

NEW CALEDONIAN LEAFHOPPERS AND THE SYSTEMATIC POSITION OF *KOSMIOPELIX* KIRKALDY AND *EUACANTHELLA* EVANS (Homoptera: Cicadelloidea)¹

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Abstract: A new tribe of the Jassinae, the Selenomorphini, is proposed to contain a new genus *Selenomorphus*, type-species, *S. nigrovenatus*. Two additional new species, *S. nervoviridis* and *S. pallidus*, are attributed to this genus. Also described are a new species of *Carchariacephalus* Montrouzier, *C. cohici* (Nirvaninae) and a new species of *Macropsis* Lewis, *Macropsis koghiensis* (Macropsinae). Particulars are given of a eurymelid and of cicadellids previously described from New Caledonia; the generic position of some of the latter is changed and some new synonymies proposed. The systematic position of 2 genera, previously referred by the author to the Aphrodinae, is discussed and one genus, *Kosmiopelix* Kirkaldy (here placed as a synonym of *Chiasmus* M. & R.) is transferred to the Deltocephalinae. For the other genus, *Euacanthella* Evans, a new subfamily, the Euacanthellinae, is proposed.

The fauna and flora of the large tropical island of New Caledonia, which lies at a distance of 1300 km from the northeast coast of Australia, have relationships with those of New Guinea, Lord Howe Island and New Zealand, as well as Australia.

The first cicadellid to be recorded from the island was described slightly over a century ago (Montrouzier, 1861). Since then a further 16 species, and a eurymelid, have been recorded and this number includes those described in this paper. In view of the size and location of the island this is a surprisingly small number and suggests that the leafhopper fauna is a sparse one.

The purpose of this paper is to describe some new species of Cicadellidae from New Caledonia and to give a general account of the known leafhopper fauna of the island as a whole.

As the subfamilies Coelidiinae, Cicadellinae and Typhlocybinae lie within the special province of other authors, the few unrecorded species in the Bishop Museum Collection comprised in these groups have not been described.

The opportunity provided by the need to record *Kosmiopelix varicolor* Kirkaldy from New Caledonia has been taken to review the systematic position of this species and also of those in the genus *Euacanthella* Evans, which, like *Kosmiopelix*, has previously been referred to the subfamily Aphrodinae (Evans, 1966).

Family EURYMELIDAE

Tribe Ipoini

***Ipoides leai* Evans**

Ipoides leai Evans, 1934, *Trans. Roy. Soc. S. Aust.* 58: 156.

Two specimens of this species are contained in the Bishop Museum Collection, both from Mokoue-Dothio (J. L. Gressitt). Very possibly this is the sole eurymelid to occur

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in New Caledonia.

Family CICADELLIDAE

Subfamily JASSINAE

Tribe Selenomorphini, new tribe

Cicadellids resembling ones comprised in other tribes of the Jassinae in general appearance and in particular closely resembling those in the Jassini in the structure of their male genitalia. Differing from species in all other tribes of the Jassinae in possessing hind wings in which veins R_s and M_{1+2} are completely separate; also in having tegmina lacking appendices, and heads with marginal rims bearing ocelli. Resembling *Selenocephalus* spp. in the last mentioned characteristic but differing widely from species in this genus in the structure of their male genitalia.

Because of the need to avoid the creation of new subfamilies unless clearly warranted, the group of species described below is referred to a new tribe, even although, on hind wing venational characteristics, subfamily status might well be justified. This action has been taken because of the close resemblance their male genitalia have to those species in the genus *Batrachomorphus* Lewis (Jassini).

