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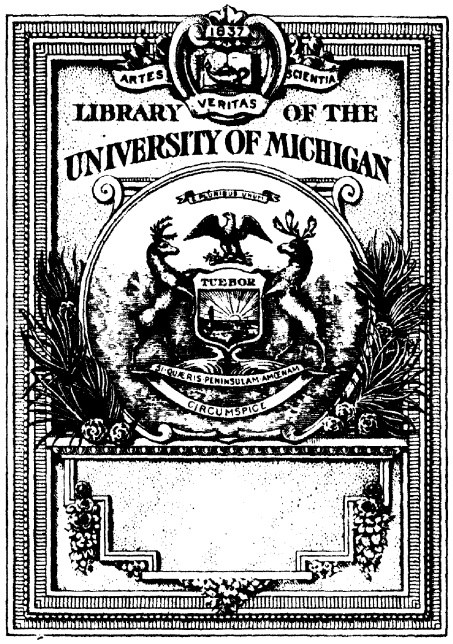
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FAUNA HAWAIIENSIS

VOL. II. PART VI.

SUPPLEMENT

TO

HEMIPTERA

G. W. KIRKALDY

TO

HYMENOPTERA, ORTHOPTERA, NEUROPTERA AND *DIPTERA*

R. C. L. PERKINS

Price Sixteen Shillings.

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FAUNA HAWAIIENSIS

OR THE

ZOOLOGY OF THE SANDWICH (HAWAIIAN) ISLES:

Being Results of the Explorations instituted by the Joint Committee appointed by

THE ROYAL SOCIETY OF LONDON FOR PROMOTING NATURAL KNOWLEDGE

AND THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

And carried on with the assistance of those Bodies and of the Trustees of

THE BERNICE PAUAHI BISHOP MUSEUM AT HONOLULU.

EDITED BY

DAVID SHARP, M.B., M.A., F.R.S.

SECRETARY OF THE COMMITTEE.

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Supplement by G. W. Kirkaldy

to

HEMIPTERA.

Vide pp. 93—174 hujus operis tom. III[1].

This second contribution deals principally with the Auchenorrhynchous Homoptera; I have, however, added species of the Heteroptera etc. described since 1902, as well as new species and notes on previously known forms.

The total number of the Hemiptera so far described from the Hawaiian Islands is 305, or, if we exclude the 63 determined species of Coccidae, Aleyrodidae and Aphidae, which greatly swell the non-endemic total, 242. Of these 226 are not known elsewhere, though I have grave doubts as to the endemicity of some of them.

The Hemipterous fauna is now seen to lack representatives in many of the most important families, only the following six containing undoubtedly endemic forms, viz. Myodochidae, Nabidae, Reduviidae, Anthocoridae, Miridae and Acanthiidae, among the 26 recognized Heteropterous families, and by four only of the 14 Homopterous families, viz. Tettigoniidae, Fulgoridae, Asiracidae and Chermidae, that is to say, by 10 out of 40, or exactly one-fourth! But this scanty representation is still better shown by the fact that out of these ten, only seven are represented by more than ten species each, and that none contain more than one subfamily, except the Myodochidae, which have an endemic subfamily, Metrarginae.

Although there are several species still to be described, I think that all but a very few genera have been accounted for.

In the Cimicinae, *Oechalia* and *Coleotichus* are possibly endemic, as regards their species, but, on the other hand, these may very possibly be found in Samoa or Tahiti, the endemic Hemipterous fauna of which is unknown.

[1] I regret that I have to announce the decease of Mr Kirkaldy, which has occurred while these pages have been in the press, so that they have not had the benefit of his revision. The residence of Mr Kirkaldy in the islands for some years, induced a change in his views on numerous points, so that the alterations in this supplement are of considerable extent and importance. The species with a number prefixed are not hitherto enumerated in the Fauna, and are practically additions, though some were described previous to Mr Kirkaldy's first treatment of the subject. EDITOR.

The following is a list of the families represented endemically in these Islands:

MYODOCHIDAE, with Metrarginae and Cyminae; NABIDAE; REDUVIIDAE with Ploiariinae only; ANTHOCORIDAE; MIRIDAE; ACANTHIIDAE; TETTIGONIIDAE; with the tribe Phrynomorphini only; FULGORIDAE, with Cixiinae only; ASIRACIDAE; and CHERMIDAE.

CIMICIDAE. Excluding an undoubted introduction, we have three species that are not known elsewhere, but may occur in Samoa or some other Pacific Island.

UROLABIDIDAE and ARADIDAE are entirely absent.

LYGAEIDAE. Excluding an undoubted introduction, we have *Ithamar*, which will probably be found elsewhere.

MYODOCHIDAE. In the Metrarginae, we have an apparently endemic subfamily, which however may occur in Samoa and other islands. *Nysius* has between 20 and 30 species, all the endemic ones being arboreal. I think all the latter could have originated from one immigrant. *Sephora* and *Nesocymus* are, I think, endemic, but possibly not. *Reclada* I do not know, and, I think, it is not endemic.

PYRRHOCORIDAE and TINGIDAE are entirely absent endemically, as also GERRIDAE, ENICOCEPHALIDAE, NEPIDAE and MACROCEPHALIDAE.

NABIDAE are well represented by more than 20 endemic species. *Milu* is doubtless a direct offshoot of a *Reduviolus* like *sharpianus*. The endemic *Reduviolus* proper are arboreal, but their offshoot *Nesotyphlias* are found on the ground under dead leaves etc. and on tree-ferns.

REDUVIIDAE are represented endemically only by the slender, long-legged Ploiariinae, of which I have recorded seven species; one of these is however probably not endemic.

ANTHOCORIDAE have six or more endemic forms.

CLINOCORIDAE, POLYCTENIDAE and DIPSOCORIDAE are absent.

MIRIDAE require a revision with more material, and there is a considerable number of species undescribed. *Sulamita*, *Kalania*, *Pseudoclerada* and *Kamehameha* are interesting endemic genera. *Tichorhinus* and *Sarona* seem to be the dominant forms.

ACANTHIIDAE are represented by five or more endemic species of *Acanthia*, which are very variable in colour and pattern and need fresh study with more material. The other families of the Notonectoidea are not represented endemically.

In the Homoptera, Cicadidae, Cercopidae and Membracidae are absent, as also (endemically) Aphidae, Aleyrodidae and Coccidae. Tettigoniidae are represented by the endemic *Nesophrosyne* with a large number of forms, extremely variable and difficult to limit, by *Nesophryne* (one to four species) also apparently endemic, and by one or two other forms in the same tribe (Phrynomorphini) also possibly endemic.

FULGORIDAE consist only of Cixiini, in two genera, the endemic *Iolania* (several species, only one yet described) and the cosmopolitan *Oliarus*, with several endemic forms.

ASIRACIDAE are well represented and comprise several endemic genera and a large number of species.

POEKILLOPTERIDAE, ISSIDAE, TETTIGOMETRIDAE and DERBIDAE are absent, the first named having a single immigrant.

CHERMIDAE are rather numerous, but very variable, and scarcely studied.

My thanks are due to the following gentlemen: to Dr R. C. L. Perkins for loan of specimens and much help in various ways; to Mr W. M. Giffard for the gift of his valuable Hemipterous collections made in various localities, but principally on Mt. Tantalus, Oahu; and to my colleagues Messrs F. W. Terry and O. H. Swezey, for specimens.

Heteroptera

For a sketch of the classification of the Heteroptera see Kirkaldy, 1907, P. Haw. E. S. I. 135 et seqq.; and 1908, Can. Ent. XL.

Fam. CIMICIDAE.

OECHALIA.

As stated elsewhere, P. Haw. E. S. I. pp. 141—3, I feel certain that there are two valid species of this genus, as there are two kinds of ova; at the same time I do not believe that the synonymy already given is incorrect.

Oechalia grisea, Burmeister.

Oe. griseus, huj. op. III. p. 171.

I have described some of the stages and figured an egg. Dr Perkins writes in reference to other remarks in that paper, "You give a wrong impression as *Oechalia* often swarms in *Myoporum*, *Acacia koa* and many others. I have seen hundreds in a few yards of sugar cane and it is often very common near the coast and even in the outskirts of Honolulu on foreign vegetation. The whole remark certainly gives no idea of the ubiquity of this very abundant bug. It is on nearly all native trees, both in egg and other stages, as well as on low vegetation." Recently, I have taken it at Kilauea (Hawaii) on *Myoporum*, *Acacia koa* and ferns.

C. blackburniae.

C. blackburniae, huj. op. III. p. 172.

I have described and figured the ova, and described the nymphal stages (1907, op. cit. p. 144, figs. 2—4). Dr Perkins writes "I have seen it swarming near the coast on *Dodonaea* as well as in the mountains. I never saw it on Koa in anything like such numbers as on *Dodonaea*. The latter covers acres of land where is no Koa. The fact is it is partial to 'pods' and 'capsules' and the tree itself is of minor consideration, if it bears these." Maui should be added to the list of islands.

[Van Duzee (1905, Bull. Amer. Mus. XXI. 207) has cited *Piezodorus rubrofasciatus* as a Hawaiian Insect, but in error. See Kirkaldy, 1908, P. Haw. E. S. I. 172 and 187. Oshanin has given these islands as a habitat of *Carpocoris pudicus* var. *fuscispina*, also in error.]

Subfam. *CYDNINAE.*

Geotomus pygmaeus Dallas.

G. pygmaeus, huj. op. III. p. 172.

This little species is common under dried cow-dung, and under stones. It is nocturnal, coming to "light" in the evenings. Add Kauai and Lanai to the islands.

Fam. LYGAEIDAE.

Ithamar hawaiiensis Kirkaldy.

I. hawaiiensis, huj. op. III. p. 170.

Dr Perkins writes, "this species is not attached to *Sida*, it abounds on Molokai at 3000 ft. on other plants, and at the Volcano (Kilauea), and as high as 8000—10,000 ft. on Haleakala. You refer merely to the coast-line." It has been common in Kaimuki this year (1908) on *Sida cordifolia*, but is attacked by *Zelus renardii*. I have briefly described the eggs and first nymphal instar (1907, P. Haw. E. S. I. p. 149). Add Hawaii to the islands.

This species, although unknown elsewhere, must be a recent introduction as it was not taken by Blackburn who would certainly have collected it near Honolulu had it been here then.

Rhopalus hyalinus, Fabr.

R. hyalinus, huj. op. III. p. 170.

I have described the ova and nymphs (1907, op. cit. pp. 146—8). This has been common this year on *Sida cordifolia* in Kaimuki, as well as on *Sonchus oleraceus*, its more natural food plant. It feeds also on *Euphorbia cordata* and is preyed on by *Zelus renardii*. Add Kauai to the islands.

Fam. MYODOCHIDAE.

METRARGA.

Metrarga, huj. op. III. p. 165.

I have recently founded two subgenera in this, viz. *Nesocryptias* and *Nesoclimacias* (1908, P. Haw. E. S. I. p. 189).

The forms now known are:

a. typical subgenus:

M. nuda (F. H. III. p. 165) typically apparently an Oahuan species, with var. *mauiensis* (1908, P. Haw. E. S. I. p. 188).

M. obscura (F. H. III. p. 166); I have recently taken this at Kilauea, Hawaii, on *Ohia lehua* (*Nani polymorpha*).

b. subg. *Nesoclimacias*.

contracta (F. H. III. p. 166); with var. *picea* (1908, P. Haw. E. S. I. p. 188).

(1) *lanaiensis* (1908, l. c.), sp. n.

c. subg. *Nesocryptias*.

villosa (F. H. III. p. 167).

Dr Perkins writes me that the species of *Metrarga* are "certainly not bark-dwellers, unless as a rare and exceptional case."

Sephora crinigera White.

Sephora criniger, huj. op. III. p. 161. See also Kirkaldy, 1907, Can. Ent. XXXIX. p. 244.

NESOMARTIS.

Nesomartis Kirkaldy, 1907, op. cit. p. 245.

(1) *Nesomartis psammophila* Kirkaldy.

Nesomartis psammophila Kirkaldy, 1907, l. c.

HAB. Oahu, "on the coast on the ground amongst *Sida*," grass etc., and "Hawaii, Kona coast in similar situations" (Perkins). Probably introduced.

NESOCYMUS.

Nesocymus, Kirkaldy, 1907, l. c.

Apparently allied to *Cymoninus* Breddin, but there is no percurrent main vein on the corium, at least not one at all which "teilt das Corium in zwei annähernd gleiche Teile," and while the corium is partly punctured, partly smooth, it is the middle oblique

third which is punctured, almost all the rest being smooth; moreover, the clavus is closely punctured. The first segment of the antennae is distinctly longer than the long diameter of an eye and extends beyond the clypeus. The third and fourth segments are about equally long. The impressed line on the pronotum is situated about the middle (as stated on p. 245; a misprint occurs on p. 244 in the table).

Nesocymus calvus, White.

Sephora calvus, Kirkaldy, 1902, F. H. III. 162.
Nesocymus calvus, Kirkaldy, 1907, Can. Ent. XXXIX. 245.

HAB. Oahu, at roots of herbage in the mountains, from 1500—2000 ft. (Perkins). At the top of Tantalus (Perkins, Giffard). One of Giffard's specimens has the second and third segments of the right antenna coalesced and shortened, a comparatively common occurrence in the Cymini.

NYSIUS Dallas (huj. op. III. p. 162).

In the ensuing descriptions, I have, owing partly to the fact that several species are represented only by one or two carded specimens, paid no attention to the bucculae, structures considered by Stål to be so important, but have used other characters which appear to me better for specific differentiation. The form of the metapleura, utilized here for subgenera, is considered by Stål and later authors as of generic importance, in other Cyminae, but I cannot regard it as such in *Nysius*. *Orsillus*, distinguished among other things by the armed fore femora, has the labium passing beyond the hind coxae, *Nysius* being separated by the same authors by the unarmed femora and shorter labium. I cannot, however, regard the length of the labium here as a generic character.

I have therefore united all the species now described, in a single genus *Nysius*, but have separated off two subgenera, *Oceanides* and *Neseis*.

It is unfortunate that I have not seen the types of the species proposed by Blackburn and White, and that I am unable to identify ten of them. Most of them were recorded from Kilauea, Hawaii, a locality rather closely investigated on several occasions by Dr Perkins and Messrs Swezey and Giffard, as well as by myself.

Conspectus quarumdam specierum hawaiiensium.

1. Metapleura postice satis rotundatim emarginata, angulo exterolaterali nonnihil prominente, margine postica late reflexa .....(2).
1*a*. Metapleura postice truncata, plerumque anguste, interdum late, reflexa; labium post coxas posticas extensum .....[**subj.** *Oceanides* **nov.**, *nimbato* typo].
2. Labium ad metasternum extensum .....(3).
2*a*. Labium ad coxas posticas extensum .....(6).

2*b*. Labium post coxas posticas extensum; callositas pronoti flavescens; pronotum antice ad margines laterales subito rotundatum ..... [**subj.** *Neseis* **nov.**] 28 *monticola* nov.

3. Species pubescentia satis fortiter vestita ..... 7 *delectus* White[1].

3*a*. Species glabrae, nitidae ..... (4).

4. Callositas pronoti nigrescens ..... (5).

4*a*. Callositas pronoti pallida ..... 1 *saundersianus* Kirkaldy[2].

5. Color ex parte maxima fuscescens vel nigrescens ..... 2 *Mauiensis* Blackburn.

5*a*. Color ex parte maxima pallida ..... 8 *hylaeus* nov.

6. Species pubescentia vestitae ..... (7).

6*a*. Species glabrae, nitidae; vel pubescentia minutissime vestitae ..... (9).

7. Longitudo ultra 7 mm. ..... 9 *Kamehameha* Kirkaldy.

7*a*. Longitudo 4—4½ mm. ..... (8).

8. Supra pallidior; femora postica pallida, fuscomaculata ..... 10 *coenosulus* Stål[3].

8*a*. Nigrescens; femora postica nigrescentia ..... 12 *lichenicola* nov.

9. Caput flavescens, ex parte leviter brunneosuffusum ..... 13 *ochriasis* Kirkaldy.

9*a*. Caput nigrum ..... (10).

10. Femora postica pallida, brunneomaculata ..... 14 *insulicola* nov.

10*a*. Femora postica pallida, immaculata, apice roseosuffuso ..... 15 *silvestris* nov.

11. Pronotum nigrum, maculis pallidis tribus parvis ad marginem posticam ornatum ..... 16 *oresitrophus* nov.

11*a*. Pronotum rufescens vel brunneoflavescens, areis laevigatis nigris vel nigrescentibus vel fuscescentibus ..... (12).

12. Vertex linea rufescente mediana longitudinali ornatus ..... 17 *nubicola* nov.[4].

12*a*. Vertex niger, vix maculatus ..... (13).

13. Tegmina haud maculata vel ad marginem apicalem corii prope medium brunneo-notata, interdum fortius maculata. Pedes pallidiores, leviter maculatae ..... 19 *nimbatus* nov.[5].

13*a*. Tegmina fortiter fusconotata. Pedes magis fuscatae ..... (14).

14. Labii segmentum primum post marginem apicalem prosterni extensum ..... (15).

14*a*. Labii segmentum primum haud ad capitis basim extensum ..... 24 *oribasus* nov.

15. Species glabra, vel sparsissime pubescens ..... 26 *montivagus* nov.

15*a*. Species pubescens ..... 25 *insulivagus* nov.

Nysius saundersianus Kirkaldy.

Nysius saundersianus Kirkaldy, huj. op. III. p. 163.

I recorded this formerly from Lanai, Molokai and Hawaii; Mr Giffard has since taken it on the former island, Koele Mts., 2000 ft. (Oct. cf. Giffard, 1908, P. Haw. E. S. I. 180).

The pronotal callosity is pale, and extends from one lateral margin to the other; the lateral margins are somewhat sinuate.

[1] Verisimiliter prope hanc speciem pertinet *N. dallasi* White, species mihi incognita.

[2] Verisimiliter prope hanc speciem pertinent *N. arboricola* White, *N. longicollis* White, *N. whitei* Blackburn, species mihi incognitae.

[3] Verisimiliter prope hanc speciem pertinet *N. blackburni* White, species mihi incognita.

[4] Prope hanc speciem pertinet verisimiliter *N. nemorivagus* White.

[5] Prope hanc speciem pertinent verisimiliter *N. rubescens, nitidus, pteridicola, vulcan* White.

(1) *Nysius mauiensis* Blackburn.

Nysius mauiensis Blackburn, 1888, P. Linn. Soc. N. S. W. (2) III.

I have identified a number of specimens as this species, but am hampered by the fact that I do not know *N. arboricola*, with which Blackburn compares it. The length of the labium is not stated, but I suppose it to be as in *N. arboricola*.

This species seems somewhat variable, the antennae being feebly ringed, conspicuously so, or almost entirely fuscate; the tegmina are in some specimens principally pale, in others principally dark.

HAB. Maui, Haleakala, 4500 ft. (Blackburn), 5000 ft. (Mar., Apr., Perkins).—Lanai, 2000 ft. (Jan., Sept., Perkins), 3000 ft. (Feb., Perkins).—Hawaii, Kona, 4000 ft. (Aug., Perkins); Kilauea, 4000 ft. (Perkins).

(2) *Nysius arboricola* White.

Nysius arboricola F. B. White, 1878, A. M. N. H. (5) I. 368.

I do not know this species. Blackburn took it "high up in the mountainous district," i.e. of Oahu, probably Mt. Tantalus.

(3) *Nysius whitei* Blackburn.

Nysius whitei Blackburn, 1888, op. cit. 346.

This was obtained from Hawaii, Mauna loa, abt. 4000 ft. (Feb.). I do not know it.

(4) *Nysius longicollis* Blackburn.

Nysius longicollis Blackburn, 1888, op. cit. 344.

This was obtained on Oahu. I do not know it.

(5) *Nysius dallasi* White.

Nysius dallasi F. B. White, 1878, op. cit. 367.

This was taken on Oahu, near Nuuanu Pali. It is probably an introduced form near *N. delectus*, but I have been unable to determine it, though it may be the species I incorrectly, according to Dr Bergroth, determined previously as *N. vinitor* Bergroth.

(6) *Nysius delectus* White.

Nysius delectus F. B. White, 1878, op. cit. 367; Kirkaldy, 1907, P. Haw. E. S. I. 152.

An introduced form, widely distributed; near the coast it is common on *Bidens pilosa*.

HAB. Apparently on all the islands at almost all elevations; not arboreal.

(7) *Nysius hylaeus*, sp. nov.

Pale yellowish testaceous, glabrous. Vertex with some dark markings, principally longitudinal, which vary in situation and depth of colour, in the three specimens before me. Second and third (except extreme apex), a spot on fourth, and the whole of the fourth segment of antennae, blackish brown (in one example, second and third paler). Eyes red-brown. Ocelli red. Pronotum with a short, oblique, subpyriform, laevigate, black spot on each side of the middle, not nearly reaching the lateral margins of the pronotum. Pronotum closely punctured, punctures mostly nearly colourless, except on and near the apical margin. Postero-lateral angle in some examples dark, also the hind margin is soiled in some. Scutellum similarly punctured, a blackish spot on the anterior half in the middle. Sterna dark brown, polished; pleura closely punctured, a little darkly suffused in part; hind margin of metapleura pale, not punctured. Tegmina rather feebly mottled with brownish grey, apical margin of corium in some examples more darkly so, apical angle in some blackish brown. Membrane hyaline, mottled with brown. Femora with a subapical dark brown ring, tinged with rose apical of this. Abdominal sternites tinged with rose, a sublateral black blotch on basal half (this is somewhat variable). Antennae with the first segment extending just beyond apex of vertex, second slightly longer than the third, and slightly shorter than the clavate fourth. Labium reaching to metasternum. Pronotum with the lateral margins very slightly sinuate, not much wider basally than apically, toothed minutely at the antero-lateral angle. ♂ not remarkable. ♀ 5th sternite apically obtusangulate, 6th acutangulate. Length $4\frac{1}{4}$ mm.

HAB. Kauai, high plateau (Aug., Perkins), Waimea Mts., 4000 ft. (May, Perkins).

This species is easily recognized among the pale glabrous forms by the short, pyriform, laevigate areas on the pronotum.

Nysius kamehameha Kirkaldy.

Nysius kamehameha Kirkaldy, huj. op. III. p. 164.

HAB. Hawaii, Hualalai, 5000 ft. (Aug., Perkins).

I have seen no specimens beyond the carded type of this, for a *Nysius*, handsome species. The labium extends practically as far as the hind coxae. The tegmina are parallel for about one-seventh of their length, thence gently rounded. The exterior half of the metapleura black, the hind margin and the interior half, together with the orifice, pale.

(8) *Nysius coenosulus* Stål.

Nysius coenosulus Stål, 1859, Eugenies Resa, Zool. p. 243; F. B. White, 1878, A. M. N. H. (5) I. p. 369.

Through the kindness of Dr Aurivillius, I was able to see the type—unfortunately in poor condition—of this doubtless introduced species. It occurs in mixed sweeping, principally, I think, on *Erigeron canadensis*.

HAB. Oahu, near Honolulu (Perkins and others); Waianae Coast (March, Perkins).—Lanai, 3000 ft. (Perkins).—Hawaii, 2000—4000 ft. (Perkins).

(9) *Nysius blackburni* White.

Nysius blackburni F. B. White, 1881, A. M. N. H. (5) VII. p. 53.

HAB. Hawaii, Kilauea, 4000 feet on ferns (White). I do not know this.

(10) *Nysius lichenicola*, sp. nov.

Head and pronotum yellowish testaceous, closely punctured, and more or less suffused, with dark brown; lateral margins of head, anterior third of pronotum, posterior margin very narrowly (usually interrupted medially and at the lateral angles), scutellum etc., dark. Tegmina typically yellowish testaceous, closely irrorated with blackish grey, usually more so towards the middle, apical angle of corium dark. Membrane vitreous, variegated varyingly with brownish grey, apical angle usually blackish. Antennae, labium, femora etc., blackish or piceous; coxae and apex of femora testaceous or pale ferruginous. Underside black, orifices dark testaceous. The fourth segment of the antennae is about twice as long as the third, and a little longer than the second. Pronotum much as in *N. coenosulus*. Length ♂ 3½, ♀ 3½—4 mm.

HAB. Hawaii, Kilauea, among the lichen on the trunks of fallen *Nani polymorpha* and *Acacia koa* (April, Kirkaldy); Kaumana, above Hilo, 2000 ft. (Jan., Perkins, no. 679).—Maui, Haleakala, 5000—9000 ft. (March, Apr., Perkins). Dr Perkins tells me he has taken it from various fruits, Mynah-bird's dung etc. This species is possibly not endemic.

It is variable, but I cannot find structural differences. In a Mauian female, the tibiae are more testaceous and the apical angle is almost entirely pale. In one male, the hind margins of the pleura are paler, but much more material is necessary for comparison, before elevating the following varieties to possible specific rank.

var. (*b*) *brunnealis* nov.

Tegmina pale ferruginous inwardly.

HAB. Haleakala, 5000 ft. (April).

var. (*c*) *atralis* nov.

Upper surface blackish brown; a small spot at base of head, one at middle and one at each lateral angle of hind margin of pronotum, pale; a few testaceous specks on tegmina, mostly near the lateral margin.

HAB. Haleakala, 5000 ft. (April).

The type of this species is one of the specimens from Haleakala.

(11) *Nysius ochriasis* Kirkaldy.

Nysius ochriasis Kirkaldy, 1902, huj. op. III. 162.

Food plant: *Dubautia* sp.

(12) *Nysius insulicola*, sp. nov.

Similar in general appearance to *N. mauiensis*, but the pronotum is maculate only at the postero-lateral angles.

Head black; clypeus and a ring around the eyes, brownish yellow. Antennae pale brownish yellow, indistinctly infuscate medially. Labium pale yellow, apically blackish. Pronotum brownish yellow (callosities browner), confusedly and comparatively sparsely brownly punctured, postero-lateral angles blackish brown. Scutellum brownish yellow, basally and laterally punctured with dark brown, posterior angle whitish. Tegmina subhyaline, pale brownish yellow, commissure and a short oblique stripe apically on exocorium dark fuscous. Membrane hyaline, a broad fuscous stripe down the middle. Beneath pale yellowish brown with a pink tinge; sterna mostly blackish, abdomen medially pale yellow; ambulacra and orifices whitish; legs pale yellow, femora spotted with dark brown, hind femora with a dark brown subapical ring. Second and third segments of the antennae subequal, each longer than the fourth. Pronotal callosity percurrent; lateral margins very slightly sinuate. ♀ 6th and 7th sternites acute-angularly emarginate apically. Length 5 mm.

HAB. Lanai, over 2000 ft. (Jan., Perkins).

(13) *Nysius silvestris*, sp. nov.

Head black, clypeus pale yellow, ocelli red; eyes black, interiorly margined with testaceous. Antennae and labium pale brownish testaceous, the former with segments 1—3 feebly ringed with pale fuscous, 4th pale ferrugineotestaceous, apically pale fuscous, the apex of labium blackish.

Pronotum pale ferruginous, with 5 longitudinal, parallel, elongate spots (or short stripes) on the basal third, the middle one extending anteriorly as far as the transverse swelling, the sublateral ones sometimes rather indistinct. Scutellum piceous, basal angles pale ferruginous, posterior angle white. Tegmina piceous, extero-lateral margin on basal half brownish yellow. Membrane hyaline, basal third dark fuscous. Sterna polished black, pleura brownish yellow tinged with red, and more or less marked with blackish. Legs and ambulacra pale, apical half of hind femora rosy. Abdomen beneath pale reddish brown, more or less clouded with blackish on sternites 2—6. Orifices pale, slightly rosy. Three apical segments of antennae subequal, the fourth a little the longer, rather elongately incrassate. Pronotal callosities percurrent, pronotum rather sparsely punctured.

♀ 6th sternite very obtusely, 7th acutely, emarginate. Length $3\frac{1}{2}$—4 mm.

HAB. Oahu, Waianae Mts., about 3000 ft., Feb. (no. 547).

(14) *Nysius oresitrophus*, sp. nov.

Black; apex of clypeus, apex of first, second and third segments of antennae, a small spot on middle of hind margin of pronotum, labium, legs, etc. brownish testaceous or brownish yellow, femora and tibiae broadly banded with piceous; tarsi partly fuscous. Postero-lateral angles of pronotum and posterior angle of scutellum yellowish testaceous. Tegmina yellowish testaceous, a large spot at base, another at intero-apical angle of corium, and a larger one on apical margin of corium, black. Membrane yellowish brown, apparently basally blackish. Antennae with the second and fourth segments subequal, a little longer than the third. Labium reaching well beyond the hind coxae. Pronotum rather superficially punctured, almost striate. Length $4\frac{1}{2}$ mm.

HAB. Maui, Haleakala, over 5000 ft. (Oct., Perkins, no. 636) 1 carded example.

(15) *Nysius nubicola*, sp. nov.

Head blackish with a red line down the middle; antennae reddish or reddish testaceous. Pronotum reddish or reddish testaceous punctured with blackish, the laevigate areas blackish (sometimes reddishly suffused). Scutellum rufescent, punctured with blackish. Tegmina yellowish hyaline, in some examples almost immaculate, in others blotched apically. Labium, legs, ambulacra, orifices, etc. rufescent or yellowish testaceous, apical segment of labium black, femora spotted with black. Underside black, the pleura partly rufescent, abdomen varyingly pale in part. Head and pronotum sparsely pubescent. Labium extending beyond hind coxae, first segment reaching to apical margin of prosternum. Second segment of antennae distinctly longer than the

third, which is longer than the fourth. Pronotum closely punctured; lateral margins scarcely sinuate, not at all carinate. Length 4—5½ mm.

HAB. Hawaii, Kona, 4000 ft. and over, Aug. (no. 231, Perkins); Hualalai, 5000 ft. (Perkins). One of the Kona specimens is the type.

(16) *Nysius nemorivagus* White.

Nysius nemorivagus F. B. White, 1881, op. cit. 54.

HAB. Hawaii, Mauna Kea.—Maui, Haleakala, 5000—6000 ft. I do not know this.

(17) *Nysius nimbatus*, sp. nov.

Head and most of underside black. Pronotal callosities piceous. Antennae, pronotum, scutellum, tegmina etc. pale olive-testaceous, a brown irregular ∪ near the middle of the apical margin of the corium. Pronotum and scutellum with blackish brown punctures, the anterior half of the former sometimes being suffused with black.

Legs, orifices etc. pale brownish yellow, fore and middle femora sparsely spotted with pale brown, hind femora strongly spotted with blackish brown. Abdomen beneath sometimes largely pale apico-medially. Antennae in some examples tinged or marked with brown. Second and fourth segments of antennae subequal, each shorter than the third. Pronotum rather sparsely punctured, laevigate areas reaching the lateral margins, which are very slightly sinuate. Length 5½—6½ mm.

HAB. Oahu, Honolulu, 2500—3000 ft., Oct.—Nov. (Perkins).

(18) *Nysius rubescens* White.

Nysius rubescens F. B. White, 1881, A. M. N. H. (5) VII. 55.

This was described from Hawaii, Kilauea, 4000 ft. I do not know it.

(19) *Nysius pteridicola* White.

Nysius pteridicola F. B. White, 1881, l. c.

This was described from the same place as the preceding. I do not know it.

(20) *Nysius nitidus* White.

Nysius nitidus F. B. White, 1881, A. M. N. H. (5) VII. 53.

HAB. Maui, Haleakala. I do not know it.

(21) *Nysius vulcan* White.

Nysius vulcan F. B. White, 1881, op. cit. 56.

HAB. Hawaii, Mauna loa, elevation not stated. I do not know it.

(22) *Nysius oribasus*, sp. nov.

Elongate. Head black. Antennae, pronotum and scutellum piceous; base and apex of first three segments of antennae pale, as also angles and keel down scutellum, and postero-lateral angles of pronotum. Labium, ambulacra, orifices and legs pale; the first and fourth segments of the labium, and the tibiae partly, fuscate; femora thickly spotted on the basal half, or so, with dark brown, coxae basally piceous. Tegmina hyaline, strongly blotched with dark brown. Beneath blackish, abdomen in one example a little pale in part. Second segment of antennae slightly longer than the third, which is longer than the fourth. Pronotum coarsely punctured; lateral margins very slightly sinuate, not at all carinate; laevigate areas blackish.

HAB. Oahu, Waialua, Koolau range, 2000 ft., Feb. (Perkins); Kaala, 1500 ft. Jan. (Perkins). The Waialua specimen is the type.

(23) *Nysius insulivagus*, sp. nov.

Sparsely yellowish pubescent. Head, sterna and pleura black, propleura partly brownish piceous. Pronotum, scutellum, and tegmina brownish piceous; laevigate areas of pronotum rather darker; scutellum partly darker, carina down the middle yellow; tegmina very closely mottled pallidly, veins paler, especially the forked median. Beneath, the abdomen is piceous, becoming more palely ferruginous towards the apex. Antennae, labium and legs pale ferruginous; apex of first three segments of antennae dark; orifices pale. First segment of labium extends beyond the apical margin of the prosternum. Second segment of antennae distinctly longer than the third, which is subequal to the fourth. Lateral margins of pronotum scarcely sinuate, obsolescently carinate.

HAB. Hawaii, Hualalai, 8000 ft., Aug. (Perkins); Kilauea, 4000 ft. (Perkins) and at the same locality on *Nani polymorpha* ("Ohia lehua," April).—Maui, Haleakala, 10,000 ft., Aug. (Perkins). One of the Hualalai examples is the type.

(24) *Nysius montivagus*, sp. nov.

Differs from the preceding by the glabrous, more shining appearance, paler pronotum (laevigate areas dark), darker antennae, maculate femora etc.

HAB. Lanai, Molokai, Hawaii.—Lanai, Halepaakai, July (Perkins).—Molokai, 4000 ft. (May, Perkins). Hawaii, Kilauea (Kirkaldy).

(25) *Nysius monticola*, sp. nov.

Superficially somewhat like *N. ochriasis*, but larger and more sordid, the fourth segment of the antennae dark, and the pronotum laterally sinuate.

Yellowish brown, a paler clear line on the vertex along the middle. Eyes blackish

brown, ocelli reddish brown. A ring at base and another near apex of second segment, one at base of third, and all the fourth (except extreme base) segment of antennae, dark fuscous. Apex of labium black. A clearer line on anterior two-thirds of pronotum down the middle, clearer also medio-laterally; rather sparsely punctured with brown, as also on pleura. Scutellum punctured with dark brown on the basal margin and between the keels and the lateral margins. Tegmina and membrane immaculate brownish yellow, veins concolorous. Ambulacra, orifices and legs immaculate brownish yellow. The whole insect glabrous, shining. Pronotum laterally sinuate, roundedly narrowing laterally in front of the callosity, slightly reflexed in part; impressed behind the callosity. Antennae with the second and third segments subequal, a trifle longer than the fourth. Labium reaching nearly to the middle of the abdomen, first segment beyond the base of the head. ♀ 6th sternite very obtusely, 7th rectangularly, emarginate. Length 6 mm.

HAB. West Maui Mts., 4000 ft. (no. 357, April, Perkins, 1 ♀)[1].

(1) *Orthoea vincta*, Say.

Pamera vincta (Say) Stål.

Orthoea periplanios Kirkaldy, 1907, Canad. Ent. XXXIX. p. 246.

O. pacifica Kirkaldy, 1907, P. Haw. E. S. I. 150; and 1908, P. Linn. Soc. N. S. W.

O. vincta Kirkaldy, 1908, P. Haw. E. S. I. 189 and P. Linn. Soc. N. S. W.

This little bug "swarmed in 1900, but was not seen prior to 1897" (Perkins). It has been described under 8 names and has spread over about the whole of America, and occurs in Ceylon, India, Burma; Christmas Islands (Indian Ocean); South Africa; Australia, Tahiti and Fiji! I have described the last nymphal instar (1907, P. Haw. E. S. I. 150), which has also with long- and short-winged adults, been figured (1908, P. Linn. Soc. N. S. W.). In Hawaii, *O. vincta* is found in *Cynodon dactylon*, but does not, I think, feed on it.

HAB. I have collected, or seen, specimens from Kauai, Oahu, Maui and Hawaii.

Clerada apicicornis Sign.

Clerada apicicornis Sign., huj. op. III. p. 160.

I have described the final nymph (1907, P. Haw. E. S. I. 151). Dr Perkins has seen this species "feeding on a dead Blattid (which had perhaps died before it was fed upon)" and does not think it catches *Lepisma*. I have only seen this on Oahu.

[1] The printed label bears the indication "West Maui 4000 ft.," but no. 357 (on the underside of the card to which the specimen is affixed) refers to "Haleakala 4000 ft.," which is in East Maui.

Merragata hebroides White.

Merragata hebroides, huj. op. III. p. 168.

Common and widely distributed[1].

Fam. NABIDAE.

Vide Subfam. *Nabinae*, huj. op. III. p. 153.

Conspectus generum ac subgenerum hawaiiensium.

1. Caput ordinarium..... 1 *Reduviolus* W. Kirby (2).
1*a*. Caput utrimque spina obtusa, prominente; segmentum primum antennarum incrassatum..... (subj. 2) *Milu* Kirkaldy.
2. Clavus ac corium haud discreta; membrana perminuta; ocelli plus minus obsolescentes.....(subj. 1*b*) *Nesotyphlias* Kirkaldy.
2*a*. Tegmina ordinaria; ocelli adsunt .....(3).
3. Scutellum immaculatum; antennae pedesque haud annulatae; margines laterales pronoti fere recti, lobo postico pronoti vix elevato... (subg. 1*a*) *Nesomachetes* Kirkaldy.
3*a*. Scutellum maculatum; antennae pedesque annulatae; margines laterales pronoti sinuati, lobo postico pronoti elevato .....(subg. typicum).

REDUVIOLUS.

(1) *Reduviolus kahavalu* Kirkaldy.

Reduviolus innotatus Kirkaldy, huj. op. III. p. 154, Pl. v. fig. 32.

R. kahavalu Kirkaldy, 1907, P. Haw. E. S. I. p. 156.

Delete the Oahuan record. I have founded a subg. *Nesomachetes* for this (1908, P. Haw. E. S. I. p. 190).

Reduviolus capsiformis Germar.

Nabis capsiformis Germar, 1837, Silb. rev. Ent. v. p. 132.

Reduviolus innotatus F. B. White, 1877, A. M. N. H. (4) xx. p. 112; Kirkaldy, 1907, P. Haw. E. S. I. p. 156.

R. blackburni (part) Kirkaldy, huj. op. III. p. 155; Perkins, 1903, Bull. Board Agr. Hawaii Ent. I.; Swezey, 1905, Bull. H. S. P. Ent. I. p. 234, Pl. 17, figs. 1—4.

R. capsiformis Reuter, 1908, Mem. Soc. ent. Belg. xv. p. 114.

The adoption of the above name is on Reuter's authority; in his remarks on p. 115 anent the figure of *R. innotatus*, he has overlooked my paper in the P. Haw. E. S. I. 156. *R. capsiformis* has been described, or alluded to, under eleven names,

[1] A Tingid of the genus *Teleonemia* is now firmly established in the Islands, but has nothing to do with the original fauna, having been purposely introduced to check the *Latana camara*.

and is practically cosmopolitan. It has nothing to do with *R. blackburni* which is a much darker, probably endemic, insect, found at Kilauea, Hawaii and elsewhere, on ferns, grasses etc.

Reduviolus morai Kirkaldy.

Reduviolus morai Kirkaldy, huj. op. III. p. 155, Pl. v. fig. 39; and 1908, P. H. E. S. I. 191.

Delete Lanai from the islands.

Reduviolus subrufus White.

Reduviolus subrufus, huj. op. III. p. 156.

Delete *R. koelensis* and *oscillans* from the synonymy; only fig. 37, in the "Fauna," applies to this species.

(2) *Reduviolus koelensis* Blackburn.

Nabis koelensis Blackburn, 1888, P. Linn. Soc. N. S. W. (2) III. p. 352.

HAB. Lanai, Koele.

I am not sure that I know this form, but at least it cannot, I think, be included under *subrufus*.

(3) *Reduviolus oscillans* Blackburn.

Nabis oscillans Blackburn, l. c.

The same remarks apply to this.

HAB. Hawaii, Mauna loa, about 4000 ft.

(4) *Reduviolus arrogans* Kirkaldy.

Reduviolus arrogans Kirkaldy, 1908, P. H. E. S. I. p. 191.

HAB. Molokai.

(5) *Reduviolus truculentus* Kirkaldy.

Reduviolus subrufus Kirkaldy, 1902, huj. op. III. Pl. v. fig. 38, but not of the text p. 156.

R. truculentus Kirkaldy, 1908, P. H. E. S. I. p. 191.

HAB. Oahu, Honolulu Mts. on *Pipturus albidus*.

(6) *Reduviolus nubigenus* Kirkaldy.

Reduviolus nubigenus Kirkaldy, 1908, l. c.

HAB. Lanai—also, I think, Maui and Molokai.

(7) *Reduviolus kaonohiula* Kirkaldy.

Reduviolus kaonohiula Kirkaldy, 1908, op. cit. p. 192.

In fresh examples, the abdomen is grass-green.

The last nymph, which, with the adult, is found on *Cyathodes tameiameiae* at Kilauea, Hawaii, is grass-green with yellow markings.

(8) *Reduviolus montivagus* Kirkaldy.

Reduviolus montivagus Kirkaldy, 1908, l. c.

HAB. Kauai.

(*c*) REDUVIOLUS subgen. NESOTYPHLIAS.

Kirkaldy, 1907, P. H. E. S. I. 155.

Reduviolus lusciosus White.

Nabis ? lusciosus F. B. White, 1877, A. M. N. H. (4), XX. 112.

Reduviolus lusciosus Kirkaldy, huj. op. III. p. 157 (part), Pl. v. fig. 35; Reuter, 1908, Mém. Soc. ent. Belg. XV. p. 124.

Nesotyphlias lusciosus Kirkaldy, 1907, P. H. E. S. I. p. 155.

HAB. Oahu. Not yet found on any other of the islands.

(9) *Reduviolus silvicola* Kirkaldy.

Reduviolus silvicola Kirkaldy, 1908, P. H. E. S. I. 192.

HAB. Molokai.

(10) *Reduviolus monticola* Kirkaldy.

Reduviolus monticola Kirkaldy, 1908, l. c.

HAB. Oahu.

(11) *Reduviolus procellaris* Kirkaldy.

Reduviolus procellaris Kirkaldy, 1908, op. cit. 193.

HAB. Molokai.

(12) *Reduviolus volcanicola* Kirkaldy.

Reduviolus lusciosus Kirkaldy, huj. op. III. Pl. v. figs. 34 and 34*a*.

R. volcanicola Kirkaldy, 1908, P. H. E. S. I. p. 193.

HAB. Hawaii, Kilauea, on tree-ferns and among dead leaves on the ground.

(13) *Reduviolus curtipennis* (Blackburn).

Nabis ? curtipennis Blackburn, 1888, op. cit. 353.

HAB. Hawaii, Waimea.

(14) *Reduviolus paludicola* Kirkaldy.

Reduviolus paludicola Kirkaldy, 1908, l. c.

HAB. Molokai.

(15) *Reduviolus lolupe* Kirkaldy.

Reduviolus lolupe Kirkaldy, 1908, l. c.

HAB. Uncertain.

(16) *Reduviolus silvestris* Kirkaldy.

Reduviolus silvestris Kirkaldy, 1908, op. cit. 194.

HAB. Kauai.

(*d*) REDUVIOLUS subgen. MILU Kirkaldy.

Milu Kirkaldy, 1907, Can. Ent. XXXIX. p. 247.
Reduviolus subg. *Milu*, Reuter, 1908, Mém. Soc. ent. Belg. XV. p. 109.

(17) *Reduviolus kerasphoros* Kirkaldy.

Reduviolus rubritinctus Kirkaldy, huj. op. III. p. 157, Pl. v. fig. 33, nec Blackburn.
Milu kerasphoron Kirkaldy, 1907, Can. Ent. XXXIX. p. 248.
M. kerasphoros Kirkaldy, 1908, P. Haw. E. S. I. p. 194; with var. *purpurea*, p. 195.
Reduviolus kerasphoron Reuter, 1908, l. c.

HAB. Oahu.

Reduviolus rubritinctus Blackburn.

Nabis rubritinctus, Blackburn, 1889, P. Linn. Soc. N. S. W. (2) III. p. 351.
Milu ? rubritinctus Kirkaldy, 1908, l. c.

HAB. Maui.

I have not seen this species, which is apparently distinct from the preceding.

Fam. REDUVIIDAE.

Zelus renardii Kolenati.

Zelus renardii Kolenati, 1856, Bull. Soc. Nat. Moscou, xxix. 460, Pl. 3, fig. 2; Kirkaldy, 1908, P. Haw. E. S. i. 195.

Z. laevicollis Champion, 1899, B. C. A. Het. ii. 252 and 260, Pl. xv. fig. 24.

Z. peregrinus Kirkaldy, huj. op. iii. p. 149; Perkins, 1903, Bull. Agr. Hawaii Ent. i. 20; Kirkaldy, 1904, Haw. For. Agr. i. 183; Swezey, 1905, Bull. H. S. P. Ent. i. 232, Pl. xvi. figs. 1—3; Kirkaldy, 1907, P. Haw. E. S. i. 156; and Canad. Ent. xxxix. 247.

This species was first seen in Honolulu in 1897, but had become common and generally spread over Oahu by 1900. It is now common in the lowlands of all the islands, the brown egg masses being very conspicuous on *Saccharum officinarum*, *Hibiscus rosasinensis*, *Citrus aurantium* etc. In the younger stages, it feeds on Aphids, young leafhoppers etc., but the adult preys on several very destructive beetles as well, though sometimes becoming injurious by sucking Coccinellids. It is apparently distributed over the Western States (California, Arizona etc.) and Mexico.

Swezey[1] and I[2] have contributed to the knowledge of the life-history.

Triatoma Lap.

Triatoma Laporte, 1832, Essai Hém. pp. 6 and 11.

Conorhinus Laporte (1832 ?) Essai Hém. p. 77.

(1) *T. rubrofasciata* de Geer.

Cimex rubrofasciatus de Geer, 1773, Mém. iii. 349, Pl. xxxv. fig. 12.

Triatoma rubrofasciata Kirkaldy, 1904, Haw. For. Agr. i. 185.

This has been taken by Koebele and Perkins around labourers' huts on certain Oahuan plantations. It is a native of Brazil, the Antilles etc., but has become distributed over the Philippines, China, Burma, Malay Peninsula, Ceylon, Andamans, India, West Africa and Madagascar.

Luteva insolida White.

Luteva insolida White, huj. op. iii. p. 152.

This occurs also around Honolulu; it is probably not endemic.

[1] 1905, op. cit. pp. 232–4, Pl. xvi. figs. 1—3.

[2] 1907, P. Haw. E. S. i. pp. 156–8.

(1) *Luteva insulicola* Kirkaldy.

Luteva insulicola Kirkaldy, 1908, P. Haw. E. S. I. p. 196.

HAB. Oahu. Waialua.

(1) *Nesidiolestes insularis* Kirkaldy.

Nesidiolestes insularis Kirkaldy, 1908, op. cit. p. 195.

HAB. Oahu, Tantalus, 1800 ft.

I have seen only a single example of this, taken up Tantalus by Mr O. H. Swezey, and now in my collection.

Fam. ANTHOCORIDAE.

Vide Miridae subfam. Anthocorinae, huj. op. III. p. 125.

Triphleps persequens White.

Triphleps persequens White, huj. op. III. p. 125.

This is distributed throughout the islands in the plains, being very common in sugar-cane fields and on cultivated *Hibiscus* etc. It is doubtless introduced. It feeds on Aphidae, Psocidae, and other small insects. Swezey[1] has described the nymph as yellowish, and has figured the adult. *T. persequens* is now known from Queensland and Fiji[2].

Physopleurella mundula White.

Physopleurella mundulus White, huj. op. III. p. 126.

This is also widely distributed similarly to the last, and has similar food-habits. Swezey has briefly described and figured the ova and nymphs, as well as the adult[3].

Lasiochilus denigratus White.

Lasiochilus denigrata White, huj. op. III. p. 126.

I followed Reuter in placing *L. decolor* as a synonym, but, as I now think, wrongly. So far as the material now before me goes, *L. denigratus* is restricted to Hawaii.

HAB. Hawaii.

