

## Report upon a Collection of Chermidae (Homoptera) from New Zealand.

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[Communicated by Dr David Miller.]

FOR the material upon which the present report is based we are indebted to Dr J. G. Myers, now of the Imperial Bureau of Entomology, but formerly of New Zealand. It is an extremely important collection, for it represents the first extensive gathering of material in this family in New Zealand. There were included in it perhaps four hundred and fifty pinned specimens, a few of which represented nymphal stages. Unfortunately, however, for most of the material host data are lacking, and in some cases but one sex is represented or the material is otherwise limited. But with this collection available it has been possible to make a definite beginning in the study of the New Zealand fauna of this family.

The holotypes and allotypes of all the new species described, together with most of the other material, are returned to Dr Myers. Paratypes and representatives of other species are retained in the Stanford University collection.

We recognise in the collection a total of twenty-five species, these including three which have previously been described from New Zealand. Of the twenty-two remaining species we have been able to connect none with named forms from other parts of the world, and all are described as new. Possibly some of these will later fall as synonyms, but this we are inclined to doubt. There is no reason to suppose that any of them are introduced forms, and the isolation of New Zealand argues against the probability that these species occur elsewhere.

Six species of Chermidae have heretofore been recorded from New Zealand. Of these we have been unable to recognise two as present in the material at hand, although they will doubtless be definitely determinable if taken from their typical hosts and localities. Of the other four we consider one to be a synonym. Thus there are at present twenty-seven species known from these islands. This is in all probability but a comparatively small proportion of the species that are actually present. This being the case, an analysis of the fauna can have but little significance, but it may be of interest to give at least a short summary. The results, as they stand at present, are rather striking.

We recognise in this material three subfamilies—following the arrangement by Crawford—the Psylliinae, Triozinae, and Pauropsyllinae. Of these the Psylliinae is represented by two genera, the Triozinae by one and the Pauropsyllinae by two. The Triozinae, with the one genus *Powellia*, is extraordinarily well represented, for of the twenty-seven species from the islands, fifteen may be referred to it.

Of the two genera of the Psylliinae, *Psyllia* has five and *Ctenarytaina* four species, and each of the genera of the other two subfamilies but one.

It has been our desire to adopt a conservative point of view in the matter of genera, but after considerable hesitation we have restored the long-forgotten genus *Powellia* and have named as new the genus *Ctenarytaina*. These two genera at present stand as peculiar to New Zealand, but probably other species from at least the paleotropics are to be added to both.

A word concerning our method of study is desirable. We hold to the view that satisfactory systematic work, especially upon forms as small as these, cannot be accomplished on the basis of the conventional pinned material alone. It is impossible in such specimens even to see, still less appreciate and understand, many of the structures which must be utilised if we are to know our material and our species in any precise and definite way. Consequently we have followed the methods which have been developed especially by students of the Coccidae, and have mounted upon slides all our material from which we desired to obtain information other than notes on colour and habitus. The types of all the new species described have been chosen from such material, and our figures and descriptions of structure based upon it.

That there are difficulties in applying this method to such forms must be recognised. These insects are rather difficult to prepare properly, for they are fragile and subject to much distortion and other damage during the course of preparation. Certain characteristics which have been much used by other authors, such as the exact profile of the thorax and the angle of the head, are difficult to preserve or are lost entirely. Consequently it is desirable to retain some material upon pins or to make careful notes before the specimens are prepared. In all cases, however, where material has been limited, we have chosen deliberately to place it upon slides rather than keep it on pins.

LIST OF SPECIES PREVIOUSLY RECORDED FROM NEW ZEALAND, WITH  
THEIR PRESENT DISPOSITION.

***Powellia vitreoradiata* Maskell.**

Here recognised and restored as the type of the genus *Powellia*.

***Trioza pellucida* Maskell.**

Here recognised and placed as a synonym of *Powellia vitreoradiata* Maskell.

***Trioza alexina* Marriner.**

Here recognised and placed as a synonym of *Powellia vitreoradiata* Maskell.

***Trioza panacis* Maskell.**

Not here recognised, but placed as a probable member of the genus *Powellia*.

**Psylla acaciae** Maskell.

Here recognised as a species of *Psyllia*<sup>1</sup>.

**Rhinocola fuchsiae** Maskell.

Here recognised and assigned to the genus *Ctenarytaina*.

**Rhinocola eucalypti** Maskell.

Not here recognised. It may possibly be one of the species here referred to *Ctenarytaina*.

KEY TO GENERA dealt with in this report: This key is based exclusively upon the material included in this report, and consequently makes no allowance either for other genera which may later prove to be represented in New Zealand or for generic limits wider than here indicated<sup>2</sup>.

1. Fore wings with the veins dichotomously branched, radius, media, and cubitus thus not arising from a common point....2

Fore wings with radius, media, and cubitus arising from a common point:

Genus **Powellia** Maskell.

2. Posterior tarsi with at least one, and generally two, black, claw-like spines at apex of basal segment.....3

Posterior tarsi without such claw-like spines:

Genus **Pauropsylla** Rübsamen.

3. Head with definite genal processes or cones.....4

Head without genal cones:

Genus **Metaphalara** Crawford.

4. Middle tibia with a distinct, although minute, longitudinal comb of setae near the apex:

Genus **Ctenarytaina**, new genus.

Middle tibiae without such a comb of setae:

Genus **Psyllia** Kirkaldy.

## Subfamily TRIOZINAE, Puton.

Genus **POWELLIA**, Maskell.

1879. *Powellia*, Maskell. *Trans. N.Z. Inst.*, 11:223.

1890. *Trioza*, Maskell, *Ibid.* 22:164.

The genus *Powellia* was originally established by Maskell for the reception of the species *vitreoradiata* Maskell. This species was based upon the nymph of a Chermid, which Maskell erroneously supposed to be a Coccid. Later, upon discovering his error, he redescribed the

1. The spelling *Psyllia*, instead of *Psylla*, is here employed in accord with the views of hemipterists.

2. For extensive keys see Crawford, Philippine Journal of Science, 15: 139-205. 1915.

species from adults and assigned it to *Trioza*, at the same time rejecting his earlier specific name and substituting for it the specific name *pellucida*.

Under the at present generally accepted International Code of Nomenclature, the specific name *vitreoradiata* must stand and the generic name *Powellia*, even though based upon a misconception, is available. The only question is whether it is desirable to recognise the genus as distinct from other triozone genera. The writers of this paper are opposed in principle to the undue multiplication of genera, but after a careful study of *Trioza urticae* (Linnaeus), the type of the latter genus, and of representatives of related triozone genera, we have come to the conclusion that there are valid reasons for the recognition of the genus *Powellia*. We present the following statement of its characters.

Triozone Chermidae in which the radius, media, and cubitus of the fore wing diverge from a common point; posterior border of the wing with three areas of black, sclerotic points (alar radulae); genae conical and more or less divergent, declivous and not in the same plane with the distinctly bulging vertex; thorax quite strongly arched; posterior coxae without a forward directed spur in addition to the normal posterior spur; posterior tibiae with a clearly evident spur or series of spurs at the base and armed with a subapical, almost thumb-like spur on the outer, posterior margin and with three apical spurs on the inner margin; antennae not hairy; wings variable in form and pigmentation; genitalia variable.

Type of the genus, *Powellia vitreoradiata* Maskell (= *Trioza pellucida* Maskell = *Trioza alexina* Marriner).

From the genus *Trioza*, *Powellia* is separable by the characters of the posterior tibiae, *Trioza urticae* lacking entirely the basal spurs and, although having the same number of apical spurs lacking the characteristic arrangement found in *Powellia*. From *Phyllopecta* (= *Megatrioza*), although having the same tibial characters, it differs in lacking the anterior spur of the posterior coxae, which is the distinctive feature of the latter genus. The fifteen New Zealand species here recognised differ greatly among themselves in regard to the details of the wings and the genitalia, but while it is possible to recognise groups of species, such as that centring about *vitreoradiata*, we do not believe that any further dividing is desirable at the present time.

#### KEY TO THE SPECIES OF POWELLIA.

##### *Females.*

1. Fore wings definitely pigmented throughout.....2  
Fore wings hyaline, or with at the most a barely visible general pigmentation or with bands or spots.....4
2. Genitalia with the dorsal plate long, slender, and distinctly decurved:

##### ***Powellia decurvata*, sp. n.**

Genitalia with the dorsal plate not decurved.....3

3. Radial sector ending close to the apex of the wing, cell  $R_1$  slender and somewhat curved:

**Powellia obfusca**, sp. n.

Radial sector ending remote from the apex of the wing, cell  $R_1$  broad and wedge-shaped:

**Powellia colorata**, sp. n.

4. Genitalia with the valves blunt, the apex of neither plate produced into a point.....5

Genitalia with at least the dorsal plate produced into a point..7

5. Fore wings with the membrane beset in the distal half with punctations except along the veins:

**Powellia equalis**, sp. n.

Fore wings with punctations at the most only at the base....6

6. Fore wings entirely without punctations, completely hyaline:

**Powellia curta**, sp. n.

Fore wings with punctations toward the base and with pigmented bands:

**Powellia fasciata**, sp. n.

7. Both dorsal and ventral plates of the genitalia strongly constricted and with at least the apical third slender, acute, and more or less up-turned.....8

Dorsal and ventral plates tapering, or if the dorsal valve is constricted it is decurved.....10

8. Apical parts of the ovipositor elongate and slender, palps transversely striate:

**Powellia styligera**, sp. n.

Apical parts of ovipositor of ordinary form, palps radially striate .....9

9. Fore wings punctate throughout except along veins:

**Powellia subacuta**, sp. n.

Fore wings with punctations at the most only at base:

**Powellia acuta**, sp. n.

10. Dorsal plate of genitalia decurved at apex:

**Powellia irregularis**, sp. n.

Dorsal plate of genitalia not decurved at apex.....11

11. Fore wings beset throughout, except along veins, with conspicuous punctations:

**Powellia, bifida**, sp. n.

Fore wings at the most with punctations only at base.....12

12. Posterior border of fore wings with a narrow, pigmented band:

**Powellia falcata**, sp. n.

Posterior border of fore wings without pigmented band.....13

13. Costal cell of fore wings typically with a large, pigmented spot;  
dorsal plate of genitalia scarcely exceeding ventral:

**Powellia emarginata**, sp. n.

Costal cell of fore wings without pigmented spot; dorsal plate of  
genitalia distinctly exceeding ventral:

**Powellia vitreoradiata**.

*Males.*

NOTE.—The males of several species are unknown.

1. Claspers expanded and emarginate or bifid at the apex.....2

Claspers not expanded and emarginate or bifid at apex.....5

2. Claspers slender deeply bifid at apex, without sclerotic spur or  
fold at apex on inner side:

**Powellia bifida**, sp. n.

Claspers broad and shallowly emarginate at apex, with a sclerotic  
fold or spur at apex on inner face.....3

3. Claspers with merely a sclerotic fold, not a spur on inner face  
at apex:

**Powellia emarginata**, sp. n.

Claspers with a spur on inner face at apex.....4

4. Fore wings hyaline:

**Powellia vitreoradiata** (Maskell).

Fore wings with a narrow, pigmented band on posterior border:

**Powellia falcata**, sp. n.

5. Claspers pyriform, acute at the apex and curved posteriorly:

**Powellia curta**, sp. n.

Claspers not so.....6

6. Claspers diagonally truncate at apex:

**Powellia acuta**, sp. n.

Claspers not diagonally truncate at apex.....7

7. Fore wings pigmented throughout, punctations small and every-  
where present:

**Powellia decurvata**, sp. n.

Fore wings hyaline, punctations conspicuous but lacking in areas  
paralleling the veins:

**Powellia subacuta**, sp. n.

**Powellia vitreoradiata** Maskell. (Pl. 7, Figs. A-N; Pl. 8, Figs. A-D; Pl. 16, Figs. E-G.)

1879 *Powellia vitreoradiata* Maskell. *Trans. N.Z. Inst.*, 11, 223-225; Pl. 8, Fig. 22.

1890. *Trioza pellucida* Maskell, *Ibid.* 22, 164-167; Pl. 11.

1903. *Trioza alexina* Marriner, *Ibid.* 35, 305-309; Pls. 34, 35.

*Previous Records.*—Recorded by Maskell from *Pittosporum eugenoides*, *Discaria toumatou* and *Geniostoma ligustrifolium*, "throughout New Zealand," and by Marriner from *Pittosporum tenuifolium*, without indication of locality. We accept specimens on *Pittosporum* as being typical.

*Specimens Examined.*—"From leaf pits on *Pittosporum crassifolium*," Wellington; Wellington and Waitakerei Hills, Auckland, without host indication (all J. G. Myers). Numerous specimens, including nymphs from Wellington.

*NOTES.*—We are quite well satisfied as to the identity of this species and as to the synonymy indicated. The figure of the male genitalia given by Maskell is, we are convinced, quite erroneous, the three remarkable hooks at the apex of the clasper being a misinterpretation of the actual condition, the same illusion being evident in some of our material. If this interpretation be accepted—and the host data are additional evidence in its favour—it is clear that *Trioza alexina* Marriner is a synonym. The erroneous change of name by Maskell is discussed above.

This species being the type of its genus we shall discuss it here in detail, and shall describe the other species of the genus chiefly by reference to it.

#### MORPHOLOGY OF THE SPECIES.

*Head* (Pl. 7, Fig. I) with the genal cones slightly shorter than the length of the vertex, quite sharply conical and rather strongly divergent, considerably depressed beneath the plane of the vertex, which is thus rather strongly bulging. Median furrow of the vertex strongly defined. Frons represented only by the anterior ocellus and probably by a triangular piece which appears on the posterior aspect of the head. Setae of the head few, inconspicuous, longer on the genae. Antennae (Pl. 7, Fig. M) about one and a-half times as long as the width of the head, presenting no special characteristics.