Genus *Selenomorphus* Evans, new genus

On the face of the head, which is wider than long, the labium does not extend as far as the middle coxae. The prominent supra-antennal ledges are transverse and the arched postfrontal suture is obscure and widely separated from the hind margin of the face. The vertex is transversely corrugated and the ocelli, which are on marginal rims separating the face from the crown of the head, are not closely adjacent to the eyes. The crown is flattened and well defined and may, either be of equal length with the eyes on each side, or longest in the center. The pronotum is slightly declivous anteriorly, narrowly parallel sided and transversely striated. The tegmina have a pattern of complete cicadellid venation or may lack vein R_{1a} and have one, or a few, supplementary cross veins. The clavus is punctate. Appendices are lacking and, unlike genera in most of the Jassinae, the tegmina do not overlap apically. In the hind wings R_s and M_{1+2} occur as separate veins. The hind tibiae have an armature of strong, short spines. In the male genitalia the broad, apically rounded, pygophores bear external spines and have long, narrow, marginal accessory processes. The parameres and subgenital plates are long and narrow, the latter being widest proximally. The 9th sternum is approximately rectangular but laterally curved.

Type-species: *Selenomorphus nigrovenatus* n.sp.

Selenomorphus nigrovenatus Evans, new species Fig. 1A-C.

Length, ♂, 5.8 mm. General coloration, yellowish brown with black markings. Face of head brownish yellow with black markings. Crown of equal length with the eyes laterally, yellowish brown broadly margined with black anteriorly. Pronotum concolorous with the crown anteriorly; posteriorly, broadly margined with black. Scutellum, brownish yellow. Tegmen, pale hyaline brown; costal margin and veins, except apically, broadly black; ante-apical veins pale brown; clavus with pale brown veins. Male genitalia as in Fig. 1C.

Holotype ♂ (BISHOP 10,119), New Caledonia, Col d'Amieu, 650 m, 21.III.1968, J. L. Gressitt & T. C. Maa. Paratypes, 1 ♂, same data as holotype; 1 ♂, Mt Koghi, 500-700 m, J. Sedlacek.

Selenomorphus nervoviridis Evans, new species Fig. 1D, E.

Length, ♂, 5.5 mm; ♀, 6.8-7 mm. General coloration, pale brown. Face of head pale brown,

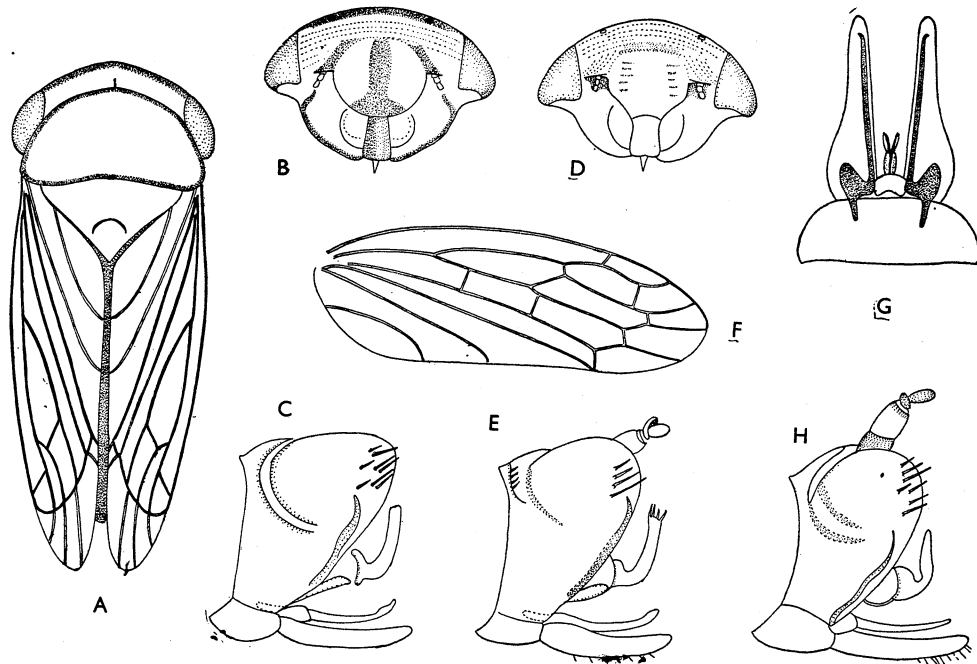


Fig. 1. A. *Selenomorphus nigrovenatus*; B, face of head; C, male genitalia; D, *S. nerviviridis*, face of head; E, male genitalia; F, *S. pallidus*, tegmen; G, male genitalia (lacking aedeagus), dorsal aspect; H, lateral aspect.

hind margin sometimes darker. Crown pale brown, narrowly dark brown anteriorly, of equal length with the eyes laterally. Pronotum and scutellum, pale brown. Tegmen pale hyaline brown with microtrichiae; veins pale green or brown. Male genitalia as in Fig. 1E.

