

HYMENOPTERA PARASITICA.

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§ 1. General considerations.

THE Hawaiian Islands, on account of their volcanic origin and isolation from the continents of Asia and America, have a most interesting, and, in some respects, peculiar fauna which is well worth the closest study, although their early settlement, their close commercial relationship with various nationalities and the introduction of many plants and animals, not indigenous, render a study of the endemic species obscure and most difficult.

This difficulty is enhanced among the smaller insects easily transportable, especially among those of parasitic habits, and more particularly among species belonging to the orders Diptera and Hymenoptera, groups still very imperfectly known in temperate zones and almost totally neglected in tropical regions, but which have a wide geographical distribution.

It becomes of the greatest importance, therefore, to see that larger and more thorough zoological and botanical collections of the endemic species of these Islands be made before further inroads of modern civilization utterly destroy the indigenous species.

Our own government¹ and the authorities of the U. S. National Museum have been singularly remiss in their duty in this respect, and have left the exploration of these Islands, now a body politic of the United States, to others.

The present contribution to a knowledge of the parasitic Hymenoptera of these Islands is based mainly upon the explorations instituted by the Joint Committee appointed by various learned societies of England and assisted by the Trustees of the Bernice Pauahi Bishop Museum at Honolulu, Oahu, and upon the rather limited material in the U. S. National Museum, collected principally by Mr Albert Koebele and Mr H. W. Henshaw.

The principal part of this material, comprising nearly 1000 specimens, was made by Mr R. C. L. Perkins during a residence of about five years in these Islands, and was transmitted to me by Dr David Sharp, Secretary of the Joint Committee.

¹ That of the United States of North America. ED.

Judging from these collections alone, the parasitic Hymenoptera of the Hawaiian Islands would seem to be much less numerous in species than are the Aculeata, since Messrs Perkins and Forel, in the first part of this work, enumerated, with the common *Apis mellifica*, two hundred and one species of Aculeata, while in the present paper, after a careful examination of nearly 1500 specimens included in the above-mentioned collections, and with the published records, only one hundred and twenty-eight species can be enumerated.

Although many of these species are apparently new and are here described for the first time, it is nevertheless a poor showing when we consider the great abundance of these insects everywhere, and remember that the parasitic Hymenoptera of the world, in species, exceed very many times all of the Aculeata and other Hymenoptera combined.

Bearing this fact in mind, the discrepancy between the known Aculeata and the Parasiticæ of these Islands is, therefore, much too great, and the list of the parasitic species given here can represent only a small percentage of the species occurring there; especially since many of the common parasitic families, which must surely occur, are entirely unrepresented and we may naturally expect soon many additions to this list.

CLASSIFICATION OF THE HYMENOPTERA.

Of the 10 superfamilies and the 94 families recognized by the writer in his recent classification of the Hymenoptera¹, five of the superfamilies and thirty of the families have been found to have representatives in the Hawaiian Islands.

In Vol. I. part I. of this work, Messrs Perkins and Forel, under the general title HYMENOPTERA ACULEATA, treat of 16 of these families, under eight family names, while the remaining families, 14 in number, will be treated here under the general title HYMENOPTERA PARASITICA, the sequence of these families being in accordance with the proposed Classification.

It seems advisable, therefore, before discussing these parasitic families, to give first a brief resumé of the arrangement of all of these superfamilies and families found in the Hawaiian Islands so that the arrangement of the families in this part, being so different from that in the text of the first part, devoted to the Hymenoptera Aculeata, may be better understood and made to harmonize.

SYSTEMATIC ARRANGEMENT OF THE HAWAIIAN HYMENOPTERA.

The superfamilies, families, subfamilies and genera now known from these Islands may be arranged, in accordance with the Author's own views, as follows:—

¹ Proc. U. S. Nat. Mus., xxiii. 1900, pp. 191—205.

Superfamilies.	Families.	Subfamilies.	Genera.	
I. APOIDEA.	I. Apidae	II. Apinae	Apis Linné.	
	VIII. Xylocopidae	I. Xylocopinae	Xylocopa Latreille.	
	IX. Megachilidae	II. Megachilinae	Megachile Latreille.	
	XIV. Prosopidae		Nesoprosopis Perkins.	
II. SPHEGOIDEA.	XVI. Crabronidae	III. Crabroninae	{ Crabro Fabricius. Nesocrabro Perkins.	
	XVII. Pemphredonidae	I. Pseninae	{ Nesomimesa Perkins. Deinomimesa Perkins.	
	XIX. Larridae	IV. Pisoninae	{ Pison Spinola. Pisonitus Shuckard (not recorded by Perkins).	
	XXI. Trypoxylidae		Trypoxylon Latreille (not recorded by Perkins).	
	XXV. Sphecidae	III. Sceliphroninae	Sceliphron Klug (= Pelopaeus Latreille).	
III. VESPOIDEA.	XXVIII. Vespidae	II. Polistinae	Polistes Latreille.	
	XXIX. Eumenidae		Odynerus Latreille. Scleroderma Latreille.	
	XXXII. Bethyliidae	I. Bethylinae	{ Epyris Westwood. Sierola Cameron.	
		III. Dryininae	{ Gonatopus Ljungh. Labeo Haliday.	
IV. FORMICOIDEA.	XLIV. Poneridae		{ Poneria Latreille. Leptogenys Roger.	
	XLV. Myrmicidae		{ Solenopsis Westwood. Tetramorium Mayr. Pheidole Westwood. Ischnomyrmex Mayr. (Stenamma Westwood, part). Cardiocondyla Emery.	
		XLVIII. Dolichoderidae		Tapinoma Förster.
		XLIX. Formicidae	I. Camponotinae	Camponotus Mayr.
			II. Formicinae	Prenolepis Emery.
V. PROCTOTRYPOIDEA.	LII. Proctotrypidae		Proctotrypes Latreille.	
	LIV. Diapriidae	II. Diapriinae	{ Zacranium Ashmead, n. g. Platymischoides Ashmead, n. g. Phaenopria Ashmead.	
		LVI. Scelionidae	IV. Scelioninae	Anteris Förster.
VI. CYNIPOIDEA.	LVIII. Figitidae	V. Eucoelinae	{ Piliinotrix Förster. Trybliographa Förster. Aglatotoma Förster. Diranchis Förster. Hypodiranchis Ashmead, n. g. Hexaplasta Förster.	

Superfamilies.	Families.	Subfamilies.	Genera.	
VII. CHALCIDOIDEA.	LXII. Chalcididae	II. Chalcidinae	{ Chalcis Fabricius. Epitranus Walker.	
	LXVI. Miscogasteridae	III. Miscogasterinae	{ Toxema Walker. Stictomischus Thomson.	
			IV. Lelapinae.....	{ Neolelaps Ashmead, n. g. Mesolelaps Ashmead, n. g.
	LXVIII. Encyrtidae.....	I. Eupelminae	{ Solindenia Cameron. Eupelminus Dalla Torre. Eupelmus Dalman.	
			II. Encyrtinae	{ Anastatus Motschulsky. Encyrtus Latreille.
				{ Bothriothorax Ratzeburg. Microterys Thomson. Adelencyrtus Ashmead.
	LXIX. Pteromalidae	II. Pteromalinae	Pteromalus Swederus.	
		III. Sphegigasterinae.....	Tomocera Howard (= Moranila Cameron).	
		IV. Spalanginae	Spalangia Latreille.	
		I. Entedoninae	{ Astichus Förster. Omphale Haliday.	
	II. Aphelininae		Coccophagus Westwood.	
	LXXI. Eulophidae	III. Tetrastichinae.....	Tetrastichus Haliday.	
		IV. Elachistinae.....	Ophelinus Haliday.	
		V. Eulophinae	{ Hemiptarsenus Westwood. Necremnus Thomson. Sympiesis Förster. Eulophus Geoffroy.	
	LXXIII. Mymaridae		II. Mymarinae	Polynema Haliday.
VIII. ICHNEUMO- NOIDEA.	LXXIV. Evanidae	I. Evaniinae	Evania Fabricius	
	LXXVI. Ichneumonidae	II. Cryptinae	Hemiteles Gravenhorst.	
		III. Pimplinae	{ Lissonota Gravenhorst. Echthromorpha Holmgren. Pimpla Fabricius.	
			IV. Tryphoninae	{ Metacoelus Förster. Bassus Fallen.
		V. Ophioninae	{ Ophion Fabricius. Pleuroneurophion Ashmead. Athyreodon Ashmead. Banchogastra Ashmead. Pycnophion Ashmead. Eremotylus Förster. Enicospilus Curtis. Atrometus Förster. Idechthis Förster. Lathrostizus Förster. Limnerium Ashmead (= Limneria Holmgren).	
	LXXVII. Alysiidae		II. Alysiinae	{ Aphaereta Förster. Aspilota Förster.

Superfamilies.	Families.	Subfamilies.	Genera.
VIII. ICHNEUMONOIDEA (continued).	LXXVIII. Braconidae...	IX. Cheloninae X. Agathidinae XII. Microgasterinae... XVI. Rhogadinae XVII. Spathiinae	Chelonus Jurine. Microdus Nees. Protapanteles Ashmead. Ischiogonus Wesmæl. Ecpiphylopsis Ashmead.

DISTRIBUTION.

In this work 14 families of parasitic Hymenoptera are recognized in the Hawaiian fauna, not a single one of which is peculiar to the archipelago, but, on the contrary, all have a wide geographical range, or at least have some representatives in all parts of the world.

These 14 families are represented by 128 species, distributed in 69 genera. Of these genera only 11 are, apparently, endemic or peculiar to the Islands, viz., *Zacranium*, *Platymischodes*, *Hypodiranchis*, *Neolelaps*, *Mesolelaps*, *Solindenia*, *Pleuro-neurophion*, *Athyreodon*, *Bauchogastra*, *Pycnophion* and *Ecpiphylopsis*.

Most of the other genera, except *Ophelinus* Haliday and *Echthromorpha* Holmgren, are represented in nearly all the known faunae, North and South America, Europe, Africa, Asia and Australia, the two mentioned being more particularly confined to the Australian and Asiatic faunae.

Of the eleven genera mentioned as being apparently peculiar to the Islands, ten are here described for the first time, and there is but little doubt in my own mind that most of these will be found to have representatives in the Australasian fauna, from whence it is evident, taking all things into consideration, that the Hawaiian fauna was originally derived.

Of the one hundred and twenty-eight species of parasitic Hymenoptera enumerated, eighty-seven are supposed to be new and are here described for the first time, so that, for the present, nothing can be said of their distribution.

The known species, however, may be arranged into three categories, as follows:—

- (1) Of Asiatic or Australasian origin (5 species).

Chalcis obscurata Walk., *Tomocera californica* How., (= *Moranila testaceiceps* Cam. = *M. testaceipes* D. T.), *Evania appendigaster* Linné and *E. sericea* Cam.

- (2) Of North American origin (7 species).

Encyrtus fuscus How., *Cocophagus lecanii* Fitch, *C. ochraceus* How., *Hemiteles melitæae* Ashm., *H. tenellus* Say, *H. variegatus* Ashm., and *Aphaereta muscae* Ashm.

- (3) Of European origin (5 species).

Spalangia hirta Hal., *Tetrastichus hagenowi* Ratzebl., *Lissonota bellator* Grav., *Metacoelus femoralis* Fourc., and *Bassus laetatorius* Fabr.

Of the above species, *Evania appendigaster* Linné, parasitic on the oothecae of cockroaches, its hyperparasite, *Tetrastichus hagenowi* Ratz., *Metacoelus femoralis*, parasitic on Lepidopterous larvae, and *Bassus lactatorius*, parasitic on Dipterous larvae, are now cosmopolitan species.

BIBLIOGRAPHIC.

The literature relating to the parasitic Hymenoptera of the Hawaiian Islands is not extensive, the following being all that I have been able to find:—

1. CAMERON, P. Notes on Hymenoptera, with Descriptions of New Species. (Trans. Ent. Soc. London, 1881, pp. 555—562.)
Describes: *Sterola* (n. g.) *testaceipes*, *Chelonus carinatus*, *Monolexis? palliatus*, *Chalcis polynesialis*.
2. ——. Descriptions of New Genera and Species of Hymenoptera. (Trans. Ent. Soc. London, 1883, pp. 187—193.)
Describes: *Epitranus lacteipennis*, *Moranilla testaceiceps*, *Solindenia* (n. g.) *picticornis*, *Eupelmus flavipes*, *Evania sericea*, *Limneria polynesialis*, *L. Blackburni*, *Ophion lineatus* and *O. nigricans*.
3. BLACKBURN, Rev. T. and CAMERON, P. On the Hymenoptera of the Hawaiian Islands. (Mem. and Proc. Manchester Lit. and Phil. Soc. (3), x. 1885—86, pp. 194—245.)
4. HOLMGREN, A. E. Kongliga Svenska Fregatten Eugenies Resa omkring Jorden under befäl of C. A. Virgin. Aren, 1851—1853. Zoologi I. Insecta. Stockholm, 1858—1868.
Describes *Echthromorpha* (n. g.) *maculipennis*.

§ 2. Systematic account of the Hymenoptera Parasitica.

Superfamily III. VESPOIDEA.

Family XXXII. BETHYLIDAE.

This family, which is composed of purely parasitic species, is quite extensive and has representatives in all parts of the world. It was first correctly placed by A. H. Haliday, as early as 1839, among the so-called fossorial wasps, but was subsequently removed and treated by Prof. John O. Westwood as a subfamily in the family Proctotrypidae.

Following the views of Prof. Westwood, it was so treated by Förster, Thomson and most of the subsequent writers on these insects and by the author in his Monograph of the North American Proctotrypidae, published in 1893. Since that time,

however, extensive studies in all families of the Hymenoptera have caused a radical change in my views, as to the classification of these insects, and I am now convinced that Haliday was right, that they have nothing in common with the Proctotrypidae, that they are far removed from the genuine Proctotrypids, and that they are more nearly allied to the genuine fossores. This position is also supported by the observations of Mr A. Busck, of the U. S. Department of Agriculture, who finds that at least some of them sting the larvae of their hosts into insensibility before oviposition, as the larger Aculeata do.

The family is divided into three subfamilies, and two of these are represented in the Hawaiian fauna by five genera, and one of these, namely, *Sierola* Cameron, was supposed to be endemic, but species have been recently described from New Zealand¹.

Subfamily I. *BETHYLINAE*.

SCLERODERMA Latreille.

1810. *Scleroderma* Latreille, *Consid. Gener.*, p. 314.

Males5.
 Females.

Species brownish-yellow or castaneous, the abdomen, however, sometimes black.....3.
 Species black or piceous black2.

2. Abdomen longer than the head and thorax united, the sutures of the dorsal segments not flavo-testaceous, although faintly testaceous in some specimens; legs mostly black or piceous brown-black, the incision of the joints and the tarsi flavo-testaceous; flagellum most frequently brownish-yellow, the scape brown, the pedicel yellow; head oblong quadrate, not narrowed behind, about one and a half times as long as wide; length 1·8 to 3 mm.

.....(1) *S. perkinsi*.

Abdomen much longer than the thorax, the structures of the dorsal segments, or at least 1 to 4 or 5 flavo-testaceous; antennae brownish-yellow; length 3 to 3·5 mm.(2) *S. polynesiale*.

3. Abdomen black4.
 Abdomen not black.

Castaneous, the head and scutellum black or brown-black; scape, pedicel and legs yellowish, the femora and tibiae with a rufous tinge; abdomen elongate, much longer than the head and thorax united, the apices of segments 1 to 5, and the terminal segment, flavo-testaceous; length 2 to 2·8 mm.(3) *S. kaalae*.

Uniformly pale castaneous; scape, pedicel and legs yellowish, the flagellum light brown; abdomen elongate, twice longer than the thorax, the apices of segments yellow; length 3 mm.(4) *S. janaiense*.

¹ Proc. Linn. Soc. N. S. Wales, 1900, p. 328.

4. Castaneous, the abdomen black, longer than the head and thorax united; dorsal abdominal segments 3 to 5 at apex yellowish; antennae, incision of the joints of the legs, the anterior tibiae, the hind tibiae at apex, and all the tarsi, yellowish; length 1.8 mm.(5) *S. nigri ventre*.
- Pale castaneous, the abdomen ovate, shorter than the head and thorax united, piceous black, the dorsal segments 2 to 5 at apex and the apical ventral segments yellowish; scape and pedicel yellow, the flagellum light brown; legs light brown, the coxae at apex, the trochanters, the incisions of the joints and the tarsi, pale yellowish; length 1.6 mm.(6) *S. brevi ventre*.
5. Piceous black, the abdomen brown-black, the claspers brownish-yellow; antennae brown; wings dusky or obscure hyaline(1) *S. perkinsi*.

(1) *Scleroderma Perkinsi*, sp. nov.

♀. Length 1.8 to 3 mm. Piceous black, the thorax under a strong lens exhibiting a feeble reticulate sculpture. Head oblong quadrate, about one and a half times as long as wide. Antennae short, not longer than the head, the tubercles and pedicel yellow, the flagellum brownish-yellow, the joints wider than long, the scape dark brown or castaneous. Legs black or piceous brown-black, the incisions of the joints and the tarsi yellowish. Mesonotum as long as the metathorax, slightly rounded and narrowed anteriorly, the pronotum hardly visible from above, the scutellum semicircular, a little longer than half the length of the mesonotum. Abdomen elongate, in most specimens black, and distinctly longer than the head and thorax united, the sutures of the dorsal segments not flavo-testaceous, although in some specimens the antennal sutures as well as the dorsal segments are faintly testaceous.

♂. Length 1.5 mm. Piceous black, the middle coxae rufous, the abdomen brown-black, the claspers yellowish; antennae filiform, sparsely pubescent, the joints of the flagellum a little longer than wide; wing subhyaline, ciliate.

HAB. Hawaii: Kona (3000 to 4000 feet).—Lanai: Koholuamano (2000 to 4000 feet) in April, 1894, 1895.

(2) *Scleroderma polynesiæ* Saunders.

1881. *Scleroderma polynesiæ* Saunders, Trans. Ent. Soc. London, 1881, p. 116, ♀.

1898. *Scleroderma polynesiæ* Dalla Torre, Cat. Hym., v. p. 560, ♀.

“Long. corp. $3\frac{3}{4}$ mm. *Scleroderma piceæ* Westw., affinis sed gracilior, annis tarsisque brevioribus; picea, unicolor, punctulatissima, abdomine valde elongato, thoracis latitudine fere coequali, segmentorum basaliū quatuor margine postico luteo-flavo. Ocelli alaeque obsoleti.” (Saunders.)

HAB. Hawaii: Haleakala (4000 feet).

(3) *Scleroderma kaalae*, sp. nov.

♀. Length 2 to 2·8 mm. Castaneous, the head and scutellum black or brown-black; scape, pedicel, legs and first abdominal segment beneath yellowish, the femora and sometimes the tibiae with a decided rufous tinge. The head and the thorax appear smooth but under a strong lens exhibit a fine delicate reticulate sculpture. The head is less than one and a half times as long as wide, with a brownish tinge beneath. The mesonotum is long, about twice as long as the scutellum, slightly narrowed and rounded before. The metathorax is widened posteriorly, being at least one-half wider at apex than at base, the sides and apex abruptly truncate. The abdomen is elongate, sub-cylindrical, twice longer than the thorax, smooth and shining, with the apices of the segments 1 to 5 and the terminal segments flavo-testaceous.

HAB. Oahu: Kaala Mts. (3000 feet), in December, 1892. One ♀ specimen.

(4) *Scleroderma lanaiense*, sp. nov.

♀. Length 3 mm. Elongate, pale castaneous; scape, pedicel and legs yellowish, the flagellum light brown; apices of the abdominal segments more or less yellow. The head is less elongate than usual, being nearly quadrate or only a little longer than wide. The scape of the antennae is longer than half the length of the flagellum and slightly curved, the pedicel being a little longer than wide, while the joints of the flagellum, except the last, are transverse, the basal joints smaller, the last joint oblong, a little longer than the pedicel.

HAB. Lanai (3000 feet). One ♀ taken in January, 1894.

(5) *Scleroderma nigri ventre*, sp. nov.

♀. Length 1·8 mm. Head, thorax and first segment of abdomen beneath castaneous; abdomen black, longer than the head and thorax united, with the apices of dorsal segments 3 to 5 narrowly yellowish; legs reddish-brown, the incisions of the joints, the anterior tibiae, the tips of the middle and the hind tibiae, and all tarsi, yellow. Antennae yellow (broken off at tips), the first three or four joints of the flagellum minute, wider than long. The head is oblong, about one and a half times as long as wide, the eyes oval, black. The mesonotum is fully twice as long as the scutellum, while the metathorax is only a little longer than wide and only slightly wider at apex than at base.

One ♀ specimen taken in January, 1894. Allied to *S. lanaiense*, but smaller, differently coloured and readily separated by the shape of the head and the metathorax.

HAB. Lanai (2000 feet).

(6) *Scleroderma breviventre*, sp. nov.

♀. Length 1.6 mm. Head, thorax and first abdominal segment pale castaneous; abdomen piceous black, the apices of dorsal segments and the apical ventral segments yellowish; scape, pedicel, trochanters, and tarsi, yellowish, the flagellum and rest of legs brown.

The head is oblong as in *S. nigriventre*, but the abdomen is much shorter, being distinctly shorter than the oblong head and the thorax united, and thus differing from all the other species described here. The joints of the flagellum, except the last, are all short, transverse, the first two or three being the smallest and narrowest joints; the last joint is oblong and as long as the penultimate and antepenultimate joints united.

HAB. Lanai (2000 feet). One ♀ taken in January, 1894.

EPYRIS Westwood.

1832. *Epyris* Westwood, Lond. and Edinb. Phil. Soc. (3), I. p. 129.

(1) *Epyris hawaiiensis*, sp. nov.

♀. Length 3.5 mm. Black; the antennae, except the last 6 or 7 joints which are dusky, the mandibles, the tegulae, and the legs, ferruginous, the coxae basally and the hind coxae posteriorly, black; dorsal abdominal segments 1 and 2 testaceous; wings hyaline with a dusky discoidal blotch toward apex.

The head is a little longer than wide, very finely, closely punctate. The thorax above is feebly coriaceous, the pronotum being long trapezoidal, longer than wide at base; the mesonotum is fully three times as wide as long, with a grooved line on each side near the tegulae; the scutellum has a grooved furrow across the base; while the metathorax is about twice as long as wide, rather abruptly, but somewhat obliquely, truncated at apex, the dorsum with several elevated longitudinal lines. The abdomen is long ovate, shining black, about as long as the head and thorax united.

Described from a single specimen, without number, and it is, therefore, impossible to tell upon which Island it was captured.

HAB. Hawaiian Islands. (Locality and date of capture not stated.)

SIEROLA Cameron.

1881. *Sierola* Cameron, Tr. Ent. Soc. London, 1881, p. 556.

This genus was originally characterized from specimens from the Hawaiian Islands and is apparently endemic, although the genus also occurs in New Zealand. It is evidently the prototype from which sprang the genus *Goniozus*, common to Europe and North America.

The genus is unknown in the European and American faunae, although I described a species, *Sierola ambigua*, doubtfully as such some years ago. This species, however, as I suspected at the time, has no relation with these insects or with the genuine Proctotrypids, but forms the type of a new genus, which I have called *Sierolomorpha*, in the family *Cosilidae*.

Mr Cameron characterized three species in this genus, which are here increased to eight species through the efforts of Mr Perkins, who suspects that they are parasitic upon species belonging to the Coleopterous family Cioidae. Mr Froggatt, however, has bred *Sierola antipoda* Ashmead, in New Zealand, from *Cecidomyia frauenfeldi*, a Dipterous insect, and if this record is correct it is more likely that the Hawaiian species will have similar habits, and probably attack Dipterous larvae associated with the Cioidae in the fungi. All other Bethylids, however, whose parasitism is known, attack only Coleopterous and Lepidopterous larvae, and Mr Froggatt's record should be confirmed by others before it is accepted as final.

Males7.

Females.

