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NEW UPPER PERMIAN HOMOPTERA FROM THE BELMONT BEDS

(HOMOPTERA: INSECTA)

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(Figures 1-5)

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The five wings of Upper Permian Homoptera which are described and figured here are all of particular interest. Four are of insects belonging to the Family Archescytinidae and the fifth is of a Cercopoid.

The wings of Archescytinids, which are the only Homoptera recorded from Lower Permian strata in Kansas, exhibit many primitive features. Thus, the fore and hind wings are similar in shape and venation, the venation has a simple basic pattern of arrangement and the clavus is small. Their occurrence, together with their probable derivatives, the Scytinopteridae, in Upper Permian beds in New South Wales is not unexpected, as both families are already known to occur in Upper Permian strata in Russia. A single wing (*Austroscytina imperfecta* Evans) formerly ascribed to this Family, only doubtfully belongs to it (Evans 1956).

The Cercopoid is ascribed to the Family Eoscarterellidae, and represents the first member of this Superfamily to be recorded from strata of Permian age.

The types and single other specimen described are in the collection of the Australian Museum.

ARCHESCYTINIDAE

Eoscytina gen. nov.

The forewing is considerably wider towards the apex than at the base. R, from near its base as far as its separation with R1a and R1b, is parallel with the costal margin. Rs arises from R approximately midway between the junction of R with M and the forking of R1. The number of branches of M are unknown, but are probably four. Cu1 is steeply bent at its point of apposition to R + M. Cu1a is angulate, joined to M by a cross-vein and greater in length than the basal straight portion of Cu1. Cu1b meets the hind margin of the forewing at a considerable distance from the apex of Cu2. The clavus is small and the anal veins form a Y-vein. Type species, *Eoscytina migdisovae* sp. nov.

Eoscytina resembles other genera of the Archescytinidae in the size of the clavus, the steep basal bend of Cu1 and in the apical separation of Cu1b and Cu2. It differs in the proportional length of Cu1a to the rest of Cu1 and in the apparent absence of Sc lying closely apposed to R. It resembles even more closely the wings of certain Homoptera in the family Boreoscytidae (Bekker-Migdisova 1949), but differs from them in having Rs simple and not branched.

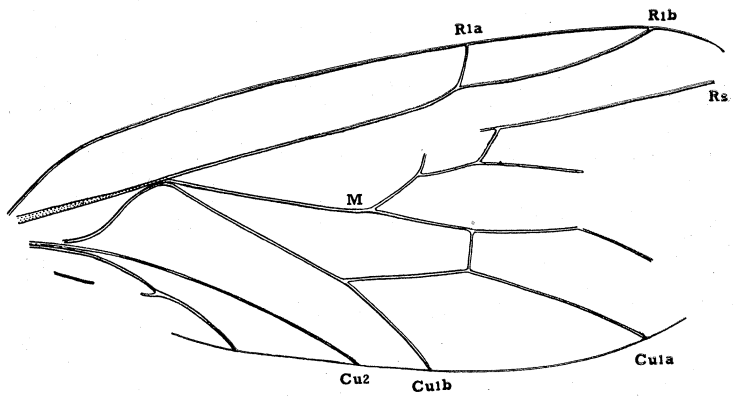

FIGURE 1.
Eoscytina migdisovae, forewing.

Eoscytina migdisovae sp. nov.

(Figs. 1, 2)

Length of holotype tegmen, 9 mm; greatest width, 3.5 mm. Another specimen, F47185 (Fig. 2), length of fragment 7.8 mm, greatest width, 3 mm.

Holotype tegmen, F47189 (Fig. 1). Both tegmina from Upper Permian strata, Belmont, New South Wales.

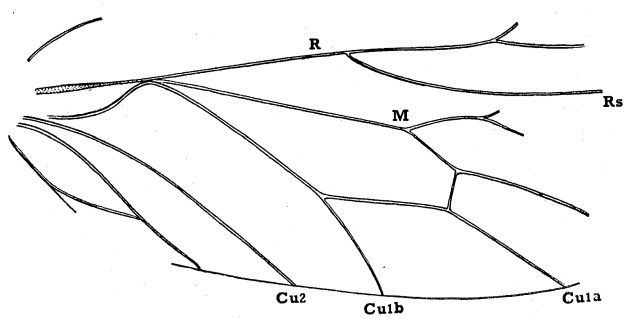

FIGURE 2.
Eoscytina migdisovae, forewing.

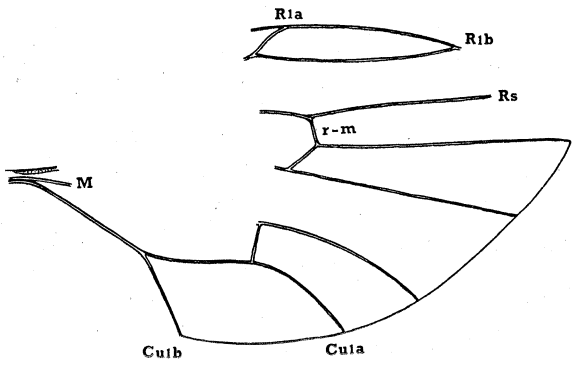

FIGURE 3.
Eoscytina incompleta, hindwing.

Eoscytina incompleta sp. nov.

(Fig. 3)

Length of fragment of hindwing, 7 mm; greatest width, 4.6 mm.

Holotype wing, F47191, from Upper Permian strata, Belmont, New South Wales.

This fragment of a hindwing is placed in the genus *Eoscytina* because of its resemblance to the tegmen of *E. migdisovae* in the characters of a wide radial cell and the shape of Cu1a.

