey, though I have not seen some of these. Types of the new species are to be deposited in the collection of the Experiment Station, Hawaiian Sugar Planters' Association, Honolulu.

FAMILY CIXIIDAE SPINOLA

Genus **MYNDUS** Stål

Myndus Stål, Berlin. Ent. Zeitschr. **6**: 307, 1862. Logotype, *Myndus musivus* Germar.

Head narrower than pronotum; posterior margin of crown broadly rounded and mesonotum tricarinate; crown broad and posterior tibiae without lateral spines; venation of tegmina distinct; radius, media and subcosta united at the base; subcosta and radius bifurcate near the nodal cell; radius with three branches; media unbranched before the branching of subcosta and radius.

This is a large genus with about 48 known species which have been described from all of the major regions of the world except South America, Africa, and Australia. Five species have been described from the Pacific—four from Samoa and one from Fiji.

1. Myndus bifurcatus, new species (fig. 1, *a-d*).

Crown broad and rather short, conspicuously narrowed anteriorly with a transverse carina at the anterior margin of the eyes and a second transverse carina at the anterior margin of the crown. Face broad, the lateral margins strongly elevated; the median carina strongly elevated dorsad, rather faintly elevated on the ventral half.

[1] Numbers in parentheses refer to Bibliography, page 147.

Male pygofer short and broad with a median elongate triangular tooth on the posterior border; genital styles elongate, bifurcate at the apex; aedeagus complex with two elongate apical spines which are strongly depressed; anal segment short, broadly reflexed ventrad; anal style elongate, conical.

General color quite variable, usually tawny olive, sometimes face and mesonotum blackish brown; legs and venter sometimes cinnamon-buff; compound eyes blackish; abdomen usually cinnamon, sometimes blackish; tegmina yellowish translucent with the apical fourth infuscated.

Length: to apex of abdomen, 2.4 mm.; to apex of tegmina, 3.6 mm.

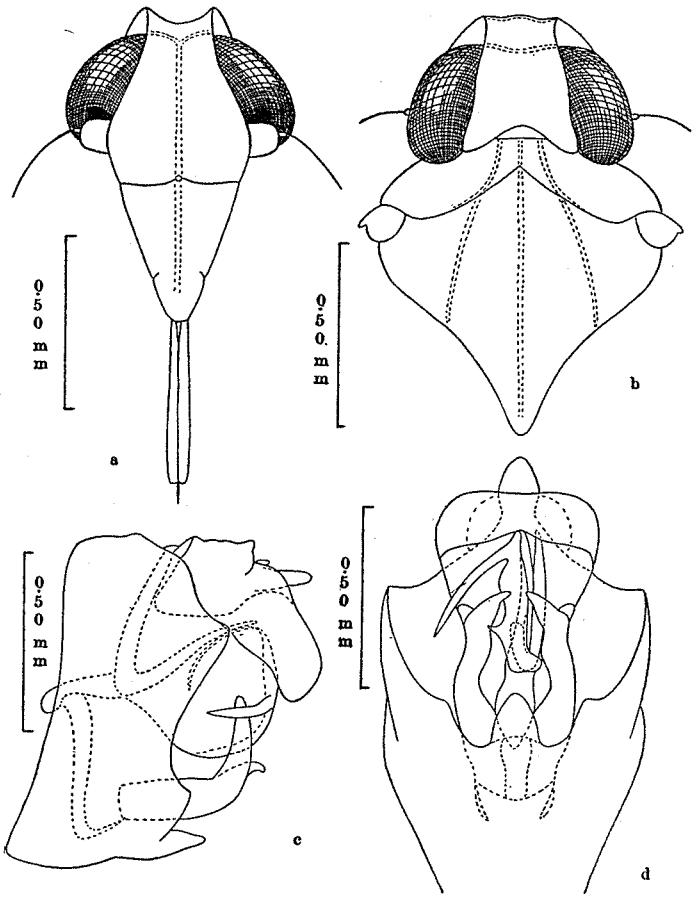

FIGURE 1.—*Myndus bifurcatus:* a, frontal view; b, dorsal view of head and thorax; c, lateral view of male genitalia; d, ventral view of male genitalia.

Holotype male, Machanao, June 4, from *Pandanus,* Swezey; allotype female, Mt. Alifan, May 21, from *Macaranga,* Usinger; paratypes: Mt. Alifan, three males; Orote Peninsula, one male; Mt. Alifan, six females; Ritidian Point, one female.

This species has the tegmina infuscate on the apical fourth, and the genital styles of the male bifurcate apically.

Family ARAEOPIDAE Metcalf (formerly DELPHACIDAE)

Genus **UGYOPS** Guérin-Méneville

Ugyops Guérin-Méneville, Zoologie, Insectes, 477, 1834. Haplotype, *Ugyops percheronii* Guérin-Méneville.

This is a genus of the subfamily Asiracinae, with the calcar subulate or awl-like. *Ugyops* belongs to a group of genera in this subfamily which has elongate antennae with the first and second segments about equal and the mesonotum quinquecarinate; the median facial carina is very variable, being sometimes single, sometimes forked at the middle of the face or below and sometimes forked from the clypeal border. The genitalia of the various species are frequently quite different. I suspect that this genus represents a complex of genera, but, until more material is available, it is not possible to distinguish the different forms.

Thirty-nine species have been described from various parts of the world, chiefly from the Eastern Hemisphere. In the Western Hemisphere, there are only two known species, both from Puerto Rico. In the Eastern Hemisphere, species have been recorded from the Seychelles, eastward across the Malay Peninsula to Indo-China, northward to Japan, southward through the larger East Indian islands, and New Guinea, south to Lord Howe Island, and eastward to Fiji and Samoa. They seem to be strangely absent from India, Ceylon, Australia, and the Hawaiian Islands. There are two species of this interesting genus in the present collection.

1. **Ugyops kinbergi** Stål, Hemiptera, Konigl. Sven. Freg. Eugenies Resa, Zoologi 4: 274, pl. 4, fig. 2, 2 a, b, 1859. (See figure 2, *a-d.*)

Crown elongate, narrow, about three times as long as the basal width. Frons elongate, narrow between the eyes, somewhat widened ventrally; the median carina forking on the basal third, the two branches running parallel to each other to the apex of the head where they are united for a short distance on the median line and then diverge and are connected with the lateral margins of the crown a short distance before the posterior margins of the crown. Antennal segments subequal; the first somewhat club-shaped; the second terete, densely pustulate; the flagellum longer than either segment, but not as long as both segments combined.

Male genitalia with the pygofer rather robust, about twice as long as its greatest width; the ventral emargination a deep triangle with the median area produced into a short tongue-like tooth; genital styles elongate, slender, their bases approximate, rather robust, the stems diverging for about half their length and gradually reduced in size; the apical half bent, more acuminate, meeting on the median line; the apices appressed, slender, acuminate; diaphragm with the dorsal margin broadly circularly excavated without genital armature; anal segment short, ventral margin broadly excavated, no anal spines; anal style short, broadly triangular, greatly flattened; aedeagus a much elongate coiled tube.

General color of the paler specimens ochraceous yellow with the eyes brown and with a faint indication of marbling on the lateral areas of the head in front of the eyes. Tegmina yellowish subhyaline and the apical fourth posterior to the branches of media brownish fuscous; with small brownish fuscous spots along the apical border of the cells between the costal border and media; with a small fuscous spot at the apex of clavus on the commisural margin; the posterior apical area of the hind wing infuscated. The specimens with intermediate coloration are colored about as in Stål's description. There is, however, a single darker female which has the general color smoky testaceous with very heavy fuscous markings on the lateral areas of the frons and on the sides of the head in front of the eyes. There is also a broad fuscous vitta starting behind the eyes and extending across the lateral fields of the pronotum, mesonotum and across the clavus to the apex of the tegmina.

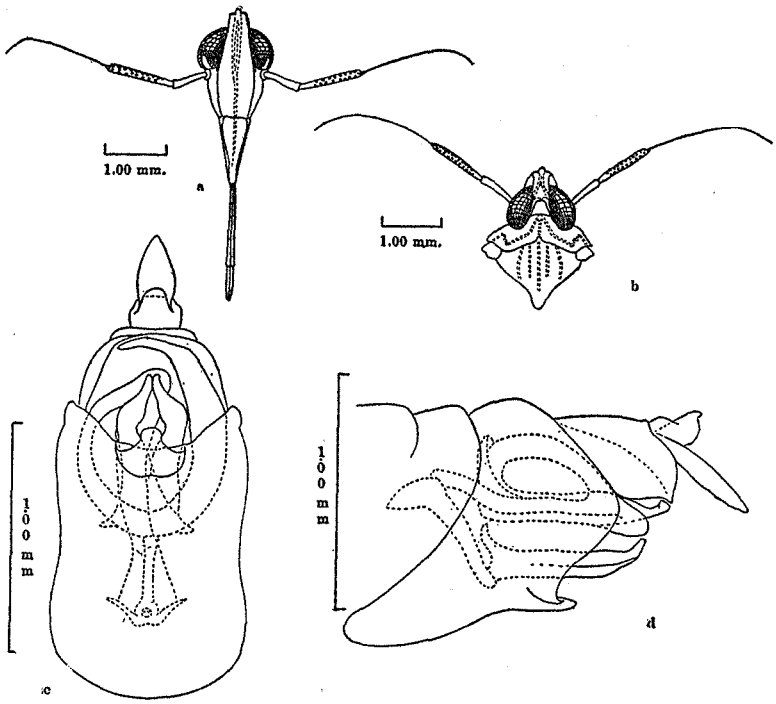

FIGURE 2.—*Ugyops kinbergi:* **a,** frontal view; **b,** dorsal view of head and thorax; **c,** ventral view of male genitalia; **d,** lateral view of male genitalia.

Yigo, April 13, Tarague, April 19, Talofofo, April 1, E. H. Bryan, Jr.; Machanao, Nov. 25, Barrigada, July 22, on *Intsia bijuga,* Swezey; Upi Trail, May 5, Usinger.

This species was described originally from Ponape, Caroline Islands. It has since been recorded from Java but not elsewhere in the Pacific. There is a series in the present collection which agrees in all essential details with Stål's short description and with his illustrations except that, in general, the specimens before me seem to be more heavily marked with fuscous on the body and

on the tegmina than Stål's description and illustration would seem to indicate. However, the other details agree so well that I consider it best to fix Stål's name upon the present specimens rather than to erect a new species for them. Stål's illustrations do not show the suture between the clypeus and the frons, and he does not illustrate the genitalia; I have, therefore, included the most outstanding characteristics which supplement his short description, and have illustrated the genitalia.

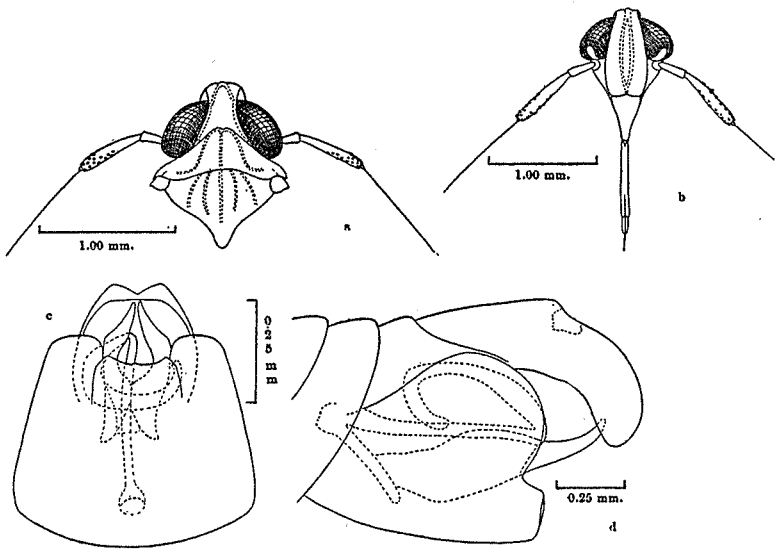

FIGURE 3.—*Ugyops samoaensis:* **a**, dorsal view of head and thorax; **b**, frontal view; **c**, ventral view of male genitalia; **d**, lateral view of male genitalia.

2. **Ugyops samoaensis** Muir, Haw. Ent. Soc., Proc. **4**: 573, pl. 10, fig. 10, 1921. (See figure 3, *a-d.*)

Ugyops sulcata Muir, Austr. Mus., Rec. **18**: 70, figs. 12-14, 1931.

There is, so far as I can see, no essential difference between these two species. *U. samoaensis* was described from Samoa and Savage Island [Niue], and *U. sulcata* was described from the New Hebrides. This species, therefore, would seem to have a wide distribution in the Oceanic region. All the specimens have the tegmina short, barely covering the abdomen; in the male genitalia the ventral margin of the pygofer is produced in a broad flaplike tooth which is concave on the posterior margin; the genital styles are broadly curved inward with the acute apices approximate; the aedeagus is a simple, elongate, coiled tube.

Umatac, May 28, on *milo;* Fadian, Aug. 19, on *Pemphis;* Agat, May 31, on *milo,* all Swezey; Piti, April 30, Usinger.

3. Perkinsiella thompsoni Muir.

Described from Guam on sugar cane; also known from Java. Recorded by Swezey (30, p. 309).

4. Megamelus proserpina Kirkaldy.

A pest of taro. It has a wide distribution in the Pacific area, being known from Fiji, Philippine Islands, Queensland, Amboina, Malaysia, Java, Niue, New Hebrides, Samoa, Tahiti, Society Islands, Hawaiian Islands, Luzon, Los Banos, Tonga. Recorded by Swezey (30, p. 310).

5. Peregrinus maidis (Ashmead).

The well-known corn planthopper is a pest of corn in the warm temperate and tropical regions of the world. It has been recorded previously from Florida, Ceylon, Texas, Hawaii, Queensland, Fiji, Java, West Indies, Australia, Jamaica, Costa Rica, North America, India, New South Wales, South Carolina, Cuba, Alabama, Mexico, Nicaragua, Brazil, North Carolina, southern states, Nigeria, Seychelles, Luzon, Philippine Islands, Formosa, Malay Peninsula, Amboina, west Africa, Borneo, Puerto Rico, southern India, Natal, Polynesia, Haiti, Barbados, Oriental region, Central America, South America, east Africa, Rodrigues Island, Mentawei Islands, South Africa, Samoa, Tahiti, Cape Province, Sierra Leone, Gold Coast, Bermuda, Washington, D. C., Tennessee, Ohio, Trinidad, Hawaiian Islands, Tanganyika, Oahu, Kauai, Lower California, Illinois, Louisiana, Dutch East Indies, and Rhodesia. Recorded by Swezey (30, p. 308).