- Species, or at least more or less of the thorax, yellow or flavo-testaceous, the abdomen sometimes black5.
- Species black, the thorax always entirely black2.
2. Legs yellowish, testaceous, or at most with only the anterior coxae and femora black or fuscous4.
- Legs, or at least all the coxae and femora, black or dark rufo-piceous3.
3. Scape blackish, the pedicel and joints 1 and 2 of the flagellum flavo-testaceous; legs black, the anterior tibiae and all tarsi yellowish, the middle and hind tibiae dark fuscous or fuscous medially; flagellar joints 1 to 11 a little longer than thick(3) *S. molokaiensis*.
- Scape, pedicel and three or four joints of the flagellum flavo-testaceous; trochanters, knees, the anterior and middle tibiae usually, tips of hind tibiae and all tarsi yellowish; sometimes with all tibiae yellowish; flagellar joints submoniliform, 3 to 5 wider than long, the following not, or scarcely, wider than long(1) *S. leuconaura*.
- Scape at base and apex, the pedicel and joints 1 to 3 of flagellum usually flavo-testaceous, or at least yellowish beneath; trochanters, all tibiae, except sometimes the hind pair medially, and all tarsi, yellowish.
- Joints of flagellum not moniliform, distinctly longer than thick(2) *S. monticola*.
- Joints of flagellum 5 to 12 moniliform, or submoniliform, not, or scarcely, longer than thick(1) *S. leuconaura*.
4. Anterior coxae and femora more or less black or fuscous, rest of legs testaceous or yellowish.
- Clypeus with a highly elevated median carina; antennae, except the last 5 or 6 joints, brownish-yellow, rarely wholly yellowish; flagellar joints about twice as long as thick or somewhat shorter, the first being slightly the shortest joint(5) *S. molokaiensis*.

- Legs, including coxae, flavo-testaceous.
- Antennae with the first three or four joints (or more) yellow, joints 8 to 12 submoniliform, only a little longer than thick.
- Clypeus produced anteriorly into a broad rounded ledge; mandibles rufous with black teeth.....(4) *S. oahuensis*.
- Clypeus normal, obtusely triangular anteriorly, but not produced into a projecting ledge(5) *S. testaceipes*.
5. Mostly flavo-testaceous, the abdomen never black6.
- Mostly black, the abdomen always black.
- Pronotum alone yellow, rest of thorax black; legs yellow; head very distinctly longer than wide; flagellum tapering off toward apex, the joints all longer than thick.....(6) *S. flavocollis*.
- Prothorax, mesonotum and scutellum yellow (rarely with the scutellum black), the head and rest of the thorax black; all legs yellow, the anterior and middle legs sometimes yellowish-white; head not longer than wide across the eyes; antennae yellow, slightly obfuscated toward apex, the flagellar joints a little longer than thick(7) *S. collaris*.
6. Ocelli, the eyes and the metathorax black; all legs yellowish-white; head large, very slightly longer than wide across the eyes; antennae yellow, the flagellar joints moniliform, the intermediate joints not longer than wide(8) *S. kauaiensis*.
7. Species, or at least more or less of the thorax, yellow10.
- Species, or at least the thorax, always black.
- Legs testaceous or yellowish, at the most with only the anterior coxae and femora black or fuscous9.
- Legs, or at least all the coxae and femora, black, or the anterior femur and coxae beneath and toward apex reddish8.
8. Coxae and femora black, the trochanters tibiae and tarsi yellowish; barely three joints of antennae yellowish, the joints beyond the last moniliform, not or scarcely longer than thick(1) *S. leuconaura*.
- Anterior coxae and femora beneath and toward apex, the trochanters, tibiae and tarsi testaceous; basal two joints beneath reddish-yellow, the joints beyond all distinctly longer than thick(2) *S. monticola*.
9. Clypeus produced into a ledge anteriorly.
- Antennae yellow, with the 4 or 5 terminal joints more or less dusky, all flagellar joints distinctly longer than wide, the first three about twice as long as wide.....(4) *S. oahuensis*.
- Clypeus normal, not produced into a ledge anteriorly.
- Antennae yellow, faintly dusky toward apex, the flagellar joints 5 to 10 submoniliform, not longer than thick(5) *S. testaceipes*.
10. Abdomen black.
- Prothorax alone yellow(6) *S. flavocollaris*.
- Prothorax, mesonotum and scutellum yellow(7) *S. collaris*.
- Abdomen never black.
- Body, except the metathorax, the ocelli and the eyes, wholly flavo-testaceous(8) *S. kauaiensis*.

(1) *Sierola leuconeuva* Cameron.

1886. *Sierola leuconeuva* Cameron, P. Manchester Soc. xxv. p. 177.—1886. Cameron, Mem. Manchester Soc. (3), x. p. 238.—1898. Dalla Torre, Cat. Hym. v. p. 554.

♀. Length 2 mm. "Black; the knees, tibiae and basal half of antennae testaceous; the hind tibiae fuscous in the middle; antennae scarcely so long as the thorax, the basal joint shortly pedunculated, double as long as wide, double the length and thickness of the second, which is thinner and shorter than the third, the third to sixth thicker than the following, broader than long, the apical two joints subequal. Head and thorax smooth, faintly alutaceous. Abdomen shining, longer than the thorax. Wings semifuscous, nervures lacteous." (Cameron.)

♂. Length 1·8 mm. Black; basal three joints of the antennae, trochanters, tibiae and tarsi, except last joint, yellowish; funicle joints moniliform, scarcely longer than thick; otherwise as in female.

HAB. Hawaii: Kona (3000 feet) July 5, (4000 feet) July, October; Kilauea, in August.—Kauai: Mts. Waimea, in July.—Lanai: Makaweli (2000 feet), in June, (3000 feet) January.—Maui: Haleakala (5000 feet), in March.—Molokai: Mts. (4000 feet), in October and November.—Oahu: Kaala Mts. (2500—3000 feet), in December.

(2) *Sierola monticola* Cameron.

1886. *Sierola monticola* Cameron, P. Manchester Soc. xxv. p. 176.—1886. Cameron, Mem. Manchester Soc. (3), x. p. 237.—1898. Dalla Torre, Cat. Hym. v. p. 555.

♀. Length 4 mm. "Black; anterior tibiae and tarsi testaceous, the tips of the latter black; the base and apex of hind tibiae fusco-testaceous, the tarsi fuscous, paler in the middle; the extreme base and apex of basal joint of antennae and the second to fourth joint testaceous. Antennae scarcely so long as the thorax; the basal joint pear-shaped, narrowest at the base, a little longer than the third and fourth united; second joint a little longer than third, and of the same thickness; second to fourth longer and thicker than the other joints; the apical seven more moniliform than the others, and a little longer than broad; the last longer and thinner than the penultimate. Head smooth and slightly alutaceous; mandibles piceous at tip, faintly striated; thorax smooth, a little alutaceous. The abdominal segments laterally at their junction narrowly milk-white. Wings hyaline, stigma and prostigma fuscous; nervures testaceous." (Cameron.)

♂. Length 2 mm. Black, basal two joints of antennae beneath, front coxae and femora beneath and toward apex, and tibiae and tarsi except last joint, testaceous;

funicle joints of antennae all distinctly longer than thick, but shortening towards apex ; otherwise as in female.

HAB. Hawaii : Hualalai (5000 feet), in August ; Kilauea ; Kona (4000—5000 feet) June, (2000 feet) September.—Lanai : Halepaakai, in July.—Maui : Haleakala (5000 feet), in August.—Molokai : Kalae, in August.

(3) *Sierola molokaiensis*, sp. nov.

(Plate VIII. fig. 1.)

♀. Length 2 to 3.5 mm. Black, the head and thorax finely coriaceous but more or less shining ; mandibles black or brown-black ; abdomen smooth, impunctate, highly polished ; antennae, except the four or five terminal joints, and the legs, except the front coxae and more or less of the front femora or at least above, testaceous or brownish-yellow ; front coxae and front femora black or dark brown in part, the latter sometimes brownish only above or outwardly ; wings hyaline, the parastigma and the stigma brown or fuscous, the other veins pallid or pale yellowish.

The head is distinctly longer than wide, with an acute ridge anteriorly between the insertion of the antennae, and clothed with a short, sparse pubescence. The antennae are much longer than the head, all the joints of the flagellum being distinctly longer than thick or from $1\frac{1}{2}$ to 2 times as long as thick.

♂. Length about 2 mm. Black ; two or three basal joints of the antennae and the legs, flavo-testaceous, the rest of the antennae being dark fuscous or black. The anterior femora above or outwardly and sometimes the front coxae, more or less, are brown or fuscous. The joints of the antennae 5 to 6 are oval and very little longer than thick, joints 11 and 12 being moniliform, while the abdomen is oblong-oval, not longer than the thorax.

HAB. Hawaii : Kilauea, July, August ; Kona (2000 feet), September.—Lanai (2000 feet), January.—Maui : Haleakala (5000 feet), in October.—Molokai : Kalae, in August (4000 feet), in May.—Oahu : Honolulu, in November ; Waianae Mts. (3000 feet), in February.

(4) *Sierola oahuensis*, sp. nov.

♀. Length 2 to 2.3 mm. Black, the head and thorax microscopically coriaceous ; mandibles rufous with black teeth ; first three or four joints of the antennae yellowish, those beyond fuscous ; legs testaceous, the upper ridge of the anterior femora sometimes with a brownish spot, the tarsi sometimes yellowish ; tegulae dark rufo-piceous ; wings hyaline, the veins, except the stigma and parastigma, pellucid.

The head is large, longer than wide, the clypeus being produced into a broad plate or ledge, rounded anteriorly and covering the mandibles. The joints of the flagellum 3 to 10 are moniliform and scarcely longer than thick.

♂. Length 1.9 mm. Agrees very closely with the female, except that the apex of the abdomen gapes open and exposes the genitalia, the produced clypeus is a little narrower and subtruncate anteriorly, not rounded, while the joints of the flagellum are longer, not moniliform, the joints all being distinctly longer than thick.

HAB. Hawaii: Kilauea, in July and August.—Oahu: Waianae Mts. (2000 feet), in March.

(5) *Sierola testaceipes* Cameron.

1881. *Sierola testaceipes* Cameron, Tr. Ent. Soc. London, p. 556. ♀.—
1898. Dalla Torre, Cat. Hym. v. p. 555.

“♀. Length 1½ lines. Black; head and mesonotum faintly alutaceous; abdomen smooth, shining; three basal joints of antennae and legs testaceous; abdominal segments at their junction dull testaceous. Wings deeply fringed, shorter than the thorax and abdomen, hyaline; stigma and parastigma fuscous; other nervures pale. Head and thorax covered with a scattered pubescence.” (Cameron.)

♂. Length 1.8 mm. Black, the head and thorax feebly coriaceous; antennae, except the 5 or 6 terminal joints, and the legs, including the coxae, yellow. The head is not longer than wide, a little the widest across the eyes. The antennae are more than twice the length of the head, with joints 7 to 12 moniliform. Abdomen oblong oval, hardly as long as the thorax or no longer.

HAB. Sandwich Islands (Rev. Thomas Blackburn); Hawaii: Kilauea, in July and August; Kona (2000—3000 feet), in September; Oloa, in September.—Kauai: Halemanu (4000 feet), in April; Koholuamano, in March, high plateau in August and October; Mts. Waimea (4000 feet), in June.—Lanai: Halepaakai, in July (2000—3000 feet), in January and February.—Maui: Lahaina (2000 feet), in January.—Molokai in June.—Oahu: Kaala Mts. (3000 feet), in December; Mts. near Honolulu (2000—3000 feet); Waianae Mts. (2000—3000 feet), in February and April.

(6) *Sierola flavocollaris*, sp. nov.

♀. Length about 3 mm. Head, thorax, except the pronotum, and the abdomen black; pronotum, base of antennae and the legs, including coxae, flavo-testaceous; terminal joints of antennae fuscous; wings hyaline or only faintly tinged, the parastigma and the stigma brown, the veins pallid or pale yellowish. Head and thorax finely coriaceous, the head anteriorly subopaque. Abdomen hardly as long as the head and

thorax united, polished, impunctate. The head is large, very distinctly longer than wide, with a median carina between the insertion of the antennae, while the antennae are a little longer than the head, all the flagellar joints being a little longer than thick, the joints 8 to 12 oval, submoniliform.

Described from 5 specimens. The species is allied to *S. collaris*, but it is larger, with a larger and quite differently shaped head.

HAB. Kauai: (high plateau), in August; Makaweli (2000 feet), in January.
—Maui: Haleakala (4000 feet).

(7) *Sierola collaris*, sp. nov.

♀. Length 2 to 2.2 mm. Black, with the mandibles, the five or six basal joints of the antennae, the prothorax, except sometimes a dusky spot on the prosternum anteriorly, the mesonotum and usually (but not always) the scutellum, yellow; the palpi, the tegulae, and the legs, yellowish-white; mesopleura sometimes with a pale spot anteriorly beneath the tegulae; wings hyaline, the stigma and parastigma brown, the internal veins pallid. The head and thorax are feebly, microscopically sculptured, clothed with a sparse, short, whitish pubescence. The head is scarcely longer than wide across the eyes, the clypeus anteriorly obtusely triangular, with a delicate median carina. Antennae normal, the 7 or 8 terminal joints obfuscated or pale brownish, joints 5 to 12 submoniliform, scarcely longer than thick, the last ovate, a little longer than the preceding. Metathorax finely rugulose. Abdomen pointed ovate, about the length of the thorax, highly polished and impunctate.

HAB. Kauai: (high plateau), in August; Halemanu (4000 feet), in May; Koho-luamano, in June.

(8) *Sierola kauaiensis*, sp. nov.

♀. Length 2 to 2.5 mm. Honey-yellow; stemmaticum, eyes and metathorax black; legs yellowish-white. The head is large, a little longer than the width across the eyes; the antennal joints 7 to 12 are moniliform, not longer than thick; the wings hyaline, the veins pallid, the stigma and parastigma tinged with brown; while the abdomen is ovate, highly shining, and a little shorter than the thorax.

Described from 3 specimens.

HAB. Kauai: Kaholuamano, in April.

Subfamily III. *DRYININAE*.

GONATOPUS Ljungh.

1810. *Gonatopus* Ljungh, Beitr. z. naturk. II. p. 161.Dark reddish-brown; head anteriorly and beneath, the antennae, and the legs, except the anterior femora, yellow.....(1) *G. perkinsi*.Rufo-testaceous, the thorax beneath blackish, otherwise similar to Perkinsi... (2) *G. haleakalae*.(1) *Gonatopus perkinsi*, sp. nov.

(Plate VIII. fig. 2, ♀.)

♀. Length 3 mm. Head, thorax and abdomen dark reddish-brown, tinged with black, especially the thorax beneath, the head in front and behind yellowish, with usually a black spot on the vertex, enclosing the ocelli; the antennae, the mandibles, the palpi and the legs, except the swollen anterior femora, which are rufo-piceous, are yellow. The head and the anterior lobe of the thorax are coriaceous, the posterior lobe of the thorax being strongly transversely striated. Abdomen oval, not longer than the posterior lobe of the thorax, but broader, smooth and polished, the petiole black, some of the segments tinged with blackish, while the hypopygium is yellow. The antennae are slightly thickened toward apex and extend a little beyond the base of the posterior thoracic lobe, with the third joint the longest, about as long as joints 4—5 united.

Described from 3 specimens.

HAB. Hawaii: Kilauea, in July.—Molokai, in June.

(2) *Gonatopus haleakalae*, sp. nov.

♀. Length 3 mm. Reddish; the vertex of the head is dusky, the lobes of the thorax beneath and the petiole of the abdomen are blackish, while the antennae and the legs are wholly yellow. The sculpture of the species is almost exactly as in *perkinsi*, except that the anterior thoracic lobe is smooth and highly polished.

Described from one specimen. Very close to *perkinsi* and possibly only a variety of it.

HAB. Maui: Haleakala.

LABEO Haliday.

1833. *Labeo* Haliday, Ent. Mag., I. p. 273.

(1) *Labeo hawaiiensis*, sp. nov.

♂. Length 1.9 mm. Black; clypeus anteriorly and the mandibles pale yellowish; ocelli red, arranged on a slight curved line; antennae about as long as the body, filiform, light brown, pubescent, the joints of the flagellum subequal, the first not longer than the scape and pedicel united, the last joint a little longer than the penultimate; legs brownish-yellow, the hind coxae and the middle and hind femora more or less obfuscated.

Head in front subconvex, highly polished, impunctate, behind strongly concave, the eyes rounded pubescent. Thorax narrowed anteriorly, the mesonotum minutely, feebly punctate, with distinct parapsidal furrows which converge toward the base of the scutellum; metathorax longer than wide, finely rugulose. Wings hyaline, pubescent, the tegulae and the stigma light brown, the veins more yellowish. Abdomen rather small, depressed, in outline oblong-oval, shorter than the thorax, polished black, the first segment foveate above.

Described from a single specimen.

HAB. Molokai Mts. (4500 feet), in August.

Superfamily V. *PROCTOTRYPOIDEA*.Family LII. *PROCTOTRYPIDAE*.*PROCTOTRYPES* Latreille.

1796. *Proctotrypes* Latreille, Préc. car. gén. Ins., p. 108.

(1) *Proctotrypes hawaiiensis*, sp. nov.

♀. Length 2.9 to 3.5 mm. Polished black, the two or three terminal abdominal segments more or less at sides and beneath, and the aculeus at apex, reddish; antennae brown, becoming blackish toward apex, the ring-joint and the first joint of the flagellum more or less yellowish; legs, except coxae which are black, ferruginous.

The head is transverse, about three times as wide as thick antero-posteriorly, with the ocelli pale and arranged in a triangle. The pronotum at the sides is lineated, with the lateral anterior angles acute. The mesonotum and the scutellum are smooth impunctate; while the metathorax at the sides and posteriorly is rugulose, with two oblong areas on the metanotum as in *P. abruptus* Say. Wings hyaline, the internal veins entirely obliterated, the stigma brown, the costal and subcostal veins very pale or yellowish, the tegulae testaceous.

Many specimens. The species is allied to *P. abruptus* Say and will come next to it in a table of our species.

HAB. Hawaii: Kona (2000—3000 feet), June & July (3500 feet), in July (4000 feet), in August; Oloa, June.—Maui: Haleakala (4500 feet), in March (8000 feet), in April.

Family LIV. *DIAPRIIDAE*

This family is represented by three distinct genera, two of which are new.

Subfamily II. *DIAPRIINAE*.

ZACRANIUM, gen. nov.

♀. Apterous. Head large, compressed, but not much wider than the compressed thorax; seen from above it is oval, a little longer than wide; seen from the side it is about twice as high as long, the antennae being inserted on a slight ledge far below the middle. Eyes faceted, small, almost round and situated toward the side of the head much below its middle. The mandibles project slightly and are bidentate, the inner tooth acute. The antennae are 12-jointed, as long as the body; the scape long, subclavate, about as long as the first four joints of the flagellum united; pedicel obconical, not short, about two-thirds the length of the first joint of the flagellum, the latter being the longest joint of the flagellum, about as long as joints 2 and 3 united; the flagellum is incrassated towards the apex, joints 4 to 9 moniliform, the 10th or last antennal joint being oblong and as long as the two preceding joints united. The thorax is compressed and about one-third the width of the abdomen at its widest part; above it is convex and a little more than thrice as long as wide, the scutellum not being differentiated, the collar at the sides and the metathorax, as well as the petiole of the abdomen, being clothed with a pale woolly pubescence. Abdomen oblong oval, about as in the European genus *Platymischus* Westwood, the second segment occupying nearly its whole surface.

(1) *Zacranium oahuense*, sp. nov.

(Plate VIII. fig. 3, ♀.)

♀. Length 2.8 mm. Polished, shining, the head and abdomen black, the thorax rufous, the collar, metathorax and the petiole clothed with a dense woolly pubescence; first two joints of the antennae and the legs, including the coxae, flavo-testaceous, the flagellum, except joints 1 and 2, which are more or less brownish, being black.

Described from 1 ♀ specimen.

HAB. Oahu: Waianae Mts., in June.

PLATYMISCHOIDES, gen. nov.

♀. Agrees well with *Platymischus* Westwood in having the head oblong, in the absence of ocelli, and in its abdominal characters, but otherwise it is quite distinct: the antennae are 12-jointed, and the scape is not dilated as in *Platymischus*; the scutellum is present but indistinctly separated from the mesonotum, while the legs are normal, not especially shortened as in *Platymischus*, and agree with those found in many genera of the Diapriidae.

(1) *Platymischoides molokaiensis*, sp. nov.

(Plate VIII. fig. 4, ♀.)

♀. Length 1.3 to 1.8 mm. Polished black, the antennae dark brown, almost black, the scape black, while the legs are dark rufopiceous, the tibiae at base and the tarsi being more or less yellowish.

The antennae are long, but little shorter than the body, the scape being about as long as the first four joints of the flagellum united; pedicel obconical, scarcely so long as the second funicle joint; the first joint of the flagellum is a little longer than the second, the third to the fifth nearly equal, those beyond to the last being moniliform, while the last joint is fusiform and a little shorter than the two preceding joints united.

Described from 3 ♀ specimens.

HAB. Molokai, in the mountains (4000 feet), in October.

PHAENOPRIA Ashmead.

1893. *Phaenopria* Ashmead, Monogr. North Am. Proctotryp., p. 436.

(1) *Phaenopria hawaiiensis*, sp. nov.

♀. Length 1.1 mm. Polished black, impunctate; antennae 12-jointed, light brown or brownish-yellow, dusky toward tips, the flagellum subclavate, gradually thickened towards apex, without a well-defined, separable club, but with the last joint much the largest ovoid, and a little longer than the two preceding joints united. Wings hyaline, the veins yellowish, the stigma being represented by a small brownish dot. Legs dark brownish or dark rufo-piceous, the trochanters, base of tibiae and the tarsi, except the last joint, yellowish.

♂. Length 1 mm. Agrees well with the female except in having a smaller abdomen and in its antennal characters. The antennae are longer than the body, 14-jointed, the first joint of the flagellum being slightly longer than the second, the second beneath angulated, while the following joints are elliptic-oval, subpedunculate, and clothed with sparse hairs.

Described from a single ♀ and ♂ specimen.

HAB. Molokai (3500 feet), in July.

*Part I. of Volume I. will be published on
October 15, 1901.*

The Fauna and Geography
of the
Maldive and Laccadive Archipelagoes.

Being the Account of the Work carried on and
of the Collections made by an Expedition
during the years 1899 and 1900
under the leadership of

J. STANLEY GARDINER, M.A.

Fellow of Gonville and Caius College and Balfour Student
of the University of Cambridge.

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Cambridge University Press Warehouse,
Ave Maria Lane.

The Fauna and Geography of the

This work comprises the results of the first scientific expedition that has visited the Maldives and Laccadives. These groups, over 1000 miles long by 70 broad and comprising about 1500 islands, were surveyed by Capt. Moresby in 1834, at a time when the natives were still unfriendly. Beyond the published charts there is no detailed information respecting them.

The expedition, consisting of Mr J. Stanley Gardiner, Mr L. A. Borradaile, Selwyn College, and Mr C. Forster Cooper, Trinity College, passed eleven months in the two groups, during which an attempt was made to survey the area as thoroughly as possible. The chief object of the expedition was to investigate the interdependence of the physical and biological factors in the formation of atolls and reefs. To this end upwards of 300 dredgings were taken, a large number of soundings were run, and every group of organisms was carefully collected.

As a type atoll Minikoi was chosen on account of its isolation, almost midway between the main reefs of the two groups. The three months, June to September, of the south-west monsoon were spent here. Every part of the land and reef was visited, and numerous observations were made on the currents, depths, tides, sand-trituration, etc. in the lagoon and surrounding sea.

In the Maldives the land and reef fauna of Hulule atoll was collected for comparison with Minikoi. For the rest 11 out of 17 atolls were visited, including about 200 islands, in a cruise of five months duration on a schooner and boats, lent by the Sultan. Later a steamer was chartered from Ceylon, and four other atolls, including Suvadiva and Addu, were dredged and surveyed. Lines of soundings were run across the central basin and between the atolls of the group.

Maldive and Laccadive Archipelagoes

The land fauna was carefully and exhaustively collected, and, being from an undoubted oceanic area, cannot fail to be of great interest. The marine collections fill in an almost unknown gap between the Red Sea and the East Indies, and are the most extensive ever obtained from any coral, oceanic area. They are believed to be very complete in respect to every group, and have arrived in good condition.

The following is a preliminary list of Zoologists who have consented to assist in working out the material.

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E. J. BLES (Fierasfer).
L. A. BORRADAILE (Crustacea).
G. A. BOULENGER, F.R.S. (Pisces).
P. CAMERON (Hymenoptera).
C. FORSTER COOPER (Cephalochorda).
W. L. DISTANT (Hemiptera).
Sir C. ELIOT, K.C.M.G. (Nudibranchiata).
HANS GADOW, F.R.S. (Aves).
J. STANLEY GARDINER (The Work of the Expedition, Madreporaria).
S. F. HARMER, F.R.S. (Polyzoa).
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Family LVI. SCELIONIDAE.