(1) *Lasiochilus decolor* White.

Dilasia (?) *decolor* White, 1879, Ent. Mo. Mag. XVI. p. 147.

Lasiochilus denigratus (part) Reuter; and *L. denigrata* (part) Kirkaldy, huj. op. III. p. 126.

HAB. Oahu. This seems to be restricted to Oahu.

[1] 1905, Bull. H. S. P. Ent. I. 235, Pl. XVI. fig. 7.

[2] 1908, Kirkaldy, P. Linn. Soc. N. S. W. XXXII. 784.

[3] 1905, loc. cit., Pl. XVI. figs. 4—6.

(2) *Lasiochilus silvicola* Kirkaldy.

Lasiochilus silvicola Kirkaldy, 1908, P. Haw. E. S. I. 196.

HAB. Kauai, Koholuamano.

(3) *Lasiochilus montivagus* Kirkaldy.

Lasiochilus montivagus Kirkaldy, op. cit. 197.

HAB. Lanai, Koele Mts. (also doubtfully from Hawaii).

(4) *Lasiochilus nubigenus* Kirkaldy.

Lasiochilus nubigenus Kirkaldy, l. c.

HAB. Maui, Haleakala.

Fam. CLINOCORIDAE.

Subfam. *CACODMINAE*, huj. op. III. p. 129.

For *Klinophilus* use *Clinocoris* Fallén 1829.

Fam. MIRIDAE.

Subfam. *MIRINAE*, huj. op. III. p. 129.

Sulamita lunalilo Kirkaldy.

Sulamita lunalilo, huj. op. III. p. 130.
The type was a specimen from Kilauea, Hawaii. Pl. IV. fig. 12*a* refers to this.

(1) *Sulamita dryas* Kirkaldy.

Sulamita lunalilo, var. Kirkaldy, huj. op. III. Pl. IV. fig. 12.
S. dryas Kirkaldy, 1908, P. Haw. E. S. I. p. 197.

(2) *Sulamita oreias* Kirkaldy.

Sulamita lunalilo, brach. form, Kirkaldy, huj. op. III. Pl. IV. fig. 13.
S. oreias Kirkaldy, 1908, P. Haw. E. S. I. 197.

TICHORHINUS Fieber.

Tichorhinus Fieber, 1858, Wien. E. Mon. II. p. 314.
Orthotylus Fieber, 1858, op. cit. p. 315; Kirkaldy, 1902, huj. op. III. p. 132.

(1) *Tichorhinus kassandra* Kirkaldy.

Orthotylus daphne var. *kassandra* Kirkaldy, huj. op. III. p. 135.

Cyrtopeltis hawaiiensis Kirkaldy.

C. hawaiiensis, huj. op. III. p. 138.

HAB. Add, Oahu, Tantalus (Dec. Perkins, Swezey, Giffard); Maunawili (Giffard) on *Touchardia*.

An error has crept into the description, viz. the base of the pronotum is wider than half the length of the second segment of the antennae.

Dr Perkins informs me this species is rather variable, some specimens being much darker.

Opuna hawaiiensis Kirkaldy.

Opuna hawaiiensis, huj. op. III. p. 140.

HAB. Oahu, on *Sida cordifolia*.

(1) *Pseudoclerada kilaueae* Kirkaldy.

Pseudoclerada morai part, Kirkaldy, huj. op. III. p. 141, Pl. IV. fig. 19.
P. kilaueae Kirkaldy, 1908, P. H. E. S. I. p. 198.

HAB. Hawaii, Kilauea.

KALANIA Kirkaldy.

Baracus Kirkaldy, huj. op. III. p. 143.
Kalania Kirkaldy, 1904, Entom. XXXVII. p. 280.

Kalania hawaiiensis.

Baracus hawaiiensis, huj. op. III. p. 143.

HAB. This seems restricted to Lanai. It was retaken there by Giffard (1908, P. H. E. S. I. 180).

Hyalopeplus pellucidus Stål.

Hyalopeplus pellucidus, huj. op. III. p. 143.

This has been redescribed from the type by Reuter (1905, Öfr. Finska Vet. Förh. XLVII. no. 12, p. 2). It is distributed from sea level up to 5000 ft. and is certainly not endemic. Near Honolulu it is common on *Hibiscus rosasinensis*, but swarms, further from the town, on Guava, *Sida*, *Dodonaea* etc. I have described the last nymph (1907, P. H. E. S. I. 159).

Koanoa hawaiiensis Kirkaldy.

Koanoa hawaiiensis, huj. op. III. p. 136.
This is arboreal and endemic.

Nesiomiris hawaiiensis Kirkaldy.

Nesiomiris hawaiiensis, huj. op. III. p. 145.
This also is arboreal and endemic. On the other hand *Oronomiris hawaiiensis* is graminivorous and an introduction.

Acanthia exulans White.

Acanthia exulans, huj. op. III. p. 146.

HAB. Oahu. I can only definitely refer this typically now from Oahu, possibly also from Kauai. I have described (1908, P. Haw. E. S. I. p. 198) var. *molokaiensis* from Molokai.

Acanthia oahuensis Blackb.

HAB. Oahu. I can refer this also only from Oahu now.

(1) *Acanthia humifera* Kirkaldy.

Acanthia humifera Kirkaldy, 1908, op. cit. p. 199.

HAB. Oahu, N. W. Koolau Range.

(2) *Acanthia nubigena* Kirkaldy.

Acanthia nubigena Kirkaldy, 1908, l. c.

HAB. Maui, Haleakala.

(3) *Acanthia procellaris* Kirkaldy.

Acanthia procellaris Kirkaldy, 1908, op. cit. p. 200.

HAB. Molokai, 4000 ft.

Arctocorisa blackburni White.

Corixa blackburni, huj. op. III. p. 148.
Corixa blackburni is now referred to *Arctocorisa*, recently raised to generic rank.

BUENOA Kirkaldy.

Buenoa Kirkaldy, 1904, Wien. E. Z. XXIII. p. 120.
Included under *Anisops*, huj. op. III. p. 148.

(1) *Buenoa pallipes* Fabricius.

Notonecta pallipes Fabricius, 1803, Syst. Rh. 103.
Anisops sp. ? Kirkaldy, huj. op. III. p. 148.
Buenoa pallipes Kirkaldy, 1904, Wien. E. Z. XXIII. p. 123.

Homoptera.

Fam. MEMBRACIDAE.

A single introduced species (from New Zealand, where doubtless introduced from Australia) occurs. I have seen a specimen in Dr Perkins' collection. It is a small Centrotine, probably a *Centrotypus* sp.

Fam. TETTIGONIIDAE.

The Hawaiian species—endemic and introduced—belong entirely to the tribe *Phrynomorphini*, though *Tettigoniini* and *Eurymelini* have been recorded in error. They are comprised in three endemic, closely related, genera, and three more or less cosmopolitan.

Tribe *PHRYNOMORPHINI*[1].

Conspectus generum.

1. Venae alarum prima secundaque apicem versus haud confluentes .....(2)
1*a*. Hae venae apicem versus confluentes .....5 *Nesosteles* Kirkaldy.
2. Tegmina cellulis subapicalibus duabus instructa .....(3).
2*a*. Tegmina cellula subapicali unica instructa .....(5).
3. Cellula subapicalis exterior (minor) basi et apice pedicellata .....2 *Nesophrosyne* Kirkaldy.
3*a*. Cellula subapicalis exterior (minor) haud et basi et apice pedicellata ...(4).
4. Vertex brevis ac latus .....1 *Nesophryne* Kirkaldy.
4*a*. Vertex antice ultra oculos extensus .....3 *Conosanus* Osborn and Ball.
5. Cellula subapicalis tegminis subovalis, medio paullo constricta.....2*a* (subg.) *Nesoreias* nov.
5*a*. Cellula subapicalis basi acutangularis .....4 *Macrosteles* Fieber.

Hic conspectus consanguinitatem non monstrat; *Nesosteles* e *Macrosteli*, *Nesoreias* e *Nesophrosyni* derivatae.

On the face of many Phrynomorphini, there is a characteristic pattern of two dark stripes up the middle, with more or less concentrically curved, subparallel, transverse stripes. Sometimes this is very well marked, sometimes very obscurely, sometimes absent. I propose, for the sake of brevity, to term this the "craticuliform pattern" or "craticulum," i.e. the "grill."

[1] For horismology etc. see my recent classification of the Auchenorrhyncha, Bull. Haw. Plant. Ent. I. 269—479, Pls. 21—32 (1906) and op. cit. III. 1—186, Pls. 1—20 (1907).

NESOPHRYNE Kirkaldy.

Nesophryne Kirkaldy, Proc. Haw. Ent. Soc. 1. p. 160, 1907.

Allied to *Eutettix* Van Duzee, but the habitus is quite different, and the vertex much shorter and more declivous, with the eyes scarcely so wide as the transversely striolate pronotum. Frons very wide, almost obliterating the fasciolae; lateral margins sloping roundly to the clypeus, the sides of the latter very slightly roundly emarginate. Antennae inserted a little nearer to the ocelli than to the base of the lora; they have a short flagellum. Clypeus about twice as long as its width, the lora do not nearly reach its apical margin. The labium reaches to the apex of the middle coxae. Tegminal venation not altogether unlike that of *Eutettix*, as represented by *E. sellata* and *melaleucae*, but the two subapical cells extend equally far apically and are truncate there, while the long median cell is apically angular. There is a well defined appendix, four apical cells and a nodal cell. Wing venation normal. Type *filicicola*. The genus is confined to Kauai.

There are probably four species, as it is very likely that my *Bythoscopus kukanaroa* and *kamaiamao* belong here. The declivous vertex and the position of the ocelli on the apical part of the bend of the head, probably led me to place them in *Bythoscopus*. I cannot refer to them now, however. The two species known tc me are separable thus:

1. Tegmina brunneo-flavescentia venis fuscis, cellulis sparse medio brunneo-irroratis. Valvula maris pallida; pygophor feminae brunneo-flavescens ...1 *filicicola* Kirkaldy.

1*a*. Tegmina forte nigrescenti-suffusa, clavo paucis areis maculisque albidis ornato; cellula subcostali partim brunneo-flavescenti, subhyalina. Valvula maris nigra; femina mihi incognita .....2 *microlepiae* sp. nov.

(1) *Nesophryne filicicola* Kirkaldy.

Nesophryne filicicola Kirkaldy, 1907, l. c.

♂ yellowish; pronotum tinged with greenish, sparsely clouded etc. with dark fuscous and olive brown. A large transverse band on the bend of the head, dark fuscous, enclosing the conspicuous yellowish red ocelli; a central line down the clypeus, most of the lora, and a spot on the genae, dark fuscous. Tegmina yellowish cinereous, veins olive brown, the principal cells obscurely irrorate inside in the middle. The long median cell has two subhyaline spots on its apical half, the interior subapical has two, and there are others, not so distinct, on the other cells. Wings smoky with dark veins. Fore and middle femora rather obscurely banded with fuscous, base of spines of hind tibiae blackish. Vertex somewhat declivous, distinctly wider than long, wider than an eye, flattened, not produced in front of eyes. Valve pale, wider than long, angularly rounded apically; plates a little longer in the middle than the valve, the two together truncately rounded apically.

♀ a little darker than the male. Tergites dark ; pygophor pale yellowish ferruginous, ovipositor sheath extending beyond the apex of the tegmina (and of the pygophor) ; last sternite trisinuate apically. Clypeus blackish, genae and lora ferruginous. Length ♂ 5½, ♀ 6½ mm.

HAB. Kauai, Kalihiwai, 400 ft., on fern (*Microlepia strigosa*, not as first stated *Gleichenia dichotoma*) (Oct., Giffard)[1].

Nymph (last instar) : pale brownish yellow, more or less infuscate (varyingly so) on the nota, a pale fuscous band across the bend of the head. Ocellar rudiments reddish. Basal half of tergites clouded in the middle with pale fuscous, blackish sublaterally ; apical half laterally broadly blackish ; beneath mostly pale yellowish ; sutures blood red. Like the adults, but the head is a little more produced subangularly.

(2) *Nesophryne microlepiae*, sp. nov.

♂ closely allied to the last, but much darker. Black ; basal margin of vertex, a few irregular markings on pronotum and scutellum, a large central suffusion on frons, rostrum (except the apex) etc., brownish testaceous. Tegmina cinereous yellow heavily suffused with black, except in a few places, i.e. a few pale spots on clavus, and the extero-lateral fourth of the corium (except the suffused cross-veins). Legs brownish yellow and black.

Pygophor black with very short, sparse yellow hairs. Length ♂ 5½ mm.

HAB. Kauai, Kalihiwai, 400 ft., on fern *Microlepia strigosa* (Oct., Giffard). This may be only a dark var. of the preceding, but I do not think so.

Nesophryne kukanaroa, Kirkaldy.

Bythoscopus kukanaroa Kirk. huj. op. III. p. 114.

HAB. Kauai, Halemanu, 4000 ft.

I cannot refer to the unique type, but I suspect it is allied to the two preceding forms, if not identical.

Nesophryne kaiamamao, Kirkaldy.

Bythoscopus kaiamamao Kirkaldy, huj. op. III. p. 115.

HAB. Kauai, high plateau.

The unique type is, in this case too, not available for inspection by me, but I believe it is allied to the three preceding. If this is so, then a little group of four stoutly built forms in this genus, occur only on Kauai.

[1] One nymph was labelled "Kilauea, Hawaii," certainly by mistake. It should have been "Kilauea, Kauai."

NESOPHROSYNE Kirkaldy.

Nesophrosyne Kirkaldy, 1907, Proc. Haw. Ent. Soc. I. p. 160.

Type *perkinsi*. This genus is closely allied to *Nephotettix*, but the venation will separate it[1]. Typically there are two discoidals, the median cell (interior discoidal) running undivided to the subapical line; there is only one normal subapical cell, which is a little constricted medianly, but in all the species but two, a second subapical cell is formed by the forking and quick reunion of the radial vein, this small cell being one-third of the length of the other subapical cell, and of course pedicellate at both ends. This small subapical is joined at its base by a straight cross (nodal) vein to the subcostal vein, sometimes there are other nodals. There are four apical cells and a well-defined appendix. The pronotum is very short at the sides. In two species, however, *insularis* and *oceanides*, the exterior subapical cell has disappeared[2]. These two last may form a subgenus *Nesoreias* (type *insularis*). *N. haleakala* I formerly separated subgenerically, on account of the longer head and shorter wings, but *N. halemanu* seems to form too strong a link with the more typical species.

This genus—*Nesophrosyne*—is the most difficult of the Hemipterous genera of these islands to deal with specifically. It is impossible in some instances, from the material before me, to say whether certain forms are species or only local varieties. A much more adequate material, a knowledge of the range of variation, of the foodplants, and of the nymphs, is necessary before the synonymy can be settled. The variation in some forms known to me is quite bewildering.

(*a*) Subgenus typicum.

(1) *Nesophrosyne umbratilis*, sp. nov.

♂ black; a longitudinal stripe down the vertex, the face (base excepted), sterna, legs, scutellum (except the lateral angles broadly) white. Ocelli red. Tegmina black, three pale yellowish elongate spots basally and two white ones apically, on clavus; four (or so) obscurer ones on the apical cells internally, and a broad white exterior band from near the base to near the apex, broken only by the dark fuscous first apical vein. Tergites black, laterally pale; sternites basally and laterally whitish, the rest—including the valve—black, except the creamy plates which are fringed with fine, short, pale hairs. Vertex produced about two-thirds of the length of an eye beyond the eyes, a little longer than wide at base. Length 4 mm.

HAB. Kauai, Kalihiwai, 400 ft. (Oct., Giffard), on fern (probably *Microlebia strigosa*).

A striking species, of which only a single male is yet known.

[1] This is figured 1908, P. Haw. E. S. I. textf. 3, on p. 208.

[2] In one species the exterior cell is open exteriorly in one example, the only exception I have seen.

(2) *Nesophrosyne halemanu*, sp. nov.

Brownish yellow; vertex with a mediolongitudinal fuscous line, suffused a little anteriorly, and four specks, two anteriorly and two posteriorly, of the same hue. Face with a strong dark radiating pattern, antennae pale. Tegmina hyaline, tinged with yellow, veins brownish fuscous, more or less suffused, apex of tegmen suffusedly brownish fuscous. There are some rather faint brownish fuscous smudgings in the subcostal and interior discoidal cells. Front and middle femora blackish annulate, hind tibiae strongly spotted with black. Vertex rounded anteriorly, forming a curve with the eyes, subcircularly depressed medianly, a trifle longer than wide at base and a little longer than the pronotum, which is a little longer than the scutellum.

♂ sternites more or less greyish black medianly, valve blackish, plates yellowish. Length $4\frac{1}{4}$ mm.

HAB. Kauai, Halemanu, 4000 ft. (May, 1895, Perkins, 503, one ♂ and one without abdomen).

(3) *Nesophrosyne silvigena*, sp. nov.

Pale ferruginous; face black, this encroaching on to the vertex; grill only visible at sides as ∈, ferruginous. Sterna (? entirely), femora (except apically) etc., blackish; hind tibiae striped longitudinally with black, bristles pale ferruginous. Membrane clouded with black inwardly, in one example with a pale spot on the clavus. Length $4\frac{1}{2}$—$5\frac{1}{8}$ mm.

HAB. Kauai, Koholuamano (April, no. 519, Perkins).

(4) *Nesophrosyne perkinsi*, Kirkaldy.

Eutettix perkinsi Kirk., 1904, Entom. XXXVII. p. 178; and Haw. For. Agr. I. 183.
Nesophrosyne perkinsi Kirk., 1907, Pr. Haw. Ent. Soc. I. 160; and 1908 op. cit., fig. 3 on p. 208.

♂ creamy, eyes pale olive green. Venation partly pale brownish fuscous, partly suffused on the cells, but very variably. Head with eyes as wide as the pronotum, obtusely rounded anteriorly; vertex about as long as its width. Tegmina with the exterior subapical cell remote from the subcostal vein; one nodal vein.

♀ like the ♂, but usually immaculate, sometimes the venation in part a little brownish. Two specks on apical margin of last sternite and the ovipositor sheath fuscous. Length ♂ $3\frac{1}{3}$—$3\frac{7}{8}$, ♀ 4—$4\frac{1}{2}$ mm.

Nymphs described in Pr. Haw. Ent. Soc. I., 1907, p. 160.

HAB. Oahu, coast range around Leahi, and up into Kaimuki, on *Sida cordifolia*.

(5) *Nesophrosyne maritima*, sp. nov.

♂. Head and scutellum pale yellowish brown; pronotum and tegmina pale greenish, subcostal and apical cells hyaline, second apical faintly smoky; veins on apical half of tegmina and some on the basal half, more or less dark fuscous, some more or less suffused, especially at their apices. Beneath and the legs, whitish. Vertex scarcely produced in front of eyes, transversely impressed anteriorly.

♀. Head and scutellum pale creamy, sometimes suffused with yellowish; ovipositor pale ferruginous; seventh sternite sinuate, very minutely notched medianly. Otherwise like the male. Length 3½—4 mm.

Nymph: ♀ pale yellowish ferruginous, irregularly suffused. Vertex with two black specks close to the middle; four specks on the top of the head in an arched row. Pronotum with four specks in two sublateral rows and another on each side under the eyes. Mesometanotum with about a dozen rather irregular specks.

HAB. Oahu: Waianae Coast (Perkins, 781, Jan. 2 exx.): Makua (Perkins coll.).

(6) *Nesophrosyne gouldiae*, sp. nov.

♂. Whitish; claval veins (mostly) suffusedly, and two blotches on the apical third, inwardly, of the tegmen, dark brownish; wings hyaline. Sometimes the rest of the hopper is whitish, sometimes the base of the vertex and the disk of the pronotum irregularly, dark brownish, with a faint fuscous grill, scarcely apparent laterally. Sometimes the tegmina are more darkly suffused, but always only on the interior half. Vertex obtuse-angled in front of the eyes, scarcely longer than its basal width, somewhat flat.

♀. Immaculate (practically) whitish; ovipositor sheath fuscous. Vertex more convex. Length ♂ 4½, ♀ 5 mm.

This has very much the appearance of *N. perkinsi*, but beyond the difference in habitat and foodplant, the vertex is convex and not impressed transversely anteriorly, and is also longer, while the size is greater; in *perkinsi* the shorter head is distinctly flattened and impressed in front of the ocelli. The type is a Tantalus specimen.

HAB. Oahu, Tantalus, 1400 ft. (Sept., Terry and Perkins) on *Gouldia* sp.; Palolo, 1400 ft. (Kirkaldy) on *Gouldia*.

(7) *Nesophrosyne pipturi*, sp. nov.

Sexes almost monomorphic. Head and underside whitish, ocelli honey yellow. Eyes greyish black; a brownish black speck on the tempora. Pronotum and scutellum pale testaceous, the latter whitish posteriorly. Tegmina subhyaline, somewhat milky, pattern obscure, a faint St Andrew's cross on the clavi when closed. Subcostal cell

with two greyish brown suffused spots. Veins (except the colourless radial and claval veins) mostly yellowish fuscous, cells slightly suffused. Posterior tibiae with brown piliferous tubercles. Lora remote from apical margin of genae. Anal vein of clavus not hooked or strongly curved. Vertex obtuse, forming more or less of a curve with the eyes, a little produced.

♂. Genital segments pale. Valve short. Plates pointed apically, flaccid, lateral margins reflexed, about three-fourths of the length of the mostly blackish pygophors which are bristly apically. Sternites sometimes more or less dark.

♀. Hypopygium somewhat long, laterally rounded, gradually produced at the middle which is slightly notched. Pygophor elongate, not quite so long as the black ovipositor, apical half with scattered pale yellow bristles. Length 4½ mm.

HAB. Oahu, Tantalus, 1300 ft. (Feb.—Apr., Kirkaldy, Terry, Giffard and Swezey), and Maunawili, 820 ft. (Feb., Giffard) on Mamake (*Pipturus albidus*). The type is a Tantalus specimen.

(8) *Nesophrosyne ponapona*, sp. nov.

Allied to the last, but darker and with a different pattern. Head etc. pale yellowish testaceous, vertex with a thin brown transverse line and two specks of the same tint. Ocelli orange. Basal two-thirds of frons yellowish brown with dark brown grill; apical third testaceous. Clypeus and lora apically blackish brown. Pronotum pale orange brown tinged with olivaceous, with obscure longitudinal streaks. Prosternum and sternites black (except laterally, ♂ orange yellow, ♀ yellowish). Scutellum whitish, anterolateral and posterior angles widely pale orange brown. Tegmina milky, basal two-thirds suffused with pale ochreous brownish, subcostal cell and a number of spots on the rest, milky white; veins yellowish fuscous, apical ones mostly darkly suffused, two dark spots in the subcostal cell. Tegmina with two nodal veins, one from the middle, one from the base, of the exterior subapical cell, suffused; subapical cell remote from the subcostal vein. Wings smoky; veins dark fuscous.

♂. Sternites black, lateral margins orange yellow.

♀. Sternites blackish, lateral margins yellowish, pygophor orange brown with yellowish brown bristles; ovipositor sheath blackish.

Var. Sometimes very dark and suffused. Length 4¼ mm.

HAB. Same localities and foodplant as *N. pipturi*, but easily distinguished by the pattern of the tegmina.

(9) *Nesophrosyne opalescens*, sp. nov.

Allied to *N. pipturi*. Vertex, frons, antennae, pronotum and scutellum pale, somewhat soiled, luteous. Clypeus, lora and genae mauvish opalescent. Ocelli crimson-ringed. Tegmina brownish yellow, with fuscous markings much as in *N. pipturi*, the

whole strongly mauvish opalescent. Wings strongly opalescent, veins dark. Abdomen black. Femora dark mauvish opalescent, tibiae pale.

♂. Pygophor with crimson and white tufts. Length 4 mm.

HAB. Oahu, Waianae (no elevation stated, April, Perkins).

(10) *Nesophrosyne*, sp. ?

Adult unknown.

Nymph: ♂. Vertex as in adult. Pale creamy or whitish, eyes greenish brown; first segment of antennae whitish, rest greenish fuscous. Pronotum with two black submedian specks on posterior margin and one under the eye laterally on each side. Mesometanotum with two pairs of submedian black spots, one anteriorly and one posteriorly, and a curved line laterally on the tegminal pad. Tergites 2—7 with two black bristly hairs on each side laterally, eighth with about a dozen. Legs pale with black, or pale fuscous, bristly hairs.

HAB. Oahu. I took three ♂♂ off "Ohia lehua" (*Nani polymorpha*) on Palolo Ridge at about 1300 ft. (Sept.), but have not yet connected them with an adult.

(11) *Nesophrosyne monticola*, sp. nov.

Vertex whitish, with a blackish brown inverted short-handled trident; frons pale yellowish, narrowly whitish basally with a slightly curved narrow blackish transverse line just apical of the yellowish brown ocelli; then just apical of this, suffused with sanguineous; clypeus, lora and genae mostly blackish. Pronotum yellow, anterior margin blackish ferruginous, continued in a narrow line down the middle. Scutellum yellow, more or less suffused with ferruginous. Tegmina ferruginous, a large yellowish white black-ringed spot on the middle of the clavi closed together; corium with a few small subopaque whitish spots interiorly, and the subcostal in part (apicalwards) hyaline; first and fifth subapical cells hyaline, veins dark ferruginous, sometimes verging on black, suffused.

HAB. Oahu, Kaala, over 2000 ft. (Dec., Perkins). Unfortunately only one ♂ of this pretty and distinct little hopper.

(12) *Nesophrosyne koleae*, sp. nov.

♂. Vertex and a large round spot on the middle of the closed tegmina, orange yellow. Face and legs pale yellow, second segment of posterior tarsi blackish. Base of vertex (narrowly and irregularly), pronotum and scutellum (except the usually yellowish posterior angle) blackish. Tegmina variegated: obscure subhyaline, irregularly but strongly suffused (especially the veins) with dark fuscous, with a bluish

bloom basally; apical half of the subcostal cell white with two suffused brownish dark brown veins towards the apex; a large yellowish cinereous spot occupying most of the basal half of the clavus; apical cells mostly smoky; there is also the orange yellow spot mentioned before. Wings dark smoky, veins blackish. Abdomen and sterna black, mostly.

♀ duller and less variegated, the orange yellow spot sometimes almost absent. Pronotum basally and the scutellum olivaceous. Sternites partly pale. Genital segments pale yellowish ferruginous, ovipositor black. Length ♂ $3\frac{7}{8}$, ♀ $4\frac{1}{2}$ mm.

HAB. Oahu, Tantalus, 1300 ft. (Jan. and Apr., Giffard) on Koolea (*Myrsine lessertiana*).

(13) *Nesophrosyne giffardi*, sp. nov.

♂. Head and scutellum bright pale yellow. Pronotum and tegmina French grey, the latter with a broad black longitudinal stripe along the inner margin of the corium as far as the apex of the clavus, the stripes on the two tegmina being connected by a short transverse stripe. Subcostal cell and membrane whitish or hyaline; apical and subapical veins suffused with black or smoky. Wings smoky, veins dark. Legs whitish, second segment of posterior tarsi dark. Sterna blackish. Abdomen black and white annulate, somewhat irregularly.

♀ more obscure, the tegminal band absent, or faintly indicated. Sternites mostly pale. Length ♂ 4, ♀ $4\frac{1}{2}$ mm.

HAB. Hawaii, Kilauea (Aug., Perkins). Oahu: Tantalus, 1300 ft. (Jan., Feb., Apr., Giffard). The type is a Kilauea specimen.

(14) *Nesophrosyne ulaula*, sp. nov.

♀. Rosy ferruginous, posterior margin of vertex very narrowly pale yellow. Ocelli ringed around with fuscous. Clypeus narrowly lined exteriorly with fuscous. Mesonotum, tergites, sternites, femora (at least basally) dark fuscous or black. Labium, rest of legs etc., pale brownish testaceous (the latter sometimes a little fuscous). Tegmina dark yellowish ferruginous; apical cells (except the first) and appendix pale. Wings pale smoky, veins fuscous. Genital segments dorsally fulvous, ventrally pale ferruginous, ovipositor dark fuscous. Hypopygium apically sinuate, minutely notched medially. Length $5\frac{3}{4}$ mm.

HAB. Oahu, "Honolulu Mts" (Aug., Perkins).

Var. *nigrolineata* nov.

Differs from the type by the slightly more angulate vertex, by a dark fuscous, transverse, percurrent stripe apical of the ocelli, and by the rather yellower tegmina.

HAB. Oahu, Maunaloa, 2000 ft. (Dec., Giffard).

This may be a good species, but I have seen only a single female, and only two females of the typical form.

(15) *Nesophrosyne bobeae*, sp. nov.

Much the appearance of *caelicola*, but the mark on the vertex is of different form, and the grill is more clearly defined. Head and scutellum ivory white, the vertex with a subcrescentic mark (the base of the grill), the lateral margins concave to enclose the pale ocelli. Frons with a well-defined brown grill, the middle line widening apically; clypeus with lateral margins blackish brown, genae and lora sparsely marked with blackish brown. Pronotum pale olive green. Scutellum with pale olive brown anterior angles. Tegmina hyaline, tinged with olivaceous, with a slight bronzy gleam; subcostal, brachial and claval veins yellowish testaceous, the rest dark olive brown, suffused at the nodal veins and the first two apicals. Clavus a little soiled along the commissure, the median cell and inner discoidal cell a little nebulose in the middle. Wings a little smoky, veins dark. Tergites black. Sternites and legs pale, base of bristles of hind tibiae blackish. Vertex subangular anteriorly. Pronotum aciculate-punctate. Exterior subapical cell remote from subcostal vein, angulate exteriorly, one nodal vein arising from the middle, suffused. Length ♂ 4¾, ♀ 5 mm.

HAB. Oahu, Tantalus, 1800 ft., on *Bobea elatior* (Oct., 1906, Perkins).

(16) *Nesophrosyne paludicola*, sp. nov.

♀. Blackish; a yellowish ferruginous grill on a purplish brown frons; a whitish spot on the pronotum near the lateral margins. Scutellum sordid whitish, more or less suffused (especially apically) with brownish. Tegmina whitish hyaline, claval veins suffused brown, apical angle brown; inner half of corium brownish except a narrow claval margin and one or two apical spots, whitish; exterior half whitish; apical cells mostly brownish. Abdomen mostly blackish brown, hind tibiae blackish brown, with white spines. Pygophor pale with pale hairs, ovipositor sheath blackish. Length 4½ mm.

HAB. Molokai, 4000 ft. (June, Perkins, 1 ♀).

(17) *Nesophrosyne palustris*, sp. nov.

Vertex, pronotum, scutellum and clavus rose pink; a faint grill, face more or less fuscous apically. Corium testaceous, closely sprinkled with rose pink. Coxae and femora (except apex) piceous, rest of legs and abdomen brownish testaceous. Hind tibiae at base of bristles piceous. Other characters those of *N. ulaula*, from which it is readily distinguished by the piceous femora and the rosy hue. Length 5 mm.

HAB. Molokai, Kahanui (Feb., Perkins coll.). One rather immature specimen in bad condition.

(18) *Nesophrosyne procellaris*, sp. nov.

Pale yellowish brown, or yellowish testaceous, the tegmina hyaline brownish testaceous, veins rather yellower (except the subcostal), the two claval veins rather widely so apically. Exterior subapical cell oval, remote from the subcostal vein, one nodal vein. Length $5\frac{1}{8}$ mm.

HAB. Molokai, Kalae (Aug., 1893, no. 167).

(19) *Nesophrosyne nimbicola*, sp. nov.

Head black, the frons with a faint ferruginous radiating pattern. Antennae pale. Pronotum basal of the eyes luteous, above this, also the scutellum, ferruginous. Tegmina brownish yellow, a large luteous spot on the clavus, a dark fuscous spot of variable size exterior to this, and a dark fuscous line from apex of clavus to apex of tegmina, then curving outwardly a little; two subhyaline specks near the apex of the tegmina outwardly. Wings smoky, veins dark. Underside mostly blackish, pleurites pale or reddish ferruginous. Tibiae and tarsi brownish yellow, hind tarsi partly black, hind femora with brownish yellow bristles.

♀ pygophor reddish ferruginous (fuscous exteriorly at the base) with paler hairs, ovipositor-sheath blackish. Length $4\frac{7}{8}$ mm.

HAB. Lanai, over 2000—3000 ft. (2 ♀♀ Perkins, Jan.).

(20) *Nesophrosyne umbricola*, sp. nov.

Differs from the last as follows:

Frons with better developed pattern. Pronotum yellow. Scutellum sordid yellow. A fuscous smudge at the base of the tegmina in the middle, fourth and fifth (and a small part of third) apical cells smoky, first apical and apex of median cell hyaline. Wings pale yellowish, veins darker. Sternites pale ferruginous. Length $4\frac{7}{8}$ mm.

HAB. Lanai, 2000 ft. (1 ♀, Perkins, Dec.).

(21) *Nesophrosyne milu*, sp. nov.

♂. Blackish brown, with a violet tinge. Ocelli pale. Eyes reddish piceous. Fore and middle tibiae and tarsi mostly pale, hind tibiae with white bristly hairs; apex of the first and all the third segment of the tarsi, pale. Tegmina blackish brown, opaque violet black on clavus, with a small yellow spot; two hyaline spots near the apex of the tegmina. Wings hyaline smoky, veins dark. Abdomen blackish brown. Length 4 mm.

HAB. Lanai, 3000 ft. (Jan., Perkins, 1 ♂).

(22) *Nesophrosyne imbricola*, sp. nov.

♀. Head, pronotum and scutellum pale yellow, with four yellowish ferruginous lines, the two inner short (almost spots), the two outer longer and united transversely anteriorly. Face pale yellowish ferruginous with a rosy tint, a fuscous more or less faint pattern on the frons, lateral margins of clypeus narrowly fuscous (or altogether so). Anterolateral angles of scutellum yellowish ferruginous. Tegmina yellowish ferruginous, with many faint whitish spots (mostly basally) and four or five small pale yellowish opaque ones nearer the middle; two subhyaline spots, one about the middle on the exterior margin and one apical of that; apical cells more or less decolored; there are also three or four small, dark fuscous spots. Wings smoky hyaline, veins dark. Legs yellowish brown, fore and hind femora with the basal half blackish, middle femora entirely black except the extreme apex. Abdomen mostly fuscous, lateral margins broadly pale, apical margin of sternites pale. Pygophor ferruginous red, with sparse ferruginous yellow hairs, ovipositor-sheath fuscous. Length $5\frac{1}{8}$ mm.

HAB. Lanai, over 2000 ft. (Jan., Perkins).

(23) *Nesophrosyne oneanea*, sp. nov.

♀. Head brownish testaceous, vertex with two basal dots, a transverse line just basal of the ocelli and two thin lines at right angles thence to base of vertex at eyes, dark fuscous. A well marked grill, the apico-interior part suffused, rest of face suffused, the genae a little less so. Pronotum irregularly dark sublaterally on the hind margin. Tegmina pale brownish yellow, veins suffusedly brownish fuscous, apical half of radial and part of subapical-cell-veins, partly yellowish. Wing veins dark fuscous. Legs pale. Sterna partly fuscous, pygophor orange yellow, sheath black. Vertex subangular. Exterior subapical cell subremote, joined to subcostal vein by a suffused broad dark spot. Length $5\frac{1}{8}$—$5\frac{1}{4}$ mm.

HAB. Lanai, 3000 ft. (Jan., Feb., Perkins).

In the other specimen the vertical mark is feeble, while the face is more blackly suffused, the apical margin of the genae clearly pale, but the tegmina are characteristic.

(24) *Nesophrosyne caelicola*, sp. nov.

This has very much the characters of *bobeae*, but I do not think it is the same. The principal difference is that the vertical marking encircles the ocelli as well, while in *bobeae* it is quite clear. A much better series than I have of this and other dubious forms, is necessary to settle them definitely. Length $5\frac{1}{2}$ mm. (♂).

HAB. Lanai, 3000 ft. (Jan., Perkins).

(25) *Nesophrosyne nubigena*, sp. nov.

♀. Very close to the last, but (except faint traces of the grill), the whole face, the fore and middle femora (except apices), hind femora, tibiae and tarsi (except the pale third segment), greater part of sterna and abdomen, the pygophor and sheath etc., black. Fore and middle tibiae and bristles of hind tibiae, brownish yellow. Some orange yellow bristles on pygophor. Length $5\frac{1}{8}$ mm.

HAB. Lanai, 2000 ft. (Perkins).

This may be the ♀ of *caelicola*, but I do not think so.

(26) *Nesophrosyne haleakala*, sp. nov.

Head, pronotum and scutellum pale yellow, the vertex with some small inconstant fuscous markings, frons with strong, dark fuscous, radiating pattern, apex of frons and the clypeus blackish brown, almost immaculate, genae and lorae marked inconstantly with fuscous. Tegmina milky, veins dark fuscous, some of the transverse and apical ones suffused; there are fuscous smudgings in most of the cells and the apex of the middle apical cell is fuscous. Wings smoky, veins dark. Vertex acute-angled, longer than wide at base and much longer than pronotum, subcircularly impressed in the middle. Scutellum very small, shorter and much narrower than pronotum. Tegmina a little shorter than abdomen.

♀ pygophor pale fulvous, ovipositor blackish brown. Length $3\frac{1}{2}$ mm.

HAB. Maui, Haleakala, 9000 ft. (April, Perkins, 2 ♀♀).

(27) *Nesophrosyne nimbigena*, sp. nov.

Vertex pale brownish yellow; a basal dot on each side of the middle and a somewhat sinuate subapical transverse line fuscous. Face brownish yellow, clearer basal of the ferrugineo-fuscous grill which is fairly well defined but somewhat suffused; apex of frons brownish yellow; rest of face yellowish testaceous, a dark fuscous spot on the middle of each lora; the base of the genae and the entire clypeus, dark fuscous. Pronotum olivaceous, anterior half dark fuscous. Scutellum brownish yellow, anterolateral angles (excluding the lateral margins very narrowly) and a submedian spot on each side near the anterior margin, dark fuscous. Tegmina cinereo-hyaline, veins brownish or yellowish; a nebulous band across the middle of the clavus and an apical blotch on the same, also an irregular blotch on the corium about the middle, part of the first and most of the second apical cell, dark fuscous. The exterior subapical cell is remote from the exterolateral margin; there are two nodal veins, one at each end of the cell, connecting it with the lateral margins, also another vein basal of the nodals,

the two cells thus formed having a transverse, nearly percurrent, line in the middle of each. Underside blackish brown. Antennae, labium, legs, incisures of segments etc., pale, a blackish spot at base of middle femora [fore femora missing].

♂ plates pale ferruginous, extreme apex yellowish.

HAB. Maui, Haleakala, over 5000 ft. (Oct., Perkins, no. 636).

(28) *Nesophrosyne myrsines*, sp. nov.

♂. Blackish brown, more or less suffused with bluish; base of vertex very narrowly, antennae and ocelli, pale yellow. Pronotum a little paler irregular locally, posterior angle of scutellum ferruginous. Tegmina hyaline, tinged with yellowish brown, on the middle third is a broad dark band which starts at the exterior margin and on reaching the clavus sends out a narrow fork at an obtuse angle, the space on the clavus between this and the main band being pale yellowish white with a green tinge; at the commissure the main band starts back at right angles (thus forming a broad V), and at the inner margin of the subcostal cell forks, sending one broad, short, branch across the subcostal and another on to the first apical cell. The exterior area forming the contents of the "V" is subhyaline, the veins suffused with pale yellowish brown; the apical part of the subcostal cell, between the last mentioned fork, is hyaline. The apical part (obliquely) of the tegmen is smoky, with a paler spot; wings smoky, veins dark fuscous. Abdomen black. Genital segments black, with crimson and white hairs. Legs pale yellowish brown, femora suffused with dark fuscous and tibiae laterally striped with the same. Length $4\frac{3}{4}$ mm.

HAB. Hawaii, Kilauea, on *Myrsine*.

Nymph: ♂. Vertex and basal three or four tergites, pale yellow, paler beneath and on the sides and legs. Eyes and pronotum crimson, the latter anteriorly yellowish. The mesometanotum and tegmina crimson, tegmina pale yellowish laterally, the former more or less suffused with blackish brown locally. Apical half of abdomen above crimson, darkening locally to blackish, eighth segment with particolored hairs (pale yellowish basally, darkening apically). Tergites 2—7 with a lateral blackish bristly hair close to apical margin. Vertex convex, subangularly produced in front of the eyes, longer than wide basally.

(29) *Nesophrosyne pluvialis*, sp. nov.

Superficially not unlike a pale form of *Thamnotettix clitellaria*.

Black: anterior margin of vertex very narrowly, frons (except apically a little obscurely), a line down middle of clypeus, antennae, etc., brownish yellow; posterior half of pronotum, a large semicircular spot on each clavus (united in repose) opaque creamy; apex of tegmina smoky, subiridescent; two large hyaline spots on the apical

half exteriorly and a few smaller scattered hyaline specks. Wings smoky hyaline, veins dark. Legs pale except the posterior tibiae which are greyish black, with whitish bristles. Apical margin of tergites and lateral margin of pleurites pale. Vertex scarcely produced beyond eyes, not longer than pronotum.

♀ pygophor and ovipositor black, the former with sparse whitish hairs.

HAB. Hawaii, Olaa (Dec., Perkins, 1 ♀).

(30) *Nesophrosyne ehu*, sp. nov.

♀. Allied to *N. ponapona*. Pale immaculate ferruginous. Tegmina translucently spotted, subcostal area and apical cells etc., translucent. Wing veins dark fuscous. Ovipositor-sheath black. Length 4 mm.

HAB. Hawaii, Kilauea (Aug., Perkins), Hilo (Apr., Swezey). The type is a Kilauean example.

(31) *Nesophrosyne oreadis*, sp. nov.

Pale ferruginous; vertex ivory white anteriorly and basally, base of frons very narrowly fuscous. Clypeus, sterna partly, fore and middle femora mostly, blackish brown, pleurites yellow. Tegmina brownish yellow, or pale ferruginous; a large pale yellow spot on clavus with a fuscous edging basally; corium spotted with hyaline and the nodals are fuscous. Two nodals, one at the apex and one at the middle of the remote exterior subapical.

HAB. Hawaii, Kilauea (Aug., Perkins, no. 656).

(32) *Nesophrosyne montivaga*, sp. nov.

Somewhat like *N. pipturi*, but the veins are more suffused etc.

Yellowish (sometimes more testaceous, sometimes tinged with orange or reddish); a narrow curved transverse line at base of frons, genae, lora, clypeus (and sometimes apical half of frons), sterna, abdomen etc. black. Pronotum varying speckled with blackish. Tegmina yellowish cinereous, veins mostly blackish brown, varyingly suffused; inside some of the cells is a median nebulosity; two nodal veins almost united. Length ♂ $3\frac{3}{4}$—4, ♀ 4 mm.

HAB. Hawaii, Kilauea (Aug., Perkins), Hamakua (Apr., Swezey). A Kilauea specimen is the type. Separated at once from *N. pipturi, ponapona* and *montium* by the clypeus, lora and genae being always blackish.

(33) *Nesophrosyne montium*, sp. nov.

Near *ponapona* and *montivaga*; from the latter it differs by the genae being always pale, except the extreme inward part; from the former by the clypeus and lora being always dark piceous, except a short ferruginous line on the clypeus, and by the dark suffused tegminal subapicals. Beneath black.

♂. Pygophor black.

♀. Pygophor blackish ferruginous, sheath black. Length, ♂ 3½, ♀ 4 mm.

HAB. Hawaii, Mountain View (March, Swezey).

(34) *Nesophrosyne silvicola*, sp. nov.

Pale olivaceous, paler beneath; vertex and scutellum brownish testaceous, a brown line on the anterior margin of the former, joining the testaceous ocelli archingly and also encircling them, a thinner line joining them straightly. Frons tinged with olivaceous and with a faint grill, the rest of the face yellowish brown, the clypeus apically more or less fuscate at the sides. Tegminal veins brownish olivaceous, sometimes fading in places; in others, especially apically and at the nodes, slightly suffused. The clavus is sometimes a little marked interiorly with brownish olivaceous. Wings hyaline. Legs testaceous, base of spines on hind tibiae blackish. Pronotum a little longer than the head, aciculate punctate. Tegmina with the exterior subapical cell remote from the subcostal vein; one nodal (median) vein, suffused.

♀. Ovipositor sheath blackish. Length, ♀ 5½ mm.

HAB. Hawaii, Kilauea (August, Perkins), Kona, 4000 ft. (July); Hamakua (April, Swezey). Probably also from Lanai, over 2000 ft. (Jan., Perkins). The type is a specimen from Kilauea.

(35) *Nesophrosyne ignigena*, sp. nov.

♀. Bright yellow, with a greenish tinge; frons (and sometimes vertex), underside, legs, etc., yellowish white. Clavus and interior half—irregularly—of corium, opaque yellowish (sometimes partly greenish), except a couple of hyaline spots each on median and interior subapical cells; rest of corium hyaline. Apical cells hyaline, second yellow, third and fourth a little smoky. Wings smoky basally, veins blackish. Tergites black, lateral margins broadly pale yellow. Vertex basally about as wide as an eye, interior lateral margins of eyes slightly divergent, vertex rounded apically, very little produced beyond eyes, not quite as wide as pronotum. Ovipositor black. First (exterior) subapical cell minute. Length, ♀ 4¾ mm.

HAB. Hawaii, Kilauea (July, Giffard), in the Koa-forest (not necessarily on Koa).

(36) *Nesophrosyne pele*, sp. nov.

Yellowish, tinged with green, vertex with four fuscous specks; frons with a warm brown, well defined, radiating pattern; rest of face (except a small part of the apical margin of the genae), abdomen (except pleurites partly yellowish) etc., black. Antennae yellowish. Clavus opaque greenish yellow, veins yellow, two large black spots exteriorly and three basal and three interior specks. Corium hyaline, varyingly (usually mostly,

except the subcostal cell) suffused with blackish brown, veins yellowish, a whitish spot basal of the middle. In the subcostal cell there is a spot close to the radial cell, and two nodal veins suffused, blackish brown. Apical cells hyaline, veins blackish brown, mostly suffused, apical margin suffused. Wings smoky. Exterior subapical cell exteriorly obtusetriangular, with two short nodals at the angle (very close together) and another at the base of the cell.

♀. Pygophor and last sternite pale, ovipositor sheath black.

HAB. Hawaii, Kilauea (Aug., Perkins), Olaa (Sept., Perkins); probably also Kauai (no. 631).

(37) *Nesophrosyne umbrigena*, sp. nov.

Dark piceous; ocelli, hind margin of vertex narrowly, and antennal peduncle, yellowish; posterior half of scutellum orange brown. Grill merely a yellow lateral line on frons, with very obscure transverse lines. Tegmina pale ferruginous; apical half of clavus dark fuscous with a large whitish spot; subcostal area medially and apically subhyaline, with a dark spot at the base, and one or two smaller spots interiorly, a large dark fuscous spot around the nodal vein. Apical two-thirds of membrane dark fuscous. Sternites black, pleurites partly brownish yellow. Legs as in *N. silvicola*. Length $4\frac{7}{8}$—5 mm.

HAB. Hawaii, Kilauea (July—Aug., Perkins). In a damaged example, the pronotum is largely whitish, and the dark area of the clavus reduced.

(38) *Nesophrosyne craterigena*, sp. nov.

Orange red, pronotum a little soiled; apical margin of scutellum irregularly, narrowly, blackish. Clavus and interior half of corium pale olive greenish, opaque, the rest hyaline; two dark fuscous spots in median cell, a spot at the apex of the basal third of the subcostal cell, one at the nodal vein, and the apex (elongately) of clavus. The claval veins yellowish medially. Apical third of membrane smoky, first and second apical veins etc. a little suffused. Length $4\frac{1}{2}$ mm.

HAB. Hawaii, Kona (March, 1 ♂, Perkins).

(39) *Nesophrosyne arcadiicola*, sp. nov.

Ferruginous; the head largely suffused with blackish, except a transverse line near the apex of the vertex, the frontal margins of the genae and the genal margins of the frons (on the latter indeed, faint transverse lines, the remains of the radiating pattern). The hind margin of the pronotum is white, and on the pronotum and scutellum are

sparse blackish marks. Tegmina with a broad band across the middle rather obliquely, a second nearer the apex, and the apex, blackish. A large whitish spot on the clavus, bordered basally with black. Rostrum and legs pale ferruginous, or brownish testaceous; the basal three-fourths of the fore femora, the middle femora, a ring on the hind femora, the bases (minutely) of the spines on the hind tibiae etc., black. Sternites black (and probably tergites).