Holotype ♂ (BISHOP 10,120), New Caledonia, Plaine des Lacs, III.1959, N.L.H. Krauss. Allotype ♀, Plateau de Dogny, 1.XI.1963, N.L.H. Krauss.

***Selenomorphus pallidus* Evans, new species** Fig. 1F-H.

Length, ♂, 4.8 mm. General coloration, pale brownish yellow with dark brown markings on the crown and thorax. Face of head pale yellowish, sometimes with obscure brown markings; hind margin narrowly black. Crown pale brown, narrowly dark brown anteriorly. Pronotum and scutellum concolorous with the crown, the former anteriorly narrowly black, or brown. Tegmen pale hyaline brown; veins pale or dark brown. Male genitalia as in Fig. 1G, H.

Holotype ♂ (BISHOP 10,121), Loyalty Is., Lifu, 26.III.1968, T.C. Maa. Paratypes, 1 ♂, New Caledonia, 10 km S of Pouebo, R. Straatman; 1 ♂, New Caledonia, Mt Koghi, Maa.

In addition to the 3 species of *Selenomorphus* described above, the Bishop Museum Collection contains single specimens of 2 ♀ insects belonging to this genus each of which has the crown longer in the center than against the sides.

Tribe Jassini

Genus ***Batrachomorphus* Lewis**

Batrachomorphus Lewis, 1834, *Trans. Ent. Soc. Lond.* 1: 51.

Type-species: *Batrachomorphus irroratus* Lewis.

The following species belonging to this genus have been described from New Caledonia.

Batrachomorphus montaguei (Distant), new combination.

Bythoscopus montaguei Distant, 1920, *Ann. Mag. Nat. Hist.* (9) 6: 467.

Batrachomorphus viridipes (Distant), new combination.

Selenocephalus viridipes Distant, 1920, *Ann. Mag. Nat. Hist.* (9) 6: 469.

Subfamily NIRVANINAE

Tribe Nirvanini

Genus *Carchariacephalus* Montrouzier

Carchariacephalus Montrouzier, 1861, *Ann. Soc. Ent. Fr.* (4) 1: 71. — Signoret, 1879, *Ann. Soc. Ent. Fr.* (5) 9: 58, Fig. 4a-c.

Type-species: *Carchariacephalus forestieri* Montrouzier.

Carchariacephalus resembles *Tortor* Kirkaldy and *Pseudonirvana* Baker, in general head shape. It differs from both genera in having the crown of the head finely rugose; the coronal suture ridge-like; the ocelli in alignment with the internal margins of the eyes and the antennal ledges, as seen from above, curved outwards beyond the external margins of the eyes.

Carchariacephalus forestieri Montrouzier Fig. 2F.

Carchariacephalus forestier Montrouzier, 1861, *Ann. Soc. Ent. Fr.* (4) 1: 71.

Female insects, which are entirely yellow in color and sometimes have a short, narrow, brown marking on the tegmen at right angles to the costal margin, or a small black marking at the apex of the tegmen. Males are pale yellow with a pair of dark brown ante-apical markings on the tegmen which may be confluent. Specimens of this species, of which the male genitalia are illustrated in Fig. 2F, contained in the Bishop Museum Collection, were collected at the following localities in New Caledonia and the Loyalty Islands: Anse Vata (Sedlacek); Tudine (Malkin); Ouvea Fayaoue (Krauss); Lifou I. (Krauss); Maré I., La Roche (Krauss).

Carchariacephalus cohici Evans, new species Fig. 2A-E.