6. Nilaparvata lugens (Stål).

A pest of rice in the Oriental region. Recorded by Swezey as very abundant. It has been listed previously from Java, Ceylon, Queensland, Fiji, Philippine Islands, India, China, Ceram, Sumatra, Sebesi, Indo-China, Malay Peninsula, Dutch East Indies.

Genus **LIBURNIA** Stål

Liburnia Stål, Hemiptera Africana 4: 179, 1866. Logotype, *Delphax vittacollis* Stål.

As at present constituted, this genus contains nearly 60 species. Many species which are at present assigned to the genus *Delphacodes* Fieber were previously assigned to *Liburnia*. *Liburnia furcifera* has a nearly world-wide distribution in the warm temperate and tropical regions of the world. This genus may be characterized briefly as follows: slender species with the head about as wide as the pronotum; carinae of the head and pronotum usually conspicuous; face with a single median carina; vertex produced only slightly in front of eyes; intermediate carinae of pronotum converging, reaching the pos-

terior border. The male genital styles usually broad with the inner angle produced; the diaphragm usually large and the anal segment usually has a pair of elongate slender recurved spines.

7. Liburnia furcifera (Horváth).

This species has been recorded previously from the following localities: Japan, Ceylon, Mexico, Sicily, Indo-China, Oriental region, Jamaica, Queensland, Egypt, Florida, Bermuda, West Indies, Formosa, India, Nicaragua, Cuba, southern states, Louisiana, Kenya, Philippine Islands, Fiji, Amboina, Malaysia, Ceram, China, Seychelles, Africa, Nigeria, Malay Peninsula, Central America, Brazil, Ecuador, British Guiana, Madeira, Cape Province, Natal, Puerto Rico, Sebesi, Korea, Ryukyu Islands, Siberia, south Europe, Manchuria, Europe, Sumatra, Zanzibar, South Africa, east Africa, Canal Zone, North Carolina, Costa Rica, and Java.

It is well represented in the present collection and seems to be fairly typical of this widely distributed and very variable species. All the males are dark colored and have macropterous tegmina; one of the specimens has a distinct pale vitta across the mesonotum. The females are all pale in color and have brachypterous wings. The specimens in the present collection were collected from grasses and sedges. Agana, June 26, Usinger; Piti, May 8, on grass, Swezey.

Genus **DELPHACODES** Fieber

Delphacodes Fieber, Zool.-Bot. Ges. Wien, Verh. **16**: 524, 1866. Logotype, *Delphax mulsanti* Fieber.

Head usually as wide as the pronotum; crown usually as broad as long; face elongate with a single median carina forked at the apex of the head. Intermediate carinae of the pronotum curved, not reaching hind margin; tibial spurs thin with teeth on the hind margin; male pygofer usually short and simple; genital styles flat, usually simple; inner apical angles produced; anal segment short; anal spines small or reduced.

The genus *Delphacodes* Fieber is one of the largest genera of fulgorids, containing at the present time nearly 300 species from various parts of the world. Species can be determined only by reference to the male genitalia, and these structures furnish perhaps the best generic characters also.

8. Delphacodes guamensis, new species (fig. 4, *a-c*).

Crown slightly longer than broad, nearly quadrate; face elongate; the lateral margins nearly parallel; carinae of the head distinct; the second segment of the antennae elongate, expanded apically.

Pygofer rather large; anal angles strongly produced and rounded; anal segment short, with slender recurved anal spines; genital styles short and broad, almost bifurcate, with the inner and outer angles strongly produced.

General color brownish. Vertex and pronotum pale ochraceous buff; carinae of head, antennae and legs ochraceous buff; tegmina subhyaline, faintly milky with a faint brownish cloud at the apex of the clavus; veins concolorous.

Length: to apex of tegmina, 2.7 mm.

Holotype male, Upi Trail, May 5, on grass, Swezey.

This species resembles *Delphacodes pacifica* Crawford from California perhaps more closely than any other species. It is, however, sufficiently distinct

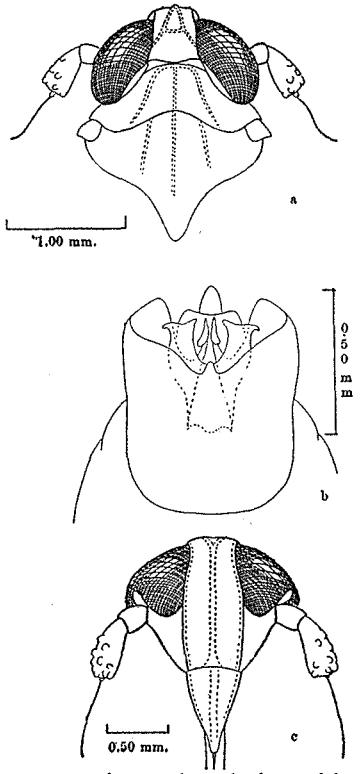

FIGURE 4.—*Delphacodes guamensis:* **a**, dorsal view of head and thorax; **b**, ventral view of male genitalia; **c**, frontal view.

FAMILY DERBIDAE SPINOLA

1. Proutista moesta (Westwood).

A pest of sugar cane in various parts of the world, having been reported previously from India, Philippine Islands, Flores, Assam, Java, Ceylon, Bombay, Palawan, Formosa, China, Borneo, Amboina, Sumatra, Bengal, Luzon, Siberut, Sipora, Negros, Seychelles, Lombok, and Sumbawa.

Genus **PYRRHONEURA** Kirkaldy

Pyrrhoneura Kirkaldy, Haw. Sugar Plant. Assoc. Expt. Sta., Ent. Bull. 1(9): 434, 1906. Haplotype, *Pyrrhoneura sacchariçida* Kirkaldy.

This genus may be separated from other genera of the tribe Otiocerini by the following combination of characters: media separated from the stem of

subcosta-radius; head when viewed laterally broadly rounded, following the contour of the compound eyes; antennae short, without a subantennal process.

Nine species are known in this genus. They seem to be rather widely distributed in the East Indian and Pacific islands. Muir has described a species from Nyasaland which is the only species known outside the Pacific area.

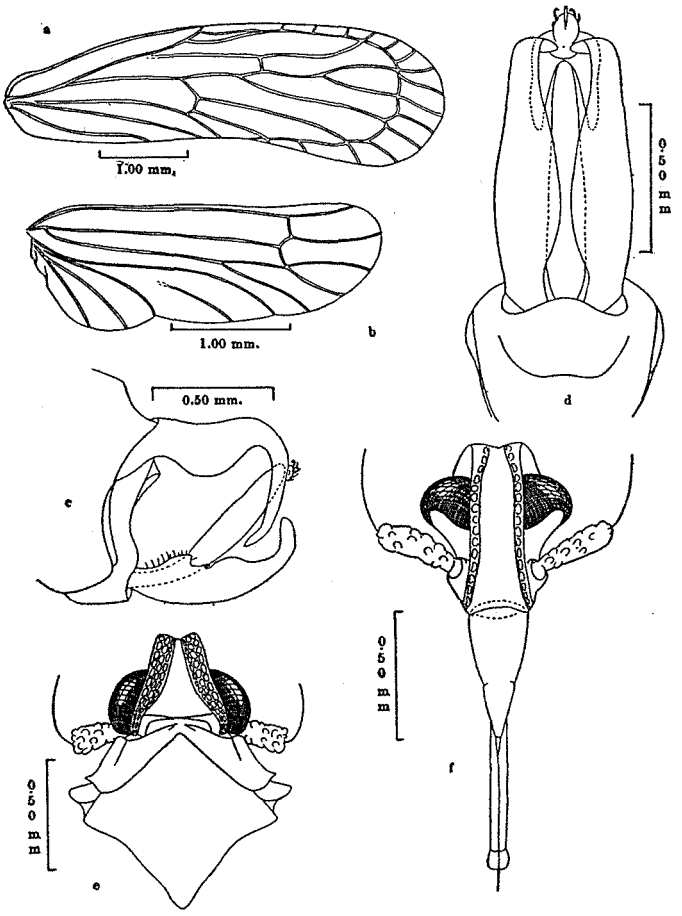

FIGURE 5.—*Pyrrhoneura bivittata:* **a**, tegmen; **b**, hind wing; **c**, lateral view of male genitalia; **d**, ventral view of male genitalia; **e**, dorsal view of head and thorax; **f**, frontal view.

2. **Pyrrhoneura bivittata,** new species (fig. 5, *a-f*).

Vertex triangular, projecting distinctly in front of eyes, nearly as broad as long; the lateral margins strongly elevated, nearly meeting on the apex of the head, with a double row of small pustules. Frons elongate, nearly four times as long as the width between the compound eyes; lateral margins nearly parallel to clypeal border and then suddenly flaring, with a single row of small pustules; median carina indistinct. First segment of antennae short; second nearly seven times as long as first, reaching to the

middle of the compound eyes; strongly pustulate. Pronotum short, deeply incised posteriorly, strongly flared; mesonotum large, ecarinate.

Genital plates of male elongate, narrow; apex produced into a broad triangular tooth which is directed dorsad; anal segment elongate, about as long as the genital plate.

General color of the body including the legs ochraceous yellow with a lateral blackish fuscous vitta; tegmina milky subhyaline; wings milky subhyaline; veins concolorous.

Length: to apex of abdomen, 2.9 mm.; to apex of tegmina, 5 mm.

Holotype male, Yigo, Nov. 13, on *Cacao,* Swezey; allotype female, Dededo, Sept. 7, on *Guettarda,* Swezey; paratype, one female, Dededo, Sept. 7, on *Ficus tinctoria* (*hodda*), Swezey.

This species may be readily recognized by the blackish fuscous fascia across the base of the frons which is continued across the lateral margins of the head and thorax as a blackish fuscous vitta and to the apex of the tegmina as a broad pale fuscous vitta.

3. **Lamenia caliginea** (Stål).

This species has been reported from Guam by Fullaway. Apparently not of economic importance, it has a very wide distribution in the Pacific region. Previous records include Tahiti, Samoa, Tutuila, Niue, Savaii, Manua, Upolu, Ellice Islands, Tonga, Society Islands, Raiatea, north Borabora, south Borabora, and Funafuti.

Genus **MUIRALYRICEN,** new genus

Head small, consisting almost entirely of the large compound eyes and the strongly elevated contiguous carinae; vertex small, deeply incised posteriorly; lateral carinae strongly elevated, contiguous. Frontal carinae contiguous to the level of the base of the antennae, then flaring to the wide clypeal border. Subantennal process large. Shoulder keels large, auriculate. Antennae with the basal segment minute, second segment flattened, ovate. Tegmina broad, costal cell broad with a recurved cross vein near the middle; a heavy straight cross vein extending from media across subcostal and radial cells to the costal margin; cubital vein ending in the extended claval vein.

Orthotype, *Muiralyricen ruber,* new species.

This genus would fall in Muir's key (18, p. 238) next to *Paralyricen* Muir, but differs in essential details of head structure and wing venation. It agrees with *Paralyricen* in having the frontal carinae contiguous and in having both shoulder keels and subantennal processes with the antennae short. The first segment is minute.

4. **Muiralyricen ruber,** new species (fig. 6, *a-f*).

Vertex narrow, elongate, projecting in front of the eyes, consisting of little more than the strongly elevated lateral margins; deeply incised posteriorly. Frontal carinae contiguous to the level of the insertion of the antennae; lower part of frons an equilateral triangle. Clypeus broad, flat; lateral carinae strongly elevated; median carina indistinct. Margin of head following the contour of the compound eyes. Subantennal process strongly developed. Shoulder keels large. Antennae short; first segment minute; second segment

about as long as broad, somewhat ovate in shape. Median area of the pronotum short, deeply incised posteriorly, extending almost to the level of the middle of the compound eyes anteriorly; lateral fields strongly developed. Mesonotum with well-developed median and intermediate carinae. Lateral margins of the metanotum strongly carinately elevated. Anterior tibiae and femora compressed. Tegulae large. Abdomen short, compressed.

General color bright red, fading below to ochraceous yellow. Legs ochraceous yellow. Tegmina and wings faintly smoky hyaline; veins and cross veins bright red; eyes black; antennae ochraceous yellow.

Length: to apex of abdomen, 1.7 mm.; to apex of tegmina, 3.4 mm.

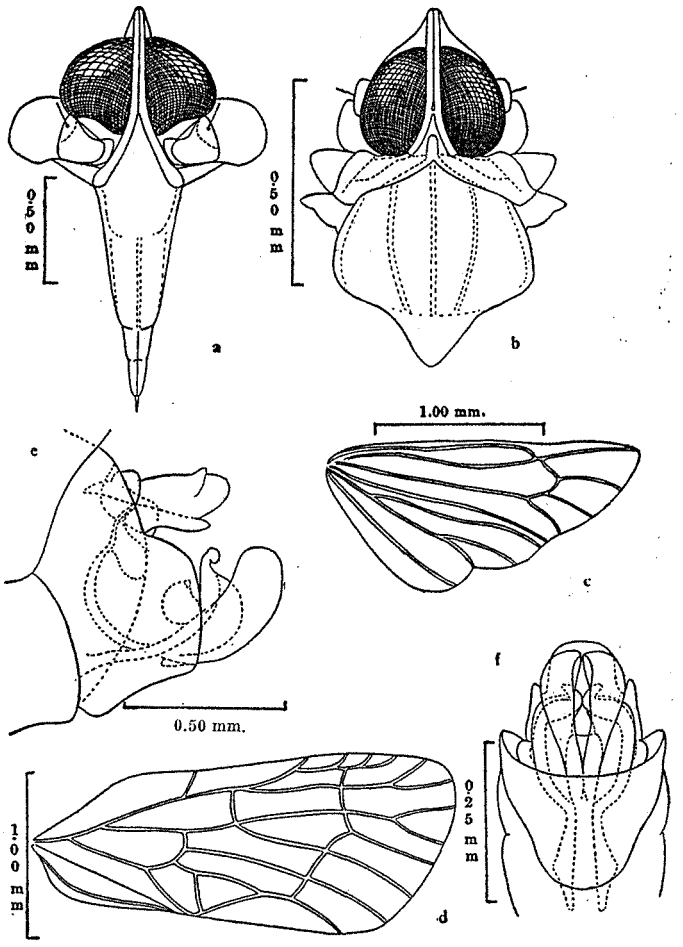

FIGURE 6.—*Muiralyricen ruber:* **a**, frontal view; **b**, dorsal view of head and thorax; **c**, wing; **d**, tegmen; **e**, lateral view of male genitalia; **f**, ventral view of male genitalia.