*Thorax* (Pl. 7, Fig. A) rather strongly arched, the pronotum declivous, the derm beset with minute ridges (Pl. 7, Fig. B) and little or not at all hairy. Posterior tibiae with several strong spurs at the base (Pl. 7, Fig. D) and with the characteristic arrangement of the black spurs at the apex (Pl. 7, Fig. F), there being a posterior, sub-apical and rather thumb-like spur and an apical comb of small setae on the outer aspect and three strong spurs on the inner aspect. Posterior femora with a small cluster of blunt setae near the apex on the anterior aspect. Posterior tarsi (Pl. 7, Fig. L) presenting no unusual characters.

*Fore wings* (Pl. 8, Fig. A) entirely hyaline, three times as long as wide, quite acute at the apex, the membrane entirely free of punctations except for a few near the base; with the usual three clusters of black, sclerotic points (Pl. 8, Fig. C), to which we are here applying the term "alar radulae." Radial sector curved, reaching nearly to the apex of the wing. Marginal cells subequal in size. Veins beset with minute setae. Posterior wings with the membrane thickly beset with minute, black punctations and with the veins defined entirely by larger sclerotic points (Pl. 8, Fig. D) and not at all by pigmentation of the wing membrane.

*Abdomen* (Pl. 7, Fig. A) with the tergites and sternites but moderately sclerotic. Genital segments of the female (Pl. 7, Fig. K) comprising slightly more than half the total length of the expanded abdomen, tapering regularly to a quite acute apex, with the dorsal plate slightly longer than the ventral and bearing an apical area (Pl. 7, Fig. N) of small, stout, retrorse, setae; gape of the genital segments but slight. Apodemes of the ovipositor slightly exceeding the genital segment in length, the apex of the "main rod" of the usual halberd shape, the tips of the lateral rods not serrate, the "palps" small and radially striate. Circumanal pore ring (Pl. 7, Fig. H) composed of a double row of pores, those of the outer row small and circular, those of the inner row elongate.

Genitalia of the male (Pl. 7, Fig. G) with the proctiger (anal valve) expanded into a roundly convex lateral wing on each side, this bearing a few slender setae near the apex. Claspers of a distinctive form, the anterior margin (Pl. 7, Fig. J) with a deep notch, the tip expanded and bilobed, the inner aspect bearing a strong sub-apical ridge which forms a basally directed, blunt, sclerotic point.

#### COLOUR AND HABIT NOTES.

Colour evidently variable, ranging from a general light bluish green with brownish markings on head and thorax to a general pale yellowish brown; eyes brown, ocelli bright red.

#### NYMPH.

Occurring in pits on the leaves of the host; flat and with a secretory fringe of delicate threads around the margin and probably also with such threads arising from the dorsum.

A typical triozone nymph, that is with the anterior wing pads produced forward and partially enveloping the head, with the dorsum entirely sclerotic except for the cervical and thoracic-abdominal articulations, and beset especially on the margin with the characteristic modified setae to which the term "sectasetae" has elsewhere been applied.

Length on slide 2 mm. General body form (Pl. 16, Fig. E) rather broadly oval. Sectasetae (Pl. 16, Fig. F) of various sizes, set in an irregular marginal series and sparsely distributed over the dorsum. Antennae short, six-segmented. Anal pore ring on the



ventral side of the body, enclosing a narrow, transverse area and composed of a single row of narrow, elongate pores enclosing an indefinite row of small, circular pores. Empodium (Pl. 16, Fig. G) sessile, fan-shaped.

**Powellia falcata**, sp. n. (Pl. 8, Fig. F; Pl. 9, Fig. B.)

*Specimens Examined*.—Holotype, a male, and paratype males and nymphs from *Aristotelia serrata*, Pokako (D. Miller) and males without indication of host from Leith, Dunedin (G. Howes).

*Colour*.—No notes available.

*Structure*.—In the male differing from *P. vitreoradiata*, to which it appears to be very closely related, only in the following characters. Fore wing (Pl. 9, Fig. F) rounded at the apex and typically with a longitudinal, narrow band of brownish colour along the basal half of the posterior margin, although some specimens seem to lack this; wing membrane without punctations except a few at the base. Genitalia (Pl. 9, Fig. B) differing from those of *vitreoradiata* in having the sclerotic, apical process on the inner face of the claspers in the form of a distinct, forward pointing hook and in having the notch on the anterior margin of the claspers much broader.

*Nymph*.—Occurring in pits on the leaves of the host. Differing from the nymph of *P. vitreoradiata* primarily in having the sectasetae confined to a single regular marginal row and an ill-defined submarginal series, there being none on the remainder of the dorsum and all being of a single size.

**Powellia emarginata**, sp. n. (Pl. 9, Figs. D, F; Pl. 8, Fig. H.)

*Specimens Examined*.—Holotype, a male, and allotype and two paratypes, Arthur's Pass, 3000 feet (J. G. Myers); one female from "kiekie" (*Freycinetia Banksii*), York Bay (J. G. Myers).

*Colour*.—Head, thorax, and genitalia ranging in general colour from a comparatively dark, reddish brown with the abdomen red, to a lighter brown with greenish markings on head and thorax and the abdomen green. Wings slightly brownish, with a very distinct, dark spot in the costal cell.

*Structure*.—In general resembling *P. vitreoradiata* quite closely. Antennae slightly more than twice as long as width of head. Fore wings (Pl. 8, Fig. H), as in *P. vitreoradiata*, without punctations but slightly broader and less acute at the apex and with the radial sector shorter and forming a wedge-shaped cell. Genitalia of female (Pl. 9, Fig. F) relatively shorter than in *vitreoradiata*, with the dorsal plate scarcely exceeding the ventral in length and bearing but a very few retrorse setae at the apex. Genitalia of the male (Pl. 9, Fig. D) of the same type as in *vitreoradiata* but with the claspers much broader and with merely a somewhat sclerotic fold on the inner face at the apex.

**Powellia bifida**, sp. n. (Pl. 8, Fig. J; Pl. 9, Fig. I; Pl. 10, Fig. E.)

*Specimens Examined.*—Two specimens only, the holotype, a male, from Arthur's Pass, 3000 feet (J. G. Myers), and the allotype from Leith, Dunedin (G. Howes).

*Colour.*—No notes available.

*Structure.*—Quite similar to *P. vitreoradiata*. Differing in the character of the fore wings (Pl. 8, Fig. J), which are rounded at the tip and have the wing-membrane beset throughout with quite evident punctations except for narrow spaces paralleling the veins. Hind wings with the venation formed in the same manner as in *vitreoradiata*, but with the rows of large points tending to be double. Genitalia of the female (Pl. 10, Fig. E) relatively long, forming approximately two-thirds of the expanded abdomen, acute at the apex, with the dorsal plate considerably exceeding the ventral and thickly beset in its apical third with small, retrorse setae. Genitalia of the male (Pl. 9, Fig. I) differing from those of *vitreoradiata* in having the proctiger long, quite slender and tapering, and with a row of quite long setae along the posterior margins, and in having the claspers also long and quite slender and deeply bifid at the apex with the posterior lobe heavily sclerotic, and without a fold or hook on the inner face at the apex.

*Notes.*—Our association of this male and female is solely on the basis of the wing characters, the shape and the arrangement of the punctations being so closely similar in the two that it seems reasonable to put them together.

**Powellia acuta**, sp. n. (Pl. 10, Figs. A, C.)

*Specimens Examined.*—Holotype, a female, and allotype and twenty-eight paratype males and females from *Cassinia leptophylla*, Ohiro, Wellington; one female from *Cassinia leptophylla*, Orongorongo, Wellington.

*Colour.*—Of a general pale green colour, with brownish markings on head, thorax, and genitalia, varying to a general brown with the abdomen greenish; wings very pale brown, not quite hyaline.

*Structure.*—Genae slightly shorter, blunter, and less divergent than in *P. vitreoradiata*. Antennae about twice as long as width of head. Fore wings (Pl. 9, Fig. H) but little more than twice as long as wide, rounded at the apex, radial sector attaining practically the tip of the wing; membrane without punctations except in claval area. Hind wings with the venation formed by the concentration of the small dots into three or four rows, but without pigmentation of the membrane. Genitalia of the female (Pl. 10, Fig. A) forming slightly more than half the length of the expanded abdomen, of a distinctive type, the dorsal plate with its apex forming a long, slender, and rather sclerotic process which is beset with small, retrorse setae. Ventral plate likewise acute, slightly shorter than the

dorsal. Dorsal plate with a tuft of quite long setae just before the base of the apical process. Genitalia of male (Pl. 10, Fig. C) with the proctiger stout, its posterior margin strongly convex and fringed with hairs, the claspers rather short and broad, diagonally truncate at the apex and with a narrow, sclerotic apical rim.

**Powellia subacuta**, sp. n. (Pl. 10, Figs. D, F.)

*Material Examined*.—Holotype, a female, and allotype, Wilton's Bush; two paratype females, Wellington Botanical Gardens (J. G. Myers); one paratype female, Day's Bay, Wellington; one paratype female, York Bay, Wellington (I. H. Myers).

*Colour*.—Notes not available.

*Structure*.—Very close to *P. acuta*. Wings, however, beset throughout with punctations except for narrow areas paralleling the veins. Genitalia of female (Pl. 10, Fig. D) with the prolongation of both dorsal and ventral plates shorter and less acute. Genitalia of the male (Pl. 10, Fig. F) with the proctiger strongly angular and the claspers slender, tapering slightly in their apical fourth to the truncate apex.

**Powellia decurvata**, sp. n. (Pl. 10, Figs. H, I.)

*Specimens Examined*.—Holotype, a male, and a paratype male, York Bay, Wellington (J. G. Myers); allotype, Mount Maunganui, Wellington, 2300 feet (J. G. Myers); males and females, Bull Mound, Tararua Mts., 3300 feet; female, Arthur's Pass (J. G. Myers); male, Auckland (J. G. Myers).

*Colour*.—Of a general light brown colour with darker markings on head and thorax; wings very pale brown.

*Structure*.—Antennae about one and a-half times as long as the width of the head. Genae fully as long as the vertex and noticeably slender. Wings slightly rounded at apex, the radial sector almost attaining apex and paralleling costal margin, membrane punctate throughout, more strongly so at base, without bare areas along veins. Hind wings with veins formed by a slight pigmentation of the membrane and a concentration of the small points. Hind tibiae with the basal spurs rather weakly developed. Genitalia of female (Pl. 10, Fig. H) forming two-thirds of the length of the expanded abdomen, the dorsal plate considerably exceeding the ventral, tapering regularly to the apex and strongly curved downward, the two plates gaping widely. Genitalia of male (Pl. 10, Fig. I) with the proctiger elongate and somewhat flask shaped, the posterior border beset with a fringe of long setae; claspers quite long, moderately slender, parallel-sided, with the apex rounded and without hooks or sclerotic processes, the inner face with numerous small setae near apex.

**Powellia fasciata**, sp. n. (Pl. 8, Fig. I; Pl. 9, Fig. A; Pl. 11, Fig. A.)

*Specimens Examined.*—But two specimens, both females, holotype from Ohakune (J. G. Myers), the other from Longacre, Wanganui (J. G. Myers).

*Colour.*—Notes not available. Wings in the type with a conspicuous brown border along the posterior margin of the wing, which is continued across the base of the wing as a rather narrow transverse band. In the paratype (Pl. 9, Fig. A) the pattern is different, there being two transverse bands across the basal half of the wing, with the band along the posterior border lacking.

*Structure.*—A very robust species, with the derm heavily pigmented. Antennae twice as long as the width of the head. Genal cones (Pl. 8, Fig. I) scarcely more than half as long as the vertex, parallel, broad, and bluntly rounded at the apex. Derm without imbrications. Dorsum of thorax distinctly hairy. Wings slightly less than three times as long as wide and but moderately acute. Radial sector short, ending remote from the apex and forming a cuneate cell. First marginal cell much smaller than the second. Membrane of wing punctate only at the base. Hind wings with the veins formed by large sclerotic points; base and anterior margin of wing brownish. Genitalia of female (Pl. 11, Fig. A), the dorsal plate quite broadly truncate at the tip and greatly exceeding the small ventral plate; ovipositor with the terminal parts very small and obscure.

*Notes.*—The two specimens at hand differ noticeably in the pigmentation of the wing, that here figured being the paratype. However, they agree so closely in structural characters that on the basis of the material at hand they appear to be the same species.

**Powellia curta**, sp. n. (Pl. 8, Fig. K; Pl. 10, Fig. G.)

*Specimens Examined.*—Holotype, a female, and two paratype females from *Metrosideros tomentosa*, Kaitaia (J. G. Myers); allotype male from "kiekie" (*Freycinetia Banksii*), York Bay (J. G. Myers).

*Colour.*—Dark brown throughout, the wings hyaline.

*Structure.*—Antennae about two and a-half times as long as width of head, noticeably slender. Genae (Pl. 8, Fig. K) scarcely more than half the length of the vertex, stout, but rather acute at the apex. Dorsum of the thorax with conspicuous hairs. Posterior tibiae with a single well-developed spur at base. Wings about three times as long as wide, somewhat more acute at the apex even than in *vitteoradiata*, radial sector terminating remote from apex and forming a wedge-shaped cell. Genitalia of female very short (Pl. 10, Fig. G), scarcely longer than the preceding segment, the dorsal plate but little surpassing the ventral, the ovipositor very small. Genitalia of male (Pl. 10, Fig. B) likewise very small, the proctiger almost globular, the claspers pyriform, tapering to an acute apex

which is curved posteriorly and is heavily sclerotic, the inner face of the claspers with a transverse row of small setae.

