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LEAFHOPPERS FROM NEW GUINEA AND AUSTRALIA BELONGING TO THE SUBFAMILIES MACROPSINAE AND AGALLIINAE WITH NOTES ON THE POSITION OF *NIONIA* BALL AND *MAGNENTIUS* PRUTHI (Homoptera : Cicadelloidea)[1]

By J. W. Evans[2]

Abstract: Twenty-three species of Cicadellidae belonging to the subfamily Macropsinae are described. Of these, 17 species are from New Guinea, and these are the first to be recorded from this island. Six species are described from Australia. One agallian leafhopper, *Austroagallia torrida*, is recorded from New Guinea. The structure of the Macropsinae and their possible affinity to other groups of leafhoppers is discussed; also problems associated with the recognition of genera. Reference is made to the distribution of Australian Macropsinae and an hypothesis advanced to account for the world distribution pattern of the Macropsinae and Agalliinae. The genera *Nionia* and *Magnentius*, at one time referred to the Macropsinae, are acknowledged to have other affinities.

Subfamily MACROPSINAE

Distribution

Representatives of the Macropsinae have been recorded from every major zoogeographical region. The number of described species and their distribution is as follows: Palaearctic (55); Nearctic (36); Australian (39); Oriental (31, of which 9 are from Japan); Ethiopian (14); Neotropical (3); Madagascar (1); New Zealand (1). None, apparently, has been recorded from oceanic islands. (Metcalf 1966; Evans 1966).

The above figures suggest the subfamily is most abundantly represented in the Holarctic region (91 species) for this number is greater than the total species recorded from elsewhere (89). There is, however, little doubt that up to the present only a small proportion of the macropsid faunas of the Oriental, Ethiopian and Australian regions has been described. Hence, all the figures demonstrate is that more intensive collecting and subsequent systematic studies have been undertaken in Europe, North America and Japan, than elsewhere.

The almost complete absence of macropsids from South America is puzzling. It is analogous to the pattern of distribution of another widespread group of leafhoppers, the Agalliinae. These are well represented in all the major zoogeographical regions with the exception of Australia.

1. Part of the specimens examined are results of fieldwork supported by grants to Bishop Museum from the U. S. National Science Foundation (G-2127, G-4774, G-10734), and to Dr J. L. Gressitt from the J. S. Guggenheim Foundation (1955-56).

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STRUCTURE

The Macropsinae are largely tree and shrub-inhabiting insects with considerable food-plant specificity. They range in length from 3 mm to 8 mm and may be green, brown, black or multi-colored. Their most notable characteristic is their remarkable structural stability.

The most generalised, and by far the largest described species, is the Western Australian *Stenoscopus drummondi* Evans. Hence, it is appropriate to refer to this insect in a discussion of macropsid structure.

The head (fig. 1 A) retains an unusual comprehensive combination of primitive features. Thus, the anteclypeus is not completely differentiated from the postclypeus, the lora are small and their posterior apices not widely separated from the antennal bases. The supra-antennal ledges are in alignment with the anterior margins of the eyes and the subgenal and epistomal sutures are obscurely retained. Finally, the ocelli are facially situated adjacent to the postfrontal suture.

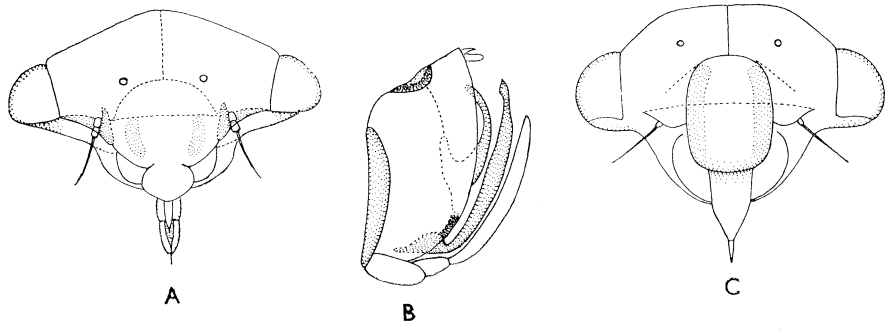

Fig. 1. *Stenoscopus drummondi*: A, head; B, ♂ genitalia; C, *Melizoderes* sp., head.

While the heads of many leafhoppers belonging to various subfamilies of the Cicadellidae retain one, or more, of the primitive characteristics listed above, the homopterous head most nearly resembling that of *S. drummondi* in general appearance is not that of a cicadellid at all, but of a biturritid, *Melizoderes* sp. This is illustrated in fig. 1 C. The Biturritidae is a small family of Neotropical leafhoppers and forms part of the complex of possibly Mesozoic relict groups associated with the Membracidae.

The prothoraces of some macropsids have features equally as primitive as those of their heads. Thus, in a recent paper I have given illustrations of some macropsid nymphs which retain both pronotal paranota and tegminal wing pads with costal expansions (Evans 1968, fig. 5 E, G, H).

The tegminal venation is of the basic cicadellid type, the only occasional departure from this pattern being the addition, as an anomalous condition, of one or more cross-veins.

The hind femoral formula is 2 : 1 : 0 and the hind tibiae have an armature of equally-spaced, equal-sized, spines.

The ♂ genitalia of *S. drummondi* are illustrated in fig. 1 B. These have the long

subgenital plates and parameres characteristic of all macropsids. The aedeagus, viewed in profile, is likewise characteristic, though not identical with those of all known species. In some species a sclerotised connective is present which links the aedeagus with the base of the 10th segment and others have spines or lobes developed on the pygophore margin.

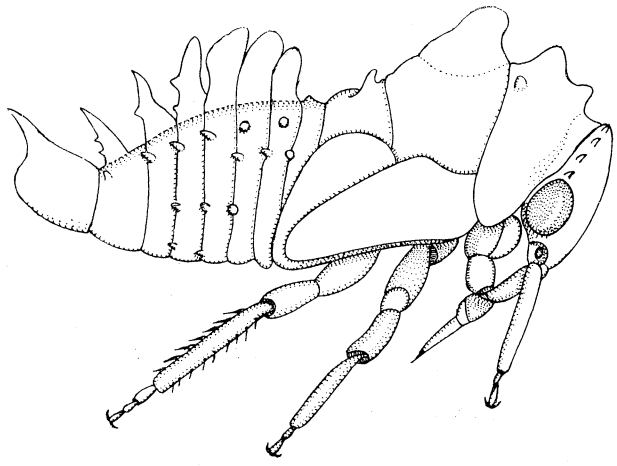

Fig. 2. *Macropsis* sp., nymph.