Holotype male, Talofofo, June 17, Swezey; paratypes: one male, Mt. Chachao, from *Icacorea* [*Ardisia*]; 1 male, Ritidian Point, E. H. Bryan, Jr.

5. Muiralyricen pallescens, new species (fig. 7, *a-c*).

A pale species with the tegmina somewhat longer than in *ruber;* milky subhyaline in color, clouded with fuscous along the veins and cross veins.

Crown very narrow, deeply incised caudad, projecting for nearly half its length in front of the compound eyes. Frons with the lateral carinae contiguous to the level of the lower margin of the compound eyes only, then widely separated to the broader clypeal border. Pronotum with the median carina strongly produced, projecting only slightly between the eyes; lateral fields of the pronotum not as large as in *ruber.* Mesonotum large, median carina very distinct, intermediate carinae indistinct. Tegmina somewhat longer than in *ruber;* venation similar.

General color of the body, including the legs and abdomen, light ochraceous buff, more or less covered with a waxy white powder. Compound eyes brown. Tegmina milky subhyaline with an irregular cloud of tawny across the medium area of the corium and a narrower fascia across the apical cross veins; veins and cross veins milky white except in the areas crossed by the tawny cloud where the veins and cross veins are blackish fuscous.

Length: to apex of tegmina, 4.3 mm.

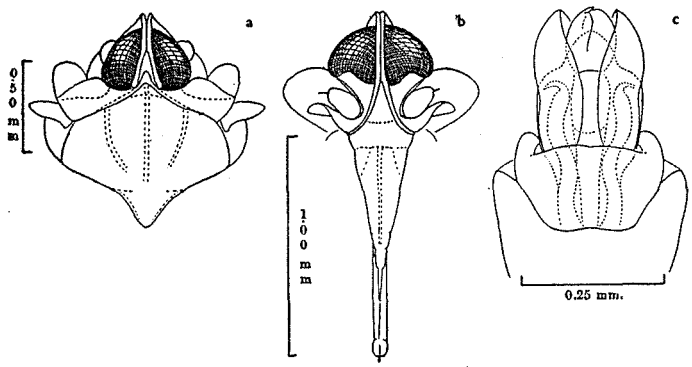

FIGURE 7.—*Muiralyricen pallescens:* **a,** dorsal view of head and thorax; **b,** frontal view; **c,** ventral view of male genitalia.

Holotype male, Piti, Sept. 1, Swezey; allotype female, Piti, Aug. 3, on *Ipomoea* sp., Swezey; paratype, one male, Orote Point, Aug. 2, on *Ipomoea* sp., Swezey.

FAMILY TROPIDUCHIDAE STÅL

Genus **SWEZEYARIA,** new genus

Crown produced for more than half its length in front of the eyes; the lateral margin strongly elevated, converging to the obtuse apex; the median carina faint. Frons elongate, narrow, widening gradually from the obtuse dorsal border to near the clypeus and then suddenly constricted to the narrower clypeus. Pronotum short; the median area triangularly produced to approximately the anterior margin of the compound eyes; lateral margin carinate; median carina distinct; posterior margin of the pronotum deeply incised. Mesonotum tricarinate. Tegmina transparent with a single definite subapical line extending from the nodal cell to the apex of clavus; a few irregular cross veins in front of the subapical line but not forming a distinct line; subcosta very close to the costal border; radius with three branches before the subapical line; media with two; and cubitus branched at the apex of the basal third of the tegmina; most of the longitudinal veins branched

beyond subapical line without cross veins beyond the subapical line. Posterior tibiae with three lateral spines, the third near the distal end.

Orthotype, *Swezeyaria viridana,* new species.

This is one of the genera of the tribe Tambiniini which has a distinct cephalic process. It is perhaps closest to *Tambinia* Stål, but differs in the shape of the crown and pronotum, and in venation.

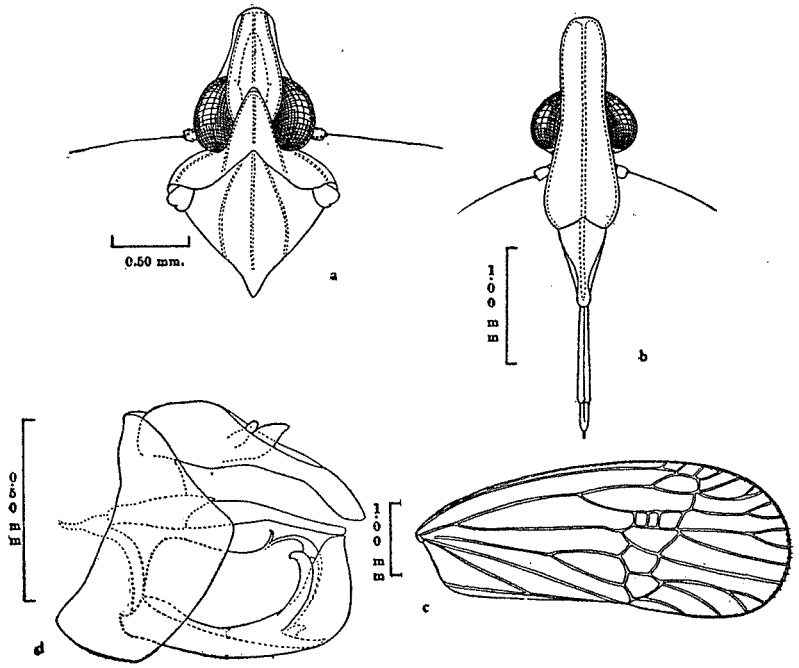

FIGURE 8.—*Swezeyaria viridana:* **a,** dorsal view of head and thorax; **b,** frontal view; **c,** tegmen; **d,** lateral view of male genitalia.

1. Swezeyaria viridana, new species (fig. 8, *a-d*).

A dull-green species tending to fade to ochraceous green with the carinae of the head marked with fuscous; the eyes brown; the stigmatal spot fuscous and the segments of the abdomen marked with testaceous laterad.

Crown nearly three times as long as the width between the eyes; the lateral margin bowed outward; the median carina fading out anteriorly. Head including the compound eyes only about half the width of the pronotum. Pronotum very short. Mesonotum nearly as long as the head and pronotum combined.

Male genitalia with the pygofer short, ringlike; the genital styles elongate, flat, meeting on the median line for about three fourths of their length, then the inner margin suddenly excavated and the styles narrowed to elongate triangular teeth which are directed dorsad and overlapping at the apex; the anal segment elongate, produced into an elongate triangular median process below the anal style.

Length: to apex of abdomen, 4.6 mm.; to apex of tegmina, 6.3 mm.

Holotype male, two paratype males, Ritidian Point, June 2, on *Pandanus,* Usinger.

Genus **TAMBINIA** Stål

Tambinia Stål, Berlin. Ent. Zeitschr. 3: 316, 1859. Logotype, *Tambinia languida* Stål (*Ossa* de Motschulsky, Soc. Nat. Moscou, Bull. **36**: 106, 1863; haplotype, *Ossa dimidiata* de Motschulsky).

This genus may be recognized by the following combination of characters: head flat; face nearly horizontal; crown produced, tricarinate; pronotum short, broad, tricarinate, anterior margin produced between the eyes, posterior margin usually deeply excavated; mesonotum elongate, tricarinate; tegmina translucent, parallel-margined, the apical margin broadly rounded; subapical line oblique, distinct, a few cross veins beyond the subapical line not arranged in a regular row; subcosta and radius united to near the subapical line; media not branched before the subapical line; cubitus one branched about halfway between the base of the tegmina and the subapical line; hind tibiae usually with two spines.

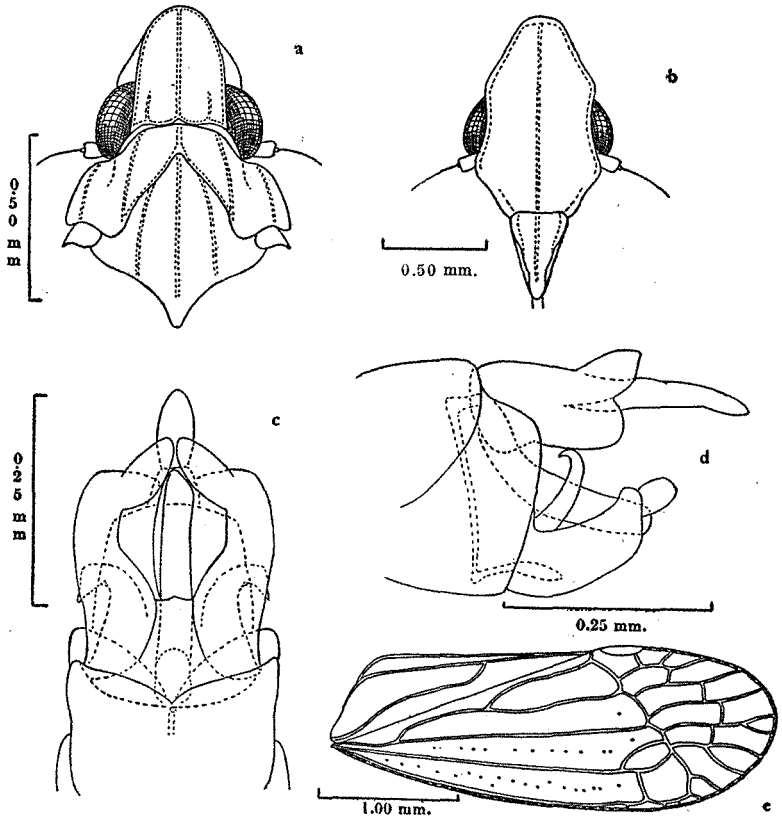

FIGURE 9.—*Tambinia guamensis:* **a**, dorsal view of head and thorax; **b**, frontal view; **c**, ventral view of male genitalia; **d**, lateral view of male genitalia; **e**, tegmen.

2. **Tambinia guamensis,** new species (fig. 9, *a-e*).

Crown about one third longer than the width between the eyes; the lateral margin narrowed around the apex; median carina percurrent; posterior border sinuate with a definite notch on the median line. Face slightly longer than its greatest width; the dorsal

margin narrow, broadly rounded, expanded to about the level of the compound eyes, then sinuate to just about the level of the antennae then narrowed to the clypeus; median carina percurrent, indistinct in the central depressed area. Pronotum about eight times as wide as its median length; anterior margin nearly straight; posterior margin deeply incised; the intermediate and median carinae conspicuous; the intermediate carinae merging with the median carinae at the anterior border; all three carinae percurrent. Mesonotum tricarinate; metanotum distinct. Tegmina with characteristic venation; costal and apical borders with a single row of small tubercles; the tubercles in costal and radial cells small but distinct.

General color of venter ochraceous yellow including legs; dorsal area of head and thorax ochraceous green; dorsal area of abdomen green; tegmina with a greenish cast.

Length: to apex of abdomen, 4.3 mm.; to apex of tegmina, 6 mm.

Holotype male, allotype female, Agat, May 31, on *Hernandia* sp., Swezey; paratypes, one male, one female, Agat, May 31, on *Hernandia,* Swezey; one male, Talofofo, June 17, Swezey; one female, Upi Trail, May 5, Usinger; one male, Machanao, June 4, on *Piper guahamense,* Swezey; one male, Machanao, June 2, Swezey; two females, Mt. Alifan, May 21, Swezey.

This species resembles *boninensis* and *crini* in having the face impressed in the median area. It differs, however, from these species in coloration, genitalia and other, minor, characters; therefore, I believe it best to describe it as new.

Family JASSIDAE Amyot and Serville

Genus **JAMITETTIX** Matsumura

Jamitettix Matsumura, Ins. Matsumurana **15**: 40, 1940. Orthotype, *Jamitettix kotonis* Matsumura.

Vertex short, more than five times as broad as long; anterior margin broadly curved; posterior margin broadly curved, nearly parallel to the anterior margin.

This genus was described to include those species closely related to *Drabescus* Stål which do not have the anterior femora furcate or ridged, and the posterior margin not dilated. The veins of the tegmina are smooth throughout, not granulate in the anterior area as they are in *Drabescus.*

1. Jamitettix guamensis, new species (fig. 10, *a-e*).

Crown slightly conically produced in front, finely rugulose with the rugae radiating from the apex of crown; two faint and somewhat irregular transverse carinae below the ocelli; posterior margin broadly, circularly incised, nearly parallel to anterior margin. Face faintly rugulose; postclypeus narrow, slightly longer than broad; the dorsal margin nearly three times as wide as the ventral margin; preocular region broad; juga nearly semicircular in outline. Pronotum nearly twice as broad as its median length; the anterior margin produced beyond the anterior margin of the compound eyes; posterior margin shallowly excavated, with the entire surface finely transversely rugulose. Mesonotum about twice as broad as long, anterior area smooth; posterior area finely rugulose.

Last ventral segment of the female but little longer than the penultimate; posterior margin slightly notched at the median line; the posterior border shallowly crenulate. Male plate broadly triangular basad, produced caudad into acuminate processes which

curve dorsad. Pygofer fairly stout, exceeding the plate slightly, with about a dozen stout setae.

Internal male genitalia: aedeagus elongate, tubular; styles slender, elongate, almost as long as the plates, broadly curved, meeting on the median line caudad; lateral processes short, stout, the apices curved laterad.

General color olive-buff with the face, crown, pronotum, and mesonotum heavily mottled with blackish fuscous. Venter and legs heavily spotted with blackish fuscous. Tegmina translucent, olive-brown; veins brown.

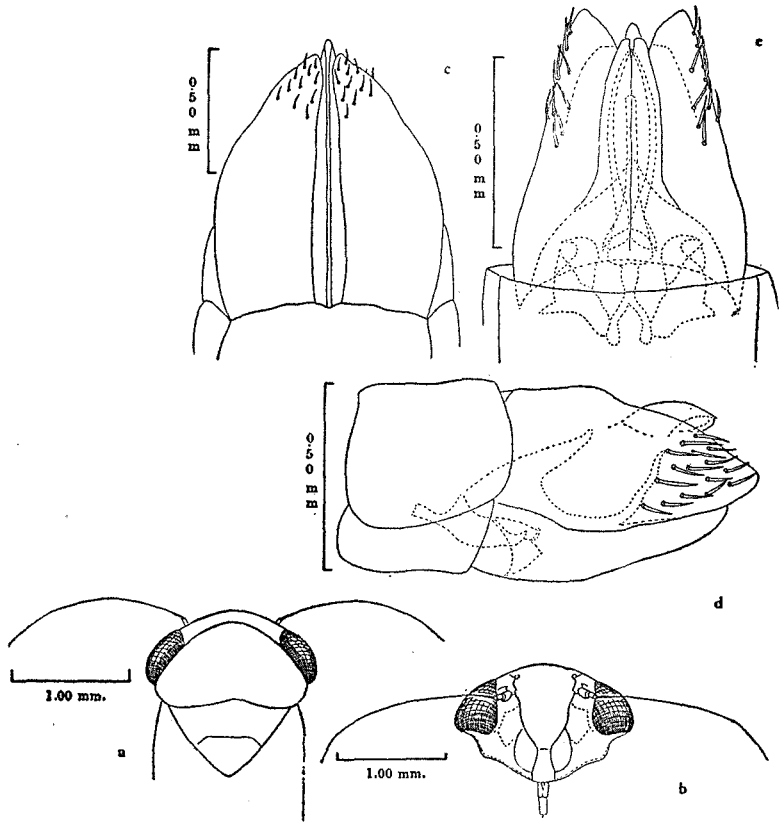

FIGURE 10.—*Jamitettix guamensis:* **a,** dorsal view of head and thorax; **b,** frontal view; **c,** ventral view of female genitalia; **d,** lateral view of male genitalia; **e,** ventral view of male genitalia.