*Notes.*—In the character of the genitalia of the female of this species seems to be closest to *P. fasciata*.

***Powellia stylicera*, sp. n.** (Pl. 10, Fig. C.)

*Specimens Examined.*—A single female from Mt. Alpha, 4000 feet, Tararua Mts.

*Colour.*—No notes available.

*Structure.*—Antennae scarcely twice as long as width of head. Genae sharply conical, acute at the apex, scarcely as long as the vertex. Hind tibiae with two or three weakly developed basal spurs. Wings hyaline, beset with fine punctations except for areas paralleling the veins, about two and a-half times as long as broad, quite similar in form to the wing of *P. bifida* (Pl. 9, Fig. H). Genitalia forming about half the total length of the expanded abdomen, the caudal half almost awl-like in form (Pl. 11, Fig. C), with the ovipositor strongly developed and its terminal parts much elongate, the "palps" strongly transversely striate; dorsal plate but little exceeding the ventral, the latter slightly serrate in the apical third.

***Powellia obfusca*, sp. n.** (Pl. 9, Fig. G; Pl. 11, Fig. F.)

*Specimens Examined.*—A single female from *Hebe salicifolia*, Silverstream, Wellington.

*Colour.*—Notes not available. Wings quite brown, faintly and irregularly mottled, highly punctate, the punctations irregular in size; alar radulae inconspicuous.

*Structure.*—Antennae scarcely twice as long as width of head. Genae sharply conical, acute at apex, slightly shorter than vertex. Posterior tibiae with several weakly developed spurs at base. Fore wings (Pl. 9, Fig. C) of a form most unusual in this group, the anterior margin almost straight, the apex well forward of the centre of the wing; radial sector reaching practically to the apex almost straight and forming a long wedge-shaped cell; first marginal cell distinctly longer than second; veins noticeably thick; alar radulae with the points much reduced in size, forming mere roughnesses. Hind wings with the exceedingly faint veins formed by a combination of pigmentation of the membrane with a concentration of minute points. Abdomen weakly sclerotic. Genitalia of female (Pl. 11, Fig. F) forming about half the total length of the expanded abdomen, tapering regularly to a rather acute apex, the dorsal plate beset with small, retrorse setae at apex; the gape wide.

*Notes.*—The peculiar wings constitute the most distinctive feature of this species.

**Powellia irregularis**, sp. n. (Pl. 11, Fig. E.)

*Specimens Examined.*—Holotype, a female, and one paratype female from Mt. Alpha, 3600 feet; a paratype female from Arthur's Pass (J. G. Myers).

*Colour.*—No notes available. Wings hyaline.

*Structure.*—In general characters very close to *P. vitreoradiata*. Antennae about one and a-half times as long as width of head. Hind tibiae with two large and several small spurs at base. Fore wings with the membrane everywhere beset with quite large punctations except for bare areas paralleling the veins; form practically as in *vitreoradiata*. Hind wing with veins formed from unusually large points. Genitalia of female (Pl. 11, Fig. E) forming somewhat less than half the total length of the expanded abdomen, noticeably irregular in form, the valves about equal in length, widely gaping, the dorsal valve quite acute at the apex and somewhat down-curved.

*Note.*—The irregular form of the ovipositor is the most distinctive feature of this species.

**Powellia equalis**, sp. n. (Pl. 11, Fig. D.)

*Specimens Examined.*—One female, Arthur's Pass (J. G. Myers).

*Colour.*—No notes available. Fore wings hyaline, except posterior margin brown.

*Structure.*—Antennae about one and a-half times as long as width of head. Genae about two-thirds the length of the vertex, conical, quite blunt at the apex. Hind tibiae with two large and several small spurs at base. Wing form about as in *P. falcata* (Pl. 8, Fig. F), membrane punctate in apical half and along posterior margin to base, with bare areas along the veins. Genitalia (Pl. 11, Fig. D) with the dorsal and ventral plates equal in length and the ventral plate somewhat larger than the dorsal, the plates almost equal in form, rounding to a very blunt apex and with a slight gape.

*Notes.*—The curiously symmetrical genitalia are distinctive.

**Powellia colorata**, sp. n. (Pl. 8, Fig. G; Pl. 9, Fig. E; Pl. 11, Fig. B.)

*Specimens Examined.*—A single female from Arthur's Pass.

*Colour.*—No notes available. Fore wings (Pl. 9, Fig. E) dark brown throughout, somewhat paler toward the base, with an almost hyaline spot followed by a very dark area just beyond the tip of the clavus.

*Structure.*—Antennae somewhat more than twice as long as width of head. Genae distinctly shorter than vertex, broadly divergent, rather blunt at apex. Hind tibiae with two or three strong and several weaker spurs at base. Wings only slightly more than

twice as long as broad, broadly rounded at apex; radial sector short, forming a wedge-shaped cell; marginal cells large and nearly equal; alar radulae with the points small and tending to be arranged in pairs; wing membrane generally beset with large sparse punctations which are lacking along the veins. Posterior wings with the veins defined by pigmentation and not by dots. Genitalia of female forming about one-third of the total length of the expanded abdomen (Pl. 11, Fig. B), the dorsal plate constricted in its apical third and forming an obtuse process, slightly exceeding the ventral plate, the gape wide; ovipositor with terminal structures very small.

*Notes.*—The striking wings are the most distinctive feature of this species.

### **Powellia panacis** (Maskell).

1890. *Trioza panacis* Maskell. *Trans. N.Z. Inst.*, 22, 167; Pl. 12, Fig. 1-12.

*Previous Records.*—Recorded by Maskell as "in New Zealand" on *Panax* sp. and *Pseudopanax ferox*.

*Notes.*—We have been unable to recognise this species in the material at hand, and we can hazard no opinion concerning it other than that it apparently belongs to this group.

### Genus PSYLLIA Kirkaldy.

To this genus (which is the genus *Psylla* of most authors) we are referring five New Zealand species. All of these differ from typical members of the genus in the short genal cones. In fact one species departs so widely in this respect that upon the ordinarily accepted bases of classification it might not even be referred to this group, the genae being merely low, rounded and widely separated prominences such as occur in the *Liviinae*. However, the sum total of its characters indicates unmistakably that it belongs with the other New Zealand species. They may very well remain in the genus *Psyllia* until and unless a survey of the entire genus as now understood reveals more adequate reasons for subdivision.

We would here call attention to a peculiar condition occurring in certain of the species at hand. Normally in the *Psylliinae* there are present on the basal segment of the posterior tarsi a pair of stout claw-like spurs, the character being one of the characteristics of this group, although it is shared with some others. In certain of the species to be discussed there is but a single claw present, this being the condition which prevails in some of the species of the *Pauropsyllinae*. That the difference here has no special significance is indicated by the fact the species are obviously closely related upon the basis of other characters.

KEY TO THE NEW ZEALAND SPECIES OF PSYLLIA.

*Females.*

1. Dorsal valve of the genitalia strongly declivous, scarcely exceeding the ventral valve.....2  
Dorsal valve of the genitalia not strongly declivous.....3
2. Fore wing with conspicuous Y-shaped maculations at margin:  
***Psyllia acaciae* (Maskell).**  
Fore wing without such markings:  
***Psyllia uncatoides*, sp. n.**
3. Dorsal valve of the genitalia with the apical third slender and more or less acute, slightly upturned.....4  
Dorsal valve of genitalia decurved, not slender and acute:  
***Psyllia uncata*, sp. n.**
4. Fore wing with maculations only in the apical third and anterior to the clavus:  
***Psyllia albizziae*, sp. n.**  
Fore wing entirely maculate, sometimes with the apical fourth conspicuously dark:  
***Psyllia apicalis*, sp. n.**

*Males.*

1. Proctiger without expanded lateral lobes:  
***Psyllia apicalis*, sp. n.**  
Proctiger with strongly expanded lateral lobes.....2
2. Lateral lobes of the proctiger without a hook-like secondary lobe on the posterior margin:  
***Psyllia acaciae* (Maskell).**  
Lateral lobes of the proctiger with a hook-like secondary lobe on the posterior margin.....3
3. Claspers elongate, parallel-sided, the extreme apex curved posteriorly and forming a sclerotic point:  
***Psyllia uncata*, sp. n.**  
Claspers otherwise formed, pyriform or aciculate.....4
4. Claspers slender, aciculate:  
***Psyllia albizziae*, sp. n.**  
Claspers pyriform, with a pronounced basal lobe on anterior margin:  
***Psyllia uncatoides*, sp. n.**



**Psylliae acaciae** (Maskell). (Pl. 12, Figs. A, B, C, G, H; Pl. 13, Figs. A, H, I; Pl. 16, Figs. H, I, J, L.)

1894. *Psylla acaciae*, Maskell, *Entomologist's Monthly Magazine*; 30, 171.

*Previous Records.*—Recorded by Maskell from *Acacia melanoxylon* at Wellington, N.Z.

*Specimens Examined.*—Nymphs and many adults from Wellington and one female from Rangitoto, all without indication of host (J. G. Myers).

*Colour.*—General colour dark brown throughout with numerous small, irregular pale blotches on head and thorax and greenish intersegmental markings on the abdomen. Fore wings with pale brown markings in the apical half and in the region of the clavus, the four marginal markings having quite constantly a distinct Y-shape (Pl. 12, Fig. A).

*Structure.*—Head (Pl. 12, Fig. C) with the genae scarcely more than half as long as the vertex, distinctly separated at the base, divergent and bluntly rounded at the apex, which bears a pair of long setae. Frons represented by a small, triangular sclerite on the posterior aspect of the head. Antennae about twice as long as the width of the head. Thorax slightly pubescent, the prothorax (Pl. 13, Fig. A) with the form and position of the pleural suture, which is considered characteristic of the genus. Hind tibiae with a single well-developed spur at the base; with a single spur and a small comb of setae on the outer aspect and four spurs on the inner aspect at the apex. Tarsi with two large claw-like spurs at apex of first segment.

Fore wing (Pl. 12, Fig. A) with the form and venation characteristic of the genus, the branching dichotomous, with a distinct, closed pterostigma and with the apex of the wing broadly rounded; membrane beset throughout with punctations which are larger and darker in the pigmented areas; posterior border of the wing with four areas of small teeth (alar radulae; Pl. 12, Fig. B), these rendered inconspicuous by the pigmented areas in which they lie. Hind wings with the venation almost obliterated, formed only by a faint concentration of the small punctations with which the membrane is beset.

Genitalia of the female (Pl. 12, Fig. H) forming about one-third of the entire length of the expanded abdomen; dorsal plate strongly declivous, with but a slight point, scarcely exceeding the ventral plate, strongly hairy; gape of the valves small. Genitalia of male (Pl. 13, Fig. I) with the proctiger composed of a basal portion having strongly expanded and posteriorly angulate lateral lobes, and a cylindrical apical portion of about the same length; claspers strongly pyriform, tapering to the acute and posteriorly curved apex, the anterior margin with a series of strong setae, the inner face with a patch of small setae in the basal half.

*Nymph* (Pl. 16, Figs. H, I, J, L).—Described by Maskell as naked and active. Specimens representing the last instar are available. These are of the typical Psylline form, the wing pads not produced forward and partially enclosing the head, the dorsum largely membranous and with numerous small sclerotic areas, the apical third of the dorsum of the abdomen being formed of a continuous plate, setae not present. Length on slide 2 mm. Specific characters, separating it from the other available nymphs of Psylline species, are to be found in the presence of a fringe of strong, slender setae along the margin of the wing pads and the posterior third of the abdomen, these setae (Pl. 16, Fig. I) not spatulate at the apex. The antennae are eight-segmented and rather long and slender. The circum anal pore ring (Pl. 16, Fig. J) outlines a small, cordate area and is composed of a single ring of quite small, elongate pores, enclosing an ill-defined ring of small, circular pores. Dorsum practically hairless. Empodium (Pl. 16, Fig. L) with a long, slender stalk bearing an expanded, membranous and somewhat radially striate lobe at the apex.

*Notes.*—We believe the identification of this species to be reasonably certain, certain features mentioned by Maskell, such as the Y-shaped markings of the fore wings being readily recognisable.

***Psyllia albizziae*, sp. n.** (Pl. 12, Figs. E, F; Pl. 13, Figs. C, G.)

*Specimens Examined.*—Holotype, a male, and allotype and numerous paratypes, together with nymphs, from *Albizzia lophantha*, Governor's Bay, Canterbury (J. G. Myers and J. F. Tapley).

*Colour.*—A general pale green, with slightly brown markings on the head and thorax. Wings (Pl. 12, Fig. F) hyaline except the apical third with irregular, brownish maculations and the area anterior to the clavus with three such spots.

*Structure.*—Antennae slightly less than twice as long as width of head. Genae (Pl. 12, Fig. E) reduced to low, rounded prominences which are widely separated at the base by the ocellus and bear a single large subapical seta on the ventral side. Frons appearing as a distinct sclerite between the rather widely separated genae on the posterior (ventral) aspect. Head finely pubescent. Thorax with no distinctive features. Posterior tibia with a distinct basal spur, arrangement of the apical spurs variable, sometimes as in *P. acaciae* and sometimes with but three spurs on the inner face (Pl. 13, Fig. G). Tarsi of hind legs with two well-developed spurs at apex.