Subfamily IV. SCELIONINAE.

ANTERIS Förster.

1856. *Anteris* Förster, Hym. Stud., II., pp. 101, 113.

Females.

1. Legs, including coxae, honey-yellow or brownish-yellow4.
Legs mostly black, the knees, sometimes base of tibiae and tarsi, honey-yellow or testaceous2.
2. Antennae not wholly black, the pedicel and the funicle joints 1 to 5 brown 3.
Antennae wholly black or at most with the pedicel at apex alone testaceous.
First joint of antennal club as wide as the second; legs, except a spot on the knees, black(1) *A. nigricornis*.
First joint of antennal club hardly half the width of the second; legs blackish but with the trochanters, knees, base of tibiae and the tarsi, except the last joint, honey-yellow or testaceous(2) *A. tarsalis*.
3. First joint of antennal club only about twice as wide as long, narrower than the second; legs black, with the trochanters, base of tibiae and the tarsi, except last joint, honey-yellow (3) *A. hawaiiensis*.
4. Scape and pedicel honey-yellow, the rest of the antennae black; first joint of club twice as wide as long but narrower than the second(4) *A. perkinsi*.

(1) *Anteris nigricornis*, sp. nov.

♀. Length 2.9 mm. Opaque black, the head finely, closely punctate, the punctuation of the thorax still finer. Eyes large, oval, finely hairy. Ocelli triangularly arranged, the lateral almost touching the eye margin. Antennae 12-jointed, black; the first joint of the funicle is the longest, cylindrical, a little more than thrice as long as thick, the second a little shorter, the third very slightly shorter than the second, the fourth a little longer than thick, the fifth moniliform, subpedunculate; club 5-jointed, with the first joint as wide as the second.

Thorax with distinct parapsidal furrows, the postscutellar ridge angulated at the middle, the metathorax finely rugoso-punctate, the upper hind angles subdentate. Wings dusky hyaline, the tegulae piceous, the venation dark brown, nearly black, the stigmal vein paler, scarcely longer than the marginal vein and ending in a small, pale knob. Legs black, the knees testaceous or honey-yellow, the anterior and middle tarsi with a brownish tinge. Abdomen fusiform, longer than the head and thorax united, the first segment longitudinally striate, the second more delicately striate and separated from the first by a crenate line at base.

Described from 1 ♀ specimen.

HAB. Lanai (3000 feet), in January 1894.

(2) *Anteris tarsalis*, sp. nov.

♀. Length 2·6 mm. Comes very close to *A. nigricornis* but differs as follows: the third joint of the funicle is much shorter, being only about half the length of the first, the fourth and fifth being nearly equal, moniliform; the first joint of the club is much smaller and not nearly as wide as the second joint; the trochanters, knees, base and tips of tibiae and the tarsi, except the last joint, are honey-yellow or testaceous; the stigmal vein is distinctly longer, its staff, without the knob, alone being longer than the marginal vein; while the three or four apical segments of the abdomen are smoother, slightly polished.

Described from 2 ♀ specimens, one without number or locality label but presumably taken in Hawaii.

HAB. ? Hawaii.—Kauai: Makaweli (2000 feet), in January.

(3) *Anteris hawaiiensis*, sp. nov.

♀. Length 2·5 to 2·7 mm. Opaque black, coriaceous or finely, closely punctate, and sparsely clothed with a short pubescence; first and second segments of the abdomen longitudinally striate; pedicel and funicle joints 1 to 5 brown, or brownish-black; knees, and sometimes base and apex of tibiae, as well as tarsi basally, testaceous; wings hyaline, faintly tinged, the venation brown-black, the marginal vein about two-thirds the length of the stigmal, the latter ending in a small, rounded knob, the postmarginal vein being nearly thrice as long as the marginal.

The head is transverse-quadrate, with the eyes large oval, faintly hairy. The antennae are 12-jointed and terminate in a 5-jointed club; the first joint of the funicle is the longest joint, about thrice as long as thick, while the fourth and fifth joints are moniliform, subequal; the first joint of the club is about twice as wide as long but much narrower than the following joints. The thorax has the parapsidal furrows distinct to the base of the scutellum but widely separated, while the postscutellar ridge is distinctly angulated at the middle. The abdomen is fusiform, longer than the head and thorax united, the first segment much shorter than the second but both longitudinally striate, the second more delicately striate, the following segments being finely, closely punctate, the fourth to the seventh subpolished.

Described from two specimens.

HAB. Lanai: Makaweli (2000 feet), in January.

(4) *Anteris perkinsi*, sp. nov.

♀. Length 2·5 mm. Black, subopaque, finely, closely punctate; scape, pedicel, and legs, including coxae, honey-yellow. The first three joints of the funicle are

cylindrical, the first the longest but very little longer than the second, the third about the length of the fourth and fifth united, which are moniliform; club 5-jointed, the first being twice as wide as long but narrower than the second. The metathorax has the upper hind angles dentate, the postscutellar ridge being angulated at the middle. Wings hyaline, the veins pallid. Abdomen alutaceously punctate, with the first segment striate, the second aciculate, the aciculations evanescent towards the apex.

Described from one specimen.

HAB. Kauai: Makaweli (2000 feet), in January.

Superfamily VI. CYNIPOIDEA.

This large complex, which comprises two families and several subfamilies with quite diverse habits, some being phytophagous, some inquiline, and others parasitic, is here noted from the Hawaiian Archipelago for the first time by several representatives belonging to the subfamily Eucoelinae.

All of the species in this subfamily, so far as the published records go, seem to confine their attacks to the larvae and puparia of the Diptera.

Family LVIII. FIGITIDAE.

Subfamily V. EUCOELINAE.

PILINOTHRIX Förster.

1869. *Pilinothrix* Förster, Verh. zool.-bot. Gesell. Wien, xix. pp. 345 & 358.

(1) *Pilinothrix bicolor*, sp. nov.

♀. Length 2.5 mm. Polished, impunctate; head and thorax mostly black, the mesonotum, scutellum and abdomen reddish-brown or castaneous; legs brownish-yellow; wings hyaline, pubescent, the tegulae and veins brownish, the marginal cell open along the front margin except near the base.

The antennae are 13-jointed, as long or a little longer than the body, black, the scape obconical, a little shorter than the first joint of the flagellum, the pedicel oval, the flagellum slightly and gradually thickened towards apex, the joints long, subcylindrical, fluted, sparsely pubescent and subequal in length, about $3\frac{1}{2}$ times as long as thick, the first two or three joints slenderer than the following but scarcely perceptibly shorter than the fifth joint. The sides of the scutellum are longitudinally striate and clothed with a few glittering hairs, the cup being long, ellipsoidal. The metathorax is finely

rugulose, clothed with a short, sparse pubescence and has a median carina. The abdomen is compressed, pointed at apex and considerably longer than the head and thorax united, with some pubescence at extreme base, the girdle not being well defined, the petiole being extremely short and striate.

♂. Length 2 mm. Wholly black, except the legs, the antennae being very much longer than in the female, 15-jointed, the joints of the flagellum all long, subcylindrical and fluted, the first two a little shorter than the following, subequal; abdomen much shorter than in the female, not longer than the head and thorax, blunt at apex; otherwise as in the female.

Described from 1 ♂ and 2 ♀ specimens.

HAB. Hawaii: Kilauea, in September.

TRYBLOGRAPHA Förster.

1869. *Trybliographa* Förster, Verh. zool.-bot. Gesell. Wien, XIX. pp. 345 & 359.

(1) *Trybliographa hawaiiensis*, sp. nov.

♀. Length 2.2 mm. Polished black; first two joints of antennae rufo-piceous; legs brownish-yellow; wings hyaline, the veins brown, the marginal cell completely closed, the cubitus distinct to near the apex of the wing but becoming pale coloured just beyond its origin.

The antennae are 13-jointed and extend to the base of the abdomen; the scape is obconical, nearly as long as the first joint of the flagellum but much thicker, the pedicel globose; the flagellum gradually and imperceptibly thickens towards the apex, the last joint being ovate, nearly as long as the first joint but fully twice as thick; the first joint of the flagellum is subcylindrical, a little thicker at apex than at base, and, although the slenderest joint, it is yet the longest; the following joints are all fluted, oval or submoniliform, not much longer than thick, the second joint being shorter and not so stout as the third. The scutellum is longitudinally striate at the sides, the cup being narrow, ellipsoidal. The metathorax is opaque, pubescent and has a sharp carina down the middle. The abdomen is compressed, but not longer than the head and thorax united, with an elevated, densely pubescent girdle at base, and seen from the side has its apex obliquely truncate.

Described from one ♀ specimen, taken in January 1896, from a decaying stem of a *Lobelia* tree.

HAB. Hawaii: Hilo (2000 feet).

AGLAOTOMA Förster.

1869. *Aglaotoma* Förster, Verh. zool.-bot. Gesell. Wien, XIX. pp. 344 & 354.

Two distinct species, belonging to this genus, have been recognized, differing greatly in size and requiring no table for their separation.

(1) *Aglaotoma rufiventris*, sp. nov.

♀. Length 2.5 mm. Polished black, the abdomen, except along the dorsum and at apex, dark rufous; legs reddish-yellow. The antennae are 13-jointed, filiform, a little longer than the body, pilose; the scape is obconical, about as long as the first joint of the flagellum but stouter; the pedicel is subglobose, a little longer than thick; the first joint of the flagellum is the shortest joint, being only about two-thirds the length of the second joint; the following joints are all a little longer than the second, subequal, except the last, which is slightly longer than the penultimate joint. The scutellum at the sides is rugulose, the cup being rather large oval with a large fovea at apex and two or three minute punctures along the lateral margins. The metathorax is finely wrinkled and bicarinate. The abdomen is hardly so long as the head and thorax united, blunt at apex, with tufts of pubescence on each side at base.

HAB. Hawaii: Kilauea, in July. One ♀ specimen.

(2) *Aglaotoma molokaiensis*, sp. nov.

♀. Length 1.3 mm. Polished black; antennae brown, the two basal joints yellowish; legs brownish piceous, the trochanters, apices of the femora, anterior tibiae and tarsi and basis of the hind tibiae and tarsi, honey-yellow; wings hyaline, the veins pale yellowish, the marginal cell closed.

The antennae are 13-jointed, gradually thickened toward apex, the first two joints of the flagellum subequal, the first slightly the shorter, the joints beyond delicately fluted, stouter, ellipsoidal and a little longer than thick. The scutellum is indistinctly aciculated at the sides, the cup being oblong-oval, with a small fovea at apex, and two microscopic, scarcely perceptible punctures on each side before the fovea. Metathorax subopaque, sparsely pubescent and bicarinate. The abdomen, seen from above, is obovate, slightly compressed and not or scarcely longer than the thorax.

Described from 1 ♀ specimen.

HAB. Molokai Mts. (4000 feet), in November.

DIRANCHIS Förster.

1869. *Diranchis* Förster, Verh. zool.-bot. Gesell. Wien, XIX, p. 360.

Polished black.

- Legs dark red, the coxae and sometimes more or less of the femora, especially basally, black; marginal cell open all along the front margin(1) *D. monticola*.
 Legs, including coxae, red, the hind tarsi fuscous; marginal cell along the apical half or more open(2) *D. rufipes*.

(1) *Diranchis monticola*, sp. nov.

♀. Length 2.4 to 2.6 mm. Polished black, the legs dark red, the coxae and sometimes more or less of the femora, especially basally, black; wings hyaline, or at most with a faint tinge, the veins brown, the marginal cell open all along the front margin.

The antennae are 13-jointed, very sparsely pilose and reach to the base of the abdomen, the flagellum being very slightly thickened toward the apex; flagellar joints 3 to 10 moniliform, fluted, the third the smallest joint a little shorter than the second, the first joint being long, subcylindrical and nearly as long as 2 and 3 united, the last joint ovate and longer than the penultimate. The scutellum is striate at the sides, the cup being large oval, its disk not flat, but subconvex, with a round fovea posteriorly. Metathorax rugulose with a median carina, above bare, at the sides pubescent. The abdomen is not longer than the thorax, blunt at apex and with a distinct woolly girdle at base.

HAB. Molokai Mts. (4000 feet), taken June 15.

(2) *Diranchis rufipes*, sp. nov.

♀. Length 2 mm. Polished black, the legs red with hind tarsi fuscous; wings hyaline, the veins rufo-testaceous, the marginal cell open along the front margin for more than its apical half.

The antennae are 13-jointed, sparsely pilose and extend to the middle of the abdomen, being somewhat longer than in the preceding species; the first joint of the flagellum is the longest joint, cylindrical, and about one-third longer than the second; the second and the following joints are elliptic oval, fluted and not quite thrice as long as thick.

The scutellum is rugose at the sides, the cup being elongate oval and with a fovea posteriorly and some microscopic punctures along the lateral margins. The metathorax is wrinkled and slightly produced into a little neck posteriorly, its disk being bicarinate.

The abdomen is not quite as long as the head and thorax united and has a thinly pubescent girdle at base.

♂. Agrees well with the ♀, except that the abdomen is smaller, the antennae and legs being more of a brownish-yellow, not distinctly red, the hind coxae being blackish at base, while the antennae are slightly dusky toward apex, have 15 distinct joints, and are longer than the whole insect, the joints of the flagellum being long, cylindrical, subequal in length, and nearly four times as long as thick.

HAB. Lanai: Halepaakai (3000 feet). Taken in January and July.

HYPODIRANCHIS, gen. nov.

(Type *H. hawaiiensis*.) This new genus will fall in a table of the genera of the Eucelinae between *Diranchis* Förster and *Heptamerocera* Ashmead. From the former it differs principally by its scutellar characters, the cup of the scutellum being smaller, neither large-oval nor rounded, but small, narrow and ellipsoidal; from *Heptamerocera* and allied genera, i.e., *Hexaplasta*, *Pentamerocera*, &c., it is readily separated by its antennal characters, the antennae in the female being without a distinctly differentiated club: the first two joints of the flagellum are thinner and shorter than the following joints and about equal, or nearly, in length; joints 5 to 13 are always somewhat stouter than joints 3 and 4, all fluted and more or less ellipsoidal in outline. Metathorax bicarinate. Wings pubescent, well ciliated at apex, the marginal cell being more or less distinctly open along the front margin, the second abscissa of the radius being straight or nearly, and clavate, or thickened towards apex, and one-half longer than the first.

(1) *Hypodiranchis hawaiiensis*, sp. nov.

(Plate VIII. fig. 5, ♀.)

♀. Length 1.5 mm. Polished black; mandibles, first four joints of the antennae and the tegulae testaceous; legs, including coxae, brownish-yellow; wings hyaline, the veins brown. The antennae are almost the length of the body, 13-jointed, sparsely pilose, joints 5 to 12 ellipsoidal, subequal, all a little longer than the third, about $2\frac{1}{2}$ times longer than thick, the last joint ovate, longer than the penultimate and also fluted. The scutellum is longitudinally striate along the sides, the cup being very narrow, ellipsoidal in outline and with a small fovea at apex. The metathorax, except the pleura, broadly at base, is wrinkled or irregularly lined, opaque and feebly pubescent. The marginal cell in the front wings is open along its front margin from near its base; while the abdomen is normal, hardly longer than the head and the thorax united, blunt at apex and with a narrow pubescent girdle at base.

HAB. Hawaii: Kona (4000 feet). Two ♀ specimens taken in August.

(2) *Hypodiranchis lanaiensis*, sp. nov.

♀. Length 2.7 mm. Polished black; the mandibles, except the teeth, the first five joints of the antennae, and the legs are brownish-yellow; palpi pale yellowish-white, the last joint of the maxillary palpi being fuscous; tegulae rufo-piceous; wings hyaline, pubescent, the veins yellowish, the marginal cell being open along the apical two-thirds of the outer margin.

The mandibles are 3-dentate, the two outer teeth being acute. The antennae are long and filiform, about the length of the body, sparsely pilose, the joints 5 to 13 being fluted; the flagellar joints, except possibly the first, are very nearly equal in length, about four times as long as thick, joints 1 and 2, however, being slightly slenderer and proportionately longer. The scutellum at the sides is rugose or coarsely wrinkled, the cup being ellipsoidal and flat and smooth on its disk. The metathorax is finely wrinkled, bicarinate above, the surface on either side of the carinae being pubescent. The abdomen is scarcely so long as the head and thorax united, black, but narrowly testaceous along the venter and with a narrow, pubescent girdle at base.

HAB. Lanai (2000 feet). One ♀ specimen, taken in December.

HEXAPLASTA Förster.

1869. *Hexaplasta* Förster, Verh. zool.-bot. Gesell. Wien, XIX, p. 15.

(1) *Hexaplasta konensis*, sp. nov.

♀. Length 1.5 mm. Polished black; first six joints of the antennae and the mandibles brownish-yellow, the apical joints of the antennae blackish; legs, including coxae, yellow; wings hyaline, ciliate, the veins in front wings brownish-yellow, in the hind wings very pale yellowish; tegulae brownish-piceous.

The antennae are 13-jointed and extend a little beyond the middle of the abdomen, the 6 terminal joints, constituting the club, being elliptic-oval, striate, and stouter than the preceding; the first joint of the funicle is the slenderest and the longest, being about one-half longer than the second, while the second and fourth joints are equal, a little longer than the third. The scutellum is rugulose at sides, the cup being smooth, its disk sub-concave, with a depression or fovea at apex. The metathorax is short, finely rugulose and pubescent. The abdomen is normal, hardly as long as the head and thorax united, with the usual woolly girdle at base. The wings are badly torn at apex, but enough remain to make out the colour of the veins and to see that the marginal cell was closed along its front margin.

HAB. Hawaii: Kona (2500 feet). One ♀ specimen, taken in July.

Superfamily VII. *CHALCIDOIDEA*.

Of this large complex, the families Agaonidae and Torymidae, common in all tropical countries, are not represented in any collections that I have seen, taken on these Islands, although we should expect that both, or at least the last mentioned, must occur there.

Family LXII. CHALCIDIDAE.

EPITRANUS Walker.

1834. *Epitranus* Walker, Ent. Mag. II. pp. 21 and 26.

(1) *Epitranus lacteipennis* Cameron.

1883. *Epitranus lacteipennis* Cameron, Trans. Ent. Soc. London, p. 187. 1898. Dalla Torre, Cat. Hym. v. p. 383.

Length $4\frac{1}{2}$ mm. "Dark reddish testaceous; the head behind, more or less of the lobes of the mesonotum, pleura, sternum, metanotum, petiole for the most part, abdomen more or less at the sides and above, coxae and femora in the middle, blackish. Antennae not much longer than thorax, becoming very gradually thickened towards the apex, which is sharply conical; the joints of the flagellum blackish at the apex. Head obsoletely punctured, covered with scattered silvery white short hairs; hind ocelli situated on the edge of the head behind. Thorax coarsely punctured; in the centre of the mesopleura is a shining semi-oblique line; in front of this line the pleura is obliquely striated. The scutellum is margined behind, the border shortly projecting. Metanotum reticulated, finely punctured. Petiole carinated at the side, longitudinally striated. The 2nd abdominal segment is longer than the petiole; its basal half is smooth and shining, the apical finely punctured; the posterior coxae are not much shorter than the femora, which are somewhat alutaceous, and, with the coxae, are covered with short pale hairs; the femora have nine short blunt teeth, those at the apex being the shortest. Wings a very little longer than the abdomen, lacteous; nervures pallid; cubitus almost obsolete." (Cameron.)

HAB. Oahu. Not in the Perkins Collection.

CHALCIS Fabricius.

1789. *Chalcis* Fabricius, Mant. Ins. 1. p. 272.

Black, strongly, umbilicately punctate.

Length 3 to 4 mm. Tegulae, except a large brown spot at base, the apices of femora, the tibiae, except a broad black band medially, and the tarsi, pale yellow, the black band on the anterior tibiae not interrupted beneath, the hind tibiae with a black annulus at base, the hind coxae *sometimes* toward apex and beneath rufous; hypopygium yellowish(1) *C. polynesialis*.

Length 4.5 to 5.5 mm. Tegulae, except narrowly at base, apices of femora and tibiae, and the tarsi, except the last joint, lemon-yellow, the tibiae *beneath* more or less striped with black, the hind tibiae with a black annulus at base outwardly but connected with the black colour beneath; hypopygium black(2) *C. obscurator*.

(1) *Chalcis polynesialis* Cameron.1881. *Chalcis polynesialis* Cameron, Trans. Ent. Soc. London, 1881, p. 561.

1898. Dalla Torre, Cat. Hym. v. p. 391.

♀♂. Length 2.8 to 3.1 mm. "Black, covered sparsely with a longish silvery pubescence. Base of scape, a line on the pronotum behind, and the scutellum more or less ferruginous. Anterior legs with the trochanters, femora, and tibiae reddish yellow, paler at the apex, and more or less fuscous in the middle; hinder legs with the coxae reddish, black behind; trochanters and base of femora reddish, the rest black, save a yellow spot above at the apex, which is reddish beneath; tibiae black at the extreme base; next to this is a clear yellow ring, the centre is black, more or less reddish on lower side, the apex clear yellow on outer side, the sides and lower parts reddish-yellow; tarsi yellowish-testaceous, the extreme apex fuscous. Head and thorax covered with shallow punctures; those on the head and prothorax are smaller than those on the middle of the mesonotum, which are again slightly smaller than those on the scutellum; lateral lobes of mesonotum with finer punctures than on the head. Metanotum with larger punctures than on the scutellum. Scutellum rounded behind, and with a transverse indistinct ridge on the apex. Abdomen not much longer than the thorax, ovate, pointed at the apex, smooth, shining, impunctate, almost glabrous at the base, the four apical segments clothed at the sides and beneath with a longish white pubescence. Wings hyaline; tegulae yellow; the teeth on femora are very strongly developed, especially at the apex.

"Seemingly a variable species as regards colouration. One of my specimens has only the apex of the scutellum reddish; another has it entirely of that colour, as well as the apex of the mesonotum. The colour of the legs also varies." (Cameron.)

HAB. Oahu: Honolulu (Blackburn); Waialua, Koolau range in February (Perkins).—Hawaii: Hilo, in July (H. W. Henshaw).

(2) *Chalcis obscurata* Walker.

1874. *Chalcis obscurata* Walker, Trans. Ent. Soc. London, p. 399, ♂. 1898. Dalla Torre, Cat. Hym. v. p. 390.

♂. Length $2\frac{3}{4}$ lines. Nigra, abdomen apicem versus cinereo-tomentosum; femora, apices tibiae tarseque flava; tibiae subtus nigro-vittatae; tibiae postice nigrae; alae cinereae.

Body, antennae and legs black, with the usual structure. Body convex. Head and thorax scabrous, dull. Antennae stout, nearly filiform. Prothorax about four times as broad as long. Sutures of the parapsides distinct. Abdomen smooth, shining, subsessile, with cinereous tomentum towards the tip. Femora yellow at the tips, hind femora minutely denticulate beneath. Tibiae yellow beneath, striped beneath with black; hind tibiae black at the base. Tarsi yellow, tips black. Wings cinereous; squamulae yellow; veins black; ulna about as long as the humerus. (Walker.)

Mr Walker says: "Perhaps a variety of *C. inclinator*, a native of Ceylon, Celebes and Aru; the black hue predominates a little more on the legs, and the wings are cinereous, not pellucid. The Chinese specimens included with *C. inclinator* belong to *C. obscurator*."

HAB. Hawaii (Koebele); Hilo (H. W. Henshaw), in July.

This species was originally described from Hiogo, Japan. Specimens are also in the U. S. National Museum taken by Koebele in Japan and China. In the Hawaiian Islands Mr Koebele has bred it from a cocoanut Pyralid, *Omiodes blackburni* Butler.

Family LXVI. MISCOGASTERIDAE.

Subfamily III. MISCOGASTERINAE.

TOXEUMA Walker.

1833. *Toxeuma* Walker, Ent. Mag. 1. pp. 371 and 378.

1. Wings not entirely hyaline, either subfuliginous or with a smoky discoidal cloud3.
Wings clear hyaline, without a discoidal cloud2.
2. Head and thorax bright gold-green, shagreened with cupreous reflections; coxae and femora metallic, the tibiae and tarsi, except the last joint, pale ferruginous; abdomen bottle-blue, the ♀ with a decided aeneous tinge, especially towards the base.....(1) *T. hawaiiensis*.
Head and thorax aeneous black, shagreened; coxae aeneous black or sub-metallic, the front coxae sometimes rufous, the rest of the legs ferruginous; abdomen aeneous black, beneath strongly, triangularly produced towards the base; all funicle joints longer than wide(2) *T. ferrugineipes*.