Holotype female, Upi Trail, May 5, Usinger; allotype male, Machanao, June 30, Swezey; paratypes: one female, Upi Trail, May 5, Swezey, one female, Sinajana, June 8, Usinger.

This species differs chiefly from *kotonis* Matsumura in much heavier, darker markings and in the decidedly different genitalia. In *kotonis,* the last ventral segment is broadly excavated; in *guamensis,* the last ventral segment is slightly notched.

Genus **EUSCELIS** Brullé

Euscelis Brullé, Homoptères, Expéd. sci. Morée 3(1) : 109, 1832. Haplotype, *Euscelis lineolatus* Brullé.

The genus *Euscelis* may be characterized briefly as follows: head broad, as broad as or broader than the pronotum; crown short and broad, obtusely angled. Tegmina variable in length, sometimes slightly shorter and sometimes slightly longer than the abdomen, with three anteapical cells.

I place the species which are described below in *Euscelis* with some hesitation. This is a large genus, including at the present time some 50 recognized species of almost world-wide distribution although no species have hitherto been recognized from any of the East Indian or Pacific islands. It is a genus which apparently contains several diverse elements, although material is not at hand for working out all of the details. The characters for this genus have never been very clearly defined. A great many species which do not rightfully belong have been placed in the genus, and the recent revisions of the genera in the group to which *Euscelis* belongs have been rather limited in their scope and have not been carefully correlated with previous work. Edwards (4) gave a key to the British genera and established five new genera without further description and without genotype designation. Haupt (10, p. 263) gives a key to the European genera without including any of the genera established by Edwards in 1922. Ball (1, p. 1) gives a key to some North American genera but does not consider the work of Haupt. He does include one of the genera established by Edwards in 1922. He gives *Cicada striola* Fallén as the genotype for *Drylix* Edwards in spite of the fact that Haupt in 1927 had given *striola* Fallén as the type of the genus *Limotettix* Sahlberg. The present species can be placed, therefore, in *Euscelis* until the genera of this family can be revised on a world-wide basis.

In this connection it might not be amiss to attempt to straighten out the synonymy of *Limotettix*. As far as I can determine, the facts are as follows: *Limotettix* was described by Sahlberg (23, p. 224) and he included 23 Palearctic species, three of which were new. No type was designated by Sahlberg, and as far as I can determine, no type was selected until Haupt (9, p. 25) selected *Cicada striola* Fallén, one of the originally included species, as the type. If this is correct, Ball's selection of *striola* as the type of *Drylix* will not stand, and the type of this genus will be the only other included species, *Thamnotettix atricapilla* Boheman. I have not been able to examine a specimen of *atricapilla* to determine whether it is sufficiently distinct to constitute a genus separate from *Limotettix* with *striola* as type. Neither can I be sure that *Limotettix* as described by Edwards to include *quadrinotata* is a valid genus separate from *Limotettix* Sahlberg with *striola* as the type.

2. Euscelis transversus, new species (fig. 11, *a-e*).

Head broad; crown obtusely angulate; last ventral segment of the female triangularly emarginate, notched; general colors ochraceous buff with a blackish submarginal transverse fascia between the eyes.

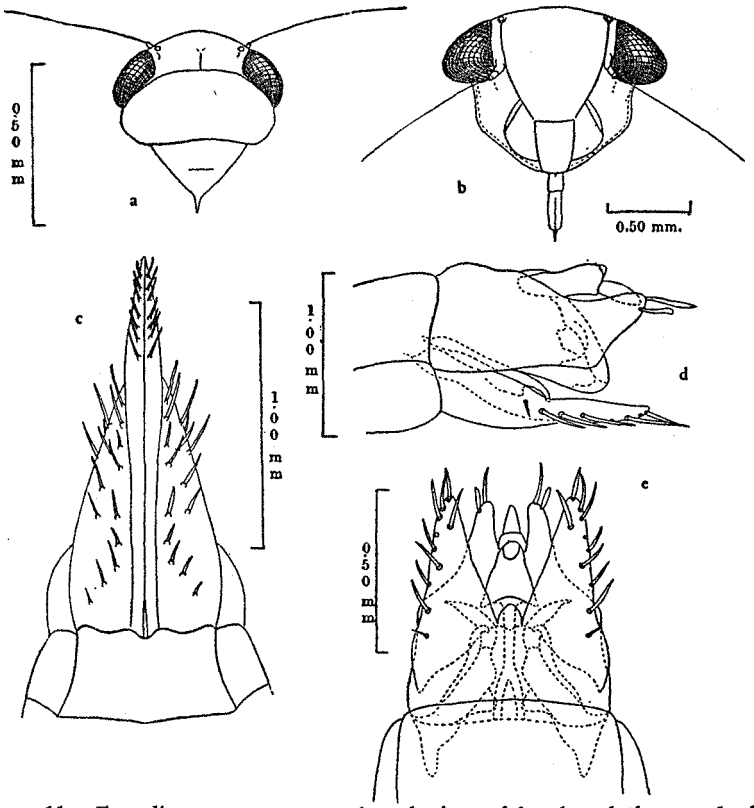

FIGURE 11.—*Euscelis transversus:* **a,** dorsal view of head and thorax; **b,** frontal view; **c,** ventral view of female genitalia; **d,** lateral view of male genitalia; **e,** ventral view of male genitalia.

Crown obtusely angulate, about three times as broad as long with obscure longitudinal rugae; ocelli visible in dorsal view. Postclypeus about as broad as its median length; lateral margins nearly parallel to the level of the antennae, then broadly curved to the upper margin of the juga and then suddenly constricted to the clypeal suture, slightly inflated; finely punctulate; anteclypeus broad and short, about 1.5 times as long as its basal width; juga broad and short, the outer margin broadly curved; preocular region about twice as long as its greatest width. Antennae inserted about the level of the middle of the eyes; genae broad; outer margin obtusely angulate. Pronotum nearly three times as broad as long, the anterior margin broadly curved; the posterior margin nearly straight. Mesonotum nearly twice as broad as long, triangular. Tegmina translucent, venation distinct.

Last ventral segment of the female nearly three times as long as the penultimate segment; the posterior margin broadly, triangularly notched on the median line; the posterior lateral borders shallowly excavated with the posterior lateral angles somewhat produced.

Male genitalia with the last segment very short on the median line; anterior margin broadly curved posteriorly and the posterior margin broadly curved anteriorly; valve elongate, produced, triangular; genital plates elongate, nearly as long as the pygofer, triangular, diverging, with a row of elongate submarginal spines along the posterior lateral border.

General color light ochraceous buff, usually ochraceous orange on the crown, the face, venter, and legs. Crown ochraceous buff or ochraceous orange with a broad blackish submarginal fascia between the eyes; face ochraceous orange with a series of about seven blackish fuscous arcs gradually decreasing in length toward the clypeal suture. Pronotum ochraceous buff with a series of three or four short dashes behind each eye. Mesonotum ochraceous orange in front of the transverse impressed line; ochraceous buff behind the line. Tegmina light ochraceous buff with the veins usually tawny.

Length: to apex of tegmina, average 4.5 mm.

Holotype female, Piti, April 30, Usinger; allotype male, Upi Trail, May 5, Swezey; paratypes, 10 females and 12 males from various localities in Guam.

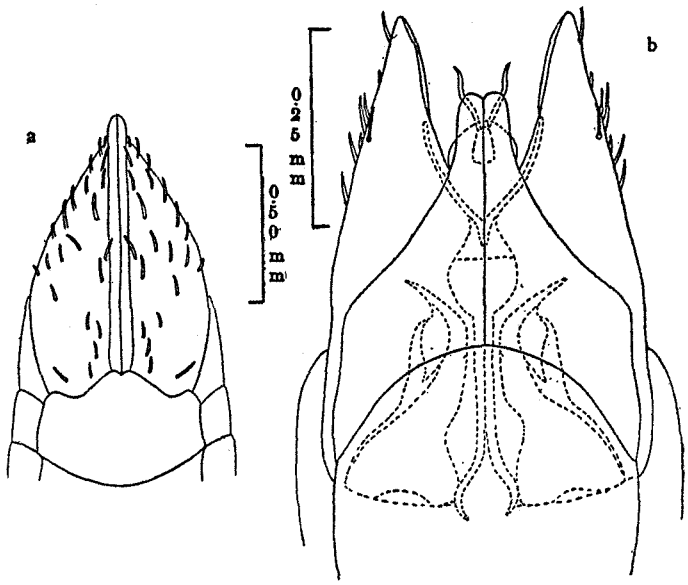

FIGURE 12.—*Euscelis picturatus:* a, ventral view of female genitalia; b, ventral view of male genitalia.

3. **Euscelis picturatus,** new species (fig. 12, *a, b*).

Crown short and broad, nearly three times as broad as its median length, only about one third as long as the pronotum; anterior and posterior borders nearly parallel; surface smooth and shiny. Face smooth and shiny; the postclypeus about as long as the width between the ocelli; the ocelli close to the eyes but not touching; the lateral margins of the postclypeus diverging to the level of the antennae and then converging to the narrow anteclypeus; anteclypeus narrow at base, somewhat broadened, spatulate toward the apex; cheeks broad; the outer margins somewhat angulate. Antennae inserted at about the level of the eyes. Pronotum about three times as broad as its median length, but little narrower than the compound eyes; anterior margin broadly curved; posterior margin nearly transverse; smooth and shining. Tegmina rather thick and opaque; venation typical with three anteapical and four apical cells.

as broad as its median length; deeply and somewhat triangularly excavated on the posterior border.

General color above greenish testaceous, below, including the face and legs, chiefly testaceous with the eyes and the lateral pieces of the abdomen fuscous; tegmina translucent with a greenish cast; the veins whitish; wings milky subhyaline.

Length: to apex of abdomen, average 2.50 mm.

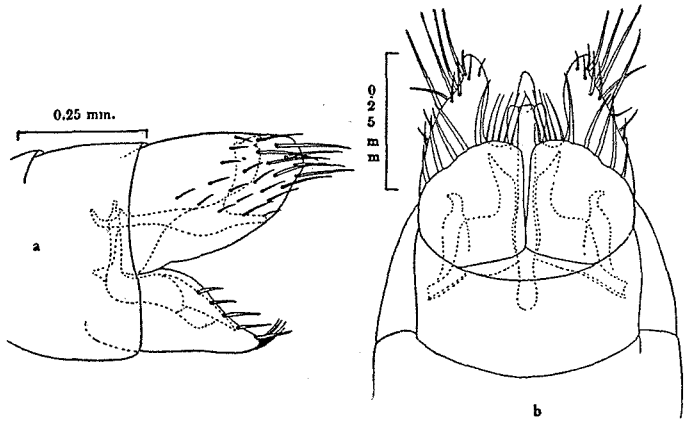

FIGURE 13.—*Stirellus subviridis:* **a,** lateral view of male genitalia; **b,** ventral view of male genitalia.

Holotype male, allotype female, Piti, Nov. 5, Swezey; paratypes: 18 males, six females, Piti, Nov. 5, Swezey; two females, Upi Trail, May 5, Swezey.

This is a greenish-testaceous species, with the crown about as long as the basal width.

Genus **NEPHOTETTIX** Matsumura

Nephotettix Matsumura, Termes. Füzetek **25**: 378, 1902.

Logotype, *Selenocephalus cincticeps* Uhler (*Cicada bipunctata* Fabricius).

Body somewhat cylindric. Crown broad, somewhat conically produced in front of the eyes, about twice as broad as its median length. Face broader than its median length; postclypeus rather gradually narrowed from the dorsal margin to the clypeal suture; anteclypeus short and broad; juga small. Pronotum short and broad. Mesonotum triangular. Tegmina usually coriaceous, venation indistinct.

6. **Nephotettix bipunctata** (Fabricius) (fig. 14, *a, b*).

Cicada bipunctata Fabricius, Syst. Rhyng. 78, 1803.
Pediopsis apicalis de Motschulsky, Étud. Ent. **8**: 110, 1859.
Pediopsis nigromaculatus de Motschulsky, Étud. Ent. **8**: 111, 1859.
Thamnotettix nigropicta Stål, Öfv. K. Vet.-Akad. Förh. **27**: 740, 1870.
Selenocephalus cincticeps Uhler, U. S. Nat. Mus., Proc. **19**: 292, 1896.

Crown short, and broad, about twice as broad as its median length, somewhat conically produced in front of the eyes; postclypeus with the dorsal margin about twice as long as the clypeal suture; the lateral margins slightly curved; anteclypeus about 1.5

times as long as its width on the clypeal border; juga small, extending dorsad slightly beyond the clypeal suture. Pronotum about three times as broad as its median length; anterior margin broadly curved, not projecting in front of interior-posterior angles of the compound eyes, not separated from the anterior-lateral borders; posterior margin shallowly sinuate, broadly curved into the posterior-lateral margin. Mesonotum broad and flat, with a distinct posterior impressed line. Tegmina usually coriaceous with the venation indistinct.

Female genitalia: last ventral segment nearly twice as long as the penultimate on the median line; posterior margin broadly, triangularly incised; the margins of the incision shallowly sinuate; the lateral angles roundly produced; median area quadrately notched with the anterior margin of the notch produced in a broad triangular tooth. Male genitalia: with the valve broadly triangular, nearly twice as broad as its median length; the genital plates broadly triangular, longer than the pygofer, their apices somewhat rounded and upturned; the inner margin slightly sinuate and overlapping on the apical third; posterior-lateral margin with a series of about eight elongate stout spines; pygofer shorter than the subgenital plate, each with a cluster of thick, short, stout spines on the apical margin and a single elongate spine; tenth segment elongate, eleventh segment short, not as long as broad; anal style elongate, conical, about three times as long as its basal width.