Length, ♂, 5.7 mm. Coloration very variable, largely black and red in varying proportions. Face of head black. Crown black, sometimes postero-medially grayish and sometimes margined with red; median longitudinal ridge, red. Pronotum entirely red or black, or red and black. Scutellum concolorous with the pronotum. Tegmen largely black or red, or reddish; costal area largely black; a vitreous area ante-apically containing a black, or red, stripe at right angles to the costal margin; sometimes also a small pale area at the apex of the clavus. Thorax, ventral surface, black. Legs pale yellow; apex of hind tibia and of each tarsal segment black. Abdomen black, hind margin of every segment whitish. Male genitalia as in Fig. 2C-E.

Holotype ♂ (BISHOP 10,122), New Caledonia, Anse Vata, 20.X.1967, J. & M. Sedlacek. Paratypes, 2 ♂♂, same data as holotype; 2 ♂♂, Mt Koghi, 500 m, Sedlacek.

C. cohici resembles the type-species in general cephalic and venational characteristics. It differs considerably in coloration and in the shape of parts of the male genitalia.

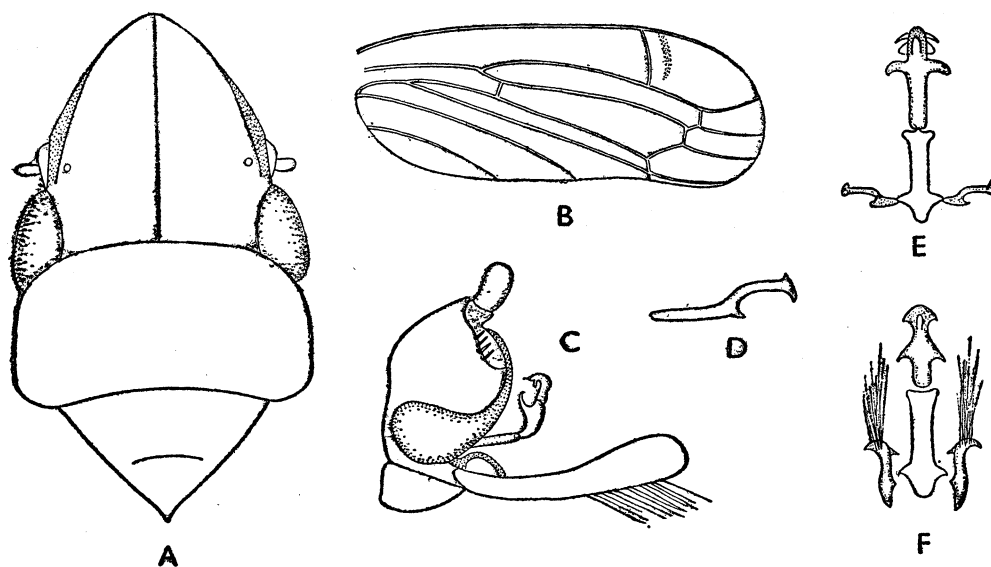


Fig. 2. A, *Carchariacephalus colici*, head and thorax, dorsal aspect; B, tegmen; C, male genitalia; D, parameres; E, aedeagus, basal plate and parameres; F, *C. forestieri*, aedeagus, basal plate and parameres.

Tribe Macroceratogoniini

Genus **Macroceratogonia** Kirkaldy

Macroceratogonia Kirkaldy, 1906, *Bull. Hawaii. Sug. Pl. Ass. Exp. Sta.* **1** (9): 323.

Type-species: *Macroceratogonia aurea* Kirkaldy.

Macroceratogonia aurea Kirkaldy

Macroceratogonia aurea Kirkaldy, 1906, *Bull. Hawaii. Sug. Pl. Ass. Exp. Sta.* **1** (9): 323.

Petaloccephala aurescens Distant, 1920, *Ann. Mag. Nat. Hist.* (9) **6**: 466. **New synonym.**

Although, in an earlier publication, *P. aurescens* has been referred to the genus *Macroceratogonia* (Evans, 1966), the identity of the species within the genus has not previously been established. Another undescribed species of *Macroceratogonia* is known to occur in north Queensland.

Specimens of *M. aurea* contained in the Bishop Museum Collection were taken in the following localities in New Caledonia: Mt Koghi (Krauss); Poindimié (Krauss); Col d'Amieu (Gressitt); Noumea (Williams).