It is of interest to note that the subgenital plates of *S. drummondi*, and possibly of all macropsids, are bi-segmented. (e.g., *Macropsis fergusoni* Evans, fig. 10 A). This feature is shared with some Ulopinae and Agalliinae (Evans 1968). Another resemblance some macropsids have with a few representatives of these subfamilies is the occurrence of bizarre nymphs with lobe-like processes. One such nymph, belonging to an unidentified South African species, is illustrated in fig. 2. This may be compared with the nymph of *Agalliopsis novella* (Say), illustrated in Osborn (1915), and with the ulopid, *Paulianiana dracula* Evans (Evans 1953).

Relationships

At one time the Macropsinae were associated with several other groups of leafhoppers in a subfamily, the Bythoscopinae. This comprised nearly all cicadellids with facially situated ocelli.

While it can be presumed this common characteristic denotes a degree of affinity, because of their distinctive features it has long been accepted that each of the several components of the Bythoscopinae merits separate subfamily recognition.

The principal phylogenetic interest of the Macropsinae, however, is not so much associated with their possible relationships with other "bythoscopine" subfamilies (apart from the Agalliinae), as with their supposed affinity with 2 ancient groups of Cicadelloidea, the Ulopinae and Biturritidae, both of which may lie close to the base of the cicadelloid stem (Evans 1947, 1948).

Generic and Specific Characters

On an earlier page it has been mentioned that the Macropsinae are an unusually stable group of leafhoppers and in a previous publication I have referred to difficulties associated with the recognition of their genera (Evans 1966).

Although, up to the present, 9 genera have been defined, most described species have

been referred either to *Macropsis* Lewis, or else to *Oncopsis* Burmeister. The principal character separating these genera is the direction of the pronotal striations. These are oblique in *Macropsis* and transverse in *Oncopsis*.

Most of the species described in this paper have distinctive ♂ genitalia, hence species recognition is simple. This situation however does not obtain with all macropsids, which suggests the need, on occasion, for other distinguishing characters to be sought. One which may merit attention is the shape of the apodemes which support the timbal muscles. These are situated in the first abdominal segment. Those of 2 species are illustrated, as a matter of interest, in fig. 3.

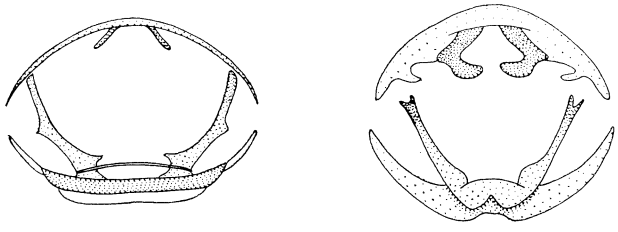

Fig. 3. Timbal muscle apodemes of A, *Macropsis eliptaminensis*; B, *M. gearyi*.

New Guinea

In the collection of Cicadellidae from New Guinea made available to me for study by Bishop Museum, there are 22 species of Macropsinae. Five of these are represented only by ♀ insects and have not been described. The remaining 17 species, which are described below, are the first representatives of this subfamily to be recorded from the island.

On the basis of characters furnished by the ♂ genitalia it would have been reasonable to group the species with genitalia illustrated in fig. 6 A–D in a different genus from those illustrated in fig. 7 and fig. 8. This step has not been taken. Instead all new species are referred to the genus *Macropsis*. This generic name has been chosen, not because the pronotal striations happen to be oblique in those species possessing them, but because of a desire to avoid defining new genera at the present time. It is hoped in the future a study may be made of the Macropsinae of the world as a whole, for this alone can ensure the recognition of valid genera.

Genus **Macropsis** Lewis

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

Type-species: *Cicada virescens* Fabricius (Germany).

Macropsis minuta Evans, new species Fig. 4 C, 6 A.

Length, ♂, ♀, 3 mm. General coloration brown, head and thorax yellowish. Face of head longer than wide, yellowish; lora distinct. Pronotum with oblique striations, anteriorly declivous, together with scutellum, concolorous with head. Tegmen even hyaline-brown; veins dark brown with white bars. ♂ genitalia as in fig. 6 A.

Holotype ♂ (BISHOP 9383), Manus I.: Rossum, 6 km SE of Lorengau, 180 m, 23.XII.

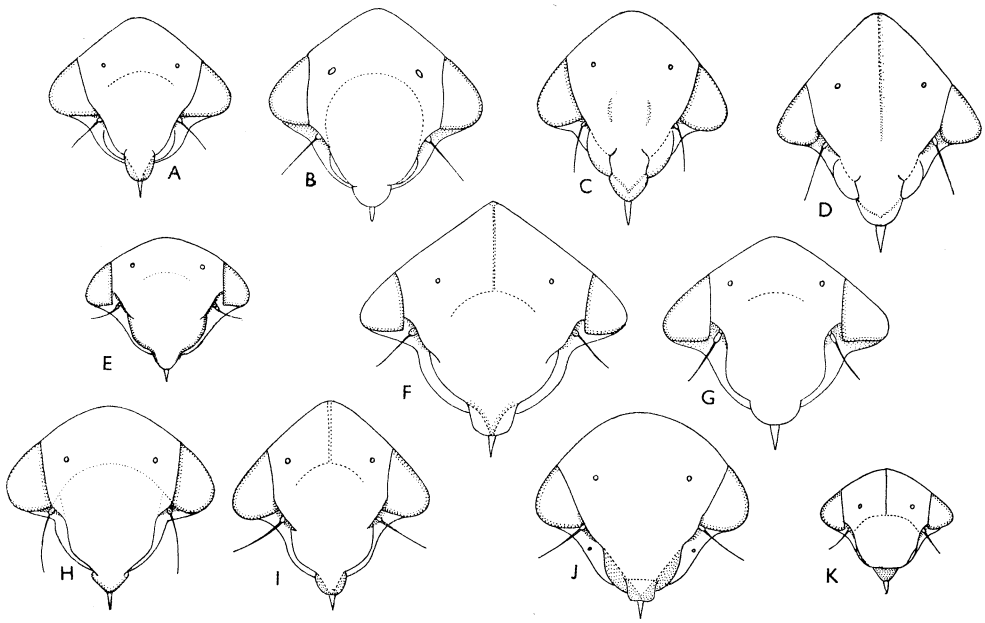

Fig. 4. Heads of A, *Macropsis novabritanniae*; B, *M. flavoscutellata*; C, *M. minuta*; D, *M. hyalita*; E, *M. agalliae*; F, *M. fasciata*; G, *M. flavobrunnea* (♂); H, *M. saidora*; I, *M. fuscata*; J, *M. kassamensis*; K, *M. completa*.

1959, T. C. Maa. Allotype ♀ (BISHOP), same data as holotype. Paratypes, 4 ♂♂, 4 ♀♀, same data.

M. minuta differs from other New Guinea species of *Macropsis* in the shape of the various parts of the ♂ genitalia.

Macropsis eliptaminensis Evans, new species Fig. 3 A, 6 B.