3. Wings mostly subfuliginous6.
 Wings hyaline, with a more or less discoidal cloud, which is sometimes reduced to a small dusky cloud, or spot, just beneath the apex of the stigmal vein.....4.
4. Apex of the wings smoky or dusky.....5.
 Apex of the wings clear, not smoky.
- Head and thorax bronzed green, shagreened or feebly shagreened, the thorax at sides and beneath sometimes differently coloured.
- Coxae aeneous black, the femora brown-black, the trochanters, tibiae and tarsi, except the last joint, brownish-yellow; abdomen aeneous black, strongly triangularly produced towards base beneath; funicle joints wider than long.....(3) *T. affinis*.
- Coxae and femora metallic, the middle and posterior tibiae usually fuscous, the knees and the anterior tibiae (sometimes middle tibiae) honey-yellow, or brownish-yellow; funicle joints subquadrate, 2 to 4 wider than long(4) *T. tarsata*.
5. Head and thorax bright bronzed green; abdomen and legs aeneous-black, a dot on the knees and all tarsi, except the last joint, light brown or brownish-yellow(5) *T. nubilipennis*.
6. Blue-black, polished; tarsi honey-yellow; a space at basal third of the wings, extending narrowly beneath the marginal vein and the triangular space formed by the postmarginal and the stigmal veins, hyaline.(6) *T. nigrocyanea*.

(1) *Toxocuma hawaiiensis*, sp. nov.

♀. Length 2·8 to 3 mm. Head and thorax gold-green, shagreened, the antennae brown-black, the legs metallic, the tibiae and tarsi, except the last joint, pale ferruginous or brownish-yellow, the abdomen bottle-blue or blue-green, while the wings are hyaline with the veins yellowish.

The antennae are 13-jointed with 2 minute ring-joints; the flagellum is subclavate, the first three joints being a little longer than thick, the fourth is scarcely as long as wide, the fifth and sixth distinctly wider than long, while the club is ovate and composed of three closely united joints. The metathorax has a distinct median carina and with lateral carinae bounding the pleura. The marginal and postmarginal veins are long, the former being a little longer, while the stigmal vein is distinctly clavate and about half the length of the postmarginal. The abdomen is pointed ovate, as long as the head and thorax united, the second segment being much the largest, occupying nearly half the length of the abdomen, or as long as segments 3 to 5 or 6 united, the seventh being usually conically pointed.

♂. Length 2·4 mm. Agrees well with the ♀, except that the anterior and middle femora are brown, that none of the funicle joints are longer than thick, and that the abdomen is oblong-oval, depressed and shorter than the thorax.

HAB. Hawaii: Kilauea, ♂ and ♀ in August; Kona (4000 feet), in July.

(2) *Toxuma ferrugineipes*, sp. nov.

♀. Length 2·8 mm. Head and thorax aeneous-black, the frons more distinctly metallic, the antennae black, the scape beneath towards base and the legs, except the hind coxae, ferruginous; wings hyaline, the veins brownish-yellow.

The antennae are much longer than in the preceding species (*hawaiiensis*), all the funicle joints being distinctly longer than thick, the first being fully twice as long as thick, the following to the club gradually shortening. The metathorax is slightly produced medially at apex, with a strong, sharp median carina, and has the pleural ridges ciliate with long white hairs. The marginal and postmarginal veins are long, as in the previous species, but the stigmal is somewhat longer, being nearly two-thirds the length of the postmarginal vein. The abdomen, seen from above, is long, conic-ovate, while beneath towards the base it is produced into a large triangular keel.

HAB. Molokai, in mountains (4800 feet), in August.—Hawaii: Kilauea in August.—Maui: Haleakala (7000—10000 feet), in May.

(3) *Toxuma affinis*, sp. nov.

♀. Length 2·6 mm. Head and thorax above bronzed green, feebly shagreened, the thorax at sides and beneath, the coxae and the abdomen aeneous-black; femora brown-black, the hind pair submetallic, the trochanters, tibiae and tarsi, except last joint, ferruginous or brownish-yellow.

The antennae are shorter than in *T. ferrugineipes*, with all the funicle joints wider than long, cup-shaped. The metathorax has the lateral carinae strongly curved inwardly towards apex, with the median carina short. The wings are hyaline, with a subfuscous cloud beneath the stigmal vein, the veins being dark brown; the postmarginal vein is almost as long as the long marginal, while the stigmal vein is about two-thirds the length of the postmarginal.

♂. Length 1·6 to 1·8 mm. Head and thorax darker than in ♀, or bronzy-black, the abdomen oblong-oval, briefly petiolate, the antennae filiform, the flagellum with long, sparse hairs, the funicle 7-jointed, the joints elliptic-oval, longer than thick, the legs, except the hind coxae, brownish-piceous, the sutures of the joints and the tarsi yellowish; otherwise as in the ♀.

HAB. Kauai (4000 feet), in October.—Lanai (3000 feet), in January.—Molokai Mts. (4500 feet), in September.

(4) *Toxuma tarsata*, sp. nov.

(Plate VIII. fig. 6, ♀.)

♀. Length 2·5 to 2·9 mm. Head and thorax bronzed green, or strongly metallic green, shagreened; flagellum brown-black, the scape and pedicel smooth, aeneous-black,

the coxae and femora metallic or aeneous, the tibiae usually dark brown or fuscous, the knees and the tarsi, except the last joint, honey-yellow or brownish-yellow; sometimes the anterior and the middle tibiae are brownish-yellow; the abdomen varies from a blue-black to an aeneous black; wings hyaline, always with a more or less well defined discoidal cloud beneath the stigmal vein, the veins being light brown or brownish-yellow.

The antennae are 13-jointed, with 2 minute ring-joints, the joints of the flagellum fluted, none of the funicle joints being longer than thick, the 4th, 5th and 6th being wider than long. The postmarginal vein is about two-thirds the length of the long marginal vein, the stigmal vein being more than half the length of the post-marginal. The abdomen is elongate, conically pointed and longer than the head and the thorax united, beneath convex, the second dorsal segment occupying hardly one-third the entire length.

♂. Length 1·5 to 1·8 mm. Head and thorax aeneous-black, the scutellum bronzed green, the flagellum subclavate, pubescent, the funicle joints subquadrate, the abdomen oblong-oval, depressed, not longer than the thorax, the second segment bluish.

HAB. Hawaii; Kilauea, in August.

(5) *Toxeuma nubilipennis*, sp. nov.

♀. Length 2·5 mm. Head and thorax bright bronzed green, shagreened, the antennae black, the legs aeneous-black, a dot on the knees, the extreme tips of tibiae, and all tarsi, except the last joint, light brown or brownish-yellow; wings hyaline, with a large discoidal cloud extending to the hind margin and the tips smoky, the discoidal cloud parted by a longitudinal hyaline streak.

The antennae are somewhat similar to those in *T. tarsata*, but are slightly slenderer, the funicle joints being longer than thick, the first being about $1\frac{1}{2}$ times as long as thick, the following very gradually shortening and widening. The marginal and post-marginal veins are nearly equal in length, the latter extending to the apex of the wing where it tapers off to a fine point; the stigmal vein is about half the length of the marginal. The abdomen is conic-ovate, produced into a point at apex, and fully as long as the head and the thorax united, the second dorsal segment occupying scarcely one-third its entire length; the fifth segment basally and the sixth and seventh, in certain lights, show a distinct brassy tinge.

The species is allied to *T. tarsata*, but may be easily separated by the antennal differences and the colour of the wings.

HAB. Lanai (3000 feet), in January.—Maui: Haleakala (5000 feet), in October.—Kauai (high plateau), in August.

(6) *Toxema nigrocyanea*, sp. nov.

♀. Length 2 mm. Uniformly blue-black, polished, and without a metallic tinge, under a strong lens exhibiting at the most a feeble alutaceous sculpture; the anterior tibiae beneath and at apex and all tarsi, except the last joint, are honey-yellow or light brown; wings subfuliginous, with their basal third and a streak beneath the marginal vein hyaline, the veins being brown.

The head in the ♀ is lost and the antennal characteristics cannot be given. The abdomen is conic-ovate as in the previous species (*T. nubilipennis*).

♂. Length 1·5 to 1·6 mm. Blue-black, with the tarsi light brown, the flagellum brown-black, the funicle joints submoniliform and subpedunculated, a little wider than long, while the abdomen is oval, depressed, and much shorter than the thorax.

HAB. Lanai (2000 feet), in January.

STICTOMISCHUS Thomson.

1878. *Stictomischus* Thomson, Hym. Skand., iv. pp. 220 & 234.

(1) *Stictomischus haleakalae*, sp. nov.

♂. Length 2·8 mm. Dull bronzed green, shagreened, the sculpture of the middle and lateral lobes of the mesonotum anteriorly transversely wrinkled; the sides of the thorax and beneath, the legs, except the anterior tarsi which are honey-yellow and the tibial spurs which are whitish, and the abdomen aeneous-black. The antennae are filiform, the scape and pedicel shining black, the flagellum dull, brown-black, pilose, the first joint of the funicle being much the longest joint, a little thicker at apex than at base and about four times as long as thick, while the following joints to the club are subcylindrical, nearly equal in length, hardly thrice as long as thick. The wings are subfuscous, the veins brown, the marginal and postmarginal veins longer than the stigmal vein, the latter ending in a large knob. Abdomen oblong oval, depressed, much shorter than the thorax.

HAB. Maui: Haleakala (5000 feet), March 20, 1894.

Subfamily IV. LELAPINAE.

This group, up to the present time, has been represented by a single genus, *Lelaps* Haliday, well represented in the West Indies and in South America.

Dr von Dalla Torre, in his *Catalogus Hymenopterorum*, Vol. v. 1898, has unwarrantably changed *Lelaps* into *Laclaps*, a name already employed in the Reptilia and the Arachnida. The original spelling of the genus is here retained, and since two new genera allied to it have been recognized in the Hawaiian fauna, I have concluded to give here a synopsis of the genera now known to me.

- Males4
 Females.
1. Antennae 12 or 13-jointed, the last joint of the club so minute as to be often confused with the penultimate joint3;
 Antennae 14-jointed, with 2 ring joints.
 Winged forms2.
 Wingless forms.
 Abdomen conically pointed, the petiole distinct, a little longer than thick, the second segment occupying hardly half of its surface; flagellum rather stout, subclavate, the joints fluted. [United States.](1) APTEROLELAPS n. g.
 (Type *A. nigriceps* Ashm. MS.)
2. Abdomen conically produced at apex and usually ending in a prominent ovipositor; second segment large, occupying fully half of the surface, the third to fifth very short, the sixth and seventh together conical, longer than half the length of the second. [West Indies, South America.](2) *Lelaps* Haliday.
3. Abdomen conically produced at apex, the second segment not much longer than 3 and 4 united, the fifth longer than the fourth, the seventh conically produced; scutellum with a cross-furrow at its apical third. [Hawaii.](3) NEOLELAPS n.g.
 (Type *N. hawaiiensis* Ashm.)
 Abdomen subglobose or short oval, the second segment very large, occupying nearly the whole surface, the following very short, more or less retracted within the second; scutellum with a cross-furrow very near its apex, far beyond its apical third. [Hawaii.](4) MESOLELAPS, n. g.
 (Type *M. cyaneiventris* Ashm.)
4. Petiole of abdomen long, the body small, spatulate; antennae very long, 14-jointed, longer than the whole body, the joints long, cylindrical, clothed with long hairs(2) LELAPS Haliday.
 Petiole of abdomen very short, the body oblong-oval, truncate at apex; antennae not longer than the thorax, 13-jointed, the flagellum filiform, pubescent, the joints after the first about twice as long as thick(4) MESOLELAPS n. g.

The males belonging to *Apterolelaps* and *Neolelaps* are unknown, and cannot be incorporated in the table.

NEOLELAPS, gen. nov.

The salient characters for the recognition of this genus have been brought out in the table of genera given above, and little more can be said of it: The shape of the abdomen is very similar to that of *Lelaps* and especially to some undescribed species in my collection from South America, but the much shorter second segment, and the differences noted in the antennae readily separate the two genera. In its antennal characters it comes quite close to *Mesolelaps*, but in all other respects it is totally different, the abdomen in the last mentioned being subglobose or short oval, never conically produced at apex, and has the second dorsal segment very large, occupying nearly the whole surface of the abdomen.

(1) *Neolelaps hawaiiensis*, sp. nov.

(Plate VIII. fig. 7, ♀.)

♀. Length 6 to 6.2 mm. Head and thorax bronzed green, shagreened, the abdomen metallic brown, the eyes brown. Scape of antennae, the tegulae and the legs, except the coxae, yellow, while the veins of the wings, except the subcostal vein and the knob of the stigmal vein, which are brown, are pallid.

The antennae are long, the joints of the funicle being long and cylindrical, but gradually shortening to the club, the first joint being not quite five times as long as thick, the last about thrice as long as thick. The abdomen is produced at apex, the 7th and 8th segments forming a spike-like process which is nearly as long as the rest of the abdomen.

HAB. Kauai (high plateau). Taken in August 1894.

(2) *Neolelaps flavipes*, sp. nov.

♀. Length 2.9 mm. Head and thorax bronzed green, shagreened, the abdomen aeneous-black; scape of antennae, the tegulae, and the legs, except the coxae, brownish-yellow, the flagellum brown.

The antennae are 13-jointed, with 2 ring-joints, the joints of the flagellum all distinctly fluted, the funicle joints in outline nearly oval, longer than thick. The scutellum is divided by a strong punctate line towards apex and by a punctate line from the postscutellum. The metathorax is produced into a small globose neck at apex, the metanotum being biareolated, the sides fimbriate with white hairs, the spiracles oval. The abdomen is acutely conically produced at apex and is attached by a very short petiole to the under surface of the globose neck of the metathorax, the second segment being large and occupying fully one-third of the whole surface of the abdomen.

HAB. Kauai: Koholuamo, in April. One ♀ specimen.

MESOLELAPS, gen. nov.

Differs from all the other genera included here by the shape of the abdomen, which is subglobose or short oval, never conically produced at apex, and by the very large second segment which occupies most of its surface, the following segments being very short and more or less retracted, while the cross-furrow of the scutellum is much nearer the tip than in *Lelaps* or *Neolelaps*.

(1) *Mesolelaps cyaneiventris*, sp. nov.

(Plate VIII. fig. 8, ♀.)

♀. Length 2.8 to 3 mm. Head and thorax variable from a bronzed green to a metallic or blue-green, and both shagreened, with the posterior margin of the mesopleura

and the metapleura smooth and more or less cupreous; antennae black; legs brown-yellow, the coxae metallic, the hind tarsi more or less fuscous; abdomen blue-black, with an aeneous tinge in certain lights; wings hyaline, the tegulae and veins yellowish. The flagellum is subclavate, the joints being fluted, the first the longest, about twice as long as thick, the following gradually shortening, the last funicle joint being only a little longer than thick.

♂. Length 2 mm. Blue to bluish-green, the head and thorax above usually bright metallic green; abdomen, coxae and femora dark blue, the tibiae and tarsi brownish-yellow; the flagellum filiform, clothed with a short pubescence, the funicle 7-jointed, the first joint the longest, nearly $2\frac{1}{2}$ times as long as thick at apex, the following gradually shortening, the seventh joint being only a little longer than thick.

HAB. Hawaii: Kilauea; Kona, taken in August, September and November; Olaa, in November.

Family LXVIII. ENCYRTIDAE.

Subfamily I. EUPELMINAE.

SOLINDENIA Cameron.

1883. *Solindenia* Cameron, Trans. Ent. Soc. London, p. 189.

(1) *Solindenia picticornis* Cameron.

1883. *Solindenia picticornis* Cameron, Trans. Ent. Soc. London, p. 189. ♀.

1898. Dalla Torre, Cat. Hym., v. p. 271.

♀. Length between 3 and 4 mm. Reddish-brown, faintly pubescent, the vertex of the head brown or blackish, the face below the antennae, the cheeks, the temples, the prothorax, the mesopleura posteriorly and the sternum, brownish-yellow, the mesonotum just in front of the scutellum bluish, the metanotum with a violaceous tinge; abdomen at basal third and funicle joints of antennae 3 to 6, the anterior coxae, all trochanters, and the middle and hind tarsi, white; rest of legs yellowish, except that the anterior tibiae outwardly, or at apex, and their tarsi, more or less, are subfuscous; the scape, pedicel, two first joints of funicle and the club are brown or fuscous. Wings abbreviated, shorter than the abdomen, and fuliginous from the apex of the subcostal vein, with an oblique, more or less cuneiform-shaped white spot beneath the marginal vein and extending to the base of the stigmal, and another *vis-à-vis* on the hind margin of the wing.

HAB. Oahu: Honolulu, in October.—Hawaii: Kona Mts. (1500 feet), in January.

EUPELMINUS Dalla Torre.

1840. *Urocryptus* Westwood, Intro. Mod. Class. Ins., II. Synop., p. 72.1897. *Eupelminus* Dalla Torre, Wien. ent. Zeit., XVI. p. 85.(1) *Eupelminus subapterus*, sp. nov.

♀. Length 2·8 mm. Brownish-yellow, the head above submetallic brown, the apical third of the abdomen or more, especially above, bronzed; flagellum subclavate, black, the pedicel yellowish; wings much abbreviated, fuscous, with pale margins and extending only slightly beyond the base of the abdomen; apex of the hind tibiae and their tarsi basally, white.

HAB. Oahu: Waianae Mountains (3000 feet), in April. "Beaten from trees, Perkins."

EUELMUS Dalman.

1820. *Eupelmus* Dalman, Svensk. Vet. Ak. Handl., XLI. p. 377.

Males9.

Females1.

1. Head and thorax metallic, peacock, emerald, gold-green or blue-green.

Head, thorax and abdomen black, with a faint metallic or aeneous tinge in certain lights.

Legs black, the anterior and middle tarsi brownish-yellow, the hind tarsi and the middle tibial spur dark fuscous or black, the other tibial spurs pale; hypopygium with a spined process medially at apex; ovipositor about the length of the hind tarsi, black(1) *E. niger*.

2. Legs, except sometimes the front and hind coxae, ferruginous, testaceous or yellow (rarely with the anterior femora more or less embrowned basally)7.

Legs, except sometimes the middle pair, mostly metallic3.

3. Anterior and middle coxae alone metallic.

Ovipositor much shorter than the abdomen4.

Ovipositor fully as long as the abdomen, angularly broken a little before the basal third.

Middle legs, all trochanters, tips of their tibiae and their tarsi, the hind femora toward apex, the extreme base of the tibiae, their apices and their tarsi basally, brownish-yellow(2) *E. konae*.

4. Scape beneath brownish6.

Scape wholly metallic, not brownish beneath5.

5. Head and thorax bright emerald-green, the abdomen above blue-green.
 Abdomen shorter than the head and thorax united; ovipositor fuscous, shorter than the hind tarsi; middle legs, all trochanters, anterior tibiae, except outwardly medially, apex of hind femora, base and apex of hind tibiae and all tarsi, except the last joint of the anterior and middle tarsi and the last two joints of the hind tarsi, brownish-yellow(5) *E. splendissimus*.
- Head and thorax metallic green, peacock or blue-green.
 Abdomen longer than the head and thorax united, not strongly punctate; ovipositor variable in colour and length, usually a little shorter than the hind tarsi, rarely as long; middle legs, sutures of trochanters (sometimes wholly), knees, more or less, extreme apex of tibiae, extreme base of the anterior and hind tarsi, and the middle tarsi, except the last joint and the teeth, brownish-yellow(4) *E. vulgaris*.
6. Gold-green.
 Abdomen much longer than the head and thorax united, closely uniformly punctate, except at the extreme base, where it is smooth; ovipositor fuscous, as long or a little longer than the hind tarsus; legs mostly brownish-yellow, the anterior and hind coxae and the hind femora, except at tips, metallic, the front and hind tibiae more or less, and apical joints of tarsi embrowned.....(5) *E. molokaiensis*.
7. Ovipositor rarely much shorter than the hind tarsi8.
 Ovipositor much shorter than the hind tarsi, not longer than the basal joint.
 All coxae, legs, and scape of antennae, yellow; head aeneous-black, impunctate; thorax and abdomen metallic green(6) *E. xanthopus*.
 Anterior and hind coxae metallic, rest of legs testaceous, the scape aeneous; head blue-green, sculptured; posterior half of the mesopleura and the abdomen cupreous(7) *E. hawaiiensis*.
8. Body metallic green but variable, the head frequently blue-green or aeneous-black; ovipositor variable in size and colour, fuscous at base and apex and yellowish medially (typical) or wholly fuscous or yellowish, or fuscous only at the base(8) *E. flavipes*.
9. Metallic green to dark blue-green.
 Dark blue-green, the legs metallic, the tibial spurs and the extreme base of first joint of middle and hind tarsi, yellowish-white, with sometimes one or two of the following joints pale beneath, the anterior tarsi more or less yellowish or whitish(4) *E. vulgaris*.
 Metallic green, the legs, except the coxae, brownish-yellow(8) *E. flavipes*.

(1) *Eupelmus niger*, sp. nov.

♀. Length 5 mm.; ovipositor the length of the hind tarsi. Robust, black; mandibles toward base rufous, the anterior and middle tarsi, and anterior and hind tibial spurs brownish-yellow, the hind tarsi dark fuscous, with a pale ring at base, the middle tibial spur black; wings subhyaline, clear hyaline at extreme base.

The head is finely shagreened, the cheeks with a few sparse punctures, the eyes rather strongly converging above so that the vertex is only half as wide as the face anteriorly. Antennae slightly thickened toward apex, the scape long, aeneous-black, the flagellum opaque, brown-black, clothed with a fine, short pubescence, the first three joints of the flagellum rather long, subequal, the following gradually shortening so that the joint before the ovate club is quadrate or nearly, about half the length of the first. The abdomen is pointed ovate, one-third longer than the head and thorax united, depressed above, strongly carinate beneath, the hypopygium terminating in a spined process the length of the longer spur of the hind tibiae; the whole surface is delicately reticulated from microscopic lines.

HAB. Maui: Lahaina. One a specimen taken in January.

(2) *Eupelmus kona*, sp. nov.

♀. Length 5 to 6 mm.; ovipositor as long as or a little longer than the abdomen and angularly broken a little before the basal third. Metallic green, shagreened; mandibles piceous, with a rufous tinge medially; all trochanters, the middle legs, the apices of anterior and hind femora and tibiae, as well as the base of their tibiae and the tarsi, brownish-yellow, the tibial spurs and basis of middle and hind tarsi whitish, the coxae and rest of legs metallic; wings hyaline, the veins brown.

The head is transverse, as seen from in front a little wider than long, the eyes convergent above, the vertex being only two-thirds as wide as the width of the face anteriorly. Antennae metallic, the scape green, half as long as the flagellum, the latter aeneous black, clothed with a black pubescence, and very slightly and gradually thickened towards apex, the joints similar to those in *E. niger* except that the joint before the club is hardly so long as wide. The abdomen is elongate, pointed at apex, keeled beneath, delicately and microscopically reticulated, but with the spined process of the hypopygium much shorter than in the previous species.

A single specimen, doubtless only a variety which may be named *rufipes*, has all the legs except the anterior and middle coxae, brownish-yellow.

HAB. Hawaii: Kilauea, in August, and Kona (4000 feet), in August. Described from 5 ♀ specimens.

(3) *Eupelmus splendissimus*, sp. nov.

♀. Length 3.5 mm.; ovipositor very short, shorter than the hind tarsi. Bright emerald green, finely shagreened, the abdomen blue-green, the middle legs, all trochanters, apices of the anterior and hind femora (the latter broadly), and base and apices of their tibiae, as well as tarsi, except the apical joints, pale brownish-yellow;

the anterior and hind coxae and rest of the legs, not specified, are metallic; wings clear hyaline, the venation yellowish.

The head is as in *E. konaë*, the eyes converging above. The antennae are aeneous-black, the flagellum subclavate, clothed with a black pubescence, the joint before the club being longer than thick, the first being the longest or much longer than the pedicel. The abdomen is oblong-oval, shorter than the thorax, the apex rounded, not pointed, above depressed, beneath convex, but not carinate.

HAB. Hawaiian Islands. Described from a single specimen, without either a number or locality label.

(4) *Eupelmus vulgaris*, sp. nov.