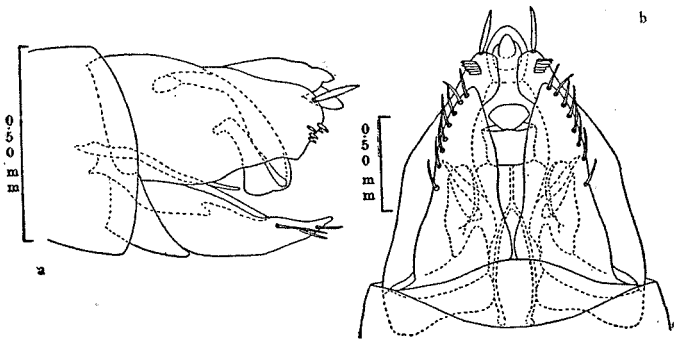

FIGURE 14.—*Nephotettix bipunctata:* **a**, lateral view of male genitalia; **b**, ventral view of male genitalia.

Color so variable that it is difficult to describe. The lighter specimens have the basal two thirds of the tegmina and the central field of the pronotum bright green, with the crown, the anterior, and the anterior-lateral margins of the pronotum, and the mesonotum, face, and entire venter buff with the face with a few, usually six, narrow, light brown arcs and the apical third of the tegmina milky subhyaline. The darker specimens, usually males, have the posterior areas of the pronotum and the basal two thirds of the tegmina bright green; the anterior margin of the pronotum and the mesonotum usually light green. The crown has a broad subapical blackish fascia and a narrow basal fascia. The apical third of the tegmina is blackish fuscous; the commisural margin is usually narrowly, sometimes broadly marked with blackish; the claval suture is usually narrowly bordered, sometimes broadly bordered with blackish fuscous to the anterior third where the colors spread out as a large blackish fuscous spot on the disk of the corium. The face and the entire venter except the legs are entirely blackish except the narrow posterior borders of the abdominal segments and the borders of the genital plates which are ochraceous orange in color. Between these two extremes are all sorts of variations.

Inarajan, May 7, 14, June 8, July 25, on rice, Swezey; Piti, Sept. 1, on rice, Swezey.

This species has a wide distribution in the tropical and warm temperate regions of the eastern hemisphere having been recorded in North Africa from Morocco to Egypt and the Anglo-Egyptian Sudan, and in southern Africa from Tanganyika to Natal and South Africa including Madagascar. From Africa, it ranges east to Ceylon and India, to the East Indies and Queensland, and north through Indo-China, Siam, China, Formosa, Ryukyu Islands to Japan.

As indicated by the synonymy, this species has been described no less than five different times. Most recent authors have kept *apicalis* de Motschulsky separated from *bipunctata* Fabricius on the basis of differences in color. However, an examination of a fairly long series in the present collection, and long series from other collections from the Oriental region has showed that there are no structural characters which can be used to separate these two forms. The color characters blend into each other in a continuous series, from those that are light green in color with the face of the male marked with a series of brown arcs, to those that have the tegmina heavily marked with black along the commisural margin and along the claval suture with a large blackish spot confluent on the basal third of the corium, the apical third of the tegmina entirely blackish fuscous, and the face completely black or with a small area of greenish yellow in the center. It is doubtful, therefore, whether these two forms should be kept separated even as color varieties.

Genus **TARTESSUS** Stål

Tartessus Stål, Soc. ent. France, Ann. 5(4): 156, 1865. Logotype, *Bythoscopus malayus* Stål.

Head broad, broader than pronotum; vertex short, very broad; eyes large; postclypeus large; anteclypeus small; labium short, broad. Pronotum large, projecting anteriorly well in front on the eyes; posterior margin broadly sinuate; posterior lateral margins very short. Mesonotum large, nearly as long as the pronotum. Tegmina with two basal, three anteapical, and five apical cells; three cross veins between media and cubitus.

This is a large genus of some 36 known species. The species range from India through the Malay Peninsula eastward, through the East Indian islands to New Guinea, the Solomon Islands and New Caledonia south to Australia; northward, the species range through Indo-China, Formosa, the Ryukyu Islands to Japan. The new species described below are the first species to be recorded from Micronesia, as far as I can discover.

Distant selected *Tartessus ferrugineus* as the type of this genus apparently on the basis that Stål synonymized his *Bythoscopus malayus* with *ferrugineus*. However, later authors have not made these two synonymous, and, if the details illustrated by Signoret are correct, the genitalia are sufficiently distinct to keep the two species separated. I have, therefore, designated *Bythoscopus malayus* as the type of this genus until the matter can be studied further.

7. Tartessus ochraceus, new species (fig. 15).

Crown very short, about half as long on the median line as next the eyes; nearly six times as wide as its greatest length; anterior margin triangularly produced, nearly a right angle, posterior margins slightly rounded; postclypeus nearly 1.5 times as long as median length; greatest width at the level of the ocelli, then the lateral margin concavely emarginate to the middle of the eye, then expanded to the base of the antennae, and then narrowed to the anteclypeus; a distinct transverse ruga extending across the postclypeus at the level of the compound eyes; above this ruga the surface of the postclypeus is finely rugose; below the ruga, the surface is smooth. Antennal flagellum with two basilar segments, the first with elongate lateral seta about half as long as the antenna and flagellum, the second with a lateral seta about half as long as the seta on the first segment. Pronotum about twice as broad as its median length, the anterior margin acutely projecting in front of the eyes, posterior margin broadly incised; lateral margins short; the whole surface of the pronotum finely, transversely rugulose. Mesonotum nearly 1.5 times as long as its greatest width.

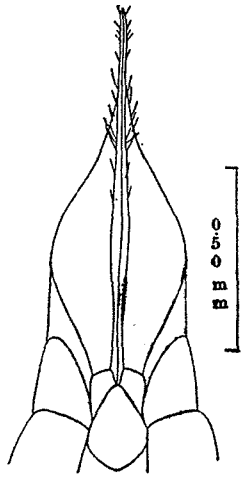

FIGURE 15.—*Tartessus ochraceus:* ventral view of male genitalia.

Last ventral segment of the female strongly compresso-elevate; the posterior margin deeply incised; the incision nearly four times as deep as its greatest width; ovipositor and ovipositor sheath about one third longer than the pygofers.

General color ochraceous buff; compound eyes brown; some of the veins of the tegmina infuscate; face with a broad transverse fascia of rosy red just below dorsal margin; another narrow and distinct transverse fascia at the level of the antennae, ochraceous orange.

Length: to apex of tegmina, 9 mm.

Holotype female, Piti, Sept. 21, on *Glochidion* sp., Swezey.

This species may be readily recognized by its pale ochraceous-buff color and distinct female genitalia. The last ventral segment is compresso-elevate and deeply notched posteriorly.

8. Tartessus swezeyi, new species (fig. 16, *a-d*).

Vertex very short, only about half as long on the median line as next the eye, projecting distinctly in front of the eyes. Postclypeus longer than broad, separated into two distinct areas by an irregular transverse ridge which runs parallel to the anterior margin of the head. Anteclypeus broad, flat with a fairly distinct median carina; preocular region elongate, narrow, about three times as long as broad, forming a distinct ledge above the small antenna. Pronotum 1.5 times as broad as long; the surface finely, irregularly, transversely rugulose; anterior margins strongly produced; posterior margin broadly incised.

Female genitalia: last abdominal segment broader than long; the produced posterior margin with a median U-shaped sinus; the posterior lateral angles of the sinus obtusely, triangularly produced. External male genitalia: last ventral segment elongate, produced, posterior lateral margins broadly rounded to a median V-shaped notch; genital plates narrow, elongate, nearly four times as long as basal width, tapering to obtuse apices. Internal male genitalia: aedeagus short, conical, genital styles with the basal half nearly quadrate, interior apical angle produced into elongate, outwardly directed, acute spines.

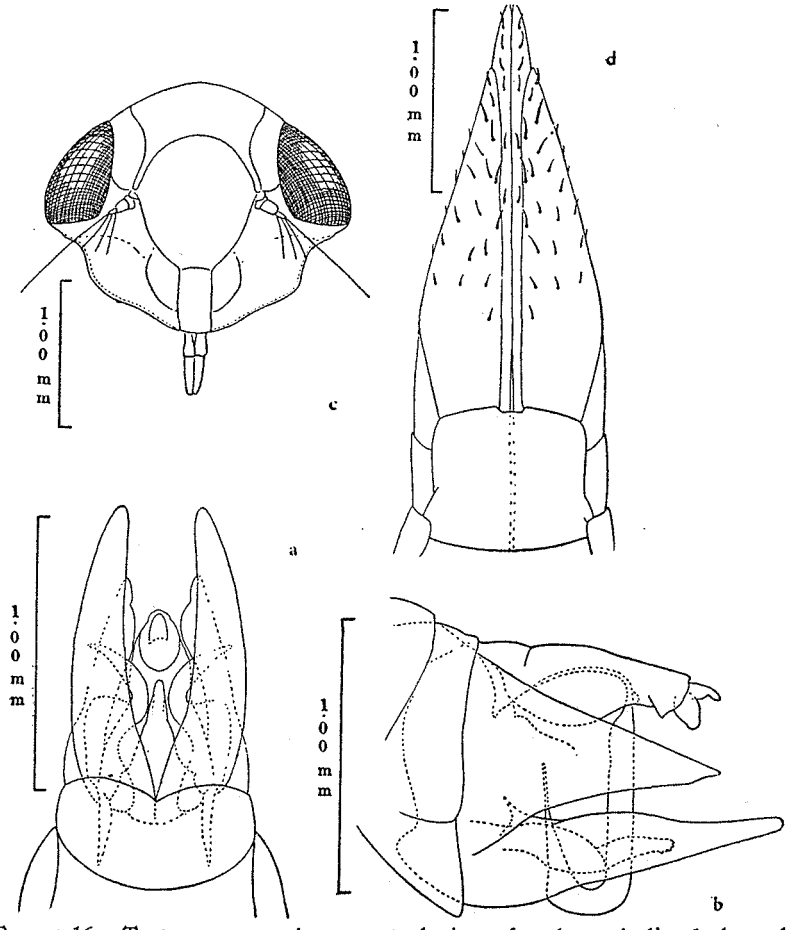

FIGURE 16.—*Tartessus swezeyi:* **a,** ventral view of male genitalia; **b,** lateral view of male genitalia; **c,** frontal view; **d,** ventral view of female genitalia.

General color of the darker females fuscous, with the head, thorax, legs, and pregenital plate ochraceous tawny. Compound eyes black, preocular area at the base of the antennae black, a large spot on the mesopleura and metapleura black; all the femora lined with blackish. Tegmina ochraceous olive with the veins blackish fuscous. First sternite chiefly ochraceous tawny; other sternites chiefly fuscous with the posterior borders ochraceous tawny; tergites chiefly black with elongate ochraceous tawny spots in the basal area. Typically the males are much darker and more heavily marked than the females. The head and thorax in the males chiefly ochraceous orange. The tegmina are chiefly blackish fuscous with the veins black; clavus pale green with the veins black. Vertex ochraceous orange; posterior border narrowly black. Face ochraceous orange with a narrow border of black just below the vertex; a broadly curving fascia of black at the level of the antennae; below this band there is a central spot on the postclypeus which is black; the lateral borders of the postclypeus are narrowly black connecting across the narrow part of the postclypeus below the central black area and then the ventral area of the postclypeus ochraceous orange with the lateral borders heavily marked with black. The anteclypeus is also bordered with black. Venter of thorax chiefly black. Fore and middle legs ochraceous orange heavily marked with black; posterior legs chiefly black or blackish fuscous. Abdomen entirely black.

Length: to apex of tegmina of male, 7.25 mm.; of female, 9 mm.

There are nymphs of at least four different stages in the present collection. They are chiefly ochraceous yellow in color, more or less marked with black; eyes usually black; lateral and posterior margins of the tegminal pads chiefly black and the lateral borders of some of the dorsal abdominal segments marked with black; face has two bright orange curving fasciae, one on the dorsal margin and one at about the level of the antennae. The front legs very much stouter than the corresponding limbs in the adults. In the youngest of the nymphs, the posterior border of the whole femur is sparsely ciliate with long setae. The tibia which is greatly flattened is closely ciliate on both the anterior and posterior border with elongate setae forming a curious basket-like structure which must be correlated with the life of the nymph.

Holotype male, allotype female, Asan, Aug. 22, on *Ficus* sp., Swezey; paratypes: two males and three females, Asan, Aug. 22, on *Ficus* sp., Swezey; one male, Barrigada, July 22, on *Premna* sp., Swezey; one male, Upi Trail, May 5, Usinger; two males and one female, Ritidian Point, April 22, E. H. Bryan, Jr.; one male and one female, Aug. 6, Swezey; one male and two females, Maṭhanao, June 30, Swezey; one male, Mt. Chachao, May 16, Swezey; two males and one female, Piti, Aug. 18, on *Glochidion* sp., Swezey; three males, Santa Rosa Peak, May 19, Swezey; one male, Mt. Alifan, April 20, E. H. Bryan, Jr.

Structurally this species seems to be closest to *Tartessus fieberi* Stål, but the genitalia are sufficiently distinct and the coloring is quite distinct.

Genus **THARRA** Kirkaldy

Tharra Kirkaldy, Haw. Sugar Plant. Assoc. Expt. Sta. Ent. Bull. 1(9): 324, 1906. Haplotype, *Tharra labena* Kirkaldy.

Vertex elongate, angularly produced in front of eyes; ocelli large; face elongate, lateral margin sinuate at the level of the antennae; clypeal suture indistinct. Mesonotum somewhat longer than vertex; pronotum shorter. Tegmina with veins M one plus two wanting; first intermediate cell not divided into anteapical and basal cells; with a narrow appendix. Wings with a broad appendix and five apical cells.

This genus was erected for species from Australia and the Fiji Islands. Since that time Baker has described a species from the Philippines. The present species has all the essential characters of the genus, and I believe should be placed here.

9. Tharra ocellata, new species (fig. 17, *a-e*).

Vertex one fourth longer than its basal width, distinctly foveate, with a slender median basal carina which extends for more than half the length of the vertex; the whole surface of the vertex finely but distinctly rugulose; the rugae extending diagonally from the median area. Postclypeus about two and one-half times as long as dorsal width; finely rugulose dorsad; most of the area, however, entirely smooth, no median carina; lateral margins diverging from dorsal margin to above the base of the antennae, then rather deeply sinuate and converging to the base of the narrow clypeus; clypeal suture very indistinct; anteclypeus somewhat expanded ventrally; juga is strongly produced dorsad; preocular region narrow. Pronotum shorter than the vertex, about three times as broad as its median length, posterior margin broadly and shallowly sinuate. Mesonotum longer than the vertex, slightly wider than medium length.