Genitalia of female (Pl. 12, Fig. I) forming scarcely a third of the total length of the expanded abdomen, the dorsal plate acutely tapering and slightly upturned at the apex, considerably exceeding the ventral plate; gape of the plates wide. Genitalia of male (Pl. 13, Fig. C) with the proetiger formed of a long, slender apical portion and a slightly shorter basal portion with broadly expanded, lateral lobes, the posterior margins of which are roundly convex

and bear a distinct sclerotic spur; claspers characteristically formed, slender, tapering, and distinctly sickle-shaped, the inner face with a number of small, black, retrorse setae near the base.

*Nymph.*—In general very similar to the nymph of *P. acaciae*, differing conspicuously only in the form and distribution of the marginal setae. These are quite stout, and are distinctly spatulate at the apex (Pl. 16, Fig. H) and are present on the tibiae of the middle and posterior legs as well as along the margins of wing pads and abdomen.

*Notes.*—The head form of this species is more like that of the *Liiviinae* than the *Psylliinae*, but the similarity of the nymphs and other characters indicate a close relationship to the other species here referred to *Psyllia*.

***Psyllia apicalis*, sp. n.** (Pl. 12, Figs. D, J; Pl. 13, Fig. F).

*Specimens Examined.*—Holotype, a male, and allotype and several paratypes from "kowhai" (*Sophora tetraptera*) and without indication of host, Governor's Bay, Canterbury (J. G. Myers and J. F. Tapley).

*Colour.*—General colour dark brown, with lighter brown stripes on head and thorax. Wings (Pl. 12, Fig. D) typically with the basal three-fourths irregularly maculated with small brown spots and the apical fourth almost entirely pigmented by the fusion of many such spots. In some specimens the entire wing is rather uniformly maculated, without the apical band, and these specimens tend to be of a lighter colour than the others. There is a tendency toward an intergradation of the two types.

*Structure.*—Antennae slightly longer than width of head. Head form practically as in *P. acaciae* (Pl. 12, Fig. C). Thorax and head not pubescent. Posterior tibiae without a basal spur, apical spurs as in *P. acaciae*. Fore wing about two and a-half times as long as wide, very broadly rounded at apex; pterostigma large, closed; membrane thickly beset with punctations which are darker and more conspicuous in the pigmented areas; radulae entirely lacking.

Genitalia of female (Pl. 12, Fig. J) forming slightly more than a third of the total length of the expanded abdomen, the dorsal plate somewhat surpassing the ventral and with its apical third forming a rather acute process; valves gaping widely. Genitalia of male (Pl. 13, Fig. F) with the proctiger long and quite slender, somewhat flask-shaped; claspers pyriform, the apex acute and slightly curved posteriorly, their inner face with numerous small setae and with a cluster of larger setae on the basal half of the posterior margin.

*Note.*—It is possible that there are two species involved in our material because of the two types of wing pattern. However, all are structurally the same, and there is sufficient evidence of intergradation in the wing pattern to lend support to the belief that the differences are merely variants. The species is evidently rather close to *P. acaciae*.

**Psyllia uncata**, sp. n. (Pl. 12, Fig. K; Pl. 13, Fig. E).

*Material Examined*.—Holotype, a male, and allotype, several paratypes and two nymphs from *Acacia baileyana* and without indication of host, Governor's Bay, Canterbury (J. F. Tapley).

*Colour*.—Of a general dull reddish brown, the abdomen somewhat darker. Wings maculate with irregular light brown spots, in general similar to those of *P. albizziae*, but the maculations extending almost to the base of the wing and not confined to the apical third.

*Structure*.—Antennae slightly less than twice as long as width of head. Genae forming low, rounded lobes, intermediate in prominence between those of *P. acaciae* (Pl. 12, Fig. C) and *P. albizziae* (Pl. 12, Fig. E). Fore wing similar to that of *albizziae*, the membrane punctate throughout, the punctations more conspicuous in the pigmented areas; radulae present, but greatly reduced, apparently but three. Hind tibiae without spur at base, the apex with one spur on the outer side and four on the inner side. First segment of the hind tarsus with but one spur, this small.

Genitalia of the female (Pl. 12, Fig. K) scarcely more than a fourth of the entire length of the expanded abdomen, the dorsal plate but little exceeding the ventral, bluntly pointed and distinctly bent downward; gape of the valves large. Genitalia of male (Pl. 13, Fig. E) with the distal half of the proctiger cylindrical, the basal half strongly expanded into broad lateral lobes, the posterior margin of which bears a conspicuous and somewhat sclerotic hook-like lobe; claspers quite long, straight, and parallel-sided, with the apex curved posteriorly and produced into a small, sclerotic point, the inner face with three small, stout setae near the apex.

*Nymph* (Pl. 16, Fig. A).—Length on slide, 1.25 mm. Of the general Psylliine type. Distinguished from the others here dealt with by its complete lack of modified or conspicuous setae, the body being hairless except for a few very small setae. Circum-anal pore ring cordate as in *P. acaciae* (Pl. 16, Fig. K). Form of empodium indeterminable from the available material. Dorsal plates of thoracic region very small.

*Notes*.—This species is evidently rather closely related to *P. albizziae* and *P. uncatoides*. It is apparently not *P. acaciae-baileyanae* (Froggatt) described from the same host species from Australia.

**Psyllia uncatoides**, sp. n. (Pl. 13, Fig. D.)

*Specimens Examined*.—Holotype, a male, allotype and several paratypes from *Acacia melanoxylon*, Riwaka, Nelson.

*Colour*.—Pale reddish brown, with four white stripes on the thorax; abdomen paler and greenish beneath. Wings with mottlings practically identical with those of *P. albizziae* (Pl. 12, Fig. F) but perhaps less distinct.

*Structure*.—Antennae about one and a-third times as long as width of head. Head form practically identical with that of *P. acaciae* (Pl. 12, Fig. C), the genae with two subapical setae. Head and thorax slightly pubescent. Hind tibiae with a single well-developed spur at base; apex with one spur on outer side and four on inner. Posterior tarsi with but a single apical spur. Genitalia of female practically identical with those of *P. acaciae* (Pl. 12, Fig. H). Genitalia of male (Pl. 13, Fig. D) with the apical half slender and cylindrical, the basal half with strongly expanded lateral lobes that bear a conspicuous, non-sclerotic, hook-like lobe on the posterior border; claspers pyriform, curved posteriorly, the anterior margin with a conspicuous lobe near the base, this lobe beset with stout setae.

*Notes*.—The female of this species is practically identical with that of *P. acaciae*, differing in its general colour and in the pattern of the maculae on the fore wings. The male, on the other hand, is perhaps closest to *P. uncata*, from which it differs sharply in the form of the claspers.

#### Genus CTENARYTAINA, new genus.

Psylliine Chermidae in which the head is strongly deflexed, the genal cones present but short, being less than half as long as the vertex, the frons apparently entirely suppressed except for the anterior ocellus; antennae scarcely longer than the width of the head; wings with a closed pterostigma; posterior tarsi with the claw-like spines of the first segment very small; genitalia of the male always with a terminal lobe on the proctiger and with the inner face of the claspers beset in part with small, black, tubercle-like setae; pleural suture of the prothorax extending to the middle of the margin of the pronotum; *tibiae of the middle legs with a short, longitudinal, subapical comb of small setae*.

Type of the genus, *Rhinocola fuchsiae* Maskell. Three other species from New Zealand, here described as new, are included.

*Notes*.—On the basis of the existing literature this group of species might be regarded as belonging to the genus *Arytaina*. The type of the latter genus is not available to us, but there are at hand other species which have been referred to it. On the basis of these we believe the New Zealand group to merit recognition as distinct. The most precise character defining it is the presence of the small comb of setae on the middle tibiae, this being visible only under the higher power of the microscope. We have seen nothing of the sort in any other Psylliine forms.

#### KEY TO THE SPECIES OF CTENARYTAINA.

##### *Females*.

1. Dorsal valve of the genitalia beset along the ventral margin in its apical half with a fringe consisting of a double row of small, modified setae:

##### **Ctenarytaina thysanura**, sp. n.

Dorsal valve of genitalia without such fringe.....2

2. Genitalia elongate, sharply acute at the apex.....3  
Genitalia shorter, the dorsal plate relatively blunt at the apex:

**Ctenarytaina clavata**, sp. n.

3. Terminal blades of ovipositor serrate, gape of the valves slight:

**Ctenarytaina fuchsiae** (Maskell).

Terminal blades of ovipositor not serrate, gape of valves wide:

**Ctenarytaina pollicaris**, sp. n.

*Males.*

1. Proctiger with a tooth-like seta on posterior margin of basal lobe:

**Ctenarytaina thysanura**, sp. n.

Proctiger without such seta.....2

2. Proctiger with the basal portion produced laterally into a large lobe with acute apex.....3

Proctiger with basal portion only slightly convex posteriorly:

**Ctenarytaina fuchsiae** (Maskell).

3. Clasper with a sclerotic, thumb-like basal lobe on the anterior margin:

**Ctenarytaina pollicaris**, sp. n.

Clasper entirely without such lobe:

**Ctenarytaina clavata**, sp. n.

**Ctenarytaina fuchsiae** (Maskell). (Pl. 14, Figs. C, D, I.)

1890. *Rhinocola fuchsiae*, Maskell. *Trans. N.Z. Inst.*, 22, 162-164;  
Pl. 12, Figs. 13-25.

*Previous Records.*—From *Fuchsia excorticata* “in New Zealand.”

*Specimens Examined.*—Several males and females from *Fuchsia excorticata*, Wellington; two females from Wilton's Bush, Wellington; three females from “konini” (*Fuchsia excorticata*), Governor's Bay, Canterbury (all J. G. Myers).

*Colour.*—General colour ranging from almost purplish to a general yellowish brown with darker markings; wings distinctly yellowish, not maculate.

*Structure.*—Length of pinned specimen to apex of wings 2 mm. Antennae but slightly longer than width of head. Head (Pl. 14, Fig. D) with the vertex and the genal cones in the same plane, practically vertical, smooth, the genae less than half as long as the vertex, their mesal margins almost approximate; frons represented only by median ocellus. Pronotum with the pleural suture (Pl. 13, Fig. B) reaching the middle of the lateral margin of the pronotum and not forked. Remainder of thorax presenting no distinctive charac-

ters. Middle legs with the distinctive comb of setae (Pl. 13, Fig. J) near the apex of the outer face of the tibia. Posterior tibiae without spur at base; with three small black spines at apex on one side and two on the other. Basal segment of posterior tarsi with two very small, claw-like spurs at apex.

Fore wings (Pl. 13, Fig. K) nearly three times as long as wide, regularly oval; pterostigma distinct; first marginal cell long and slender; membrane evenly pigmented and punctate throughout, the punctations arranged in a delicate lace-work (Pl. 13, Fig. M). Hind wings (Pl. 13, Fig. L) best with extremely minute and inconspicuous punctations; venation exceedingly faint, formed by a fold or thickening of the wing membrane with pigmentation.

Genitalia of the female (Pl. 14, Fig. C) composing a little less than half of the total length of the expanded abdomen, slender, and very acute, the dorsal plate considerably surpassing the ventral; ovipositor large, the apical blade dorsally serrate; gape of the valves but slight. Anal pore ring composed of a simple row of pores. Genitalia of the male (Pl. 14, Fig. I) with the proctiger divided into two parts, a large, basal portion which is expanded into slight lateral wings with convex posterior margin, and a small apical lobe, the whole almost hairless. Claspers moderately slender, regularly tapering to a somewhat acute apex, the inner face beset with numerous small, black, retrorse, tubercle-like setae.

*Notes.*—The identification of this species may be taken as certain. It is readily separable from the remaining species of the genus except that the female is somewhat similar to that of *C. pollicaris*. Compared directly the genitalia of these two females differ distinctly, but the differences are difficult to express verbally.

***Ctenarytaina thysanura*, sp. n.** (Pl. 14, Figs. B, F, H; Pl. 16, Figs B, C, D.)

*Specimens Examined.*—Holotype, a female, allotype and several paratypes, and also nymphs from *Boronia* sp., "from Melbourne," Dunedin.

*Colour.*—General colour yellowish brown with darker markings; abdomen striped with black; wings yellowish.

*Structure.*—In general quite close to *C. fuchsiae*, but differing in the following particulars. Antennae slightly shorter than width of head. Head (Pl. 14, Fig. F) apparently slightly different in form, the occiput more concave. Genitalia of female (Pl. 14, Fig. B) very long and slender; dorsal plate beset along the apical half of its ventral margin with a fringe composed of two rows of small, modified setae; gape of the valves wide; the ovipositor with its parts very large, the palps transversely striate. Genitalia of male likewise very distinctive (Pl. 14, Fig. H), the proctiger with a slender apical lobe, the basal portion strongly expanded into lateral lobes, which bear a conspicuous, stout, thorn-like seta on their posterior border; claspers slender, tapering, the posterior margin sinuate, the inner face with areas of small, stout setae.

*Nymph* (Pl. 16, Figs. B, C, D).—Length on slide, 1.25 mm. Of the ordinary Psylliine type, with the following distinctive details. Antennae rather short and stout, eight-segmented. Dorsal plates of the thoracic region but two, these large. Abdomen with the apical half of the dorsum included within a single plate. Body destitute of all but a very few extremely small setae, except for a fringe of small, hastate setae about the margin at the apex (Pl. 16, Fig. D). Circum-anal pore ring (Pl. 16, Fig. C) small, very broadly cordate, composed of a single ring of pores enclosing an irregular ring of obscure, circular pores. Empodium distorted in all the available specimens.