♀. Length 3 to 4.5 mm.; ovipositor usually much shorter than the hind tarsi. Metallic green, bronzed green to blue-green, closely, finely punctate or shagreened, the legs being mostly metallic; the middle legs entirely, the trochanters, the knees, tips of tibiae and the tarsi, except apical joints of the front and hind tarsi, are brownish-yellow; wings hyaline or only faintly tinged, the veins light brown.

The general habitus of this species, as well as the shape of the head and the antennae, is as in *E. niger*, except that the abdomen is shorter and less pointed at apex.

♂. Length 3 to 3.5 mm. The head and thorax vary in colour from a bronzed green to a blue-green, and are closely, shallowly punctate or reticulately sculptured. The mesonotum is only slightly depressed and exhibits only faint traces of the parapsidal furrows. The abdomen is usually bluish, but also sometimes aeneous or even metallic green. The flagellum is long, filiform, black, and clothed with a dense black pubescence. The legs are most frequently metallic green or blue, with the extreme tips of the tibiae and the front tarsi, except an annulus at the extreme base, and the tibial spurs whitish.

Described from many specimens representing both sexes.

HAB. Hawaii: Kona (3000 feet), in September, (4000 feet), in August, (2000 feet), in October.—Lanai: Mts. Waimea (4000 feet), in May.—Maui: Haleakala, in April, (5000 feet), in March.—Oahu: Honolulu (2000 feet), in October; Kaala Mts. (1500 feet), in January.—Molokai Mts. (4000 feet), in April and June.

(5) *Eupelmus molokaiensis*, sp. nov.

♀. Length 2.1 mm.; ovipositor a little longer than the hind tarsus. Gold-green, finely, closely punctate and clothed with a whitish pubescence; mandibles dark rufous, with black teeth; scape metallic with the extreme base yellowish; flagellum subclavate, black and pubescent, the joints gradually shortening and widening to the club, the

first joint the longest, the joint before the club a little wider than long and a little shorter than the preceding; wings hyaline, the veins yellowish; legs brownish-yellow, with the front and hind coxae and the hind femora, except at tips, metallic, the tibial spurs and the tarsi, except the last joint, whitish, the hind tibiae, except at both ends, embrowned, the anterior femora and tibiae slightly obfuscated medially. The abdomen is elongate, much longer than the head and thorax united, rounded at apex, the ovipositor prominent and of a dark fuscous colour.

Described from a single ♀ specimen taken July 7, 1893. The species is easily distinguished from all others by colour, and the entire surface, including the abdomen, being finely, closely punctate; the abdomen in the other species being smooth or at most microscopically reticulated from delicate lines, but never closely punctate.

HAB. Molokai: Kalae.

(6) *Eupelmus xanthopus*, sp. nov.

♀. Length 1.9 mm.: ovipositor very short, not longer than the basal joint of the hind tarsus, brown. Metallic greenish, the head much darker, aeneous-black, the scutellum and the abdomen bronzed green, the surface being smooth and impunctate, except the scutellum, which is feebly shagreened. Wings hyaline, the veins pale-yellowish. Scape of antennae and the legs straw-yellow, the flagellum black.

HAB. Oahu: Honolulu. One specimen taken in July.

(7) *Eupelmus hawaiiensis*, sp. nov.

♀. Length 3 mm.; ovipositor about the length of the basal joint of hind tarsi, testaceous but narrowly black at base. Robust, gold-green, with bluish and purplish reflections and shagreened, the head bluish-green; antennae black, the scape and pedicel aeneous; first joint of the flagellum is the longest joint, being longer than the pedicel and about twice as long as the last funicle joint. Wings hyaline, the veins light brown; the legs, except the front and hind coxae, which are metallic, wholly testaceous; abdomen a little longer than the head and thorax united.

Type. Cat. No. 5551, U. S., N. M.

HAB. Hawaii. One ♀ specimen taken by Albert Koebele.

(8) *Eupelmus flavipes* Cameron.

1883. *Eupelmus flavipes* Cameron, Trans. Ent. Soc. London, p. 190. ♀.—1894. Dalla Torre, Cat. Hym., v. p. 276.

Length 4 to 5 mm. Green; thorax beneath, the sides above more or less, and abdomen, coppery. Antennae black; scape more or less testaceous beneath. Legs straw-yellow, the femora somewhat darker; posterior and anterior coxae for the most

part coppery green; middle pair coppery at extreme base. The antennae are inserted a little below the level of the eyes and become but very slightly thinner towards the apex, and are covered with a microscopic pile; the 2nd joint is a little more than one-half of the length of the third, which is nearly of the same length as the 4th; the 5th distinctly shorter; 6th a little shorter than 5th; the 7th, 8th, and 9th become gradually shorter; the apical a little shorter than the three preceding together, sharply pointed at the apex, and apparently composed of only one joint. The antennae are nearly as long as the abdomen. Head and thorax covered with longish black scattered hairs. Pronotum and metanotum finely punctured. Abdomen shorter than the thorax, depressed in the centre, narrowed at base and apex, the latter rounded. Ovipositor a little longer than the posterior tarsi, testaceous, black at base and apex; apex of middle tibiae distinctly thickened; middle metatarsus thickened, pilose beneath, shorter than the succeeding joints together; the long spur three-fourths of its length. Wings hyaline; cubitus indistinct, pallid yellow; ulna fuscous; costa scarcely pilose. Eyes large, projecting and converging towards the top. (Cameron.)

HAB. Hawaii: Kona (4000 feet).—Kauai (2500 feet), Makaweli.—Lanai (2000 to 2500 feet), in December.—Molokai (3000 feet) in October, Kaala Mts. (3000 feet) in December.—Oahu: Waianae Mts. (2500 feet), in April.

ANASTATUS Motschulsky.

1859. *Anastatus* Motschulsky, Etud. entom., VIII. p. 116.

This genus, which is parasitic in the eggs of various insects and particularly in those belonging to the Rhynchota and Orthoptera, is represented by a single species, as follows:

(1) *Anastatus koebelei*, sp. nov.

♀. Length 3 mm. Metallic green or blue-green, the head in front, the middle lobe of the mesonotum and the scutellum being usually gold-green; head and thorax shagreened, the metapleura smooth bottle-blue; abdomen black or blue-black, with a whitish or yellowish-white band near the base; scape of antennae, the pronotum at the sides, and the legs, except the front and middle coxae, dark rufous, sometimes more or less fuscous; flagellum black. The wings are fuscous, with the basal third and the tips hyaline; the fuscous part of the wings near the middle has two oblique whitish spots, *vis-à-vis*, the first originating at the front margin about the middle of the marginal vein, while the other is opposite this at the hind margin, both converging and almost uniting at the middle of the wing.

Type. Cat. No. 5552, U. S. N. M.

HAB. Hawaii. Described from four ♀ specimens taken by Mr Albert Koebele, and two specimens taken by Mr Perkins, at Kona (1500 feet), in September 1892.

Subfamily II. *ENCYRTINAE*.Tribe II. *ENCYRTINI*.*ENCYRTUS* Latreille.

1809. *Encyrtus* Latreille, Gen. Crust. et Ins., iv. p. 31.

(1) *Encyrtus fuscus* Howard.

1880—81. *Comys fusca* Howard, U. S. Dept. Agric., p. 363, ♀, ♂.—1887. Cresson, Syn. Hym. North America, p. 239.

1887. *Chiloneurus maculatipennis* Provancher, Add. Fn. du Can. Hym., p. 208. ♀.—1898. Dalla Torre, Cat. Hym., v. p. 242.

1900. *Encyrtus fuscus* Ashmead, Proc. U. S. Nat. Mus., xxii. p. 360.

♂. Length 2.6 mm.; expanse of wings 5 mm.; greatest width of fore wing 0.8 mm. Face deeply punctate, yellowish-brown in colour, vertex dusky, cheeks blackish, mouth parts dusky. Scape of antennae and pedicel honey-yellow below, brown above; flagellum blackish, with quite long black hairs. Collar black above, brownish-yellow below; mesoscutum blackish in the middle, ochereous at sides, clothed with many lighter hairs; tegulae ochereous, blackish at tip; scapulae dusky, very thickly and finely punctured; mesoscutellum ochereous, with hairs anteriorly, the tuft being black; metanotum black except postscutellum, which has an ochereous tinge; peduncle black; abdomen shining black. Wings as with *C. bicolor*, the markings, however, being clearer and more distinct, and the veins very black, except at the transverse clear spot; the stigmal vein is more curved than in *bicolor*. Front coxae transparent white, femora, tibiae and tarsi honey-yellow; middle and hind coxae yellowish, blackish at tips; middle femora yellowish, slightly darker above; tibiae almost black, yellowish at tip; spur and tarsi yellow; claws blackish; hind femora and tibiae nearly black; tarsi whitish except last joint.

♀. Similar to the male in all respects except that the colour of the collar, mesoscutum, scapulae, and mesoscutellum is of a uniform clear ochereous. (Howard.)

HAB. Hawaii: Oloa, in November.—Lanai (3000 feet), in February.

Tribe III. *MIRINI*.*BOTHRIOTHORAX* Ratzeburg.

1844. *Bothriothorax* Ratzeburg, Ichn. d. Forstins., i. p. 209.

(1) *Bothriothorax insularis* Cameron.

1886. *Encyrtus? insularis* Cameron, Mem. Manchester Lit. and Phil. Soc. (3), x, p. 243.—1894. Dalla Torre, Cat. Hym., v. p. 260.

Dark blue; the antennae, apex of fore femora, apical third of middle and apical half of hind femora, the tibiae and tarsi yellowish testaceous, base of four anterior tibiae fuscous; club of antennae darker than scape; abdomen more or less green. Wings hyaline, nervures testaceous. Head covered with large, distinctly separated punctures; thorax more closely punctured, the punctures being also smaller than those on the head; scutellum closely and more finely punctured than the metanotum; abdomen shining, impunctate. Head and mesothorax finely and sparsely pilose; scutellum densely pilose. Abdomen glabrous.

Scape of antennae longer than the flagellum, the flagellum 7-jointed, the first six broader than long, becoming gradually broader until the sixth is double as wide as long; last joint (forming a club) longer than the preceding six; the apex produced laterally, the elongation forming about one-fourth of the total length, and half the thickness of the central part; the club becomes gradually thickened towards the apex. The flagellum is covered with longish stiff hairs, directed towards the apex. Head broad, rather large; eyes large, converging above; ocelli in a wide triangle, widely separated, the upper two nearly touching the eyes; occiput concave. Face deeply excavated, the excavation reaching laterally to the mouth; epistoma projecting, broadly keeled. Thorax large, broad, without sutures; scutellum large; metathorax small. Abdomen shorter than the thorax, the apex narrowed, transverse. Wings scarcely as long as the body; cubitus more than double the length of the ulna, which is very short; radius absent; edge of wing shortly ciliated. The cubitus does not reach to the middle of the wing. Hind tibiae almost one-spurred, the inner being a mere stump.

The above-described species is certainly not an *Encyrtus* as now understood. I cannot make it fit into any of the genera as defined by Mayr and Foerster; but having only a single example (a male), I do not care to found a new genus for its reception. The sculpture of the head and thorax is pretty much as in *Bothriothorax*. (Cameron.)

There is a *Bothriothorax insularis* Howard, described later from the West Indies; it may be known hereafter as *B. howardii*.

HAB. Hawaiian Islands: taken on several of the islands.

MICROTERTYS Thomson.

1875. *Microterys* Thomson, Hym. Skand., iv. p. 155.

(1) *Microterys molokaiensis*, sp. nov.

♂. Length 1.1 mm. Dark bronzed green, the mesopleura still darker, or aeneous black; scape and pedicel black, the flagellum dark brown, the joints elongate oval, clothed with long, sparse hairs; legs fuscous, the tibiae spurs white, the tips of middle

tibiae and their tarsi brownish-yellow. Wings hyaline, with an irregular fuscous discoidal cloud beneath the marginal vein, the same connected with a fuscous streak or ray along the hind margin of the wing and interrupted by a clear spot extending below the short stigmal vein.

HAB. Molokai Mts. (3000 feet). Described from a single specimen taken in June 1893.

ADELENCYRTUS Ashmead.

1900. *Adelencyrtus* Ashmead, Proc. U. S. Nat. Mus., XXII, pp. 341, 401.

(1) *Adelencyrtus kaalae*, sp. nov.

♀. Length 1.5 mm. Head variable, from a blue-black to an aeneous-black, with some sparse punctures on the vertex, the scrobes semicircular but not deeply impressed. Head and abdomen aeneous black, smooth and impunctate, the hypopygium brownish. Antennae dark brown, the scape clavate, as long as the pedicel and the flagellum united, the pedicel obconic, scarcely longer than thick at apex, the flagellum short, clavate, all the joints being wider than long. Wings clear hyaline, the veins brownish, the stigmal vein being about as long as the marginal and postmarginal veins united. Legs dark brown or fuscous, the trochanters, the tarsi and the middle legs brownish-yellow.

HAB. Oahu: Kaala Mts. (2000—2500 feet), in December, (3000 feet) in July.

Family LXIX. PTEROMALIDAE.

Subfamily II. PTEROMALINAE.

Tribe II. PTEROMALINI.

PTEROMALUS Swederus.

1795. *Pteromalus* Swederus, Svensk. Vet.-Ak. Handl., XVI, p. 200.

(1) *Pteromalus fuscitarsis*, sp. nov.

♀. Length 2 mm. Very similar in habitus to *P. puparum* Linné, the head and thorax bronzed green, shagreened, the abdomen ovate, polished black. Antennae 13-jointed, with 2 ring-joints, dark brown, the extreme base of the scape yellow; funicle joints 1 and 2 subequal, very little longer than thick, cup-shaped, joints 3 to 6 subquadrate, a little wider than long. Legs, except coxae and the hind tarsi, brownish-

yellow, the coxae metallic, the hind tarsi fuscous. Metathorax rugulose, with a median carina, the pleural ridge with long white hairs. Wings hyaline, the veins pale yellowish, the marginal vein about twice as long as the stigmal, the latter two-thirds the length of the postmarginal; tegulae piceous black.

HAB. Lanai (3000 feet). Described from a single specimen taken by Mr Perkins in January 1894.

Subfamily III. *SPHEGIGASTERINAE*.

TOMOCERA Howard.

1881. *Tomocera* Howard, Rep. U.S. Dep. Agric., 1880—81, p. 368.
 1883. *Moranila* Cameron, Trans. Ent. Soc. London, p. 188.
 1885. *Dilophogaster* Howard, Entom. Amer., II. p. 98.

(1) *Tomocera californica* Howard.

1881. *Tomocera californica* Howard, Rep. U.S. Dept. Agric., 1880—81, p. 368.
 ♀, ♂.—1898. *Tomocera californica* Dalla Torre, Cat. Hym., v. p. 216.
 1883. *Dilophogaster californica* Howard, Entom. Amer., II. p. 98.
 1883. *Moranila testaceiceps* Cameron, Trans. Ent. Soc. London, p. 188.
 1898. *Moranila testaceipes* Dalla Torre, Cat. Hym., v. p. 160.

♀. Average length of body, 2.1 mm.; average wing expanse, 3.5 mm.; greatest width of fore wing, 0.65 mm. Head with a delicate sculpture; all of the thorax except the scapulae with fine longitudinal punctures above; metascutum and postscutellum with a number of coarse indentations; many stout bristles sparsely scattered over dorsum of thorax. Abdomen subovate, somewhat flattened dorso-ventrally, smooth and shining; first segment very large, but the other five are plainly distinguishable. On each side of the peduncle on the anterior part of the first abdominal segment is a strong tuft of snow-white hairs. Wing veins strong, dark, bristly, the stigmal making a very small angle with the post-marginal. Colour: head, face, scape of antennae, and the under sides of all legs bright mahogany brown; thorax black with a strong metallic lustre on prothorax, tip of scutellum, and scapulae; abdomen bluish-black with a slight brownish patch beneath at base; flagellum of antennae blackish with short dark hairs; border of the eyes at top of the head bluish; front and middle coxae light brown, hind coxae shining blue-black above, brownish below and at tip; all femora blackish above; middle and hind tibiae blackish above, front tarsi yellowish, last joint black; middle tarsi whitish; hind tarsi with first and fifth joints blackish, others yellowish. The centre of the fore wing is occupied by a large dusky circular patch, the inner edge of which is darker than the rest.

♂. Length 1·5 mm. General colour deep metallic blue-black; antennae with the scape yellow-brown, the remaining joints darker; all legs light yellow-brown except hind tibiae, which are blackish. Wings perfectly clear. (Howard.)

HAB. Lanai (3000 feet), in January.—Molokai Mountains (3000 feet), in January and June.—Maui: Haleakala, in March and July.

Although this species was originally described from California as early as 1881, and from the Hawaiian Islands in 1883, it is evidently not indigenous to either fauna, but is probably a species introduced from the Australian fauna.

Subfamily IV. *SPALANGIINAE*.

SPALANGIA Latreille.

1802. *Spalangia* Latreille, Hist. nat. Crust. et Ins., III. p. 227.

(1) *Spalangia hirta* Haliday.

1833. *Spalangia hirta* Haliday, Ent. Mag., 1, p. 334. ♀. 1876. Thomson, Hym. Skand., IV. p. 215. 1881. Cameron, Trans. Ent. Soc. London, p. 562.—1898. Dalla Torre, Cat. Hym., v. p. 208.

Capite thoraceque fere totis punctato reticulatis confertim villosis ♀. ("Long. corp. . 14; alarum 2.")

Caput obscure aeneum antice magis attenuatum quam in sequente, totum confertim crasse punctatum et villosum, plaga intermedia frontis tantum laevissima glabra: antennae nigrae quam in illa longiores et minus incrassatae, articulo 3tio parum breviora quam 2do: thorax obscure aeneus: collare, mesothoracis scutum et humeri confertim punctati, scuti tantum margine antico levigato: paraptera et scutellum vage punctata, hoc apice parcius: metathoracis latera rugoso-punctata, scutellum laevissimum marginibus et canalicula media crenatis: squamulae fusco-ferrugineae: alae dilute ferrugineae nervis fuscis: abdomen et pedes ut in sequente. (Haliday.)

HAB. Hawaii: Honolulu (Blackburn). This European species was recorded from Honolulu by Mr Peter Cameron. I have not seen it and it is not in the collections made by Messrs. Perkins and Koebele, although there is another species, represented in both sexes, which is described below as new.

(2) *Spalangia lanaiensis*, sp. nov.

♀. Length 1·8 to 2 mm. Polished black but exhibiting a faint bluish or aeneous tinge in certain lights; it is smooth and impunctate, except a few sparse punctures on the pronotum, the parapsides and at the sides of the scutellum; the tarsi, except the last

joint, are honey-yellow or testaceous; the metathorax with a median grooved punctate line, which is forked at base so as to form a small, triangular space; the abdominal petiole is a little more than twice as long as thick, coriaceous and opaque, with three delicate, elevated lines; the body of abdomen is oblong oval and much shorter than the body, while the wings are hyaline, with the veins brownish-yellow.

The antennae are 10-jointed, if the long club be considered to be only one joint, although with a strong lens three indistinct joints may be detected, thus making the antennae 12-jointed; the scape is a little longer than the 7 funicle joints united; the pedicel obconical, as long as the first three funicle joints united; the funicle joints, except the first, are a little wider than long; while the club is oblong, considerably thicker than the funicle and about as long as the last four joints of the funicle united.

♂. Length 1.5 mm. Agrees well with the female, but the few punctures, noted in female, are smaller, less distinct or nearly obsolete; the body of the abdomen is smaller, short oval; while the antennae are somewhat different, the pedicel being a little shorter, the joints of the funicle moniliform, briefly pedicellated, while the club is ovate and scarcely so long as the last three joints of the funicle united.

HAB. Lanai (2000 feet). Described from one male and two females taken in January 1894.

Family LXXI. EULOPHIDAE.

Subfamily I. ENTEDONINAE.

ASTICHUS Förster.

1856. *Astichus* Förster, Hym. Stud., II. p. 78.

(1) *Astichus cyaneus*, sp. nov.

♀. Length 1.4 mm. Body and legs, except tarsi, blue; tarsi mostly white, the last joint of all tarsi and the first and second joints of hind tarsi fuscous; antennae black; wings mottled with brown and hyaline spots.

The head, seen from above, is transverse, fully twice as wide as long, from in front, much wider than long, the vertex flat, the face deeply concave for the reception of the antennae, and angulated at each side near the eye. The antennae are 10-jointed and extend to the tegulae, pubescent, with all the joints of the funicle wider than long, the club being cone-shaped. The wings are similar to those in *A. arithmeticus* Förster, but with more brown maculations and brown at tips. The abdomen is ovate, pointed at apex, but scarcely so long as the head and thorax united, depressed above, sub-

angularly carinate beneath toward base, the second segment being the longest, longer than 3 and 4 united, the following short, subequal.

HAB. Lanai (3000 feet). Described from a single specimen taken by Perkins in January 1894.

OMPHALE Haliday.

1833. *Omphale* Haliday, Ent. Mag., III. p. 339.

(1) *Omphale metallicus*, sp. nov.

♀. Length 1·8, 2, to 2·8 mm. Metallic green to blue-green, shagreened, the sides of the thorax and beneath and the legs more of a bronzed green, the tarsi, except the last joint, pale yellowish, the tibial spurs whitish; thorax beneath and the legs, except the tarsi, sometimes aeneous-black; metathorax very short, with a median carina. The abdomen is usually fusiformly pointed, longer than the head and thorax united and usually of a darker colour than the thorax (rarely oval and shorter than the thorax, due probably to the terminal segments being retracted). The wings are hyaline, with the veins brownish-yellow. The antennae are subclavate, the scape and pedicel aeneous-black or metallic, the flagellum brown-black, rather densely pubescent, the funicle 4-jointed, the joints rather stout, a little longer than thick.

♂. Length 0·9 to 1 mm. Very variable in colour, blue-green to bronzed green, but rarely blue-black, the sides of thorax and beneath, and the legs, except tarsi, blue-black, the tarsi, except the last joint, whitish. The flagellum is dark brown, very hairy, with the funicle only 3-jointed, the joints of same being moniliform; otherwise as in female.

Comes near *O. versicolor* Ashm., described from St Vincent, W. I., but differs in colour, and particularly of the legs and antennae.

HAB. Hawaii: Kailua (W. G. Wait), on November 7, 1894; Kilauea, in August; Oloa, in December.—Kauai: Halemanu. Kaala Mts. in December.—Molokai Mts. (3000 feet), in April, June, September and October.—Oahu: Waianae Mountains (3000 feet), in April. Many specimens.

Subfamily II. APHELININAE.

COCCOPHAGUS Westwood.

1833. *Coccophagus* Westwood, Lond. and Edinb. Phil. Mag. (3), III. p. 344.

(1) *Coccophagus ochraceus* Howard.

1895. *Coccophagus ochraceus* Howard, Techn. Ser., No. 1, U. S. Dep. Agric. Ent., p. 38.

♀. Length 0·7 mm.; expanse, 1·53 mm.; greatest width of fore wing, 0·3 mm. Differs at once from all other species of the genus in having the general colour ochraceous or dark honey-yellow instead of black. Head and thorax very finely and sparsely punctate, also very delicately shagreened. Normal notal hairs blackish; abdomen smooth. General colour, as stated above, dark ochre yellow. Eyes dusky, ocelli dark red. Antennae yellowish, except pedicel, which is blackish. Mesopleura and terminal segments of abdomen dark brown, nearly black. All legs concolorous with thorax. Wings hyaline, veins uniformly fuscous.

♂. Punctuation of notum a trifle more pronounced than with the female, mesonotum appearing slightly rugose; antennae slightly dusky. (Howard.)

HAB. Hawaii: Kilauea, a single specimen taken in August 1896. The species was originally described from Alameda, California, and it has probably been introduced into the Hawaiian Islands.

(2) *Coccophagus lecanii* Fitch.

1858. *Platygaster lecanii* Fitch, Fifth Rep. Ins. New York, p. 25.

1878. *Coccophagus lecanii* Smith (Emily), Amer. Natural., p. 666.—Forbes, Seventh Illinois Rep., p. 129.—1881. Howard, Rep. U. S. Dep. Agric., pp. 357—358.—1894. Howard, J. Linn. Soc. London, xxv. p. 97. 1895.—Howard, Techn. Ser., No. 1, U. S. Dep. Agric., p. 33.—1898. Dalla Torre, Cat. Hym., v., p. 33.