Subfamily COELIDIINAE

Genus **Tharra** Kirkaldy

Tharra Kirkaldy, 1906, *Bull. Hawaii. Sug. Pl. Ass. Exp. Sta.* **1** (9): 324.

Type-species: *Tharra labena* Kirkaldy.

Tharra neoguttata (Distant), new combination.

Jassus neoguttatus Distant, 1920, *Ann. Mag. Nat. Hist.* (9) **6**: 468.

This is the only one of several species of *Tharra* occurring in New Caledonia so far

to have been described.

Subfamily IDIOCERINAE

Genus *Idiocerus* Lewis

Idiocerus Lewis, 1836, *Trans. Ent. Soc. Lond.* **1**: 47.

Type-species: *Idiocerus stigmaticollis* Lewis.

Idiocerus albofrontalis (Distant), new combination.

Nehela albofrontalis Distant, 1920, *Ann. Mag. Nat. Hist.* (9) **6**: 467.

This insect, which is only tentatively ascribed to the genus *Idiocerus*, is the sole representative of the Idiocerinae so far to have been recorded from New Caledonia.

Subfamily MACROPSINAE

Genus *Macropsis* Lewis

Macropsis Lewis, 1834, *Trans. Ent. Soc. Lond.* **1**: 49.

Type-species: *Cicada virescens* Fabricius.

Macropsis koghiensis Evans, new species Fig. 3A-C.

Length, ♂, 3.5 mm, ♀, 4 mm. General coloration, yellowish brown. Face of head yellowish brown with dense brown punctures, longer than wide; anteclypeus narrowing anteriorly, antennal ledges oblique. Crown narrow, widest against eyes. Pronotum with oblique brown punctures, together with the scutellum, concolorous with the face. Tegmen pale hyaline brown; veins brown with white spots. Legs yellowish with brown markings. Male genitalia as in Fig. 3B, C.

Holotype ♀ (BISHOP 10,123), New Caledonia, Mt Koghi, 400-600 m, I.1969, N.L.H. Krauss. Allotype ♂ and 3 paratype ♂ ♂, same data as holotype.

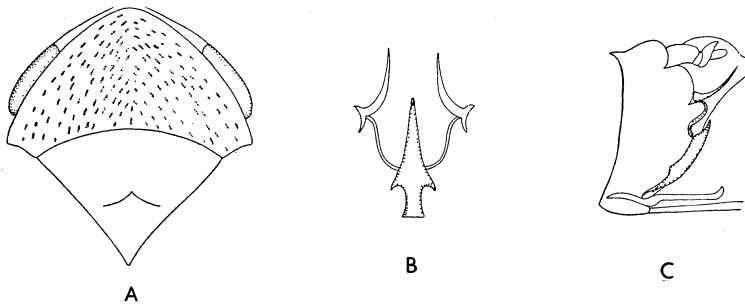


Fig. 3. A, *Macropsis koghiensis*, head and thorax, dorsal aspect; B, aedeagus and connectives; C, male genitalia.

Subfamily TARTESSINAE

Genus *Tartessus* Stal

Tartessus Stål, 1865, *Ofvers. Vetens-Akad. Förh. Stockh.* **22**: 156.

Type-species: *Bythoscopus ferrugineus* Walker.

Tartessus stalii Signoret

Tartessus stalii Signoret, 1880, *Ann. Soc. Ent. Fr.* (5) **10**: 352.

Tartessus reuteri Signoret, 1880, *Ann. Soc. Ent. Fr.* (5) **10**: 361. **New synonym.**

Tartessus coronatus Distant, 1920, *Ann. Mag. Nat. Hist.* (9) **6**: 468. **New synonym.**

This species is sexually dimorphic in respect to color. Male insects, in general, are black with narrow brown crowns, although sometimes the tegmina are hyaline brown with black veins. Females are predominantly brown with black markings on the face of the head; sometimes the tegmina are black.

Among the numerous specimens of this species in the Bishop Museum Collection are ones from Mt Koghi (Krauss); Mt Ignambi, 900 m (Straatman); Plaine des Lacs (Krauss) and Ile des Pins (Krauss).