Length, ♂, 3 mm. General coloration black, scutellum yellow. Face of head rugose with a cellular pattern, medially brown, laterally yellowish; lora distinct, narrow; antennal ledges extending posteriorly to center of eyes. Pronotum rugose with a cellular pattern of ridges, entirely black, or medially black, laterally yellow. Scutellum black, apex bright yellow. Tegmen hyaline-black and brown with pale areas near costal margin distally. Femora, proximally, black or brown, distally, pale yellowish. ♂ genitalia as in fig. 6 B.

Holotype ♂ (BISHOP 9384), NE New Guinea, Eliptamin Valley, 1200–1350 m, 16.VI. 1959, W. W. Brandt. 2 paratype ♂♂, same data as holotype.

M. eliptaminensis resembles *M. scutellata* n. sp. in coloration but differs in the structure of the ♂ genitalia. Thus, the pygophore lacks a spine-like process and the aedeagus-10th segment connective is differently shaped.

Macropsis flavobrunnea Evans, new species Fig. 4 G, 6 C.

Length, ♂, ♀, 4 mm. General coloration brown and black with pale markings. Face of head

pale yellowish with dense brown punctures, sometimes partly suffused with brown. ♂, lora continuous with postclypeus; ♀, lora separate from postclypeus. Pronotum with oblique striations, rugose, brown or yellowish, or completely dark brown. Scutellum anteriorly yellowish, or brownish, apically whitish. Tegmen hyaline, mottled with pale and dark brown, in part vitreous; veins yellow, apices of anal veins, white. External sides of hind tibiae dark brown, spurs of largest spines, white. ♂ genitalia, aedeagus forked apically; dorsal extension of aedeagus-10th segment connective long and curved (fig. 6 C).

Holotype ♂ (BISHOP 9385), NE New Guinea, Daulo Pass, 2500 m, 5.II.1959, C. D. Michener. Allotype ♀ (BISHOP), NE New Guinea, Simbai, Bismarck Range, 1700 m, 28.V. 1966, J. L. Gressitt. 1 paratype ♀, same data as holotype; 1 ♀, Chimbu Valley, 1800 m, 16.V.1963, J. Sedlacek.

M. flavobrunnea resembles *M. completa* n. sp. in having a spanner-shaped aedeagus-10th segment connective. It differs in the size and proportions of this structure.

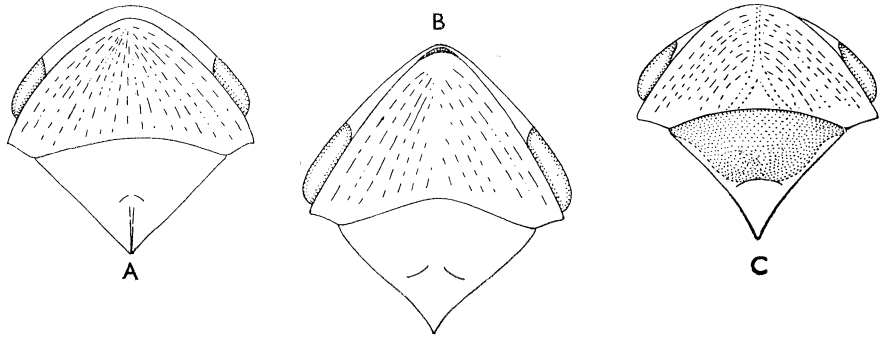

Fig. 5. Head and thorax, dorsal aspect: A, *Macropsis bunyensis*; B, *M. hyalita*; C, *M. flavoscutellata*.

Macropsis completa Evans, new species Fig. 4 K, 6 D.

Length, ♂, 4 mm. General coloration mottled yellowish brown. Face of head yellow with brown punctures, anteclypeus dark brown, anteriorly depressed; lora continuous with postclypeus. Pronotum with oblique striations, anteriorly declivous, pale yellowish mottled with brown. Scutellum concolorous with pronotum, muscle impressions brown. Tegmen pale hyaline yellowish brown with dark brown markings. ♂ genitalia, apex of aedeagus-10th segment connective, spanner-shaped (fig. 6 D).

Holotype ♂ (BISHOP 9386), NE New Guinea, Wau, Morobe District, Nami Creek, 1670 m, 26.VIII.1963, J. Sedlacek (Malaise trap). Paratypes 2 ♂♂, same data as holotype.

M. completa resembles *M. flavobrunnea* n. sp. in general, but not detailed, ♂ genitalia characteristics.

Macropsis kassamensis Evans, new species Fig. 4 J, 6 E, F.

Length, ♂, 3.8 mm; ♀, 5 mm. General coloration yellow or brown. Face of head yellowish brown; anteclypeus anteriorly black; maxillary plates in ♂, black; lora well defined. Eyes and crown of head narrowly visible in dorsal aspect in ♀, not in ♂. Pronotum with oblique stria-

tions, steeply declivous anteriorly, golden in ♀, pale, or dark coffee brown in ♂. Scutellum medially brown, laterally and apically yellow. Tegmen vitreous in ♀, pale hyaline-brown, or smoky, in ♂; veins dark brown with pale bars; a dark brown marking at apex of claval suture. Hind tibiae whitish yellow, apices and space between spurs, black. ♂ genitalia, aedeagus-10th segment connective, apically forked (fig. 6 E, F).

Holotype ♂ (BISHOP 9387), NE New Guinea, Kassam, 1350 m, 48 km E of Kainantu, X.1959, T. C. Maa. Allotype ♀ (BISHOP), same data as holotype. Paratypes, 3 ♂♂, 4 ♀♀, same data. Additional specimens, Wau, 1200 m; Finisterre Range, Saidor; Matoko.

M. kassamensis resembles *M. eliptaminensis* n. sp. in having a forked aedeagus-10th segment connective. It differs in the shape of this process and in coloration.