♀. Length, 1 mm.; wing expanse, 2·25 mm.; greatest width of fore wings, 0·42 mm. Antennae as long as the thorax; head, pronotum, and mesonotum finely and sparsely punctate and furnished with short bristles, punctures of mesoscutum arranged in longitudinal rows. Mesonotum also has a fine shagreening. Mesoscutellum and parapsides of mesoscutum very finely shagreened, without large punctures; abdomen smooth. General colour black, shining, tegulae brown; eyes dark reddish-brown; antennae light brown, with darker longitudinal raised lines on flagellar joints. Hairs of thorax whitish, lighter on mesoscutellum. Last half of mesoscutellum and centre of post-scutellum bright lemon-yellow. Wing veins brown. All femora brown or black, sometimes yellowish at either extremity. All tibiae straw-yellow, with the exception of the posterior pair, which have a brown annulus near base; all tarsi straw-yellow with the fifth joint dark brown.

♂. Somewhat smaller than female; antennae longer, club proportionately considerably longer, each of the joints as long as each of the immediately preceding funicle joints. Coloration like that of the female, except that the yellow tip of the meso-scutellum is wanting. (Howard.)

HAB. Hawaii. Two specimens, labelled No. 1117, bred by Mr Albert Koebele.

Subfamily III. *TETRASTICHINAE*.

TETRASTICHUS Haliday.

1843. *Tetrastichus* Haliday, Trans. Ent. Soc. London, III. p. 297.

(1) *Tetrastichus hagenowii* Ratzeburg.

1852. *Eutodon hagenowii* Ratzeburg, Ichn. d. Forstins., III. p. 211, ♀.—1898. Dalla Torre, Cat. Hym., v. p. 38.

♀. Length 1·5 to 1·8 mm. Aeneous-black, with a metallic green or bluish-green lustre in certain lights; the scape of antennae, the pedicel, the legs, including all coxae, except sometimes the anterior coxae basally, and the extreme base of abdomen, pale yellowish; the flagellum light brown, pubescent. Wings hyaline, the veins pale yellowish. Abdomen pointed ovate, the length of the head and thorax united or a little longer, above depressed, beneath convex.

HAB. Hawaii: Kona (2000 feet), in January; Hilo, in June (taken by Mr H. W. Henshaw).—Lanai: (2000 feet), one ♀ in July.

This species is a hyperparasite on *Evania appendigaster* Linné, which lives in the egg-cases of cockroaches.

Subfamily IV. *ELACHISTINAE*.

OPHELINUS Haliday.

1843. *Ophelinus* Haliday, Trans. Ent. Soc. London, III. p. 300.

(1) *Ophelinus mauiensis*, sp. nov.

♀. Length 3 to 3·5 mm. Dark bronzed green, finely shagreened; the scape and pedicel aeneous-black, the flagellum opaque black, pubescent; legs, except coxae, pale brownish-yellow, the femora above toward base, the hind tibiae outwardly toward apex and the three basal joints of hind tarsi outwardly faintly dusky or obfuscated. Wings

subhyaline, being faintly tinged with brown, the stigmal vein with a fuscous streak beneath its knob. Metathorax with a median carina. Abdomen elongate, fusiformly pointed, much longer than the head and thorax united, or fully twice as long as the thorax. The antennae are 8-jointed, the pedicel obconical, a little longer than thick at apex; funicle 3-jointed, the joints elongate, the first and second subequal, the first very slightly the longer, about thrice as long as thick, the third twice, or a little more, longer than thick; while the club is 3-jointed, the last joint being very minute.

♂. Length, 2 mm. Differs from the female in having all the legs, except the tarsi, which are fuscous, bronzed or metallic black, the funicle being 4-jointed, the first joint being nearly as long as the second and third united, the fourth moniliform, the club 2-jointed, while the abdomen is oblong, not longer than the thorax and concave above; otherwise it is similar to the female.

HAB. Maui: Haleakala (5000 feet), in March and October.

(2) *Ophelinus hawaiiensis*, sp. nov.

♀. Length, 3.4 mm. Agrees very closely, in shape and structure, with *O. mauiensis*, except that it is of a metallic blue-green, the wings being clearer, nearly hyaline, without the fuscous streak, beneath the knob of stigmal vein, while the scape and the legs, except the coxae, are wholly brownish-yellow.

HAB. Hawaii: Kilauea. Described from one female taken in August 1896.

Subfamily V. *EULOPHINAE*.

HEMIPTARSENUS Westwood.

1833. *Hemiptarsenus* Westwood, Mag. Nat. Hist., VI. p. 122.

(1) *Hemiptarsenus hawaiiensis*, sp. nov.

♀. Length 2 mm. Aeneous black and feebly shagreened, the mandible rufous, the scape of the antennae and the legs, except the hind coxae, brownish-yellow; flagellum brown-black, sparsely pubescent. Wings hyaline, the veins yellowish; a faint dusky cloud just beneath the knob of the stigmal vein.

The scape is long and extends considerably above the ocelli; the pedicel is obconical, scarcely longer than thick; the funicle is 4-jointed, the first joint being the longest, about thrice as long as thick, the fourth being only about twice as long as thick; while the club is cone-shaped and scarcely so long as the first joint of the funicle. The wings are normal, the marginal vein in the front wings being very long,

somewhat longer than the subcostal, the stigmal vein very short, ending in a small knob, with an uncus, while the postmarginal vein is more than twice the length of the stigmal vein with its knob. The abdomen is oval and hardly as long as the thorax.

HAB. Hawaii: Kona (4000 feet). Described from a single specimen taken in August, 1892.

NECREMNUS Thomson.

1878. *Necremnus* Thomson, Hym. Skand., v. p. 234.

(1) *Necremnus maculatipennis*, sp. nov.

♀. Length 2 mm. Aeneous-black, coriaceous, the wings maculate with irregular brown spots, the large discoidal spot beneath marginal vein having a hyaline space between the base of the marginal vein and the origin of the stigmal vein, the apex of the wing with three submarginal spots. The fourth joint of the antennae and the legs, except the hind coxae, are light brownish-yellow. Abdomen ovate, not longer than the thorax.

♂. Length 1.8 mm. Agrees well with the female, except that the flagellum is longer, the joints of the funicle being longer and slenderer, while the abdomen is oblong-oval, shorter than the thorax, concave above.

HAB. Maui: Haleakala (5000 feet). Described from one male and two female specimens taken in March 1894.

SYMPIESIS Förster.

1856. *Sympiesis* Förster, Hym. Stud., II. p. 74.

(1) *Sympiesis kona*, sp. nov.

♀. Length 2 mm. Metallic blue-black, the surface smooth and shining but under a strong lens exhibiting microscopic reticulate lines. The antennae are black, the flagellum subclavate, compressed, the funicle 3-jointed, the first joint the longest, seen from its flat side about twice as long as wide, the second joint a little longer than wide, the third not longer than wide; club 3-jointed. Legs, except the middle and hind coxae, clear yellow. Wings clear hyaline, the veins light brownish. Abdomen pointed ovate, about as long as, or a little longer than, the head and thorax united.

HAB. Hawaii: Kona (2500 feet). Described from a single female taken in September 1892.

EULOPHUS Geoffroy.

1762. *Eulophus* Geoffroy, Hist. abr. Insect., II. p. 312.(1) *Eulophus citripes*, sp. nov.

♀. Length 1.4 mm. Metallic brown-black, feebly shagreened, the flagellum dark brown, pubescent, the pedicel and the funicle joints beneath and toward apex yellow; mouth parts pale brownish-yellow. Wings clear hyaline, the veins light brownish; the knob of the stigmal vein with a faint fuscous streak beneath. Legs, except the middle and hind coxae, lemon-yellow. Abdomen pointed ovate, longer than the head and thorax united.

HAB. Hawaii: Kona. Described from one specimen.

Family LXXIII. MYMARIDAE.

Subfamily II. MYMARINAE.

Tribe II. MYMARINI.

POLYNEMA Haliday.

1833. *Polynema* Haliday, Ent. Mag., I. p. 347.(1) *Polynema hawaiiensis*, sp. nov.

♂. Length 1.5 mm. Polished black, impunctate; legs rufopiceous, the trochanters, tips of femora, knees, an annulus at base of tibiae and the tarsi, except the hind pair, yellowish. Antennae longer than the body, black or brown-black, with the second joint alone yellowish, the joints of the flagellum elongate, fully four times or more longer than thick. Wings hyaline, longly fringed, the delicate subcostal vein and the punctiform marginal vein piceous black. Head, viewed from above, quadrate; pronotum conical; mesonotum twice as long as wide with two distinct parapsidal furrows extending to the base of the scutellum, the latter subconvex, longer than wide or as long as the metanotum; metanotum smooth, sloping off posteriorly. Abdomen rather small pyriform, polished, the petiole slender and fully as long as the hind coxae.

HAB. Molokai Mountains (4000 feet), in September, 1883.

Superfamily VIII. ICHNEUMONOIDEA.

Family LXXIV. EVANIIDAE.

Subfamily I. EVANIINAE.

EVANIA Fabricius.

1775. *Evania Fabricius*, Syst. Ent., p. 345.

Black, the wings hyaline, the stigma and the costal veins black.

Face reticulately punctate, with a slight median carina extending anteriorly from between the insertion of the antennae.....(1) *E. sericea* Cameron.Face smooth impunctate, with a median carina extending posteriorly from between the antennae.....(2) *E. appendigaster* Linné.(1) *Evania sericea*, Cameron.1883. *Evania sericea* Cameron, Trans. Ent. Soc. London, p. 191, ♀.— 1889. Schletterer, Ann. Naturh. Hofm., iv. p. 167.

♀. Length 7 mm. Black; palpi, knees, anterior tibiae, and tarsi obscurely fuscous. Head and thorax coarsely rugose; petiole longitudinally rugose, smoother at the base; mesopleura in front smooth, shining, impunctate, behind coarsely reticulated; breast covered with large shallow punctures. Coxae finely rugose, smooth at base. Posterior femora not much longer than thorax; tibiae and tarsi armed with short thick bristles; tarsi not much longer than tibiae; claws apparently simple. The head, thorax, and legs at the base are closely covered with a white velvety pubescence, which is longest at the sides. Abdomen smooth, shining, compressed, shortly pilose at the sides. Antennae longer than the body; the apex of scape brownish. Wings hyaline; cubital and discoidal nervures obsolete from the discoidal cellules, the upper of which is not at all so broad in proportion to the lower as it is in *E. laevigata*; the transverse humeral nerve is interstitial. The mandibles have two short obtuse teeth besides the large apical one.

This species is apparently most nearly allied to *E. tasmanica*, Westw., but the present species has not the face longitudinally striated. (Cameron.)

HAB. Oahu and Hawaii (No. 131). Oahu: Waianae Mts., in March; Honolulu (A. Koebele).—Lanai, in July.—Hawaii: Hilo in July (H. W. Henshaw); Kona (600 feet), in July (Perkins).

(2) *Evania appendigaster* Linné.1758. *Ichneumon appendigaster* Linné, Syst. Nat., Ed. x. 1.1889. *Evania appendigaster* Schletterer, Ann. naturhist. Hofmus. iv. p. 136. ♀, ♂.
(Full bibliography and synonymy.)

♀, ♂. Length 7 to 8 mm. Black, shining, the head and the thorax above, except a few sparse punctures, are smooth and impunctate; mesopleura anteriorly smooth impunctate, posteriorly along the hind margin crenate, and with a few sparse punctures on its convex disc; metathorax rather coarsely reticulated, the scutellum with a few minute sparse punctures. Wings hyaline, the stigma and costae black, the internal veins brownish or testaceous. Abdomen petiolate, the abdomen strongly compressed, hatchet-shaped, testaceous along the venter, the ovipositor subexserted, visible from above as a short point; body of abdomen in ♂ clavate, compressed.

HAB. Hawaii: Olaa and Hilo, in July (H. W. Henshaw).

Family LXXXVI. ICHNEUMONIDAE.

Subfamily II. CRYPTINAE.

Tribe III. HEMITELEINI.

This tribe is represented by three closely allied species, widely distributed in North America, which were evidently introduced into these Islands from importations from California.

HEMITELES Gravenhorst.

1829. *Hemiteles Gravenhorst*, Ich. Eur., II. p. 780.(1) *Hemiteles variegatus* Ashmead.1890. *Hemiteles variegatus* Ashmead, Proc. U. S. Nat. Mus., XII. p. 398.

♀. Length, 2.4 mm.; ovipositor, 0.4 mm. Brownish-yellow, varied with black, minutely shagreened and opaque; the head is large, transverse, wider than the thorax, the stemmaticum blackish; antennae 18—20-jointed; thorax without parapsidal grooves, and with three black blotches posteriorly; metathorax areolated, the disk black; petiole more or less black, a blotch on disk of second and third abdominal segments sometimes, and the following segments entirely, black. Wings hyaline, the front wings with two transverse fuscous bands. Metathorax areolated, the areola hexagonal, a little wider than long, the basal area very short transverse.

HAB. Hawaii. One female specimen taken by Koebele.

(2) *Hemiteles tenellus* Say.

1835. *Cryptus tenellus* Say, Journ. Bost. Soc. Nat. Hist., I. p. 233. ♀.—1859. Leconte's Ed. Say's Works, II. p. 690. ♀.

1869. *Hemiteles tenellus* Walsh, Can. Ent., II. p. 12. ♀.—1887. Cresson, Syn. Hym. North Am., p. 161.

♀. Length nearly three-tenths of an inch. Honey-yellow; wings banded. Antennae blackish towards the tip; wings hyaline; a fuliginous band before the middle, and a much dilated or double one beyond the middle including the stigma; stigma triangular, and with the nervures brown; radial cellule wide; second cubital somewhat rounded, the exterior nervure wanting; apical nervure obsolete; metathorax beneath the scutel and the insertion of the abdomen black; abdomen arcuated, blackish at tip; oviduct half as long as the abdomen. (Say.)

HAB. Hawaii: Kilauea, in September.

(3) *Hemiteles melitacae* Ashmead.

1890. *Hemiteles melitacae* Ashmead, Proc. U. S. Nat. Mus., XII. p. 398, ♀.

♀. Length, 5 mm.; ovipositor, 1 mm. Yellowish-brown, shagreened, opaque; the thorax has three black streaks posteriorly; the metathorax above basally, a median line on the posterior face, streak on petiole and the terminal abdominal segments, are more or less black. Antennae 23-jointed, filiform, the first three joints of the flagellum being long, subequal; thorax without parapsidal grooves; metathorax areolated, the spiracles small, round. Wings hyaline, with two transverse smoky bands, the first across the basal nervure, the other taking in the upper two-thirds of the stigma and all of the marginal cell, the marginal cell, however, has a clear space next to the stigma, and there are also two or three small clear dots in the areolet; the stigma and veins are black, except a spot at base of stigma, the median and submedian veins, the first recurrent nervure and the portion of the cubitus in the clear space between the bands, are yellowish; the cubitus is not broken by a stump of a vein near its middle; hind wings clear hyaline.

HAB. Hawaii: Kilauea.

Subfamily III. PIMPLINAE.

Tribe III. LISSONOTINI.

LISSONOTA Gravenhorst.

1829. *Lissonota* Gravenhorst, Ichn. Eur., III. p. 30.

(1) *Lissonota bellator* Gravenhorst.1829. *Lissonota bellator* Grav. loc. cit. supra, p. 106.

♀. Length 7 mm.; ovipositor longer than the body. Black; the mandibles medially, the flagellum, the legs, the apical third, or more, of the first segment of abdomen, abdominal segments three and four and base of fourth, and the venter, except at apex, rufous; wings subfuscous, the stigma brown, the areolet triangular, sessile.

HAB. Oahu. A single specimen of this European species is in the collection labelled: "Probably from Oahu. May be British."

Tribe IV. PIMPLINI.

ECHTHROMORPHA Holmgren.

1868. *Echthromorpha* Holmgren, Eugen. Resa, Zool., I. p. 406.1892. *Stagmopimpla* Saussure, Grandidier's Hist. de Madagascar, xx. Hym., pl. xvi. f. 1.1894. *Rhynchopimpla* Kriechbaumer, Berl. Ent. Zeit., xxxix. p. 51. ♀.1894. *Polyamma* Kriechbaumer, loc. cit., p. 394. ♂.

The type of this genus, *E. maculipennis* Holmgren, was described from Hawaii. It is one of the commonest species and is found on most of the Islands.

The genus is, however, evidently of Australian origin. Two species have been discovered in the Hawaiian fauna, separable as follows:

Males 2.

Females.

1. Black, the front wings with a black spot near apex.
Orbits black; legs, except more or less of the anterior femora, and tibiae, and the abdomen wholly black (1) *E. maculipennis*.
Anterior orbits more or less yellowish; anterior and middle legs more or less rufous, the two or three terminal abdominal segments rufous
..... (2) *E. flavo-orbitalis*.
2. Face below the insertion of the antennae black, the anterior margin of clypeus alone yellowish; anterior legs in part alone rufous (2) *E. maculipennis*.
Face below the insertion of the antennae, the apex of the clypeus and the anterior legs, yellowish (2) *E. flavo-orbitalis*.

(1) *Echthromorpha maculipennis* Holmgren.1868. *Echthromorpha maculipennis* Holmgren, Eugen. Resa, Zool. vi. p. 406; tab. viii. f. 3.

♀. Length 12 to 16 mm.; ovipositor about half the length of the abdomen, or a little less. Black, punctate, the abdomen, except the first segment which is smooth and

shining, closer and more strongly punctate, the scutellum convexly elevated, nearly smooth, the postscutellum smooth, impunctate, but with two foveolae, the posterior face of the metathorax polished, impunctate, but with some faint, transverse aciculations towards sides, towards the base and the pleura strongly punctate. Mandibles toward base and the anterior femora beneath and toward apex, their tibiae and tips of tarsal joints rufous; rest of legs black. The head is transverse, thin antero-posteriorly, the temples being flat, not developed, the face above the insertion of the antennae concave, the basin being smooth, except some faint aciculations or wrinkles; below the antennae the face is feebly convex, sparsely punctate but shining; the clypeus is large, smooth, the labrum slightly exposed, yellowish; palpi yellowish; ocelli pale. The wings are hyaline, with a small black spot almost at the extreme apex of the front wings, the stigma and veins black, except the longitudinal veins at their origin, which are testaceous. The abdomen is similar to that in *Pimpla* (sens. str.), the dorsal segments 2 to 6 with a transverse impressed line at apex, which is more or less obsolete medially, and with segments 2 to 5 also with an oblique line on each side extending from the base to the apical transverse line, the apical portion of the segments beyond this line being smooth.

♂. Length 7 to 14 mm. Agrees in every respect with the female, except that it is smoother, feebly, sparsely punctate, the antennae longer, the abdomen elongate, slender, the first and second segments polished, impunctate, while the following segments are also polished but with some sparse, feeble punctures.

HAB. Hawaii: Hilo; Kona (4000 feet), in August; Oloa (2600 feet), in May and September; Kilauea, in September.—Kauai (high plateau), in September.—Lanai: Kaala Mountains (2000 feet), in July.—Maui: Jao Valley, in April.—Molokai, in the Mountains.—Oahu: Waianae Mts., in March; Kaala Mts. (2000 feet) in July.

This species has been bred by Mr Albert Koebele from a geometrid larva infesting coconut palms, identified by Dr H. G. Dyar as *Omiodes blackburni* Butler.

(2) *Echthromorpha flavo-orbitalis* Cameron.

1886. *Echthromorpha flavo-orbitalis* Cameron, Proc. & Mem. Manchester Lit. & Phil. Soc. (3), x. p. 239, ♀.

♂. Length 8 mm. "This species differs from *E. maculipennis* as follows:—The face is entirely yellow, the eyes are narrowly bordered with yellow except at the top, the scape beneath, and the anterior coxae and trochanters, the basal half of the scutellum, and the postscutellum are yellow; the wings are much darker tinted, the nervures and stigma are quite black; the metanotum is more strongly punctured, and the oblong depression found near the base in *E. maculipennis* is absent; the punctuation on the abdomen is stronger, there being also a distinct punctuation on the second segment, and the transverse impressions are more conspicuous. Possibly an examination of a large

series of specimens may prove that *E. flavo-orbitalis* is only a variety of *E. maculipennis*. (Cameron.)

♀. Length 9 to 16 mm. Differs from female of *E. maculipennis* in having the scale of the antennae, the apex of the clypeus, the anterior and middle legs, except coxae, and the abdominal segments 7 to 8 rufous.

HAB. Hawaii: Hilo in July (H. W. Henshaw).—Molokai, in mountains (4500 to 5000 feet), in June (Perkins).

GLYPTOGASTRA Ashmead.

1900. *Glyptogastra* Ashmead, Proc. U. S. Nat. Mus., XXIII, p. 57.

(1) *Glyptogastra hawaiiensis*, sp. nov.

♀, ♂. Length 7 to 13 mm. Entirely black, except that the anterior femora and tibiae *beneath* are ferruginous. The head and thorax are coriaceous and finely punctate; ocelli transparent, pale amber coloured; wings smoky black, with a faint violaceous tinge in certain lights. The head is transverse, with the temples very flat, not developed, the face above the insertion of the antennae concave, with some fine transverse striae in the basin. The clypeus is distinctly separated from the face, nearly smooth, subopaque, with a few punctures toward the base, the anterior margin being slightly arcuate, not impressed. The antennae are nearly as long as the body, in female 31-jointed, in male 32-jointed, the first joint of the flagellum being much the longest, nearly eight times as long as thick, the following to the last gradually shortening, the last joint about twice as long as the antepenultimate. The scutellum and the postscutellum have deep, broad furrows at the sides, the former being connected with the mesonotum by strong, elevated carinae at the sides anteriorly and has a furrow or depression across the base. The metathorax has a shallow median furrow which broadens into a triangular depression at apex, the triangular space thus formed with some faint, oblique lines. The abdomen is elongate, shaped as in *Pimpla*, the surface finely, microscopically reticulated, the first segment with a hump-like elevation at its apical third, segments 2 to 5 with oblique impressed lines laterally, and segments 2 to 4 with also indications of a transverse line at or near their apices, the line more distinctly impressed laterally. Ovipositor prominent, about half the length of the abdomen. The venation of the wings is similar to *Echthromorpha*, only the discoidal nervure is not quite interstitial with the median vein.

HAB. Hawaii: Kilauea, in August; Kona (4000 feet), in September.

PIMPLA Fabricius.

1804. *Pimpla* Fabricius, Syst. Piez., p. 112.

(1) *Pimpla hawaiiensis* Cameron.

1886. *Pimpla hawaiiensis* Cameron, Proc. & Mem. Manchester Lit. & Phil. Soc., (3), x. p. 239, ♀.

♀, ♂. Length 5.5 to 10 mm.; ovipositor less than one-half the length of abdomen. Black; legs red, the anterior tibiae inclining to yellowish in front, the hind tibiae and tarsi black, the extreme base of hind tibiae and a broad band above the middle and the spurs white; the tips of four anterior tarsi black; extreme base of posterior testaceous. Antennae scarcely as long as the thorax and abdomen united, stoutish, tapering towards the apex; inclining to brown on the lower side, covered with microscopic pile. Head as wide as the thorax, shining, impunctate, the face somewhat protuberant, covered sparsely with white hairs; front a little depressed above the antennae; clypeus clearly separated; maxillary palpi testaceous, labial fuscous. Thorax shining, impunctate, the mesonotum sparsely, sternum and metapleurae densely covered with longish white hair; metanotum without any keels, the thoracic spiracles oblong. Abdomen about double the length of the thorax, covered with a longish white pubescence; base of petiole excavated, the middle portion sparsely punctured; apical part shining, impunctate, separated from the part in front by being a little raised. The other segments (except the apical) are closely and rather strongly punctured; the second is longer than broad; the others to the seventh broader than long; the seventh is longer than broad; the eighth is narrowed gradually to the apex. The edges of the second segment are testaceous at base and apex. Wings hyaline, shorter than the thorax and abdomen; the nervures and stigma black; areolet 4-angled, angled on lower side; the lateral nervures uniting at top; the recurrent nervure angled a little above the middle. (Cameron.)

HAB. Hawaii: Hilo in June and July (H. W. Henshaw); Kona (4000 feet), in July; Olaa (1500 feet), in May.—Lanai: Halepaika, in July (2000 feet), in February; Haleakala (3000 feet), in July.—Molokai, in mountains (2500 feet), in July.—Oahu: Honolulu (2000 feet), in March; Kaala Mts. (1500 feet), in February; Waianae Mts., in April.