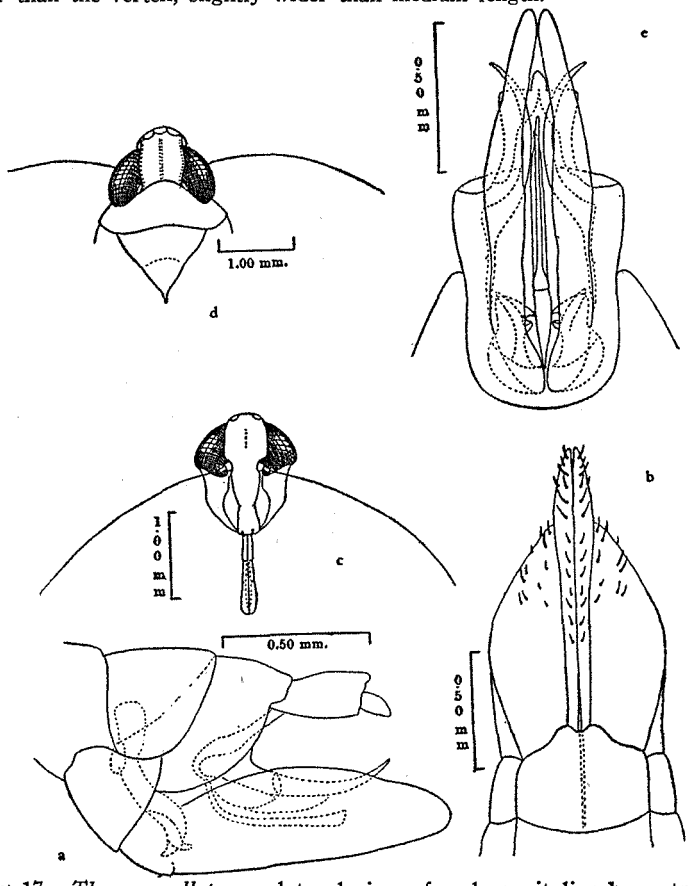

FIGURE 17.—*Tharra ocellata:* **a,** lateral view of male genitalia; **b,** ventral view of female genitalia; **c,** frontal view; **d,** dorsal view of head and thorax; **e,** ventral view of male genitalia.

Female genitalia with the last ventral segment longer than the penultimate; posterior margin produced, with a triangular V-shaped incision on the median line; pygofer slender; ovipositor and ovipositor sheath longer than pygofer. Male plates elongate, slender parallel-sided, somewhat curved; the apices approximate, somewhat rounded apically. Aedeagus elongate, slender, tubular; genital spines with elongate bases, widely separated, converging, broadly curved to attenuate apices.

General color ochraceous tawny. The tegmina ochraceous brown; legs and venter ochraceous buff; eyes blackish; hind wings smoky brown. In the male, the dorsal third of the face blackish fuscous.

Length: to apex of tegmina of female, 6.5 mm.; of male, 5.5 mm.

Holotype male, Ritidian Point, April 16, E. H. Bryan, Jr.; allotype female, Upi Trail, May 5, Usinger; paratypes: female, Machanao, Aug. 6, Swezey; female, Upi Trail, May 5, E. H. Bryan, Jr.; male, Machanao, June 30, Swezey.

In general structural characters, like *carinata* Baker, and in coloration somewhat like *ogygia* Kirkaldy. The last ventral segment of the female of this species is distinctive.

Genus **CICADULINA** China

Cicadulina China, Bull. Ent. Research **17**: 43, 1926. Orthotype, *Cicadulina bipunctella* Matsumura (*zeae* China).

This genus was established for a single species from Kenya. The venation of the tegmina and wings, and the characters of the male genitalia are quite distinct, especially the peculiar spine on the pygofer which seems to be characteristic for the species of this genus.

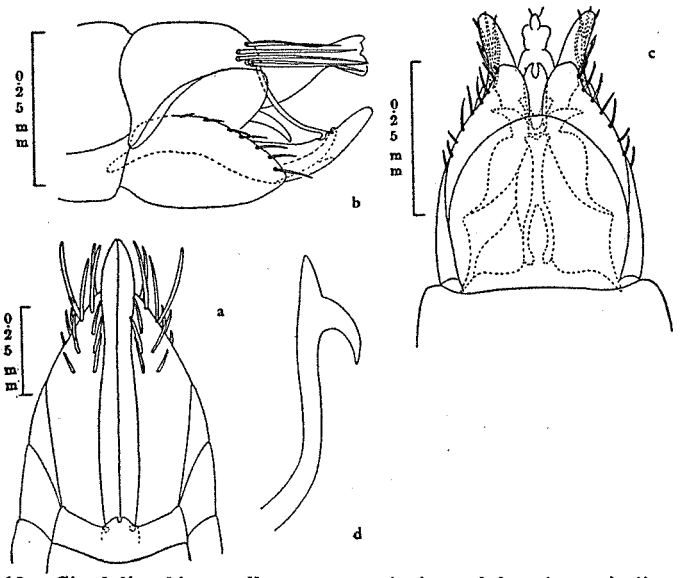

FIGURE 18.—*Cicadulina bipunctella:* **a**, ventral view of female genitalia; **b**, lateral view of male genitalia; **c**, ventral view of male genitalia; **d**, spine of pygofer.

10. Cicadulina bipunctella (Matsumura) (fig. 18, *a-d*).

Cicadula bipunctella Matsumura, Coll. Sci. Tokyo, Jour. 23: 12, 1908.

Cicadulina zeae China, Bull. Ent. Research 17: 43, 1926.

Dr. Paul Oman has suggested that these two species are synonymous. *C. bipunctella* was described from Egypt and *zeae* from Kenya. The specimens in the present collection agree in all essential details with Matsumura's description and China's description and illustration. It occurs rarely on corn and grass in Guam. Piti, May 2 and 8, on grass; Dededo, May 11, on corn, Usinger.

11. Cicadulina viridis, new species (fig. 19, *a-c*).

A pale olive-yellow species, uniformly colored except the darker compound eyes. Crown much broader than in any other species known to me, being more than three times as broad as its median length.

Female genitalia: last ventral segment not strongly produced, but little broader than its median length, posterior margin straight. External male genitalia: valve small; posterior border rounded; plates attenuate, not quite as long as the pygofer, with a row of six stout spines along the lateral margins; pygofer large, broadly expanded posteriorly concealing the anal style. Internal male genitalia: genital styles slender terminating in acute, laterally directed spines; aedeagus long, slender, strongly recurved and directed cephalad, suddenly expanded apically. Spine of pygofer elongate, spirally curved, broadly expanded apically.

Length: to apex of abdomen, 2.75 mm.; to apex of tegmina, 3.5 mm.

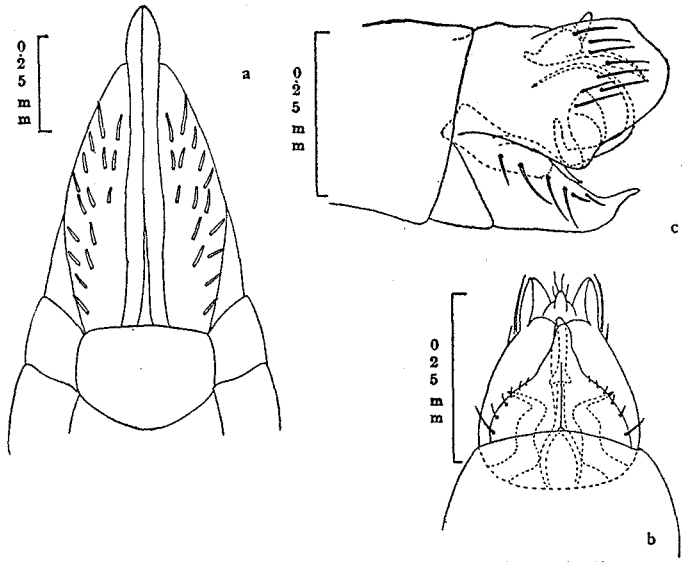

FIGURE 19.—*Cicadulina viridis:* **a,** ventral view of female genitalia; **b,** ventral view of male genitalia; **c,** lateral view of male genitalia.

Holotype male, Piti, May 1, Usinger; allotype female, Piti, June 3, Swezey. Paratypes: 11 females and 10 males, Piti, May, June, July, Swezey; three females, Piti, Usinger; one male and two females, Sasa, Usinger; two males and one female, Inarajan, Usinger; all on sedges.

12. **Cicadulina uniformis,** new species (fig. 20, *a-d*).

A uniform pale testaceous-green species with a very short, broad crown. Crown short, nearly five times as broad as its median length; anterior and posterior border parallel. Pronotum about four times as long as the crown, slightly wider than the eyes. Mesonotum not as long as pronotum.

External male genitalia: valve intermediate in size between *viridis* and *bipunctella,* posterior border broadly rounded; genital plates exceeding the valve by about half their length, contiguous on the median line; apices rounded; pygofers elongate, about twice as long as the plates; spine of pygofer attenuate, somewhat sinuate, apex acute, simple without lateral spines. Female genitalia: last ventral segment as long as its greatest width; posterior border with a deep V-shaped notch extending about one third of the length of the segment; pygofers elongate, rather slender.

Length: to apex of tegmina, 3.6 mm.

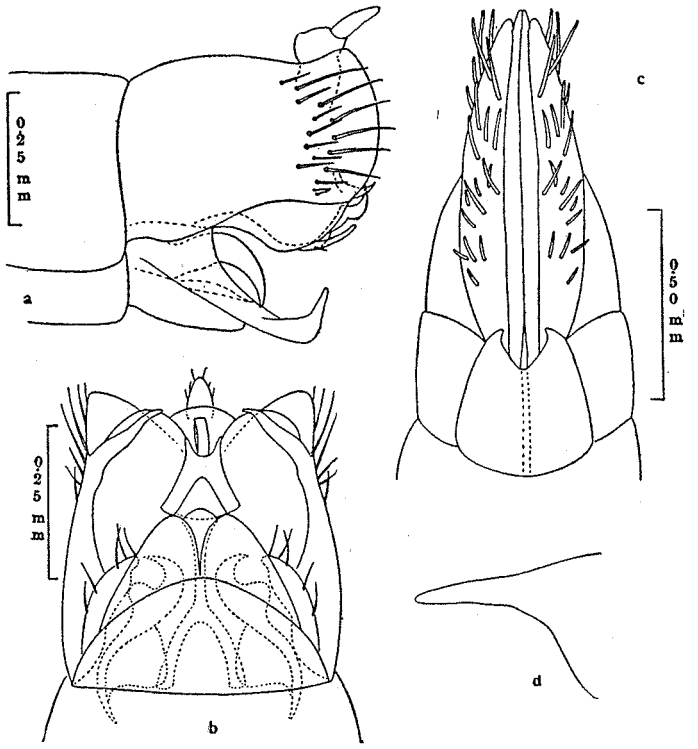

FIGURE 20.—*Cicadulina uniformis:* **a,** lateral view of male genitalia; **b,** ventral view of male genitalia; **c,** ventral view of female genitalia; **d,** spine of pygofer.

Holotype male, Piti, July 27, Swezey; allotype female, Piti, May 1, Usinger; paratype, one female, Mt. Tenjo, May 3, Swezey.

FAMILY BYTHOSCOPIDAE DOHRN

Genus **BYTHOSCOPUS** Germar

Bythoscopus Germar, Rev. Ent. Silbermann 1: 180, 1833. Logotype, *Cicada lanio* Linnaeus.

The genus may be characterized briefly as follows: Head usually nearly as broad as the pronotum; crown short and broad; face short and broad with the ocelli well below the level of the dorsal margin. Pronotum short and broad; the anterior margin not projecting in front of the anterior margin of the compound eyes. Mesonotum short, broadly triangular. Tegmina translucent; venation indistinct.

This is a genus of about 90 species of world-wide distribution. Osborn (21) described four new species from Samoa and listed a fifth species, previously recorded from Ceylon, for this region. Only one other species has been recorded from Pacific islands, and no species have heretofore been recorded from Micronesia.

1. **Bythoscopus viridoflavidus,** new species (fig. 21, *a-c*).

General color olive-yellow fading to ochraceous buff. Head including eyes broader than pronotum. Female genital segment broadly excavated. Male plate broadly produced posteriorly.

Crown of head very short, nearly eight times as broad as long; face including anteclypeus about as long as broad; juga narrow, elongate reaching to the base of the antennae; genae broad, the outer margins broadly curved; anteclypeus short and broad, about twice as long as its greatest width. Pronotum twice as broad as its median length; the whole surface finely rugulose; anterior margin broadly curved projecting only slightly in front of the posterior-interior angle of the compound eyes, curving imperceptibly into the anterior-lateral margin; posterior margin very shallowly excavated.

Female genitalia: last ventral segment with the median length nearly twice as long as the median length of the penultimate segment; the posterior margin broadly excavated; pygofer elongate, robust, not exceeded by the ovipositor or the ovipositor sheath, exceeded, however, by the conical anal spines. Male genitalia: plates strongly produced, more than half as long as the pygofer.

General color olive-yellow; compound eyes brown; tegmina translucent, almost transparent; the claval suture and the commisural margin embrowned.

Length: to apex of tegmina, female 4.5 mm.; male, 3.45 mm.

Holotype male, Mt. Alifan, May 21, Swezey; allotype female, Machanao, Aug. 6, Swezey. Paratypes: one female, Dededo, May 11, from *Piper guahamense,* Swezey; one male, Mt. Alifan, April 20, E. H. Bryan, Jr.

2. **Bythoscopus atrifrons,** new species (fig. 22, *a-c*).

Quite similar in general structure and coloration to *B. viridoflavidus* with a short narrow crown. Male with the face except ocelli entirely black. Male last ventral segment bisinuate; plates elongate, shorter than the pygofer, gradually diverging, apices slender;

genital style narrow, about as long as the aedeagus. Female last ventral segment deeply excavated on the posterior border; the pygofer elongate, slender.

Length: to apex of tegmina, 4.5 mm.; to apex of abdomen, 4 mm.