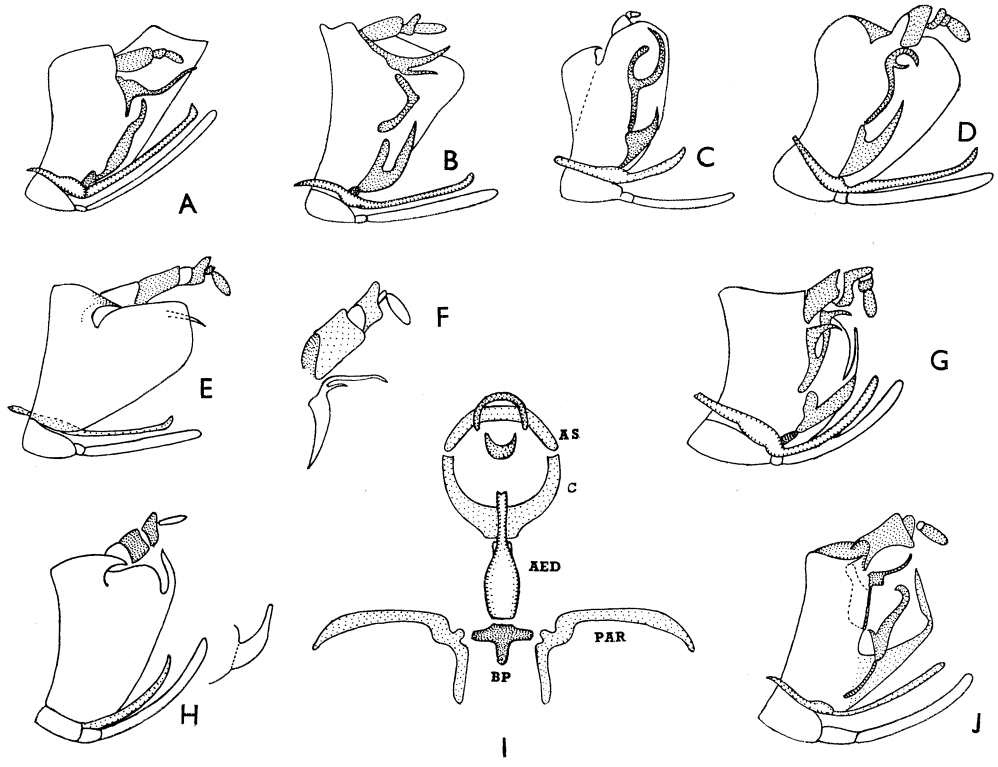

Fig. 6. ♂ genitalia: A, *Macropsis minuta*; B, *M. eliptaminensis*; C, *M. flavobrunnea*; D, *M. completa*; E, F, *M. kassamensis*; G, *M. flavoscutellata*; H. I, *M. nigrastriata*; J, *M. fasciata*. AS, anal segments; C, connective; AED, aedeagus; BP, basal plate; PAR, paramere.

Macropsis flavoscutellata Evans, new species Fig. 4 B, 5 C, 6 G.

Length, ♂, 3.7 mm. General coloration black, apex of scutellum, yellow. Face of head black or dark brown; laterally, from anterior corner of antennal ledges to hind margin of face, or greater part of face, yellow. Anteclypeus continuous with postclypeus; lora narrow, obscure-

ly separated from postclypeus. Crown developed narrowly against eyes. Pronotum with oblique striations, black, sometimes yellow laterally. Scutellum black, apically yellow. Tegmen shining hyaline-black, sometimes with small pale areas; anal border sometimes yellow. Legs yellow. ♂ genitalia, pygophore with marginal lobe; aedeagus-10th segment connective as in fig. 6 G.

Holotype ♂ (BISHOP 9388), NE New Guinea, Wau, 1700 m, 26.XII.1965, J. & M. Sedlacek (Malaise trap). Paratypes, 4 ♂♂, same data as holotype. Additional specimens, NE New Guinea, Baiyer R., 1150 m; NW New Guinea, Wissel Lakes, 1530 m.

M. flavoscutellata resembles *M. eliptaminensis* n. sp. in coloration but differs in the structure of the ♂ genitalia.

Macropsis nigrastriata Evans, new species Fig. 6 H, I.

Length, ♂, 3.3 mm; ♀, 3.8 mm. General coloration brown or dark brown with pale markings. Face of head pale brown with dark brown spots; anteclypeus continuous with postclypeus, anteriorly dark brown; lora not separated from postclypeus; maxillary plates dark brown. Pronotum with oblique striations and an obscure median ridge, anteriorly rounded and declivous, pale brown, striations dark brown. Scutellum yellow with dark brown spots. Tegmen pale or dark hyaline-brown sometimes with whitish markings, which may be in the form of 2 transverse fasciae; veins brown with white bars. Legs pale brown with dark brown markings. ♂ genitalia, pygophore with dorsal lobe; aedeagus-10th segment connective apically club-shaped (fig. 6 H).

Holotype ♂ (BISHOP 9389), NE New Guinea, Wau, 1700 m, 30.VII.1965, J. & M. Sedlacek (Malaise trap). Allotype ♀ (BISHOP), NE New Guinea, Wau, Morobe Distr., Nami Creek, 1700 m, 28.VIII.1963, J. Sedlacek (Malaise trap). Paratypes, 4 ♂♂, Wau.

M. nigrastriata resembles *M. flavoscutellata* n. sp. in having a marginal pygophore lobe in the ♂ genitalia. It differs in the shape of the aedeagus-10th segment connective and in coloration.

Macropsis fasciata Evans, new species Fig. 4 F, 6 J.

Length, ♀, 3.6 mm. General coloration brown with white markings. Face of head broadly diamond-shaped, slightly wider than long; lora continuous with postclypeus. Pronotum with oblique striations, rugose, slightly declivous anteriorly, pale or dark brown. Scutellum concolorous with pronotum. Tegmen with a corrugated surface, pale, or dark, hyaline brown with an anterior transverse whitish fascia, sometimes whitish apically; veins brown with raised white spots. ♂ genitalia with an angulate pygophore process (fig. 6 J).

Holotype ♂ (BISHOP 9390), NW New Guinea, Wissel Lakes, Enarotadi, 1850 m, 12.VII. 1962, J. Sedlacek (Malaise trap). 1 paratype ♂, NE New Guinea, Mt Missim, 1600 m, Gressitt.

M. fasciata differs from other species of *Macropsis* in the characters furnished by the ♂ genitalia.

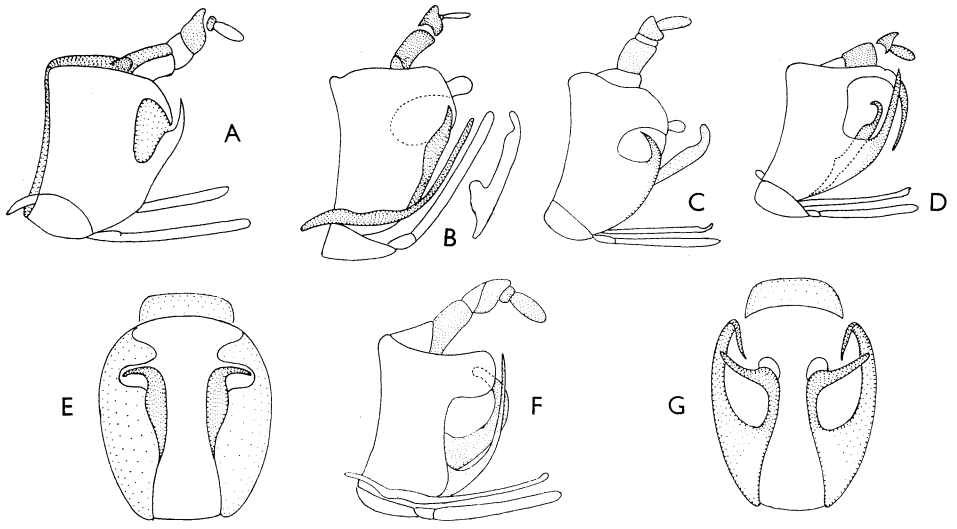

Fig. 7. ♂ genitalia : A, *Macropsis nigra* ; B, *M. saidora* ; C, E, *M. novabritanniae* ; D, *M. agalliae* ; F, *M. micropunctata* ; G, *M. tricolorata*.