♂. Valve very small. Length 4½ mm.

HAB. Hawaii, Hilo (April, Swezey).

(40) *Nesophrosyne nuenue*, sp. nov.

♂. Yellowish testaceous; vertex with a more or less broken cross and four specks, brownish; frons with a broken and feeble brownish black radiating pattern. Pronotum (tinged with green) and scutellum somewhat soiled. Tegmina cinereous, tinged with green, the closed clavi with a large pale greenish white spot, irregularly and very narrowly margined with pale fuscous; corium exteriorly mostly hyaline, veins dark fuscous, cross veins somewhat suffused; two subcontiguous nodal veins and one near the base of the interior[1] subapical; some of the cells a little nebulose medianly. Sternites black, apical segments and pygophor pale greenish white, hairs pale. Head of the *pipturi* type.

♀. The grill fainter; pronotum more or less variegated with pale fuscous. Pygophor brownish yellow, hairs concolorous, ovipositor-sheath ferruginous, narrowly margined with blackish brown. Head not so angulate anteriorly as in the ♂. Eyes pale castaneous, with a transverse paler bar, narrowly bordered with blackish on each side, not so distinct in the ♂ as in the ♀. Length, ♂ 4, ♀ 4½ mm.

Nymph: pale yellow brown, with the following blackish marks: two subcontiguous specks in the middle and four on the apical margin of the vertex; two spots anteriorly and four on the hind margin of the pronotum; a submedian longitudinal line on the mesometanotum and a short transverse line at the base which turns off upwards at right angles for a little space, also one or two spots etc. on the pads; eight sublateral and five lateral (basal) spots on the tergites and two submedian specks on the last tergite. Each of the 26 lateral and sublateral spots emits a black bristle and there are some of the latter also on the last tergite and on the pygophor. Legs pale, tibiae more or less striped with black, bristles of hind tibia pale. Antennae more or less fuscous, flagellum black. (Hamakua, April, Swezey.)

HAB. Hawaii, Kilauea (April, Swezey, Kirkaldy).

[1] On one tegmen there is only one subapical, the exterior, both the discoidals being undivided.

Subgen. 2. NESOREIAS nov.

1. Face dark, with two paler spots ..... 1 *insularis.*
1*a*. Face yellow ..... 2 *oceanides.*

(41) *Nesophrosyne* (*Nesoreias*) *insularis*, sp. nov.

Vertex and pronotum whitish yellow, the former suffused with fuscous, usually leaving simply two large subcontiguous pale spots at the base; pronotum sometimes a little suffused. Ocelli pale reddish orange, probably not functional. Scutellum yellowish. Frons blackish brown, basally narrowly obscure, two large contiguous pale fulvous spots close to this; genae, clypeus and lorae blackish brown, antennae pale. Underside yellowish white. Tegmina hyaline yellowish; clavus opaque pale greenish white; subapical line and apical veins suffusedly fuscous; apex of clavus and apical cells smoky. Wings smoky, veins dark. Vertex scarcely extending before the eyes. A slender species.

♂. Seventh sternite apically black, two small spots medianly, genital segment red and black. Length 4 mm.

HAB. Hawaii, Kilauea (Aug., Perkins), Hamakua (April, Swezey). The type is a Kilauea specimen.

(42) *Nesophrosyne* (*Nesoreias*) *oceanides*, sp. nov.

Bright yellow; pronotum a little suffused with greenish. Tegmina with the clavus bright yellow, a spot at the base and a smaller one at the apex, brownish black, rest of tegmina brownish black except the apex of the subapical vein, the apical cells, and the subcostal cell (except basally) etc., hyaline; veins on these hyaline parts rather suffused dark fuscous. Subcostal vein pale yellow, except basally. Wings black. Legs pale yellowish, hind tibiae with the base of the spines etc., blackish. Vertex two-thirds wider between the eyes at ocelli than at base, one-third wider there than the length. Pronotum slightly longer than the head. Length $4\frac{1}{2}$ mm.

HAB. Hawaii, Olaa (Aug., Perkins), Hilo (April, Swezey). The type is an Olaa specimen.

Nymph: Head pale yellowish with some obscure sanguineous lines on vertex; nota sanguineous (except lateral margins of pads); rest of body whitish or yellowish testaceous, except apical half of tergites which is mostly sanguineous with a blackish median line, suffused basally (on apical half). Head has much the shape of the adult's.

NESOSTELES Kirkaldy.

Nesosteles Kirkaldy, 1906, Bull. Ent. H. S. P. Ent. 1. 343.

This is very close to *Balclutha* Kirkaldy, and its synonymy depends on whether *N. glauca* and *N. hebe* are congeneric; the latter seems to differ very little from

Balclutha, but I have not sufficient material of the latter now for effective comparison, so that I prefer, for the present, to leave matters as they are.

Conspectus specierum hawaiiensium.

1. Caput pronotumque viridi-testacea maculis parvis ac lineis inclaris, pallidis rufo-fuscis. Tegminum venae colore tegminum pallidiores.....(2).

1*a*. Caput pronotumque viridescentia vel aureo-brunnea. Tegminum venae virides .....(3).

2. Vertex ante oculos vix productus. Tegminum venae late pallidae. Longitudo 3½—4 mm..... 1 *hebe* Kirkaldy.

2*a*. Vertex leviter rotundatim productus. Tegminum venae inclarae, pallidae. Longitudo 2 mm. ..... 2 *volcanicola* nov.

3. Forma elongata, angusta, satis parallela; caput pronotumque aureo-brunnea; tegmina viridescentia; vertex subtriangulariter productus. Longitudo 4 mm..... 3 *plutonis* sp. nov.

3*a*. Brevior? latior, tegminibus ad latera magis rotundis. Vertex ante oculos rotundatim paullo productus. Longitudo 2½ mm..... 4 *peregrina* sp. nov.

(1) *Nesosteles hebe* Kirkaldy.

Nesosteles hebe, Kirkaldy, 1906, l. c.

HAB. Well distributed over the Islands. I have seen it from Kauai, Kealia (Oct., Giffard); Oahu, all over, frequently to light (Kirkaldy, Perkins, Giffard, Swezey, Terry). Hawaii, Kilauea (Perkins).

This seems to be *hebe* from Viti, though all the examples seen are much less reddish on the head, being more yellowish green. It may be convenient to distinguish it varietally as *hospes*.

(2) *Nesosteles volcanicola*, sp. nov.

Closely allied to the above, but much smaller, the vertex more produced before the eyes, and the tegminal veins more obscure. The face also has a somewhat incomplete grill. Length 2 mm.

HAB. Hawaii, Kilauea (Perkins, 1906).

I have only seen a few carded examples from Kilauea, but it is probably not endemic.

(3) *Nesosteles plutonis*, sp. nov.

Head, pronotum, legs etc. golden brown; tegmina yellowish green, membrane hyaline, with yellowish green veins. Abdomen mostly black. Elongate and slender, head distinctly wider medianly than at the eyes, a trifle more angular in the ♀ than in the ♂. Length 4 mm.

HAB. Hawaii, Kilauea.

I have seen only a carded pair in Dr Perkins' collection. It is probably endemic.

(4) *Nesosteles peregrina*, sp. nov.

Yellowish green or green. Abdomen below partly faint fuscous. Membrane hyaline, veins yellowish green. Wings hyaline, veins faint fuscous. Vertex flatter than in the other three species, distinctly wider in the middle than at the eyes. Length 2½ mm.

A Kilauea specimen is the type.

HAB. Oahu, Honolulu, comes to light (Kirkaldy); Hawaii, Kilauea (Perkins and Giffard). Probably not endemic.

MACROSTELES Fieber.

Macrosteles Fieber, 1866, Verh. zool. bot. Ges. Wien XVI.

I know only a single Hawaiian species, which appears to be endemic.

(1) *Macrosteles kilaueae*, sp. nov.

Bright yellow, legs etc. paler. Eyes greenish grey. Apical cells of tegmina hyaline, with yellow veins. Wings hyaline, veins white, sometimes partly fuscous. There is no appreciable sculpture, except microscopic. Vertex wider between the eyes than its length, and wider than the eyes together, lateral margins slightly divergent; rounded obtusely anteriorly, somewhat convex, roundly obtuse in profile; frons somewhat convex. Pronotum wider than the head and a trifle longer, lateral margins short, not keeled, hind margin slightly obtuse-angulately emarginate. Tegminal venation not very unlike that of *M. punctifrons*, but the first apical vein is sublongitudinal, not subtransverse, and the fourth vein is also longer and more longitudinal.

♀. Sheath blackish brown. Length 4½ mm.

HAB. Hawaii, Kilauea. I have seen only one carded ♀, in Dr Perkins' collection.

PHRYNOMORPHUS Curtis.

Phrynomorphus Curtis, 1833, Ent. Mag. I. p. 194.

Athysanus Burmeister, 1838, Gen. Ins. I., *Jassus*.

Athysanus subg. *Athysanus* and *Conosanus*, Osborn and Ball, 1902, Ohio Nat. II. 232 (not subg. *Commellus* which is part of *Deltocephalus*, sens. lat.).

The synonymy of this and the allied genera is complicated and as the Hawaiian representative is an introduced form, it is unnecessary to dilate here on the generic nomenclature.

(1) *Phrynomorphus hospes*, Kirkaldy.

Deltocephalus hospes Kirkaldy, 1904, Entom. XXXVII. 177.

Phrynomorphus hospes Kirkaldy, 1907, Bull. H. S. P. A. Ent. III. 60, Pl. I. figs. 13—17.

The last nymphal instar is described and figured in the work last cited (p. 13).

This introduction from Australia and Fiji feeds here on *Cynodon dactylon*.

Tribe *EURYMELINI*.

There do not appear to be any of this tribe in the Hawaiian Islands, the two species collected by Dr Perkins and referred by me to *Bythoscopus*, belonging really to the genus *Nesophryne*.

Stål described two species, *B. peregrinans* (referred to incorrectly on p. 115 of vol. III. as *B. peregrinus*) and *B. viduus* from Oahu, but erroneously[1].

B. peregrinans was described from Tahiti, Oahu, California and Rio de Janeiro. It has been since recognized as an *Agallia* (sens. lat.) by Berg and recorded from the Argentine Republic; recently Osborn and Ball (now the highest North American authorities on Homoptera), believe that a species from California answers to Stål's description; they place it close to *A. sanguinolentus*, which is an *Aceratagallia*. It is perhaps a little doubtful however whether the same species actually has this distribution from Vancouver to the Argentine. It is well known that the localities recorded in the "Eugenies Resa" are often quite inaccurate and as *B. viduus* is recorded from Tahiti as well as Oahu, and as nothing like either *peregrinans* or *viduus* has ever been recorded from the Hawaiian Islands, both may safely be expunged from the Hawaiian lists.

Fam. ASIRACIDAE.

The Hawaiian Asiracidae are, as regards the endemic, arboreal forms, characterized by the spur of the hind tibiae being solid, subcultrate, with rather large teeth; a condition known, in outside faunas, only in *Proterosydne arboricola* Kirkaldy, from Queensland.

In this family, the male genitalia are of the highest specific, and even generic, importance; hence in these islands, as in other countries, females are often very difficult to determine, unless taken with the males. The colour and pattern of the nymphs are generally of specific value.

The genera in Hawaii may be separated as follows, but I must remark that *Nesosydne* is probably heterogeneous. A considerable proportion of the species, however, is known only in the brachypterous state, if indeed these latter forms are ever macropterous, and I therefore prefer waiting a little before founding the probably necessary new genera.

[1] Cf. Kirkaldy, 1907, A. S. E. Belg. LI.

Conspectus generum.

1. Calcar mobile tibiarum posticarum laminatum, bifidum, dentibus invalidis instructum. Formae graminivorae [Tribus Criomorphini][1] .....(2).
1*a*. Calcar solidum, subcultratum, dentibus fortioribus, paucioribus instructum. Formae arborivorae vel filicivorae, *Nesosydne ipomoeicola*, forma herbivora, excepta. [Tribus Proterosydnini].....(4).
2. Antennae fere cylindricae .....(3).
2*a*. Antennae depressae ac dilatatae ..... 2 *Perkinsiella* Kirkaldy.
3. Carinae frontis fere ad basim frontis in unum conjunctae ..... 3 *Kelisia* Fieber.
3*a*. Carinae frontis fere medio oculorum conjunctae..... 1 *Peregrinus* Kirkaldy.
4. Caput ordinarium .....(5).
4*a*. Caput perelongatum, abdomine thoraceque simul sumptis longius ... 10 *Dictyophorodelphax* Swezey.
5. Frons carinis duabus, interdum obsolescentibus, instructa .....(6).
5*a*. Frons carinis duabus, in unum fere ad basim conjunctis, instructa .....(9).
6. Tegmina haud reticulata .....(7).
6*a*. Tegmina brevia, venis haud faciliter distinguendis, subreticulatis ..... 6 *Nesorestias* Kirkaldy.
7. Frons elongata, carinis duabus perdistinctis, subparallelis, instructa..... 5 *Nesopleias* gen. nov.
7*a*. Frons minus elongata, carinis lateralibus haud semper faciliter distinguendis; si distinctis, tunc rotundatis.....(8).
8. Frons immaculata ..... 4 *Aloha* (typ.) Kirkaldy.
8*a*. Frons pallide maculata..... 4*a* (subg.) *Leialoha* nov.
9. Formae pergraciles ..... 9 *Nesodryas* Kirkaldy.
9*a*. Formae robustae .....(10).
10. Frons haud maculata ..... 7 *Nesosydne* Kirkaldy.
10*a*. Frons pallide maculata ..... 8 *Nesothoe* Kirkaldy.

Peregrinus Kirkaldy.

Peregrinus Kirkaldy, 1904, Entom. xxxvii. p. 175.

(1) *Peregrinus maidis*, Ashmead.

Delphax maidis Ashmead, 1890, Psyche v. p. 323, figs.
D. psylloides Lethierry, 1896, Ind. Mus. Notes iii. p. 105, fig.
Peregrinus maidis Kirkaldy, 1906, Bull. H. S. P. Ent. i. p. 407; and 1907 op. cit. iii. p. 132, Pl. 12, figs. 7—8; Pl. 10, fig. 14.
Pundaluoya simplicia Distant, 1906, Faun. Ind. Rh. iii. 468, fig. 255.
Liburnia psylloides Distant, op. cit. 484.

Hab. All the islands on *Zea mays*, the adults also on *Saccharum officinarum*, *Sorghum vulgare*, etc. One specimen was taken by Dr Perkins in 1892. This introduced species is found also on *Bromus unioloides* and *Cynodon dactylon* in Queensland (Tryon), and has been collected as well in Fiji, New South Wales, Java, Ceylon, Florida, Texas, and the Antilles.

[1] *Asiraca* atque genera proxima tribum 'Asiracini' constituunt. Habent haec calcar subuliforme.

PERKINSIELLA Kirkaldy.

Perkinsiella Kirkaldy, 1903, Entom. xxxvi. p. 179.

(1) *Perkinsiella saccharicida* Kirkaldy.

Perkinsiella saccharicida Kirkaldy, 1903, l. c.; 1906, Bull. H. S. P. Ent. i. p. 405, Pls. 26 & 27, figs. 1—5; 1907, op. cit. iii. p. 137, Pl. viii. figs. 5—8; Pl. xii. figs. 2—13.

P. saccharida Kirkaldy, 1906, op. cit. i. p. 406.

HAB. Wherever *Saccharum officinarum* is grown in the islands; now greatly reduced by various parasites. It has been found in Eastern Australia and Java.

The metamorphoses are partly described and figured in the papers cited above.

KELISIA Fieber.

Kelisia Fieber, 1866, Verh. zool. bot. Ges. Wien xvi. p. 519.

Three species, apparently not endemic, have been found in the islands. I cannot, however, connect them with any previously described.

(1) *Kelisia sporobolicola*, sp. nov.

♂ ♀. Yellowish testaceous, keels paler. Face and antennae brownish testaceous, the frons speckled with yellowish testaceous. Tegmina tinged with cinereous, veins whitish testaceous, rather thickly granulated with blackish brown. Abdomen above spotted laterally with blackish brown. The tegmina reach to the middle of the abdomen, and there are no clear apical cells.

♂. Pygophor pale, partly more or less infuscate; with black genital styles, oedeagus etc.; genital styles long and narrow, divergent, apical third acuminate.

♀. Pygophor concolorous with the underside.

The type is an Oahuan specimen.

HAB. Oahu, Honolulu coast (Oct. 1 ♂, 2 ♀♀ Perkins; March, Swezey and Kirkaldy); Hawaii, Puako (May, Swezey).

(2) *Kelisia swezeyi*, sp. nov.

♂. Superficially not unlike the last described, and with not very dissimilar genital organs, but the pronotal keels are less divergent posteriorly, the tegmina are longer and less granulate, and the frons is different.

Head, pronotum and scutellum pale fuscous, frons and clypeus bordered with black inside the pale lateral keels; rest of body yellowish testaceous, the abdomen sparsely

marked with black laterally and on the pygophor. Tegmina rather feebly granulate with brown, a black speck near the apex of the clavus on the commissure. Head dorsally very slightly produced beyond the eyes, frontal keels blunt. Tegmina reaching to about three-fourths of the length of the abdomen, with somewhat clear apical cells. Pygophor testaceous, a longitudinal line dorsolaterally, the ventral wall of the anal tube, the genital styles, etc., black; the last very similar in form to those of *K. sporoboli*. Length $2\frac{1}{2}$ mm.

HAB. Oahu, Kalihi (March, Swezey). Only a single specimen, kindly lent to me by Mr Swezey; it is the only one he has seen.

(3) *Kelisia paludum*, sp. nov.

♂. Brownish yellow, abdomen often largely infuscate; a dark fuscous spot at the apex of the commissural area. Tibial spur with 18 minute teeth. Tegmina very feebly granulate.

The ♂ pygophor is more or less dusky; genital styles long and narrow, slightly curved, shortly bifid apically.

♀. Immaculate yellow.

HAB. Oahu, Waikiki (Jan. and March, Swezey and Kirkaldy), on *Herpestis monnieria* and *Juncus*. These were closely intermingled, and eggs not having been found, the actual foodplant is not certain.

ALOHA Kirkaldy.

Aloha Kirkaldy, 1904, Entom. XXXVII. p. 177.

Corresponds to *Criomorphus* in the Criomorphini. The median keels of the frons are roundedly arched outwardly, but are sometimes obsolescent in *A. myoporicola*, which probably does not belong to this genus. Type *A. ipomoeae* Kirkaldy.

Conspectus specierum hawaiiensium.

1. Frons nigrofusca, parte apicali quarta saltem, cum sex saltem maculis utrimque inter carinas submedianas atque margines laterales, pallida, maculis quibusdam basin versus minoribus. Antennarum segmentum primum nigrescens [subgen. *Leialoha* nov., typo *naniicola* Kirkaldy (2).

1*a*. Frons concolor, interdum maculis subobsoletis pallidis ornata. Antennarum segmentum primum nigrescens apud has, pallidum apud illas species...(5).

1*b*. Frons nitida, nigra, immaculata ..... 7 *myoporicola* nov.

2. Tegmina vitrea, notis fuscis paucis ornata.....(3).

2*a*. Tegmina lactea basi; apice pallida, fusco-notata; fascia lata, fusco-fuliginea trans medium ornata. Tegminum pili albi ..... 3 *pacifica* nov.

3. Tegmina pallide testaceo et inconspicue granulata, pilis albis..... 1 *naniicola* nov.

3*a*. Tegmina rude albo-granulata, pilis fuscis .... 2 *oceanides* nov.

5.	Tegmina maculata	4 *lehuae* nov.
5*a*.	Tegmina haud maculata, commissura apice excepta	(6).
6.	Forma plus minus rubra	5 *ohiae* nov.
6*a*.	Forma haud rubra	6 *ipomoeae* Kirkaldy.

(1) *Aloha naniicola*, sp. nov.

Vertex and pronotum testaceous, the latter fuscous laterally with whitish specks. Frons darkish fuscous, apical third and some specks, yellowish white; genae yellowish white, extreme base fuscous. Antennae dark fuscous. Clypeus fuscous with pale keels. Tegmina hyaline milky with an irregular band along the middle of the membrane, apex of clavus, etc., fuscous. Femora pallid, with a subapical fuscous ring, the apex subsanguineous. Tibiae testaceous, anterior and intermediate pair with two fuscous rings on each; posterior tibiae with one near the base. Length 4—4$\frac{1}{8}$ mm.

HAB. Oahu, Waianae, 3000 ft. (Feb., Perkins); Tantalus, 1300 ft. (Jan., April, Giffard, Kirkaldy, Swezey). Hawaii, Kilauea (Perkins, Kirkaldy). On Ohia lehua (*Nani polymorpha*, also known generically as *Metrosideros*). The type is a Kilauea example.

(2) *Aloha oceanides*, sp. nov.

Vertex, frons, genae and nota dark brown; all the keels, the basal specks on frons and the specks on the pronotum, yellowish brown; apical fourth of frons, apical third of genae, apical specks on frons, and some at base of genae whitish; clypeus dark fuscous, basal half of middle keel pallid. Antennae dark fuscous or blackish (second segment in immature examples paler dorsally). Ventral part of pronotum and the sterna dark fuscous. Tegmina milky hyaline, veins (more or less suffusedly) dark brown, strongly and closely studded with white granules which emit white hairs; marginal vein yellowish brown. Tegmina suffused with dark brown as follows: extreme base, a short irregular transverse blotch extending from marginal vein to median just apical of the junction of the latter with the brachial (basally it is fairly straight, apically it extends along the median and subcostal veins about as far again), a large rhomboid spot on the subcostal cell, at about three-quarters of its length, which extends obliquely on to the median at its forking. The apical cells have a large irregular T-shaped mark, and the veins are all suffused, at least apically. Anal and axillary suffused just basal of their union. Wing veins brownish black. Legs yellowish brown, femora and tibiae annulate with dark fuscous. Tergites mostly black; pleurites yellowish brown and dark fuscous chequered. Length 5$\frac{1}{4}$—5$\frac{1}{2}$ mm.

HAB. Kauai, 4000 ft. (July—Aug., Perkins, three examples, also one in bad condition).

In immature examples, the vertex and the disk of the pronotum, etc., may be pallid.

(3) *Aloha pacifica*, sp. nov.

♀. Similar to *A. oceanides*, but proportionately slightly more robust. The whole of the tegmina basal of the apical cells is dark smoky except the basal fourth of that space, the subcostal cell in part, the apex of the clavus, and the tegminal granules, the latter supporting white hairs. Apical keels of the vertex and the middle keels of the pronotum and scutellum subsanguineous. Length $5\frac{1}{3}$ mm.

This is a quite distinct species, but the male and definite localities are desiderata.

HAB. "Kauai? Molokai?" (1 ♀, Perkins).

(4) *Aloha lehuae*, sp. nov.

Head and pronotum pale ochraceous, the latter a little fuscate partly, scutellum dark ferruginous. Tegmina hyaline, veins pale, granules pale brown; a dark fuscous band across the tegmina close to the base, a short fuscous line at apex of claval cell and a fuscous smudge along the middle of the membrane. Wings pale smoky, veins blackish brown. Length $4\frac{1}{3}$ mm.

HAB. Oahu, Tantalus; on Ohia lehua (*Nani polymorpha*).

(5) *Aloha ohiae*, sp. nov.

Head pale yellow; antennae, legs, scutellum, underside, red (sometimes paler). Tegmina hyaline, tinged with yellowish red, veins and granules red. Length 5 mm.

The type is a Waialua specimen.

HAB. Oahu, Waialua, Palolo, Pacific Heights, Tantalus. Hawaii, Kona. (Perkins, Kirkaldy, Giffard, Terry, Swezey) on *Nani polymorpha.*

(6) *Aloha ipomoeae* Kirkaldy.

Aloha ipomoeae Kirkaldy, 1904, Entom. XXXVII. p. 177; and 1908, P. H. E. S. I. Pl. 4, fig. 9.

This species is usually micropterous, but macropterous forms occur.

HAB. Oahu, Tantalus, etc., up to the summit on *Ipomoea pes-caprae, batatas, bonanox, tuberculata, insularis*, etc. (Perkins, Kirkaldy, Terry, Swezey, Giffard); Makiki, beneath Hilo grass (Nov., Swezey). Hawaii, Paauhau (March, Swezey).

(7) *Aloha? myoporicola*, sp. nov.

♂. Vertex, frons, pronotum and scutellum shining polished black or blackish brown; keels of vertex and of extreme base of frons, apical margin (narrowly) of frons, the clypeus, genae (except a slight line), posterior angle, very minutely, of scutellum, legs (except femora, a little fuscous locally, and tibiae more or less obscurely annulate),

pale yellowish. Antennae yellowish. Tegmina subhyaline pale yellow, veins yellowish white, sparsely granulate with brown; middle two-thirds of tegmen from subcosta to suture, smoky. Tergites yellowish, sutures blackish, lateral margins variegated with black, sternites mostly blackish. Labium reaching to hind coxae; second segment of antennae scarcely twice as long as the first, the second being about as long as the median width of the frons. Tegmina micropterous, extending about as far as the apex of the abdomen, with 5—6 apical cells. Spur with eight spines.

♀. Usually much paler than the male, the vertex, pronotum, and scutellum being more or less pallidly suffused, but sometimes these approach the coloration of the male. Tergites dark with yellowish markings apically. Length 4 mm.

HAB. Hawaii, Kilauea, 4000 ft. (July—Sept., nos. 578, 656, 686 & 691, Perkins, July, Giffard, Dec., April—May, Kirkaldy) on *Myoporum sandwicense*; Kona, 4000—5000 ft. (June—July, Perkins).

The type is a Kilauean example.

NESOPLEIAS, gen. nov.

This genus has very much the appearance of *Nesorestias*, but the tegmina are not reticulate, and the frons has two entire keels. From *Aloha*, etc. it differs by the form of the tegmina, and by the elongate frons, which has two fine, very distinct, subparallel keels, which enclose a sublinear space throughout, meeting just basal of the truncate apical margin. The genal carina meets the frontal keels acutely. Pronotum with three straight keels, the lateral ones meeting archedly in front; all meeting the hind margin straightly. Scutellum tricarinate.

Conspectus specierum hawaiiensium.

1. Tegmina cellulis apicalibus destituta; margine postica densata ..... 1 *nimbata* nov.
1*a*. Tegmina cellulis apicalibus instructa; margine postica ordinaria..... 2 *dubautiae* nov.

(1) *Nesopleias nimbata*, sp. nov.

♀. Pale brownish yellow, paler beneath, the tegmina with a fuscous band just exterior to the clavus and crossing it at the apex, where it darkens and thickens; basal of this band the colour is paler. Tergites blackish brown laterally. Tegmina scarcely reaching beyond the middle of the hopper, roundedly arched externally, rounded apically. Subcostal cell and apical margin strongly thickened, especially the latter, which is not venose. Radial and brachial veins forked obscurely immediately basal of the apical margin. Length 3 mm.

HAB. Oahu, Tantalus, 1500 ft. (Feb., 1907, Perkins). I have seen only a single female of this curious form.

(2) *Nesopleias? dubautiae*, sp. nov.

Highly variable in colour, in some examples almost immaculate pale brownish yellow; in others, the tegmina and abdomen above are heavily blotched with blackish brown. These colour variations are not sexual. Spur with nine spines. The pygophor has a minute spine on the lip. The ♂ styles are contiguous to the oedeagus at their laterobasal angle and are produced ventralwards in a triangular lobe; using the inner side of this as a base, they are acuminately and obliquely triangular and are very different to those of any other Hawaiian species. Length 3 mm.

HAB. Oahu, Tantalus (1907, Perkins); Konahuanui, 2000 ft. (May, Dec., Swezey) on Naenae (*Dubautia plantaginea*).

NESORESTIAS Kirkaldy.

Nesorestias Kirkaldy, 1908, P. H. E. S., I. p. 205.

(1) *Nesorestias filicicola* Kirkaldy.

Nesorestias filicicola Kirkaldy, 1908, l. c.

HAB. Oahu, Tantalus, 2000 ft. (Kirkaldy, Swezey, Terry) on ferns.

NESOSYDNE Kirkaldy.

Nesosydne Kirkaldy, 1907, op. cit. 161.

This genus corresponds more or less with *Delphacodes* Fieber in the section with non-compressed spur. The type is *N. koae*, but the genus as now comprehended is doubtless heterogeneous.

(1) *Nesosydne koae* Kirkaldy.

Nesosydne koae Kirkaldy, 1907, l. c.; and 1908, op. cit., Pl. IV. fig. 2.

♂ ♀. Pale green, usually yellowing after death. Tegmina hyaline, veins pale greenish, with fuscous granules. Sutures of tergites narrowly fuscous.

♂. Base of tergites and the lateral margins greenish, rest blackish. Genital styles narrow, elongate, slightly truncately bifid at apex.

♀. Ovipositor dark fuscous. Length ♂ $3\frac{1}{8}$, ♀ 4 mm.

HAB. Oahu, Tantalus, 1200—1500 ft., on the young leaves of *Acacia koa* (Perkins, Kirkaldy, Giffard, Terry, Swezey).

Nymphs pale green.

var. *rubescens* Kirkaldy, 1907, op. cit. p. 161.

Similar to the type and found with it, but larger and with a rosy brownish tinge. Length ♂ 4, ♀ 5 mm.

Nymphs green tinged with roseate.

I have examined some numbers of this sometimes common hopper, but have never found a brachypterous form.

(2) *Nesosydne pipturi* Kirkaldy.

Nesosydne pipturi Kirkaldy, 1908, op. cit. p. 202, Pl. IV. fig. 3.

♂. Head, pronotum and scutellum fuscous or blackish, with pale keels, the dorsal one broadly so and rather suffused. Antennae, clypeus, sterna and legs pale; femora partly fuscous. Tegmina whitish hyaline, a fuscous smudge across the middle third, accentuated by the radial and brachial veins being blackish medially and the apex of the clavus also blackish; sometimes the darkening is continued more or less to the apex of the clavus. Abdomen pale sanguineous, with a few scattered blackish marks. Head dorsally scarcely reaching in front of the eyes, apical margin smoothly rounded; frons very smooth, keels almost obsolescent, except as pale lines. Second segment of antennae $\frac{5}{8}$ths longer than the first. Labium reaching to the base of the hind trochanters. Lateral margins of pronotal keels curving outwards, but reaching hind margin. Tegmina rounded apically, not extending as far as apex of abdomen; with two or three apical cells. Spur with 7—8 spines, first segment of hind tarsi much longer than the other two.

♀. Pale yellowish, intracarinal areas of vertex and frons rather irregularly fuscous, not so deeply or entirely as in the ♂. Tegmina hyaline, veins pale yellow, a short black line on the commissure. Tergites sometimes lightly stained with fuscous. Length ♂ $1\frac{7}{8}$, ♀ $2\frac{1}{8}$ mm.

Easily distinguished by the smooth, wide, somewhat polished frons, with scarcely raised keels and by the green nymphs.

♂. Genital styles broad, constricted medially, flatly bifid apically.

Nymphs pale green, paler beneath. Labium reaching to middle of the hind trochanters. Spur with seven spines.

HAB. Oahu, N.W. Koolau range (825, 786, Perkins, 3 ♂♂), Tantalus 1500—2000 ft. (Feb., May, Aug., Oct., Perkins, Giffard, Kirkaldy, Swezey, Terry), Konahuanui ridge (Feb., Swezey, Jan., Kirkaldy), on Mamake (*Pipturus albidus*); Molokai, Pelekunu (Oct., Perkins, 3 ♀♀).

(3) *Nesosydne halia* Kirkaldy.

Nesosydne halia Kirkaldy, 1908, op. cit. Pl. 4, fig. 8.

♂. Pale luteous; frons between the keels, pronotum and scutellum (usually except the keels), dark fuscous. Tegmina cinereohyaline, entire margin pale luteous; with a

tiny dark fuscous speck near the apex of the commissure, or also with an obscure oblique stripe. Abdomen above sometimes dark apicolaterally; beneath with dark lateral wedges on the three middle segments. Frons elongate, broader at the base than at the apex, keels broad and rather flat. Antennae extending to about the middle of the clypeus, second segment a little longer than the first. Pronotal keels reaching the hind margin, then curving around slightly. Hind tibiae longer than tarsi, first segment of the latter one-third longer than the second and third together. Spur with eight teeth. Tegmina with three apical cells not nearly attaining the apex of the abdomen. Genital styles broad at the base, sinuate, apically acuminate, but truncate at the apex, the inner angle acute. The oedeagus is horned on each side basally.

♀. Similar to the ♂ but larger; luteous, the keels paler. Abdomen above mottled with fuscous laterally on the apical two-fifths, also similarly at the base. Beneath as in the ♂. Tegmina also with a dark fuscous blotch at the apex of the commissural cell. Length ♂ 3, ♀ $3\frac{7}{8}$ mm.

HAB. Oahu, Tantalus, 1300 ft. (Perkins; Kirkaldy, Giffard), Pacific Heights ridge (May, Swezey).

var. ♀. A dark fuscous oblique stripe on the tegmen, varying to pale. Head, pronotum and scutellum (except keels) dark fuscous.

(4) *Nesosydne pele*, sp. nov.

Of the general appearance of *N. koae*, but larger and differently coloured.

Head and pronotum brownish testaceous, or pale olivaceous, the clypeus between the keels (and sometimes the vertex and frons between the keels), genae and pronotum partly anteriorly, dark brown or blackish. Antennae testaceous, extreme apex of first segment dark. Scutellum blackish, or piceous. Tegmina hyaline; apex of anal cell of clavus dark brown; veins brown, rather feebly granulate, black-haired. Legs sordid testaceous, more or less suffused. Abdomen dorsally and the body beneath mostly blackish. Pronotal keels divergent, not reaching the hind margin. Spur with about nine spines. Length 5 mm.

HAB. Hawaii, Kilauea (Perkins, 1906).

(5) *Nesosydne umbratica*, sp. nov.

Pale, rather sordid, greenish yellow; head between the keels fuscous. Tegmina with apex of clavus and of subcostal cell dark fuscous. Fore tibiae apically fuscous. Labium reaching to the apex of the hind coxae. Second segment of the antennae about one-fifth longer than the first. Tibial spur with 9—10 teeth. Tegmina with five apical cells, clavus not completely sutured off; apex of subcostal very narrow, truncate, continuation of the subapical transverse vein. Tegmina not reaching to the apex of abdomen. Length $4\frac{1}{8}$ mm.

HAB. Hawaii.

(6) *Nesosydne gouldiae*, sp. nov.

Brownish white; frons and clypeus between the keels, dark fuscous; pronotum and scutellum between the keels, genae, etc., more or less fuscous. Tegmina yellowish brown, hyaline, veins more or less fuscous, the apical ones yellowish brown, apex of clavus and of subcostal dark fuscous. Legs and sterna pale yellowish. Tergites more or less variegated with dark fuscous. Second segment of antennae one-third longer than the first. Tegmina with the clavus not completely sutured off; three apical cells, subcostal cell apically acute. Spur with 10—11 spines. Tegmina not reaching to the apex of the abdomen. Length 4—5 mm.

The nymphs of the last instar have the same general colour as the adult, but the tergites are fuscous except a narrow longitudinal row of spots down the middle (making a broken line), and two sublateral longitudinal brownish yellow stripes on two or three segments. There are also some pale specks, etc. Second antennal segment about twice as long as the first, fore and middle tarsi unjointed, hind tarsi trisegmentate, the spur with 7—8 spines.

HAB. Oahu, Honolulu Mts. (Sept., Perkins, nos. 793 & 805, Nov.—Dec., Perkins) and Konahuanui (no. 867, March, Perkins); also Tantalus (Perkins, Terry); Palolo, 1800 ft. (Terry), on Manono (*Gouldia* sp.).

(7) *Nesosydne nephrolepidis* Kirkaldy.

Nesosydne nephrolepidis Kirkaldy, 1908, op. cit. p. 203, Pl. 4, fig. 1.

HAB. Oahu, Tantalus.

(8) *Nesosydne ipomoeicola* Kirkaldy.

Delphax pulchra Stål, 1854, O. V. A. F. XI. 246; and 1859, Eugenies Resa, Zool. 275.

Nesosydne ipomoeicola Kirkaldy, 1908, op. cit. 202, Pl. 4, fig. 4.

Somewhat like *N. halia*, but the pronotal keels are more divergent and curving, and do not reach the hind margin; the brachial and radial veins are forked near the subapical line; there are five apical cells and the tegmina are a little longer. The frons is nearly parallel-sided, very slightly (and gradually) narrower basally than apically. Antennae shorter, scarcely reaching beyond the base of the clypeus. Basal margin of tegmina fuscous.

♂. Head, pronotum and scutellum dark fuscous, or blackish, keels of head pale. Sterna, abdomen more or less, etc., dark fuscous or blackish.

♀. Similar to the same sex in *N. halia*, but the abdomen is more obscure.

Vars. Both sexes vary more or less in the following directions, head often scarcely fuscate. Apex of commissural and of subcostal cells, etc. dark fuscous; these may meet and be extended in a large median black blotch in the ♂. Abdomen often orange red, more or less marked with black. Length ♂ 2½; ♀ 3½—3⅞ mm.

HAB. Kauai, 400 ft. (Oct., Giffard); Oahu, Honolulu (Stål), Tantalus, 1300 ft. (Kirkaldy, Giffard, Perkins, Swezey, Terry), on *Ipomoea bonanox*, etc.; Honolulu and Kalihi, sea-level to 50 ft., on *Jussiaea villosa* (June, Swezey); Makiki, 150 ft., on *Dolichos lablab* (March, Swezey). Hawaii, above Hilo, 1800 ft. (Dec., Perkins, two ♂♂), Olaa (Nov., Perkins, one ♂).

This is perhaps the commonest endemic Asiracid. I have not seen Stål's type, but I have no doubt of the correctness of the identification; the name given by him, however, is preoccupied.

Macropterous form. Head with keels brownish yellow, the intracarinal spaces more or less fuscous. Nota brownish yellow, more or less strongly and entirely suffused with dark fuscous, the keels usually excepted. Tergites mostly blackish brown. Tegmina hyaline, veins pale testaceous, basal margin and a mark on the commissure blackish, apical veins (at least apically) and apical margin, also veins of wings, fuscous. Length 4 mm.

(9) *Nesosydne hamadryas*, sp. nov.

♀. Shining dark fuscous; keels of frons and clypeus narrowly margined with fuscous. Antennae, labium and legs, pale yellowish white. Scutellum piceous. Tegmina hyaline iridescent, appearing blackish basally, owing to the abdomen showing through, veins fuscous. Head dorsally scarcely longer than broad, extending very little beyond the eyes; lateral margins of frons subparallel. Antennae reaching well beyond the base of the clypeus, second segment one-half longer than the first. Tegmina reaching well beyond the abdomen, with six apical veins, second and third with a common base, and the third forked near its base. Pronotum with the lateral keels not reaching the hind margin but also not curving away. Spur with 10 spines. Length ♀ 4½ mm.

HAB. Oahu, Tantalus (1 ♀, Perkins, 1906).

I am indebted to Dr Perkins for the loan of this, the only specimen he has taken.

(10) *Nesosydne haleakala*, sp. nov.

♀. Brownish yellow; genae, clypeus and apical part of frontal keel blackish brown. Tegmina with a fuscous stripe obliquely from the base (exteriorly) to apex of clavus, darkening at the two ends. Tarsi blackish. Tegmina scarcely reaching beyond the middle of the abdomen, clavus not completely sutured off; three apical veins, the sub-

costal cell acute apically. Second segment of antennae about one-fourth longer than the first. Length $3\frac{7}{8}$ mm.

HAB. Maui, Haleakala, 5000 ft. (by "grubbing," April, no. 251, 2 ♀♀, also an example in very bad condition, Perkins).

(11) *Nesosydne nephelias*, sp. nov.

♂. Head, pronotum and scutellum blackish, the keels widely pale; antennae and legs yellowish testaceous, femora long, striped with dark fuscous. Abdomen yellowish testaceous, partly suffused with brown. Tegmina hyaline cinereous, veins partly fuscous, a spot at the apex of the subcostal cell and the commissure at the apex of the clavus, dark fuscous. Venation irregular.

♀. Pronotum, scutellum and abdomen less dark.

HAB. Lanai, 2000 ft. and over (Jan.—Feb., Perkins).

(12) *Nesosydne procellaris*, sp. nov.

♂ ♀. Brownish yellow; a line on the genae and the lateral margins of the pronotum and scutellum (rather feebly), dark fuscous. Tegmina brownish yellow, hyaline, base very narrowly and a transverse smudgy stripe just basal of the subapical veins, dark fuscous; veins mostly pale brownish. Apices of tibiae, tarsi etc., dark brown. Tegmina brachypterous, with five apical veins (sometimes one may be forked very close to the apical margin); the subcostal is undivided and its apical margin is a continuation of the subapical transverse vein.

♂. Frons between the keels, apical part of vertex and posterolateral margins of scutellum all faintly fuscous. Sternites blackish brown, broadly bordered with yellowish, last segment yellowish, pygophor piceous, styles blackish ferruginous. Tegmina not reaching as far as the apex of the abdomen. Last tergite truncate apically; pygophor not spined in profile, subcircular, lateral margins a little thickened and flattened.

♀. Frons between the keels, apical part of vertex, posterolateral margin of scutellum very narrowly, dark fuscous. Sternites yellowish, marked with brownish. Pygophor yellowish brown suffused basally with brown, ovipositor yellowish. Tegmina reaching just beyond the apex of the abdomen. Ovipositor narrow and parallel-sided for more than its apical half, basally considerably widened, lateral margins of pygophor subparallel; nebenplatten narrow and oblique. Length $4\frac{1}{2}$ mm.

HAB. Molokai, 3000 ft. (June, 1 ♂, 1 ♀, Perkins).

This species is very probably now extinct. It is the bulkiest of the Hawaiian Asiracidae.

(13) *Nesosydne palustris* Kirkaldy.

Nesosydne palustris Kirkaldy, 1908, op. cit. p. 202, Pl. IV. fig. 7.

♂. Head, pronotum and scutellum sordid brownish yellow, scutellar keels darker, the median suffused; anterior margin of head darker; genae and clypeus with paler keels. Tegmina brownish yellow, hyaline, immaculate except a short, dark stripe on the commissure at the apex of the clavus; also some of the veins dark. Tergites pale brownish yellow, variegated with blackish brown. Legs and sterna pale yellowish. Second segment of antennae two-sevenths longer than the first. Spur with nine spines. There is no continuous subapical transverse line, and the clavus is not completely sutured off from the corium. There are four apical veins, the subcostal cell being acute apically. (In one example, there is a supplementary transverse vein in the interior discoidal cell of one tegmen.) Tegmina reaching not quite as far as the apex of the abdomen. Last tergite deeply acute-angularly emarginate; pygophor in profile with a horizontal spine on the dorsal margin. Length $3\frac{1}{2}$—$3\frac{3}{4}$ mm.

HAB. Molokai, 4950 ft. (Sept., Perkins) and 4500 ft. (Sept., Perkins), two ♂♂ on trees in the excessively wet bogs in the highest points of Molokai. This species is also probably extinct now.

(14) *Nesosydne nubigena*, sp. nov.

♂. Closely allied to the last, but smaller. Tegmina reaching to about the middle of the pygophor, with two apical cells only. Spur with eight spines. Length 3 mm.

HAB. Molokai, forest above Pelekunu (July, one ♂, Perkins). Also probably extinct.

(15) *Nesosydne cyathodis*, sp. nov.

Head brownish yellow, the apical margin of frons and genae, clypeus, antennae, legs (except spur), etc., dark fuscous or blackish brown. Tegmina whitish. Pronotum and scutellum fuscous with pale keels. Abdomen blackish with pale spots and a broken pale line down the middle. Tegmina reaching to about three-fourths the length of the abdomen.

♂ pygophor black, styles, etc., black; genital styles in shape somewhat like those of *chambersi*, but more elongate and narrower. Length $1\frac{7}{8}$ mm.

The nymphs of the last instar are of the same general colour as the adult, but the frons is pale only basally, and the abdomen is rather more marked pallidly.

HAB. Hawaii, Kilauea, 4000 ft. (April, Swezey, Giffard, May, Kirkaldy), on Pukeawe (*Cyathodes tameiameiae*).

(16) *Nesosydne raillardiae* Kirkaldy.

Nesosydne raillardiae Kirkaldy, 1908, op. cit. p. 203, Pl. IV. fig. 5.

HAB. Hawaii, Kilauea, 4000 ft. (Swezey) on *Raillardia*.

(17) *Nesosydne chambersi* Kirkaldy.

Nesosydne chambersi Kirkaldy, 1908, op. cit. Pl. IV. figg. 10—12.

Yellowish, or pale ferruginous. Tegmina subhyaline, veins mostly concolorous with the prominent brown granules; apical margin of tegmina narrowly suffused with brown, also a very little suffusing round each granule. Each tergite margined apically with dark fuscous. Length 3 mm.

Pl. IV. figg. 11—12 of the work cited above, show the venational discrepancy in the same individual.

HAB. Hawaii, Kilauea, 4000 ft. (April, Swezey).

(18) *Nesosydne argyroxiphii* Kirkaldy.

Nesosydne argyroxiphii Kirkaldy, 1908, op. cit. p. 201, Pl. IV. fig. 6, and text-fig. i.

Black; keels of head and nota, a broken, very narrow line down the middle of the abdomen etc., testaceous. Antennae dark fuscous, partly stained with dirty testaceous. Tegmina subopaque, milky, veins fuscous. There are no apical cells and the tegmina do not reach to the middle of the abdomen. Length 3 mm.

The *nymphs* of the last instar are brownish testaceous, largely suffused with dark fuscous.

HAB. Maui, crater of Haleakala (Oct., Perkins, two ♀♀, Swezey, Terry), on Ahinahina (*Argyroxiphium sandwicense*), at about 10,000 ft. Mr Swezey has kindly lent me a male, the only one I have seen, to study the genitalia.

(19) *Nesosydne imbricola*, sp. nov.

♂. Dark fuscous; keels brownish yellow; frons and clypeus with broad brownish yellow median and lateral keels. Antennae and legs brownish yellow, largely suffused with dark fuscous. Exterior half of clavus and apical fourth of tegmina cinereous hyaline, also most of subcostal cell, the rest fumate with one or two small hyaline spots; a spot at apex of commissural area and another at apex of subcostal area, the subcostal vein, etc., dark fuscous. Tegmina feebly granulate, not reaching beyond about three-fourths of the length of the abdomen. Length 3 mm.

HAB. Maui, Haleakala, 5000 ft. (March, April, one ♂, Perkins).

(20) *Nesosydne monticola*, sp. nov.

♀. Black; submedian keels of vertex (and sometimes of the base of the frons) pale. Pronotal keels obscurely pale ferruginous. Tegmina cinereo-hyaline, largely suffused with fuscous (almost altogether except a hyaline transverse stripe near the apical margin); veins mostly dark fuscous. The frons has a few pale specks along the lateral margin and three along the middle keel on each side (the latter sometimes obsolescent). Antennae more or less dark fuscous. A row of pale specks down the middle of the tergites, the apical two or three segments spotted or specked (individually) pallidly. Tegmina reaching to about three-fourths of the length of the abdomen; mostly four apical cells. Length 3 mm.

HAB. Maui, Haleakala, 8000 ft. (April, three ♀♀, Perkins).

NESOTHOË Kirkaldy.

Nesothoë Kirkaldy, 1908, P. H. E. S. 1. p. 202, fig. 2.

An endemic genus of ten species, males of which I have seen in three species. It corresponds somewhat to *Chloriona* in the "laminate-spurred" series. Beyond the spur, it differs by the sudden compression of the tegmina at the base of the apical cells, the stronger excavation of the vertex and the union of the submedian keels of the frons closer to the base of the latter. First segment of the antennae not, or scarcely, as long as wide, about one-third of the length of the second segment (typically), which is rather flattened; clypeus tricarinate. Tibial spur subcultrate, compressed, solid, narrow and elongate, with 7—10 strong teeth. In all the species, the frons is marked transversely, more or less clearly, with pale, broken lines and spots. Type *N. fletus*.