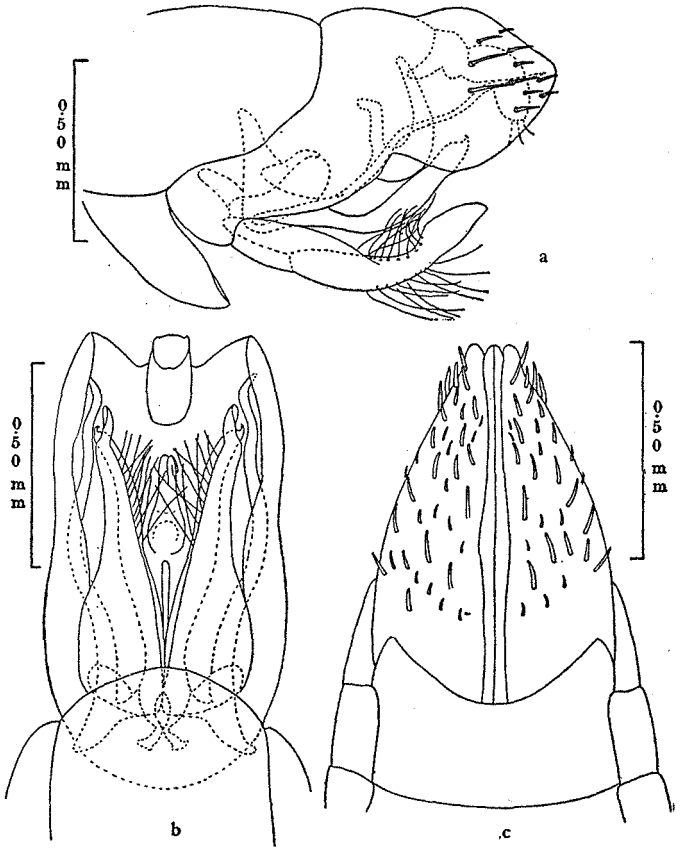

FIGURE 21.—*Bythoscopus viridoflavidus:* a, lateral view of male genitalia; b, ventral view of male genitalia; c, ventral view of female genitalia.

Holotype male, Barrigada, July 22, from *Morinda* sp., Swezey; allotype female, Barrigada, June 12, Swezey; paratype, one male, Upi Trail, May 5, Swezey.

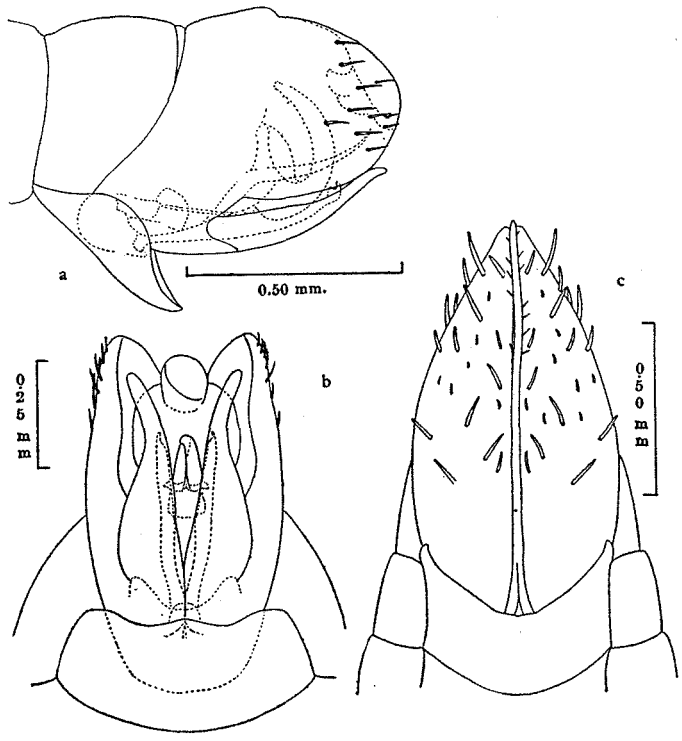

FIGURE 22.—*Bythoscopus atrifrons:* **a**, lateral view of male genitalia; **b**, ventral view of male genitalia; **c**, ventral view of female genitalia.

FAMILY CICADELLIDAE VAN DUZEE (FORMERLY EUPTERYGIDAE)

Genus **EMPOASCA** Walsh

Empoasca Walsh, Boston Soc. Nat. Hist., Proc. **9**: 315, 1864. Logotype, *Empoasca viridescens* Walsh.

Empoasca may be recognized by the following combination of characters: crown usually rounded or subangulate; ocelli distinct; tegmina with four apical cells; wings with a single apical cell; the last ventral segment of female and the external and internal male genitalia are usually diagnostic.

This is a genus with a large number of species which are small or very small, usually plain green, greenish, or golden yellow in color. Only the species in the Nearctic and Palearctic faunas have been extensively studied and very few species have been reported previously from the Pacific islands.

1. Empoasca yona, new species (fig. 23, *a-d*).

A greenish-yellow species with reddish-brown eyes but without other markings. Crown slightly broader than its median length, distinctly rounded before; posterior margin subparallel, not as long as the pronotum.

Female genitalia: last ventral segment slightly sinuately produced in the median area, with a distinct though shallow V-shaped notch on the median line. External male genitalia: plates very long, when viewed ventrally somewhat divergent; apices obtuse when viewed laterally with the apical two thirds expanded into a broad plate with a dorsal circular margin. Internal male genitalia: aedeagus simple, slender based; styles elongate, slender; apices slender, accuminate; lateral processes elongate, nearly as long as the genital styles, bifucate.

Length: to apex of tegmina, 2.75 mm.; to apex of abdomen, 2.25 mm.

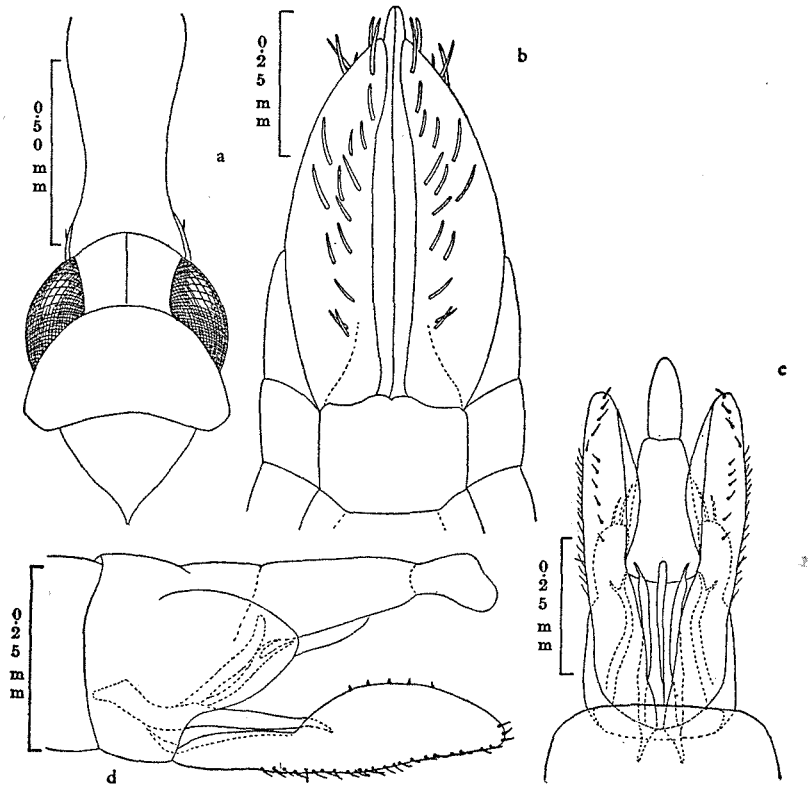

FIGURE 23.—*Empoasca yona:* **a**, dorsal view of head and thorax; **b**, ventral view of female genitalia; **c**, ventral view of male genitalia; **d**, lateral view of male genitalia.

Holotype male, allotype female, Piti, June 15, Usinger, at light; paratypes: 14 females, Yona, May 12, Usinger; one female, June 5, Usinger.

2. Empoasca morindae, new species (fig. 24, *a, b*).

Golden yellow with reddish-brown eyes but without other color markings.

Head with the compound eyes wider than the pronotum; crown subangulate, as long as its greatest width and as long as the median length of the pronotum; face above the antennae somewhat protuberant; below the antennae flat. Pronotum with anterior and posterior margins nearly parallel. Mesonotum subequal to pronotum in length.

Female genitalia: last ventral segment broader than long; posterior lateral angles roundly produced; the posterior border between the lateral angles almost truncate. External male genitalia: plates very long, almost as long as the apex of the anal style, slender, triangular; apices obtuse; dorsal border of the plate somewhat sinuate. Internal male genitalia: aedeagus simple, somewhat expanded near the apex; short, not more than one third as long as the genital plates; lateral processes short, about half as long as the genital plates; bisinuate with broad bases gradually tapering to slender, outwardly directed apices; genital styles flat, somewhat triangular, with obtuse apices about two thirds as long as the genital plate.

Length: to apex of tegmina, 3 mm.; to apex of abdomen, 2.5 mm.

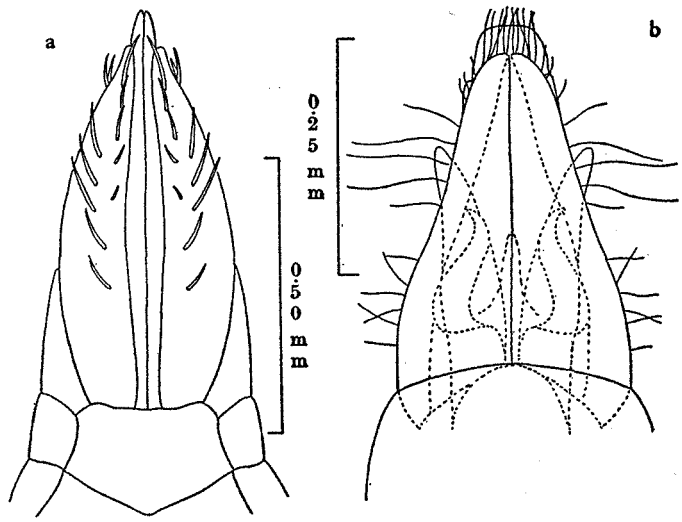

FIGURE 24.—*Empoasca morindae:* **a**, ventral view of female genitalia; **b**, ventral view of male genitalia.

Holotype male, Barrigada, July 6, on *Morinda* sp., Swezey; allotype female, Barrigada, July 22, on *Morinda* sp., Swezey. Paratypes: five males, Barrigada, July 6, four males, Barrigada, July 22, all by Swezey on *Morinda* sp.; three males, Piti, May 1, on *Morinda* sp., Usinger; six females, Barrigada, July 6, two females, Barrigada, July 22, all by Swezey on *Morinda* sp.; one female, Piti, May 1, one female, Dededo, May 1, one female, Orote Peninsula, May 24, one female, Machanao, June 2; all by Usinger from *Morinda* sp.

3. **Empoasca barringtoniae,** new species (fig. 25, *a-e*).

A bright golden-yellow species with crown, pronotum, and mesonotum subequal in length. Crown strongly projecting, subacute with the sides forming almost a right angle. Head and thorax light ochraceous buff, compound eyes tawny; tegmina golden yellow, transparent on the apical third.

External male genitalia: plates long, triangular, flat, contiguous on the basal half, diverging to rather acute apices on the apical half, almost reaching the apex of the anal style, fringed with elongate, slender setae on the lateral borders. Internal male genitalia: aedeagus simple, tubular, about as long as the lateral processes; genital styles broad, flat, their acute apices curved inward; lateral processes broad, flat, converging to slender acute apices on the median line. Female genitalia: last ventral segment elongate, posterior lateral angles projecting; the median area slightly produced.

Length: to apex of abdomen, 2 mm.; to apex of tegmina, 2.5 mm.

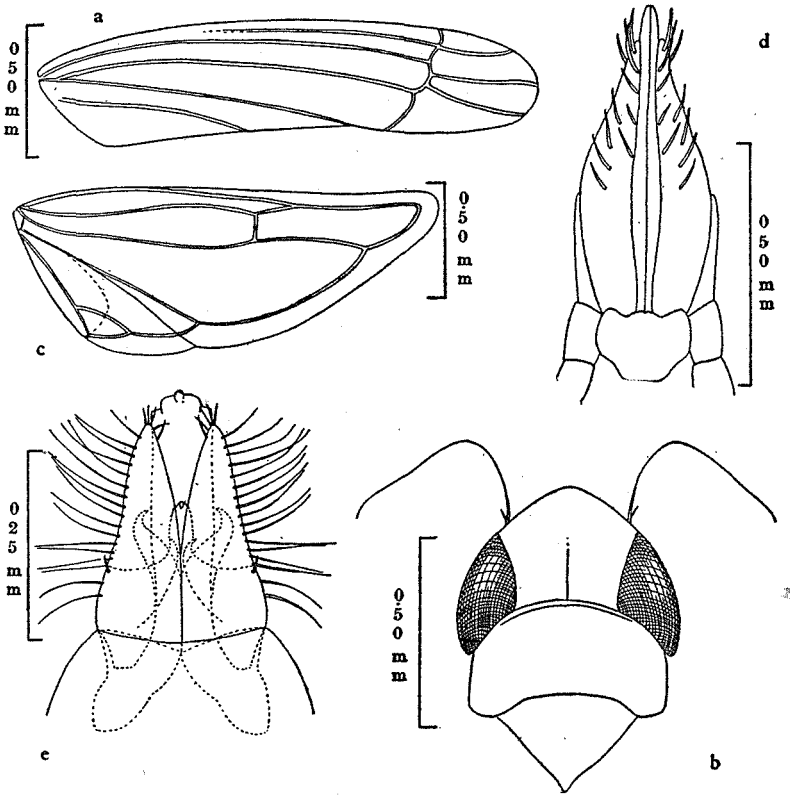

FIGURE 25.—*Empoasca barringtoniae:* **a,** tegmen; **b,** dorsal view of head and thorax; **c,** wing; **d,** ventral view of female genitalia; **e,** ventral view of male genitalia.

Holotype male, allotype female, Fadian, Aug. 19, on *Barringtonia speciosa,* Swezey. Paratypes: one male, five females, Fadian, Aug. 19, on *Barringtonia* sp., Swezey; five males, eight females, Tumon, May 30, on *Barringtonia speciosa,* Swezey.

4. Empoasca macarangae, new species (fig. 26, *a, b*).

A pale greenish-yellow species with an obtuse, slightly subangulate vertex which is not quite as long as the pronotum; mesonotum longer than the pronotum.

Female genitalia: last ventral segment elongate, longer than broad; the posterior margin produced at the median half, nearly straight. External male genitalia: plates very long, longer than the anal spine, gradually divergent; inner margin nearly straight, the outer margin and dorsal margin slightly sinuate; apices obtuse, with a number of stout spines; tenth segment with a short, recurved spine. Internal male genitalia: aedeagus very short, only about a fourth as long as the genital plates; genital style elongate, narrow, about half as long as the genital plates; apex deflected to a short acute spine which is directed laterad; lateral processes about as long as the genital style, converging, slender, the tips produced into a slender acute spine.