Subfamily CICADELLINAE

Genus *Kolla* Distant

Kolla Distant, 1907, *Faun. Brit. Ind. Rhyn.* 4: 223.

Type-species: *Kolla insignis* Distant.

Neither of the species listed below, described by Distant from New Caledonia, is congeneric with the type-species of the genus *Kolla* and both may well belong to an endemic genus. Distant also recorded the widespread tropical species *Cicadella spectra* (Distant) from the island.

Kolla parvipicta Distant

Kolla parvipicta Distant, 1920, *Ann. Mag. Nat. Hist.* (9) 6: 469.

Kolla auriculata Distant

Kolla auriculata Distant, 1920, *Ann. Mag. Nat. Hist.* (9) 6: 470.

Subfamily XESTOCEPHALINAE

Genus *Xestocephalus* Van Duzee

Xestocephalus Van Duzee, 1892, *Trans. Amer. Ent. Soc.* 19: 298.

Type-species: *Xestocephalus pulicarius* Van Duzee.

There are several species of cicadellids belonging to this genus in the Bishop Museum Collection. These must await description until a study is made of the rich New Guinea fauna of these insects.

Among the leafhoppers from New Caledonia contained in the Bishop Museum Collection are 5 specimens of *Kosmiopelix varicolor* Kirkaldy; and a male collected at Noumea (Straatman) and a female from La Foa (Joyce) are illustrated in Fig. 4F and 4G respectively.

When, early this century, Kirkaldy described the genus *Kosmiopelix* he gave the locality of the type-species as Bundaberg, north Queensland and he ascribed the genus to the Acocephalidae (Aphrodinae), (Kirkaldy, 1906). In the generic description he stated that *Kosmiopelix* differed from *Aphrodes* Curtis in having a differently shaped foliaceous head and from *Eupelix* Germar by the eyes not being enclosed by the sides of the head; also that the tegmina reached a little beyond the base of the abdomen. He pointed out that *K. varicolor* varied in head shape and in color independent of sex.

Because of failure to appreciate the extent of variation of *K. varicolor* many years later a second species *K. rieki* was added to the genus (Evans, 1947). Later this was placed as a synonym of the type-species (Evans, 1966).

During the past few years specimens of a few fully winged insects, undoubtedly belonging to this species, have been acquired from various localities within Australia and there is also such a specimen in the Bishop Museum New Caledonia Collection. The

Australian localities of fully winged insects are as follows: Gilruth, Queensland; New England National Park, N.S.W.; Mt Wilson, N.S.W.; Mt Lofty, S. Australia and Kimberley, Western Australia. It so happens that none of the above localities are identical with those from which brachypterous specimens are available. These are Mareeba and Cooktown, Queensland; Avalon, N.S.W., and Risdon, Tasmania.

As well as being widespread in Australia, *K. varicolor* has an even more extensive pattern of distribution, since winged forms have been found to be identical with a South African species described as *Postumus hyalinus* Evans. The type-species of *Postumus* Distant, *P. fasciatus* Distant, was described from India.

Formerly I have suggested that *Kosmiopelix* was seemingly close to *Chiasmus* Mulsant & Rey, a genus represented by species living in Europe, Asia and North Africa (Evans, 1966), and a comparison of specimens of *K. varicolor* with ones of *C. translucidus* M. & R. and of *C. conspurcatus* (Perris) has shown the 3 species to be congeneric.

Ribaut has referred *Chiasmus* to the Deltocephalinae and not to the Aphrodinae (Ribaut, 1952) and though this genus lacks features common to most representatives of the former subfamily, his action finds support in the very different tentorial and male genitalia characteristics of *C. varicolor* and *Aphrodes bicinctus* Schrank.

The correct systematic position of *Kosmiopelix varicolor* would accordingly seem to be as follows:

Subfamily DELTOCEPHALINAE

Genus *Chiasmus* Mulsant and Rey

Chiasmus M. & R., 1855, *Ann. Soc. Linn. Lyon* **1855**: 215.