Subfamily IV. TRYPHONINAE.

Tribe IV. TRYPHONINI.

METACOELUS Förster.

1868. *Metacoelus* Förster, Verh. d. naturh. Ver. Rheinl., xxv. p. 161.

(1) *Metacoelus femoralis* Fourcroy.1781. *Ichneumon femoralis* Fourcroy, Ent. Paris, p. 396.1829. *Exochus femoralis* Gravenhorst, Europ. Ichn., II. p. 346. 1856. Holmgren, Monogr. Tryph. Suec., p. 308.

♀, ♂. Length 5.5 to 7 mm. Black, sparsely pubescent; upper edge of the frontal ledge ferruginous; palpi and tegulae yellowish; antennae brown-black or fuscous, paler beneath; legs incrassated, flavo-ferruginous; wings subhyaline, the costae and the stigma brown-black, the other veins lighter brown. The whole body is shining, the face rather coarsely punctate, the vertex and mesonotum more finely punctate, the scutellum with some sparse, minute punctures, while the pleura and the metathorax are smooth, impunctate, the latter being completely areolated. The abdomen is shining, highly polished, the first segment having two carinae that extend a little beyond the middle of the segment. The joints of the flagellum, after the first, are wider than long, the first being fully as long as 2 and 3 united.

HAB. Hawaii: Hilo, in July.—Maui: Lehaima (2000 feet), in January.—Oahu: Waianae Mts., in April.

This European species is known to occur also in Africa, Asia, Australia, and North America.

Tribe V. *BASSINI*.*BASSUS* Fallen.1813. *Bassus* Fallen, Sp. Nov. Hym. disp. meth. exhib. Lundae.(1) *Bassus lactatorius* Fabricius.

1804. *Bassus lactatorius* Fabricius, Syst. Piez., p. 63.—1829. Gravenhorst, Ichn. Eur., III. p. 353.—1810. Panzer, Faun. Ins. Germ., p. 19, f. 19.—1852. Ratzeburg, Ichn. d. Forstins., II. p. 109.—1856. Holmgren, Monogr. Tryph. Suec., p. 353.—1895. Davis, Trans. Am. Ent. Soc., XXII. p. 19.

♀, ♂. Length 5.5 to 6 mm. Head and thorax, the abdomen (except the apex of the first segment, the second and third segments and the base of the fourth, which are red), the base of hind femora and an annulus near the middle and hind tarsi, black; the anterior orbits, the clypeus, the mandibles, except teeth, the palpi, the anterior margins

of the lateral lobes of the mesonotum, the tegulae, a line beneath tegulae, the scutellum and a broad band on hind tibiae, white; legs, except as noted, rufous.

HAB. Maui: Lahaina (along coast), in January.—Oahu: Waianae Mountains, in March.—Hawaii: Hilo (H. W. Henshaw), in July.

This species, which is parasitic on the larvae of Syrphid flies, is now widely spread over the entire world, being recorded from Europe, Africa, Asia, Australia, New Zealand, Chatham Islands, Japan, Hawaii, North and South America, and the West Indies.

Subfamily V. OPHIONINAE.

Tribe II. OPHIONINI.

OPHION Fabricius.

1798. *Ophion* Fabricius, Ent. Syst. Suppl., p. 210.

Black, the orbits yellowish(1) *O. nigricans*.
Luteous, the eyes, claws and sheaths of ovipositor black.....(2) *O. lineatus*.

(1) *Ophion nigricans* Cameron.

1883. *Ophion nigricans* Cameron, Trans. Ent. Soc. London, p. 193.

♀, ♂. Length 16 to 19 mm. Obscure black, covered all over with a close pale pubescence, the orbits of the eyes before and behind yellow; the face [and sometimes] more or less of mesonotum, metanotum at base, pleurae and sternum, brownish [rarely entirely black]. Mesonotum margined along the side to the end of the scutellum, which is rugose. Metanotum finely rugose; at the base is a striated furrow. Pleurae finely punctured. Coxae finely punctured; spurs thick, setose on under side [sutures and second joint of trochanters, the tibiae and tarsi vary from brown to ferruginous]. Antennae [in ♀] somewhat shorter than the abdomen [in ♂ somewhat longer], obscure brownish fuscous. Wings hyaline; nervures fuscous; stigma livid. (Cameron.)

HAB. Hawaii: Kilauea.

(2) *Ophion lineatus* Cameron.

1883. *Ophion lineatus* Cameron, Trans. Ent. Soc. London, p. 192, ♀, ♂.

♀. Length 13 mm. Luteous. Eyes, claws, and sheath of ovipositor black. Wings hyaline; stigma pallid ferruginous, darker round the edges; nervures fuscous;

covered with a short white pubescence. Mandibles deeply bidentate, the apex blackish: foveae above face not very deep, longer than broad; covered with a white pubescence. Antennae a little longer than the body. Mesonotum almost shining, very finely punctured; mesonotum distinctly bordered all round; from the tegulae the carina curves round to the scutellum, along the side of which it goes to the end, the two keels converging as they do so, but not joining; the apex of the mesonotum is also bordered, and there is a lateral keel at the side of the scutellum in front behind the fore wings. The metanotum is more pilose than the mesonotum; it is finely rugose all over; at the base is a waved indistinct furrow. Abdomen covered with long, depressed, white hairs, especially at the apex; the ventral surface is darker than the rest. The long spur of the posterior tibiae is longer than the 2nd tarsal joint. Female and male. (Cameron.)

HAB. Hawaii: Lanai. Unknown to the author and not represented in the collections made by Mr Perkins.

PLEURONEUROPHION Ashmead.

1900. *Pleuroneurophion* Ashmead, Proc. U. S. Nat. Mus., xxiii. p. 86.

(1) *Pleuroneurophion hawaiiensis*, sp. nov.

(Plate IX. fig. 1, ♀.)

♀. Length 9.5 mm. Head obscure yellowish-white, the occiput fuscous; teeth of mandibles black; palpi brownish-yellow; ocelli large, arranged in a triangle; eyes large, extending almost to the base of the mandibles and sinuate within opposite the insertion of the antennae; antennae black, the scape, the pedicel and the ring-joints at apex and beneath, ferruginous; the thorax, the coxae and more or less of the trochanters, except their sutures, which are whitish, and the hind femora, black, rest of legs brownish or fuscous. Wings hyaline, the stigma and veins brown, except a whitish spot between the parastigma and the stigma; the stigma is lanceolate, the first abscissa of the radius being much swollen beyond its origin but becoming slender at tip; marginal cell long, while the cubitus is distinctly angulated. The abdomen is nearly twice as long as the head and thorax united, compressed and shaped as in *Anomalon*, the ovipositor exerted but short, not so long as the first joint of the hind tarsi. The head is smooth, impunctate; the mesothorax above is nearly smooth but distinctly sculptured at the sides, while the metathorax is rugulose, with one transverse carina, the space enclosed by it being much smoother than the portion beyond.

Type. Cat. No. 5553, U. S. N. M.

HAB. Hawaii. Described from a single specimen received from Mr Albert Koebele.

ATHYREODON Ashmead.

1900. *Athyreodon* Ashmead, Proc. U. S. Nat. Mus., XXIII. p. 87.

(1) *Athyreodon hawaiiensis*, sp. nov.

(Plate IX. fig. 2, ♀.)

♂. Length about 7 mm., the tip of the abdomen being broken off, the exact measurement is not ascertainable from the single specimen. Brownish, slightly paler beneath; head anteriorly, the mandibles, except teeth, the palpi and the tegulae, yellowish-white; antennae much longer than the body, light brown, the first joint of the flagellum being much the longest joint. Ocelli very large, prominent, the lateral almost touching the eye margin. Eyes large, sinuate within. Anterior legs, including the coxae, honey-yellow, the middle and posterior legs darker or brownish. Wings hyaline, the stigma, except a longitudinal streak, and the veins brown-black. The head is smooth, impunctate, the thorax above delicately, microscopically punctate, the sides shagreened, while the metathorax is finely rugulose, with a transverse constriction just back of the postscutellum, but without a distinct transverse carina.

HAB. Hawaii: Olaa. One ♂ taken in December.

BANCHOGASTRA Ashmead.

1900. *Banchogastra* Ashmead, Proc. U. S. Nat. Mus., XXIII. p. 87.

(1) *Banchogastra nigra*, sp. nov.

(Plate IX. fig. 3, ♀.)

♀. Length 12 mm. Wholly black, the anterior wings with a decided bluish tinge, the hind wings much paler, almost hyaline. The antennae are longer than the body, filiform, and entirely black, except the ring-joint at apex, which is pale. The face is somewhat closely punctate, the head behind and the thorax above being coriaceous; the scutellum is smoother, sparsely punctate, with the lateral margins elevated; the metathorax is short, with one transverse carina, the entire basal space being shagreened, while the space beyond, which represents the posterior truncature, is very coarsely rugulose. The legs are of moderate length, somewhat shorter than in other genera of the Ophionini, the hind tarsi not being longer than their tibiae. The abdomen is fusiform, subcompressed at apex, smooth and impunctate, the ovipositor not at all projecting.

HAB. Hawaii: Kilauea. One ♀ taken September 1895.

PYCNOPHION Ashmead.

1900. *Pycnophion* Ashmead, Proc. U. S. Nat. Mus., XXIII. p. 87.

Black; anterior femora and all tibiae and tarsi, except sometimes the hind pair, rufous; orbits black. Length 8—9 mm.; ovipositor not half the length of the abdomen(1) *P. kauaiensis*.

Black; anterior and middle legs, except middle coxae, rufous; orbits anteriorly white. Length 12—13 mm.; ovipositor as long as the abdomen ... (2) *P. molokaiensis*.

(1) *Pycnophion kauaiensis*, sp. nov.

♀, ♂. Length 8 to 9 mm. Differs from *P. molokaiensis* in its much smaller size, and without the white orbital lines; the anterior femora and tibiae, as well as the extreme tip of the middle femora and their tibiae and all tarsi, except the hind tarsi, rufous, the hind tibiae either black or rufous, variable; the metathorax is smoother than in *P. molokaiensis*, and is without a distinct transverse carina.

The male scarcely differs from the female: the antennae are proportionately longer, while the compressed abdomen, seen from the side, is a little narrower, with prominent claspers, its length being about three times as long as wide.

HAB. Kauai (4000 feet), in July. 2 ♀ and 2 ♂ specimens.

(2) *Pycnophion molokaiensis*, sp. nov.

(Plate IX. fig. 4, ♀.)

♀. Length 12 to 13 mm. Wholly black, except as follows: a line on the anterior orbits below the insertion of the antennae, as well as sometimes above the antennae, and a line on the hind orbits from the middle of the eyes downwards, white; last joint of maxillary palpi more or less yellowish; anterior legs from base of femora more or less rufous, their tarsi blackish or fuscous, the joints sometimes pale at apex (rarely with the coxae and trochanters rufous or rufous beneath), the propectus rufous. Wings hyaline, faintly tinged, the stigma and veins brown-black. Metathorax short, with a single transverse carina, the entire basal portion smooth and shining, the posterior face finely rugulose. The abdomen is a little longer than the head and thorax united, petiolate, compressed, smooth and shining, the ovipositor prominent, with a slight upward curve and as long as the abdomen.

HAB. Maui: Haleakala (5000 feet), in September.—Molokai, in mountains (4500 to 5000 feet), in April and September.—Kauai: Waimea Mts. (4000 feet).

EREMOTYLUS Förster.

1868. *Eremotylus* Förster, Verh. d. naturh. Ver. Rheinl., xxv. p. 150.

(1) *Eremotylus orbitalis*, sp. nov.

♀, ♂. Length 13 to 16 mm. Black; front and hind orbits, a transverse stripe back of the ocelli, and the labrum, obscure whitish or ivory white; the face is rarely wholly pale, although the clypeus anteriorly or on its disk is ferruginous or pale; mandibles rufous, with the tips black; palpi yellowish; coxae and hind legs black, the anterior and middle legs, except coxae, vary from a rufous to a rufo-piceous, the femora sometimes almost black (rarely with the front coxae and more rarely with the middle coxae, rufous).

Wings hyaline, the stigma and veins brown-black. Abdomen three or more times longer than the head and thorax united, compressed, smooth and shining, seen from the side not very wide at apex, the petiole subclavate, about as long as the first four joints of the hind tarsi united or a little longer than the second abdominal segment; third abdominal segment a little shorter than the second, the following gradually shortening. The head, except the face, is smooth, the face being finely punctate. The antennae extend a little beyond the middle of the abdomen, the first three joints being rufo-piceous, pale at apex; the flagellum is filiform, black, and clothed with a fine, black pubescence. Ocelli large, the lateral almost touching the eye margin. Eyes very large, submarginate within opposite the insertion of the antennae, and extend almost to the base of the mandibles. The thorax above is coriaceous, the metathorax being finely rugulose, but without a transverse carina.

HAB. Hawaii (Koebele); Kona (2000 feet), in July (Perkins).—Kauai: Waianae Mts. (2000 to 4000 feet), in January, February and July.—Maui: Haleakala (4000 feet), in June.

ENICOSPILUS Curtis.

1820. *Enicospilus* Curtis, Cat. Brit. Ins., p. 352.—1835. Id. Ill. Brit. Ent., vii. p. 126.

1. Disco-cubital cell with two blister-like spots7.
 Disco-cubital cell with one blister-like spot
 Abdomen not entirely black2.
 Abdomen entirely black

Orbits white, interrupted by the large lateral ocelli; tarsi ferruginous; second recurrent nervure from 2 to 3 times as long as the width of the third discoidal cell at base; first abscissa of the transverse median nervure in hind wings more than half the length of the second abscissa(1) *E. maucicola*. ♀.

2. Thorax not entirely black, usually brownish, castaneous, dark rufous, or pale ferruginous, sometimes marked with black4.
 Thorax entirely black.
 Terminal abdominal segments never dusky or blackish3.
 Terminal abdominal segments always dusky or blackish.
 Abdominal segments 2 to 3 or 2 to 4 in ♀ and 3 to 4 or to 5 in ♂ rufous, the rest dusky or blackish; transverse median nervure in hind wings with the first abscissa about half the length of the second recurrent nervure more than twice the length of the width of the third discoidal cell at base(2) *E. kaalae*. ♀, ♂.
3. Abdominal segments 3 to 8 castaneous or dark rufous.
 Tibiae and tarsi and more or less of the trochanters ferruginous; antennae nearly as long as the body, light brown(3) *E. waimeae*.
4. Thorax immaculate or only faintly dusky at sides or in the sutures5.
 Thorax distinctly marked with black.
 Thorax dark rufous or castaneous, the metanotum, disk of mesonotum, more or less, and the mesosternum black; legs, except apical half of femora, which is black, pale ferruginous; second recurrent nervure about thrice as long as the width of the third discoidal cell at base.....(4) *E. variegatus*.
 Thorax paler ferruginous, the metanotum from the transverse carina, the middle lobe of the mesonotum and the mesosternum black; legs pale ferruginous, abdomen with the sides, from 3rd segment, with a fuscous band; second recurrent nervure about twice as long as the width of the third discoidal cell at base; antennae yellowish, much longer than the body(5) *E. nigrolineatus*.
5. Thorax and abdomen, or the head and abdomen pale ferruginous or yellowish brown6.
 Thorax and abdomen castaneous or dark rufous.
 Legs ferruginous; orbits and face, except sometimes a dusky median streak, pale yellowish or whitish; antennae in ♀ shorter than the body, in ♂ as long or a little longer than the body; second recurrent nervure more than twice longer than the width of the third discoidal cell at base; transverse median nervure in hind wings with the first abscissa scarcely half the length of the second abscissa.....(6) *E. castaneus*.
6. Disco-cubital nervure forming a curve, not angulated; second recurrent nervure about four times as long as the width of the third discoidal cell at base; transverse median nervure not interstitial with the basal nervure; antennae in ♀ considerably longer than the body(7) *E. henshawi*.
 Disco-cubital nervure angulated a little before the middle; second recurrent nervure only about twice the length of the width of the third discoidal cell at base; transverse median nervure interstitial with the basal nervure; antennae in ♀ not longer than the body(8) *E. molokaiensis*.
7. Ferruginous; abdomen much darker or brown; antennae as long as or longer than the body(9) *E. longicornis*.

(1) *Enicospilus manicola*, sp. nov.

♀. Length 17 to 20 mm. Black; the anterior orbits (narrowly) and the posterior orbits (broadly) white; mandibles rufous with black teeth, sometimes black at base; tarsi dark brown, the tibiae sometimes more or less brownish.

The antennae are as long as or a little longer than the body. Ocelli very large, the lateral contiguous to the eye margin. The face below the insertion of the antennae is finely punctate, the clypeus black or rufo-piceous, finely transversely aciculate, the labrum somewhat prominent or exposed and always rufo-piceous. The metathorax is rugulose, with the first transverse carina present, enclosing a smooth area at base. Wings sub-hyaline, the stigma and veins brown-black, a testaceous spot between the stigma and parastigma, while the disco-cubital cell has one small blister-like spot. Abdomen about twice as long as the head and thorax united, strongly compressed from the second segment, smooth, shining, and impunctate, but clothed with a fine, fuscous coloured, sericeous pubescence.

HAB. Maui. Lanai (2000 feet), in December.—Molokai, in the mountains (4500 feet), in September.—Kauai; Waimea Mts.—Oahu: Kaala (1500 feet), in January.

(2) *Enicospilus kaalae*, sp. nov.

♀, ♂. Length from 17 to 22 mm. Head yellowish white, the occiput and a broad band extending from the front ocellus to the tip of the clypeus black; mandibles reddish with the tip or teeth black; palpi brownish-yellow; antennae brown-black, extending to beyond the middle of the abdomen, the scape beneath, and the pedicel and ring-joint at apex, rufous; the first joint of the flagellum is nearly as long as joints 2 and 3 united; the ocelli are large, the lateral touching the eye margin; the thorax, most of the legs, and the first segment of the abdomen are black, the rest of the abdomen except the three or four terminal segments, which are more or less blackish or dusky, is rufous; all tibiae and tarsi rufous; wings hyaline or faintly tinged, the lanceolate stigma and venation brown-black, the disco-cubital cell with one small blister-like spot.

The head and thorax are almost smooth, or feebly, closely, microscopically punctate, the scutellum with elevated lateral margins, the sides of the thorax opaque, very finely, closely punctate, while the metathorax is finely rugulose, with a transverse carina at about its basal third. The abdomen is about two and a half times as long as the head and thorax united, compressed, with the first segment subclavate, very little longer than the second.

The male agrees well with the female, except that the antennae are a little longer than the body, obscure rufous or brownish, the abdomen a little differently coloured, the first and second segments being black, while the third to fifth are rufous.

HAB. Oahu: Kaala Mts. (6500 feet), in March 1892.

(3) *Enicospilus waimeae*, sp. nov.

♀. Length 15 to 16 mm. Resembles *E. maucicola*, but smaller, the abdomen slenderer, seen from the side, not so wide dorso-ventrally; the face below the antennae is obscure rufous or brownish; the antennae and the abdomen, except segments 1 and 2, are brown; the anterior trochanters, the second joint of the middle and hind trochanters and all tibiae and tarsi are pale ferruginous. Otherwise it is quite similar to *E. maucicola*, except that the blister-like spot in the disco-cubital cell is larger and of a triangular or oblong-oval shape, while the enclosure at base of the metanotum is punctate.

HAB. Kauai: Mts. of Waimea (4000 feet), in June.—Hawaii: Olaa, in December.

(4) *Enicospilus variegatus*, sp. nov.

♀. Length 20 to 22 mm. Brown or castaneous; the disk of the mesonotum more or less, a stripe on the scutellum, the mesosternum, the metathorax, except at base above, the apical two-thirds or more of the femora and abdominal segments 1 and 2, black; the orbits and the face are dirty white, the antennae are brown, longer than the body; while the legs, except as noted, are pale ferruginous, the last joints of the tarsi being fuscous. The metathorax is without the basal transverse carina.

HAB. Hawaii: Hilo (H. W. Henshaw); Olaa, in December (Perkins).

(5) *Enicospilus nigrolineatus*, sp. nov.

♀, ♂. Length 15 to 18 mm. Brownish-yellow, the antennae and the legs somewhat paler; a median line on the mesonotum, a large spot on the mesosternum and the disk of the metathorax from the basal transverse carina, and a more or less distinct line on the sides of the abdomen, dark fuscous or black.

The antennae are much longer than the body, yellowish, in both sexes, the first joint of the flagellum being scarcely so long as the second and third joints united. The basal transverse carina of the metathorax is distinct in both sexes, and the space enclosed by it is much smoother than that beyond. The wings are hyaline, the stigma and the veins, except the second abscissa of the median vein and the second abscissa of the radius, which are brown, being yellowish.

HAB. Lanai (2000 feet), in January.—Kauai: Waimea Mts. (4000 feet), in June.—Hawaii: Hilo (H. W. Henshaw), in May; Kona (4000 feet), in August, December.—Maui: Haleakala (5000 feet), in May.—Molokai, in mountains (3000 feet), in June and September.

(6) *Enicospilus castaneus*, sp. nov.

♀, ♂. Length 16 to 20 mm. Castaneous or dark rufous; orbits, anteriorly and posteriorly, and the face below the antennae, yellowish or yellowish-white; legs ferruginous, the hind coxae sometimes brownish; wings hyaline or only faintly tinged, the stigma and veins reddish-brown, the disco-cubital blister-like spot small, triangular.

The antennae in the ♀ are scarcely as long as the body, involute at apex, reddish-brown, with the first joint of the flagellum as long as 2 and 3 united; in the ♂ they are much longer than the body, the first joint of the flagellum being only one-half longer than the second. The width of the third discoidal cell at apex is about twice as wide as at base, while the first transverse carina of the metathorax is distinct in the ♀, but in the ♂ entirely or nearly obliterated, although sometimes with a trace of the carina left.

HAB. Hawaii: Kilauea (H. W. Henshaw), in May, (Perkins), in August; Kona (6000 feet), in September; Olaa in May (H. W. Henshaw), in September (Perkins). Lanai (2500 feet), in February.—Molokai (2000 to 4500 feet), in March, June and September.—Oahu: Waiaimea Mts. (2000 feet).

(7) *Enicospilus henshawi*, sp. nov.

♀. Length 9 to 10 mm. Head entirely, the antennae, the tegulae, the prosternum, the legs and the abdomen pale ferruginous, the thorax brown; wings hyaline, the stigma and veins brown, the disco-cubital nervure strongly curved, almost interstitial with the second transverse median nervure, causing the third cubital cell to be unusually narrowed at base, the second recurrent nervure being more than four times longer than the width of the third discoidal cell at base.

The antennae are longer than the body, the first joint of the flagellum being long, but still shorter than the second and third joints united. The metathorax shows not a trace of the transverse carina, while the abdomen is twice as long as the head and thorax united, the petiole and second segment being long, nearly equal, the former slightly the longer.

HAB. Hawaii: Hilo. Taken by Mr H. W. Henshaw in May.

(8) *Enicospilus molokaiensis*, sp. nov.

♀, ♂. Length 11 to 13 mm. Uniformly pale ferruginous, except that the orbits and face are more or less whitish, the legs much paler, with a yellowish tinge; the costal veins and sometimes the margins of the stigma and the first abscissa of the radius, which is much incrassated towards base, are brown, the other veins being paler.

The antennae, in the ♀, are a little shorter than the body, involute at apex, the last joint being fusiform, the thickest joint and as long as the two preceding joints united, the penultimate and antepenultimate joints being about equal and only a little longer than thick, the first joint of the flagellum is elongate and very nearly as long as the second and third joints united; in the ♂ they are longer than the body and slenderer toward apex, the terminal joints being proportionately longer, the last, however, being shorter than the two preceding united, which themselves are twice as long as thick, the first joint of the flagellum being distinctly shorter than the second and third united. The basal transverse carina of the metathorax is distinct in the ♀ but absent in the ♂. Wings hyaline, only faintly tinged, the disco-cubital blister-like spot pear-shaped, the disco-cubital nervure (unlike other species) distinctly angularly broken very near its middle and thus easily distinguishing the species from all others.

HAB. Hawaii: Kanai (2000—3000 feet), in January and February, (4000 feet), in July; Oloa, in September; Kona (4000—4500 feet).—Lanai (2000 feet), in February; Waimea (4000 feet), in May.—Molokai, in mountains (4000 feet), in January, July and September.

(9) *Enicospilus longicornis*, sp. nov.