Length: to apex of tegmina, 3.25 mm.; to tip of abdomen, 2.75 mm.

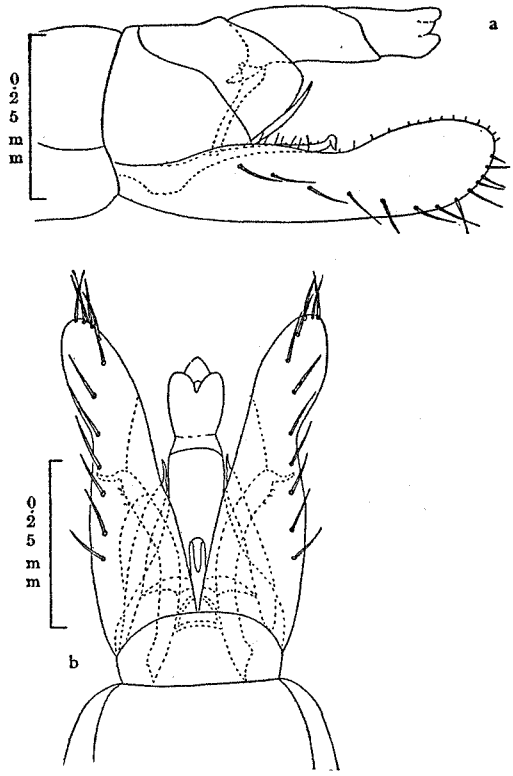

FIGURE 26.—*Empoasca macarangae:* **a,** lateral view of male genitalia; **b,** ventral view of male genitalia.

Holotype male, Mt. Alifan, May 21, from *Macaranga* sp., Usinger; allotype female, Mt. Alifan, May 21, Usinger; paratypes, four males and six females, Mt. Alifan, from *Macaranga* sp., Swezey and Usinger.

5. Empoasca pipturi, new species (fig. *27, a-d*).

An ochraceous yellow species with the crown nearly twice as broad as its median length, rounded before.

Female genitalia: last ventral segment nearly twice as long as its greatest width, projecting; posterior margin strongly produced with a V-shaped median notch. External male genitalia: plates flat, elongate, longer than the anal style, slightly twisted; genital styles elongate, about three fifths as long as the plates; the apices attenuate, crossing over each other.

Length: to apex of abdomen, 1.75 mm.; to apex of tegmina, 2.5 mm.

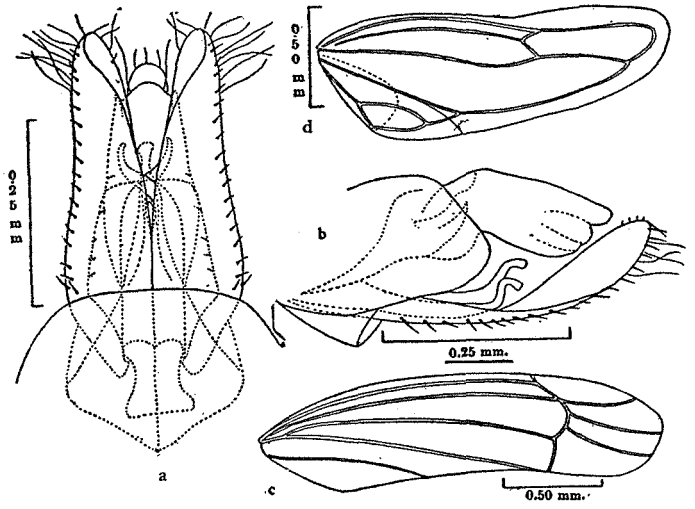

FIGURE 27.—*Empoasca pipturi:* **a,** ventral view of male genitalia; **b,** lateral view of male genitalia; **c,** tegmen; **d,** wing.

Holotype male, allotype female, four male and four female paratypes, Mt. Alifan, June 27, on *Pipturus* sp., Swezey.

6. Empoasca fuscovitta, new species (fig. 28, *a-c*).

An ochraceous orange species with a pair of fuscous vittae which start at the clypeal suture, extend over the lateral margin of the face, the apex of the head, and are continued across the crown and the pronotum to the apex of the mesonotum.

Crown narrow, obtuse, only about one third wider than its median length; face elongate, slightly protuberant, twice as broad as median length; lateral margin of cheek straight. Pronotum nearly twice as long as the crown, as wide as compound eyes, not quite twice as wide as its median length.

Male genitalia: genital plates much elongate, only slightly narrowed to divergent obtuse apices; plates and pygofer longer than the anal spine; anal styles broad, the apices suddenly constricted to somewhat divergent and recurved processes. Female genitalia: last ventral segment elongate, about 1.5 times as long as its greatest width, somewhat compressed; posterior lateral angles somewhat projecting; the posterior margin with a broad, shallow U-shaped excavation which occupies about three fourths of the width of the segment; the median line with a shallow V-shaped notch which is continued anteriorly as a slight ridge.

General color ochraceous buff, paler beneath and darker above, almost ochraceous orange on the dorsal part of the head and the thorax; crown with a pair of fuscous vittae percurrent; these vittae about the same width as the paler area between; the fuscous vittae continued across the pronotum, widened somewhat posteriorly; another pair of fuscous vittae behind the compound eyes; the lateral margins of the pronotum are broadly ivory-white; mesonotum with the median line ochraceous orange, the lateral area fuscous; tegmina milky subhyaline; clavus broadly clouded with fuscous along the commisural margin; costal margin with a blackish stripe extending almost to the apical cells; the corium clouded with smoky from the base to almost the apex of clavus; another cloud beyond the apex of the clavus and the apical area with a smoky cloud; face with a pair of lateral vittae which unite on the lower third to form a large fuscous cloud.

Length: to apex of tegmina, 2.5 mm.; to apex of abdomen, 1.75 mm.

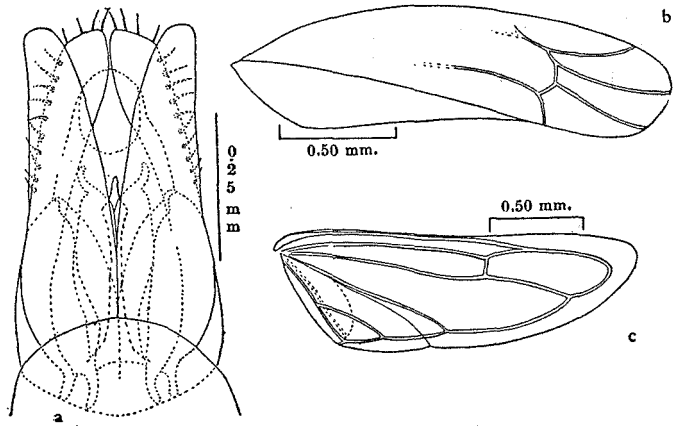

FIGURE 28.—*Empoasca fuscovitta:* **a**, ventral view of male genitalia; **b**, tegmen; **c**, wing.

Holotype male, allotype female, Machanao, June 30, Swezey.

7. **Empoasca bipunctulata,** new species (fig. 29, *a-e*).

Crown as long as its width between the eyes, obtusely rounded anteriorly; face narrow, elongate, more than twice as long as the width between the eyes. Pronotum about twice as broad as long; the posterior margin broadly excavated.

Male genitalia: unique; genital plate and genital styles elongate, slender, suggestive of certain species in the subfamily Jassinae; genital plate elongate, slender, the basal two thirds about the same width throughout, then elbowed, narrowed, directed mesad and ending in obtuse apices with elongate setae; genital styles not as long as the anal spine, the basal portion of about the same width, then suddenly constricted and terminating in elongate, slender flagellate processes; the lateral processes somewhat sickle-shaped, attenuated to acute apices which are directed laterad; aedeagus elongate, slender, about half as long as the pygofer, terminating in a slender process. Female genitalia: with last ventral segment about 1.5 times as broad as long; the posterior lateral angles strongly projected; the posterior border excavated in a broad U-shaped sinus; the median area projected into a broad sharp triangular tooth with a shallow median V-shaped notch.

Color of the venter including the legs and abdomen pale ochraceous buff; face ochraceous orange with a pale, rather indistinct median vitta and two pairs of oblique vittae, the dorsal pair starts at the apex of the head and slopes laterad to the middle of the eyes; the ventral pair is broader and starts at the top of the median vitta and slopes laterad to the antennae; crown ochraceous orange with a pale median vitta starting about

the center of the crown and terminating anteriorly in two recurved fasciae above the ocelli and extending almost to the compound eyes; behind these fasciae there is a pair of broad, short dashes directed caudad which extend from the margin of the compound eyes for about a fourth of the width of the crown; pronotum chiefly ochraceous orange; median vitta ivory-white; lateral fields broadly ivory-white; tegmina translucent with ochraceous greenish reflections; a large black spot between media and the cross veins just posterior to these.

Length: to apex of tegmina, 2.75 mm.; to apex of abdomen, 2.25 mm.

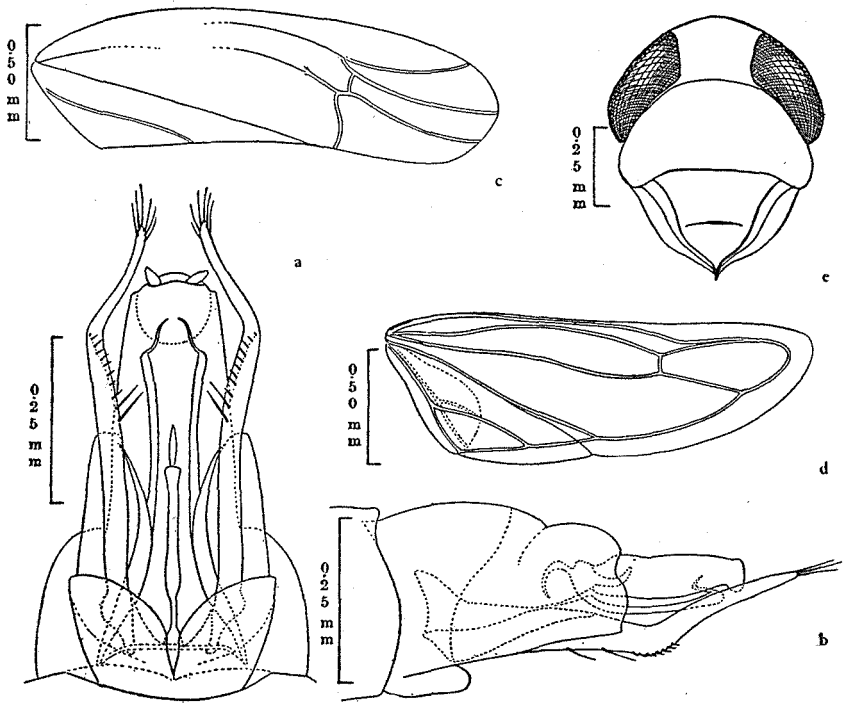

FIGURE 29.—*Empoasca bipunctulata:* **a**, ventral view of male genitalia; **b**, lateral view of male genitalia; **c**, tegmen; **d**, wing; **e**, dorsal view of head and thorax.

Holotype male, Piti, May 1, from sedges, Usinger; allotype female, Piti, May 1, from sedges, Swezey; paratype, one female, Umatac, May 14, Usinger.

This species is colored ochraceous orange and ochraceous buff. The pronotum has a median pale vitta and tegmina with a circular black spot on the corium beyond the apex of the clavus. The genitalia are quite different from any other species of *Empoasca* known to me, but the other structural characters place this species in this genus.

8. Empoasca pitiensis, new species (fig. 30, *a-c*).

A greenish species with obtusely angulate head and distinct genitalia.

Crown obtusely angulate, about 1.5 times as broadly as its median length, not as long as the pronotum; face including anteclypeus more than twice as long as the width between the eyes; pronotum and mesonotum subequal; pronotum about twice as broad as its median length, narrower than the head including the compound eyes.

External male genitalia: posterior margin of last ventral segment with a deep V-shaped notch extending cephalad for more than a third of the length of the segment; genital plates elongate, diverging, the inner margin slightly sinuate; the apices obtuse. Internal male genitalia: of the type of *Empoasca obtusa* (Walsh) with the following differences; genital styles broad at base, gradually tapering to acute divergent apices; lateral processes bifid, not longer than the genital styles; aedeagus simple, without apical, lateral processes. Female genitalia: with the last ventral segment about twice as broad as long; the posterior margin transverse.

Length: to apex of tegmina, 3 mm.; to apex of abdomen, 3.25 mm.

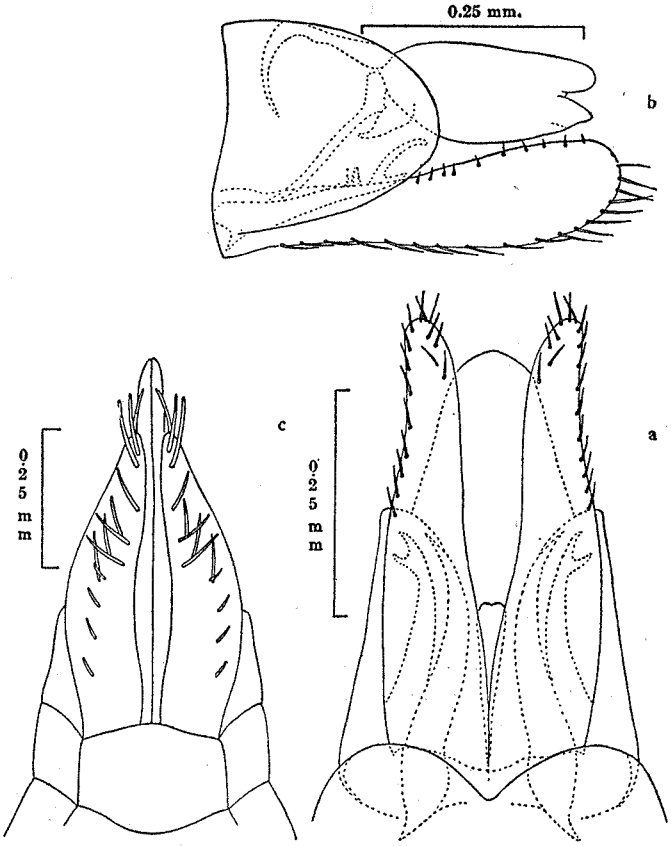

FIGURE 30.—*Empoasca pitiensis:* **a**, ventral view of male genitalia; **b**, lateral view of male genitalia; **c**, ventral view of female genitalia.

Holotype male, allotype female, four male and three female paratypes, Piti, May 23, from beans, Swezey.

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