Macropsis nigra Evans, new species Fig. 7 A.

Length, ♀, 4 mm. General coloration black. Face of head black, antennal ledges broadly pale yellowish ; lora swollen, continuous with postclypeus. Pronotum medially coarsely rugose with a cellular pattern, black. Scutellum black. Tegmen dark hyaline-brown ; veins brown. Hind tibiae pale yellow, spurs and associated spines brown. ♂ genitalia, aedeagus-10th segment connective hammer-shaped ; pygophore margin as in fig. 7 A.

Holotype ♂ (BISHOP 9391), NW New Guinea, Wissel Lakes, Enarotadi, 1850 m, 3.VIII. 1962, J. Sedlacek (Malaise trap).

M. nigra resembles *M. agalliae* n. sp. in the shape of the pygophore margin. It differs in the proportions of the parts of the ♂ genitalia and in coloration.

Macropsis agalliae Evans, new species Fig. 4 E, 7 D.

Length, ♂, 3 mm. Agalliane in appearance, dark brown with pale markings. Face of head wider than long, pale brown with a pair of large dark brown markings posteriorly ; anteclypeus and lora continuous with postclypeus. Pronotum with oblique striations, dark chocolate brown, palest medially. Scutellum yellow, muscle impressions dark brown. Tegmen dark hyaline-brown with extensive pale areas ; veins broadly white, apically dark brown. ♂ genitalia as in fig. 7 D.

Holotype ♂ (BISHOP 9392), SE New Guinea (Papua), S. Highlands, Aiyurop-Rumpi, nr Mendi, 14.IX.1958, on *Pipturus*, J. L. Gressitt.

M. agalliae resembles *M. nigra* n. sp. in general but not in detailed, ♂ genital characteristics. It differs also in coloration.

Macropsis saidora Evans, new species Fig. 4 H, 7 B.

Length, ♂, ♀, 3.8 mm. General coloration, pale brown. Face of head anteriorly yellowish, posteriorly brown; lora swollen in ♂, flat in ♀, continuous with postclypeus. Pronotum with oblique striations and a median longitudinal ridge, pale brown, sometimes yellowish medially. Scutellum yellow or brown, apex yellow. Tegmen pale hyaline brown, or vitreous, partly suffused with brown; veins brown. ♂ genitalia, pygophore with a dorsal finger-like lobe and a ventrally based marginal spine (fig. 7 B).

Holotype ♂ (BISHOP 9393), NE New Guinea, 19 km SE of Okapa, 1800 m, 28.VIII.1964, J. Sedlacek (light trap). Allotype ♀ (BISHOP), NE New Guinea, Finisterre Range, Saidor, Matoko, 28.IX.1958, W. W. Brandt. Paratypes, 1 ♂, 1 ♀, same data as allotype; 1 ♂, SE New Guinea, Dimifa, S. Highlands, Gressitt; 1 ♀, NE New Guinea, Wau, Sedlacek; 1 ♀, Aiyura, Gressitt; 1 ♂, NE New Guinea, Eliptamin Valley, Brandt.

M. saidora resembles *M. novabritanniae* n. sp. in the shape of the pygophore in the ♂ genitalia. It differs in details of genitalia structure and in size and coloration.

Macropsis novabritanniae Evans, new species Fig. 4 A, 7 C, E.

Length, ♂, 3 mm; ♀, 3.3 mm. General coloration greenish yellow. Face of head yellow, lora separately defined. Pronotum with oblique striations, anteriorly declivous, yellowish green. Scutellum concolorous with pronotum. Tegmen pale hyaline brown. Ventral surface of thorax and abdomen, and legs, pale brownish yellow. ♂ genitalia as in fig. 7 C, E.

Holotype ♂ (BISHOP 9394), New Britain, Sio, 600 m, 24.VII.1956, E. J. Ford. Allotype ♀ (BISHOP), New Britain, Gazelle Peninsula, Mt Sinewit, 900 m, 16.XI.1962, J. Sedlacek (light trap). Paratypes, 2 ♀♀, NE New Guinea, Dreikikir, Sepik District, Gressitt; 1 ♂, NW New Guinea, W. Irian, Waris, Maa.

M. novabritanniae resembles *M. saidora* n. sp. in general ♂ genitalia characteristics. It differs in having a less indented pygophore margin and in the shape of the pygophore spine; also in coloration.

Macropsis micropunctata Evans, new species Fig. 7 F.

Length, ♂, 3.8 mm. General coloration pale brown. Face of head pale brown with brown punctures and oblique white ridges posteriorly; anteclypeus and lora continuous with postclypeus. Pronotum with oblique striations, steeply declivous anteriorly, pale brown with white markings. Tegmen pale hyaline brown with 3 transverse white fasciae; veins with small and large brown spots. Legs pale brown with dark brown markings. ♀ genitalia as in fig. 7 F.

Holotype ♂ (BISHOP 9395), NE New Guinea, Wau, 1750 m, 20.IX.1965, J & M. Sedlacek (Malaise trap).

M. micropunctata resembles *M. saidora* n. sp. and *M. novabritanniae* n. sp. in general ♂ genitalia characteristics. It differs in the more extreme specialization of the pygophore margin.

Macropsis tricolorata Evans, new species Fig. 7 G.

Length, ♂, 3.8 mm. General coloration green and black. Face of head pale olive green; anteclypeus and lora continuous with postclypeus. Pronotum with oblique striations, pale olive green. Scutellum yellow. Tegmen black with vitreous areas, more especially apically; veins black. Hind tibiae pale whitish yellow; bases of spurs brown. ♂ genitalia, pygophore with dorsally and ventrally directed curved processes (fig. 7 G).

Holotype ♂ (BISHOP 9396), NE New Guinea, Wau, 1700 m, 19.VII.1965, J. & M. Sedlacek (Malaise trap). 1 paratype ♂, same data as holotype.

M. tricolorata resembles *M. nigra* n. sp. and *M. agalliae* n. sp. in having narrow dorsal and ventral pygophore processes. It differs in their shape and in coloration.