♂. Length 15 to 17 mm. Ferruginous; orbits and face below the antennae whitish; eyes large, black or brown-black; wings hyaline, or only faintly tinged, the stigma and the costal veins brown, the parastigma, stigma at base and the outer nervure of the marginal cell, as well as the blister-like spots in the disco-cubital cell, yellowish.

The antennae are long and slender, longer than the body, tapering off at apex, the terminal joints about of an equal length, more than $2\frac{1}{2}$ times longer than thick, the first joint of the flagellum being about as long as the second and third united. The metathorax has no trace of the basal transverse carina. The disco-cubital cell, unlike the 8 previously described species, has two blister-like spots, the larger of which is of an irregular triangular shape, the smaller being more or less ovate.

HAB. Hawaii: Kilauea.

Tribe IV. ANOMALINI.

ATROMETUS Förster.

1868. *Atrometus* Förster, Verh. d. naturh. Ver. Rheinl., xxv. p. 146.

This genus is represented in the Hawaiian fauna by seven species, separable with the aid of the following table.

1. Thorax mostly rufous, sometimes marked with black7.
 Thorax and abdomen mostly black, the prosternum, mesosternum and mesopleura sometimes pale2.
2. Mesopleura, including the pro- and meso-sternum, yellow or pale yellowish, rarely dusky on the disk6.
 Mesopleura with a longitudinal yellow band across the disk, or the mesosternum is marked with black4.
 Mesopleura wholly black3.
3. Hind coxae and femora black; anterior orbits, face below antennae, a spot on hind orbits superiorly (sometimes connected with the anterior orbital lines), the cheeks, prothorax, except sometimes superiorly, and the front and middle coxae and trochanters yellow (♀); in ♂ the hind orbits are without a spot, while the prothorax is yellowish only beneath; antennae, with ring-joint, 28-jointed(1) *A. flavifrons*.
- Hind coxae and femora rufous; tarsi, or at least the hind tarsi, more or less fuscous, the front and middle pairs sometimes pale; the face below the antennae, cheeks but not hind orbits, prothorax more or less beneath and the front and middle coxae and trochanters, yellow, or pale yellowish. ♀.
(2) *A. tarsatus*.
4. Metathorax not wholly black.....5.
 Metathorax wholly black.
 Mandibles, except tips, the orbits, except an interruption at the summit of the eyes, the face below the antennae, prothorax beneath, a longitudinal band on the mesopleura and the anterior and middle coxae, lemon-yellow. ♂.....(3) *A. citricinctus*.
 Mandibles, except teeth, the clypeus, the face below the antennae, the upper anterior orbits and the hind orbits, connected above, the prothorax entirely, a longitudinal band on the mesopleura, and the anterior and middle coxae and trochanters, lemon-yellow. ♂. ♀ agrees with ♂ except that the orbits are broadly interrupted above.....(4) *A. molokaiensis*.
5. Metathorax with a large yellow spot on each side towards apex but not connected with a yellow band across the base; mesonotum entirely black; mesopleura mostly yellow, with a spot beneath the front wings and along the mesosternal suture, black. ♂.(5) *A. haleakalae*.
 Metathorax with a large yellow spot on each side towards apex but connected with a yellow band across the base; mesonotum with a hook-like yellow mark on each side anteriorly, the inner angle of same extending as a band towards the scutellum. ♀.(6) *A. hawaiiensis*.
6. Head, except a spot enclosing the ocelli and the occiput, a hook-like band on each side of the mesonotum anteriorly, prothorax, mesopleura, including the mesosternum, except a black spot beneath the insertion of the front wings, a large spot on sides of metathorax connected with a band across the base and the scutellum, lemon-yellow. ♂.....(6) *A. hawaiiensis*.
 Head black, the face below the antennae (entirely), mandibles, cheeks, front and middle legs, prothorax, mesopleura, including the sternum, except a spot beneath the insertion of front wings and a faint spot on the metapleura, yellow or yellowish-white. ♂.....(7) *A. delicatus*.

7. Head, except the occiput and a large spot enclosing the ocelli which are black, lemon-yellow; prothorax, scutellum, mesopleura including the sternum, and the front and middle legs, pale yellowish. ♀.(7) *A. delicatus*.

(1) *Atrometus flavifrons*, sp. nov.

♀. Length 5 to 7 mm. Black, subopaque, the head coriaceous, the mesopleura finely, closely, evenly punctate, the metathorax rugose, the hind coxae coarsely coriaceous; a dot on temples just back of eyes, anterior orbits, face below the antennae, clypeus, mandibles, cheeks, an annulus at apex of scape, prothorax, except a spot on the prosternum, tegulae, front and middle coxae and trochanters, extreme apex of hind coxae, sutures of trochanters, and the extreme base of their femora and extreme base of their tibiae, yellow; rest of front and middle legs, except more or less of their tarsi, testaceous; apices of front tarsi, apices of joints 1 to 3 and joints 4 and 5 of middle tarsi, fuscous or black; hind coxae and femora, except as noted, black (rarely reddish-brown), their tibiae and tarsi, dark brown or fuscous, the tarsi sometimes black; scutellum more or less brownish; dorsal abdominal segments 2 to 7 at sides ventrally marked with reddish, rest of the abdomen black, the sheaths of the ovipositor being not quite as long as the basal joint of hind tarsi. Wings hyaline, the stigma and veins dark brown. The eyes are very large, converge below and extend to the base of the mandibles. The antennae are 27-jointed, or, with the pedicellus, 28-jointed, black, and as long as the body; the flagellum being slightly thickened towards apex, the basal joints elongate, cylindrical, the first the longest joint, although only slightly longer than the second, about 9 times as long as thick.

♂. Length 4.5 to 5 mm. Agrees very closely with the ♀ in colour, except that the temples are usually immaculate, the scutellum black, the front and middle tarsi paler, the hind femora reddish-brown, the hind tibiae fuscous towards base and apex, their tarsi fuscous, while the antennae, with the pedicellus, are only 24-jointed.

HAB. Hawaii: Kona (2000 feet), in August; Olaa, in December.—Lanai, in July.

(2) *Atrometus tarsatus*, sp. nov.

♀. Length 6 mm. Allied to *A. flavifrons* but differs as follows: the face from the antennae downwards, but not the superior orbits, the prothorax beneath, the scape and the ring-joint, are yellow; sternum black; the hind legs are rufous, their coxae above and the first joint of their trochanters above, have a dusky blotch, their tarsi being fuscous or subfuscous; the third and fourth dorsal abdominal segments ventrally at sides are rufous, the following segments being black. The antennae are 23 or 24-jointed.

The ♂, or what is supposed to be the ♂, has the orbits connected by a yellow band, the prothorax, except a spot on its pectus, and the scutellum are reddish, while the hind coxae, except at apex, are black, their tibiae at tips and their tarsi being fuscous.

HAB. Hawaii: Kona (3500 feet), in July.

(3) *Atrometus citricinctus*, sp. nov.

♂. Length 6 mm. Black; the orbits, except an interruption at summit of eyes, the face below the antennae, the mandibles, except the teeth, the prothorax beneath, the front and middle coxae and their trochanters, except above, a longitudinal band on the mesopleura, the tegulae, and the apex of the scutellum, lemon-yellow; rest of the front and middle legs reddish; the hind legs mostly black, their tibiae medially-reddish. Wings hyaline, the stigma and veins brown-black. Antennae, with the annular joint, 27-jointed, as long as the body.

HAB. Hawaii: Kilauea, in August and September.

(4) *Atrometus molokaiensis*, sp. nov.

♀. Length 8 mm. Black; the orbits entirely, the face below the antennae, mandibles, prothorax, tegulae, scutellum, a longitudinal band on the mesopleura and the front and middle coxae and trochanters, lemon-yellow; rest of the front and hind legs mostly castaneous or dark rufous, their coxae above blackish, pale at base and beneath, the tips of their tibiae and tarsi black or dark fuscous; venter more or less testaceous. Antennae 28-jointed, longer than the body.

HAB. Molokai, in the mountains (4500 feet), in August.—Maui: Haleakala.—Hawaii: above Hilo, in December.

(5) *Atrometus haleakalae*, sp. nov.

♂. Length 6 to 6.5 mm. Black; the orbits sometimes narrowly interrupted at the summit of the eyes, face below the antennae, prothorax, scutellum, except at base, the mesopleura, except a spot beneath the tegulae and a spot along the mesosternal suture, an oblong spot on the sides of the metathorax, and the hind coxae, except a large black spot above, lemon-yellow; palpi, anterior and middle coxae and trochanters, yellowish-white; rest of legs mostly reddish or testaceous, the tips of the hind tibiae and their tarsi black or fuscous. Wings hyaline, the stigma and veins dark brown. Antennae, with the annulus, 28-jointed, as long as the body.

HAB. Maui: Haleakala (5000 feet), in March and April.—Molokai, in mountains (4000 feet), in July.

(6) *Atrometus hawaiiensis*, sp. nov.

(Plate IX. fig. 5. ♀.)

♀. Length 10 to 10.5 mm. Black; the head, except the occiput and an oblong spot on the vertex extending forwards to the base of the antennae and enclosing the ocelli, the prothorax, a hook-shaped spot on each side of the mesonotum anteriorly and extending along its outer margins to the tegulae, the mesopleura, except a spot beneath the tegulae and on the sternum, the scutellum, an oblong spot on the sides of the metathorax connected with a band across its base (neither so distinctly defined nor as yellow as in the ♂), and the anterior and middle coxae and trochanters, lemon-yellow; the rest of the front and middle legs, except the tarsi, are reddish, the tarsi being more or less fuscous; the hind legs are rufous, the coxae and trochanters above marked with black, the extreme base and apex of their femora, the apex of tarsal joints 1 to 3 and the following joints black or fuscous; abdomen black, the venter and more or less of dorsal segments 2 to 6 ventrally, testaceous. Wings hyaline, the stigma and veins dark brown. Antennae black, 30-jointed, with the first three joints pale, although dusky above.

♂. Agrees very closely with the female, except that the antennae are 34-jointed, and that the mesopleura, except a small black spot just beneath the tegulae, are wholly yellow.

HAB. Hawaii: Kilauea, in August.

(7) *Atrometus delicatus*, sp. nov.

♂. Length 4.5 mm. Head, except a large spot on the vertex enclosing the ocelli, the prothorax, the mesopleura wholly, and a stripe on the sides of the metathorax, yellow; the palpi, the anterior and middle coxae and trochanters and the hind coxae at base, white, rest of the front and middle legs, except last joint of tarsi, honey-yellow, the hind legs red, their coxae except at base, their trochanters above, the extreme base of femora and tarsi, black or fuscous. Wings hyaline, the stigma and veins brown. Antennae 25-jointed, the first three or four joints pale, the following black or brown-black.

♀. Agrees well with the male, except that the thorax is brown, with the lateral mesonotal lobes, a spot beneath tegulae, the lower part of the mesopleura and the lower part of the metapleura blackish, while the hind coxae and the legs are paler than in male, without any black, although a little darker than the middle legs.

HAB. Kauai: Koholuamo, in April.

Tribe V. CAMPOPLEGINI.

IDECHTHIS Förster.

1868. *Idechthis* Förster, Verh. d. naturh. Ver. Rheinl., xxv. p. 154.

This genus is represented by a single species.

(1) *Idechthis oahuensis*, sp. nov.

♀. Length 7 to 7.5 mm. Head and thorax black, very closely punctate and clothed with a sparse, glittering white pubescence, that on the face denser and silvery; mandibles rufous; palpi, tegulae and front and middle coxae and trochanters, yellowish-white; rest of legs rufous or ferruginous, the hind tibiae and tarsi often more or less obfuscated or fuscous; abdomen mostly rufous or ferruginous from the apex of the second or third segment, but these segments are more or less dusky above; ovipositor a little longer than the hind tarsi. Wings hyaline, the stigma and veins brown, the areolet petiolate, the transverse median vein interstitial, the third discoidal cell about twice as wide at apex as at base. Antennae, with the annulus, 33 to 34-jointed.

HAB. Oahu: Waianae Mts., in March.—Hawaii: Hilo (H. W. Henshaw), in July.

LATHROSTIZUS Förster.

1868. *Lathrostizus* Förster, Verh. d. naturh. Ver. Rheinl., xxv. p. 154.

(1) *Lathrostizus insularis*, sp. nov.

♀. Length 6 mm. Head and thorax closely punctate, black and clothed with a sparse, whitish pubescence; first two joints of antennae, except on disk above, and the front and middle legs, except the coxae and trochanters, honey-yellow; mandibles, palpi, front and middle coxae and trochanters, the apex of hind coxae and sutures of trochanters, and all tibial spurs, yellowish-white; hind coxae, except at apex, black; rest of legs dark reddish; abdomen black, the apices of the third and following segments narrowly testaceous, at the sides more or less obscure, rufous; the ovipositor is about as long as the hind tarsi and has a slight upward curve.

The antennae are 30-jointed and extend to the base of the abdomen, the flagellum being brown-black, clothed with a very short sparse pubescence. The wings are hyaline, the tegulae and the subcostal vein yellowish-white, the costal vein and the outer edge of the stigma brown-black, the stigma within and the internal veins being

light brown, the areolet being subpetiolate, nearly sessile. The metathorax is distinctly areolated, the areola, however, being confluent with the petiolar area, while the posterior face is transversely rugulose.

HAB. Molokai: Kaunakakai, sea level, in September.

LIMNERIUM Ashmead.

1858. *Limneria* Holmgren, Svensk. Vet.-Ak., Handl., II. p. 51.

1900. *Limnerium* Ashmead, Can. Ent., XXXII. p. 368.

1. Submedian cell in front wings not longer than the median, the transverse median nervure interstitial with the basal nervure 2.
- Submedian cell in front wings longer than the median, the transverse median nervure not interstitial, uniting with the median vein beyond the origin of the basal.

All coxae black, the front and middle trochanters, the second joint of hind trochanters, tibial spurs, anterior and middle tarsi, extreme base of hind tarsi, extreme base of hind tibiae and a broad annulus at the middle, as well as the tegulae, palpi and mandibles, yellowish-white (1) *L. polynesiale*.

2. All coxae black or at most with the front and middle coxae pale only at apex.

Legs ferruginous, first joint of hind trochanters, the extreme base and apex of hind femora, an annulus at base of hind tibiae, separate from the apex of the femora by a narrow white annulus, its apical third or more, and their tarsi, black or fuscous; the hind tibiae medially, the scape beneath, the mandibles, the palpi, and the tegulae, yellowish-white (2) *L. hawaiiense*.

Legs ferruginous; the middle and hind tibiae medially more or less, yellowish; the apices except extreme base, the first joint of middle and hind trochanters, apices of tarsal joints of front and middle legs and the hind tarsi, blackish or fuscous; scape wholly black ... (3) *L. blackburni* Cameron.

(1) *Limnerium polynesiale* Cameron.

1883. *Limneria polynesialis* Cameron, Trans. Ent. Soc., London, p. 191. ♀.

♀. Length, with terebra, 4 mm. Black; tegulae, trochanters at apex, and middle of four posterior tibiae, yellowish-white; base and apex of four posterior tibiae and femora reddish; anterior legs pale testaceous, the tibiae with a more yellowish tinge; posterior tarsi infuscated. Abdomen on the under side at the sides, and more or less above, reddish; segmental divisions yellowish-white at the sides, and more or less above on the three apical. Head and thorax semiopaque, finely punctured, covered (especially the face) with a white pubescence. Super-median areola distinct, semicircular; the others are somewhat compressed; posterior median triangular at base, and extending to the apex. Antennae as long as the thorax and abdomen, black, obscure fuscous

beneath. Terebra curved, a little longer than the petiole, which is alutaceous. The abdomen is covered (especially the apex) with a pale pubescence. Wings hyaline; nervures and stigma pale testaceous; areolet complete, scarcely petiolated. (Cameron.)

The specimens taken by Mr Perkins measure only 4 mm. in length, but otherwise agree very well with Mr Cameron's description. The antennae in the ♂ are 28-jointed.

HAB. Maui: Haleakala, at an elevation of about 4000 feet (Cameron); Waialuna, Koolau range.—Oahu, in February 1893 (Perkins).

(2) *Limnerium hawaiiense* Cameron.

1886. *Limneria hawaiiensis* Cameron, Proc. & Mem. Manchester Lit. & Phil. Soc., x. p. 241, ♀.

[♀. Length 5 to 5.5 mm. Antennae in ♀ 26-jointed, in ♂ 29-jointed, the scape pale beneath.] Very similar in coloration and size (except that it is somewhat smaller) to *L. blackburni*, but differing from it in the head and thorax being *densely* covered with silvery-white pubescence, on *L. blackburni* (especially on the thorax) it being very sparse and the pleurae are almost glabrous; the posterior median area of the metanotum is narrower and longer; the femora are of a much paler red, the four posterior trochanters [except sometimes the first joint of the hind trochanters] are entirely yellow, there is no black at the base of the hind femora, the black on the tibiae is lighter, the four anterior tarsi are pale testaceous without any black, and the areolet is not only longer, but is also somewhat wider; the postpetiole is more strongly punctured, as are also the second and third segments, and the apical segments are more densely covered with white hair, the hair being also longer. The apex of the second segment and the greater part of the third segment externally are testaceous. (Cameron.)

HAB. Oahu.

(3) *Limnerium blackburni* Cameron.

1883. *Limneria blackburni* Cameron, Trans. Ent. Soc. London, p. 192.

♀. Length 6 mm. Black; the mandibles, palpi, trochanters, knees and tibiae (except at base and apex), and the spurs, yellowish-white; femora and base and apex of anterior tibiae reddish; base of four posterior femora, base and apex of posterior tibiae, blackish; coxae and base of trochanters black; anterior tarsi fuscous; the base of the tarsal joints pale. Abdominal segments at junction white; ventral surface at base yellowish. Head, thorax, and coxae almost opaque, faintly punctured, covered with a white pubescence, which is especially long on the face. Abdomen semiopaque, very finely punctured; terebra as long as the four last segments together; base of petiole smooth, almost shining. The three basal areolae of metanotum are less strongly

punctured than the rest; the superior median areola small, distinct, semicircular, broader than long; posterior median triangular at base; from that it contracts slightly, and ends above the middle of the metanotum, where there is another field longer and somewhat oval in form, which occupies the rest of the middle space; the posterior intermedian area is semiobsolete, small; spiracular, large, wider at base than at apex; at the base it becomes rounded and enlarged. Wings hyaline; areolet shortly stalked; stigma fuscous. (Cameron.)

HAB. Hawaii: Mauna Kea, at an elevation of at least 13,000 feet, on the snow near the summit.

Family LXXVII. ALYSIIDAE.

Subfamily II. ALYSIINAE.

Tribe II. ALLOEINI.

APHAERETA Förster.

1862. *Aphaereta* Förster, Verh. d. naturh. Ver. Rheinl., XIX. p. 264.

(1) *Aphaereta muscae* Ashmead.

1888. *Aphaereta muscae* Ashmead, Proc. U. S. Nat. Mus., x. p. 646. ♀, ♂.

1898. Dalla Torre, Cat. Hym., IV. p. 42.

♀, ♂. Length 2 to 2.5 mm. Polished black; first two joints of antennae, the mandibles, the prothorax, the legs and the first segment of the abdomen, honey-yellow or reddish-yellow.

The antennae in the ♀ vary from 21 to 23-jointed, in the ♂ from 24 to 26 joints, the first and third joints of the flagellum being subequal, shorter than the first. The mesonotum is without a fovea just before the scutellum, the scutellum being deeply foveated at base and divided by a delicate median carina into two parts, the bottom usually showing a few striae; the postscutellum is carinate; the metathorax posteriorly is strongly wrinkled, while the upper basal part of the metanotum is short, smooth, with two areas, the median or dividing carina being strongly developed and elevated posteriorly, the furrow on the mesopleura being crenate. The wings are hyaline, ciliate, with the costae and the narrow stigma brown, the internal veins much paler or yellowish-white; the first abscissa of the radius is about as long as the second transverse cubitus, rarely a little longer, while the latter is about half the length of the first transverse cubitus, or a little shorter.

Abdomen oblong-oval, the first dorsal segment being longitudinally striate, with two carinae toward base, becoming obsolete at about the middle of the segment; rest of the segments smooth and polished, the ovipositor about as long as the hind tarsi.

HAB. Hawaii: Kona (2000 feet), in September (4000 feet), in August.—Oahu: Waianae Mts. (3000 feet), in April.—Molokai Mts. (3000 feet), in May and June.—Kauai: Mts. Waimea (4000 feet), in June.—This species is widely distributed over the United States and in Canada.

ASPILOTA Förster.

1862. *Aspilota* Förster, Verh. d. naturh. Ver. Rheinl., XIX. p. 268.

(1) *Aspilota kona*, sp. nov.

♀. Length 2.1 mm. Polished black; antennae 28-jointed; the mandibles, except the teeth, first two joints of antennae, first segment of abdomen and the legs, including the coxae, honey-yellow; palpi white; flagellum black, bearded with rather long sparse hairs.

The mesonotum has a central fovea posteriorly just in front of the scutellum; the scutellum is convex, deeply foveated at base, the fovea divided into two parts by a delicate median carina, while the metanotum is biareolated, the posterior face of the metathorax being wrinkled. The wings are hyaline, ciliated; the costa and the linear stigma, as well as the radius, are brown, the internal veins being pale. The abdomen is compressed from the second segment and ends in an upward curved ovipositor, which is not longer than the basal joint of the hind tarsi.

HAB. Kona (2000 feet), in October. Described from a single specimen, taken by Mr Perkins.

Family LXXXVIII. BRACONIDAE.

Subfamily IX. CHELONINAE.

CHELONUS Jurine.

1807. *Chelonus* Jurine, Nouv. méth. Hym., p. 289.

(1) *Chelonus blackburni* Cameron.

1881. *Chelonus carinatus* Cameron, Tr. Ent. Soc. London, p. 559 *nee* Provancher.

1886. *Chelonus blackburni* Cameron, Proc. & Mem. Manchester Litt. & Phil. Soc. x. p. 242.

1898. *Chelonus cameronii* Dalla Torre, Cat. Hym., iv. p. 200.

♀. Length 2·4 to 2·5 mm. Black, half-shining, covered with a close microscopic silky pubescence; the greater part of the scape of the antennae and the four following joints reddish testaceous; extreme apex of coxae, trochanters, apex and base of anterior femora, and the posterior knees, pale red; four anterior tibiae and tarsi pallid testaceous: hinder tibiae broadly annulated with white, the white ring being nearer the top than the bottom; tips of four anterior tarsi and the hinder pair fuscous; the greater part of the hinder metatarsus white; spurs white; basal third of abdomen white, except a blackish mark at extreme base; at the apex this white portion is rounded, and at its junction with the black colour passes into brown. Mandibles reddish. Antennae about the length of the body, 17-jointed, the seven apical joints thicker than the basal ones. Head finely punctured, the face covered with white hair. Mesonotum finely punctured. From the usual transverse ridge at the base of the scutellum there runs a central straight carina, and outside of this again are two curved outwardly, but it is only the second which reaches the edge of the thorax; these keels are united by fine cross-bars. Scutellum smooth, shining on basal half, apical half with longitudinal striations. Metathorax punctured, and with distinct coarse longitudinal striations, truncated at the apex, and with a minute tooth at each edge. Abdomen about the length of head and thorax, finely punctured, the punctures almost obsolete on the basal white portion. The second segment depressed in the centre, and produced at the sides into a leaf-like ridge, from the inner side of which runs an almost obsolete carina in the direction of the centre of the segment, but which is not reached. The union (apparent) of the second with the third segment is indicated by a fine transverse line. Wings hyaline, stigma, radial and cubital nervures fuscous; other nervures pale testaceous. (Cameron.)

HAB. Oahu. Various localities (Cameron).—Kauai: a single ♀ taken by Mr Perkins.

PHANEROTOMA Wesmael.

1838. *Phanerotoma* Wesmael, Nouv. Mém. Ac. Sc. Bruxelles, XI. p. 165.

(1) *Phanerotoma hawaiiensis*, sp. nov.

♂. Length 2·6 mm. Brownish-yellow; the eyes, ocelli, a spot in the depression on each side of the postscutellum, a band across base of the metanotum, interrupted medially, a narrow lateral stripe on first abdominal segment, subobsolete towards apex, and a broad lateral band on the second and third segments, black. Wings hyaline, the costae brown, the stigma and internal veins paler; the second cubital cell is triangular, the radius having only two abscissae, the first abscissa being almost perpendicular, forming with the second almost a right angle, and being interstitial, or very nearly, with the second transverse cubitus.