The species are separable as follows:

1. First segment of antennae blackish or dark fuscous (or if pale, then the second is blackish) ..... (2)
1*a*. Antennae pale ..... (6)
2. Frons basally dark with pale markings, apically white ..... (3)
2*a*. Frons pale brownish yellow with whitish specks and a whitish suffused blotch in the middle; tegmina brown with a broad white basal band and an exterolateral crescent of the same hue ..... 1 *fletus* Kirkaldy.
3. Vertex and pronotum white; tegmina immaculate ..... 2 *hula* Kirkaldy.
3*a*. Vertex and pronotum pale yellowish or brownish; tegmina maculate ..... (4)
4. Apical third of tegmen not maculate, some of the veins narrowly suffused ..... 3 *frigidula* Kirkaldy.
4*a*. Apical third of tegmen irregularly suffused, at least one of the cells smoky ... (5)
5. Tibiae whitish, clearly annulate with brown ..... 4 *bobeae* Kirkaldy.
5*a*. Tibiae brownish yellow, feebly annulate ..... 5 *perkinsi* Kirkaldy.
6. Apical part of tegmen not blotched ..... (7)
6*a*. Apical part of tegmen blotched with brown ..... (9)
7. Tegmen with an oblique band near the base ..... (8)
7*a*. Tegmen only suffusedly smoky ..... 6 *laka* Kirkaldy.

8. Larger, tegmina milky ..... 7 *piilani* Kirkaldy.
8*a*. Smaller, tegmina not milky, face more clearly spotted apically..... 8 *terryi* Kirkaldy.
9. Second segment of antennae four times as long as the annuliform first ..... 9 *pluvialis* Kirkaldy.
9*a*. Second segment less than three times as long as the non-annuliform first ..... 10 *silvestris* Kirkaldy.

These species are distributed as follows:

Kauai: *hula, pluvialis.* Oahu: *perkinsi, bobeae, terryi.* Molokai: *piilani.* Lanai: *silvestris.* Maui: *fletus, laka.* Hawaii: *frigidula.*

(1) *Nesothoë fletus* Kirkaldy.

Nesothoë fletus Kirkaldy, 1908, op. cit. p. 204.

♂♀. Head and pronotum yellowish, with paler keels, the pronotum fuscous laterally with pale granules; frons with a number of white specks all over the middle third, and a suffused white blotch about the same place; clypeus fuscous. First segment of antennae black, second fuscous. Scutellum brownish ferruginous, with paler keels. Tegmina warm brown, the base broadly white, produced a little on to the clavus, a large crescentic white area on the apical half exteriorly and a few spots apically; veins mostly pale with brownish granules. Sterna and sternites pale. Femora and tibiae piceous; the former pale or sanguineous, basally and apically, the latter annulated with brownish yellow or sanguineous; tarsi pale. Frons slightly more than twice as long as broad, laterally gently rounded. Second segment of antennae scarcely three times as long as the first, somewhat more rounded in profile than the other species, first about as broad as long. Spur with eight spines. Length ♂ $4\frac{1}{2}$; ♀ $4\frac{7}{8}$ mm.

The name "*fletus*" is in allusion to the battle of "Ke Paniwai" in 1776, when the Iao River was "choked" with the slain.

Hab. Maui, Western Mts, Iao Valley (March, Perkins, one ♀, and July, one ♂, Swezey). Easily recognized by the broad warm brown band down the white tegmen.

(2) *Nesothoë hula* Kirkaldy.

Nesothoë hula Kirkaldy, 1908, op. cit.

♂. Vertex and pronotum white, lateral margins of the latter blackish; base and apex of frons rather narrowly, middle keel, three short transverse lines in the middle etc., white, the rest dark fuscous; genae (except the white apex), clypeus, first segment of antennae, scutellum (except the posterior angle minutely, and a few specks on the posterolateral margins) black, keels of scutellum sometimes ferruginous; second segment of antennae fuscous. Tegmina hyaline, veins on clavus and corium pale, with minute fuscous granules, subcostal veins and veins on membrane fuscous, two or three blackish marks on commissure; marginal vein fuscous. Legs pale, femora longitudinally striped with black. Abdomen apparently mostly black. Frons narrowed basally. Second segment of antennae about three times as long as the first, which is longer than broad. Spur with eight spines.

♀. The black in the male is replaced by yellowish brown, except the first segment of the antennae, and two or three spots on the vertex and a few on the genae, also the marks on the commissure. Sternites pale, ovipositor dark. Length ♂ 4¾, ♀ 5¼ mm

Easily recognized by the spotless tegmina and dead white head and pronotum.

HAB. Kauai, high plateau (Aug., Perkins, two ♂♂, two ♀♀, nos. 96 and 631).

(3) *Nesothoë frigidula* Kirkaldy.

Nesothoë frigidula Kirkaldy, 1908, op. cit.

♀. Pale (or dark) yellowish brown, paler beneath; apical third, or two-thirds, of frons and specks on the basal part pale; second segment of antennae blackish. Tegmina hyaline tinged with cinereous, feebly granulate, veins almost concolorous, except the subcostal and 2nd—4th apicals, which are fuscous. Near the base of the tegmen there is a broad, suboblique, fuscous band. Wings hyaline, veins fuscous. Length 4½ mm.

HAB. Hawaii, Kona, over 2000—3000 ft. (Sept.—Oct., 2 ♀♀, Perkins).

(4) *Nesothoë bobeae* Kirkaldy.

Nesothoë bobeae Kirkaldy, 1908, op. cit. text-fig. 2 (venation).

♂ ♀. Vertex and pronotum cinereous, the latter fuscous laterally with pale granules. Frons fuscous, (apically whitish), three or four elongate pale spots medially, the fourth nearly on the apical pale part, and very narrowly ringed with brown; also pale specks laterally. Clypeus fuscous; genae dark fuscous basally, pale apically. Scutellum sordid pale brown, fuscous laterally. Tegmina cinereous hyaline, veins pale, with dark fuscous granules closely set, corium and clavus suffused discally with fuscous, also sparsely on apical cells (especially the middle one), 1st—3rd apical veins suffused with dark fuscous. First segment of antennae black, second dark fuscous. Sterna and legs pale, the latter annulate with dark fuscous. Abdomen dark fuscous mostly. Frons about 2⅓ times as long as wide, narrow; lateral margins vertically reflexed. Labium reaching nearly to hind coxae. Second segment of antennae nearly three times as long as the first, which is as wide apically as long. Spur with seven spines. Length 4 mm.

In the male, the penultimate sternite is deeply subangulately emarginate, the last slightly so.

HAB. Oahu, Honolulu Mts. (Dec., 2 ♂♂, Perkins), Tantalus, 1300 ft. (Dec., Giffard, Perkins), on *Bobea*.

(5) *Nesothoë perkinsi* Kirkaldy.

Nesothoë perkinsi Kirkaldy, 1908, op. cit.

♀. Vertex, basal two-thirds of frons, base of genae, scutellum, etc. piceous; pronotum dark fuscous; keels, granules, and 15—16 specks on frons—some of which may fuse, forming three short transverse lines—pale brownish yellow. Apical third of

frons and apical $\frac{3}{4}$ of genae, whitish. First segment of antennae black, second brownish yellow. Tegmina cinereous hyaline, veins pale with fuscous granules, apical veins fuscous, first three suffused; an irregular smoky smudge near the middle of the corium, another on the apical cells interiorly, spreading a little on to the corium. Legs pale brownish yellow, femora marked and tibiae annulated, with brown. Tergites piceous or blackish, sutures pale. Frons scarcely twice as long as broad, lateral margins regularly rounded, frons little wider apically than at the base. Second segment of the antennae more than three times as long as the first. Spur with nine spines. Length ♀ $4\frac{7}{8}$—5 mm.

HAB. Oahu, Honolulu Mts. (Sept., Perkins, over 2000 ft., Oct., Perkins, 5 ♀♀); Tantalus (1906, Perkins); Palolo (March, 1800 ft., Swezey), on *Myrsine* sp.

(6) *Nesothoë piilani* Kirkaldy.

Nesothoë piilani Kirkaldy, 1908, op. cit.

Pale yellow, disk of scutellum fuscous. Vertex and base of frons sordid pale brownish yellow, rest of frons paler and clearer, with scarcely perceptible paler, short, cross lines. Antennae testaceous, extreme apex of first segment partly fuscous. Tegmina milky hyaline, an undulating fuscous line near the base of the tegmen and parallel with it, faintly smoky a little apical of this. Veins mostly pale, apical ones a little darker, granules brown. Legs pale, apex of femora and base of tibiae a little fuscate. Tergites more or less fuscate. Second segment of antennae more than three times as long as the first, which is scarcely longer than wide, lateral margins regularly rounded, frons a little wider apically than at base. Ovipositor dark. Length 5 mm.

HAB. Molokai, 3000 ft. (June, Perkins, 1 ♀ in bad condition).

(7) *Nesothoë terryi* Kirkaldy.

Nesothoë terryi Kirkaldy, 1908, op. cit.

Very close to the preceding, but smaller, the frons more clearly spotted apically and the tegmina not milky. Length $4\frac{1}{4}$ mm.

HAB. Oahu, Waialua, Koolau range (Perkins, 3 ♀♀, no. 428).

(8) *Nesothoë laka* Kirkaldy.

Nesothoë laka Kirkaldy, 1908, op. cit.

♀. Pale brownish yellow, scutellum fuscous between the keels. Frons slightly suffused with fuscous, with pale median keels and four specks on each side in a longitudinal row. Tegmina hyaline, tinged with yellowish cinereous, a little smoky in part; marginal vein tinged with sanguineous; other veins pale with closely set, small, fuscous

granules; a small short fuscous line on the corium near the apex of the clavus, the apices of most of the apical veins a little suffused. Legs yellowish white, fore tarsi banded with fuscous. Frons somewhat like that of *N. fletus*. Second segment of antennae about three times as long as the first, which is rather less cylindric than in the genotype, and which is much shorter than broad. Ovipositor dark. Length 5 mm.

HAB. Maui, Iao Valley, Western Mts. (March, Perkins, 1 ♀).

(9) *Nesothoë pluvialis* Kirkaldy.

Nesothoë pluvialis Kirkaldy, 1908, op. cit.

♀. Pale yellowish (or tinged with sanguineous); keels, three transverse lines—not nearly reaching the lateral margins—a few spots on frons etc., paler. Tegmina hyaline, basal half (except the base, etc.) faintly smoky, an irregular brown blotch on the apical cells, apices of apical veins suffused; granulations dark, close; marginal vein sanguineous. Tibiae and tarsi pale, base of former piceous; femora piceous, apex sanguineous. Tergites partly fuscous. Frons widening towards the apex, about three-fourths longer than wide apically. Antennae like those of the genotype, second segment about four times as long as the first, which is annuliform. Spur with seven or eight spines. Length 4—4½ mm.

HAB. Kauai, Halemanu, 4000 ft. (no. 510, May, Perkins, 1 ♀), and Koholuamano, 4000 ft. (no. 526, April, Perkins, 2 ♀♀); Head of Koloko Ditch, 800 ft. (Oct., Giffard).

(10) *Nesothoë silvestris* Kirkaldy.

Nesothoë silvestris Kirkaldy, 1908, op. cit.

Pale sordid fuscous; the frons with three transverse lines and some specks, and the apical margins narrowly, whitish yellow; genae apically pale; clypeus dark fuscous; antennae brownish white. Tegmina cinereous hyaline; veins naturally pale, but often suffused with dark fuscous; a curved dark fuscous stripe on the subcostal, extending over the middle three-fourths and touching the radial internally about the middle of the scutellar margin triangularly from this inwards, the corium and a part of the clavus smoky; apical and subapical veins mostly dark fuscous suffusedly, a blotch on the interior part of these cells; granules rather feeble, with pale hairs; subcostal cell pale brownish yellow, except where the curved stripe touches it basally and apically. Femora and tibiae brownish yellow, biannulate with dark fuscous, tarsi dark fuscous. Labium reaching to hind coxae. Spur with eight spines. Frons about twice as long as broad, about as wide apically as basally, lateral margins gently rounded; keels of genae and of frons not meeting apically. Second segment 2¾ times as long as the first, which is longer than broad. Length ♀ 4⅞—5 mm.

HAB. Lanai, Koele Mts., 2000 ft. (Jan., Perkins, 2 ♀♀).

Nesodryas Kirkaldy.

Nesodryas Kirkaldy, 1908, op. cit. pp. 201 & 203.

Somewhat allied to *Megamelus* Fieber, but the basal segment of the antennae is shorter than wide, not more than one-fourth of the length of the thickened second; the hind tibiae are distinctly longer than their tarsi, and the first segment of the latter is more than twice as long as the others together. Veins of tegmina feebly granulate; five apicals, the second and third with a common stalk, fourth forked near apex. Tibial spur solid, narrow, with 4—7 strong spines. Type *N. freycinetiae.* The species of this genus are perhaps the most delicate of all the Asiracidae.

The four species may be separated as follows:

1. Vertex and pronotum each with two small, but conspicuous, dark fuscous spots ..... 1 *freycinetiae* Kirkaldy.
1*a*. Vertex immaculate ..... (2)
2. Vertex and pronotum immaculate, pale ..... (3)
2*a*. Vertex black ..... 5 *dryope*, sp. nov.
2*b*. Vertex pale, pronotum dark smoky ..... 2 *elaeocarpi* Kirkaldy.
3. ♂ ♀. Pale greenish testaceous; tegmina milky coloured ..... 3 *giffardi* Kirkaldy
3*a*. ♂ ♀. Pale brownish yellow. ♂ tegmina greyish hyaline; ♀ tegmina yellowish hyaline with the interior half pale orange brown, or yellowish fumate ..... 4 *eugeniae* Kirkaldy.

(1) *Nesodryas freycinetiae* Kirkaldy.

Nesodryas freycinetiae Kirkaldy, 1908, op. cit. p. 203.

♂ ♀. Greenish testaceous (the green often fading locally), or even changing to pale orange brown; clavus and inner half of corium and of membrane, the abdomen, etc., suffused with pale reddish brown (sometimes also pronotum and scutellum). Vertex and pronotum each with a couple of small conspicuous blackish brown spots. Apex of first apical cell and adjoining exterior margin of tegmen, apex of inner apical cell, etc., fuscous. Vertical keels faint. Length ♂ ♀ 4—4½ mm.

The ♂ pygophor has a very long, subascendant, lateral spine on each side; the genital styles are narrow.

The nymphs have been described by Swezey (1908, P. H. E. S. II.).

Hab. Oahu, Honolulu Mts., 2000 ft. (Nov., Perkins, 1 ♀); Pacific Heights ridge, 1500 ft. (May, Swezey); Tantalus, 1300 ft. (Jan., April, Oct., Dec., Giffard), on Ieie (*Freycinetia arborea*); also reported from *Acacia koa*, but certainly in error.

(2) *Nesodryas elaeocarpi* Kirkaldy.

Nesodryas elaeocarpi Kirkaldy, 1908, op. cit.

Head, antennae, etc., greenish testaceous. Eyes blackish grey. Pronotum dark smoky. Labium and legs (except the black tip of the former, and black hind femora and base of hind tibiae) testaceous. Tegmina hyaline with a broad dark fuscous stripe

along the middle; veins not on this stripe testaceous. Wings pale smoky with dark brown veins. Tergites black; sternites mostly pale greenish. Pygophor, etc., black. Length ♀ 4½ mm.

HAB. Oahu, Tantalus (April, 1906, Perkins, Swezey), on *Elaeocarpus bifidus*.

(3) *Nesodryas giffardi* Kirkaldy.

Nesodryas giffardi Kirkaldy, 1908, op. cit.

Pale greenish, fading after death. Eyes and claws dark fuscous. Tegmina subhyaline milky, with white hairs; veins greenish testaceous (fading), a short fuscous line at the apex of the commissural cell; the base of the tegmina varyingly narrowly and rather faintly fuscous; interior apical cell usually faintly fuscous. Labium reaching to, or a little beyond, the base of the hind femora. Length ♂ ♀ 4—4½ mm.

HAB. Oahu, Maunawili, 800 ft. (Febr., March, Giffard, Swezey), on Olona (*Touchardia latifolia*) and *Cyrtandra grandiflora*; Tantalus (Perkins).

(4) *Nesodryas eugeniae* Kirkaldy.

Nesodryas eugeniae Kirkaldy, 1908, op. cit.

♂. Head, pronotum, scutellum and underside pale yellow. Tegmina subhyaline, appearing silvery grey basally owing to the dark body beneath, apical third pale smoky. Wings hyaline, veins dark.

♀. Pale luteous, or pale brownish yellow, testaceous beneath, immaculate; scutellum and tergites pale orange brown. Tegmina with exterior half of entire length more or less hyaline, inner half yellowish fumate, or pale orange brown, veins and granulations pale; sometimes the base of the commissural cell, apices of apical cells, etc., a little fuscous. Ovipositor blackish. Length ♂ 4, ♀ 4½ mm.

HAB. Oahu, Tantalus, 1300 ft. (Perkins; Jan., March, April, Giffard); Palolo (Sept., Swezey) on Ohiaha (*Eugenia sandwicensis*).

(5) *Nesodryas dryope*, sp. nov.

♀. Vertex shining black, also the pronotum (except the varyingly pale brownish posterior margin). Frons, genae, and antennae pale yellowish white, first segment of last partly blackish. Eyes reddish. Scutellum fuscous or blackish. Abdomen above blackish brown. Tegmina hyaline, basal veins colourless, the apical veins, the subcostal, and the veins of the wings, fuscous; an oblique fuscous smudge on the tegmina near the base, a dark fuscous mark near the apex of the clavus. Femora, and tibiae basally, dark fuscous, rest pale. Head dorsally longer than wide, produced a little in front of the eyes; keels strong and well cut; frontal keels uniting close to the base, filiform, not

parallel. First segment of antennae annuliform, second short, not reaching to the base of the clypeus. Tegminal veins feebly granulate, five apicals, the second forked near the base. Spur with 5—6 spines. ♀. Ovipositor scarcely as long as the pygophor. Tegmina reaching well beyond the apex of the abdomen. Length $3\frac{7}{8}$ mm.

HAB. Oahu, Tantalus (Feb., 1906, Perkins, ♀), ridge near Tantalus (Dec., Swezey, ♂); Kauai, Koloko (800 ft., Giffard, Oct.).

The type is a Tantalus specimen.

DICTYOPHORODELPHAX Swezey.

Dictyophorodelphax Swezey, 1907, P. H. E. S. I. p. 104.

(1) *Dictyophorodelphax mirabilis* Swezey.

Dictyophorodelphax mirabilis Swezey, 1907, op. cit. p. 105; and 1908, op. cit. II. 2, text-figg. 1—4.

Swezey has described and figured the ultimate nymph (1908, l.c.).

HAB. Oahu, Konahuanui, 2200—2500 ft., in mixed sweeping, but probably on sedges (Swezey, Terry, Feb., Dec.).

Fam. CHERMIDAE.

(= Psyllidae auctt. et huj. op. III. p. 113.)

Dr Perkins' collections from 1892—1902 are in the hands, I understand, of Mr E. A. Schwarz. I add only two to my former enumeration, though I took at least ten new species recently during a visit to Kilauea, Hawaii.

HEVAHEVA Kirkaldy (huj. op. III. p. 113).

(1) *Hevaheva monticola* Kirkaldy.

Hevaheva monticola Kirkaldy, 1908, P. H. E. S. I. p. 205.

I originally described this from a carded pair taken recently by Dr Perkins at an elevation of about 2000 ft. on Tantalus, Oahu. I have since secured a pair taken about the same place by Mr Swezey.

HAB. Oahu.

(2) *Hevaheva silvestris* Kirkaldy.

Hevaheva silvestris Kirkaldy, 1908, op. cit. p. 206.

Described from a single example taken by Dr Perkins on Tantalus; I have since secured another specimen taken at the same place by Mr Swezey.

HAB. Oahu.

Fam. APHIDAE.

There are apparently no endemic Aphidae in Hawaiia. In a recent paper (1907, P. H. E. S. I. pp. 99—102), I recorded four species, viz.: *Myzus citricidus* Kirkaldy, *Aphis rosae* (Linn.), *Loxerates sacchari* (Zehntner) and *Myzocallis kahawaluokalani* Kirkaldy. Aphids on *Sorghum*, *Sonchus*, Hibiscus and Cabbage, have not been studied sufficiently fully yet, and I recently found another species at Kilauea, Hawaii, on grasses etc. All these are probably introduced.

Fam. ALEYRODIDAE.

Six species of *Aleyrodes*, none apparently endemic, have been enumerated by Kotinsky in my recent Catalogue of this family (1907, Bull. Board Agric. Hawaii II.), viz.: *giffardi*, *hibisci*, *kirkaldyi* and *sonchi* of Kotinsky, *vaporariorum* Westwood, and an unnamed species on *Coffea*.

Fam. COCCIDAE.

Since the first part of this contribution was published, (huj. op. III. pp. 102 etc.), a revised list has been issued (1904, Entom. XXXVII. pp. 226—30, with a bibliography), totalling 53 species, a net increase of five.

Supplement

by R. C. L. Perkins

to

HYMENOPTERA.

Previously treated in Vol. I.

HYMENOPTERA.

In describing numerous additional species of Hawaiian Hymenoptera, I have, for convenience, arranged the genera and species nearly in accordance with Ashmead's Classification, as set forth in Vol. I. pp. 279—281 of this work, and have adopted the superfamily Divisions, as enumerated by him. At the same time, I think it would be more natural to combine the whole of the Aculeata together with the Chrysididae, Bethylidae and the Proctotrupoidea in one large group, as in fact Sharp has already suggested. Failing this, a greater number of superfamilies, equivalent to those of Ashmead, should be adopted, e.g. one for the Chrysididae and another for the Mymaridae. The latter appear to me to be equivalent to all the other families of the Chalcidoidea taken together. In any case Ashmead's characters for superfamilies and lesser groups need defining anew, for those that he gives are frequently altogether inadequate or incorrect. I need only instance the Chrysididae and Dryininae (Bethylidae) which he places in his Vespoidea, in spite of the fact that hosts of the species have not the thoracic structure he assigns to the superfamily. Similarly some characteristic Sphecoidea have the pronotal angles attaining the tegulae and would be placed in the Vespoidea in accordance with his tables. His characters for the Mymaridae are quite erroneous. In drawing up his generic characters I should imagine that his extraordinarily acute sight led him to almost entirely neglect the precaution of dissecting the smaller forms. The Monograph of North American Proctotrypidae, the most elaborated of his works, suffers greatly from this neglect. Most of the genera, that I have examined, in that group, have quite different mouth-parts from those described by him. It is much to be desired that a thorough revision of Ashmead's tabular classifications should be made by those entomologists, who have access to his collections. It is greatly to be deplored that he should not have lived to accomplish this himself, after having laboured so long and so successfully for the advancement of our knowledge of his favourite Order of insects.

APOIDEA.

Fam. PROSOPIDAE.

NESOPROSOPIS Perkins.

Nesoprosopis Perkins, huj. op. I. p. 75.

I have made a dichotomous table for distinguishing the numerous species of this large genus. The females I am unable to tabulate at present. Unfortunately one species *N. nivalis*, of which the male is known, was omitted in the table. It would there be identified as *N. anthracina*, from which it is at once distinguished by the unusually long hairs clothing the front of the head and the thorax and the yellow base to the hind tibiae.

Another species, *N. crabronoides*, was not known to me in the male sex, when I made the table, but I have since taken it numerously at Kilauea, the only known locality for this remarkable little insect. It may be included in the following manner:

20. Prothorax with yellow marking ..... 20*a*.
Prothorax without yellow marking ..... 23.
20*a*. Hind tibiae widely yellow at the base but the tarsi entirely dark ..... *N. crabronoides*.
Hind tibiae or tarsi or both otherwise coloured ..... 21.

Synopsis of *Nesoprosopis* ♂♂.

1. Genital armature with the stipites produced so that in dorsal aspect they extend far behind the apex of the sagittae, more or less membranous apically and forming an apical (often blunt) angle at the end of their inner margin, this apical part being more or less deflexed ..... 2.
Genital armature usually with the stipites hardly or not at all extending beyond the apex of sagittae in dorsal aspect, their apex well rounded not forming an angle inwardly with the inner margin and not membranous ... 5.
2. Posterior tibiae not distinctly whitish or yellow at the base ..... 3.
Posterior tibiae white or yellow at the base ..... 4.
3. Stipites of genital armature fringed with hairs right to the apical inner angle ... *N. simplex*.
Stipites with hairs on their outer margin, which become very short and inconspicuous or altogether fail near the apex ..... *N. facilis*.
4. Process of eighth ventral segment with long bifurcation at apex; face not very wide ..... *N. chlorosticta*.
Process of eighth segment without long apical bifurcation; face very wide..... *N. hirsutula*.
5. Second segment of the abdomen without a definite puncturation and never with a distinct metallic reflection, species rarely large ..... 6.
Second segment evidently punctured or with a metallic reflection; species large ..... 37.
6. Process of eighth ventral segment linear or sublinear, not dilated; face below the antennae never with three widely separated yellow spots ..... 7.
Process of eighth ventral segment nearly always dilated, at least expanded at its flexure; or if not dilated the face below the antennae bears three widely separated yellow spots ..... 10.

7. Scape of antennae not much dilated, about twice as long as wide on its broad surface ..... 8.
   Scape of antennae strongly dilated, subtriangular, not twice as long as wide ... *N. anthracina.*
8. Cheek between the eye and mandible distinct and rather long, plate above the clypeus generally narrow and elongate, basal joint of antennae less arched beneath ..... *N. volcanica.*
   Cheek short or very short, plate above the clypeus short; scape more strongly arched beneath ..... 9.
9. Process of eighth ventral segment without a longish apical bifurcation; pubescence of mesonotum rather long ..... *N. difficilis.*
   Process of eighth segment with longish bifurcation: pubescence of mesonotum short ..... *N. laeta.*
10. Scape of antennae little or not at all dilated, twice as long as wide or more than twice, face below the antennae wholly or nearly all yellow, at most the post-clypeal plate and the clypeal sutures being black, the yellow colour always continued back above the line of insertion of the antennae along the inner orbits; abdomen never conspicuously ferruginous on the basal segments ..... 11.
    Scape nearly always distinctly, often strongly, dilated, nearly always less than twice as long as wide; in species, where least dilated, with the hind margin at least strongly curved not very gently curved as in the above group, frequently subtriangular or even subcordiform; face in front of the antennae rarely largely yellow and with this colour produced behind the antennae along the eye-margins and if so then either the hind margin of the scape is quite strongly rounded or the basal abdominal segments are ferruginous ..... 15.
11. Face wholly yellow in front of the antennae ..... 12.
    Face not wholly level in front of the antennae, at least part of the post-clypeal plate black, the yellow colour produced back along the eye-margins as a narrowing vitta ..... *N. obscurata.*
12. Scape of antenna with a yellow mark apically or with a complete yellow line ... *N. blackburni.*
    Scape not so marked; face elongate ..... 13.
13. Posterior tibiae yellow with a fuscous stain behind ..... *N. flavipes.*
    Posterior tibiae black at most yellow at the base and apex ..... 14.
14. Face longer, apical margin of post-clypeal plate much shorter than its sides to the antennal fossa ..... *N. longiceps.*
    Face shorter, apical margin of post-clypeal plate about as long as its side ..... *N. finitima.*
15. Abdomen not conspicuously ferruginous on the basal segments; at most (as a variation) with a piceous, dull reddish or immature appearance ..... 16.
    Abdomen conspicuously ferruginous basally ..... 35.
16. Scape of antennae not arched beneath, its lower edge straight or almost straight ..... 17.
    Scape distinctly arched beneath ..... 20.
17. Anterior area of propodeum somewhat coarsely rugose all over ..... *N. haleakalae.*
    Anterior area at most with short wrinkles in front; species very small ..... 18.
18. Process of eighth ventral segment not distinctly dilated ..... *N. mutata.*
    Process dilated dorsoventrally ..... 19.
19. A very conspicuous deep black median area behind the antennae ..... *N. dumetorum.*
    Deep black area not or hardly noticeable ..... *N. angustula.*
20. Prothorax with yellow marking ..... 21.
    Prothorax without yellow marking ..... 23.

21. Face extremely wide; the supra-clypeal plate extremely wide and short .....22.
Face not wide and transverse; supra-clypeal plate with the apical margin about equal in length to its side as far as the antennal fossa .....*N. kona.*
22. Clypeus for the most part or entirely yellow; wings nearly clear .....*N. kauaiensis.*
Clypeus with a yellow spot, wings dusky .....*N. unica.*
23. Yellow markings of face continued up far behind the antennae along the eye-margins as a broad vitta .....*N. inquilina.*
Yellow markings rarely continued back behind the antennae and then only for a short distance or as a rapidly narrowing vitta .....24.
24. Face extremely wide and transverse across the eyes in front view; clypeus black, but yellow spots on each side of the face between the clypeus and the eyes are sometimes present.....*N. laticeps.*
Clypeus generally yellow-marked, if black the face is not transverse .....25.
25. Scape of antennae very strongly dilated, subcordiform; face below the antennae entirely yellow or almost entirely .....*N. flavifrons.*
Scape not so shaped, often elongate triangular, the anterior margin not strongly rounded .....26.
26. Clypeus with a large yellow spot or all yellow, sometimes there is a small spot outside the clypeus near to or touching its side margin on each side .....27.
Clypeus either with a small yellow spot or entirely black, or if with a large yellow spot or nearly all yellow then there is a large yellow generally more or less triangular-shaped spot between the clypeus and the eye-margin on each side, these spots always distinct from the yellow clypeal spot .....28.
27. Wings dusky, hind tibiae not yellow at the base, plate above the clypeus black .....*N. koae.*
Wings clearer, hind tibiae yellow at the base, supra-clypeal plate more or less yellow.....*N. vicina.*
28. Very small narrow species, with excessively short wrinkles at the anterior margin of the propodeum, the rest of the dorsal surface of which is smooth, except for microscopic surface sculpture; clypeus black, mesothorax not clothed with dark hairs .....*N. mauiensis.*
Species not very small and narrow; propodeum generally rugose or rugulose to the brow or nearly; clypeus generally yellow-marked, if black, the mesonotum is clothed with long black hairs .....29.
29. Clypeus and sides of face either black or yellow-marked, variable, antennal scape very deeply arched beneath; mesonotum with long erect black hairs .....*N. melanothrix.*
Antennal scape gently or moderately arched, mesonotum not clothed with long black hairs .....30.
30. Plate above the clypeus always short and wide, wider than long to the point where its sides meet the antennal fossae .....31.
Plate above the clypeus as long or longer than wide to the point where its sides meet the antennal fossae .....32.
31. Clypeus only bearing a yellow spot.....*N. comes.*
Face below the antennae with three yellow spots .....*N. coniceps.*
32. Clypeus black .....*N. ombrias.*
Clypeus yellow or marked with yellow .....33.
33. Head posteriorly strongly emarginate, so that the vertex is much shorter medially than at the sides .....*N. sphecodoides.*
Head lightly emarginate, the length of vertex in the middle and at the sides not greatly different .....34.

34. Wings darker and facial markings generally much smaller ..... *N. assimulans*, var. *oahuensis*.
Wings clearer and facial markings larger ..... *N. assimulans*.
35. Yellow colour of the face continued far behind the antennae as a broad vitta along the eye-margins ..... 36.
Yellow colour if continued behind the antennae forming a narrowing vitta, pointed at its termination ..... *N. volatilis*.
36. Scape of antenna pale above anteriorly, mandibles with a yellow line ..... *N. hostilis*.
Scape entirely pale above, mandibles without a yellow line ..... *N. hilaris*.
37. Abdomen ferruginous ..... *N. paradoxica*.
Abdomen not ferruginous ..... 38.
38. Scape excessively dilated, the front margin very strongly rounded (prothorax never with a yellow line or spots) ..... 39.
Scape not excessively dilated, its front margin at most only gently rounded, prothorax sometimes with a pale line or spots ..... 40.
39. Scape of antennae strongly transverse, front margin extremely strongly rounded *N. insignis*.
Scape less wide and its front margin less strongly rounded ..... *N. satelles*.
40. Face dotted with rather short erect black hairs, for the most part evenly, between the antennae and apex of clypeus; two large facial spots below the antennae and sometimes the clypeus also with pale marking ..... *N. setosifrons*.
Face not so clothed ..... 41.
41. Prothoracic pale band very broad, hind tibiae almost entirely creamy white, wings very dark with steely iridescence, face black (?always) ..... *N. perspicua*.
Without some or any of these characters ..... 42.
42. Wings above (when expanded) fuscous, without conspicuous blue or violet iridescence ..... 43.
Wings with conspicuous blue or violet iridescence ..... 45.
43. Face below the antennae with pale markings ..... *N. anomala*.
Face without pale markings ..... 44.
44. Pronotum with an entire or almost entire pale band ..... *N. fuscipennis*.
Pronotum rarely with an entire band sometimes all black ..... *N. pubescens*.
45. Apical abdominal segments with dark hairs, second ventral segment less raised from the base, pronotum always with an entire or almost entire band ..... *N. caeruleipennis*.
Apical segments pale-haired, second ventral segment more raised, pronotum black, or with pale spots or a broken band, rarely with an entire one ..... *N. pubescens* var.

(1) *Nesoprosopis ombrias*, sp. nov.

Male black, the legs more pitchy, the tarsi paler, the front tibiae yellow in front the flagellum of the antennae dull reddish beneath, clypeus black, a yellow spot on the face on either side of it, probably sometimes absent. Cheek very short, the base of the mandibles nearly touching the eye, the plate above the clypeus not very wide, its apical side about as long as its lateral one to the antennal fossa, the front of the head densely and shallowly punctured. Scape of antennae subdilated, its upper side strongly rounded, about twice as long as its greatest width, seen from in front slightly arched beneath. Mesonotum excessively dull with dense minute surface sculpture, finely and very shallowly punctured, the scutellum more closely. Propodeum with its anterior area entirely rugose. Wings smoky brown, with some blue iridescence. Abdomen less dull than

the thorax, having a very fine and close surface sculpture, and excessively fine indefinite puncturation.

Female, except for the usual sexual differences, like the male in sculpture, etc., the face entirely black, the front tibiae somewhat reddish in front. Mesonotum and scutellum excessively dull, finely and very shallowly punctured and the propodeum rugose as in the other sex. Wings smoky brown. Puncturation of the abdomen excessively fine and feeble or indefinite, apical segment clothed with fuscous hairs. Larger than the ♂. Length 7—10 mm.

Closely allied to *N. assimulans*, but quite easily distinguishable. The female is one of the largest of the species having no well-defined abdominal puncturation.

HAB. Hawaii, Kona district.

(2) *Nesoprosopis flavipes*, Sm.

Nesoprosopis flavipes Smith, huj. op. 1. p. 99.

This is apparently a distinct species, which I have now taken on Hawaii. It is extremely close to *N. blackburni* Sm.

HAB. Hawaii, a coast or low-land species.

Fam. MEGACHILIDAE.

(1) *Lithurgus* sp.?

HAB. Oahu, widely distributed and sometimes abundant. First appeared about 1900.

SPHECOIDEA.

(= Fossores huj. op. 1. p. 7.)

Fam. PEMPHREDONIDAE.

Subfam. *PSENINAE.*

STIGMUS Jur.

(1) *Stigmus inordinatus* FOX.

Stigmus inordinatus Fox.

A single specimen of a *Stigmus* was taken in Honolulu some years ago, but the species has not since been met with. I sent a description to Dr Ashmead of Washington, who informed me that it agreed well with the above, found in California and Colorado.

HAB. Oahu, Honolulu.

Fam. TRYPOXYLONIDAE.

TRYPOXYLON Latr.

(1) *Trypoxylon bicolor* Sm.

Identified by Dr Ashmead. It is an Oriental species, not known to occur in 1897, but common in 1900 at Hilo, Hawaii. It has now spread to Oahu and probably to the other islands, as it often nests in furniture, chairs, etc.

HAB. Hawaii, Oahu.

PISON Spinola.

Vide huj. op. 1. p. 14.

(1) *Pison* sp.?

A third species of this genus has been introduced recently and is now very abundant in Honolulu. I find that *P. iridipennis* was common here in 1900, but it is now lost amongst the great numbers of the new species.

HAB. Oahu, Honolulu.

Fam. CRABRONIDAE.

In the Trans. Ent. Soc. London, 1902, p. 145 et seq. I divided the Hawaiian Crabronids into five groups or genera, including *Nesocrabro*, already characterized in this work.

Xenocrabro includes all the species other than those previously referred to *Nesocrabro*, excepting *Crabro abnormis* now *Oreocrabro*, *Crabro tumidoventris* now *Hylocrabro*, and *Crabro curtipes* now *Melanocrabro*. The species assigned to *Xenocrabro* are clearly very closely allied to the common European species called *Crabro* or *Solenius vagus*, and I believe the other Hawaiian forms are all related to or derived from *Xenocrabro*.

NESOCRABRO Perkins.

Nesocrabro adspectans, Blackb.

Nesocrabro daemonius Perkins, huj. op. 1. p. 28.

Having seen the types of *N. adspectans*, I see no specific characters to distinguish *N. daemonius*.

Nesocrabro rubrocaudatus, Blackb.

Nesocrabro bidecoratus Perkins, huj. op. 1. p. 27.

As I anticipated, this is nothing more than a very remarkable variety of the above species.

Fam. EUMENIDAE.

PSEUDOPTEROCHEILUS Perkins.

Pseudopterocheilus Perkins, Ent. Mo. Mag. XXXVII. p. 266.
To this genus belong the following species.

Pseudopterocheilus pterocheiloides, P.

Odynerus pterocheiloides P., huj. op. I. p. 69.

Pseudopterocheilus congruus, Sm.

Odynerus congruus Smith, huj. op. I. p. 69.

Pseudopterocheilus relictus P.

Pseudopterocheilus relictus P., Proc. Hawaii Ent. Soc. I. p. 63; not *Odynerus relictus* P., huj. op. I. p. 74.

OBS. There is found on the coast of Kauai a species, the male of which is almost inseparable from *P. congruus* and *P. hawaiiensis*. Until the female is discovered, it, however, would be rash to consider it as being identical with either of these species, as the males of *Pseudopterocheilus* exhibit specific differences much less strongly than the females.

CHELODYNERUS P.

Chelodynerus Perkins, Tr. Ent. Soc. London, 1902, p. 136.

Chelodynerus chelifer, P.

Odynerus chelifer P., huj. op. I. p. 70.
Chelodynerus P., Proc. Hawaii Ent. Soc. I. p. 68.

NESODYNERUS P.

Nesodynerus Perkins, Ent. Mo. Mag. XXXVII. p. 277.
The following species mostly referred originally to *Odynerus* belong to my genus *Nesodynerus*.

Nesodynerus rudolphi, D. T.

Odynerus rudolphi D. T., huj. op. I. p. 46.

Nesodynerus conifer, P.

Odynerus conifer P., huj. op. I. p. 38.

Nesodynerus dilatatipes, P.

Odynerus dilatatipes P., huj. op. I. p. 37.

Nesodynerus vittativentris, P.

Odynerus vittativentris P., huj. op. I. p. 65.

Nesodynerus cooki, P.

Odynerus cooki P., huj. op. I. p. 64.

(1) *Nesodynerus paractias* P.

Nesodynerus paractias P., Pr. Hawaii Ent. Soc. I. p. 73.

Nesodynerus oblitus, P.

Odynerus oblitus P., huj. op. I. p. 74.

Nesodynerus eupteryx, P.

Odynerus eupteryx P., huj. op. I. p. 47.

(2) *Nesodynerus optabilis* P.

Nesodynerus optabilis P., Proc. Hawaii Ent. Soc. I. p. 61.

This species has not been described at length, but only distinguished by such characters, as are given in my tables of the species of *Odynerus* of the island of Oahu. It is superficially somewhat like *N. rudolphi*, *Odynerus montanus*, *O. unicus* and others from Oahu.

Black, shining, wings deeply infuscate and with purple iridescence. Clypeus impressed at the apex and distinctly emarginate. Head shining, puncturation inclining to be rugose. Mesonotum with the larger punctures very sparse and irregular, the finer ones between these distinct, irregular and not dense, parapsidal furrows complete and distinct; scutellum finely and sparsely and rather indefinitely punctured, propodeum nearly smooth, shining, trenchant at the sides. Basal abdominal segment shallowly and remotely punctured, second very convex, subtuberculate in dorsal aspect; beneath, the costae moderate, the depression subtriangular, distinct, but not deep. Wings with the two recurrent nervures about as distant from each other, as the first is from the basal lower angle of the second cubital cell, distance from second recurrent nervure to the apical lower angle of the cell rather greater than the distance between the recurrent nervures; the second cubital cell is wider above, less triangular, than in *N. rudolphi*.

HAB. Oahu, Waialua district, outside the forest, flying over ferns.

Odynerus iopteryx P.

O. iopteryx Perkins, huj. op. I. p. 63.

O. illudens P., Ent. Mo. Mag. (2) XII. p. 267.

The unique specimen, on which I described *O. iopteryx*, was a somewhat abnormal example.

HAB. Oahu; widely distributed, coast and mountains.

Odynerus acoelogaster P.

O. acoelogaster P., huj. op. I. p. 65.

O. relictus P., t. c. p. 74.

O. lithophilus P., Ent. Mo. Mag. (2) XII. p. 267.

O. lithophilus, Pr. Hawaii Ent. Soc. I. p. 72.

The original description was based on an abnormal example; *O. relictus* was founded on a very old unique specimen in the British Museum from the Beechey collection. The proper description of this variable species is in the Proceedings of the Hawaiian Entomological Society as cited above. The original name is fortunately quite applicable to the species in all its varieties.

Odynerus egens P.

O. egens P., huj. op. I. p. 61.

O. infaustus P., t. c. p. 73.

The latter described from a very old specimen of the Beechey collection is no doubt identical with *O. egens*.

(1) *Odynerus thersites*, sp. nov.

Black, teeth of mandibles more or less red, sometimes a spot behind the eyes and a median frontal spot yellow. Wings hyaline and subinfuscate, with a bluish or violaceous iridescence in some lights. General appearance that of *O. peles*, but the clypeus is quite deeply emarginate and bidentate; the head above the antennae with excessively dull surface and a very scanty and feeble, in fact hardly discernible punctuation. Mesonotum excessively dull, with remote and very faint punctures, the propodeum rugose. Basal segment of the abdomen with largish but shallow punctures, the second simply convex, beneath the costae well-developed, the depression not defined but represented by a faint median impressed line. Male; length 6—8 mm.

An overlooked species, very likely previously confounded by me with the variable *O. peles*, but nevertheless distinct.

HAB. Hawaii in the mountains at 4000 ft. or more.

Odynerus peles P.

O. peles P., huj. op. I. p. 39.

The puncturation of this species varies a good deal in intensity and I do not feel sure that, even after the segregation of *O. thersites* described above, there are not more than one species under the name of *O. peles*. Specimens taken in wet districts at moderate elevations of two or three thousand feet and others found below the 1000 ft. line are generally more strongly punctate than those taken at 4000 ft. and upwards.

(2) *Odynerus lipocharis*, sp. nov.

Black, the first abdominal segment inconspicuously or interruptedly margined with yellow. Wings very darkly infuscate and with blue iridescence. Clypeus impressed at apex and bidentate, but only slightly emarginate, closely punctate. Front very closely rugosely punctate. Mesonotum coarsely and closely punctured, the interstices between the coarse punctures shining and punctulate; scutellum strongly punctured. Propodeum rugose, the side-margins explanate. Basal abdominal segment strongly and closely punctured, second segment very strongly tuberculately raised, highest point rather in front of the middle of its length; beneath with rather shallow, but distinct, depression, the middle costae long. Male; length 11 mm.

Allied to *O. konanus, hiloensis* etc., and superficially unlike any other Kauai species, as well as being quite distinct structurally.

HAB. Kauai, near Lihue, at no great elevation above the sea.

(3) *Odynerus subegens*, sp. nov.

Very like *Odynerus egens* P., but readily distinguished by the puncturation of the thorax, which, though very fine and feeble, is distinct. The apex of the clypeus is not red.

HAB. Hawaii, 4000 ft.

The following species of *Odynerus* have been described by me since the publication of Vol. I. pt. 1 of this work, in the Proc. Hawaii Ent. Soc., Vol. I. pp. 70—74 and in the preceding tables, pp. 61—70.

(4) *Odynerus homoeophanes* P.

O. homoeophanes P., t. c. p. 70.

HAB. Oahu.

(5) *Odynerus eucharis* P.

O. eucharis P., t. c. p. 71.

HAB. Oahu.

(6) *Odynerus pseudochromoides* P.

O. pseudochromoides P., t. c. p. 71.

HAB. Oahu.

(7) *Odynerus paludicola* P.

O. paludicola P., t. c. p. 71.

HAB. Oahu.

(8) *Odynerus paranaias* P.

O. paranaias P., t. c. p. 71.

HAB. Oahu.

(9) *Odynerus epipseustes* P.

O. epipseustes P., t. c. p. 72.

HAB. Oahu.

(10) *Odynerus tempe* P.

O. tempe P., t. c. p. 72.

HAB. Maui.

(11) *Odynerus monas* P.

O. monas P., t. c. p. 73.

HAB. Molokai.

(12) *Odynerus aprepes* P.

O. aprepes P., t. c. p. 73.

HAB. Maui.

(13) *Odynerus xerophilus* P.

O. xerophilus P., t. c. p. 72.

Represents on Oahu the *O. scoriaceus* P. of Hawaii and the *O. molokaiensis* of the intermediate islands.

HAB. Oahu.

(14) *Odynerus acyanus* P.

O. acyanus P., t. c. p. 63.

HAB. Oahu.

The following species were described in the Trans. Ent. Soc. London, 1902, pp. 131—140.

(15) *Odynerus cypris* P.

O. cypris P., t. c. p. 138.

HAB. Hawaii.

(16) *Odynerus eutretus* P.

O. eutretus P., t. c. p. 138.

HAB. Hawaii.

(17) *Odynerus holomelas* P.

O. holomelas P., t. c. p. 138.

HAB. Hawaii.

(18) *Odynerus crypterythrus* P.

O. crypterythrus P., t. c. p. 139.

HAB. Hawaii.

(19) *Odynerus newelli* P.

O. newelli P., t. c. p. 139.

HAB. Hawaii.

(20) *Odynerus mesospilus* P.

O. mesospilus P., t. c. p. 140.

HAB. Hawaii.

Fam. BETHYLIDAE.

Vide p. 282 huj. op. Tom. I.

The Hawaiian species of *Scleroderma* and *Sierola* are endemic, those of *Holepyris* are introduced and usually found in houses. One or two other genera also occur in houses or more rarely outside, being parasitic on insects attacking grain or seeds, while one is parasitic on the minute beetle, *Hypothenemus eruditus* Westw.

(1) *Scleroderma euprepes*, sp. nov.

Head black, two basal joints of antennae, the legs, and the pronotum yellow, rest of the antennae sordid yellow or infuscate, the rest of the thorax brown, very dark at the sides, along the anterior margin of the propodeum, abdomen dark brown.

Head much wider than the thorax, with minute microscopic reticulation, which prevents it from being very shining, and some sparse feeble punctures, sparingly pilose. Length of eye about half the distance from its upper edge to the occiput. Antennae

rather long, the pedicel about as long as the two following joints together, the third a little longer than the fourth, none of the funicle joints being at all strongly transverse. Thorax duller than the head, similarly sculptured, the propodeum and pronotum subequal, the former widening posteriorly and impressed along its front margin. Abdomen much more shining than the thorax and as long or rather longer than the head and thorax together. Length, ♀ 4·25 mm.

HAB. Kauai, 4000 ft.

(2) *Scleroderma poecilodes*, sp. nov.

Head dark brown, pronotum yellow, rest of thorax dull brown, the propodeum more or less yellowish. Abdomen brown at base and apex, the intermediate segments black or nearly so, the apical margins being pale, the basal segment yellowish at the sides basally. Legs with the femora and tibiae brown, more or less yellow-tinged, the tarsi paler, yellowish. Antennae yellow, the flagellum with the joints more or less sordid or darkly annulate.

Head shining, much wider than the thorax, with very fine reticulate sculpture of the surface, the eyes about half as long as the distance from their upper margin to the occiput; antennae stout, the pedicel about as long as the two first funicle joints, the funicle joints short and most of them strongly transverse. Thorax much duller than the head, similarly but rather more strongly sculptured, and like it sparsely pilose, the proportion of the parts much as in *S. euprepes*; abdomen shining, with very fine but evident sculpture of the surface, as long or rather longer than the head and thorax together. Length, ♀ 3 mm.