*Notes*.—The characters of this species that are most of all distinctive are of a sort which would almost certainly be entirely overlooked in the conventional pinned material.

***Ctenarytaina clavata*, sp. n.** (Pl. 14, Figs. E, G.)

*Specimens Examined*.—Holotype, a male, allotype and numerous paratypes from "manuka" (*Leptospermum scoparium*), Wellington Botanical Gardens; one specimen "on grass," Aramoho.

*Colour*.—Ranging from head and thorax yellowish, abdominal sclerites and genitalia dark brown, to head and thorax brick red with abdomen reddish brown and genitalia dark brown.

*Structure*.—Similar to the preceding species except in the following details. Antennae slightly longer than width of head. Genitalia of female (Pl. 14, Fig. E) constituting about one-third of the total length of the abdomen, comparatively stout, the dorsal plate not sharply acute and but little exceeding the ventral, the gape of the valves large. Genitalia of the male (Pl. 14, Fig. G) very distinctive, the proctiger large, with a small, cylindrical apical lobe, the basal portion produced into large lateral wings which are produced into an acute apex; claspers strongly clavate in form, beset on the inner face with small, black, tuberculate setae over the apical half and in a small basal cluster.

*Notes*.—This is apparently closest to the following species.

***Ctenarytaina pollicaris*, sp. n.** (Pl. 14, Figs. A, J.)

*Specimens Examined*.—Holotype, a male, and allotype and several paratypes from "manuka" (*Leptospermum ericoides*), Aramoho, and Orongo-orongo, Wellington; without indication of host, Catchpole, Wellington.

*Structure*.—Differing from *C. Clavata* only in the following details. Genitalia of female (Pl. 14, Fig. A) with the valves elongate and acute. Genitalia of the male (Pl. 14, Fig. J) much as in *clavata*, but the claspers with a distinct, black, thumb-like process at the base on the anterior margin.



## Subfamily PAUROP SYLLINAE.

## Genus PAUROP SYLLA, Rübsamen.

This genus, as understood by Crawford, includes Pauropsylline forms in which the posterior legs are longer than the middle and the posterior coxae have the coxal spur present although short; fore wings transparent, the veins branching dichotomously, the first marginal cell not narrow and long; antennae not longer than the width of the head.

With this characterisation the species here to be dealt with agrees only in part. It lacks entirely the usual posterior spur of the hind coxae, and is thus similar to but one other known species of the Chermidae, *Apsylla cistellata* (Buckton), but it cannot belong to the genus *Apsylla*, at least as now defined, because of the large hind legs. The characteristics of the fore wing are somewhat those of *Paurocephala*, but specimens of the type of the latter genus are at hand, and with that it is certainly not congeneric. We are assigning the species to *Pauropsylla* chiefly because of its apparent resemblance to *P. verticis* Crawford and *P. depressa* Crawford, since we do not have at hand material which will permit us to discuss the question of generic groups in his subfamily.

In common with the two species mentioned, the species at hand lacks entirely the median furrow of the vertex, which in apparently all other Chermids is present, extending from the median ocellus to the occiput. Its absence gives to the face of the insect a most unusual appearance. That the three species which lack this furrow are closely related seems probable, whether or not they belong to the genus *Pauropsylla*.

***Pauropsylla myersi*, sp. n.** (Pl. 15, Figs. A, C, B, F, K, L, M, O, P.)

*Specimens Examined*.—Holotype, a female, and allotype, three paratype females and three paratype males from "kamahi" (*Weinmannia racemosa*), York Bay, Wellington (J. G. Myers).

*Colour*.—General colour a dark brown, with the face, pronotum, areas at base of wings, and the scutellum pale yellow; wings hyaline, with the veins and pterostigma dark brown. Length of pinned specimen to apex of wings 2.8 mm.

*Structure*.—A robust species, with the thorax short and broad, the head reflexed beneath the prothorax and exceedingly short, dorsally crescentic in outline, slightly exceeding in width the very short prothorax which is received into its excavated posterior border.

*Antennae* (Pl. 15, Fig. B) scarcely as long as the width of the head, penultimate segment bearing one fleshy spine and the last segment with two such spines, these about as long as the segment from which they arise. Head (Pl. 15, Fig. C) of a peculiar type; eyes prominent, on the dorsal side not received into the epicranium; median furrow of the vertex entirely lacking; frons represented only by the median ocellus; genae somewhat swollen; clypeus

relatively very small; rostrum comparatively enormous (Pl. 15, Fig. L), nearly twice as long as the anterior coxae. Setae on the head sparse, very small.

Prothorax (Pl. 15, Fig. L) with the pleurites greatly reduced, the pronotum extending far down the sides of the body. Pterothorax, while rather short, presenting no unusual developments. Posterior coxae (Pl. 15, Fig. K) while rather small, still greatly exceeding the middle coxae in size, but showing no trace of the posterior spur. Posterior legs with the femur only slightly longer than that of the middle legs, but with the tibia elongate, being nearly one and a-half times as long as the femur. Posterior tibia with a crowded row of black spines (Pl. 15, Fig. O) at the apex and without a basal spine. Apices of the other tibiae with a small, transverse comb of setae on one side. Tarsi (Pl. 15, Fig. M) all with the first segment swollen, the second long and slender, those of the posterior legs without claw-like spines on the basal segment.

Fore wings with the membrane beset toward the apex with inconspicuous punctations; pterostigma strongly developed but small; medial-cubital petiole long, the base of the cubitus very short; marginal cells long and slender. In some specimens an abnormality is present in the form of an extra vein extending from M to Cu<sub>1</sub>, forming a small extra cell. That this is an abnormality—or at least a mere variation—is clearly indicated by the fact that the vein may be present in but one wing, or may differ in position on opposite sides of the same specimen. Hind wings with the venation obsolete except for the costa, the base of the main veins and the first anal; membrane uniformly beset with small punctations.

Abdomen with but the first five pairs of spiracles present instead of the seven pairs usual in the family; tergites and sternites strongly sclerotic, the spiracles borne either in very small plates or in the ends of the tergites. Genitalia of the female (Pl. 15, Fig. F) of a very peculiar form, the valves apparently being fused throughout the greater part of their length to form a solid segment, which close to its apex is suddenly and greatly constricted, leaving a very short and very small apical portion that envelopes the apices of the parts the ovipositor; apodemes of the ovipositor very long, extending through at least the two segments anterior to the genitalia; anal pore ring composed of two or three rows of small, roughly circular pores. Genitalia of the male (Pl. 15, Fig. P) relatively very small, the proctiger short and broad, the claspers slender, with the posterior margin almost straight, the anterior margin parallel through its basal half and then converging to an acute point; inner face with two rows of stout, black, tubercle-like setae in the apical half.

*Notes.*—We take pleasure in naming this unusual species for Dr J. G. Myers, to whom we are indebted for the opportunity of preparing this paper.

## Genus METAPHALARA Crawford.

1925. Crawford, Broteria, *Série Zoológica* 22, 60.

We are utilising this genus for the reception of a single New Zealand species of doubtful position of which we have but two females. The genus has as its type a South American species, *Metaphalara cannella* Crawford, and is characterised by its author as follows:—“Head not much deflexed; vertex broader than long, turned down in front between antennal bases; genal cones wanting; frons visible from beneath as a long, narrow sclerite between genae, with anterior ocellus at its front end; clypeus elongate, piriform. Eyes more or less hemispherical. Antennae moderately long, about twice as long as width of head or longer, rather stout.

“Thorax not much arched. Hind tibiae with several small spines at apex and basal tarsus with two black claws. Fore wings membranous, more or less hyaline, broadly rounded at apex, with a pterostigma.

“Male anal valve produced caudad into two finger-like processes in *Aphalara*.”

To the genus Crawford has referred two other species, *Paurocephala ilicis* (Ashmead) and *Paurocephala spegazziniana* (Lizer), the former from North and the latter from South America. He states that the genus is “more or less midway between Aphalarinae and Pauropsyllinae in its relationship to other genera.” With the characterisation as given by Crawford our New Zealand species agrees rather well.

***Metaphalara zealandica*, sp. n. (Pl. 15, Figs. E, G, H, I, J, N.)**

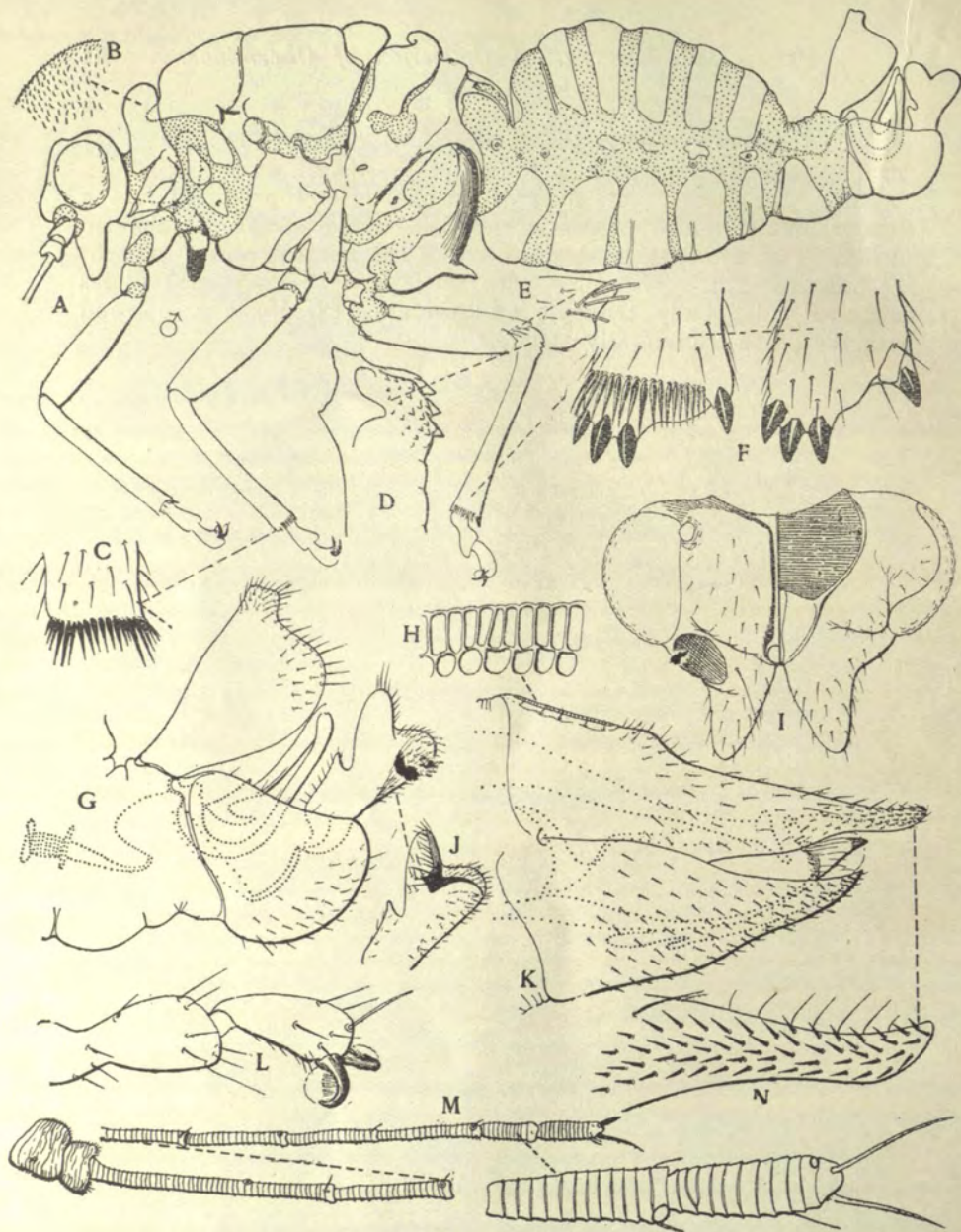
*Specimens Examined*.—Two females, the holotype from Arthur's Pass (J. G. Myers) and a paratype from Bluecliff.

*Colour*.—No notes available. Wings very slightly brownish, the fore wings with a slightly darker brown border along the posterior margin of the clavus, the hind wings with a similar border along the costa.

*Structure*.—Antennae about twice as long as width of head, rather slender, presenting no unusual features. Head (Pl. 15, Fig. E) with the characteristics of the genus; anterior ocellus very obscure; anterior margin showing a slight tendency toward the birostrate appearance which is more or less characteristic of the Cherminae (Carsidarinae).

Thorax presenting nothing unusual. Pleurites of prothorax normally developed, the pleural suture Y-shaped. Posterior tibia without a spine at the base and with several small, black spines at apex (Pl. 15, Fig. N). Posterior tarsi with two black, claw-like spines at apex. Fore wings (Pl. 15, Fig. D) with the membrane sparsely beset with inconspicuous punctations; pterostigma long and slender. Posterior wings with the membrane beset with punctations; venation very obscure; formed only a slight concentration of the punctations; radial sector and media and the anal vein alone evident.

Abdomen with its plates weakly sclerotic, but presenting no unusual features except in the genitalia. Genitalia (Pl. 15, Fig. G) forming scarcely more than a fourth of the length of the expanded abdomen, the dorsal plate abruptly declivous and produced into a slender, acute, apical process which is roughly serrate at the tip (Pl. 15, Fig. I), considerably exceeding the ventral plate; gape of the valves slight. Ovipositor with the apices of its lateral pieces expanded, diagonally truncate and serrate (Pl. 15, Fig. J) and with the palps transversely striate.