Kosmiopelix Kirkaldy, 1906, *Bull. Hawaii. Sug. Pl. Ass. Exp. Sta.* **1**(9): 334. **New synonym.**

Postumus Distant, 1918, *Faun. Brit. Ind. Rhyn.* **7**: 84. **New synonym.**

Type-species: *Chiasmus translucidus* Mulsant & Rey.

Chiasmus varicolor (Kirkaldy), new combination Fig. 4A-G.

Kosmiopelix varicolor Kirkaldy 1906, *Bull. Hawaii. Sug. Pl. Ass. Exp. Sta.* **1** (9): 335.

Kosmiopelix riek Evans, 1947, *Trans. R. Ent. Soc. Lond.* **98**: 253.

Postumus hyalinus Evans, 1947, *Trans. R. Ent. Soc. Lond.* **98**: 253. **New synonym.**

In addition to *C. varicolor* there are several other species of Deltocephalinae contained in the Bishop Museum New Caledonia Collection. For the most part these comprise species belonging to widely distributed genera and include *Exitianus* spp., *Orosius* sp., *Scaphoideus* sp., *Balclutha* sp. and *Cicadulina* sp. As mentioned earlier the leafhopper fauna of New Caledonia is a surprisingly small one, even though many more species must undoubtedly occur in the island than the few recorded here. It is remarkable also on account of the small extent of apparent endemism; the limited extent of the speciation that has taken place, and because of the seeming absence of 2 groups of cicadellids, the Ledrinae and Penthimiinae, both of which might be expected to be represented.

Apart from *Chiasmus varicolor*, the only other cicadellids comprised in the Australian fauna, which have been assigned to the subfamily Aphrodinae, belong to the genus *Euacanthella* Evans, of which one species has also been recorded from New Zealand (Evans, 1966).

Species in this genus resemble those in *Aphrodes* and *Chiasmus* in having the

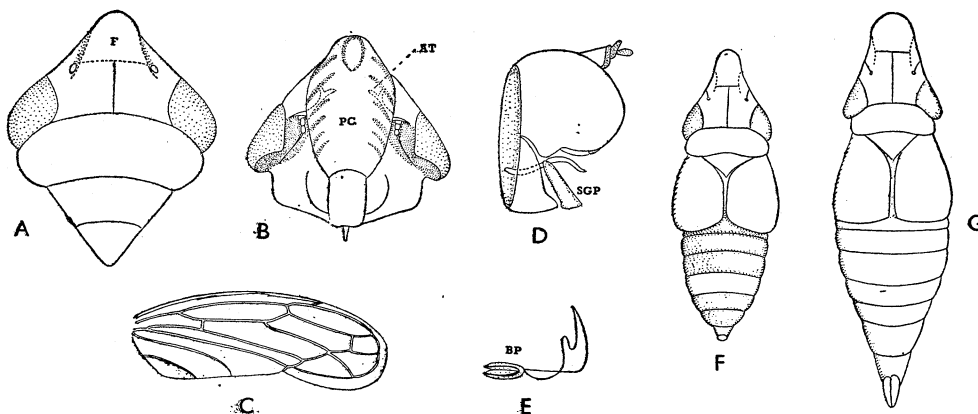


Fig. 4. A, *Chiasmus varicolor*, winged ♂, head and thorax, dorsal aspect; B, face of head; C, tegmen; D, male genitalia; E, aedeagus and basal plate; F, ♂, New Caledonia; G, ♀, New Caledonia. AT, anterior arm of tentorium; BP, basal plate; F, frons; PC, postclypeus; SGP, subgenital plate.

postclypeus extending onto the crown of the head, a dorsal frons, and dorsal ocelli. They resemble *Chiasmus* spp. also in the occurrence of both brachypterous and fully winged forms. They differ from species in both genera mentioned above in having a swollen anteclypeus which narrows anteriorly; in the shape of the maxillary plates and very considerably in characters provided by the male genitalia.

When the genus *Euacanthella* was described the following 3 species were recognized: *E. palustris*, *E. insularis* and *E. bicolor* (Evans, 1938). Subsequently, the 2 last named were placed as synonyms of the type-species, *E. palustris*. This synonymy was established because it was supposed that formerly recognized differences were associated with no more than a variable color pattern and variable wing development (Evans, 1966). In the same work a new species, *E. brunnea*, was described from New Zealand.