HAB. Oahu; near Honolulu, 1500 ft.

(3) *Scleroderma chlorodes*, sp. nov.

Head yellowish brown or testaceous, the thorax a little paler, yellow, legs entirely pale, concolorous with the thorax or almost so. Abdomen with the basal and apical segments more or less pale, being brown or rufescent, the intermediate segments black or blackish brown with pale apical margins. Scape and pedicel of the antennae yellow, the rest also yellowish, but infuscate, or with dark annulations.

Head somewhat, but not much, shining, owing to the surface sculpture, and bearing a few very fine feeble punctures; antennae shortish and thick, formed much as in *S. poecilodes*, with the funicle joints mostly very short and transverse. Thorax dull, propodeum a good deal wider posteriorly than on its anterior margin. Abdomen more shining than the thorax, but with the surface sculpture distinct, sparsely pilose, about as long as the head and thorax together. Length, ♀ 3 mm.

HAB. Oahu; Waianae mountains.

(4) *Scleroderma sophorae*, sp. nov.

Head and thorax brown, rarely altogether concolorous, the prothorax usually being distinctly paler (more yellowish) than the sordid parts behind it, the head too (except anteriorly) is more often concolorous with the paler pronotum, than with the mesonotum and propodeum. Antennae entirely pale, the funicle joints with fuscous rings. All the legs are yellowish-tinged, but they are for the most part of a dark colour, brownish or sordid, with yellow tarsi. The basal segment and tip of the abdomen are brown or yellowish brown, the intermediate segments black or dark brown, with the apices somewhat widely pallid. When the intermediate segments are paler than usual, the basal segment is always paler still (more yellowish).

Head very long and narrow, parallel-sided, the eyes only about one-third as long as the distance from their upper margin to the occiput; the surface appears smooth, the minute reticulation, distinct enough under high powers of the compound microscope, being invisible under a very strong lens; on the thorax, however, the reticulation can be distinguished with the latter, appearing as an excessively fine puncturation or shagreening. The antennae are short, the funicle joints for the most part strongly transverse, the pedicel as long as the two next joints together. Abdomen more shining than the thorax, and as long or a little longer than the latter and the head together. Length, ♀ 2·5 mm.

Hab. Hawaii, 4000 ft.; bred from the dead wood of *Sophora*.

Obs. It is clear to me from the examination of this species and from others, of which I have seen a number of examples obtained in company, that slight differences of colour are not of specific value in this genus. Further, the abdominal segments are subject to retraction and I suspect that Ashmead's *S. breviventre* is an unnaturally contracted specimen.

Sierola Cameron.

(1) *Sierola dichroma*, sp. nov.

Female black, the lower part of the face, the head about the posterior angles, the pronotum and mesonotum ferruginous, legs, scape of antennae and mandibles paler, yellow testaceous or whitish, rest of antennae infuscate or sordid, abdomen brown-black, paler in parts.

Male ferruginous, a dark cloud about the ocelli, a black transverse one along the scutellar and propodeal suture, the base and about five transverse indefinite fasciae on the abdomen dark, mandibles whitish, legs pale yellow, base of antennae clear yellow, the rest more sordid or brownish.

Head in both sexes very broad, the temples rounded, the surface dull and coriaceous and with distinct, remote, shallow punctures. Antennae moderately long, the

flagellar joints moniliform, not transverse, the pedicel and first funicle joint cylindrical, the former slightly the longer, both being decidedly elongate. Thorax not quite so dull as the head, the mesonotum with shallow sparse punctures, the rest almost impunctate, but with minute surface sculpture. Wings subinfuscate, stigma and parastigma dark fuscous, the veins lighter, but still dark. Abdomen smooth and shining, the apical margins impressed so as to make large angular emarginations in the surface of the segments in the middle. Length 3—3·5 mm.

In some examples the abdomen is nearly uniformly dark brown.

HAB. Oahu; 1500 ft. and upwards.

HOLEPYRIS Kieff.

(1) *Holepyris? hospes*, sp. nov.

Black, the antennae and legs ferruginous, the coxae mostly dark brown, the front femora posteriorly and the hind ones outwardly more or less infuscate or darkened, mandibles, clypeus, apical abdominal segment, and the impressed margin of the pronotum also ferruginous.

Clypeus with a longitudinal median carina, head dull, finely and not densely, but distinctly, punctured, eyes pilose. Antennae 13-jointed, the pedicel subequal to or rather longer than the first funicle joint; joints of the funicle mostly subequal and a little longer than wide. Pronotum as long as the mesonotum and scutellum together, very dull and very finely punctured, the punctures of unequal size. Mesonotum much shorter than the scutellum, the latter with a transverse basal impression, both dull and finely punctured; propodeum longer than the mesonotum and scutellum together, abruptly truncate posteriorly, the truncation margined; a median raised line reaches right through to the truncation, on each side of this are two other lines, which do not attain the truncation, and between all these lines the surface is shagreened; external to these lines, between the outer ones and margined sides of the propodeum the surface is obliquely rugulose. There is a well-developed tooth on the underside of the claw of the anterior tarsi near its middle. Wings hyaline, neuration yellow, stigma divided in the middle by a white space, so as to form a prostigma, at least not much less developed than in *Sierola*. Abdomen smooth and shining, the apices of the segments except the first pale. Length, ♀ 4·5 mm.

HAB. Oahu; Honolulu.

OBS. This species seems to me certainly congeneric with *Epyris hawaiiensis* Ashm., which Kieffer refers to his genus *Holepyris*. *E. hawaiiensis* is a domestic species, common in houses, and rarely seen outside. It is certainly introduced, as also is *H. hospes* now described.

Fam. COSILIDAE.

SIEROLOMORPHA Ashm.

(1) *Sierolomorpha hospes*, sp. nov.

Female black, smooth and shining, legs, except the coxae, which are more or less dark, tip of abdomen, apex of clypeus, second and third antennal joints all pale-coloured, yellowish brown or testaceous; scape of antennae dark brown but paler at base and apex, antennae except the above-mentioned joints sordid, but more or less reddish-tinged; wings infuscate, stigma fuscous.

Head smooth and shining, very remotely and sparsely punctured, the ocelli in a triangle widest at base, antennae 12-jointed, scape rather short, the pedicel subovate and subequal to the first funicle joint, which is decidedly shorter than the second, apical joint much longer than the preceding one. Thorax very sparsely punctate and sparingly pilose, smooth and shining except the impressed front of the pronotum, parapsidal furrows subconvergent posteriorly, not reaching the front margin of mesonotum; scutellum with a deeply impressed transverse line in front; propodeum with a transverse costate sulcature in front and a median rough triangular area, the rest smooth. Abdomen smooth and shining, very sparsely pilose and punctate. Wings with only one cubital and two discoidal cells bounded by true nervures, the second recurrent nervure and the second of the transverse cubiti indicated only by white lines, the first transverse cubitus also incomplete above. Length 4 mm.

Ashmead figures the wing of the type of this genus, Bull. U.S. Nat. Mus. XLV. Pl. IV. fig. 2, as *Sierola* Cam.? Kieffer assigns *Sierolomorpha* to the Bethylidae, as Ashmead did originally, removing it later to the Cosilidae.

HAB. Oahu, Honolulu, 1906.

PROCTOTRUPOIDEA.

Fam. CERAPHRONIDAE.

Subfam. *CERAPHRONINAE.*

CERAPHRON Jur.

(1) *Ceraphron plebeius*, sp. nov.

Black, the scape of the antennae and the legs except the coxae brownish yellow or testaceous, the front femora more or less darker, brown.

Head and thorax very densely finely punctured or shagreened; pedicel of the antennae elongate, longer than the next joint, which is itself elongate and longer than the following one; second, third and fourth funicle joints small and short, the following ones a good deal larger than these and subequal, and not evidently transverse; scutel-

lum distinctly shining and smoother posteriorly; posterior lower angles of the propodeum spinose. Wings hyaline and lightly infuscate, radius given off from the marginal vein before the apical third of the length of the wing. Second abdominal segment longitudinally costate on about its basal third, for the rest polished and impunctate. Length, ♀ 1—1·5 mm.

HAB. Oahu; Honolulu.

(2) *Ceraphron abnormis*, sp. nov.

Ferruginous, the apex of the scape of the antennae black, as well as all the other joints, excepting that the pedicel may be somewhat pale. Abdomen with a dark transverse basal band, and the apical segments also black or dark, this colour beginning usually about the middle of the large second segment.

Head dull densely sculptured, shagreened, scape of antennae attenuate towards the apex, pedicel in the ♂ very small, the first flagellar joint about three times as long as wide, a little longer than the following, which are subequal; pedicel in the ♀ elongate, rather more than half as long as the very elongate first funicle joint, which is double the length of the second funicle joint; subapical joints of the funicle rather longer than wide. Thorax densely punctate, or shagreened, the scutellum smooth and polished posteriorly, the metanotum prominently angulate in the middle. Abdomen with long regular longitudinal costae at the base, for the rest smooth and shining, glabrous, the head and thorax bearing a very short pubescence. Length about 2 mm.

It is doubtful whether this insect is a true *Ceraphron*, as it has the parapsidal furrows distinct, at least in front. According to Ashmead's definition of the group it differs from all Ceraphroninae in that the maxillary palpi are three-jointed, and there are two distinct spurs on the hind tibiae. The generic characters are as follows:

Head transverse; ocelli in a small subequilateral triangle, the lateral ones very remote from the eye-margins, the eyes pubescent, not nearly reaching the mandibles. Mandibles bidentate, maxillary palpi with three elongate and subequal joints, the first broadest basally, the second near the middle and the third subtriangularly dilated. Labial palpi very short, with an elongate pilose joint and probably a short basal one before this. Antennae of ♂ long, filiform, 11-jointed, subattenuate apically; in the ♀ 10-jointed and with subclavate flagellum. Mesonotum with the parapsidal furrows marked by punctate lines, which usually fail before reaching the hind margins; mediodorsal grooved line complete and distinct. Axillae triangular, large, meeting inwardly, marked off from the scutellum, which is acutangular in front, by crenate lines. Posterior tibiae with two distinct calcaria. Marginal vein linear, less than one-third of the length of the long curved radius, separated by a pale spot from the submarginal. Abdomen with the second segment forming most of its surface, and costate at the base.

HAB. Oahu and one or more of the other islands; introduced from North America, as I have collected it in California. Swezey discovered it to be a parasite on Dryinids, *Haplogonatopus* and *Echthrodelphax*.

Fam. SCELIONIDAE.

Subfam. *TELENOMINAE*.

(1) *Telenomus despiciendus*, sp. nov.

Black, the scape dark brown, pale beneath, and also above at the base, the legs yellowish or testaceous, the tibiae and femora, seen from above, sometimes more or less darker or sordid, the pedicel of the antennae more or less brown. Head and mesonotum not much shining, closely and finely sculptured or punctate, the face polished, with a few microscopic punctures. Antennae with the pedicel obconical and much longer than the small third joint, three following joints all small and short and not differing much from one another, the seventh joint is a good deal larger than these, but still is much smaller than the eighth, which with the three following may be said to form the club. Scutellum smooth and shining, lower lateral angles of the propodeum not prominent. Basal abdominal segment and the second at the base regularly longitudinally rugose, the latter segment much longer than its basal width and except at the base polished. Front wings with short apical cilia. Length, ♀ ·6 mm.

HAB. Oahu; Honolulu.

Telenomus rhopali, sp. nov.

Closely allied to *T. despiciendus*, the structure of the antennae being in most respects similar.

Black, with black antennae and dark legs, which are black or in part dark brown; knee-joint of front legs, apex of tibiae more or less, and the base of tarsi paler; extreme base of middle and hind tibiae, and the basal joint or two joints of their tarsi yellowish. Antennae with the pedicel about as long as the two following short joints together; the seventh joint is transverse, and considerably larger than the very small sixth joint, but much smaller than the eighth, which with the three next forms a four-jointed club. Sculpture of abdomen as in *T. despiciendus*. Length, ♀ ·6 mm.

The male closely resembles the female, excepting that the antennae are not clavate, the pedicel is not longer than the third joint, the latter and the two following being longer than the sixth and following joints, which are short and subquadrate, the apical joint pointed and much longer than the penultimate. Legs sometimes paler than in the ♀, dark sordid brown or pitchy, and the tarsi etc. more clearly and extensively yellow.

HAB. Oahu; parasitic in eggs of *Rhopalus hyalinus*, but in no wise related to the other species of *Telenomus* infesting these eggs.

(3) *Telenomus paractias*, sp. nov.

Black, the scape of the antennae and legs clear testaceous, the tip of the scape and of the tarsi infuscate, pedicel a little pallid, at least apically. Wings lightly infuscate, neuration rather pallid, the fringe of front wings moderately short.

Head polished in front, on the vertex dull, densely and minutely punctured; pedicel of the antennae obconical, rather shorter than the slender and elongate third joint, fourth rather similar to the third, subequal to it or slightly shorter, fifth much shorter than the fourth and wider, sixth and following short, subquadrate, wider than the fifth, so as to form a fairly distinct six-jointed club, the apical joint being smaller than the preceding and pointed. Mesonotum finely punctured, sparsely pilose, lower posterior angles of the propodeum prominent. Basal abdominal segment regularly longitudinally rugose, the second with short regular wrinkles at the base, and forming the greater part of the dorsal surface, much longer than its basal width, smooth and shining. Length, ♀ 1 mm.

HAB. Honolulu; parasitic in eggs of *Rhopalus hyalinus*.

(4) *Telenomus adelphus*, sp. nov.

Extremely like *T. paractias* and only distinguishable so far as I can see by the more widely darkened apex of the scape of the antennae, the more confusedly rugose basal abdominal segment and chiefly by the antennal structure. Though the length of the antennal joints is nearly similar in either species, in *T. adelphus* the club is only 5-jointed, the sixth joint of the antennae being not very different from the fifth, while the seventh is much wider than the former.

The male of this species is known to me, and in general resembles the female, but the scape is dark pitchy except at the base and the hind and middle tibiae are more or less darker, the former at least being somewhat infuscate above. Antennae filiform, pubescent, 12-jointed, the scape a good deal shorter than the elongate third joint, the latter slightly shorter than the fourth, the fifth also shorter than the latter, the following joints tending to decrease in length to the apical one, which is longer than the preceding and pointed.

HAB. Oahu, 1500—2000 ft.

(5) *Telenomus vulcanus*, sp. nov.

Black, the tarsi brown or obscure, wings hyaline, iridescent, subinfuscate, clearer at base. The head is not very much wider than the thorax, and both are sparsely clothed with white hairs and are punctate. The sculpture of the mesonotum under high powers of the microscope is seen to consist of scattered punctures, and of very delicate reticulate lines, which are not close enough to prevent the surface from being shining; under

similar powers the rugosity of the basal abdominal segment and the transverse costate impression at the base of the second can easily be seen, but under a strong lens the sculpture is seen with difficulty.

The antennal club may be said to be four-jointed, since the seventh joint of the antennae is notably smaller than the eighth, though likewise notably larger than the sixth; the pedicel is ovate or obconical, and much wider and also longer than the third antennal joint, which is elongate and about twice as long as wide, the third does not differ much in length from the second, the penultimate joint is about as long as its greatest width. The cilia of the front wings are rather long, the longest being about half the length of the width of the wings, where widest. Abdomen narrow, elongate and subparallel-sided. Length ♀ ·8 mm.

The male has filiform-moniliform antennae, the pedicel and first funicle joint about equal, the latter, in one aspect, more than usually wide, with the sides rounded, subequal in length to the next, which is narrower, the apical joint pointed, and one and a half times as long as the preceding.

This species is remarkable for its narrow elongate form.

HAB. Hawaii; Kilauea.

Subfam. *BAEINAE.*

The two following species do not agree with the subfamily characters, as given by Ashmead, since they possess a quite distinct postmarginal vein. They are easily separated from each other as follows:

1 (2). Abdomen petiolate, posterior ocelli close to the eye-margins .....*Pseudobaeus.*
2 (1). Abdomen sessile, posterior ocelli very remote from the eye-margins .....*Dyscritobaeus.*

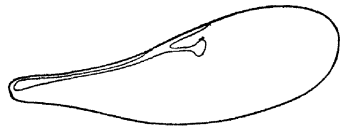
These insects are certainly introduced; they are found in gardens in Honolulu, in company, usually, with introduced species of bugs. I suspect they are egg-parasites of these, but theoretically they should be bred from eggs of spiders.

In *Dyscritobaeus* I have considered the segment, which is apparently the first and fits close to the propodeum as the second, as I believe a preceding segment exists, but is not readily observed.

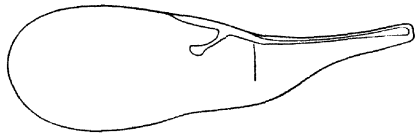
PSEUDOBAEUS, gen. nov.

Head as wide or wider than the thorax, eyes pubescent, lateral ocelli close to the eye-margins. Antennae of the ♂ filiform, moniliform, 12-jointed; of ♀ 7-jointed, with large solid club, several lines of hairs no doubt indicating the effaced articulations. Mesonotum with the parapsidal furrows indicated only posteriorly. Wings pubescent, shortly fringed, basal nervure present, but faint, marginal vein shorter than the stigmal, the latter oblique, but not extremely so, knobbed at the tip, rather shorter than the postmarginal, which bears three or four bristly long hairs, similar to those regularly disposed on the marginal and submarginal veins. Abdomen petiolate, the basal segment

much narrower than the second segment at apex or than the metanotum, second segment narrow at base and smaller than the third segment, which is the largest.



Dyscritobaeus, front wing.



Pseudobaeus, front wing and female antenna.

(1) *Pseudobaeus peregrinus*, sp. nov.

Male: head and thorax dark brown or blackish, abdomen brown more or less suffused with black or very dark brown, the first segment always paler, yellowish brown; scape of antennae more or less yellowish brown, legs for the most part sordid.

Female much lighter brown than the male, the thorax darker than the face, the abdomen with dark margins, scape in front concolorous with the face or nearly so, the flagellum more sordid, legs testaceous.

Head punctured, the face smooth and shining, impunctate, mesothorax and scutellum closely punctured, clothed with short white hairs, lower posterior angles of propodeum prominent or spinose. First and second abdominal segments longitudinally striate, the third with excessively fine striae. Antennal scape of ♂ about as long as the four following joints together, pedicel evidently smaller than the first funicle joint, which is longer than the following, the second to sixth being roundish, small and subequal; seventh, eighth and ninth rather larger, the apical joint elongate, acuminate. Scape of female long, cylindrical, longer than the pedicel and funicle together, pedicel longer and larger than the first funicle joint, which is evidently longer than wide and about equal to the three following joints together, these being very short or transverse; club ovate, equal to the scape in length. Length ·75 mm.

HAB. Oahu, Honolulu.

DYSCRITOBAEUS, gen. nov.

Male: head fully as wide as the thorax, the eyes pubescent, the vertex concave behind, the ocelli in a triangle, widest at the base, but the outer ones are very remote

from the eye-margins and often difficult to see. Antennae filiform 12-jointed. Mesonotum without furrows. Marginal vein of front wings shortish, shorter than the postmarginal, which is well developed, rather longer than the stigmal, the latter knobbed at the apex, very oblique or almost longitudinal in direction, originating about the middle of the length of the wing; marginal, submarginal and postmarginal veins with regular series of bristles; front wings shortly fringed, the cilia longest near the apex of the dorsal margin, basal nervure not defined. Abdomen very wide at base adapted to the propodeum, sessile, the second and third segments not differing greatly, or the latter rather longer.

(1) *Dyscritobaeus comitans*, sp. nov.

Male black, with whitish pubescence, the scape of the antennae in front, the legs, the whole of the second abdominal segment, the third at least on its basal portion yellowish brown or testaceous.

Head dull, appearing very densely punctate or shagreened, antennae with the scape extended about as long as the whole insect, the pedicel subtriangular, about as long as the first funicle joint, the latter and all the following not differing much in appearance, appearing slightly longer than wide, apical joint acuminate and longest. Thorax dull, closely punctate (under high powers of the microscope the sculpture is seen to consist of punctures and a reticulation of fine lines) metathorax a little angulate in the middle. Second and third abdominal segments longitudinally striate, the former more strongly and distinctly than the latter. Length ·75 mm.

HAB. Oahu, Honolulu; in company with the preceding, which it very closely resembles superficially.

BAEUS Hal.

(1) *Baeus persordidus*, sp. nov.

Dark pitchy brown, the head almost black, the abdomen rather paler than the thorax, legs infuscate or sordid yellow, paler than the body, hind tarsi yellow above, the tips dark.

Head much wider than the thorax, somewhat shining and smooth, very finely and not closely punctured; thorax and abdomen finely punctured and clothed with short white hairs. Hind tibiae long, but not twice as long as the tarsi, basal joint of the latter about equal to the three following together. Abdomen very strongly decurved, in dorsal aspect the second segment forms nearly the whole visible surface.

The antennae have an elongate ovate club, rather longer than all the funicle joints and the pedicel together; the latter is nearly as long as all the funicle joints, which are very short, the first being the longest. Length (♀) ·5 mm.

HAB. Oahu; about 2000 ft.

Subfam. *SCELIONINAE.*

OPISTHACANTHA Ashm.

(1) *Opisthacantha dubiosa*, sp. nov.

Black, the mandibles, scape of the antennae wholly or in part and all the legs yellowish brown or testaceous, abdomen often distinctly brownish on the basal portion, rarely black. Head and thorax with white pubescence, both very densely and roughly sculptured, but the head more finely than the thorax; postscutellum in profile appearing as a short spine projecting over the propodeum. First segment of the abdomen short, strongly transverse, much shorter than the second, both of these strongly longitudinally striate, third as long as the two preceding together, and much more finely longitudinally striate, the following segments excessively finely punctured.

Antennae of the male filiform moniliform, the pedicel extremely small, the first funicle joint decidedly longer than those following, which are short, but not transverse, and do not differ much from one another, apical joint longer than the preceding and pointed.

Antennae of female with a large six- or seven-jointed club, as long or longer than the pedicel and funicle joints together, pedicel about as long as the first funicle joint, which is longer than the following. The basal of the seven joints, which appear to me to form the club, may really belong to the funicle. Length about 2 mm.

Differs from the type of *Opisthacantha* in the total absence of parapsidal furrows and the want of a basal cell. Ashmead appears to have seen specimens agreeing in these respects with the above (vide his classifications). Although he describes the third abdominal segment as "a little longer" than the second, he figures it as being much longer.

HAB. Oahu; males very common in company with introduced bugs.

ANTERIS Först.

(1) *Anteris montana*, sp. nov.

Female: black, the abdomen for the most part, the funicle of the antennae dark fuscous or pitchy, scape of antennae and legs testaceous, the pedicel of the former and coxae of the latter being darker, or more brown; scutellum with the margin testaceous.

Head pubescent, densely punctate; first funicle joint of antennae much longer than the pedicel, and rather longer than the second, which like the third is elongate; the latter about as long as the next two together, the fourth being rather longer than the fifth and not transverse; basal joint of the club wider than long and much less wide than the next joint. Mesonotum and scutellum dull and very finely punctured, the postscutellum prominent and angulate in the middle posteriorly, propodeum rugulose-punctate, its inferior lateral angles minutely dentate, the superior ones slightly prominent.

Wings slightly yellowish tinged, the neuration yellowish, the stigmal vein paler. Abdomen with the basal segment regularly strongly striate, the second much more finely striate and crenate along the basal margin, the third very finely rugulosely punctate or subaciculate, the following very minutely punctured and hardly shining. Length 2·75 mm.

The male, which no doubt belongs to this female, agrees very closely with it in sculpture, but is generally more elongate. The antennae are filiform, becoming attenuate apically, the pedicel is very small, the funicle joints are subequal in length, mostly about twice as long as wide, the apical joint much longer than the preceding and pointed. Hind coxae and hind and middle tibiae dark brown or dark fuscous, much darker than in the female. Allied to *A. perkinsi* Ashm. but with different sculpture of the abdomen and slightly different in other points.

HAB. Oahu; in the mountains, the male commoner than the female.

(2) *Anteris oahuensis*, sp. nov.

Female: head black, the mesonotum ferruginous, scutellum, except the margin, postscutellum and propodeum more or less darkly infuscate, abdomen obscure dark brown. Antennae testaceous, the funicle more sordid, the club nearly black. Legs yellow, tarsi appearing darker from the clothing of black hairs.

Head somewhat coarsely sculptured, punctate and transversely rugose, funicle joints of antennae slender, the first three not differing much in length, and each several times as long as wide, fourth joint much shorter than the third, but considerably longer than wide, basal joint of club not at all strongly transverse, and only a little narrower than the following. Mesonotum and scutellum very finely punctured, postscutellum longitudinally rugose, with rounded well-raised posterior margin, not at all angulate; propodeum emarginate posteriorly, its hind margin raised. Basal segment of the abdomen striate and with a smoother median elevation on its basal half, second more finely striate, third and fourth still more finely so, fifth and sixth very finely punctured. Wings lightly infuscate, veins yellow. Length 3·5 mm.

HAB. Oahu; near Honolulu, 1800 ft.

CALOTELEIA Westw.

(1) *Caloteleia elegans*, sp. nov.

Ferruginous, the funicle joints of the antennae, the scape, legs, base of second and of the terminal abdominal segment paler in colour, more yellow, but these parts themselves are not uniform in tint. Five apical joints of the antennae, third, fourth and fifth abdominal segments, most of the second and the apical part of the sixth, black. Pedicel of the antennae and basal club joint more or less infuscate, but not black, apex of

posterior femora also dark. Head well rounded in front and emarginate behind, the eyes pubescent, not nearly attaining the mandibles. Scape of antennae long, cylindrical, pedicel small, nearly equal to the first funicle joint, which is longer than the second, the latter about as long as its greatest width, club with six joints, transverse except the apical one, the basal one pale; mandibles bidentate.

Head and thorax quite dull, with dense, excessively minute sculpture, propodeum excavated and carinated on each side of the excavation. Front wings blackish smoky, with two transverse white bands, one considerably before and the other just beyond the marginal vein, the area between these pale bands is the darkest part of the wing. The wings are very narrow (petiolate) on less than the basal half, marginal vein short, thickish, the stigmal knobbed at the tip, the postmarginal difficult to see, but longer than the stigmal. In some aspects a basal cell can be traced, but the nervures are very faint. Parapsides of the mesonotum evident. Basal abdominal segment longer than wide, its sides subparallel, the large suberect, shagreened basal process, attaining the postscutellum; second segment elongate narrow at base, longer than the third, longitudinally striate. Third segment, wider than long, much longer than fourth, smooth, polished and impunctate, sixth only half the width of the base of the fifth, about as long as this and the fourth together, pointed at apex. Female: length 2·25 mm. Remarkable for the petiolate wings.

HAB. Oahu, Honolulu; certainly introduced.

(2) *Caloteleia exul*, sp. nov.

Black, the mandibles and scape of the antennae, except more or less of the tips of each of these, testaceous or ferruginous, pedicel also more or less pale, legs testaceous.

Head and thorax very densely and finely sculptured, dull, the mesonotal parapsides distinct. Pedicel of antennae about as long as the first funicle joint which is longer than either of the three following short joints, club six-jointed. Wings hyaline faintly clouded, neuration dark, basal cell faintly indicated, postmarginal vein longer than stigmal. Propodeum concave and carinate on each side. First abdominal segment dull, shagreened, the process, fitting the propodeal concavity, smoother, the extreme apex of the segment smooth; second segment crenate at base and with some delicate striae reaching to about the middle of the length of the segment on its disc, otherwise smooth and shining, like the third, to which it is about equal in length, or rather longer; apical segment very narrow subtriangular, longer than the preceding. Female: length 2·5 mm.

HAB. Honolulu; no doubt introduced.

Fam. PLATYGASTERIDAE.

INOSTEMMA Hal.

(1) *Inostemma abnormis*, sp. nov.

Black, the tegulae brown, the abdomen dark brown, legs flavotestaceous, coxae browner. Wings hyaline, pubescent. Head dull, lateral ocelli extremely close to the eye-margins. Mesonotum dull, with dense minute sculpture, under high powers of the microscope showing a reticulation of fine lines; posteriorly between the parapsidal furrows, which are distinct, the sculpture is less fine, and there are three short raised lines. Scutellum consute at the base, shagreened, propodeum with a spinose angle on each side. Basal abdominal segment rugose, its erect process reaching about to the dorsal surface of the thorax, but not extending over it, this process on its upper part densely covered with small pointed or spinose elevations; second segment with a basal sculptured depression, longer than all the following segments together and, except at the base, smooth and shining. Length 1·6 mm.

The single example I have seen is in poor condition and deprived of its antennae. Its generic position is uncertain, but clearly it is very near to *Inostemma*, even if it does not actually belong there. It is the only Platygasterid yet found in the islands, excepting the very abnormal genus *Aphanomerus*, introduced by myself and Koebele to destroy the eggs of *Siphanta*. *Aphanomerus pusillus*[1] is now thoroughly established.

HAB. Oahu, near Honolulu.

Fam. DIAPRIIDAE.

PHAENOPRIA Ashm.

(1) *Phaenopria frater*, sp. nov.

Black, smooth and shining, impunctate, the scape and pedicel of the antennae red, the latter sometimes only red-tinged, all the legs ferruginous, the front tibiae and all the femora usually more or less obscured and darker than the hind tibiae and tarsi.

Head with sparse pale hairs, the eyes small, very slightly convex, the ocelli in a nearly equilateral triangle. Antennae about two-thirds the length of the insect, the scape about equal to the following four joints together, the first flagellar joint distinctly longer than the second, longer but not so thick as the pedicel, the flagellar joints gradually widening to the tip of the antennae, but without a definite club, except that the apical joint is as long as the two preceding and wider than these. Pronotum rather densely hairy, the scutellum without a fovea in front, but with the axillae marked off, the propodeum conspicuously hairy towards the sides, and bearing a strong median carina, which seen in profile is bent into a distinct angle near the base. Petiole of the

[1] *Aphanomerus* would probably be more correctly referred to the subfam. Baeinae, p. 620 *ante*. R. C. L. P.

abdomen sometimes reddish, with dense clothing like the propodeum, the abdomen itself elongate-ovate, the second segment about twice as long as all the following together. Wings with the thickened or punctiform marginal vein blackish fuscous.

HAB. Oahu; 1500—2000 ft.

(2) *Phaenopria soror*, sp. nov.

Very like *P. frater*, but differing in the colour of the antennae, the scape being almost black above, except at the tip; in the darker colour of the legs, the clavate portion of the hind tibiae being darkly infuscate; and in the more elevated and sharper basal angle of the median carina of the propodeum and the rather larger club joint of the antennae.

HAB. Hawaii, Kilauea; taken while ovipositing in larvae of a species of *Drosophila*.

(3) *Phaenopria subtilis*, sp. nov.

Extremely like *P. soror* and *P. frater* and variable in colour.

Black, polished, the legs and more or less of the antennae being red. Scape sometimes wholly red or partly or all except the base and apex suffused with black or dark brown; pedicel and flagellum sometimes wholly pale, the former and some of the basal joints of the latter always red beneath, though nearly the whole flagellum may be dark above. Legs sometimes to a considerable extent embrowned.

Antennae with the pedicel thicker and as long or rather longer than the first funicle joint, the latter a little longer than the second, the funicle joints being mostly small and longer than wide to about the sixth joint, the seventh, eighth and ninth are notably wider than the preceding, the two latter appearing in some aspects fully as wide as long or even somewhat transverse, the apical joint or club about as long as the three preceding together or at least not much shorter. Basal abdominal girdle of yellow hair very dense; carina of propodeum in lateral aspect with its anterior angle not very prominent. Length 1·5—1·7 mm.

HAB. Oahu; Koolau range, 1500 ft. and above.

(4) *Phaenopria ambulator*, sp. nov.

Female reddish brown or castaneous, the head and the abdomen except at the base black or nearly so; the antennae black; the scape and pedicel more or less red-tinged, the legs ferruginous or brownish yellow.

Head with the sides slightly convergent behind the eyes basally, sparsely clothed with pale hairs, the eyes small; ocelli absent; antennae not much shorter than the whole insect, scape about as long as the four following joints, the pedicel and first flagellar joint nearly equal, the latter much longer than the second, the joints widening towards the apex of the antennae, there being no definite club; the penultimate joint

subquadrate, about as long as its greatest width, the apical joint ovate, just as long as the two preceding together, but not quite twice as long as its greatest width. Head, thorax and abdomen smooth and polished, the head sparsely pilose; the pronotum, propodeum and abdominal petiole with dense pale ochreous wool-like hair. Neck when exposed coarsely transversely rugose. Scutellum distinct, not impressed at base, the axillae not defined. Wings quite rudimentary, mere filaments, clothed like the propodeum and easily overlooked. Abdomen ovate, pointed at apex, the second segment twice or more than twice the length of all the following together.

Male closely resembles the female; the antennae are longer, being as long as the whole insect, the first and second flagellar joints elongate, the second being distinctly longer than the pedicel, most of the following joints roundish and moniliform.

Var. *a*. Smaller, the scape and pedicel concolorous with the legs, the abdomen brown, black only apically and at the sides, the head also less black.

HAB. Oahu; 1500—2000 ft.

(5) *Phaenopria montana*, sp. nov.

Black, the legs rufotestaceous, the antennae red, becoming darker apically so that towards the tips they are black or almost so; thorax sometimes dark brown or pitchy, a little rufescent in front.

Smooth and shining, the antennae formed much as in *P. ambulator*, the third joint quite strongly elongate, decidedly longer than the pedicel. Posterior part of thorax very densely covered with appressed yellowish hair, the abdomen with a rather conspicuous clothing of subdecumbent pubescence. When seen from in front it is noticeable that these abdominal hairs are more or less directed towards the middle line from each side. Length 2 mm. Readily distinguished from *P. ambulator* by colour and abdominal vestiture.

HAB. Honolulu mountains, about 2000 ft.

(6) *Phaenopria hylaea*, sp. nov.

Closely allied to *P. ambulator*. Head, thorax, two basal joints of the antennae and the legs ferruginous or testaceous; abdomen and the flagellum of the antennae black.

Head smooth, flattish above, and thinly clothed like the thorax and abdomen with short erect hairs. Antennae much shorter than those of *P. ambulator*; the pedicel is rather wider and longer than the following joint, which is subelongate, the fourth and following joints are small and nearly round, while those preceding the apical one are strongly transverse, the latter conic-ovate and shorter than the two preceding together. Thorax and abdomen smooth and shining, the hairy covering of the posterior part of the former yellowish, and less dense than that of *P. ambulator*. Length 1·5 mm.

HAB. Honolulu mountains, about 2000 ft.

DIAPRIA Latr.

(1) *Diapria drosophilae*, sp. nov.

Black, the thorax, abdominal pedicel and sometimes the second segment more or less red or dull red, in the ♂ the thorax is sometimes nearly black or only slightly reddish tinged; antennae in the ♀ red excepting the dark club, in the ♂ the two basal joints only are wholly yellow or red, but the basal stalk of the other joints is usually red, legs yellow with the apical joint of tarsi dark.

Head smooth and shining, with sparse long hairs, and a patch of pale pubescence along the sides of the occipital margins. Antennae of the male very long, the pedicel not as long as the first funicle joint, which is much shorter than the following and lacks the long basal stalk, the second and following joints of the funicle are subequal, each with a very thin stalk, as long or longer than the thickened apical part of the joint, which bears a whorl of long hairs; the apical funicle joints are noticeably shorter than the basal ones, the terminal joint being the smallest of all. Antennae of ♀ short, with well-marked three-jointed club, the pedicel much larger and longer than the first funicle joint, which with all the following joints is elongate or subelongate, the seventh funicle joint is noticeably wider than the preceding, but still much less wide than the basal joint of the club. Thorax polished and bearing sparse long hairs, the pronotum densely clothed with appressed hair; scutellum foveated at the base, propodeum with a median carina forming a projecting angle anteriorly, in lateral aspect, pubescent on each side. Abdominal petiole short, about as long as wide in the ♀, rather longer in the ♂, hairy and with appressed pubescence; the rest of the abdomen smooth and polished. Wings subinfuscate, the cilia shortish. Length about 2 mm.

HAB. Oahu, Honolulu; commonly parasitic on introduced species of *Drosophila*.

(2) *Diapria xenica*, sp. nov.

Male black, the two basal antennal joints and all the legs yellow.

Head globose, polished, clothed with sparse pale hairs; antennae with the funicle moniliform and with whorls of long hairs, the pedicel very much shorter than the first funicle joint, which is subequal to the second, these two being the longest, but the latter is more incrassate, and in one aspect concave on one side, convex on the other, the following joints have at the most a very short stalk and are ovate, the several subapical joints being shorter than the basal ones and nearly round, the terminal joint somewhat shorter than the two preceding together. Thorax smooth and polished, sparsely clothed with erect hairs, the prothorax with a pubescent collar, the scutellum with a basal impression; propodeum dull, with a median carina. Wings hyaline, pubescent, with rather short cilia, the stigma yellow. Abdominal pedicel hardly longer than wide,

dull, hairy and pubescent, the rest of the abdomen smooth and polished. Length about 1·5 mm. ♂.

Possibly this species should be referred to Ashmead's genus *Ceratopria.*

HAB. Oahu, Honolulu; no doubt introduced.

CHALCIDOIDEA.

The endemic Chalcids are chiefly, if not solely, represented by the Families Miscogasteridae, Encyrtidae, Eulophidae, and possibly a few species of Pteromalidae of the subf. Spalangiinae. In these families only a few genera are represented by native species, but there are a good many unquestionably introduced ones, represented each by only one or a few species. New forms are constantly appearing in Honolulu, having been accidentally introduced with plants from other countries, or in some cases purposely for economic reasons.

Two or three species of Chalcididae have been recently introduced and one has now become a very common insect and will soon, no doubt, be ubiquitous.

Fam. EURYTOMIDAE.

EURYTOMA Ill.

(1) *Eurytoma* sp.?

HAB. Oahu, Hawaii and probably all the islands. A recent introduction now common, parasitic on various Braconids.

ISOSOMA Walker.

Isosoma spp.?

Two species of this genus occur in foreign grasses and are now widely distributed in the islands.

Fam. ENCYRTIDAE.

Subfam. *EUPELMINAE.*

In addition to the species described below I know two or three other species of Eupelmines, all introduced and not yet determined.

EUPELMUS Dalman.

The species of this genus are numerous in the islands and I suspect that Ashmead included many species under the two names *E. vulgaris* Ashm. and *E. flavipes* Cam. To these two species he assigned the whole of my numerous specimens, excepting nine individuals, of which five were named *E. konae,* the other four each representing a

distinct species. *E. niger* Ashm., *xanthopus* Ashm., and *molokaiensis* seem all to be very easily distinguished and have not again been met with. *E. hawaiiensis* Ashm., and *E. flavipes* Cam. could hardly be recognized without inspection of the type, with any certainty, and the same might be said of *E. vulgaris* Ashm. I have made no attempt to include these in my tables, in fact it could not possibly be done, since characters of essential importance are not mentioned in the descriptions. As far as Ashmead's "table" is concerned, I may say that examples bred from such distinct hosts as bees of the genus Prosopis, cocoons of Chrysopidae, eggs of Orthoptera, etc. (each of the parasites, bred from these, forming a distinct species) would run down to *E. flavipes* Cam.

One may doubt whether all the Hawaiian species rightly belong to one genus, but at present until the genera of Eupelmine Encyrtids are thoroughly revised I do not care to detach any from the genus *Eupelmus*. The impossibility of the use of the hairs on the eyes for generic separation is obvious on examination of the Hawaiian forms, since all conditions between conspicuously hairy eyes, and those on which only a few hairs can be detected with difficulty, under high powers of the microscope, are to be found.

Unfortunately the males cannot be associated with their females except by breeding, and they are likely to prove more difficult to separate than the latter. All the males I have bred, that belong to females with almost entirely yellow legs, have the legs dark. Ashmead, however, refers the males with dark legs to similarly coloured females, males with pale legs to females so coloured, and his determinations are certain to prove erroneous in many of these cases.

Of course not too much stress can be laid on the metallic colouration of the head, thorax, etc. in determining species, yet in some cases this colouration is very fairly constant. The dichotomous table, which I have made, not without considerable trouble, would probably fail anyone attempting to name isolated species, but will I believe prove to be of considerable assistance to the worker, after he has given a good deal of time to the preliminary study of a fairly representative collection. To see the characters properly it is necessary to relax and manipulate all the specimens, so that the parts are well exposed for examination.

Synopsis of species (females).

Wings smoky black, white for a short distance basally, scape of antennae distinctly dilated (apical joint of maxillary palpi dark)..... 1.

Wings uniformly hyaline, at most faintly yellow-tinged or infuscate; scape simple ..... 2.

1. Hind tarsi with the two apical and (excepting the base and apex) the two basal joints dark above..... *setiger.*

Hind tarsi with a band on the basal joint, and the apical joint black ..... *subsetiger.*

2. Palpi pale ..... 3.

Palpi dark ..... 17.

3. Scape of antennae to a large extent and the mesopleura yellow .....*E. rhyncogoni.*
Scape dark, yellow at most at the base above, mesopleura not yellow ...4.

4. Facial impression above the interantennal elevation black, blue-black, or purple-black, more or less shining, at least in some aspects, finely shagreened or quite smooth, never extremely dull and densely and evenly shagreened over its whole surface.....5.
Facial impression generally metallic, of various hues, but very rarely as above, the surface very dull, conspicuously and densely shagreened, generally shallow.....11.

5. Front and hind femora black or metallic green or blue-black, the apices only yellow .....6.
Front and hind femora largely or entirely pale or the hind femora only pale...7.

6. Head brilliantly shining.....*E. xestias.*
Head not very polished, owing to minute surface sculpture .....*E. axestias.*

7. Hind tarsi blackish or dark fuscous above .....8.
Hind tarsi pale .....9.

8. Front femora black, metallic .....*E. ombrias.*
Front femora yellow .....*E. parombrias.*

9. Ovipositor black and very short .....*E. dysombrias.*
Ovipositor pale, except at base .....10.

10. Facial impression smooth and highly polished .....*E. xestops.*
Facial impression only somewhat shining, being feebly shagreened.....*E. paraxestops.*

11. Facial impression dark, blue-black or purple-black, and the sides of the face between the impression and the margins of the eyes also with purple or purple-red reflections .....*E. axestops.*
Facial impression of various metallic tints, as also the sides of the face adjoining it, rarely the impression itself is of a dark obscure tint and only slightly metallic .....12.

12. Scape with a clear yellow or brownish yellow band at the base .....13.
Scape without a yellow band at base.....14.

13. Abdomen (except basally) largely of a very dull red or rosy colour and excessively densely shagreened, the surface being very dull .....*E. rhodias.*
Abdomen nearly uniformly metallic and in some aspects shining.....*E.xanthodorus.*

14. Very large species 5 mm. or more; mesonotum extremely dull and densely sculptured, its colour for the most part dull metallic coppery, posterior femora dark and metallic outwardly in the lower part, the posterior tibiae infuscate outwardly.. .....*E. euprepes.*
Smaller species without some or any of the above characters .....15.

15. Front femora dark and metallic posteriorly except at the apex and more or less dark in front also at the base; eyes rather conspicuously hairy under a strong lens .....*E. oribates.*
Front femora yellowish or brown, eyes very little hairy .....16.

16. Front tibiae yellow, not at all dark or metallic, mesonotum mostly vivid green...*E. oreias.*
Front tibiae metallic and usually distinctly darkened above; mesonotum more golden or brassy green .....*E. chrysopinus.*

17. Antennae short and thick, basal funicle joints short not or only a little longer than wide.....41.
Antennae slender, several of the basal joints of funicle elongate and much longer than wide .....17*a*.

17*a*. Ovipositor hardly exserted behind the abdomen .....43.
Ovipositor well exserted .....18.

18. Facial impression blue-black or with purple reflections, always shining in certain aspects, often nearly smooth, more or less deep and narrow...19.
Facial impression rarely black or with purple reflections, usually green, golden or of other metallic tints, densely and evenly shagreened all over, quite dull, more or less wide and often shallow .....26.
19. Ovipositor black or dark fuscous above, at most a little pale apically .....20.
Ovipositor largely pale, being at least partly yellow or dull reddish.....24.
20. Front femora for a large part or altogether yellow or yellowish brown .....21.
Front femora dark, pitchy and metallic, or metallic black, at most pale at the tips .....23.
21. Larger, legs except front and hind coxae clear brownish yellow, the hind femora a little metallic outwardly .....*E. monas.*
Smaller, legs more or less darkened or sordid in various parts .....22.
22. Middle tibiae brown above, except at base and apex .....*E. asthenes.*
Middle tibiae pallid yellowish throughout.....*E. parasthenes.*
23. Front tibiae above uniformly dark or pitchy, metallic .....*E. leptophyas.*
Front tibiae black or metallic black and brightly yellow at the apex .....*E. epilamprops.*
24. Facial impression above with a strong median carina .....*E. dryas.*
Facial impression above with at most a faint trace of a carina .....25.
25. Legs brownish yellow or yellowish brown .....*E. peles.*
Legs pallid yellow .....*E. chloropus.*
26. Ovipositor as long as the abdomen .....*E. euoplias.*
Ovipositor shorter than the abdomen .....26*a*.
26*a*. General colour of the front and hind femora and tibiae dark or black metallic green, the base and apex usually yellow .....27.
General colour of these parts yellow or brownish yellow, at most somewhat darkened and metallic above or outwardly .....34.
27. Middle femora dark brown or pitchy above and beneath (excepting at the extreme base and at the apex) and hardly metallic; ovipositor black, at most pale at the extreme tip .....*E. pelopus.*
Middle femora pale beneath, usually more or less dark only on the posterior face; ovipositor in some species pale to a considerable extent medially, yellow or obscure reddish .....28.
28. Middle tibiae almost uniformly pale and not, or hardly perceptibly, metallic above; ovipositor black .....*E. melanacrias.*
Middle tibiae more or less darkened and metallic above over a considerable portion of their surface, or if not very noticeably darkened, the ovipositor is more or less pale, at least dull reddish in part ....29.
29. Ovipositor black ....*E. epimelas.*
Ovipositor pale, yellowish, reddish or obscure red in the middle .....30.
30. Abdominal pleura with wide dark bands, that are hardly metallic, separated by metallic bands .....*E. chalcoprepes.*
Abdominal pleura nearly uniformly metallic.....31.
31. Intermediate abdominal segments metallic blue or green with narrow, dark and hardly metallic apical margins.....*E. caerulophanes.*
Intermediate abdominal segments above dark blackish fuscous, dull bluish black or purple-black, with bright metallic tints, at most, only at the extreme base ....32.
32. Head in front aspect between the front ocellus and the facial impression hardly shining or dull, densely sculptured; mesonotal ridges red or rosy metallic.....33.

Head in front above the facial impression rather shining and smoother; mesonotal ridges not reddish ..... *E. heterosomus.*

33. Smaller; marginal vein yellow, nearly uniform in colour and like the stigmal; facial impression sordid metallic..... *E. rhododorus.*

Larger; marginal vein infuscate, much paler at the extreme base, darker than the stigmal; facial impression green metallic ..... *E. amaurodes.*

34. Scape of antennae yellow or brownish yellow basally ..... 38.

Scape not yellow at the base ..... 35.

35. Ovipositor very short about half the length of the hind tarsi ..... *E. achreiodes.*

Ovipositor more than half the length of the hind tarsi..... 36.

36. Front tibiae at most a little browner and slightly metallic above..... *E. aporostichus.*

Front tibiae with a dark conspicuous metallic line above ..... 37.

37. Middle tibiae with a dark metallic line above; facial impression brightly metallic green or golden ..... *E. eustichus.*

Middle tibiae at most a little deeper brown above and not or hardly metallic; facial impression of sordid metallic colour ..... *E. pelodes.*

38. Fully the basal half of the scape of antennae yellow ..... *E. hemixanthus.*

Less than half of the scape yellow..... 39.

39. Front tibiae above yellow without a conspicuous dark metallic line; abdominal pleura brightly metallic basally, dark apically ..... *E. pauroxanthus.*

Front tibiae above with a dark metallic line; abdominal pleura not so coloured, very dull and densely sculptured ..... 40.