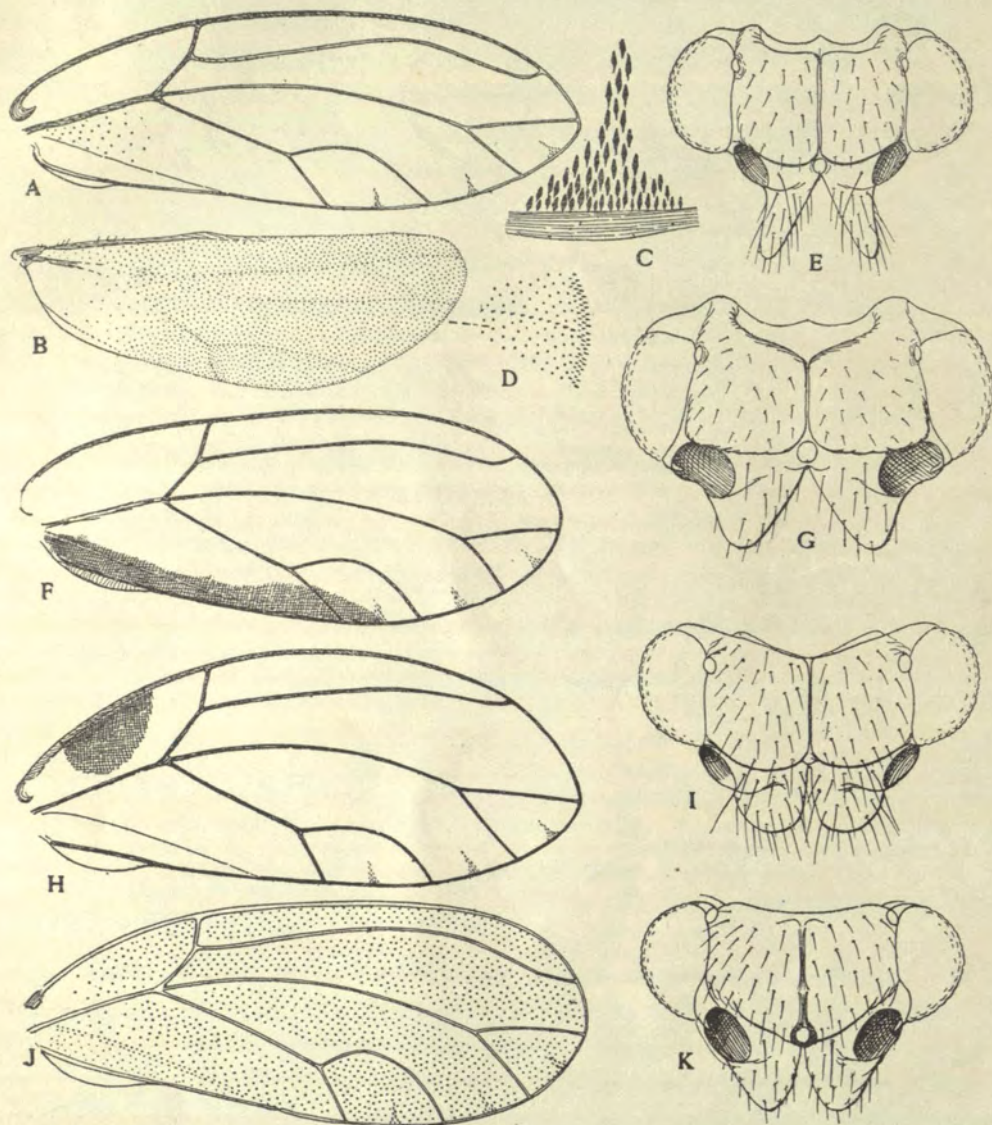


## EXPLANATION OF PLATE 7.

*Powellia vitreoradiata* (Maskell).

- A. Lateral aspect of male.
- B. Markings of derm of thorax.
- C. Apex of tibia of middle leg.
- D. Base of tibia of posterior leg.
- E. Apex of femur of posterior leg.
- F. Outer and inner aspects of apex of posterior tibia.
- G. Genitalia of male.
- H. Portion of circum-anal pore ring of adult female.
- I. Head, left side dorsal, right side ventral.
- J. Inner face of clasper of male.
- K. Genitalia of female.
- L. Posterior tarsus.
- M. Antenna, with enlargement of last two segments.
- N. Detail of apex of genitalia of female.

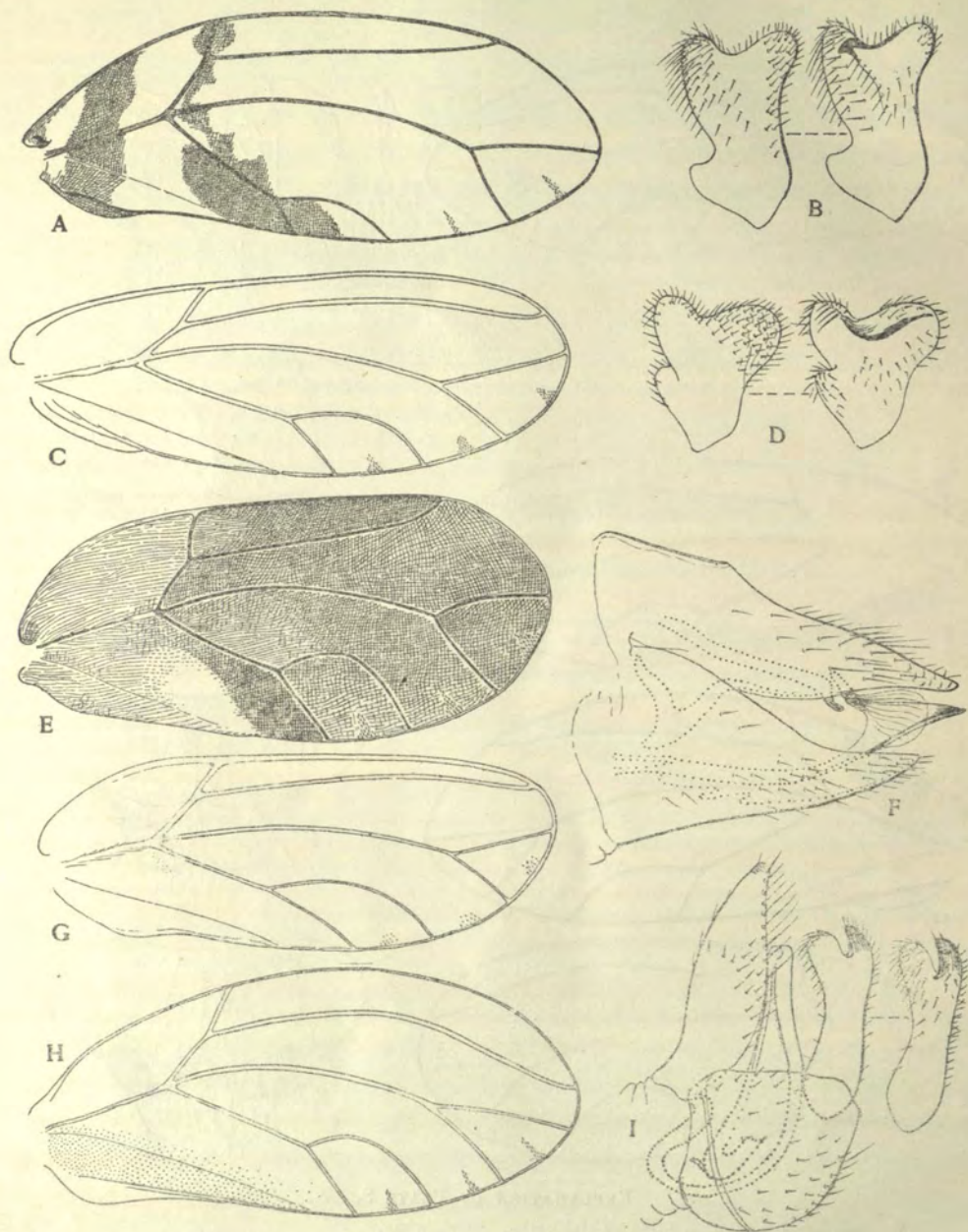




## EXPLANATION OF PLATE 8.

- A. *Powellia vitreoradiata* (Maskell), fore wing.  
 B. The same, hind wing.  
 C. The same, alar radula.  
 D. The same, detail of hind wing.  
 E. *Powellia subacuta*, sp. n., head.  
 F. *Powellia falcata*, sp. n., fore wing.  
 G. *Powellia colorata*, sp. n., head.  
 H. *Powellia emarginata*, sp. n., fore wing.  
 I. *Powellia fasciata*, sp. n., head.  
 J. *Powellia bifida*, sp. n., wing.  
 K. *Powellia curta*, sp. n., head.

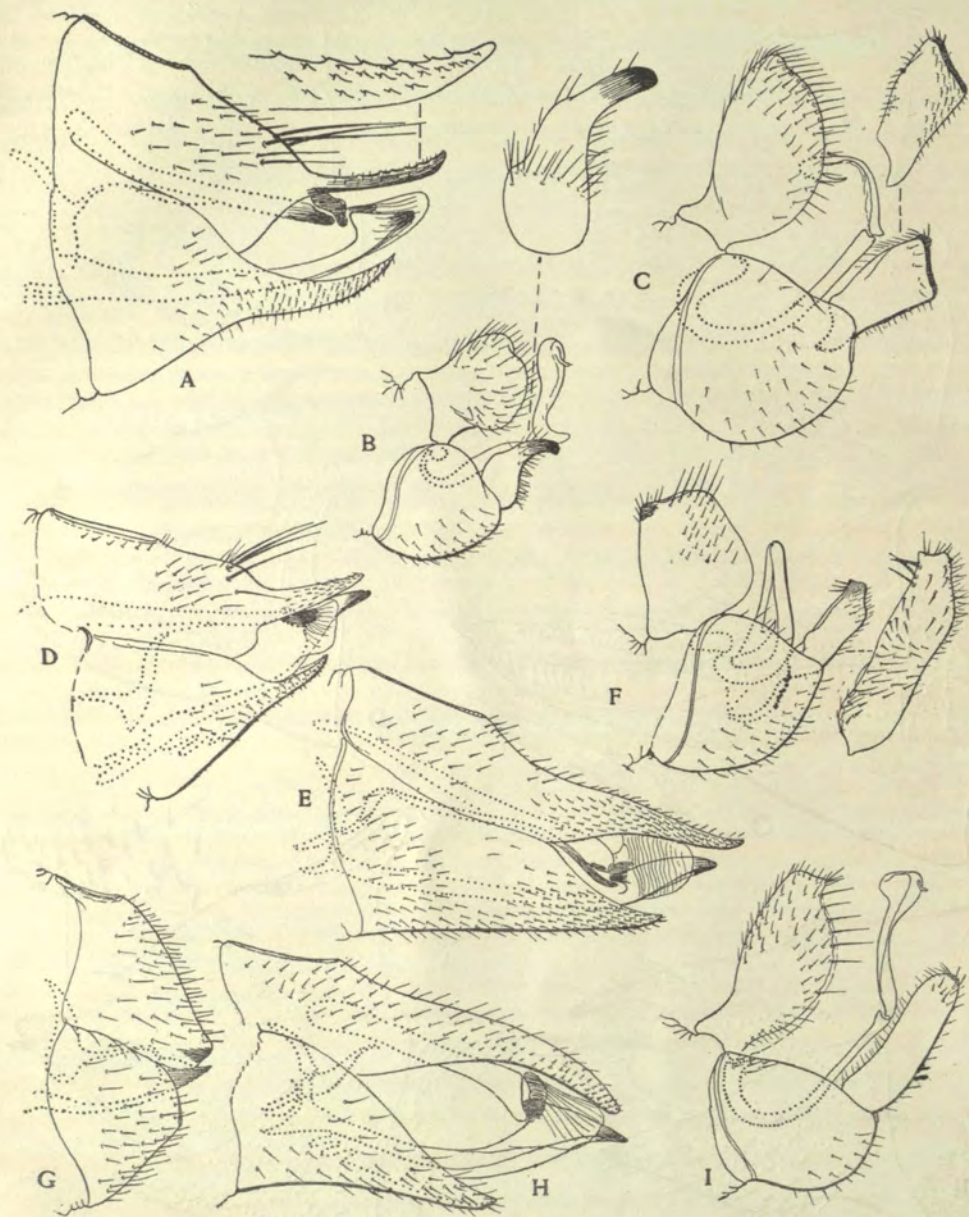




EXPLANATION OF PLATE 9.

- A. *Powellia fasciata*, sp. n., fore wing of paratype.
- B. *Powellia falcata*, sp. n., claspers of male.
- C. *Powellia decurvata*, sp. n., fore wing.
- D. *Powellia emarginata*, sp. n., claspers of male.
- E. *Powellia colorata*, sp. n., fore wing.
- F. *Powellia emarginata*, sp. n., genitalia of female.
- G. *Powellia obfusca*, sp. n., fore wing, pigmentation not indicated.
- H. *Powellia acuta*, sp. n., fore wing.
- I. *Powellia bifida*, sp. n., genitalia of male.