A critical re-examination of available material of *Euacanthella* spp. has disclosed that two, and not a single, species occur in Tasmania and southeastern Australia and that one of these is identical with the species described from New Zealand. It has also made clear that *Euacanthella* lacks any close association with *Aphrodes*. As it seems impossible to relate it to any currently recognized subfamily it therefore becomes necessary to raise the previously defined tribe, the Euacanthellini, to subfamily status.

Subfamily EUACANTHELLINAE, new subfam.

Genus *Euacanthella* Evans

Euacanthella Evans, 1938, *Pap. Roy. Soc. Tasm.* 1938: 8.

Type-species: *Euacanthella palustris* Evans.

***Euacanthella palustris* Evans** Fig. 5A-D.

Euacanthella palustris Evans, 1938, *Pap. Roy. Soc. Tasm.* 1938: 8.

Euacanthella insularis Evans, 1938, *Pap. Roy. Soc. Tasm.* 1938: 9.

Euacanthella brunnea Evans, 1966, *Mem. Aust. Mus.* 12: 143. **New synonym.**

Fully winged ♀♀: Titirangi, New Zealand; Three Kings Is., N. Z.; Berrima,

N.S.W.

Fully brachypterous ♂♂: Paika, N. Z.; Hobart, Cradle Mt, Tasmania; Bowral, Berrima, Wilsons Valley (Mt Kosciusko), N.S.W.

Short winged, but not fully brachypterous, ♂♂: Waka, Auckland, Three Kings Is., N. Z.

Euacanthella bicolor Evans Fig. 5E-H.

Euacanthella bicolor Evans, 1938, *Pap. Roy. Soc. Tasm.* 1938: 9.

Fully winged ♂♂: Snug, Adamsfield, Cradle Mt, Tasmania; Wilsons Valley (Mt Kosciusko), Katoomba, N.S.W.

Females: no specimens available.

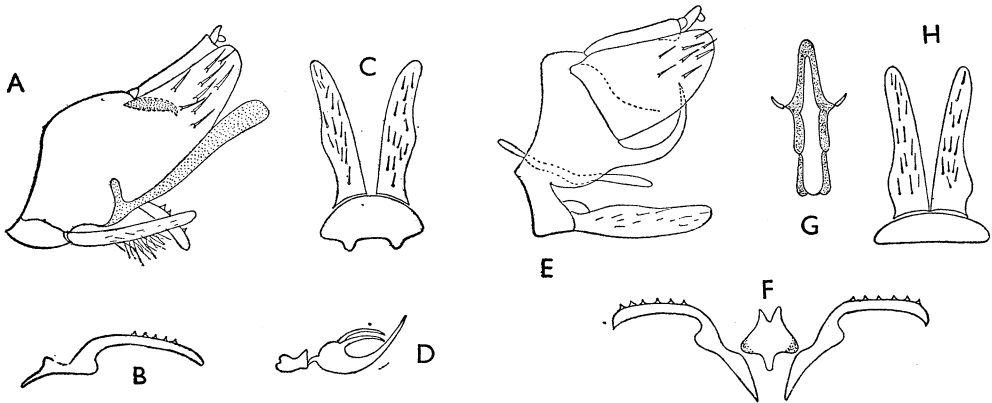


Fig. 5. A, *Euacanthella palustris*, male genitalia, lateral aspect; B, paramere; C, subgenital plate and 9th abdominal sternum; D, aedeagus and basal plate; E, *E. bicolor*, male genitalia, lateral aspect; F, parameres and basal plate; G, aedeagus; H, subgenital plates and 9th abdominal sternum.

All specimens of *Euacanthella* spp. taken in Tasmania and New South Wales by the author have been found in a marsh environment but it is not known whether these insects frequent a similar habitat in New Zealand. As it is very exceptional for a leafhopper to occur naturally both in Australia and New Zealand, it is possible that in the latter country *E. palustris* is an introduced insect.

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