40. Mesothoracic pleura with distinct green metallic tint in part ..... *E. leucothrix.*

Mesothoracic pleura without distinct green tint ..... *E. paraleucothrix.*

41. Mesonotum medially fine metallic green, the ridges purple and strongly contrasted with the other ..... *E. basileius.*

Mesonotum without these strongly contrasted colours..... 42.

42. Middle tibiae above dark and metallic except at the extreme base and at the apex; hind tarsi black or dark above, except at the base ..... *E. melanotarsus.*

Middle tibiae above only somewhat sordid in the middle; hind tarsi mostly yellow ..... *E. xanthotarsus.*

43. Hind femora and tibiae dark, the latter yellow apically; middle legs entirely yellow, excepting the tips of the tarsi..... *E. dysoplias.*

(1) *Eupelmus setiger*, sp. nov.

Very dull, the head and thorax very densely shagreened and clothed with short, thick, white, subappressed setae. Head posteriorly with a greenish metallic tinge in front of this obscure coppery; mesonotum posteriorly dark fuscous, very little metallic, in front and externally to the ridges dull reddish, scutellum and axillae still more conspicuously red, mesopleura with a dull green tint in the middle. Abdomen shining metallic red at the extreme base, for the rest dull bluish or greenish black and densely sculptured, its sides with white setae like those of the thorax. Legs for the most part purplish black, the knee joints pale, basal joint of the front and middle tarsi pale at base and the former also at the apex, second and fourth joints of front tarsi brownish above, third yellow, fifth black; third and fourth joints of middle tarsi yellow, hind tarsi like the front ones with third joint entirely yellow, the second and fourth

brown. Ovipositor white, black on more than its apical third, and also at the extreme base.

Head with the facial impression shallow, dull, densely shagreened, not defined above; eyes distinctly pubescent, scape of antennae dilated, the basal part of the funicle metallic green or golden green and densely clothed with appressed white hair, apical two or three joints of funicle and the club not so clothed, black and only slightly metallic. Wing smoky blackish, with a white band near the base, neuration sordid yellowish. Ovipositor short, about as long as the first two or three joints of the hind tarsi. Length ♀ 3 mm.

A robust species, very unlike any other, except the following, and probably not a true *Eupelmus*.

HAB. Hawaii, Kilauea.

(2) *Eupelmus subsetiger*, sp. nov.

Extremely like the preceding in colour, clothing and sculpture, but only about half the bulk, length 2 mm. Front tarsi with the basal and apical joints dark, the rest yellow, hind tarsi with the basal joint widely pale at base, and narrowly at the apex, the three following joints yellow, the apical joint dark, ovipositor black at extreme base, lightly infuscate apically.

HAB. Oahu, on the coast.

(3) *Eupelmus rhyncogoni* P.

Eupelmus rhyncogoni Perk., Proc. Hawaii Ent. Soc. I. p. 132.

HAB. Oahu; 1200 ft. and upwards.

(4) *Eupelmus xestias*, sp. nov.

Head above with brassy and red reflections, smooth and shining, with some feeble punctures; facial impression deep purplish black, smooth and shining with a median carina above, palpi pale yellow or whitish. Antennae elongate, clavate, the first two funicle joints elongate and the longest, the third stouter than the second, but longer than wide, the apical joints transverse; scape with bright metallic green reflection. Mesonotum golden, with redder reflections in the front and on the scapulae, very finely shagreened and with scattered punctures. Front and hind coxae, front and hind femora, except at the apex, and half or more of the anterior tibiae black or dark, rest of the legs brownish yellow, or in parts yellow. Neuration yellow. Abdomen with bright green metallic reflection at base, the rest dull, densely shagreened or sculptured, black or at the most faintly metallic. Ovipositor black, about as long as the first two or three joints of the hind tarsi. Length ♀ 2 mm.

HAB. Hawaii; 4000 ft.

(5) *Eupelmus axestias*, sp. nov.

Head above dull or only slightly shining, the sculpture very fine and indefinite, metallic green or yellowish green and with some coppery red reflection, facial impression dark with purple reflections, smooth and shining, deep, its upper edge well margined, and with a median carina; palpi whitish. Antennae subclavate, the pedicel much stouter and as long or longer than the first funicle joint, which with the next two is elongate, the last funicle joint being as wide or wider than long; scape with metallic green reflection, eyes distinctly hairy. Front and hind coxae, front and hind femora, except apically, dark and metallic, the front tibiae also dark, but widely yellow apically, middle tibiae a little brown above near the base, the rest of the legs brownish yellow or in parts still paler. Mesonotum with white pubescence, dull, bronzy, very finely and closely shagreened, and with scattered feeble punctures, externally to the ridges more coppery; abdominal pleura dull purplish black; ovipositor black, about as long as the three first joints of the hind tarsi. Length ♀ about 2 mm.

HAB. Oahu, 1800 ft.

(6) *Eupelmus ombrias*, sp. nov.

Head black, with slight metallic green reflection, finely rugulose behind the ocelli, but otherwise very feebly sculptured, yet hardly shining. Palpi pale yellow; facial impression very deep, smooth and shining, with a median carina, and its upper margin well defined, deep black or with slight purple lustre. Eyes very little pubescent. Antennae of the usual form, subclavate, the pedicel and first flagellar joint subequal, the several basal joints of the funicle all being elongate, scape metallic green-black. Mesonotum more or less black or dark in front and at the sides, metallic with various hues, but not very brightly. Mesopleura blackish, slightly metallic. Abdomen green or blue-black above. Ovipositor missing, probably very short. Front and hind coxae dark, metallic, and also the front femora, rest of legs for the most part brownish yellow, at most a little darker in parts (e.g. the middle coxae basally); the hind tarsi conspicuously dark. Length ♀ 2 mm.

HAB. Molokai; 2500 ft.

(7) *Eupelmus parombrias*, sp. nov.

Head above slightly metallic, not shining; the facial impression deep, black with slight purplish tinge, smooth and shining in some aspects, its upper margin well-defined, without a definite median carina. Palpi pale, scape of antennae largely brown or yellowish brown basally, darker and slightly metallic apically; the basal joints of the funicle elongate, the first being the thinnest and longest, the last funicle joint as wide or wider than long. Mesonotum greenish black and with some golden or brassy reflection, its pubescence dark and inconspicuous; pleura of the thorax pitchy brown, dull and

metallic. Abdomen blackish, with green metallic reflection at extreme base. Legs yellow, the front coxae browner, the hind tarsi entirely brown or infuscate. Wings hyaline, neuration yellow. Ovipositor dark or pitchy, shorter than the hind tarsi. Length ♀ about 2 mm.

HAB. Oahu; Koolau range, 1500 ft.

(8) *Eupelmus dysombrias*, sp. nov.

Head finely punctured and somewhat shining and smooth, black, with metallic reflections behind the ocelli, blue-black in front of these, the facial impression deep, black or with slight purple tinge, viewed from the apex appearing nearly smooth, in front view very finely shagreened, its upper margin distinctly defined, no distinct median carina. Antennae with the basal joints of the funicle elongate; eyes very sparsely hairy. Mesonotum brassy, but not very brightly metallic, densely shagreened, clothed with short and not very conspicuous, white hairs; mesopleura for a large part dull coppery. Abdomen at the base and sides bright copper-coloured, in the depression blackish with coppery reflections. Front and hind coxae dark and metallic, middle coxae also dark beneath, rest of legs yellow, the front femora outwardly with metallic green reflection, but not darkened. Neuration yellow. Ovipositor black, short, about as long as the two basal joints of the hind tarsi. Length ♀ 1·8 mm.

HAB. Oahu, Honolulu, not 100 ft. above sea-level.

(9) *Eupelmus xestops*, sp. nov.

Head smooth, with a few fine punctures, polished; facial impression deep, smooth, blue or purplish black, a trace of a median carina at its upper extremity, the margin of which is well defined. Eyes distinctly but rather sparsely hairy, palpi pale; scape of antennae with metallic green reflection, basal funiclar joints elongate, the apical one about as long as wide. Mesonotum with white, short hairs, quite dull and densely shagreened, dull brassy; mesopleura in front and posteriorly more coppery. Front and hind coxae dark and more or less metallic, rest of legs brownish yellow or testaceous and not metallic. Abdomen brilliant coppery at the base, the rest of the surface and the pleura also conspicuously metallic, but less bright than the base. Ovipositor yellow or yellowish brown, black at the base, as long as the hind tarsi, or rather longer. Length ♀ 3 mm.

HAB. Hawaii, Kau, 4000 ft.

(10) *Eupelmus paraxestops*, sp. nov.

Head dull, or at least only faintly shining in part, metallic with distinct green reflection in part at least, the surface finely rugulose and with some faint punctures; facial impression deep, blue or purplish black, smooth, with indication of a median

longitudinal carina, its upper margin distinctly defined. Palpi pale, antennae obscurely brown basally, of the usual structure, eyes apparently with very few hairs or almost glabrous. Mesonotum metallic green, with brassy or golden reflections, mesopleura with a bluish space near the middle. Abdomen brilliantly metallic green at the base, its depressed portion dark bluish or purplish black, the pleura metallic green and coppery. Legs, except the dark and metallic front and hind coxae, entirely yellow or brownish yellow. Neuration yellow. Ovipositor yellow, black at the base, shorter than the hind tarsi. Length ♀ about 3 mm.

HAB. Oahu; Koolau range, 1500 ft.

(11) *Eupelmus axestops*, sp. nov.

Head brightly metallic above, brassy or golden with more or less red or coppery red reflections; facial impression deep, blue- or purple-black, dull, distinctly and closely shagreened, its upper margin distinctly defined. Antennae slender and elongate, the four basal funiclar joints all long and slender, scape brightly metallic, usually more or less brownish basally. Palpi pale, eyes somewhat pubescent, but not very conspicuously so. Mesonotum bright green, or brassy green, the scapulae metallic red or coppery red, the pubescence white, the surface dull with dense distinct shagreening; pleura with red and coppery reflections. Abdomen at the extreme base bright green, behind this dull black or purplish black, the apical segments metallic, the pleura nearly uniformly coppery red. Front and hind coxae dark and metallic, rest of legs yellow or brownish yellow. Ovipositor black at the extreme base, the rest yellow or brownish yellow, nearly as long as the hind tarsi. Length ♀ 3·5—4 mm.

HAB. Oahu; widely distributed at elevations of 1200 ft. and upwards.

(12) *Eupelmus rhodias*, sp. nov.

Head and thorax of an infuscate or sordid copper colour, extremely dull and very densely shagreened, clothed conspicuously with pale hairs. Facial excavation shallow, very densely shagreened and dull, not distinctly margined above; antennae widely pale (yellowish brown) at the base, on the apical portion dark brown or fuscous; palpi pale; eyes conspicuously hairy; first funicle joint of antennae longer than the pedicel, the second also elongate but shorter than the first; mesopleura somewhat like the mesonotum in colour, but with dull green tints in part. Legs with the front and hind coxae dark and metallic, for the rest the legs are brown and yellowish, being darker in some parts than others, the apices or base and apices of the joints being usually more yellow. Neuration yellow. Abdomen very dull and densely shagreened, black and red or dull rose-coloured for the most part, at the extreme base brilliantly metallic, but even here with a quite distinct surface sculpture. Ovipositor sordid yellowish, black at the base, longish, as long or longer than the hind tarsi. Length ♀ 3·5 mm.

HAB. Molokai, 2500 ft.

(13) *Eupelmus xanthodorus*, sp. nov.

Head dull, rough with shallow punctures and surface sculpture, obscure coppery metallic. Facial impression not very deep, very dull, densely shagreened, with greenish tint in the antennal scrobes, its upper edge not distinctly margined, faint traces of a median carina, which is probably not a constant character. Eyes sparsely and inconspicuously hairy; scape of antennae clear yellowish at the base, three basal funicle joints all quite strongly elongate. Palpi pale. Mesonotum dull, roughly shagreened, copper-coloured, clothed with white hairs, mesopleura coppery, except the usual dull median area. Front and hind coxae dark and metallic, rest of legs yellow or brownish yellow, hind femora outwardly rather browner and with metallic reflection. Abdomen above metallic, most conspicuously so at base, the pleura nearly uniform coppery and shining in some aspects. Ovipositor sordid yellowish brown, black at base, and nearly white close to the tip, hardly as long as the hind tarsi. ♀. Length 4 mm.

HAB. Hawaii, Kau?. The locality of this species is a little uncertain and possibly it may be from Oahu.

(14) *Eupelmus euprepes*, sp. nov.

Head of a dull copper colour, its surface extremely dull and densely shagreened, facial impression shallow, very densely shagreened, dull, its sculpture finer than on the sides of the face adjoining. Eyes with excessively short, inconspicuous hairs. Palpi pale. Mandibles except the tips and the pedicel at the base of the scape of the antennae yellowish, scape metallic, first funicle joint very long, longer than the pedicel or than the second joint, which with the next two is strongly elongate. Mesonotum dull copper-coloured, very densely shagreened, not the least shining, thoracic pleura to a large extent metallic green. Front and hind coxae dark and metallic, the rest of the legs for the most part yellow or brownish yellow, the front femora with a dark metallic line behind, the front tibiae largely dark and metallic, posterior femora dark and metallic outwardly on their lower part at least, the hind tibiae subinfuscate and with metallic reflection; middle tibiae similarly somewhat sordid and metallic, except at the base and apex. Abdomen with brilliant green and golden reflections at the extreme base, behind this banded with blackish hardly metallic and dull greenish metallic transverse areas, pleura dull metallic-coloured (mostly green or coppery) with narrow dark apical bands. Ovipositor yellow, rather widely black at base, about one and a half times the length of the hind tarsi. Length 5·5 mm. ♀.

HAB. Hawaii, Kilauea.

(15) *Eupelmus oribates*, sp. nov.

Head above golden and green metallic, more or less sordid anteriorly, facial impression very dull, shagreened, moderately deep, its upper limits definite, but without a distinct margin, colour dull metallic green to a large extent. Palpi pale, antennae

without special characters, the several basal joints of the funicle elongate, the first the longest. Eyes distinctly hairy. Mesonotum roughly shagreened, golden metallic, the scapulae reddish coppery, very conspicuously clothed with white hairs. Front and hind coxae dark and metallic, legs otherwise mostly brownish yellow, the front femora are darkened at the base and have a dark metallic line beneath, the front tibiae are somewhat embrowned and metallic. Posterior femora more or less darkened outwardly and with green metallic reflection. Abdomen brightly metallic at base, the rest blackish and hardly metallic, except the apex, which, as often, is again brightly metallic; abdominal pleura coppery metallic. Ovipositor yellow, black at base, shorter than the hind tarsi, about equal to the first two or three joints. Length ♀ about 3 mm.

HAB. Oahu, Pali, Decr. 1900, no. 803.

(16) *Eupelmus oreias*, sp. nov.

Head metallic green, the facial impression dark coloured, with slight bluish or purplish tint in some lights, densely shagreened, dull, rather deep; the sides of face between the impression and the eyes metallic coppery or golden. Antennae normal, palpi pale, eyes hardly noticeably hairy. Mesonotum largely bright green, densely shagreened, scapulae more golden or golden green; clothing of white hairs not very conspicuous, chiefly observable at the sides; thoracic pleura less brightly metallic than the mesonotum, having dull green and golden reflections, abdominal pleura coppery. Front and hind coxae dark and metallic, legs otherwise entirely pale. Abdomen above metallic, dark banded. Ovipositor short, yellow, black at the base, about half the length of the hind tarsi. Length ♀ 2·75 mm.

HAB. Oahu, Koolau range, 1500 ft.

(17) *Eupelmus chrysopinus*, sp. nov.

Head metallic, green, golden green or golden, the facial impression dull metallic of various colours, sometimes dull greenish or purplish black, but always with blue or purple reflection about the interantennal elevation, the surface densely shagreened and dull. Palpi pale; antennae without special characters, eyes very little hairy. Mesonotum dull or nearly so, brassy or golden green, the scapulae coppery or reddish, wholly or in part. Front and hind coxae dark and metallic, the rest of the legs pale, yellow or brownish yellow, the front tibiae above metallic and usually dark on this metallic line. Abdomen at the base brilliantly green, behind this dark purplish black and with more or less blue or green reflections, the apical segment bright metallic coppery, the pleura uniformly copper-coloured. Ovipositor yellow, black at the base, short, about half the length of the hind tarsi. Length ♀ 3—3·8 mm.

HAB. Hawaii, Kau at various elevations.

(18) *Eupelmus monas*, sp. nov.

Head somewhat shining, golden with some green and coppery reflections, finely rugulose and with some sparse fine punctures, facial impression, purple or reddish purple, with the surface rugulose and not shining, with a more or less distinct median longitudinal carina. Antennae of the usual form, eyes with very short hairs, palpi dark. Mesonotum rather dull golden, densely shagreened, quite conspicuously clothed with white hairs, scapulae more or less infuscate. Neuration yellow. Front and hind coxae dark and metallic, the rest of the legs yellow, hind femora appearing a little dark above. Abdomen bright metallic coppery at extreme base and at the apex, the intermediate parts dull blackish, the pleura uniformly metallic coppery, ovipositor black or blackish fuscous, a little shorter than the hind tarsi, about equal to the three or four basal joints together. Length ♀ 3 mm.

On account of the dull rugulose facial impression, which is less narrow at the bottom than is usual in the species, in which the colour of this part is purple, and also because the impression is of more metallic tint than in the other species, it is doubtful whether this species should really be placed with those having a blue-black or purple-black face.

HAB. Oahu, near Honolulu, 1500 ft.

(19) *Eupelmus asthenes*, sp. nov.

Head shining, golden, more or less rugulose and with fine punctures, facial impression very deep, smooth, deep black or purplish black; eyes scarcely hairy, antennae of the usual form. Palpi dark. Mesonotum dull, finely and closely shagreened, deeply depressed in the middle, dull brassy, in front and the scapulae coppery. Front and hind coxae black and metallic, general colour of rest of legs yellow or yellowish brown, the front femora behind darkened and metallic, front tibiae excepting the apex and extreme base dark and metallic above; hind femora, hind and middle tibiae also more or less embrowned and with metallic reflection, the apex of the tibiae being quite pale. Base of abdomen brightly metallic green, behind this the segments are blackish and hardly metallic, the terminal segment bright coppery; abdominal pleura also copper-coloured. Ovipositor black, about equal in length to the hind tarsi. Length ♀ 2·25 mm.

HAB. Hawaii, Kilauea.

(20) *Eupelmus parasthenes*, sp. nov.

Head above somewhat shining, green or golden, the facial impression very deep, purple-black in colour, and sometimes with more or less evidence of a median carina, in some aspects the surface appearing nearly smooth. Palpi dark, eyes collapsed after death, probably very little hairy, antennae with no special characters. Mesonotum with conspicuous white pubescence, brassy with the front lobe and the scapulae more reddish

or copper-coloured. Front and hind coxae dark and metallic, rest of legs generally yellow, the front femora behind are somewhat darkened and metallic, the front tibiae a little sordid, the hind femora are embrowned outwardly and have a metallic reflection, the hind tibiae are also somewhat darkened above and slightly metallic, their apices and the base of the tarsi being white. Abdomen bright coppery at the base and tip, between these dark and hardly metallic, the pleura wholly copper-coloured. Ovipositor blackish, about as long as the hind tarsi. Length ♀ 2·6 mm.

HAB. Oahu, on *Pipturus*, no. 857.

(21) *Eupelmus leptophyas*, sp. nov.

Head scarcely shining, finely and sparsely punctured, golden or golden green; the facial impression deep, purple-black, smooth and shining, face between the impression and eye margins also black; palpi dark, antennae of the usual form, eyes with sparse hairs. Mesonotum brassy, green tinged, finely shagreened, the scapulae more reddish golden or coppery, clothed with white hairs. Neuration yellow. Front and hind coxae, the front and hind femora (except at extreme base and apex) dark and metallic, front tibiae dark and metallic above (except at base and apex), hind tibiae at most slightly embrowned, rest of legs brownish yellow or yellow, except the tips of the tarsi. Abdomen brilliantly green at extreme base, behind this dull blackish, the apex reddish coppery; abdominal pleura fiery copper-coloured, the intermediate segments, when not contracted, green metallic basally. Ovipositor blackish or dark fuscous, paler at the extreme tip, long and slender, rather longer than the hind tarsi. Length ♀ 4·5 mm.

The abdominal segments in this example were fully extended, so that some specimens might be considerably shorter.

HAB. Hawaii (Mauna Loa), 4000 ft.

(22) *Eupelmus epilamprops*, sp. nov.

Head finely rugulose, in some aspects shining about the ocelli, and golden metallic, facial impression deep, purplish black, the surface nearly smooth seen from the apex, and with a more or less distinct median carina; antennae of the usual form, the palpi dark, the eyes inconspicuously hairy. Mesonotum coppery in front and on the scapulae, posteriorly more golden, conspicuously clothed with white hairs. Front and hind coxae dark and metallic, front femora almost entirely dark brown or pitchy, metallic above and behind, front tibiae much the same as the femora, tarsi brown or fuscous above. Middle legs yellowish, the tibiae dark above except at the base and apex. Hind femora embrowned, more yellow apically, slightly metallic, hind tibiae dark or brown above except at the apex, the tarsi dark above, except the basal joint, which is mostly pale.

Neuration pale, yellowish. Abdomen brilliantly metallic at the extreme base and coppery at the tip, between these mostly dull blackish, the pleura coppery. Ovipositor slender, black, about equal in length to the hind tarsi. Length ♀ 3 mm.

HAB. Hawaii, Kau, 4000 ft.

(23) *Eupelmus dryas*, sp. nov.

Head in some aspects a little shining, finely rugulose and sparsely punctured, green or golden green, facial impression purple-black, smooth or nearly so at least in some aspects and with a median carina; palpi dark, eyes bare or nearly so, antennae of the usual structure, with elongate basal funicular joints. Mesonotum in front and on the scapulae coppery, posteriorly more or less green, dull, densely shagreened, clothed with white pubescence. Neuration yellow. Front and hind coxae dark and metallic, all the rest of the legs brownish yellow, front femora with metallic tint posteriorly. Abdomen brilliant metallic green at base, the apex coppery, most of the intermediate segments dull black, or purplish black, pleura copper-coloured. Ovipositor reddish, longer than the hind tarsi. Length ♀ 3·75 mm.

Var. *dubius*, the legs paler yellow, the middle tibiae except at base and apex subinfuscate above, the front femora without metallic tint posteriorly, facial impression less smooth and with fine surface sculpture.

HAB. Molokai, 3000 ft.; var. *dubius* Oahu, 1500 ft. I have seen only a damaged specimen of the latter, which has lost its ovipositor; it is probably a distinct species.

(24) *Eupelmus chloropus*, sp. nov.

Head above green and usually with some golden reflections, more or less shining anteriorly, in some aspects at least; facial impression deep, somewhat rugulose or shagreened, but still appearing smooth and shining when viewed from the apex, usually with fine reddish purple reflections; palpi dark, antennae normal, with several of the basal funicular joints elongate. Eyes usually collapsed in dry specimens, probably with very few hairs. Mesonotum metallic green, densely shagreened, the front lobe more golden and the scapulae with coppery red or fiery reflections, conspicuously clothed with white hairs. Neuration pale yellowish. Legs excepting the dark and metallic front and hind coxae almost entirely pale yellow. Abdomen brilliant metallic green at the extreme base, behind this dull blackish, the apex coppery; pleura copper-coloured. Ovipositor black at base and more or less fuscous at the apex, the rest yellow, rather longer than the hind tarsi. Length ♀ 3—4·25 mm.

This species is unusually slender and elongate.

HAB. Oahu; mountains near Honolulu, 1200 ft. and upwards.

(25) *Eupelmus peles*, sp. nov.

Head metallic, with coppery and green, or golden reflections, rugulose and sparsely punctured; facial impression deep, wide, shagreened, but the antennal grooves are smoother and shining in some aspects, purplish black, as also the sides of the face between its impression and the eye margins. Palpi black, antennae of the usual form, eyes bare or nearly so. Mesonotum coppery or reddish coppery on the front lobe and on the scapulae, posteriorly dull golden or greenish, densely shagreened, the surface dull. Neuration yellow. Legs brownish yellow or yellowish brown, the front and hind coxae dark and metallic, the front femora above and the hind ones outwardly with slight metallic reflection, but not dark. Abdomen brilliantly golden green at the base, behind this for the most part blackish; the bases of the intermediate segments, when exposed, are metallic, at least on each side, the pleura coppery. Ovipositor black at the base, the rest yellowish, decidedly longer than the hind tarsi. Length ♀ 4·25 mm.

HAB. Hawaii, Kilauea.

(26) *Eupelmus euoplias*, sp. nov.

Head above coppery or more golden in some lights, dull, rugulose and sparsely and finely punctured; facial impression dull, densely shagreened, wide at the bottom, metallic like the sides of the face adjoining it, and more or less green about the antennal grooves, but somewhat less bright, antennae slender with elongate basal funicular joints as usual, palpi dark, eyes sparsely hairy. Mesonotum coppery or reddish metallic on the front lobe and on the ridges of the scapulae, dull and densely shagreened. Front and hind coxae, front and hind femora and tibiae dark and metallic, except the knee joints of the front legs and the apex of their tibiae, the knee joint of the hind legs which are more widely yellowish, the extreme base of the hind femora, and the apices of the hind tibiae; middle tibiae distinctly embrowned and metallic above except at the base and apex, middle coxae also partly dark and metallic, tarsi brown or infuscate above, those of the middle legs less dark than the others, basal joint of hind tarsi whitish at base. Neuration yellowish, the stigmal vein postmarginal and apical part of the marginal vein more sordid or infuscate. Abdomen brightly metallic at the extreme base, behind this blackish, the apex coppery, as also the pleura. Ovipositor long, black, but on about its apical half it is sordid yellowish, about as long as the abdomen, when this is not contracted, interrupted a little before the basal fourth of its length. Length ♀ 3·75 mm.

This species must be very close to *E. konae* Ashm., but differs so much in detail, that I hesitate to consider it to be that species.

HAB. Hawaii, Kilauea.

(27) *Eupelmus pelopus*, sp. nov.

Head green, in dorsal aspect dull, rugulose, with a few, nearly effaced, punctures, the facial impression wide, shallow, dull, densely rugulose, even in the antennal grooves, metallic greenish. Antennae of the usual form, eyes glabrous or nearly, palpi dark. Mesonotum dull, densely shagreened, green, the front lobe more golden, the ridges with coppery reflections. Front coxae, femora and tibiae almost wholly dark and brightly metallic, the trochanters black, slightly metallic, tarsi for the most part dark brownish above; middle legs with the femora blackish, pale at base and apex, tibiae also darkish brown except at base and apex, tarsi mostly pale; hind legs with the coxae and femora brilliant metallic green, the tip of the latter yellow, the tibiae dark fuscous and much less metallic than the femora, their base and apex pale, basal joint of tarsi pale, the rest dark above. Neuration yellow, appearing darker from the clothing of black hairs. Abdomen metallic green at the base, coppery at the tip. Ovipositor black, the tip pale, a little shorter than the hind tarsi. Length ♀ ? 3·5 mm.

Having seen but one example, which is in a much contracted state, I cannot give its length exactly.

HAB. Hawaii, Kau district, about 4000 ft.

(28) *Eupelmus melanacrias*, sp. nov.

Head above golden in some aspects with green reflections, dull and rugulose, but seen obliquely somewhat shining; facial impression dull blackish, as also the sides of the head between it and the eye-margins, the surface quite dull, rugulose or shagreened; palpi dark, antennae of the usual form, eyes with excessively short hairs, fairly numerous in parts, but very inconspicuous. Mesonotum dull and shagreened, the front lobe and the parapsides or scapulae coppery or reddish coppery, the rest with some greenish tint. Front coxae, femora and tibiae dark and metallic (at most pale at the apices) the trochanters also mostly dark and metallic, tarsi yellow, the apical joints dark above; middle legs brownish yellow, hind legs with the coxae and femora dark and metallic, the latter yellow at the tips, tibiae dark except at base and apex and metallic, trochanters and tarsi, except the apical joints, yellow. Neuration yellow. Abdomen metallic blue and green above, the tip coppery; ovipositor blackish, inclining to pitchy, about as long as the hind tarsi without their apical joint. Length ♀ 3 mm.

HAB. Molokai, 4000 ft.

(29) *Eupelmus chalcoprepes*, sp. nov.

Head green or golden green, the surface dull and roughened with rugulosity and some shagreening; facial impression somewhat shallow, the surface dull, very densely shagreened or somewhat rugulose, the colour metallic, but not of vivid hues; scape fine

metallic green in some lights, the palpi dark, the eyes sparsely and inconspicuously pilose. Mesonotum with pallid yellowish or whitish hairs, green and more or less golden, the ridges sometimes coppery. Front and hind coxae, femora, and tibiae dark and metallic green, their apices and bases (excepting the coxae) more or less yellow, their trochanters also for the most part dark, all the joints of their tarsi more or less darkened above, the basal joint pale at the base; middle legs yellowish, their coxae outwardly dark and metallic, the femora with a dark metallic line, the tibiae brown and metallic above except at the base and apex, the tarsi pale. Abdomen brilliant metallic green at the base, behind this the segments are dark, blackish, with basal metallic green or blue bands, tip of abdomen in apical view brilliant coppery, pleura blackish, with basal metallic bands; ovipositor black at base, and darkened towards the apex, between these parts yellowish or reddish, about as long as the first two or three joints of the hind tarsi. Marginal and stigmal veins of front wings subinfuscate. Length ♀ 4—4·5 mm.

HAB. Hawaii, Kau district, 4000 ft.

(30) *Eupelmus epimelas*, sp. nov.

Head above dull golden, the surface minutely but roughly sculptured, dull and rugulose, facial impression rather shallow, greenish, densely shagreened or rugulose, dull, palpi dark, antennae of the usual form, eyes hairy, but not conspicuously so. Mesonotum greenish metallic, finely shagreened, dull, with sparse and fine but roughish punctures, the ridges with reddish reflections. Legs almost similar to those of *E. chalcoprepes*, but the middle coxae and the hind trochanters are yellow. Abdomen metallic green at the base, behind this purplish black, the tip green, seen from above, coppery in apical view; pleura coppery. Ovipositor black, shorter than the hind tarsi, about equal to the three basal joints. Length ♀ about 3 mm.

HAB. Hawaii, Kilauea.

(31) *Eupelmus caerulophantes*, sp. nov.

Head above metallic green or golden, densely finely rugulose and shagreened, so as to be rough and dull in dorsal aspect, facial impression shallow, densely rugulosely shagreened, the surface dull, with green and coppery metallic colour; eyes inconspicuously pilose, palpi dark, antennae of the usual form. Mesonotum with rather sparse white hairs, dull, densely shagreened, golden, the parapsidal ridges reddish coppery. Legs much as in *E. chalcoprepes*, but the basal joint of the hind tarsi is entirely yellow or whitish; hind trochanters yellow, middle tibiae subinfuscate above, a little beyond the base, and metallic, the base and the apex more widely pale. Abdomen brilliant blue-green at the base, the intermediate segments dull metallic blue or green with dark fuscous apical bands, fifth segment entirely bluish metallic. Ovipositor black

at the base and apex, between pale, of an obscure yellowish brown colour, a good deal shorter than the hind tarsi, about as long as the two basal joints together. Length ♀ 3·75 mm.

HAB. Oahu, Waimea, no. 829.

(32) *Eupelmus heterosomus*, sp. nov.

Head above dull in one aspect, finely rugulose, in other positions considerably shining, with coppery and brassy reflections, facial impression wide but deep, entirely rugulosely shagreened, metallic with some purplish lustre; antennae of the usual form; eyes with a good many hairs, but they are very short and not conspicuous; palpi dark. Mesonotum conspicuously white-haired, shagreened, dull, of a golden or brassy metallic colour, darker on the front lobe and on the parapsides. Legs almost as in *E. caerulophantes*, the basal joint of hind tarsi entirely yellow, the hind tibiae widely yellow at the apex, the middle femora entirely or almost entirely yellow or brownish yellow, the middle tibiae very dark and metallic above, except at the base and apex. Abdomen brightly metallic at extreme base, the rest dull black or bluish black, the tip, viewed apically, bright copper colour; pleura coppery; ovipositor black at base and more or less dark at the apex, the rest reddish, shorter than the hind tarsi. Length ♀ about 3 mm.

HAB. Hawaii, Kau, 4000 ft.

(33) *Eupelmus rhododorus*, sp. nov.

Head above reddish golden, dull, roughly sculptured, the facial impression dull, densely rugulosely shagreened, of much duller metallic colour than the sides of the face along the margin of the eyes, the latter with a good many short hairs on their outer portion, the antennae of the usual form, the palpi dark. Mesonotum bright metallic green, more golden on the anterior lobe, the parapsides metallic red or rosy. Front and hind legs much as in the several preceding species, middle coxae with bright metallic tint and darkened, middle femora with a metallic line, middle tibiae whitish yellow at base and apex, brownish and metallic, but not dark, between; basal joint of hind tarsi yellowish white, like the apex of the tibia. Abdomen brilliant metallic green and golden at the base, the rest dull blackish, the tip, viewed apically, copper-coloured; ovipositor black at base, beyond this sordid reddish or brown, not differing much from the hind tarsi in length. Length ♀ 3·5 mm.

HAB. Oahu, near Honolulu, 1500 ft.

(34) *Eupelmus amaurodes*, sp. nov.

Head above green, more golden in front, dull with rough surface sculpture, and anteriorly with remote, largish, feebly impressed punctures; facial impression very densely shagreened and dull, shallow on its upper part, green, the sides of the face

adjoining it golden or reddish golden; antennae of the usual form, eyes evidently pilose, but the hairs extremely short, palpi dark. Mesonotum brightly metallic, green and golden, densely and rather strongly shagreened, the parapsides rosy red. Front and hind legs as in the preceding species, the basal joint of hind tarsi entirely pale, middle femora with a darkened metallic line, the tibiae dark brown above, except at base and apex, and metallic. Front wings with marginal, stigmal and postmarginal veins fuscous. Abdomen with bright green metallic colour at the base, behind this for the most part dull blackish, the tip in apical view coppery red, the pleura coppery; ovipositor black at base, beyond this brown, short, about as long as the two or three basal joints of the hind tarsi. Length ♀ 4·5 mm.

HAB. Hawaii, Kilauea.

(35) *Eupelmus achreiodes*, sp. nov.

Head green and golden above, rugulose and with largish feeble or subobsolete punctures anteriorly, facial impression shallow and very wide, dull, densely shagreened, blackish green, the upper extremity of the interantennal elevation purplish, sides of face between the impression and the eyes metallic; antennae of the usual structure, palpi dark, eyes very little hairy. Mesonotum densely shagreened, clothed with white hairs, green or golden green, the parapsides with reddish coppery reflections. Front and hind coxae dark and metallic, the rest of the legs yellow, front tibiae darkened above. Neuration yellow. Abdomen bright metallic green at the base, behind this mostly metallic green or blue, and duller, the tip and the pleura coppery. Ovipositor yellow, black at base, short, about half as long as the hind tarsi. Length ♀ 3·5 mm.

HAB. Hawaii, Kau, about 2000 ft.

(36) *Eupelmus aporostichus*, sp. nov.

Head above green, rugulose, facial impression green, dull and rugulosely shagreened, wide, the sides of face adjoining it golden; antennae of the usual form, palpi dark, eyes apparently glabrous. Mesonotum fine metallic green, less dark than that of the facial impression, the parapsides reddish golden. Front and hind coxae dark and metallic, the middle ones dark brown and metallic beneath, rest of legs yellow, the front tibiae a little darkened and metallic above. Abdomen brilliantly green at the base, behind this metallic green-black, the tip green above, coppery in apical view, pleura coppery. Neuration yellow. Ovipositor black at base, the rest yellowish brown and more or less subinfuscate apically, as long as the three basal joints of the hind tarsi. Length ♀ 3 mm.

HAB. Oahu, Honolulu mountains, on *Pipturus*, July 1900, no. 786.

(37) *Eupelmus eustichus*, sp. nov.

Head green or golden and green, the surface rugulose, with shallow punctures in front near the eye margins, the facial impression densely rugulosely shagreened, and sometimes with a slight median raised line, dull and wide; the antennae of the usual form, palpi dark, eyes glabrous or nearly so. Mesonotum green or golden green, the parapsides coppery or reddish coppery; front and hind coxae dark and metallic, front tibiae with dark metallic line above, as also the middle tibiae, front tarsi more or less brownish or lightly infuscate above, rest of the legs mostly yellow or brownish yellow. Neuration yellow. Abdomen brightly metallic green or blue at the extreme base, behind this mostly metallic blue-black or green-black, tip of abdomen in apical view coppery red, pleura coppery. Ovipositor black at base, the rest yellowish or reddish, rather shorter than the hind tarsi, or about equal to the basal four joints. Length ♀ 3·25—4 mm.

HAB. Oahu, mountains near Honolulu, 1500 ft. or more.

(38) *Eupelmus pelodes*, sp. nov.

Head above more or less green, in front with reddish reflections, the surface quite rough, with fine wrinkles or shagreening and wrinkles together, the facial impression sordidly metallic, dull, densely rugulosely shagreened, sides of the face adjoining golden or coppery red; antennae of the usual form, palpi dark, eyes with very few hairs. Mesonotum very dull, and densely shagreened, clothed with pale hairs, of green and dull golden colour, the parapsides dull reddish golden or coppery. Neuration yellow. Front and hind coxae dark and metallic, rest of legs mostly yellow or brownish yellow, front tibiae with a metallic dark line above, the middle one slightly embrowned above between the pale base and apex, apical two joints of posterior tarsi dark brown or blackish. Abdomen brilliant green at the base, behind this dull bluish black, not metallic, tip of abdomen in apical view bright coppery, pleura uniformly copper-coloured. Ovipositor yellow, black at the base, about equal in length to the hind tarsi. Length ♀ 4 mm.

HAB. Hawaii, Kilauea.

(39) *Eupelmus hemixanthus*, sp. nov.

Head above of a dull metallic colour, its surface densely finely shagreened and very dull, clothed with white hairs, the facial impression very shallow, with dull golden and green metallic tints, very densely shagreened all over and the surface quite dull; eyes considerably hairy, antennae of the usual form, the palpi dark; scape of antennae yellow on the basal half or more. Mesonotum very densely shagreened and dull, metallic dull golden and green, the parapsides redder, clothed conspicuously with white hairs. Neuration yellow. Front and hind coxae dark and metallic, the front and

middle tibiae with a dark metallic line above, the hind tibiae brownish except at the base and apically, rest of the legs yellow, including the tarsi, yellow, except more or less of the apices of these. Abdomen brilliantly metallic green at the base and reddish coppery at the tip, between mostly blackish; pleura unusually dull with dense surface sculpture, and conspicuously clothed with white hairs, coppery; ovipositor yellow, black at base and more or less darkened at the apex, about as long as the three basal joints of the hind tarsi. Length ♀ about 3 mm.

HAB. Oahu, near Honolulu, 1500 ft.

(40) *Eupelmus pauroxanthus*, sp. nov.

Head above green and golden, the surface rugulose, dull or very little shining, the facial impression, mostly dull metallic coppery, wide, very densely finely shagreened, dull; antennae of ordinary form, the scape pale brown or yellowish for a short distance at the base, then becoming darker and metallic brown; palpi dark, eyes sparsely and inconspicuously hairy. Mesonotum green with golden tints, dull, densely shagreened, the parapsides also for the most part green. Front and hind coxae dark and metallic, rest of legs yellow, the posterior femora outwardly slightly metallic, but not darkened, the posterior tarsi, except the white basal joint, lightly infuscate above. Abdomen brightly metallic green at the base, behind this the segments are brightly metallic basally, dull blackish apically, the pleura of the segments fiery metallic basally, dark apically; ovipositor yellow, black at base, about as long as the first four or five tarsal joints. Length ♀ about 2·5 mm.

HAB. Oahu, Honolulu, 200 ft., July 1900, no. 769.

(41) *Eupelmus leucothrix*, sp. nov.

Head above green, finely and extremely densely shagreened, very dull; facial impression wide, shallow, very dull and densely shagreened, green and golden; antennae of the usual form, the scape yellow at the base, the rest mostly black and metallic; palpi dark; eyes considerably and noticeably hairy. Mesonotum dull golden, or green and golden, very densely shagreened, parapsides viewed from the sides more reddish. Front and hind coxae dark and metallic, front tibiae dark and brightly metallic above, the tarsi subinfuscate above; middle tibiae dark brown above except at the base and apex; hind femora with a darkened and brightly metallic area outwardly, the tibiae dark above except at base and apex, the basal tarsal joint white, the apical ones dark above; the general colour of the legs is brownish yellow. Neuration yellow. Abdomen bright metallic green at base, behind this blackish, the tip in apical view fiery copper-coloured, the pleura dull with dense surface sculpture, clothed with white appressed hairs, coppery; ovipositor yellow, black at base, and more or less dark at the apex, shorter than the hind tarsi. Length ♀ 2—3 mm.

HAB. Oahu, near Honolulu, 1500 ft.

(42) *Eupelmus paraleucothrix*, sp. nov.

Head above more or less golden, densely minutely shagreened and dull, facial impression wide, not deep, very densely shagreened and dull, of rather dark metallic colour, antennae of the usual form, the scape yellow for a short distance at the base, the rest dark and metallic, eyes considerably hairy, palpi dark. Mesonotum very densely shagreened and clothed conspicuously with white hairs, deep or reddish golden behind and still more red on the parapsides, in front greenish golden, pleura with hardly any green tint. Legs nearly as in *P. leucothrix*, all the tibiae with a dark line or darkened above, the front and hind ones conspicuously metallic on the dark line. Abdomen brilliant metallic at the base, and the tip, in apical view, reddish coppery, between for the most part dull bluish black, pleura coppery; ovipositor yellow, black at base, as long as the first two or three joints of the hind tarsi. Length ♀ 3·5 mm.

HAB. Hawaii, Kilauea.

(43) *Eupelmus basileius*, sp. nov.

Head above green punctate and more or less rugulose, facial impression deep, in some aspects nearly smooth at the bottom, black; antennae short and stout, the several basal joints of the funicle not elongate, but short; palpi dark, eyes apparently glabrous. Mesonotum green or blue-green, extremely finely shagreened, somewhat shining, the parapsidal portion purple. Front and hind legs dark and metallic green, tip of the front tibiae and the tarsi mostly pale; knee joints, and apical part of tibiae of hind legs yellow. Middle femora black and submetallic, also the tibiae except narrowly at the base and widely at the apex, which parts are yellow. Abdomen conspicuously metallic blue, brightly green at the base, pleura green; ovipositor black, as long or nearly as long as the hind tarsi. Length ♀ 2 mm.

HAB. Oahu, Tantalus and elsewhere, 500—1500 ft.

(44) *Eupelmus xanthotarsus*, sp. nov.

Like *E. basileius* with short thick antennae, the head green, punctate or shagreened and with black face.

Mesonotum entirely green, densely and evenly and more strongly shagreened and duller. Legs very similarly coloured, but the middle tibiae are less dark above, though embrowned, except at the base and apex. The hind tarsi yellow. Ovipositor black above, more or less yellowish tinged at the sides. Length ♀ 2·4 mm.

HAB. Oahu, near Honolulu, 1500 ft.

(45) *Eupelmus melanotarsus*, sp. nov.

Very like *E. xanthotarsus*, but with the head above much less dull.

Mesonotum densely and rather strongly shagreened, legs much as in the two preceding species, but the front and hind tarsi are black or dark fuscous above. The middle femora and tibiae are black or very dark, except at the extreme base and at the tips. Abdomen blue or green with fine purple reflections. Ovipositor black or blackish, more or less pale at the extreme tip, as long as the hind tarsi or nearly. Length ♀ 2·5 mm.

HAB. Oahu near Honolulu, about 1500 ft.

(46) *Eupelmus dysoplias*, sp. nov.

Head above punctate or shagreened, blackish with metallic reflections, green or brassy, facial impression deep and narrow, finely shagreened, dull, with greenish tint at the bottom; antennae slender basally, the first two or three funicle joints being quite elongate; palpi dark, eyes collapsed, probably glabrous or nearly. Thorax blackish, but with brassy or golden reflections quite distinct. Front and hind coxae black, and somewhat metallic; front femora and tibiae and the last four tarsal joints blackish or dark fuscous, the knee joint, apex of tibiae and basal tarsal joint yellow or pale. Middle legs yellow; hind legs with the femora and tibiae black, the latter widely yellow at the apex, the knee joint brownish, the basal joint of the tarsus yellow, the following joints infuscate above. Neuration mostly fuscous. Abdomen bright green at the base, the rest blackish and very little metallic, pleura black; ovipositor hardly exserted behind the abdomen, the tip somewhat pale. Length ♀ 2·25 mm.

HAB. Oahu, Honolulu; not much above sea level, under 100 ft.

Subfam. *MIRINAE*.

ANAGYRUS How.

(1) *Anagyrus major*, sp. nov.

Head reddish or yellowish brown, scape and pedicel of the antennae blackish or fuscous, the former being more or less yellow at the sides, five first funicle joints yellow, the sixth and the club black or dark fuscous. Thorax sordid fuscous above, more or less reddish-tinged, prothorax whitish, sides and ventral surface of thorax yellow. Abdomen dark fuscous at the base, the rest sordid yellowish or brown; legs yellow or brownish yellow, the hind tibiae and femora at least more or less sordid, the colour of the legs apparently rather variable; front tarsi dark. Marginal vein dark fuscous, the stigmal vein paler, and with an ill defined small infuscation about it.

Head with a dense shagreening or close fine sculpture, pubescent, a rounded ridge between the antennae, the ocelli in a triangle, the outer ones well separated from the

margins of the eyes, the latter hairy. Scape of antennae somewhat dilated on the apical part beneath, pedicel obconical, elongate, considerably longer than the first joint of the funicle, the latter not differing much in length, the apical ones appearing somewhat shorter than the basal, club with three subequal joints and about as long as the three preceding joints together. Thorax densely sculptured, the sculpture, which appears to be a close shagreening, more or less concealed by the conspicuous clothing of short white pubescence. Marginal vein subpunctiform, postmarginal very little developed, stigmal shortish. Hairless, oblique line very distinct, rest of wing closely and regularly set with hairs. Length 1·5 mm. Ovipositor very little prominent. Female.

HAB. Hawaii, Kilauea.

(2) *Anagyrus xanthogaster*, sp. nov.

Very like the preceding, but in its typical form smaller, the antennae shorter and very differently coloured, the general appearance being sordid yellowish, the apical joints darker, but without the strongly contrasted coloration of *A. major*. The abdomen yellow above.

On Oahu I have found a larger form, not apparently differing in structure from the above, the mesonotum is reddish brown, the face nearly entirely pale yellow.

HAB. Hawaii, Kilauea; Oahu, on the coast.

(3) *Anagyrus nigricans*, sp. nov.

Black, the legs yellow, the hind femora and tibiae slightly clouded. Wings hyaline but not quite clear.

Head dull, with fine feeble and not dense puncturation; antennae pale-tinted, not quite black, with the scape subdilated beneath, the pedicel obconical about as long as the first funiclar joint, which is much longer than wide, the following joints not differing much in length, all being more or less elongate, the club longer than the two preceding together. Mesonotum and scutellum slightly shining, very finely, remotely punctured. Abdomen triangular, acute at apex, deeply concave in dry specimens, and more or less pallid in the concavity. Neuration etc. as in the preceding. Length rather more than 1 mm. Female.

HAB. Oahu, near Honolulu, 1500 ft.

(4) *Anagyrus fraternus*, sp. nov.

Very similar to *A. nigricans*, but the scape of the antennae is very little dilated, though somewhat thickened towards the apex, and the thoracic puncturation is rather more distinct and the punctures more numerous on the scutellum. The hind femora

are black or pitchy black, but the tibiae brightly yellow. The pedicel and the elongate funiclar joints are all subequal and the club is longer than the two preceding joints, the antennal joints not differing much in their proportional length from those of *A. nigricans.*

What I take to be the male of this species has the antennae longer, and set with longish hairs, the thorax duller and more distinctly punctate, the pedicel shorter than the first funicle joint, the club about as long as the two preceding joints together. It is of a less black colour, more inclining to pitchy, especially at the sides of the thorax, and the legs are for the most part infuscate, or dirty yellow. The species appears to be rather larger than *A. nigricans.*

HAB. Hawaii, Kilauea.

(5) *Anagyrus laeviceps*, sp. nov.