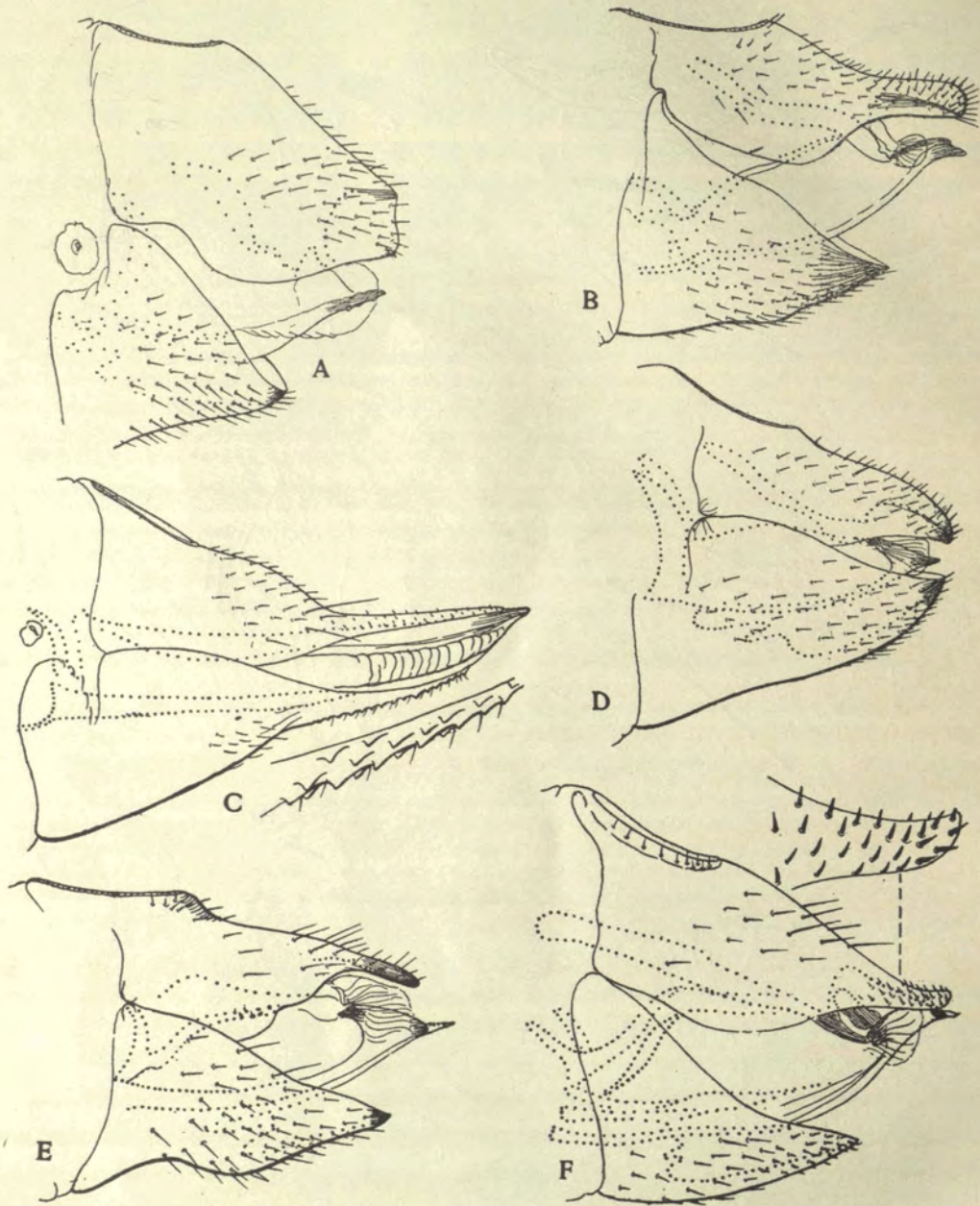




## EXPLANATION OF PLATE 10:

- A. *Powellia acuta*, sp. n., genitalia of female and detail of same.  
 B. *Powellia curta*, sp. n., genitalia of male and inner face of clasper.  
 C. *Powellia acuta*, sp. n., genitalia of male and inner face of clasper.  
 D. *Powellia subacuta*, sp. n., genitalia of female.  
 E. *Powellia bifida*, sp. n., genitalia of female.  
 F. *Powellia subacuta*, sp. n., genitalia of male and inner face of clasper.  
 G. *Powellia curta*, sp. n., genitalia of female.  
 H. *Powellia decurvata*, sp. n., genitalia of female.  
 I. *Powellia decurvata*, sp. n., genitalia of male.



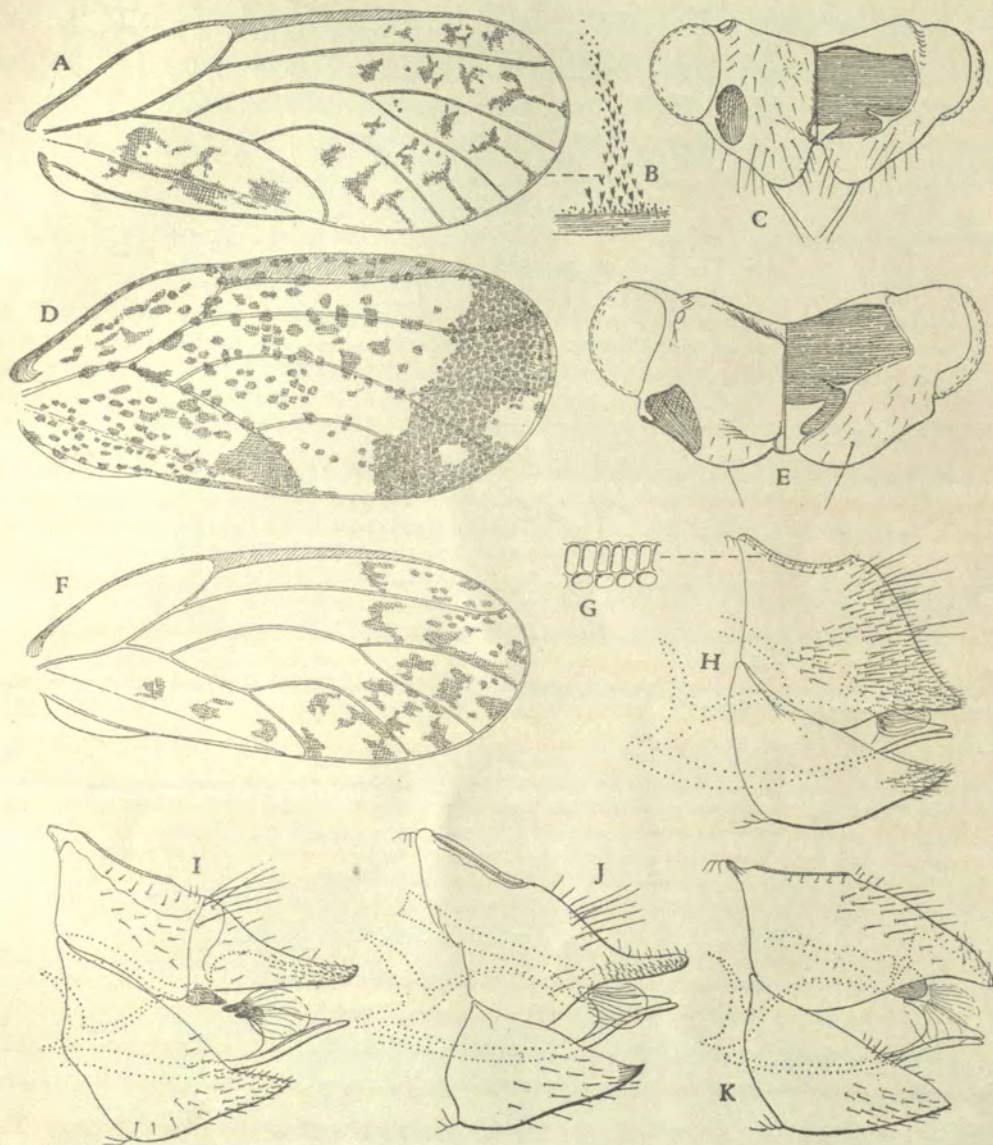


EXPLANATION OF PLATE 11.

Genitalia of females of:

- A. *Powellia fasciata*, sp. n.
- B. *Powellia colorata*, sp. n.
- C. *Powellia stylogera*, sp. n.
- D. *Powellia equalis*, sp. n.
- E. *Powellia irregularis*, sp. n.
- F. *Powellia obfusca*, sp. n.

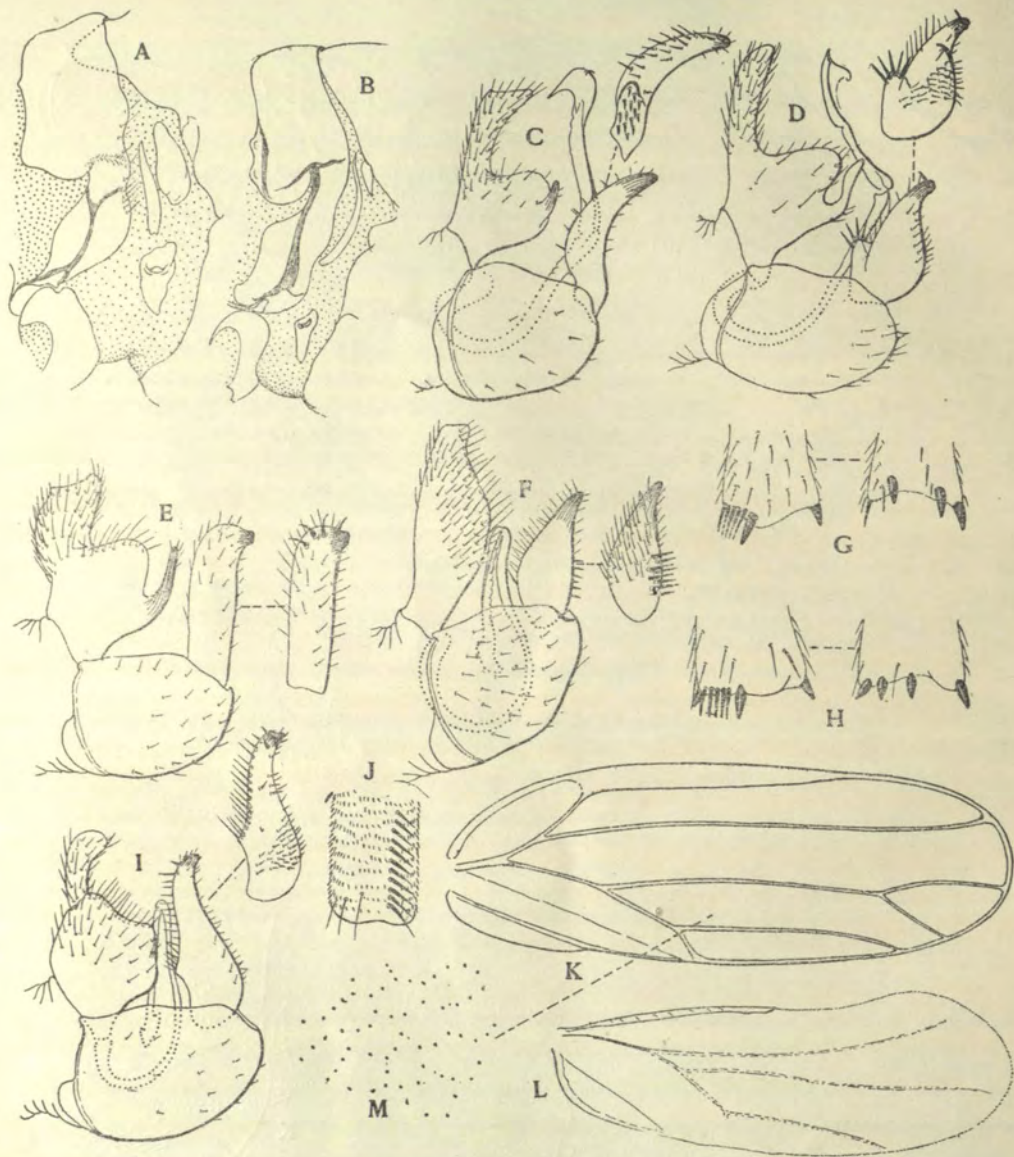




## EXPLANATION OF PLATE 12.

- A. *Psyllia acaciae* (Maskell), fore wing.  
 B. Alar radula of same.  
 C. Head of same.  
 D. *Psyllia apicalis*, sp. n., fore wing.  
 E. *Psyllia albizziae*, sp. n., head.  
 F. Fore wing of same.  
 G. *Psylliae acaciae* (Maskell), portion of circum-anal pore ring.  
 H. Genitalia of female of same.  
 I. *Psylliae albizziae*, sp. n., genitalia of female.  
 J. *Psyllia apicalis*, sp. n., genitalia of female.  
 K. *Psyllia uncata*, sp. n., genitalia of female.