Bekkerscytina gen. nov.

The forewing is elongate-oval in shape. The costal space is wide and R is not parallel with the costal border. Rs arises from R nearer to the point of separation of R from R + M than to the fork of R1. M has three branches, M1, M2 and M3 + 4. Cu1 is strongly bent basally; Cu1a which is not angulate is slightly longer than the straight portion of Cu1 and Cu1b meets the margin of the wing distally of Cu2. Cross-vein m—cu is present. The clavus is small and the two anal veins are separate for their entire lengths.

Type species, *Bekkerscytina primitiva* sp. nov.

The tegmen of *Bekkerscytina* differs from that of *Eoscytina* in shape, in the earlier departure of Rs and in the separate condition of the anal veins.

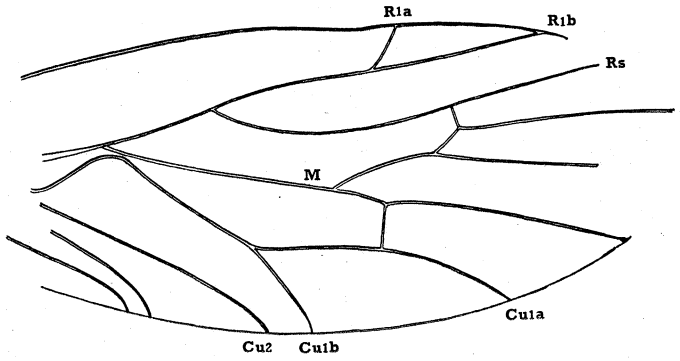

FIGURE 4.
Bekkerscytina primitiva, forewing.

Bekkerscytina primitiva sp. nov.

(Fig. 4)

Length of holotype tegmen 7.8 mm; greatest width 4.8 mm.

Holotype tegmen F47190, counterpart 47184, from Upper Permian strata, Belmont, New South Wales.

CERCOPOIDEA

EOSCARTERELLIDAE

Belmontocarta gen. nov.

Upper Permian Homoptera with rugose tegmina which are considerably wider apically than at the base. Sc is present as a short vein curving distally towards the base of R+M. R1a is a single vein and R1b branched and linked with Rs by an oblique cross vein. M has 4 branches and M1 and M2 are considerably longer than M3 and M4. Cu1, which is basally parallel with R + M, is joined to the base of M by a short cross vein; Cu1a is evenly arched, while Cu1b is in alignment with the margin of the tegmen. Cross veins r-m and m-cu are present. Type species, *Belmontocarta perfecta* sp. nov.

Belmontocarta differs from the Triassic genus *Eoscarterella* Evans, to which it has close affinities, principally in the shape of Cu1, which is curved in the tegmina of *B. perfecta* and straight in *Eoscarterella* spp.

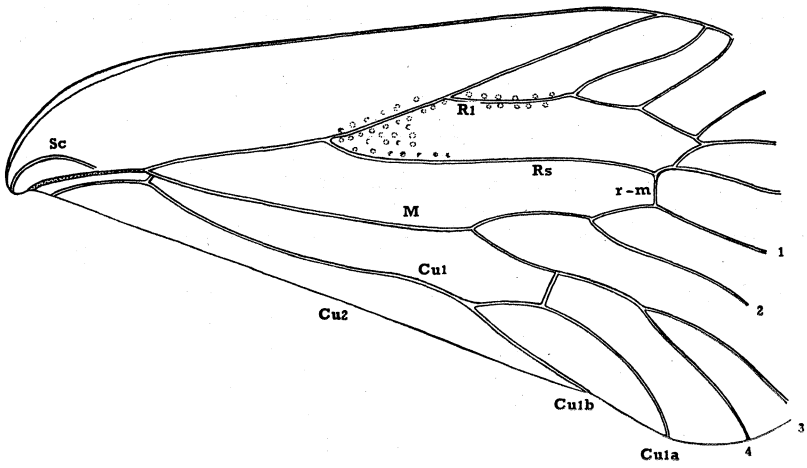

FIGURE 5.

Belmontocarta perfecta, forewing.

Belmontocarta perfecta sp. nov.

(Fig. 5)

Length of preserved portion of tegmen, 10.5 mm; greatest width 4.8 mm. Tegmen coarsely rugose except apically where it is smooth, suggesting an apical overlap of folded tegmina. Rlb with 4 branches extending to the margin of the tegmen. Clavus missing.

Holotype tegmen F47199, from Upper Permian strata, Belmont, New South Wales.

Formerly (Evans 1956) the family Eoscarterellidae was placed only provisionally in the Cercopoidea due to the fact that M and Cul were separate basally. Further consideration of the possible relationship of the three genera now comprised in this family renders more certain its Cercopoid affinities. Characteristics in which these tegmina differ from those in the Cicadelloid complex and resemble Cercopoidea are the presence of a short Sc, a branched Rlb, features associated with the shape of Cul and a rugose tegmen which is considerably wider apically than basally. Certain Scytinopterids also have a multi-branched Rlb (*e.g., Orthoscytina, Triassoscytinopsis, Triassoscelis*) but in these Cu1b is not in alignment with the margin of the tegmen. Furthermore, although M and Cu1 are not fused basally in Eoscarterellids, they are not separated as widely from each other as is the case with most Scytinopterids.

SUMMARY

Five wings of Upper Permian Homoptera from New South Wales are described and figured. One is of a Cercopoid, and four of insects belonging to the Family Archescytinidae. They represent respectively the first record of a Cercopoid from Permian strata and the first undoubted Archescytinids from Upper Permian strata in New South Wales.

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