Very similar to *A. fraternus* and *A. nigricans.* The head in front is nearly smooth and the remote punctures are extremely faint; the mesonotum is very finely, evenly punctured, but not closely, the scutellum faintly and a good deal more sparsely. The antennae are slender with elongate funicle joints, the scape widened apically, but without a conspicuous dilatation, the proportional length of the funicle joints and pedicel much as in the above species, or subequal. Wings dusky hyaline, legs black or dark pitchy, hind tibiae with a paler spot at the base, and darker than the tarsi. Length 1·5 mm. Female.

In the specimen described the sheath of the ovipositor is suberect or bent backwards, and in side view appears as a pointed blade-like process. Probably it is usually closed down on the hypopygium.

HAB. Oahu; near Honolulu, 2000 ft.

(6) *Anagyrus tantaleus*, sp. nov.

Black, the posterior part of the thorax and the abdomen above within the concavity obscure or pitchy brown. Antennae black, the pedicel reddish at the apex. Legs for the most part yellow, the hind coxae dark, the hind femora infuscate especially on their outer surface. Wings lightly infuscate or yellowish-tinged. Very similar to the several preceding species.

Front of the head above the antennae evenly and distinctly punctured, dull; scape of antennae rounded on the lower side so as to be slightly thickened or dilated, pedicel obconical, rather longer than the first funicle joint, which is subelongate, as are the following and subequal. Mesonotum rather more finely punctured than the head, the scutellum still more finely. Abdomen distinctly longer than the head and thorax together. Length about 2 mm. Female.

HAB. Oahu; mount Tantalus.

BLEPYRUS Howard.

(1) *Blepyrus marsdeni* How.

Blepyrus marsdeni Howard, Proc. U.S. Nat. Mus. XXI. (1898), p. 234.

This is a very abundant species throughout the islands and I do not feel certain that it is not synonymous with *Encyrtus insularis* Cam. described on a single ♂. It would appear that if *B. insularis* is distinct from the above, it must now have become extinct, for it was found by Blackburn on several islands and, being no doubt a parasite of scale insects, could hardly have failed to have been bred by myself, Koebele or others, if it still existed.

MICROTERYS Thom.

(1) *Microterys flavus* Howard.

HAB. Common throughout the islands, on introduced scale-insects.

APHIDENCYRTUS Ashm.

(1) *Aphidencyrtus?* sp.?

HAB. Oahu; a common parasite of some imported Aphides.

HELEGONATOPUS Perk.

(1) *Helegonatopus*, sp.?

HAB. Oahu; parasitic on *Echthrodelphax* and other Dryinidae.

OBS. Several other minute and obscure Mirine Encyrtids, all no doubt imported, have been collected, but not yet determined.

Fam. PTEROMALIDAE.

It is almost certain that this vast family is unrepresented in the islands by endemic forms, excepting possibly by a few species of the subf. Spalangiinae. Several introduced species have been found and, as some of them are spreading, they will no doubt become ubiquitous. Species of the genus *Pteromalus* have been imported for economic reasons. Most conspicuous of the Pteromalidae, that are foreign, are two or three species belonging to the subf. Sphegigasterinae.

Subfam. *SPHEGIGASTERINAE.*

TOMOCERA How.

(1) *Tomocera ceroplastis* Perk.

Tomocera ceroplastis Perk., Proc. Hawaii Ent. Soc. I. p. 76.

HAB. Oahu; introduced.

PACHYNEURON Walk.

Pachyneuron spp.

Two or more species of this or allied genera are parasitic on species known to be of foreign origin.

HAB. Oahu.

Subfam. *SPALANGIINAE.*

SPALANGIA Latr.

(1) *Spalangia cameroni*, sp. nov.

Female: Aeneous black, the abdomen deep black or blue-black, the tarsi yellow, dark at the tips. Head elongate, coarsely punctate, the punctures well separated from one another, the eyes with erect white hairs, longer than is usual on these organs. There is an elongate smooth median space at the bottom of the depression above the insertion of the antennae. Antennae with the second joint or pedicel elongate, very much longer than, but hardly twice as long as the first joint of the funicle, four terminal joints of the funicle quadrate, club nearly as long as the three preceding joints. Pronotum very densely rugose-punctate in front and at the sides between which is a smooth, more or less triangular, area, with at most a few punctures, this area bounded behind by a transverse costate line, the apical margin behind the line smooth. Mesonotum with a smooth median line, and a densely punctate area on each side of this; the parapsides marked out by a costate or punctate furrow, the scapulae bearing some fine punctures; axillae smooth and shining, like the scutellum, and separated from this by costate lines and both impunctate or nearly, the scutellum having a transverse costate line in front of the hind margin and the suture between it and the postscutellum is costate. Propodeum very smooth and shining, with a median narrow costate channel, divided by a longitudinal raised line, and punctate around its margins; the pleura marked off by a costate suture, very densely and finely punctured below, but smoother near the suture. Wings clear hyaline, neuration brownish. Abdominal pedicel with about half a dozen raised longitudinal lines, the other segments very smooth, the fourth the largest, the third emarginate posteriorly, the apical ones with pale hairs. Length about 3 mm.

Male very like the female, but the head is shorter, the pedicel of the antennae is minute, hardly longer than wide, much shorter than the first funicle joint, which is much longer than the following; the other funicle joints longer than in the female, being longer than wide. Length 3 mm. but much smaller examples occur. This is probably the species referred to *S. hirta* by Cameron.

Distinguished at once from *S. hirta* Hal. by the long second antennal joint in the female.

HAB. Oahu, Hawaii, Molokai and no doubt all the islands.

(2) *Spalangia simplex*, sp. nov.

Black, the head usually with slightly greenish tinge, the thorax more brassy and the fourth segment of the abdomen also slightly metallic, the post-petiolar one deep black. Tarsi yellowish or testaceous, apex of tibiae, the knee joints and the trochanters (more or less) also pale, reddish or testaceous. Front of head smooth and shining, with at most a few feeble punctures, but with a distinct fine medio-frontal crenate or punctate line reaching the anterior ocellus. Antennae of the female with the funicle joints short, increasing in width towards the club, and being mostly transverse, pedicel elongate, about as long as the two first funicle joints together, club as long or rather longer than the three last joints of the funicle. In the male the antennae are more elongate, the funicle joints all much longer than wide, the first much the longest, three times as long as wide, nearly as long as the next two together, the pedicel very small, hardly half the length of the first funicle joint, club about as long as the two preceding joints.

Pronotum smooth and shining, but closely punctate on the neck and with a transverse curved crenate line near the hind margin; mesonotum with a similar submedian transverse crenate line and with one or two pits behind it on the mediodorsal line. Axillae marked off posteriorly by strong crenate lines, a less distinct one between scutellum and postscutellum; a distinct transverse crenate line on the former behind the middle; propodeum acutely spined on each side, with a median longitudinal double crenate line and with crenate margins enclosing two large smooth spaces, the pleura roughly sculptured. Mesonotum and scutellum smooth and shining except as above noted. Wings clear, neuration brown. Pedicel of the abdomen with numerous fine longitudinal raised lines, twice as long as wide in the ♂, but a good deal shorter in the female, rest of abdomen smooth and polished. Length 1·5—2 mm.

HAB. Oahu, Honolulu.

Fam. EULOPHIDAE.

To this enormously large and difficult family belong a considerable number of endemic Chalcids. The specimens preserve very badly in the tropics and, a few hours after death, distort and shrivel in such a manner as to preclude any proper description from being made, unless they are preserved in a special manner. They are best described when freshly killed. Though I have collected a considerable amount of material, I do not think it worth while to describe any new forms, until still more comprehensive and better preserved material is available. Many species of Aphelininae and some species of other subfamilies have been introduced for economic purposes, many also accidentally. To the species described by Ashmead in Vol. I. of this work two species only need be added here.

PARAPHELINUS Perk.

(1) *Paraphelinus xiphidii* Perk.

Paraphelinus xiphidii Perk., Bull. H. S. P. A. Exp. Station 1. p. 264.

HAB. Oahu, Maui, Kauai and probably all the islands.

MELITTOBIA Westw.

(1) *Melittobia hawaiiensis* P.

Melittobia hawaiiensis Perkins, Proc. Hawaii Ent. Soc. 1. p. 124.

HAB. Hawaii, Oahu; Oahu, Honolulu; Hawaii, Kilauea and no doubt throughout the islands.

Fam. TRICHOGRAMMIDAE.

There are several species of this family known in the islands, but it is doubtful whether there are any endemic forms. Those here described are almost certainly all foreign. Several other species are known to me, e.g. a species commonly parasitic in the eggs of the introduced Locustid *Elimaea appendiculata*, and one parasitic in the eggs of the Chrysopine genus *Anomalochrysa*. All the species invariably shrivel up and collapse within a few hours after death, if not placed in fluid, and are best described, when freshly killed. The genus *Westwoodella* belongs to the subfamily Oligositinae, all the other known Hawaiian Trichogrammids (including those undescribed) belong to the Trichogramminae. I have described two species under the genus *Pentarthron*, but this appears to me to be synonymous with Westwood's genus *Trichogramma*. *P. flavum* is perhaps identical with *Trichogramma pretiosa*.

WESTWOODELLA Ashm.

(1) *Westwoodella hilaris*, sp. nov.

Head and thorax orange-red or brownish red, varying in tint in dried specimens, abdomen black, with a basal yellowish or reddish, wide ring, sides of thorax posteriorly dark, antennae sordid, darker in parts; front legs sordid, hind legs with the femora dark, the tibiae and tarsi pale, tips of all the tarsi black or dark fuscous.

Pedicel, funicle and club of antenna
of *Westwoodella hilaris* ♀.

Head transverse, collapsed in dry specimens, eyes pilose; scape of antennae stoutish, narrowed apically, pedicel obconical, longer than thick, funicle joint rather like the pedicel, but considerably less thick and a little shorter, club long pointed, of three subequal elongate joints; with the ring joint the antennae are seven-jointed.

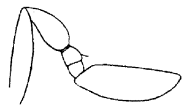
Wings pedicellate, narrow, and with a long fringe, hyaline with a fuscous shade where the wing widens after the pedicel and another distinct blotch about the stigmal vein. Marginal vein as long as the submarginal, stout, bearing about six long bristles, the submarginal with one bristle near its middle, stigmal vein short, thick. Mesothorax with a few black bristles, scutellum with one on each side about its middle. Abdomen in dried specimens concave above, narrow and elongate, as long as head and thorax together. Length ·5 mm. Female.

HAB. Oahu, Honolulu; amongst foreign grasses.

PENTARTHRON Ril.

(1) *Pentarthron semifumatum*, sp. nov.

Black, the thorax at the sides and posteriorly more or less pitchy or obscurely reddish, head red, collapsing in dried specimens, antennae sordid yellowish. Legs with the femora black or blackish, the tibiae and tarsi yellow, but the hind tibiae at least are sometimes black on their basal half. Wings with a smoky cloud on the front pair from their base to the region of the stigmal vein, and occupying all the basal part of the wing.



Antenna *Pentarthron semifumatum* ♀.

Antennae with five distinct joints and apparently a very minute ring joint, the scape long, the pedicel ovate, longer than the two funicle joints together and much wider, first funicle joint in some aspects appearing much wider than the second, club rather longer than pedicel and funicle together and without perceptible segmentation. Thorax and abdomen more or less shining in some aspects, the mesonotum under the microscope with a sculpture of very delicate reticulate lines. Abdomen just about as long as the head and thorax together, the ovipositor very little exserted.

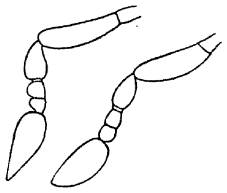
The truly marginal portion of the neuration of the front wings, i.e. the true marginal vein, is very short and bears a long bristle, there is another a little before this on the submarginal and one a little after it at the base of the stigmal, the three veins appearing as a continuous curve. There are many hair lines, some of which, about six or eight, stand out more distinctly than the others, owing to a considerable space on each side of them being hairless. Between these are many less distinctly separated hair lines. Length ·5 mm. Female.

HAB. Hawaii, Oahu, and probably all the islands, since it occurs both in the town of Honolulu and in the mountains of Hawaii above 4000 ft.

(2) *Pentarthron flavum*, sp. nov.

Female, entirely flavous, the head in life probably still paler, the eyes and ocelli red, lateral ocelli near the eye-margins.

Antennae six-jointed with a ring joint, the club solid, and equal in length to the pedicel ring joint and funicle together, the two funicle joints in some aspects appear not very different from one another, the scape with its basal pedicel is a good deal longer than the pedicel and funicle joints together. The mesonotum has a bristle



Pentarthron flavum ♀.
Antenna in two rather different aspects.

in front on each side, and another near the posterior angles, the scutellum one on each side near the posterior margin. The axillae encroach greatly on the parapsides of the mesonotum, so that the latter are subsecuriform, being dilated in front and sublinear posteriorly. Abdomen equal in length to the head and thorax together, the ovipositor not, or hardly, exserted.

Wings hyaline about 7 or 9 more prominent hair lines, between which are a number of others closer together, or more confused, or incomplete. Length ♀ ·8 mm.

HAB. Oahu, Honolulu.

Fam. MYMARIDAE.

The Mymarids are a very distinct group of Hymenoptera, to be ranked as a superfamily more distinct from any one other than, for instance, is the superfamily Apoidea from the Sphecoidea. They show affinities with the Proctotrupoidea, especially with the Diapriidae, and also with the parasitic Cynipoidea. Of the Chalcid series they appear more nearly related to some Eulophidae and Trichogrammidae, but the affinity is very remote.

The endemic Hawaiian species are probably confined to the genus *Polynema*, but some species introduced either casually, or purposely for economic reasons, are also present, and now more numerous individually than the native forms. I have not thought it advisable at present to describe specimens from the intermediate islands, which may represent mere varieties of those occurring on Hawaii and Oahu. Considering the difficulty of differentiating species from the different islands in the case of larger insects, it may naturally be expected that in minute parasitic Hymenoptera these difficulties will reach a climax. Various species, of which only one sex is known, I have also left undescribed at present.

Subfam. *GONATOCERINAE.*

ALAPTUS Hal.

(1) *Alaptus immaturus* P.

Alaptus immaturus Perk., Bull. H. S. P. A. Exp. Station 1. p. 197.

HAB. Oahu and probably all the islands; bred from eggs of Psocidae.

LEIMACIS Forst.

(1) *Leimacis peregrina*, sp. nov.

Dark, blackish fuscous, more or less yellowish or tinged with yellow, especially along the sutures, the legs pale yellow, but in parts a little smoky, antennae smoky blackish, the scape and pedicel, more fuscous or yellow tinged in lateral view. Front wings hyaline except round the margin, and the marginal vein is dark.

Antennae 8-jointed, the scape and club nearly equal, the pedicel large, obconical, about as long as the two following joints together, first funicle joint stouter and shorter than the second, which is more slender than the third, these two being nearly equal in length, fourth and fifth wider than the third, but not differing much from it in length, club almost as long as the whole of the funicle joints together. Thorax and abdomen nearly of equal length, the former truncate posteriorly, on the head and thorax a very few fine bristles are noticeable. Front wings spatulate, the longest cilia four or five times as long as the greatest width of the wing, the disc with a line of only three or four hairs, marginal vein long. Length ·25 mm.

HAB. Oahu, Honolulu.

Subfam. *MYMARINAE.*

POLYNEMA Hal.

(1) *Polynema gigas*, sp. nov.

Black, the front legs yellow or brownish yellow, the middle and hind legs brown or partly yellowish brown, their tibiae and tarsi blackish; abdominal petiole for the most part dark brown; pedicel of the antennae yellowish at the sides, scape laterally pitchy or brown.

Antennae of male long and filiform, the pedicel compressed, ovate, the first funicle joint decidedly shorter than the second, which is about six times as long as wide; first funicle joint in the female short, barely one-half the length of the very long second joint, the three terminal ones elongate and not very unequal, the fifth joint being about four times as long as wide. Mesonotum with delicate rugulose or reticulate surface sculpture, propodeum with smooth and shining surface. Abdominal petiole narrowing to the

apex, its upper side curved, when seen in profile; ovipositor exserted to about the length of the claw joint of the hind tarsus. Wings with dark, ovate, punctiform marginal vein; the longest cilia hardly half as long as the greatest width of the front wing. Length 1·5—2 mm.

HAB. Hawaii, 4000 ft.; bred from shoots of *Myrsine* bored by the caterpillar of a very large species of *Archips* (Tortricidae), but I cannot conjecture the true host of this parasite.

(2) *Polynema terrestris*, sp. nov.

Black, two basal antennal joints and all the legs yellow; abdominal petiole yellow or brownish yellow or in the ♂ partly dark brown, third antennal joint in the ♀ more or less pale.

Antennae of ♂ very long and filiform, one and a half times as long as the whole insect, the joints of the funicle elongate and about equal, the third being five times (or more) as long as wide. First funicle joint in ♀ hardly half as long as the second, which is considerably longer than the third, the fourth, fifth and sixth subequal, the last about three times as long as its greatest width, club rather longer than the two preceding. Sculpture of the thorax, which is somewhat shining, of the usual kind, but hardly visible under the strongest lenses; front wings with dark, punctiform marginal vein, the longest cilia hardly half as long as the greatest width of the wing. Ovipositor of ♀ very slightly exserted. Length 1·5—1·75 mm.

HAB. Oahu, 1500 ft. and upwards.

(3) *Polynema pyrophila*, sp. nov.

Black, the second joint of the antennae beneath paler, more or less yellowish or brown, in the ♂ sometimes obscurely pitchy; coxae and trochanters generally more or less brownish, tips of femora, except sometimes the hind ones, distinctly pale.

Antennae of ♂ with the pedicel roundish in lateral aspect, the first funicle joint rather shorter than the second, the following joints subequal and more than three times as long as wide. Antennae of ♀ very slender, the long ovate club rather longer than the two preceding joints together, the pedicel dilated, the first funicle joint hardly half as long as the second, which is about one and one-fifth longer than the third. Pronotum short, mesonotum hardly shining, with excessively fine reticulate surface sculpture, visible only under a very strong lens, the parapsidal furrows very distinct, the scutellum elongate and large, divided by a fine transverse line about the middle; the propodeum and abdomen smooth and polished. Second abdominal segment much narrowed from the apex forwards to its junction with the petiole. Ovipositor prominent, as long

as the second joint of the hind tarsus. Wings evenly hairy, the marginal vein thick, punctiform, the longest cilia of the front wing only about half the greatest width of this. Length 1·3—1·4 mm.

HAB. Hawaii; 4000 ft.

(4) *Polynema scrutator*, sp. nov.

Male black, the abdominal pedicel and all the legs yellowish or brownish yellow, the pedicel sometimes somewhat darkened; all the tibiae, the middle and hind femora and sometimes also the front ones brown or dark brownish, claw joint of tarsi dark. Antennae with the pedicel yellow laterally, the scape sometimes brown or piceous at the sides.

Antennae long and filiform, the joints of the funicle subequal, the third about three times as long as its greatest width, the pedicel compressed, dilated, being very strongly rounded beneath, first funicle joint a little shorter than the second. Thorax with distinct microscopic rugulosity under strong magnification, the abdomen smooth, shining, with the pedicel much narrowed from base to apex. Front wings with the marginal vein ovate, subpunctiform, dark, the longest cilia much shorter than the greatest width of the wing, or only about half as long. Length 1 mm.

HAB. Oahu, Honolulu. Though I have on various occasions found this species in the town of Honolulu, I have never at any time taken a female of the males described above. Males and females of *P. reduvioli* occur with it, in some localities.

(5) *Polynema rubriventris*, sp. nov.

Female black, the abdomen ferruginous, sometimes partly dark or infuscate; the legs, except the apical tarsal joints, entirely yellow, as also the two basal and sometimes the third antennal joint; the club and three preceding funicle joints black, while the more basal funicle joints are mostly more or less sordidly yellowish or brown.

Antennae slender, the pedicel compressed, obconic, the first funicle joint half as long as the very slender and elongate third, the three apical joints of the funicle subequal, slender, three or four times as long as wide, the club as long as the two preceding joints. Thorax hardly shining, the minute surface sculpture or rugulosity distinct, the impresso-punctate transverse line on the scutellum about two-thirds the length of the latter from its front margin. Abdomen smooth and shining, the ovipositor distinctly subexserted. Marginal view of front wings subovate, the longest cilia not half as long as the greatest width of the wing. Length 1·6—1·75 mm.

HAB. Oahu; 1500 ft. and upwards.

(6) *Polynema tantalea*, sp. nov.

Male ferruginous, the head and the abdomen, except its base and the petiole, and the apical joints of the tarsi black; middle and hind tibiae blackish and their tarsi more or less infuscate. Antennae black, the two basal joints clear yellow. Legs, except as noted above, yellow.

Antennae very long and slender filiform, much longer than the whole insect, the first funicle joint considerably shorter than the second, the several following this not differing much in length, the third being about five times as long as its greatest width, whilst several of the apical joints are noticeably shorter than these basal ones. Thorax dull, with very fine surface sculpture, the transverse line near the hind margin of the scutellum distinct. Abdomen smooth and shining. Front wings evenly pubescent, marginal vein punctiform, dark, the submarginal yellow, longest cilia not half as long as the greatest width of the wing. Length 1·25 mm.

HAB. Oahu; 1500—2000 ft.

(7) *Polynema oahuensis*, sp. nov.

Ferruginous or yellowish brown, the head black, but the occipital region and the face below the antennae is concolorous with the rest of the body; apical joint of the tarsi black, as well as the club and the three preceding antennal joints.

Antennae of the ♀ with the first funicle joint quite short, not half as long as the very long second joint, the pedicel obconic, the club as long as the two preceding joints together. Thorax hardly at all shining, the surface sculpture very fine; transverse impressed line near the hind margin of the scutellum distinct; abdomen smooth and shining, the ovipositor distinctly subexserted, black. Wings evenly pubescent, marginal vein punctiform, dark; longest cilia of front wings, not more than half the length of the greatest width of the wing. Length ♀ 1·5 mm.

HAB. Oahu; 1500—2000 ft.

(8) *Polynema triscia*, sp. nov.

Ferruginous, a transverse line across the head in front, the apical joints of the middle and hind tarsi, and the apical part of the abdomen, black or dark-coloured. The hind tibiae infuscate on their apical portion. Basal two joints of antennae clear yellow, the third yellowish but infuscate, the following shows more or less of a yellow tinge, while most of the flagellum is black.

Antennae of male very long, decidedly longer than the whole insect, filiform, attenuate apically, scape short, wide in lateral aspect, pedicel very short, ovate or subrotundate, first flagellar joint elongate, three times as long as its greatest width and just about equal to the second, the latter and the following joints being all nearly equal in length, and all fluted on their flattened sides. Mesonotum and scutellum dull, with

the usual minute sculpture (reticulated under a compound microscope) distinct; propodeum smooth and shining. Wings with the neuration fuscous, the marginal vein of the front wings subovate, beneath which is a fuscous fascia, a second fascia near the middle of the wing, while a third occupies the apical part of the wing and is broader than the clear space between itself and the middle fascia; cilia short, the longest not half the length of the greatest width of the wing. Abdomen shining. Length ♂ (abdomen somewhat contracted) 1·5 mm.

HAB. Oahu; Koolau range, 1500 ft.

(9) *Polynema apicalis*, sp. nov.

Ferruginous, the antennae except the two basal joints, which are more or less yellow or brown, black; the middle tibiae are noticeably darkened, the hind ones, except basally, nearly black; the hind femora are also dark on the apical portion; and the apical joint of all the tarsi is black. Wings hyaline, but widely black on the apical portion. Vertex of head with a transverse black line in front.

Antennae with the pedicel subtriangular or obconic, the first funicle joint very short, about equal to the pedicel but much more slender, the second very long, more than twice as long as the preceding, and also much longer than the third; fourth, fifth and sixth not differing much in length and shorter than the third, club ellipsoidal, somewhat shorter than the three preceding joints together. Thorax not shining, appearing densely minutely punctate, from the microscopic reticulation of the surface. Marginal vein dark, elongate-ovate, the longest cilia of front wings not equal in length to half the greatest width of the wing. Abdomen smooth and shining, the ovipositor very slightly exserted. Length 1·6 mm.

HAB. Oahu; Honolulu mountains, about 2000 ft.

(10) *Polynema perforator*, sp. nov.

Yellow or brownish yellow, the head, abdomen except the pedicel, and the claw joints of all the tarsi black. Antennae with the three basal joints in the ♂, and two in the ♀, yellow; the following joints more or less infuscate, the club fuscous or blackish.

Antennae in the ♂ long and filiform, the pedicel compressed and dilated, strongly rounded beneath, the first funicle joint rather shorter than the second; in the ♀ the first funicle joint much shorter than the next, not two-thirds of its length, the club large and as long as the three preceding joints together. Thorax sculptured as in the other species, the abdomen smooth and shining. Ovipositor as long or rather longer than the claw joint of the hind tarsi. Front wings with marginal vein subpunctiform, dark-coloured, ovate, the longest cilia hardly half as long as the greatest width of the wing. Length ·75—1·2 mm.

HAB. Oahu, in the mountains.

(11) *Polynema ciliata*, sp. nov.

Black, the two basal joints of the antennae, the pedicel of the abdomen, and all the legs, pale yellow, the pulvillus of all the tarsi dark.

Head smooth and shining, the pedicel of the antennae strongly compressed, obconical, or ovate, as long or a little longer than the slender first joint of the funicle, the latter about half the length of the very elongate second joint, the third rather shorter than the second, the three following joints on their wide surface much wider than the preceding joints, the two first of these being subequal, the last conspicuously more elongate, the club just about equal to the three preceding joints together. The club and funicle joints are blackish or smoky, the basal funicle joints sometimes showing a yellowish tinge; the scape and pedicel are almost entirely yellow, the upper edge of the former and the tip of the latter being darkened. Mesonotum shining, hardly or not visibly sculptured under a strong lens, the propodeum quite smooth and shining. Abdomen smooth and polished, the ovipositor very slightly exserted. Front wings hyaline basally to considerably beyond the marginal vein, the rest appearing darker, with even clothing of black hairs, marginal vein short more or less pale, longest cilia as long as the greatest width of the wing, or rather longer. Length ♀ hardly 1 mm. when fully extended.

HAB. Oahu; 1500 ft.; parasitic in the eggs of a small Delphacid.

(12) *Polynema jassidarum*, sp. nov.

Black, the antennae black or fuscous in the male, the second joint is always noticeably yellowish, and the scape and first funicle joint may be more or less obscurely or sordidly pale. In the female the scape is dark or black, the pedicel and most of the funicle joints yellow, the club and preceding funicle joint always dark. Legs and abdominal pedicel yellow or brownish yellow, the femora and tibiae usually more or less embrowned, the apical joint of the tarsi black.

Antennae of the ♂ considerably longer than the whole insect, the pedicel roundish in lateral view, the funicle joints subequally elongate, the third about two and a half or three times as long as wide. Female with the first funicle joint short, only about half the length of the second, the latter slender and the longest of all, the club as long as the three preceding joints, which are subequal and shorter than the third funicle joint. Form and sculpture of the thorax as in the other species; the abdomen smooth and shining, with the ovipositor distinctly exserted. Wings with the marginal vein punctiform, dark brown or brownish yellow, variable in colour; the longest cilia of the front wings rather less than the greatest width of the wing. Length ·65—·85 mm.

HAB. Oahu near the coast; parasitic on eggs of a Jassid.

(13) *Polynema nana*, sp. nov.

Black, the antennae entirely black above, but the scape and pedicel in lateral view are usually more or less pale, piceous or sometimes yellowish; legs blackish or dark brown, but the tarsi are paler, generally yellowish, sometimes infuscate above, the apical joint being conspicuously black.

Antennae of ♂ considerably longer than the whole insect, pedicel compressed, dilated, strongly rounded beneath, the first funicle joint decidedly shorter than the second, the third and following subequal, the latter being rather more than twice as long as its greatest width. In the ♀ the first funicle joint is short, much shorter than the second, the club as long as the three preceding joints together, the pedicel compressed, ovate. Pronotum short and hardly noticeable in dorsal aspect, the mesonotum shining, with distinct parapsidal furrows and a very delicate reticulate sculpture under high powers of the microscope. Scutellum large and long as in the other Hawaiian species. Wings evenly hairy, marginal vein dark, punctiform, the cilia, where longest, as long as or longer than the greatest width of the front wing. Abdomen smooth, shining, the ovipositor slightly, but distinctly, exserted. Length about ·5 mm.

HAB. Hawaii, Kilauea. One apterous female, taken with the winged ones, appears identical with the above.

(14) *Polynema reduvioli* P.

Polynema reduvioli Perk., Bull. H. S. P. A. Exp. St. 1. p. 196.

HAB. Oahu, Kauai, Hawaii, and no doubt all the islands.

CYNIPOIDEA.

Fam. FIGITIDAE.

Subfam. *EUCOILINAE.*

The species of Eucoiline Cynipoids are numerous in the islands, and unquestionably difficult to determine specifically. Ashmead referred the Hawaiian species described by him to a number of genera, but to me all the Hawaiian species appear intimately allied and likely to prove still more intimately so, as new species are found. Kieffer in Wytsman's Genera Ins. refers Ashmead's Hawaiian species to three genera, and I believe the *Pilinothrix* of Ashmead should have been placed with the forms, which Kieffer refers to *Cothonaspis*, subg. *Anectocleis*. It is also noteworthy that the Hawaiian species with closed marginal cell, referred by Kieffer to *Eucoila*, subg. *Psichacra*, very closely resemble some of the forms with open marginal cell and that this cell in different species varies very much as to how far it is open above. In fact in some Hawaiian forms it is not at all easy to decide whether the marginal cell is really closed or open.

Kieffer gives as a character of *Cothonaspis* (s. l.) "cupule non convexe," but in all or nearly all the Hawaiian forms it is more or less convex and sometimes very strongly so. Only in the species, for which I have formed the subg. *Nesodiranchis* is the scutellar cup depressed.

Under the circumstances, I think it better to place all the Hawaiian species with more or less open marginal cell (excepting the one just referred to) in a subgenus *Hypodiranchis* Ashm., treating this as a section of *Cothonaspis*. Ashmead's characters for *Hypodiranchis* will not fit most of the species here described, nor in fact do the examples he described agree with the generic characters he laid down. In the sense used here, *Hypodiranchis* will refer to a division of *Cothonaspis* in which the cup of the scutellum is generally more or less convex, sometimes strongly so, and never impressed, and the antennae of the female are without a definite club.

I find it impossible to refer males, caught at large, to their proper females with any certainty and therefore have described none of this sex. Had I done so the list of species would have been much increased, but no doubt many or most of the names given to males would become mere synonyms of previously described females. By breeding, or special collecting in the field, the sexes will no doubt be rightly assigned in the future.

I may note that several species of parasitic Cynipids have been introduced into the islands for economic purposes, but these are not considered in this account.

COTHONASPIS Hart.

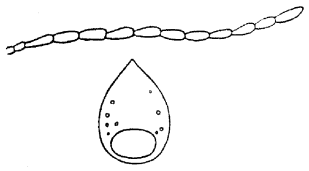
NESODIRANCHIS, subgen. nov.

Like *Diranchis*, as defined by Ashmead, in most characters, but with the antennae not at all clavate, the more basal flagellar joints being larger and longer than those at the apex, so that the antennae become distinctly attenuate towards the tips. Third antennal joint slightly longer than the fourth, all of these beyond the pedicel being elongate, the sides slightly rounded, the surface very finely striate or rugulose rather than fluted, fourth and fifth joints about twice as long as wide, apical joint about one and one-half times the length of the preceding. Scutellar cup large, ovate, depressed, the posterior fovea large, transverse; marginal cell in front wings entirely open above, cubitus effaced, represented by a hair line; abdomen about as long as the thorax, with a slight hairy girdle at base, hypopygium not conspicuously prominent.

(1) *Cothonaspis* (*Nesodiranchis*) *ashmeadi*, sp. nov.

Black, the mandibles, the two basal antennal joints (and the third obscurely) red; legs yellow, tarsal joints mostly black. Neuration brownish towards the base, but the radius darker, the last abscissa black or almost so.

Antennae shortly pilose, pedicel short, hardly longer than wide; mesonotum smooth and shining, scutellar cup distinctly concave, with a few punctures on each side,



Nesodiranchis ashmeadi ♀.
Antenna and cup of scutellum.

in front of the posterior fovea, distinct; sides of cup pilose, with close rugose punctuation; propodeum with a carina on each side of the middle, the area between these shining; on each side of this area externally the propodeum is pubescent. Abdomen smooth and shining, with a thin basal pubescent girdle. Length 2 mm. Female.

HAB. Oahu, 1500—2000 ft.

Subgen. COTHONASPIS Först.

(2) *Cothonaspis* (*Hypodiranchis*) *pele*, sp. nov.

Black, polished, the mandibles and all the legs ferruginous, the tarsi, at least the hind and middle ones, more or less infuscate above, the pedicel of the antennae obscurely red or pitchy.

Antennae moderately long, rather longer than the head and thorax together, 13-jointed, the pedicel hardly longer than wide, the first funiclar joint elongate, more than twice as long as wide, distinctly, though not greatly, longer than the second, and about equal to the third; the first and second distinctly more slender than the latter, the latter more so than the fourth, this and all the following being subequal and moniliform, each longer than wide, and all fluted. Mesonotum very smooth and shining, with sparse pale hairs; scutellar cup narrowly ovate, pointed anteriorly, twice as long as its greatest width, with a large fovea posteriorly, and with some distinct piligerous punctures on each side in front of the fovea; sides of scutellum beneath the disc distinctly rugose and posteriorly pilose. Meso- and metapleura smooth. Wings hyaline, ciliated, neuration dark and strong, the marginal cell open above for about half its length, the cubitus much fainter than the rest of the neuration. Propodeum carinate on each side of the middle, the surface dull and thinly pubescent. Abdomen about equal in length to the head and thorax together, with a rather sparse and inconspicuous hairy girdle at the base, the hypopygium strongly exserted. Length 2 mm. ♀.

HAB. Hawaii, Kilauea; ovipositing in Dipterous larvae, belonging to the genus *Drosophila*.

(3) *Cothonaspis* (*H.*) *intermedia*, sp. nov.

Female black, polished, the legs brown, the hind ones darker, the front and middle pair more yellowish brown or testaceous. Antennae obscure brownish or pitchy, the apical joints black, or nearly so, the pedicel being the palest joint.

The joints of the flagellum are all elongate, the first being distinctly longer than the second, the following joints subequal, the more apical slightly wider than the first and second; the third joint is nearly $2\frac{1}{2}$ times as long as its greatest width, the antepenultimate joint only about twice as long as wide. Scutellar disc very convex above, very long and narrow, subparallel-sided, the very fine margins generally, in some aspects, appearing slightly sinuate inwardly behind the middle, the fovea very large, with one or two very fine punctures on each side in front of the fovea; below the disc the scutellum is finely and regularly longitudinally striate and sparsely hairy; propodeum with the median area between the carinae punctate, the sides with yellow pubescence, like that of the abdominal girdle, the latter also having an apical ciliation of longer hairs. Meso- and metapleura smooth. Wings hyaline, somewhat yellow-tinged, especially about the nervures, which are rather dark fuscous; cubitus pallid, not distinct, marginal cell closed above for about half its length from the base. Hypopygium rather strongly exserted. Length 2·5 mm. ♀.

Male very like the female, but with much longer, filiform antennae, the flagellar joints subequally elongate, the third being about $2\frac{1}{2}$ times as long as wide, the antepenultimate about 4 times, owing to the attenuation of the antennae apically, the first distinctly, but slightly, curved.

Var. Scutellum at the sides, more or less of the sides of the abdomen at the base, more or less of the basal joints of the antennae, or some of these parts, reddish, or pitchy.

HAB. Oahu; widely distributed in the mountains above 1300 ft.

(4) *Cothonaspis* (*H.*) *tantali*, sp. nov.

Polished black, the mandibles and the pedicel of the antennae dark red, all the legs ferruginous, the apical joint of the front and middle tarsi and most of the posterior tarsi above, infuscate.

Antennae long and filiform, 13-jointed, slightly longer than the whole insect, the pedicel short, hardly longer than wide, the first flagellar joint slightly longer than the second, the latter three times as long as its greatest width, the joints towards the apex of the antennae a little wider in proportion to their length, the penultimate joint being rather more than twice as long as its greatest width, the terminal joint long, one and two-thirds the length of the preceding. Mesonotum polished, sparsely pilose; scutellar disc narrow, two and a half times (or more) as long as its greatest width, deeply and

largely foveated posteriorly, and with a series of distinct marginal piligerous punctures on each side, from near the base to the fovea; sides of scutellum below the disc longitudinally wrinkled and pilose; propodeum between the carinae very dull and densely rugulose, at the sides with a patch of dense woolly hair; mesopleura smooth, metapleura longitudinally strigose. Wings hyaline, faintly yellow-tinged, ciliated; neuration for the most part rather pale yellowish brown, marginal cell open above, the cubitus much fainter than the other nervures. Abdomen elongate-ovate pointed at apex, with a dense basal girdle of yellowish pubescence, the hypopygium not conspicuously exserted, but more so in some examples than in others. The basal flagellar joints of the antennae are sometimes more or less reddish-tinged. Length 2·25 mm. ♀.

The antennae are so slender that they can hardly be called subclavate, and possibly this species could be referred to Förster's genus *Anectoclis*.

HAB. Oahu, near Honolulu, above 1500 ft.

(5) *Cothonaspis* (*H.*) *strigosa*, sp. nov.

Extremely similar to *P. tantali*, having the same scutellar structure, similar antennae etc. It is readily distinguished, however, by the mesopleura posteriorly being strongly longitudinally strigose, like the metapleura, instead of being altogether smooth and shining.

HAB. Oahu; Honolulu, above 1500 ft.

(6) *Cothonaspis* (*H.*) *declivis*, sp. nov.

Black, the two basal antennal joints red, mandibles and legs testaceous or brownish yellow.

Antennae long, about as long as the whole insect, all the flagellar joints elongate, the flagellum appearing subclavate, owing to the more apical joints being proportionately rather wider and shorter than the more basal ones, in some aspects; first and second flagellar joints nearly equal in length, the latter slightly stouter, about equal to the following, but rather more slender, third about three times as long as wide, the ante-penultimate joint about twice as long as wide. Mesonotum polished, sparsely pilose, pleural region smooth and polished, including the metapleura. Scutellar cup more than twice as long as wide, very convex longitudinally and very strongly declivous posteriorly before the large round fovea, also strongly convex transversely, sides of the cup rugulose, but partly smooth; propodeum dull between the carinae, but very indistinctly sculptured. Wings ciliated, neuration brownish yellow, the marginal cell open above, except for a short distance at base, cubitus very faint. Hypopygium not prominent. Length 2 mm. ♀.

HAB. Oahu; near Honolulu, above 1500 ft.

NOTE. With *P. declivis* and *P. tantali* I take a male Cynipid, which I cannot refer to either with any certainty. It may be distinct from either, but I suspect this is not the case.

(7) *Cothonaspis* (*H.*) *naias*, sp. nov.

Black, polished, five basal joints of the antennae red, mandibles and legs testaceous or ferruginous, hind coxae browner, hind tarsi evidently infuscate.

Antennae two-thirds the length of the whole insect, the basal joint of the flagellum equal in length to the third, but evidently more slender, the second joint being much shorter, about two-thirds the length of these, fourth and following joints wider than the third, all elongate, submoniliform, subequal, the antepenultimate joint about twice as long as wide. Scutellar cup long and narrow, acuminate in front, foveated at its posterior end, about three times as long as wide, with several evident punctures on its smooth surface, its sides distinctly, finely rugulose. Propodeum with a dense patch of pubescence outside each of the longitudinal carinae; meso- and metapleura smooth and polished. Wings clear, hyaline, ciliated, marginal cell apparently closed above on less than its basal half, neuration yellowish brown, cubitus faint. Hypopygium somewhat prominent. Length 1·75 mm. ♀.

HAB. Oahu; 1500 ft.

(8) *Cothonaspis* (*H.*) *debilis*, sp. nov.

Black, polished, mandibles and two basal antennal joints yellowish brown, some other of the basal flagellar joints also more or less pale, legs testaceous, apices of tarsi dark.

Antennae as long as the whole insect, slender, but gradually subclavate, the two basal flagellar joints being notably more slender than those towards the apex. First flagellar joint subequal to or a trifle longer than the second, which is subequal to the following joints; fluted sculpture distinct; antepenultimate joint of antennae twice as long as wide. Scutellar cup elongate-ovate, twice as long as its greatest width, foveate at its posterior end, and with a few fine punctures before the fovea; sides very finely rugulose; propodeal carinae distinct, the pubescence not dense; mesothoracic and metathoracic pleura smooth, polished. Neuration brown, yellow-tinged, cubitus much paler and fainter than radius, but easily seen, marginal cell closed above for only a short distance at the base. Hairy girdle of abdomen not dense, hypopygium not strongly prominent. Length hardly 1·5 mm. ♀.

C. debilis var. *similis* var. nov.

Very like the above in appearance and structure, but the hind coxae are rather darker brown, the scutellar cup is slightly wider, its margins more distinct and at the sides it is shining and smooth instead of being rugulose.

C. debilis var. *subdebilis* var. nov.

Antennae paler than in typical *debilis* (var. *similis* being intermediate), scutellar cup decidedly narrower than in either of the above forms, about $2\frac{1}{2}$ times as long as wide, shining and nearly smooth on its sides, or at least hardly visibly sculptured even under a very strong lens.

HAB. Hawaii; Kilauea. Without a long series of examples the three forms described can hardly be considered as species.

(9) *Cothonaspis* (*H.*) *abnormis*, sp. nov.

Black, polished, two basal antennal joints, mandibles and all the legs ferruginous or testaceous.

Antennae long and slender, as long as the whole insect, the flagellum feebly subclavate, the apical joints being evidently wider, when compared with the basal joints, but all are elongate, the antepenultimate joint being about three times as long as wide. Three basal joints almost of equal length, though the basal one, on actual measurement is a trifle shorter. Scutellar cup elongate, not distinctly margined, and best seen when looked at obliquely from in front. It is of narrow ellipsoidal form and very little raised, the sides being extremely low, rugosely sculptured, and there is no posterior fovea; propodeum bicarinate, dull and hardly perceptibly sculptured between the carinae, pubescent at the sides; pleura smooth, the mesopleura with an impression. Wings more or less yellowish-tinged, marginal cell closed above on about the basal half, neuration brownish yellow, cubitus rather distinct. Abdomen strongly compressed, with complete hairy girdle, the hypopygium prominent. Length 1·5—1·75 mm. ♀.

HAB. Oahu; 1500—2000 ft.

OBS. This species might be placed in a distinct genus, but the possibility of the occurrence in the islands of others, which would connect it with more usual forms, renders it inadvisable to separate it generically at present.

(10) *Cothonaspis* (*H.*) *dubiosa*, sp. nov.

Black, polished, two basal joints of antennae and mandibles distinctly red, legs flavo-testaceous, abdomen blackish or very dark brown over most of the basal portion, becoming reddish apically, as also widely so at the sides beneath. Front and middle tarsi brownish, the posterior tarsi dark fuscous.

Antennae about two-thirds the length of the insect, the flagellum subclavate, fluted, its third joint being evidently wider than the second, the latter and the first almost equal in length, the third and fourth very slightly longer, the antepenultimate joint twice as wide as long, the third rather longer, about $2\frac{1}{2}$ times its width and evidently fluted. Scutellar cup elongate, twice as long as its greatest width, very distinctly

marked by its pale margins throughout, a few scattered punctures (in the type specimen) in front of the posterior fovea ; sides of the cup somewhat shining, with some very fine punctures, and extremely fine longitudinal rugulosity, sparsely pilose ; pleura smooth and polished ; propodeum with the two longitudinal carinae as in the other species. Wings ciliate, the neuration yellowish at base, becoming darker apically, the apical side of the marginal cell being dark fuscous ; this cell closed on its basal half above. Length rather more than 2 mm. ♀.

I cannot be sure that the marginal cell in this species is not altogether closed, as in some aspects the nervure on the upper side of the cell appears continuous to the apex, though fainter beyond the middle.

HAB. Oahu ; 1500 ft. I have only examined one example and the abdomen is partly crushed.

(11) *Cothonaspis* (*H.*) *dichroma*, sp. nov.

Black, polished, the two basal joints of the antennae distinctly red, as well as the mandibles, legs testaceous, the tarsi more or less infuscate, the hind ones dark fuscous or blackish above, abdomen ferruginous.

Antennae rather more than two-thirds the length of the whole insect, the flagellum subclavate, its second joint being considerably less wide than the third, its first joint more slender still ; the first of these joints very little longer than the second, and all the flagellar joints are elongate, submoniliform, the antepenultimate (with its contracted base) being about twice as long as wide. Scutellar cup elongate, rather more than twice as long as wide, pointed anteriorly and foveated at the other extremity, one or two fine punctures inside either margin ; at the sides it is densely rugosely sculptured or rugose-punctate and sparsely pilose. Propodeum between the carinae impressed, slightly hairy, hardly sculptured. Pleura smooth, not sculptured. Hypopygium somewhat exserted. Length 2 mm. ♀.

HAB. Oahu, about 1500 ft.

EUCOILA Westw.

(1) *Eucoila* (*Psichacra*) *oreias*, sp. nov.

Black, smooth and shining, mandibles red on their apical part, coxae black or very dark ; front and middle femora mostly dark brown above, the apical part being pale brownish yellow, front and middle tibiae yellowish brown, the latter sometimes darker than the former ; hind legs darker than the others, the femora black or nearly, excepting the yellowish apices, tibiae dark brown except at base, the tarsi entirely blackish or dark fuscous. Neuration yellowish, the apical side of the marginal cell paler than most of the neuration.

Antennae as long as the entire insect, or almost so, the first two joints beyond the pedicel being somewhat thinner than the next. The flagellar joints are subequal in

length, the first being slightly shorter than the second, both elongate and slender, the antepenultimate joint of nearly the same length as these, but much stouter, about twice as long as wide. The scutellar cup is elongate-ovate, its greatest width being less than half its length; its margins are not very distinct, its dorsal surface bears no punctures in front of the posterior fovea, or at most one or two very feeble ones, but its sides are somewhat roughened by a number of punctures. Abdominal hairy girdle not dense. Length ♀ 1·75 mm.

HAB. Hawaii, Kilauea.

(2) *Eucoila* (*P.*) *orobates*, sp. nov.

Extremely like *E. oreias*, with similar long antennae, which do not differ much in structure from those of that species. The legs, however, are less dark in nearly all parts, brown and, where paler, yellowish, the neuration of the wings is darker, fuscous; the scutellar cup is well margined, wider, about twice as long as its greatest width, and bears punctures on each side dorsally in front of the posterior fovea, its sides are quite smooth, polished and impunctate or nearly. Length ♀ 1·75 mm.

HAB. Hawaii, Kilauea.

(3) *Eucoila* (*P.*) *hygrophila*, sp. nov.

Black, polished, legs ferruginous or testaceous, hind coxae and sometimes the middle ones darkish brown, the hind femora and tibiae also browner, the hind tarsi dark fuscous; several of the basal antennal joints more or less distinctly reddish. Neuration fuscous, more or less yellow-tinged. Antennae considerably shorter than the whole insect, without a definite club, but the fourth joint of the flagellum is considerably thicker than the third, the first joint being decidedly longer than the second or third, which are subequal and shorter than the fourth; the antepenultimate joint is considerably less than twice as long as its width. The scutellar cup is well defined, not at all impressed, but with a distinct posterior fovea, very elongate, about three times as long as wide; the sides are finely longitudinally rugulose; sides of the propodeum and the basal abdominal girdle densely hairy. Length ♀ 1·5—2 mm.

Eucoila hygrophila var. *philygra* nov.

Like the above in sculpture etc. but with the neuration yellower, and the basal joints of the flagellum rather different, the first joint being slightly but distinctly longer than the second, and about equal to the third. Length ♀ 1·2 mm.

HAB. Oahu; 1500—2000 ft.

EUCOILIDEA Ashm.

(1) *Eucoilidea micromorpha*, sp. nov.