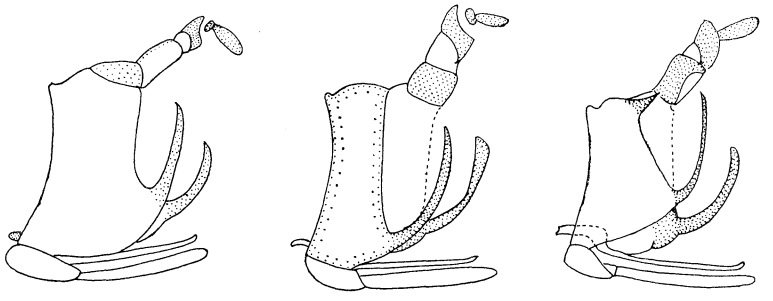

Fig. 8. ♂ genitalia: A, *Macropsis hyalita*; B, *M. flavopallida*; C, *M. fuscata*.

Macropsis hyalita Evans, new species Fig. 4 D, 5 B, 8 A.

Length, ♂, 3.8 mm; ♀, 4.2 mm. General coloration pale yellowish (possibly green in life). Face of head diamond-shaped, as wide as long, rugose and punctate with a median longitudinal ridge; lora distinct, extending beyond margins of maxillary plates. Pronotum shaped like an inverted U, yellowish with oblique brown striations. Scutellum yellow. Tegmen yellowish hyaline with irregularly distributed small brown spots; apex of anal veins, and of clavus, brown. Ventral surface of thorax and legs, except for brown bases of spurs on hind tibiae, yellow. ♂ genitalia as in fig. 8 A.

Holotype ♂ (BISHOP 9397), NE New Guinea, Eliptamin Valley, 1200-1350 m, 1.VII.1959, W. W. Brandt. Allotype (BISHOP), same data as holotype. 4 paratype ♀♀, same data as holotype. Additional specimens, Wau; Mt Giluwe; Kainantu; Bokondine (Bogondini).

M. hyalita resembles *M. flavopallida* n. sp. and *M. fuscata* n. sp. in having a similar shaped pygophore process in the ♂ genitalia. It differs from the former in the shape of the aedeagus and from the latter in having a shorter pygophore process, in cephalic features, and in coloration.

Macropsis flavopallida Evans, new species Fig. 8 B.

Length, ♂, ♀, 4 mm. General coloration yellowish. Face of head rugose, pale yellowish; anteclypeus and lora continuous with postclypeus; antennal ledges arched, extending posterior-

ly to inner margins of eyes. Pronotum with oblique striations, pale yellowish with brown spots. Scutellum concolorous with pronotum. Tegmen pale yellowish hyaline with scattered pale brown spots. Ventral surface of thorax and abdomen, and legs, concolorous with dorsal surface. ♂ genitalia as in fig. 8 B.

Holotype ♂ (BISHOP 9398), NW New Guinea, Wissel Lakes, Enarotadi, 1800 m, 2.VIII. 1955, J. L. Gressitt. Allotype ♀ (BISHOP), NW New Guinea, Enarotadi, 1900 m, 31.VIII. 1955, Gressitt (light trap). Paratypes, 4 ♂♂, 1 ♀, same data as holotype; 1 ♀, NE New Guinea, Daulo Pass, 2400 m (Asara-Chimbu div.), Gressitt; 1 ♀, NE New Guinea, Wau, Edie Creek, 200 m, H. Clissold; 1 ♀, NW New Guinea, Star Mts, Sibil Valley, 1245 m, Quate.

M. flavopallida resembles *M. hyalita* n. sp. and *M. fuscata* n. sp. in having a similar shaped pygophore process. It differs from both species in the shape of the aedeagus and in coloration.

Macropsis fuscata Evans, new species Fig. 4 I, 8 C.

Length, ♂, 3.3-3.7 mm; ♀, 3.8-4.3 mm. Anteriorly brown or yellow, posteriorly grayish; variable in size and coloration. Face of head broadly diamond-shaped, as wide as long, bright yellow or yellowish; anteclypeus and lora continuous with postclypeus. Pronotum with oblique striations, yellow, or brown, or pale brownish yellow spotted with brown. Scutellum concolorous with pronotum. Tegmen pale hyaline brown spotted with brown, sometimes with 2 or 3 transverse white fasciae. Legs pale yellowish with brown markings. ♂ genitalia as in fig. 8 C.

Holotype ♂ (BISHOP 9399), NW New Guinea, Swart Valley, Karubaka, 1450 m, 17.XI. 1958, J. L. Gressitt (light trap). Allotype ♀ (BISHOP), same data as holotype. Paratypes, 1 ♂, NE New Guinea, Korn Farm, W. Highlands, Gressitt; 2 ♂♂, NW New Guinea, Star Mts, Sibil Valley, Quate; 1 ♂, NE New Guinea, Wau, Morobe Distr., Sedlacek; 1 ♀, NE New Guinea, Eliptamin Valley, Brandt; 1 ♀, NE New Guinea, Adelbert Mts, Wanuma, Gressitt; 1 ♀, NE New Guinea, Feramin, Brandt; 1 ♀, Ti, Nakanai Mts, New Britain, Ford.

M. fuscata, which is apparently the most abundant and widespread species of *Macropsis* in New Guinea, resembles *M. hyalita* n. sp. and *M. flavopallida* n. sp. in the shape of its pygophore process. It differs from the former in size and coloration and in having the lora incorporated in the postclypeus, and from the latter in size, and the shape of the aedeagus.

Australia

Thirty-eight species of Macropsinae have been recorded from Australia. Of these 2 species have been assigned to monotypic genera (*Stenoscopus* Evans and *Stenopsoides* Evans). Of the remainder, 24 species were originally placed in the genus *Macropsis* and 12 in *Oncopsis*.

Recently, on the grounds that probably no Australian species were truly congeneric with the type species of either genus I suggested that all, for the time being, might be regarded as *Macropsis* spp. (Evans 1966). This generic name was chosen as the oldest. Possibly it would have been preferable to have selected instead the generic name *Oncopsis*, on the grounds that nearly all Australian macropsids have transverse pronotal striations. This applies even to most of those which, at the time of their description,

were incorrectly considered to have pronota in which the striations were oblique.

In all the New Guinea species of *Macropsis* described in this paper the pronotal striations, when present, are definitely oblique (e.g., *M. hyalita* n. sp., fig. 5 B). They are oblique also in 2 of the 6 Australian species described below (*M. bunyensis* n. sp. (fig. 5 A), *M. mandurae* n. sp.).

It might, accordingly, seem appropriate to assign the New Guinea species to the genus *Macropsis* and all Australian species, with the exception of the 2 mentioned above, to *Oncopsis*. This would have the seeming advantage of serving to distinguish the Oriental from the autochthonous element of the Australian fauna. This action has not been taken because it is doubtful whether the 2 new Australian species with oblique pronotal striations are congeneric with the New Guinea ones. Thus, their heads (fig. 9 E, F) more closely resemble those of Australian species with transverse pronotal striations than the heads of New Guinea insects in which the striations are oblique.

Distribution

Another circumstance which suggests that the 2 Australian species of *Macropsis* with transverse pronotal striations do not belong to the Oriental element of the Australian fauna is the occurrence of one of them in south Western Australia. This area, which is the center of oldest extant macropsine fauna of the world, lacks recent northern faunal derivatives.