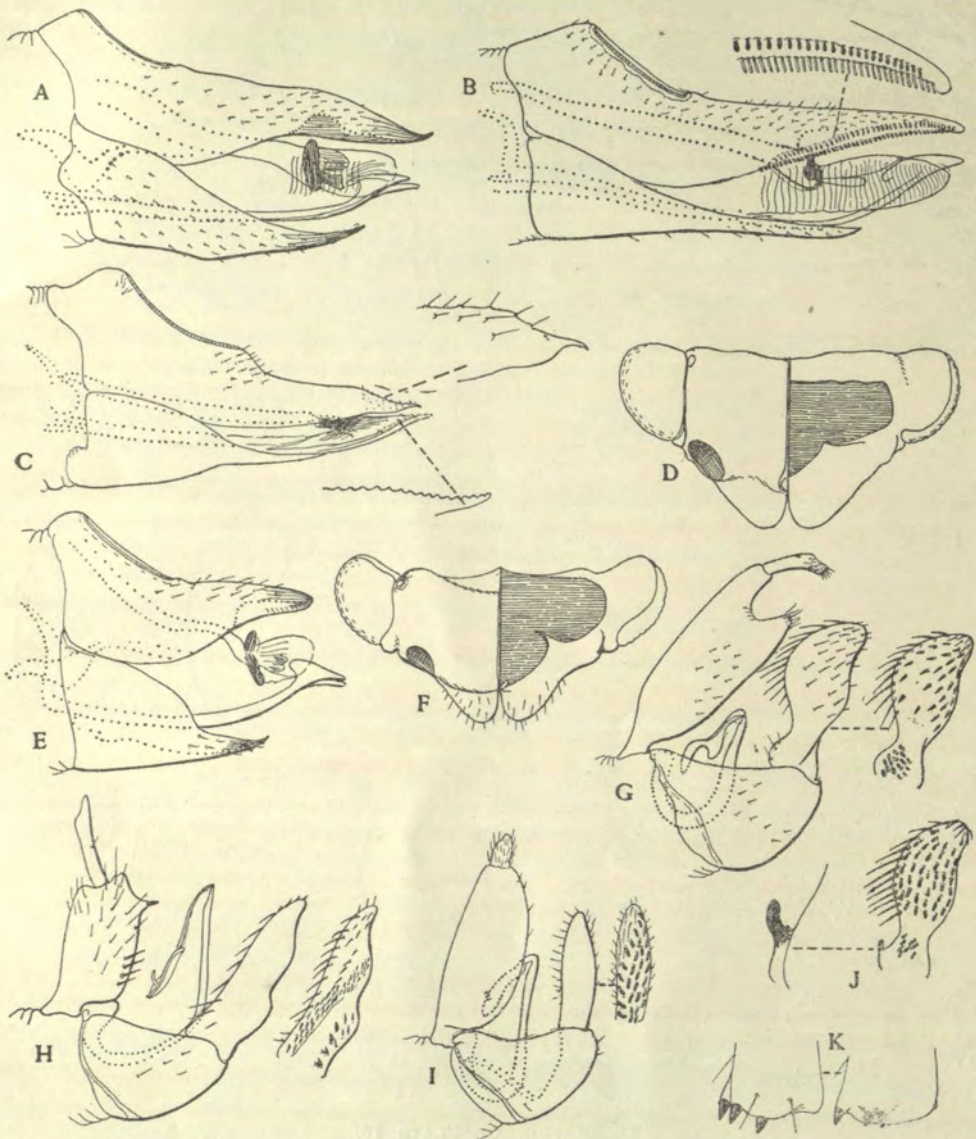




## EXPLANATION OF PLATE 13.

- A. *Psyllia acaciae* (Maskell), lateral aspect of prothorax.  
 B. *Ctenarytaina fuchsiae* (Maskell), lateral aspect of prothorax.  
 C. *Psyllia albizziae*, sp. n., genitalia of male and inner face of clasper.  
 D. *Psyllia uncatoides*, sp. n., genitalia of male and inner face of clasper.  
 E. *Psyllia uncata*, sp. n., genitalia of male and inner face of clasper.  
 F. *Psyllia apicalis*, sp. n., genitalia of male and inner face of clasper.  
 G. *Psyllia albizziae*, sp. n., apex of posterior tibia.  
 H. *Psyllia acaciae*, sp. n., apex of posterior tibia.  
 I. Same, genitalia of male and inner face of clasper.  
 J. *Ctenarytaina fuchsiae* (Maskell), comb of setae at apex of middle tibia.  
 K. Same, fore wing.  
 L. Same, hind wing.  
 M. Same, detail of arrangement of punctations on fore wing.

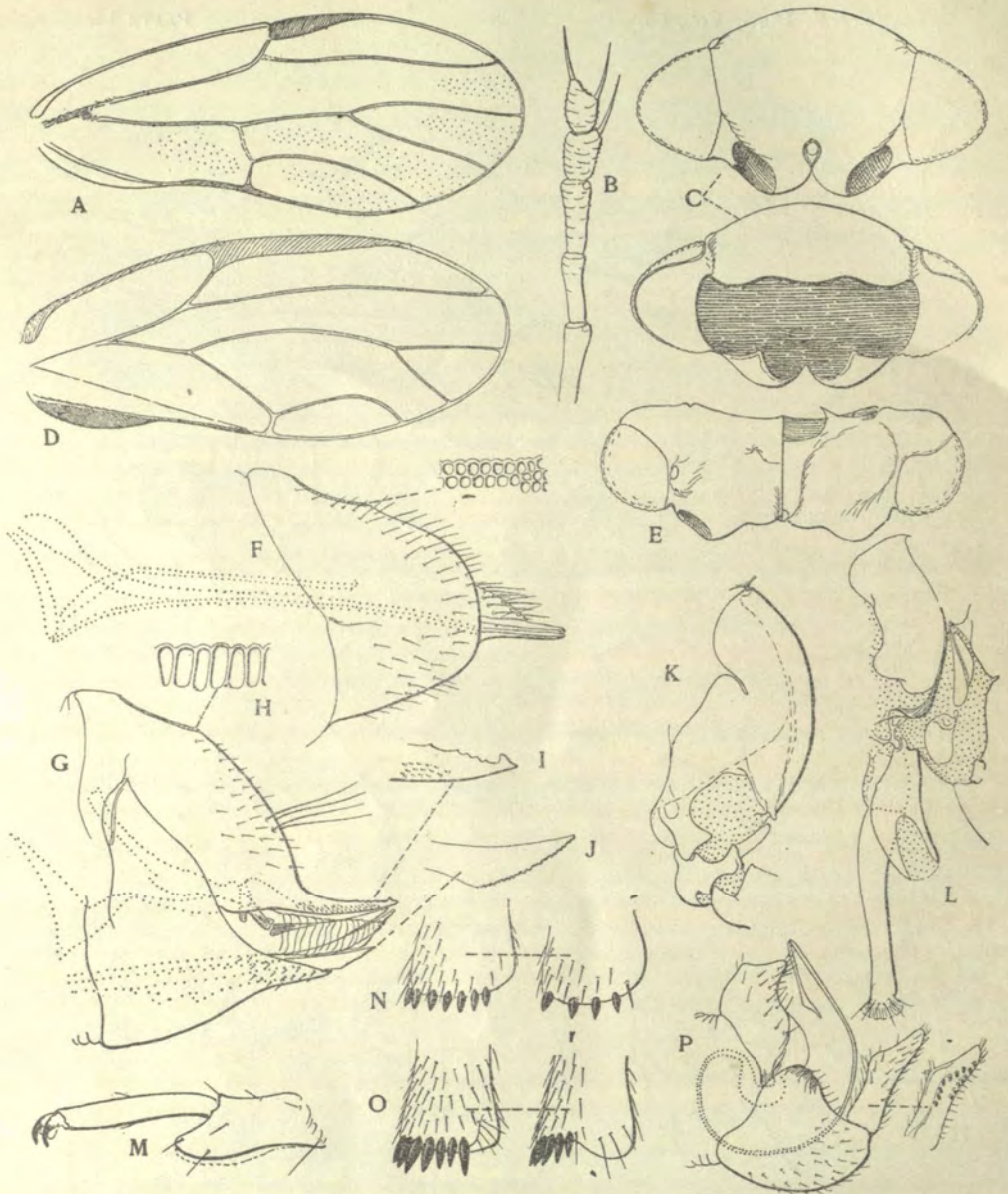




## EXPLANATION OF PLATE 14.

- A. *Ctenarytaina pollicaris*, sp. n., genitalia of female.  
 B. *Ctenarytaina thysanura*, sp. n., genitalia of female and detail.  
 C. *Ctenarytaina fuchsiae* (Maskell), genitalia of female and details.  
 D. Same, head.  
 E. *Ctenarytaina clavata*, sp. n., genitalia of female.  
 F. *Ctenarytaina thysanura*, sp. n., head.  
 G. *Ctenarytaina clavata*, genitalia of male and inner face of clasper.  
 H. *Ctenarytaina thysanura*, sp. n., genitalia of male and inner face of clasper.  
 I. *Ctenarytaina fuchsiae* (Maskell), genitalia of male and inner face of clasper.  
 J. *Ctenarytaina pollicaris*, sp. n., inner face of clasper and detail.  
 K. *Ctenarytaina fuchsiae* (Maskell). apex of posterior tibia.

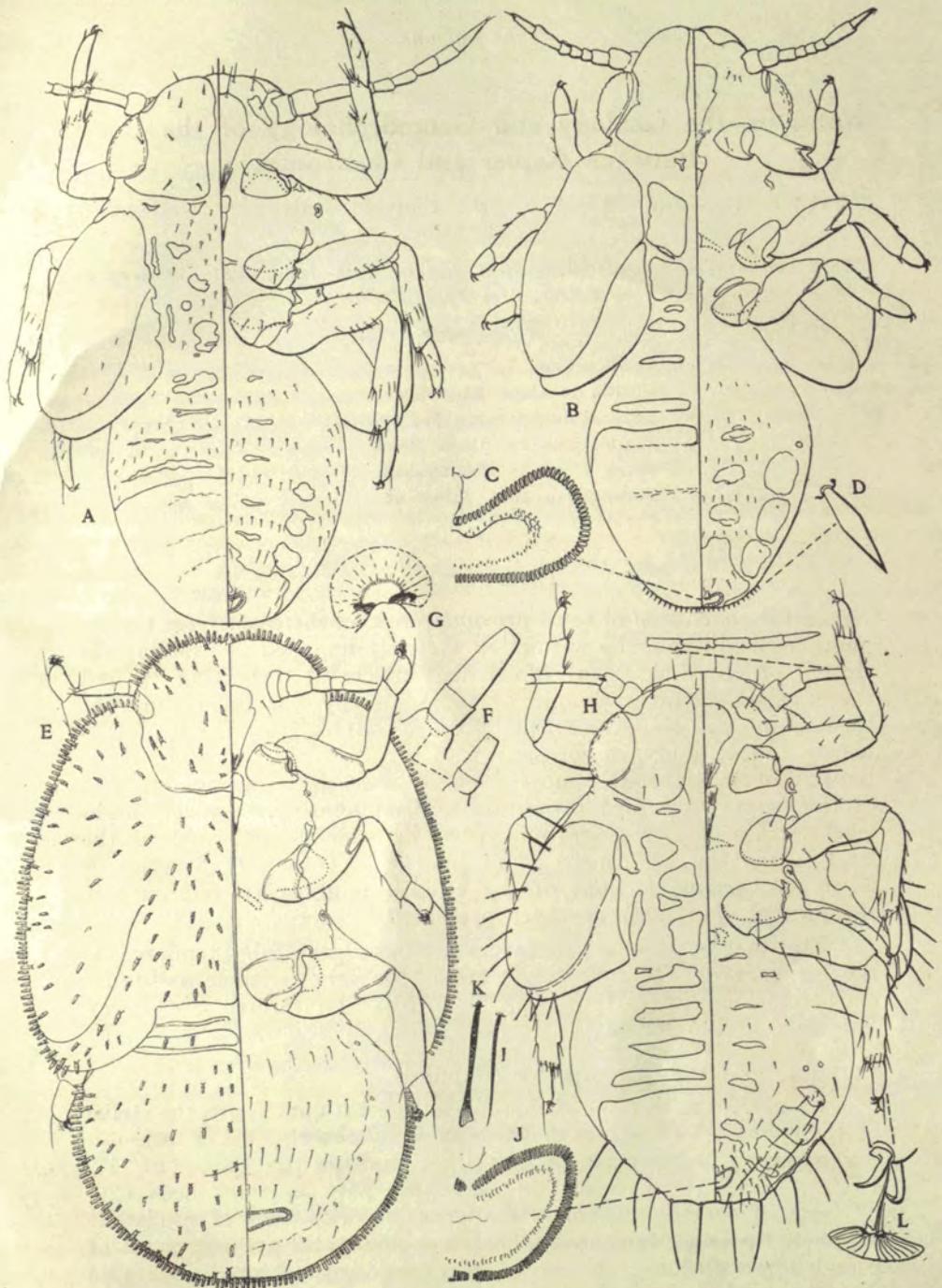




EXPLANATION OF PLATE 15.

- A. *Pauropsylla myersi*, sp. n., fore wing.
- B. Same, apex of antenna.
- C. Same, cephalic and caudal aspects of head.
- D. *Metaphalara zealandica*, sp. n., fore wing.
- E. Same, head.
- F. *Pauropsylla myersi*, sp. n., genitalia of female and detail of pore ring.
- G. *Metaphalara zealandica*, sp. n., genitalia of female.
- H. Same, detail of circum-anal pore ring.
- I. Same, apex of dorsal plate of genitalia.
- J. Same, apex of blade of ovipositor.
- K. *Pauropsylla myersi*, sp. n., posterior coxa.
- L. Same, lateral aspect of prothorax and rostrum.
- M. Same, posterior tarsus.
- N. *Metaphalara zealandica*, sp. n., apex of posterior tibia.
- O. *Pauropsylla myersi*, sp. n., apex of posterior tibia.
- P. Same, genitalia of male and inner face of clasper.





Nymphs of:

## EXPLANATION OF PLATE 16.

- A. *Psyllia uncata*, sp. n.
- B. *Ctenorytaina thysanura*, sp. n.
- C. Same, detail of circum-anal pore ring.
- D. Same, seta from apex of abdomen.
- E. *Poecellia vitreoradiata* (Maskell).
- F. Same, sectasetae.
- G. Same, empodium.
- H. *Psyllia acaciae* (Maskell).
- I. Same, seta from margin of abdomen.
- J. Same, detail of circum-anal pore ring.
- K. *Psyllia albizziae*, sp. n., seta from margin of body.
- L. *Psyllia acaciae* (Maskell), empodium.