Black, abdomen beneath at least at the base yellowish or brownish yellow. Legs mostly testaceous, the front and middle femora distinctly dark brown above except apically, tarsi and sometimes the posterior tibiae also more or less dark. Head, abdomen, and mesonotum smooth and polished. Antennae with short, globose pedicel, funicle with the joints increasing slightly in width towards the apex of the antennae, and fluted, the first and second joints nearly equal in length and the slenderest, the third being slightly wider than the latter, and also of about the same length, anteapical joints longer than their greatest width, but not much longer. Scutellar cup with a distinct complete series of marginal punctures just within its border, rugose-punctate below this. Mesopleura smooth and shining. Propodeum very finely sculptured in the middle between the carinae, and with a pubescent patch external to the carinae on each side in front. Abdominal petiole longitudinally costate. Neuration sordid yellowish. Length 1·2 mm. Female.

Var. *a*. Smaller, the antennae more pitchy, or blackish fuscous, abdomen more widely yellowish brown from base to apex, posterior femora as dark, or almost as dark, as the others.

HAB. Oahu, Honolulu on the lowlands and in the mountains to 1500 ft.

ICHNEUMONOIDEA.

Fam. ICHNEUMONIDAE.

Subfam. *CRYPTINAE.*

Cryptine Ichneumons are represented, in addition to the introduced species enumerated in Vol. I., by a single species of the tribe Hemitelini, a common parasite in the nests of spiders. I have little doubt the species is introduced. It is widely distributed in the islands.

Subfam. *PIMPLINAE.*

PIMPLA Fabr.

(1) *Pimpla*, sp. ?

A commonplace species of *Pimpla* is now common on Oahu, where it was first noticed in 1901.

Pimpla hawaiiensis Cam.

This species, described from the islands, also inhabits Mexico, and I have bred it from pupae of Mexican Tortricidae. It is no doubt an importation into the islands.

GLYPTOGASTRA Ashm.

(1) *Glyptogastra ashmeadi*, sp. nov.

Black, the apex of the clypeus, the labrum, antennae, front legs except a large part of the coxae, the middle tibiae, the sides (more or less) and the apical margins of the second to sixth abdominal segments, the whole or nearly the whole of the seventh and eighth and the genital armature ferruginous or testaceous. Middle and posterior femora red, the hind tibiae obscure red, as also the middle and hind trochanters, the coxae and tarsi black or blackish. Apical half of the antennae blackish above, beneath paler, but sordid. Abdomen dull, metallic greenish black.

Face below the antennae and nearly the whole thorax conspicuously clothed with pale brownish yellow hairs; antennae with 32 joints and with the first funicle joint much longer than the second, the rest decreasing in length towards the apex, each joint subcompressed so as to be wider at its base and apex than in the middle. Thorax dull and densely sculptured beneath the pubescence, formed as in *G. hawaiiensis* Ashm., the propodeum with very shallow punctures, which are larger than those of the mesonotum, the posterior median impression without hairs. Elevation of first abdominal segment concave above, second to sixth with lateral oblique lines, meeting at their apices the more or less distinct transverse impressed lines, which are distinct only towards the sides of each segment. Apical three or four segments recurved. Wings uniformly light shining fuscous, the neuration and stigma dark. Length (abdomen not straightened out) 9 mm.

OBS. *G. hawaiiensis* is not simply black as described, but is distinctly metallic.

HAB. Oahu; Honolulu, 1500 ft. I have not seen the female.

Subfam. *OPHIONINAE.*

ENICOSPILUS Curt.

The Hawaiian species of *Enicospilus* present unusual difficulties owing to the variation of important structural characters, as well as of colour. In some species the entire absence of the blister-like spot on the front wings decharacterizes the genus. It is, however, quite impossible to separate such species generically, because these spots are subject to variation in other species, so that in some cases, while the blister spot is tolerably distinct in some examples, in others it may be almost or entirely effaced. The transverse carina of the propodeum is also variable. Thus in *E. kaalae* Ashm. the male (as in the type) may be without the carina, or it may be well developed, as it always is in the female.

Enicospilus kaalae Ashm.

Enicospilus semirufus Perkins, Tr. Ent. Soc. London, 1902, p. 142.

My *E. semirufus* is a variety of the above. I characterized it as distinct from the fact that the male of *E. kaalae* was said to resemble the female. In the type, however, the male of *E. kaalae* lacks the distinct carina of the female. The colour description likewise did not altogether agree. The examination of a large number of examples shows that the carina on the propodeum of *E. kaalae* may be present or absent and is not a specific character.

HAB. Oahu; very common throughout the island. The type is from Kauai.

(1) *Enicospilus tyrannus*, sp. nov.

Male, head and face yellow, the ocelli very large, dark brown; the mandibles and mouth-parts brownish, the impressions on each side of the clypeus and a median spot beneath the antennae brown. Antennae ferruginous or testaceous, towards the apex fuscous. Pronotum mostly yellowish, the mesonotum dark brown, bordered with yellowish, and with a yellow longitudinal line on each side of the middle, dividing the dark colour into an anterior and two postero-lateral lobes; scutellum and postscutellum brown medially, more yellow laterally, propodeum blackish pitchy; more brown on the smooth anterior area. Legs ferruginous, the tibiae and tarsi paler. Abdomen dark brown or dark fuscous, in parts more reddish brown, especially in lateral aspect.

Female with the inner orbits widely pale yellow below the antennae, narrowly so above; middle of the face brown, the clypeus more yellowish, palpi and mandibles testaceous or ferruginous, the latter with dark teeth, occiput mostly pale yellow. Pronotum dark brown with a yellow area on each side, mesonotum blackish fuscous, the lateral margins in front and a space in the middle posteriorly, yellowish or reddish; scutellum at sides yellow, more testaceous above; propodeum black. Legs with the coxae black or very dark brown, the femora brown, tibiae and tarsi ferruginous. Abdomen dark blackish fuscous, a little red-tinged in parts.

Antennae of male extending well beyond the apex of the spread wings, in the female reaching about to the apex, the eyes very large, leaving only a very short cheek between the eyes and mandibles. Mesonotum dull, with very fine and dense rugulose puncturation, more pubescent in the female; propodeum nearly smooth and somewhat shining in front in the male, and at the most with faint traces of a carina dividing off the posterior finely rugose portion; in the female the carina is distinct, the part in front of it finely and densely rugose, but less dull and more finely sculptured than the posterior portion. Wings distinctly yellowish-tinged in the male, still more conspicuously so in the female; stigma of male brown, of female dark brown, discocubital cell with two distinct yellowish spots, the basal larger and of triangular shape. Length ♂ 17, ♀ 22 mm.

HAB. Molokai, 4000 ft.

(2) *Enicospilus capnodes*, sp. nov.

Male black, or in parts blackish fuscous, labrum testaceous, mandibles except the tip reddish, the inner orbits narrowly, the posterior widely, yellow; second joint of trochanters and apex of first joint ferruginous. Wings evenly fuscous; though translucent, and not very dark, they are darker than in most of the Hawaiian *Enicospilus*.

Head with the eyes very large, only separated from the mandibles by a very narrow cheek, the face below the antennae densely and finely punctate, the vertex smooth and shining between the large ocelli; antennae very long, reaching far beyond the apices of the expanded wings. Mesonotum very minutely punctured, the propodeum clothed with short pale pubescence, slightly shining in front in some aspects, the transverse carina represented only in the middle by a short line or tubercle, behind this closely rugose, dull and much less smooth than in front of it. Discocubital cell of front wings with a small dark spot, showing signs of total obsolescence, the radius thickened at the base, transverse median nervure not interstitial with the basal nervure, first recurrent not interstitial with the second transverse median nervure, but the space between them is very short, one-fourth the length of the second recurrent nervure. Abdomen very finely punctured or appearing granulate and clothed with pale fuscous pubescence. Length 14 mm.

HAB. Hawaii; Kona, 3000 ft.

(3) *Enicospilus dispilus* P.

Enicospilus dispilus Perkins, Tr. Ent. Soc. London, 1902, p. 143.

HAB. Oahu; abundant in the mountains.

(4) *Enicospilus dimidiatus* P.

Enicospilus dimidiatus Perkins, loc. cit. supra.

HAB. Oahu; common in the mountains.

ATHYREODON Ashm.

Abanchogastra Perkins, Tr. Ent. Soc. London, 1902, p. 141.

My genus *Abanchogastra* is synonymous with the above. A serious misprint or error, of which there are several in Ashmead's table of the genera of Ophionini, misled me into supposing my genus undescribed.

Athyreodon hawaiiensis Ashm.

Athyreodon hawaiiensis, Ashmead huj. op. I. p. 343.

A colour variety, separable by no structural character, so far as I can see, is found on Maui.

HAB. Maui, West Maui, and probably general, if looked for specially.

(1) *Athyreodon debilis* P.

Abanchogastra debilis Perkins, Tr. Ent. Soc. London, 1902, p. 141.

HAB. Oahu; mountains round Honolulu.

BANCHOGASTRA Ashm.

(1) *Banchogastra vitreipennis*, sp. nov.

Female black, the front tarsi somewhat brownish, the wings hyaline, iridescent, only slightly infuscate.

Mesonotum very densely and finely punctured, the propodeum dull and rugose behind the transverse carina, in front of this smoother and more shining. Abdomen narrow, the second segment nearly parallel-sided, elongate, one and a half times (or more) as long as its basal width.

Closely allied to *B. nigra* but distinguished by its comparatively clear wings and long second abdominal segment. Length 9—10·5 mm.

HAB. Maui; Haleakala, 5000 ft. and upwards.

PYCNOPHION Ashm.

(1) *Pycnophion fuscipennis*, sp. nov.

Rufous, the head, a median stripe on the mesonotum and the abdomen black. Legs mostly black, but the coxae for the most part (the hind ones being more or less dark) are red, as well as the extreme apex of the trochanters and base of femora of the middle and hind legs. Posterior orbits narrowly yellow and the anterior ones to the height of the antennal insertions. Wings shining fuscous, and iridescent.

Eyes very large, there being a short cheek between these and the mandibles, the first funicle joint of antennae nearly as long as the next two together. Mesonotum dull, finely punctate, the propodeum without a transverse carina, irregularly finely rugose. Ovipositor rather short, extruded to about the length of the three preceding dorsal segments. Female. Length 9 mm.

In this species the first recurrent nervure is almost interstitial with the discoidal.

HAB. Kauai, 3000 ft. and at lower elevations.

PRISTOMERUS Curtis.

(1) *Pristomerus hawaiiensis*, sp. nov.

Male black, the two basal joints of the antennae, the mandibles, palpi, apex of clypeus, all the legs (except the tips of the tarsi, the apex of the hind tibiae and more or less of the hind coxae) yellow, brownish yellow, or testaceous. Scutellum and middle of mesonotum on its posterior half red, this colour continued forwards along the furrows

and in front at the sides to the tegulae; upper edge of anterior and posterior orbits narrowly red, with a dilatation of this colour on the vertex. Basal abdominal segment red at the base for half its length or nearly, second segment red-marked at extreme base and at the apex, second and third for a large part or wholly red, claspers testaceous.

Scape of antennae short, not or hardly longer than its greatest width, first and second flagellar joints subequally elongate. Mesonotum dull, shallowly but distinctly punctured on its posterior half, the punctures becoming effaced anteriorly; scutellum shining and punctate, the deep transverse impression in front of it longitudinally rugose; propodeum strongly areolated, the areoles of the posterior surface rugose. Wings slightly yellowish-tinged, neuration yellowish fuscous, stigma very large, triangular, fuscous. Basal abdominal segment finely longitudinally rugose on its apical half, second segment very finely so, third excessively finely rugulose at the base laterally. Hind coxae with a strong tooth beneath near the middle, between which and the apex are several minute teeth.

Female generally like the male, but the basal antennal joints are dark brown or infuscate, the orbits and thorax wholly black, the hind coxae nearly entirely black or very dark brown, the hind femora nearly wholly pitchy brown, and much more slender, the tooth is more slender and placed nearer to the apex of the joint, the minute teeth following it being absent or hardly visible, the third, fourth and fifth abdominal segments with narrow red apical margins. Ovipositor nearly as long as the abdomen. Length 5·5—7·5 mm.

HAB. Hawaii, widely distributed at an elevation of 1000—2000 ft.

(2) *Pristomerus hilaris*, sp. nov.

Very closely allied to *P. hawaiiensis*, but the ♂ is easily distinguished by having the whole thorax red, excepting more or less of the propodeum; the antennae have the basal flagellar joints pale, as well as the scape. In some examples the propodeum is nearly entirely black, in others it is half red. The basal abdominal segments are a little more finely longitudinally rugose, and the metapleura above the hind coxae less strongly punctured. Length ♂ 7 mm.

I have not seen a female of this species, which replaces the preceding on Oahu, Maui and Molokai, but may prove to be merely a variety and not a good species.

HAB. Oahu, Molokai and Maui; 1000 ft. or more above sea-level.

ATROMETRUS Först.

(1) *Atrometrus tephrias*, sp. nov.

Male with the whole head, excepting the occiput and a broad median band extending from this to the antennae and enclosing the ocelli, lemon-yellow; scape, pedicel and base of flagellum more or less pale beneath; the whole of the prothorax,

the mesosternum and mesopleura, excepting a spot beneath the tegulae, and the scutellum, pale yellow. Thorax above for the most part blackish, the margins of the mesonotum, a spot on the disc, one on the postscutellum and at the anterior margin of the propodeum, as well as a band on the sides of the latter, all pale in colour, red, testaceous or yellow, but never bright yellow like the head. Abdomen beyond the second segment brownish, with black bands. Middle and front legs brownish yellow, hind legs pitchy brown, the coxae yellow, marked with black, the trochanters also more or less pale. Wings very iridescent, neuration blackish.

Female with head markings as in the ♂, but the pale colour is more testaceous and the sides of the head behind the eyes largely blackish. Prothorax reddish, mesonotum red with a median anterior and two lateral dark areas, mesosternum black, the pleura dark, but partly reddish, especially posteriorly, scutellum and propodeum red, the former paler; legs much as in the male, the hind pair generally darker than the others, the coxae brownish. Basal joints of antennae more or less pale, especially beneath. Basal two segments of abdomen black or nearly so, the rest obscure brown.

Head above the antennae finely and densely punctate or coriaceous; thorax also very finely and densely so; propodeum closely irregularly rugose, with short and rather dense, pale pubescence. Antennae of female with about 24 joints, of ♂ 25 or 26 joints. Length 6 mm.

HAB. Oahu; not rare at about 1500 ft. in the mountains.

(2) *Atrometrus sociabilis*, sp. nov.

Black, the whole face below the antennae, the scape of the antennae beneath, the orbits for a short distance above the yellow of the face, the tegulae, the anterior and intermediate coxae and trochanters, sulphur yellow or pale yellow. The pronotum is reddish or yellowish in the middle above, more or less blackish or infuscate at the sides, where the posterior and inferior angles are both paler, being either yellow or testaceous. Mesonotum and propodeum entirely black. Front legs, except the still paler coxae and trochanters, clear testaceous, the hind coxae black, yellow at the tips, the femora pitchy, the tibiae and tarsi sordid, brownish yellow. Abdomen black, or in part brownish-tinged, third and following segments ventrally yellowish brown. Neuration dark brown or blackish. Antennae with the small ring joint 22- or 23-jointed in either sex. Head above the antennae very densely and evenly punctate, propodeum densely irregularly rugose, and pubescent, mesonotum excessively finely and closely punctured. Length 5 mm. Apparently allied to *A. flavifrons* Ashm.

HAB. Hawaii; Kilauea.

(3) *Atrometus satelles*, sp. nov.

Male black, the face beneath the antennae bright yellow and this colour is continued upwards for a very short distance along the orbits; posterior orbits black, scape of antennae yellow beneath, the following two short joints and the next long joint also yellowish brown; seen from above all these joints are also pale, but more sordid. Pronotum, tegulae, front and intermediate coxae and trochanters pale yellow, scutellum in front with a reddish mark, becoming yellow at its anterior angles; a reddish spot on the postscutellum; front and middle legs, except as above noted otherwise, clear testaceous, a minute yellow spot at the apex of the mesopleura; posterior coxae yellow, with a dark stripe outwardly and inwardly; first joint of trochanters blackish, second yellow above; femora pitchy brown, tibiae and tarsi more or less sordid yellowish. Abdomen pitchy, third, fourth and fifth segments brown, with a dark apical band.

Antennae 23-jointed, head above the antennae smooth, the sculpture nearly effaced, propodeum finely granulate or shagreened, a little rugulose posteriorly. Length 5 mm.

HAB. Hawaii; Kilauea.

(4) *Atrometus solitarius*, sp. nov.

Male black, the face below the antennae, the whole orbits except for an interruption on the vertex, the whole prothorax, the tegulae, the anterior and intermediate coxae and trochanters, a mark more or less reddish on the scutellum, a band (reddish anteriorly) on the mesopleura, sulphur yellow. First three antennal joints (counting the minute ring joint) brown beneath, darker above. Front and intermediate legs (except as above noted otherwise) clear yellowish brown, the tarsi of the latter darker; posterior legs with the coxae reddish, with a black stripe on each side, basal joint of trochanters black, pale at the tip; femora pitchy brown, pale at extreme base; tibiae and tarsi blackish pitchy. Abdomen blackish, after the second segment dark fuscous, pubescent and finely punctured, the venter yellowish brown. Antennae 24-jointed, with the minute annular joint. Head above the antennae dull, densely punctured; mesonotum extremely finely punctured, the propodeum densely rugose. Length 5 mm.

HAB. Hawaii; Kilauea.

Fam. BRACONIDAE.

All Hawaiian Braconids are no doubt of foreign origin, excepting *Ecphylopsis* and possibly *Ischiogonus palliatus* Cam. Of recent introduction are a species of *Bracon*, one or two of *Macrodyctium*, several species of *Apanteles*, three species herewith described, and a few still undetermined. *Chelonus blackburni* Cam. is also found in Australia, while *Phanerotoma hawaiiensis* Ashm. was probably introduced by Koebele (? from Japan).

Subfam. *MICROGASTERINAE.*

APANTELES Först.

Apanteles, spp.

Several species have become established, one is known to me from North America and one is parasitic on caterpillars of domestic Lepidoptera.

Subfam. *BRACONINAE.*

BRACON Fabr.

(1) *Bracon*, sp.?

HAB. Oahu, at and near Honolulu.

MACRODYCTIUM Ashm.

(1) *Macrodyctium omiodivorum* Terry.

Macrodyctium omiodivorum Terry, Bull. H.S.P.A. Exp. Station.

A very variable species.

HAB. All the islands.

HABROBRACON Ashmead.

(1) *Habrobracon*, sp.?

HAB. Oahu and probably the other islands; often found in houses. It attacks caterpillars living in beans etc.

Subfam. *RHOGADINAE.*

ISCHIOGONUS Wesm.

(1) *Ischiogonus pallidiceps*, sp. nov.

Female black, the head yellowish brown, the tegulae and legs pale testaceous, basal joints of antennae also more or less pale, apex of mandibles dark. Antennae with the second joint of flagellum shorter than the first, the head smooth polished. Mesonotum shining in front and at the sides, in the middle more dull and with indefinite rugulose puncturation; scutellum at the base longitudinally costate; propodeum with a median raised line or carina, the anterior areas separated by this carina, rugulose; areola and petiolar areas confluent, and more strongly rugulose; pleural area marked off by a very fine longitudinal carina. Wings hyaline, iridescent, nervures brown, the extremities of the nervures at the base of the stigma yellowish. Basal abdominal segment coarsely rugose, second longitudinally strigose, dull and sculptured between the strigae, third shortly strigose at base, the rest smooth and shining, ovipositor exserted to about the length of the abdomen.

Male agrees generally in structure with the female, but is pale brown in colour, the basal or more than one of the abdominal segments often darker, sometimes the whole abdomen of a darker hue than the head and thorax. Length 3—5 mm.

HAB. Oahu; appeared first rather numerously in 1900, since which time it has been very common. It attacks various Longicorn Coleoptera, notably the species of *Clytarlus* and *Plagithmysus*. I have seen a specimen, apparently identical, from New Zealand.

Subfam. *SPATHIINAE.*

HORMIUS Nees.

(1) *Hormius* (?) *peregrinus*, sp. nov.

Head and thorax ferruginous or reddish brown varying in depth of colour, the rest of the thorax darker, blackish, more or less tinged with red, basal and usually the apical abdominal segments dark, the second segment always pale yellowish, legs testaceous, the hind femora more or less dark at least on the apical portion outwardly, their tibiae also dark except on the whitish basal portion, antennae testaceous basally, becoming dark apically, ovipositor black on the apical third or less, the rest pale.

Head dull, transversely rugose posteriorly; mesonotum very finely punctured, dull, in the middle posteriorly with some more or less longitudinal wrinkles, scutellum with a few strong costae anteriorly; propodeum with a close more or less reticulate rugose sculpture like that of the first abdominal segment, the areolation effaced; stigma dark fuscous, pale at base and sometimes at the apex. Hind femora exceedingly robust and incrassate, armed beneath with teeth, the basal of these placed before the middle, a longer one is placed nearly at the middle and is closely followed by about five or six others which decrease in size towards the apex of the femora. Basal abdominal segment subparallel-sided, about twice as long as wide in the male, less elongate in the female, only about half as wide as the apex of the second segment, which like the following is only very minutely sculptured. Ovipositor longer than the abdomen. Length 3·5—4·5 mm.

HAB. Oahu, Honolulu; of recent introduction.

OBS. I am unable to place this insect generically with any certainty. It appears to show some affinity with the Helconinae.

SPATHIUS Nees.

(1) *Spathius perdebilis*, sp. nov.

Male brown, the propodeum, petiole of abdomen and its apical segments, the lateral lobes of the mesonotum more or less, dark brown or infuscate, head paler yellowish brown, legs yellow, as also the several basal antennal joints, the other joints infuscate. Neuration mostly pallid, the stigma fuscous, pale at base.

Head shining, microscopically rugulose, first flagellar joint of antennae longer than the second. Mesonotum dull, densely and minutely punctate or shagreened; propodeum with a delicate median carina in front, the surface finely shagreened, the petiolar area defined, very narrow, but dilated or somewhat diamond-shaped anteriorly. Petiole long and very narrow, many times as long as wide, dull, densely and finely shagreened, its upper edge in profile well curved; rest of abdomen polished and smooth. Length 2·5 mm. I have not seen the female.

HAB. Oahu, Honolulu, introduced, without doubt.

Supplement by R. C. L. Perkins

to

ORTHOPTERA.

Vide pp. 1—16 hujus tomi.

ACRIDIOIDEA.

ATRACTOMORPHA Sauss.

(1) *Atractomorpha crenaticeps* Bl.

HAB. Oahu; now common round Honolulu; first appeared about 1900.

LOCUSTOIDEA.

HOLOCHLORA Stål.

(1) *Holochlora venosa.*

HAB. Oahu; the eggs inserted in young shoots of trees have been frequently found since 1896, but the mature insect is still rarely met with.

The determination of the above species and of the Mantid named below, were, I believe, kindly made by the authorities at the Dept. of Agriculture in Washington for some of the economic entomologists in the islands.

BRACHYMETOPA Redt.

Brachymetopa blackburni de B.

Brachymetopa discolor Redt., Perkins, Fauna Haw. II. p. 9.

In the Part 'Orthoptera' of the Fauna I have referred to the peculiar case of *B. discolor* and *B. blackburni*, but at the time of publication of that Part I had not sufficient evidence to warrant my uniting these as forms of one species. There is no doubt that they merely represent a striking case of dimorphism. Some years ago I spent two days investigating the matter and carefully examining every mature insect, that I could find. Of twenty-six adult ♂♂ 24 belonged to the var. *discolor*, the brownish-coloured black-faced form. Two males only were the green *blackburni* form. One of the latter was so far intermediate as to have a large triangular brownish or darkened area on the face, this marking being characteristic of the distinct Oahuan species *B. unica* P.

Of twenty-one females, one only was of the *discolor* var. but one or two of the other twenty (typical green *blackburni*) showed the triangular dark facial area as in the ♂ above referred to. In reality this variety can hardly be considered as a true intermediate form, but rather as a third constant variation, rare in either sex. It is certainly interesting to find this peculiarity of marking occurring as a constant specific character in *B. unica* of which I have, since its description, examined additional specimens.

It would appear then that about one ♂ in 13 of *B. blackburni* is green, typical or subtypical, the others being var. *discolor*, while of the females one in twenty-one only is var. *discolor* the others being the green form. Consequently there is exhibited a sexual dimorphism in *B. blackburni*, which is not yet quite complete, while a third form is of uncommon occurrence in either sex, in some respects forming a slight intermediate condition between the *blackburni* and *discolor* forms and resembling in colour another species of the genus, very distinct from and much rarer than *blackburni* but occurring with it.

I ought to add that all the specimens here considered were taken in the same locality.

GRYLLOIDEA.

(1) *Gryllus*, sp. ?

A commonplace species of *Gryllus* appeared in Honolulu in 1901 and has now spread into the country.

Paranemobius Alfk.

(1) *Paranemobius schauinslandi* Alfk.

What I take to be this species is an evidently[1] imported species, found in dirty and dusty houses, in closets, cellars, etc., in Honolulu and elsewhere.

Leptogryllus P.

(1) *Leptogryllus cylindricus*, sp. nov.

Testaceous or ferruginous, becoming often more or less discoloured after death, the front tibiae and femora with faint fuscous spots or annulations, apex of first, the second and apex of third joints of hind tarsi and sometimes of the middle ones infuscate. Tip of ovipositor blackish, with numerous small teeth on each side, the apical ones the larger. Hind femora very slender, with many small fuscous spots outwardly. Tegmina squamiform, about covering the metanotum in the male, smaller in the female, their inner margins not nearly touching the middle line. Ovipositor of the female very long, considerably longer than the hind femur. Length of body without ovipositor 15 mm., ovipositor 13 mm., hind femur 10 mm.

Hab. Kauai, about 2500 ft.

[1] An examination of the figures of *P. schauinslandi* has since convinced me that it is not the household insect above referred to, and it is still unknown to me. R. C. L. P.

(2) *Leptogryllus apicalis*, sp. nov.

Colour, size and form generally as in *L. nigrolineatus*, the tegmina in the male covering nearly all the metanotum, the posterior femora dark or black for a large extent on the basal portion. Length ♂ 18 mm., hind femora 12 mm.

HAB. Molokai and Maui (3000 ft.).

(3) *Leptogryllus deceptor*, sp. nov.

Extremely like *L. nigrolineatus* having the same colouration but distinguished at once by the small laterally placed tegmina, leaving the metanotum mostly exposed, and the ovipositor is apparently longer. Female. Length of hind femora 12 mm.; ovipositor 9—10 mm.

HAB. Oahu, 1500—2000 ft.

PROGNATHOGRYLLUS Brunn.

The genus *Nesogryllus* is the male of *Prognathogryllus* and was originally separated largely on account of the quite different cerci. It is noteworthy that in the allied genera there is no such sexual difference in these organs. The species are difficult and specimens from the other islands are so close to the Kauai and Oahu forms, as to be inseparable without a good series of specimens, especially as those taken in numbers appear to show considerable variation.

MANTOIDEA.

A second species of this group has been imported to the island of Hawaii, where it is now common in some localities and spreading.

PARATENODERA Rehn.

(1) *Paratenodera sinensis* Sauss.

HAB. Hawaii; now common on the windward side; first taken in 1900.

BLATTOIDEA.

PANCHLORA Burm.

(1) *Panchlora maderae* F.

I omitted this species in my earlier paper on the Orthoptera, although it was known to me that it had occurred in Maui. It has since been found on Oahu, Molokai and Hawaii, and is no doubt generally distributed.

DERMAPTERA.

At least three species of earwigs have been imported and become established since my former list was made up. They are of little importance for the purposes of this work. The most conspicuous is a species of *Labidura.*

LABIDURA Leach.

(1) *Labidura icterica* Serv.

HAB. Oahu, Honolulu and in the country. It occurs as high as 1000 ft. or more in the mountains also.

Supplement by R. C. L. Perkins

to

NEUROPTERA

Vide pp. 31—89 hujus tomi.

Fam. HEMEROBIIDAE.

Subfam. *CHRYSOPINAE.*

Anomalochrysa reticulata P.

At Kilauea, Hawaii, I have taken specimens of an *Anomalochrysa* agreeing well with *A. reticulata*, but they are rather small and, as in many other species, there is some variation in the neuration. The male characters are remarkable. The apical dorsal plate is fringed with hairs and bears a specially developed stout spinose one on each side at the base; the apical ventral valve is hairy beneath, subtriangular, being subacute at the apex, which forms a recurved hook. The abdomen has the clothing normal, the hairs not directed basally, as in *A. frater* P., which it much resembles.

HAB. Hawaii, Kilauea.

Anomalochrysa rufescens McL.

I suspect that my *A. biseriata* is the female of *A. rufescens* McL., the type of which I have not seen.

Subfam. *HEMEROBIINAE.*

(1) *Nesomicromus angularis*, sp. nov.

Head pale, yellowish, clothed with pale hairs, the pronotum also pale, but dark-spotted at the sides and thereon with dark hairs, rest of thorax pale but more or less dark in parts, abdomen brownish, with pale hairs. Antennae pale yellowish. Anterior wings light brown mottled with darker and with a large triangular dark brown or blackish fuscous triangular area on the basal half, connected with dark spaces on the costa, apical margin whitish hyaline, this pale area interrupted by a dark space a little above its middle, neuration pink in the pterostigmatic region. Posterior wings hyaline with dark fuscous markings along the outer gradate nervures and beyond these, with a good deal of fuscous strigulation; pterostigmatic nervures and many of the others pink. Front and middle tibiae annulate, the hind ones very long, pale, subfusiform in shape.

Anterior wings with emarginate apical margin, the costa bisinuate, the dorsal margin rounded, seven to nine radial sectors, hind wings with apical margin distinctly concave. Apical dorsal appendages of abdomen long but not extending far beyond the ventral plate, which is triangular, between the appendages two chitinous spines crossing one another. Expanse about 16 mm.

HAB. Molokai, 4500 ft.

(2) *Nesomicromus phaeostictus*, sp. nov.

Brownish (after drying) the head above yellow, clypeus and middle of face brown, antennae pale yellow, the joints fuscous-ringed; front and middle tibiae conspicuously dark-ringed.

Wings hyaline, the front pair with four small but conspicuous dark spots on the basal fourth of the costa, and nearly equidistant one from another, three similar spots below these on the radius, three nearly equidistant dark blotches on the costa beyond the small spots, and with one or two other small spots between each of these blotches, a transversely elongate spot beyond the latter, a spot at the tip of the wing, sometimes connected with the last of the costal blotches, two elongate dark spots on the apical margin. For the rest the wings are strigulated with brown or fuscous with darker spots on the cubitus and the gradate nervules; the nervures bear conspicuous light and dark hairs, the former more numerously. Hind wings with seven or eight dark spots on the costa, a dark suffusion in the costal cells beneath the three or four basal spots, and a second suffusion beneath two of the other spots; a large smoky cloud on the lower part of the apical margin and a small one, distant from this, on the dorsal.

Front wings falcate, the apical margin conspicuously concave, the dorsal margin nearly straight or faintly concave on the basal half; radius with about seven sectors. Hind wings with the apical margin distinctly concave. Female: expanse about 16 mm. Allied to the preceding species.

HAB. Oahu, 1500 ft. Koolau range.

(3) *Nesomicromus ombrias*, sp. nov.

Dark brown or blackish, the lower part of the face testaceous, a pale marking on the head above, some spots on the pronotum, the mesonotum in the middle in front, yellowish. Basal two joints of the antennae brown, the following testaceous. Legs pale, yellowish, the front and middle tibiae with two dark wide rings, the hind pair very long, dilated after the basal third, with a more or less dark cloud near the base and another at the apex; femora also more or less infuscate at apex, apex of abdomen yellowish.

Front wings darkish brown or fuscous, mottled over most of their surface with pale spots or strigulations, interrupting the dark nervures with pale spaces, the gradate

nervules dark and with darker suffusion at their sides, especially the outer series. The dilated costal cells form the clearest part of the wing, beyond the outer gradate nervules the mottling is sparse but there is a marginal series of five or six conspicuous pale spots, widely separated from one another, extending from the apical on to the dorsal margins. There is a large basal area between the radius and dorsal margin of a generally darker colour than the rest of the wing, forming a large blotch, angulated below and more or less curved above, where it is broken by pale spaces about the cubital nervures. About its angle it is uniformly dark. Hind wings smoky hyaline, iridescent, with a conspicuously darker smoky area along the dorsal margin, on the basal third or fourth of the wing length.

Front wings rounded at the tips, apical margin not at all excised, costa strongly curved on its basal part, where the costal cells are unusually high. Six sectors to the radius. Apical segment of the abdomen raised or somewhat bent back, angulately emarginate in dorsal aspect, the appendices in side view elongate triangular, bluntly pointed. conspicuously clothed with curved hairs, extending far beyond the apical ventral segment. Male: expanse 15 mm.

HAB. Oahu; mountains near Honolulu, 1500 ft.

ODONATA.

Fam. AGRIONIDAE.

The Hawaiian species referred to the genus *Agrion*, I believe, are none of them really referable to that genus, and the species though apparently all allied to one another, yet themselves form a number of groups. Probably in the hands of a specialist the whole will form a peculiar genus, with several subgenera. I have previously spoken of the great variability exhibited by the various species, and were it not for the characters shown by the terminal appendages of abdomen in the ♂, the difficulty of separating the species would be intense. Having now examined many more specimens from the different islands, I am the more convinced of the extreme importance of these characters. In many species, if one only had the extreme forms, one would certainly consider these to form distinct species, but when one has large series, especially from different localities and different islands, one finds that the apparently strong distinctions between extremes, apart from those afforded by the appendages, all vary and intermediate forms occur. Characters usually considered of specific, or even of more than specific importance, whether of colour, size, neuration, etc. all vary and one is finally driven to the male structures to find constant characters.

The following tabulation is probably a fairly natural grouping of the species that I have examined. It is based on the male characters.

1. Superior appendages of the ♂ abdomen short, the inferior ones extending behind them; most of the abdominal segments dark and metallic, and at most with a pale band at the base; lower appendages bidentate at the apex or obliquely truncate in side view ..... *A. xanthomelas, pacificum, nigrohamatum.*

   Without some or all of the above characters ..... 2.

2. Superior appendages generally shorter than the lower and with a black tooth on the inner side towards the base, this tooth being usually directed upwards; abdomen largely red ..... *A. oresitrophum, orobates, leptodemas, calliphya.*

   Without some or any of these characters ..... 3.

3. Legs mostly dark brown or black; abdomen usually black or pitchy and metallic, rarely with red segments behind the two basal ones; insect often with more or less whitish pruinosity; upper appendages in lateral view emarginate at apex so as to form two apical processes or teeth..... *A. koelense, asteliae, amaurodytum, eudytum, adytum.*

   Without some or all of these characters ..... 4.

4. Upper appendages extremely long and forcipate, dilated only at the extreme base ..... *A. nesiotes.*

   Appendages not so formed ..... 5.

5. Upper appendages turned outwards, their broad surface exposed in dorsal aspect; apical abdominal segment strongly and obliquely raised from base to apex ..... *A. oahuense.*

   Without these characters ..... 6.

6. Postcostal area of front wings with a single row of cellules, rarely with a few divided, to form a double row; abdomen slender or very slender..... *A. deceptor, vagabundum, kauaiense, molokaiense, jugorum.*

   Postcostal area of front wings always with a double row of cellules for a considerable part; species of large size and the abdomen relatively stout compared with the above species ..... *A. oceanicum, blackburni, heterogamias.*

The last three species form the genus *Megalagrion* of McLachlan, but individuals of some of the preceding group might be included therein.

(1) *Agrion calverti*, sp. nov.

Head dull black, apex of clypeus and labrum, orbits to the height of the antennae, mouth-parts and a spot on the basal joint of the antennae yellow or cream-coloured. Postocular spots orange, not connected. Prothorax yellow in front and at the sides. Dorsum of mesothorax black with purplish metallic lustre, a spot on each side in front connected with a sutural line not reaching the hind margin, a spot on each side near this margin, a band on the sides of the mesothorax extending back from the middle coxae for less than half its length, but represented by a detached spot near the hind margin, the whole lower part of the mesopleura extending back from the posterior coxae to the hind margin, except a spot posteriorly, yellow. Median longitudinal ridge of mesonotum reddish. Legs with the femora and tibiae sordid brownish or fuscous above, beneath and the trochanters yellow, the coxae infuscate in part. Abdomen black or pitchy, with a green metallic lustre, basal segment yellow at the sides and with very narrowly pale apical margin, third to the seventh with narrow yellow basal band, terminal segment reddish, but sordid in parts.

Front wings with about 18 postcubitals, the stigma fuscous, its lower side covering one cellule; three cellules between the quadrilateral and the nodus. Postpterostigmatic cellules forming a single row.

Apical abdominal segment broadly emarginate; the superior appendages about as long as this, dilated on more than their basal half, the dilated part reddish and without a distinct tooth on its lower margin apically, at most with a very minute notch in the margin just before its apical angle. Seen from above the upper appendages are slightly curved inwardly at the tips, the lower ones are red, black at the acute tips, and more strongly curved inwards.

Length of abdomen 35 mm., expanse about 45 mm. Female not known. Colour variation not known.

HAB. Oahu, near Honolulu, 1200 ft. Named after Prof. P. Calvert.

Agrion adytum var. *tillyardi* nov.

Very slender and elongate, head and thorax dull black, the latter with slight metallic reflection. Face black, apex of clypeus and labrum and the orbits to about the height of the insertion of the antennae white or pale-coloured. Occipital margin of the vertex red; postocular spots wanting. Prothorax with the front margin yellow, as also the whole underside; dorsum of mesothorax with a yellow spot on each side at the base, sometimes continued back as a fine sutural line to or nearly to the wings; sides of thorax yellowish, sometimes with a black spot in front of the insertion of the hind wings, or with a continuous black longitudinal band in place of this spot. Thorax posteriorly reddish. Legs for the most part blackish or brown above, yellow beneath, as also are the tarsi for the most part above; spines long slender and black. Basal two abdominal segments black, the first yellowish or red at the base, sides, and along the apical margin, the second with red apical margin and yellow on the sides, third segment reddish pitchy or pitchy black and this like the preceding sometimes submetallic, the apex still darker, fourth, fifth and base of sixth segments either quite red or else pitchy, the apices darker, seventh with the extreme base red, eighth entirely red, or only its extreme base red, two last segments red, sometimes more or less sordid or infuscate. Appendages red, the tips black. Beneath the abdomen is yellow or reddish.

Front wings with 16—20 postcubital cellules before the stigma, the latter wine-red, overlying one and part of a second cell, three cellules between the quadrilateral and the nodus. Superior appendages ♂ as long as the terminal segment, much dilated basally, when viewed inwardly; in external profile view emarginate at apex to form a large superior and small inferior process or tooth, both of which are black, the upper ones seen from above a little bent inwards at the tip; lower appendages acute at tips, which reach back to the small tooth of the upper ones.

The postpterostigmatic cellules do not form a double series as is usual in *A. eudytum* P., though sometimes one or more of them is petiolate. Length of abdomen 35 mm.; expanse about 50 mm. I do not know the female.

HAB. Kauai; near Lihue on a mountain stream. Named for Mr R. J. Tillyard, who has done so much work on Australian Odonata.

(2) *Agrion williamsoni*, sp. nov.

Agrees generally in size and appearance with the darker example of *A. tillyardi*, but the prothorax is black or dark above anteriorly, and the middle and hind tibiae are less dark or embrowned; the second abdominal segment is dark at the sides, unicolorous with the dorsal surface; antepenultimate segment with only its extreme apical margin red, the terminal segment, with an apical red band, occupying about half its whole surface. Pterostigma fuscous, only a little red-tinged.

Superior appendages of the male strongly curved inwards, minutely tuberculate at the tip, strongly dilated beneath on the basal two-thirds or more of their length, the dilatation forming a great prominent angle, but bearing no spine or tooth. Lower appendages pale and dilated at the base, black on the apical portion and acute at the tips, about as long as the superior appendages. Female not known.

HAB. Kauai; in the same locality as *A. adytum* var. *tillyardi*. Named for Mr E. B. Williamson of Indiana.

Supplement by R. C. L. Perkins

to

DIPTERA.

Vide Tom. III. hujus operis, pp. 1—92.

Fam. PIPUNCULIDAE.

(1) *Pipunculus vulcanus*, sp. nov.

Head with the front and face black, with inconspicuous fuscous tomentum and in the female smooth and shining for half the distance between the ocelli and antennae; posteriorly the head is greyish tomentose, at least towards the sides, but not densely so. Antennae entirely dark, black or piceous, third joint acuminately produced at the apex. Mesonotum somewhat shining, especially in the male, with hardly noticeable fuscous tomentum, and further clothed with short and sparse, but very distinct, erect, black hairs; in the female the sides as far as the tegulae and the anterior margin with a narrow border of whitish tomentum; the pleura with sparse whitish tomentum in both sexes; scutellum with a marginal fringe of bristly hairs, which are more developed than the mesonotal ones; metanotum with whitish tomentum. All the legs entirely dark above, the femora being black or very dark brown, with short bristly black or spinose hairs beneath, the middle ones with a very regular series of longer hairs, curved downwards, on their posterior face; tibiae often less dark than the femora, piceous or reddish pitchy, and without special bristles on the hind pair; tarsi black, or at least dark, above. Wings strongly infumate or fuscous in the male, nearly clear in the female, third costal segment much shorter than the fourth, posterior cross-vein obliquely transverse, its upper extremity about opposite the apex of the second longitudinal, terminal segment of fourth distinctly bisinuate; stigma brown. Abdomen shining on the apical segments of the male, very little tomentose except rather obscurely on the apical part of the basal segment, which has the lateral series of bristles well developed, the rest of the abdomen bearing short black hairs. In the female the abdomen is greyish tomentose and clothed with short black hairs, dull, except the fifth segment. Length 3·5—4 mm.

Allied to *P. juvator*, a variable and widely distributed species, which is found with it, and also occurs on other of the islands. Superficially *P. vulcanus* is most readily distinguished by the darker legs.

HAB. Hawaii, Kilauea.

(2) *Pipunculus acrothrix*, sp. nov.

Female black, the abdomen shining metallic aeneous-black. Face below the antennae with dense white tomentum, that on the head posteriorly more fuscous. Third antennal joint clear yellow, the beak thin and long, white. Mesonotum with thin fuscous tomentum, dense only at the sides, sparsely and shortly pilose; marginal bristles of scutellum well developed; metanotum and pleura with denser yellowish grey tomentum. Wings long and clear, neuration as in *P. vulcanus*, stigma brown, about half as long as the fourth costal segment. All the coxae dark, the trochanters and tibiae all clear yellow, the femora of this colour at base and apex, the middle being black, the tarsi, except the basal joint, being more or less dark above. Posterior tibiae with three or four long bristles outwardly near the middle. Abdomen with a distinct band of pale tomentum on the basal segment, the rest brightly shining and clothed with short hairs, the fifth at the apex with many long black bristles. Length 4·75 mm.

Very distinct by the colour of the legs, bristles of hind tibiae, the metallic colour and clothing of fifth abdominal segment.

HAB. Hawaii, Kilauea. Male not known to me.

(3) *Pipunculus pyrophilus*, sp. nov.

Deep black, more or less shining, especially the male, the very sparse tomentum of the surface being mostly fuscous and nowhere conspicuous, except perhaps an apical band on the first abdominal segment of the female. Legs in both sexes entirely black, or at most a trifle reddish or pitchy at some of the articulations. Antennae entirely black; the face of the female above the antennae not at all shining.

General appearance that of a minute *P. vulcanus*, but easily distinguished by being even more entirely black in both sexes; by the erect hairs of the mesonotum, which are unusually long, and as well, or almost as well, developed as the scutellar bristles. Wings smoky hyaline, differing very little in the sexes, though rather darker in the male. Stigma very short compared with the long fourth costal segment. Neuration generally as in *P. vulcanus*. Abdominal hairs black, longer in the female than in the male. Length 3 mm.

HAB. Hawaii, Kilauea. Attached to one or both of the small Delphacid leaf-hoppers, that are so common on *Raillardia* around the crater.

(4) *Pipunculus holomelas*, sp. nov.

Female entirely black and for the most part shining, the antennae entirely dark, piceous. Mesonotum apparently without tomentum (? abraded) shining and with very short erect hairs, metanotum with greyish tomentum. Halteres pale in the middle, more or less dark at base and apex. Legs with the coxae and femora black, the

trochanters and some of the articulations alone being more or less yellowish or brown, tibiae and tarsi piceous or dark brown above. Posterior tibiae with three or four long bristles outwardly about the middle. Wings nearly clear, only slightly smoky, neuration much as in *P. vulcanus*. Abdomen with greyish tomentum on the first two segments, the rest deep black and shining, the ovipositor yellow, short and strong. Length 4 mm.

HAB. Molokai; readily known from the other species, that have the long bristles on the hind tibiae, by the almost entirely dark legs. The male will no doubt have darker wings as is usual in Hawaiian species.

(5) *Pipunculus juvator* P.

P. juvator Perkins, Bull. H. S. P. A. Exp. Station I. 152.

HAB. Hawaii, Oahu and no doubt other of the islands.

(6) *Pipunculus oahuensis* P.

P. oahuensis Perkins, loc. cit. p. 153.

HAB. Oahu, 100—1000 ft.

(7) *Pipunculus terryi* P.

P. terryi Perkins, loc. cit. pp. 153 and 154.

HAB. Kauai, Lihue in cane-fields.

(8) *Pipunculus sweezeyi* P.

P. sweezeyi Perkins, loc. cit. p. 154.

HAB. Oahu, 1500—1800 ft. not usually common.

(9) *Pipunculus hawaiiensis* P.

P. hawaiiensis Perkins, loc. cit. p. 155.

HAB. Hawaii, Hamakua, 1200 ft.

Fam. DROSOPHILIDAE.

(1) *Idiomyia heteroneura*, sp. nov.

Front yellow or golden with a dark transverse mark anteriorly, orbits posteriorly and the vertical triangle dark, forming part of a transverse dark band, face yellow, antennae reddish yellow, the third joint blackish, the proboscis and palpi yellow. Thorax yellowish, two narrow black stripes, well separated, extend on each side of the middle from the anterior margin for about two-thirds of the length of the mesonotum; just external to these anteriorly is a largish black spot on each side

and behind their middle externally on each side there starts another black stripe reaching to the scutellum, while between them on the posterior half of the mesonotum is a median dark stripe (or perhaps two very closely apposed stripes). Scutellum dark on the disc, but broadly bordered with yellow, metanotum mostly dark; pleura with three or four dark spots. Halteres yellow. Legs yellowish, tips of tibiae noticeably infuscate. Wings hyaline, their base as far as the apex of the first vein for the most part infuscate, the infuscation irregular in depth and distribution, marginal cell infuscate, as well as the tip of the wing on either side of the apex of the second, third and fourth veins; transverse veins and a small portion of the fourth longitudinal vein just before the apical one of the two transverse veins that are between it and the third, distinctly infuscate on each side. This second or apical transverse vein oblique, placed much before the posterior transverse, the sector of the fourth vein between these being not much shorter than the first named. Abdominal segments hairy, more or less shining, black medially and apically, so as to leave a well-marked series of yellow spots on each side. Ovipositor reddish yellow.

HAB. Hawaii.

(2) *Idiomyia silvestris*, sp. nov.

Front golden yellow, the orbits as far as the apical fronto-orbital bristle, the vertical triangle and a band connecting these posteriorly, blackish and with grey tomentum; face, palpi and proboscis yellow. Antennae dark, the second joint pitchy brown, the arista with about four bristles beneath, the basal part being bare, and about nine above. Mesonotum yellowish, most of its surface suffused with brown or blackish infuscation, forming vague lines and spots, but not a definite pattern; scutellum dark brownish black, metanotum black, tomentose; mesopleura mostly blackish. Halteres pale yellow. Legs yellowish or brownish yellow with the middle and hind femora dark brown or blackish, the tibiae also more or less dark. Wings hyaline, basally as far as the termination of the first vein largely but irregularly infuscate, marginal cell faintly brownish, tip of wing darkly infuscate on either side of veins two, three and four. Transverse veins infuscate, as also the part of vein four just before the origin of the second or apical of the two transverse veins between it and the third. This second transverse vein is oblique and placed much before the posterior cross-vein, so that the sector of the fourth that lies between them is not much shorter than this second transverse vein itself. Abdomen black, at the base a little pale, pilose and shining, the ovipositor paler.

HAB. Hawaii.

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