While, in general, the several Australian *Macropsis* spp. seem each to have a restricted distribution there is one species, *Macropsis fergusoni* Evans, in which the position is so different as to merit recording.

The type locality of *M. fergusoni* is near Lake St Clair, Tasmania and other specimens have been taken at high altitudes on Mt Kosciuscko in New South Wales, and Mt Hotham, in Victoria. Although these 3 localities are widely separated, such a sub-alpine pattern of distribution is not an unusual one. What is surprising is that additional specimens have been collected at Cunnamulla, in Queensland; near Victory Downs Station in the Northern Territory; in the Musgrave Ranges in South Australia and at Cottesloe in Western Australia.

In order to ensure that specimens from all the above localities are conspecific, ♂ genitalia examinations have been made. The genitalia lack sclerotized aedeagus-10th segment connectives and have a generalized aedeagus. However, the dorsal pygophore margin has a characteristic shape and sketches of this margin of insects from 4 localities are given in fig. 10 B–E.

Macropsis gearyi Evans, new species Fig. 3 B, 10 I.

Length, ♂, 5.6 mm. General coloration yellowish brown. Face of head wider than long, pale yellowish with dark brown punctures; muscle impressions of frontoclypeus well defined, yellow. Anteclypeus narrowest mid-length, anterior margin rounded with apical bristles; hind margin laterally defined; lora wide, flat. Antennal ledges arched, terminating close to anterior margins of eyes. Crown lacking. Pronotum with transverse striations, steeply declivous anteriorly, grayish, spotted with brown. Scutellum longer than pronotum in dorsal aspect, yellowish brown with dark brown spots. Tegmen vitreous; veins brown. ♂ genitalia as in fig. 10 I.

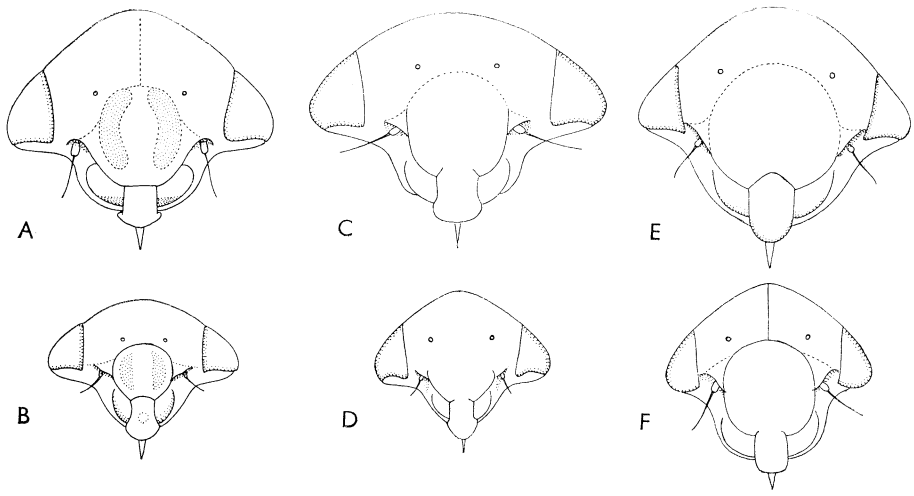

Fig. 9. Heads of A, *Macropsis fergusoni*; B. *M. translucens*; C, *M. bella*; D, *M. emmae*; E, *M. mandurae*; F, *M. bunyensis*.

Holotype ♂ (Australian Museum, K69191), Queensland, Carnarvon, II.1941, N. Geary. Paratypes, 2 ♂♂, same data.

M. gearyi resembles *M. translucens* Evans in coloration and size and in having a steeply declivous pronotum. It differs in facial proportions and in ♂ genitalia characteristics.

Macropsis bella Evans, new species Fig. 9 C.

Length, ♂, ♀, 4 mm. Coloration bright green and red. Face of head wider than long, yellowish brown; frontoclypeus and vertex medially sometimes dark brown. Anteclypeus parallel-sided, widening anteriorly beyond sides of lora, which are extensive and completely defined. Crown lacking. Pronotum with transverse striations, anteriorly declivous, visible narrowly in ventral aspect, red or brown. Scutellum almost as long as pronotum, dark reddish brown, laterally yellow; muscle impressions and apex, black. Proximal 2/3 of tegmen, including veins, green; anal margin broadly black; costal margin posterior to vein Rla broadly red; apex hyaline brown; veins red. Ventral surface of thorax black, of abdomen, greenish yellow. Legs yellow, spurs on hind tibiae, brown.

Holotype ♀ (Australian Museum K69192), Western Australia, Albany, X.1966, J. W. & F. Evans. Paratypes, 3 ♀♀, same data.

Described, though ♂ specimens are lacking, because of its striking color pattern in which it differs from all other known species of *Macropsis*.

Macropsis nikitini Evans, new species Fig. 10 J, K.

Length, ♂, ♀, 3.5 mm. General coloration pale brownish yellow. Face of head yellow; anteclypeus completely separated from postclypeus by a transverse suture; sides of frontoclypeus obscurely defined. Pronotum with transverse striations, anteriorly declivous. Tegmen yellowish

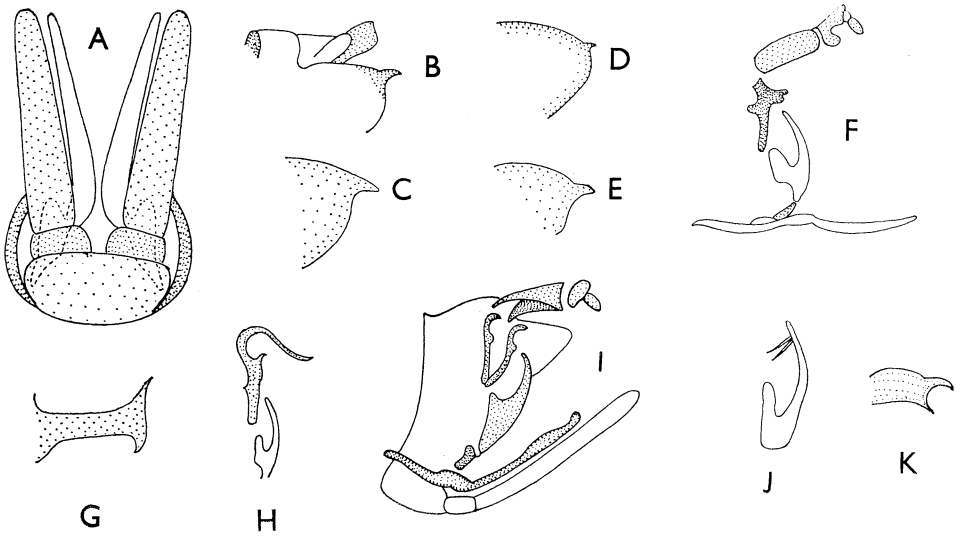

Fig. 10. *Macropsis fergusoni*: A, 9th sternum, subgenital plates and parameres; B-E, pygophore apex, B, Lake St Clair, Tasmania; C, Alice Springs, Northern Territory; D, Cunnamulla, Queensland; E, Musgrave Ranges, S. Australia; F, *M. bunyensis*, ♂ genitalia; G, *M. emmae*, connective apex; H, *M. mandurae*, aedeagus and connective; I, *M. gearyi*, ♂ genitalia; *M. nikitini*, J, aedeagus, K, connective apex.

hyaline, sometimes with a few large dark brown markings. ♂ genitalia, aedeagus with a pair of sub-apical spines; apex of aedeagus-10th segment connective, spanner-shaped (fig. 10 J, K).

Holotype ♂ (Australian Museum K69193), New South Wales, Warwick Farm, 12.X. 1964, M. I. Nikitin. Allotype ♀ (Australian Museum K69194), same data as holotype. Paratypes, 4 ♂♂, 4 ♀♀, same data.

M. nikitini resembles *M. viridiceps* Evans in pronotal shape and coloration. It differs in the shape of the ♂ genitalia.

Macropsis emmae Evans, new species Fig. 9 D, 10 G.

Length, ♂, 4.8 mm; ♀, 5.2 mm. General coloration, pale yellowish. Face of head slightly wider than long, pale yellowish with a pair of black spots on vertex posterior to ocelli. Pronotum with transverse striations, pale yellowish with a pair of black spots anteriorly. Scutellum concolorous with pronotum, muscle impressions black. Tegmen hyaline, pale yellowish brown. ♂ genitalia, aedeagus-10th segment connective as in fig. 10 G.

Holotype ♂ (Australian Museum K69195), New South Wales, Braidwood, X.1963, J. W. Evans. Allotype ♀ (Australian Museum K69196), same data as holotype.

M. emmae differs from other species of *Macropsis* described from Australia in coloration and ♂ genitalia characteristics.

Macropsis bunyensis Evans, new species Fig. 5 A, 9 F, 10 F.

Length, ♂, 3 mm; ♀, 3.3 mm. General coloration brown. Face of head as wide as long, pale brown with brown punctures. Crown of equal length with adjacent eyes. Pronotum with oblique striations, pale grayish brown with brown punctures. Scutellum pale brownish yellow, center and muscle impressions concolorous with pronotum. Tegmen in part vitreous, in part pale hyaline brown; veins in part yellow with brown bars, in part broadly dark brown. ♂ genitalia as in fig. 10 F.

Holotype ♂ (Australian Museum K69197), Queensland, Bunya Mts, V.1958, J. W. Evans. Allotype ♀ (Australian Museum K69198), same data as holotype. Paratypes, 2 ♀♀, same data.

M. bunyensis differs from other Australian species of *Macropsis* in the shape of the aedeagus-10th segment connective in the ♂ genitalia.

Macropsis mandurae Evans, new species Fig. 9 E, 10 H.

Length, ♂, ♀, 3.2 mm. General coloration pale yellowish gray. Face of head longer than wide; trans-clypeal suture complete; lora swollen anteriorly. Crown of equal length with adjacent eyes. Pronotum with oblique striations, together with scutellum concolorous with head. Tegmen hyaline-gray; veins dark brown with white bars. ♂ genitalia aedeagus-10th segment connective hook-shaped (fig. 10 H).

Holotype ♂ (Australian Museum K69199), Western Australia, Mandurah, X.1966, J. W. & F. Evans. Allotype ♀ (Australian Museum K69200), same data as holotype. Paratypes, 2 ♂♂, 6 ♀♀, same data.

M. mandurae differs from other Australian species of *Macropsis* which have oblique pronotal striations in the shape of the aedeagus-10th segment connective in the ♂ genitalia.

Tribe Nioniini

Several years ago I suggested the genera *Nionia* Ball and *Magnentius* Pruthi were related to *Macropsis* and I proposed a tribe of the Macrospinae, the Nioniini, for their reception (Evans 1947). Subsequently, *Nionia*, the species of which are restricted to the Neotropical and Nearctic regions, was referred by Oman to a separate subfamily of the Cicadellidae, the Nioniinae (Oman 1949). This action, which has been supported by Linnavuori (1959) is undoubtedly correct. The genus *Magnentius* has 2 described species, *M. clavatus* Pruthi, from southern India, and *M. congoensis* Evans, from the Congo. As a result of a re-examination of specimens of the former species, which was referred by Pruthi to the Bythoscopinae, I am now of the opinion that the genus would be more correctly placed in the Penthimiinae.

Subfamily AGALLIINAE

Austroagallia torrida Evans

Austroagallia torrida Evans, 1936, *Pap. R. Soc. Tasm.* **1935**: 70.

This is the sole agallian leafhopper recorded from Australia, where it is widely distributed and well known as a vector of clover rugose leaf-curl (Nielsen 1968). It is also the only species of the Agalliinae to be represented in the Bishop Museum New Guinea leafhopper collection. Among the localities where it has been taken are the following: Minj area, 1700 m, Elmo Hardy; Moife, 2100 m, Maa; Goroka, 1530 m, Michener; New Britain, Vunabakan, 180 m, Maa.

The only other described species of *Austroagallia*, *A. avicula* (Ribaut) and *A. sinuata* (Mulsant & Rey), are European insects, so, almost certainly, *A. torrida* is of Palearctic origin.

A possible explanation of the virtual absence of Agalliinae from Australia and the Macropsinae from South America is as follows: The Macropsinae originated in Australia, where the most generalized forms now occur and where they are probably more abundantly represented than elsewhere. From Australia they extended their range to India at a time when the 2 countries formed part of a single land area. Subsequently, they spread to Africa and the Holarctic Region and in the latter became adapted to cold climatic conditions. Because of this environmental adaptation, when, during the late Tertiary, North and South America were linked together by land, their southern extension was inhibited.

The Agalliinae originated in the Neotropical region where they are most abundantly represented today. Subsequently, they spread to Europe and Asia by way of North America. By the time they became widespread in Asia, Australia had become isolated from the rest of the world, hence was inaccessible.

If this explanation is valid, then it must be presumed that neither the Macropsinae, nor the Agalliinae, ever formed part of the cold climate fauna of the southern continents. Accordingly, the single species of Macropsinae recorded from New Zealand, *Zelopsis nothofagi* Evans, must be of Australian and not Chilean provenance. The suggestions made above do not explain the apparent absence of Agalliinae from New Guinea, which has an essentially Oriental insect fauna. Moreover, it is especially puzzling, as some species have been recorded from oceanic islands, hence, presumably, following adventitious transport, can readily become established in new environments.

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