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Notes on the Australian Chloropidae (Diptera) – 1

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Abstract

Six species reared from known hosts by staff of the Forestry Commission, N. S. W. have been identified. Of these, only one, *Lioscinella tonnoiri* Malloch, was previously known and five are described below as new, namely: *Lioscinella australiensis* sp. n., *Conioscinella apiomorphae* sp. n., *C. araeceri* sp. n., *C. eucalypti* sp. n. and *C. xyloryctae* sp. n.

Introduction

The small collection of Chloropidae from the Forestry Commission, New South Wales considered in this paper is of particular interest, as all six species were reared, thus providing valuable additional biological information on a family in which the life history is known for only a small proportion of the species so far described. The collection was originally sent to Dr. C. W. Sabrosky in Washington for determination in 1967 but, apart from a preliminary review, lack of time and other commitments prevented him completing his study and early in 1976 he kindly passed the material to me for detailed examination.

Little work on the Australian Chloropidae has been done since Malloch's important series of 14 papers in Proc. Linn. Soc. N. S. W. published between 1923 and 1941. Paramonov (1956, 1961) erected two new „families", Mindidae and Echiniidae. However, both type genera, *Minda* and *Echinia*, proved to be synonymous with Chloropid genera — *Minda* with *Pemphigonotus* Lamb (McAlpine, 1958) and *Echinia* with *Anatrichus* Loew (Sabrosky, 1962). Sabrosky (1955) published a useful paper with notes on a number of Australian species, and Harrison (1959) recorded two Australian species as present in New Zealand. Colless and McAlpine (1970: 732) briefly discussed the family and Hickman (1971) described several new species reared from egg-sacs of spiders in Tasmania.

The present classification of the world Chloropidae is in urgent need of revision. Earlier workers, in particular Becker, Duda and Enderlein, erected numerous genera based on trivial characters and this proliferation of genera, with some 300 currently accepted as valid for the world fauna of about 1500 described species, has resulted in the generic assignment of new species being based on subjective judgements and the virtual impossibility of preparing keys with clearly

defined generic limits. The situation is particularly confused with the *Lioscinella-Gaurax* group of genera in the Oscinellinae, following the attempt by DUDA (1929, 1930) to split the wide concept of *Oscinella* Becker. Several workers have produced composite keys embracing several genera owing to the blurred generic limits in this area (DUDA, 1933; MALLOCH, 1941).

SABROSKY has made a massive contribution to our knowledge of the Chloropidae in his numerous papers during the past 40 years but this work has been limited almost exclusively to detailed examination of external morphological characters. It is now clear that progress in the further clarification of the systematics of the family will only be possible with the study of male genitalia and the structure of the postabdomen. NARTSHUK working in Leningrad has illustrated the genitalia of many species from the U. S. S. R. and surrounding areas in a series of some 30 papers published since 1958. KANMIYA (1971) has made a valuable start in clarifying Japanese species with excellent genitalia drawings of species in the genus *Dicraeus*. Further important revisionary papers based on the study of the genitalia are currently in preparation by workers in Britain, Germany and Sweden. The New Zealand Chloropidae have recently been revised, with the description of 16 new species and a number of generic changes (SPENCER, in press).

Two hundred species have so far been described in Australia but the family occurs in abundance throughout the continent, many thousands of unidentified specimens are available for study and it is certain that many new species await description.

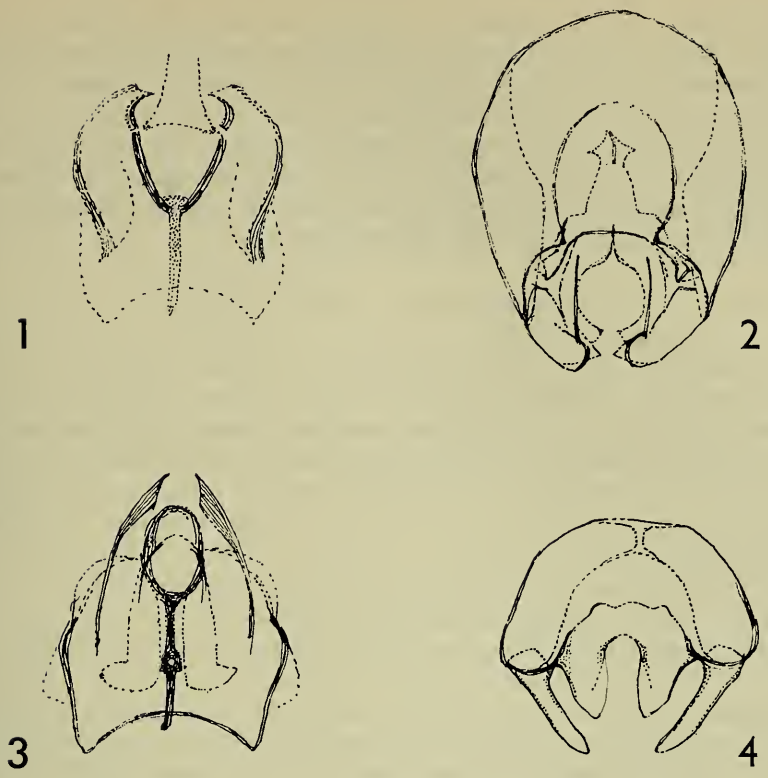
Life histories of the Chloropidae are extraordinarily diverse, the larvae being plant feeders, scavengers or true parasites. Of the six species discussed or described below, one — *Lioscinella tonnoiri* (MALLOCH) — feeds in egg-sacs of spiders, in eggs of mantids, in cocoon-masses of sawflies or is parasitic on Lepidoptera, and the other five are parasitic or scavengers associated with Coleoptera, Diptera, Homoptera and Lepidoptera.

MALLOCH (1941) treated many species earlier described in the genus *Oscinisoma* Lioy (not *Oscinosoma* as used) as belonging to *Botanobia* Lioy. It is now fully accepted that *Botanobia* (Europe) is synonymous with *Gaurax* Loew (U.S.A.). MALLOCH (1941: 41) accepted that *Gaurax* does not occur in Australia and after studying specimens of the genotype, *G. festivus* Loew, and other North American *Gaurax* species, I am satisfied that this is correct. In *Gaurax* the cerci are always long and the surstyli broadened; the male genitalia and hypopygium of *G. festivus* Loew which have not previously been illustrated are shown in Figs. 1, 2. MALLOCH (1940: 263) attempted to separate *Lioscinella* and his concept of *Botanobia* with the following couplet:

22 Triangle entirely glossy, more than half the length of frons and well defined, or yellow with a small black ocellar spot . . . *Lioscinella Duda*
— Triangle usually merely shiny, not half as long as the frons and poorly defined . . . . . *Botanobia* Lioy

These differentiating characters are clearly unsatisfactory and MALLOCH later (1941: 57) included *Lioscinella* and *Botanobia* species in a single composite key.

The most important single character used by DUDA and largely followed by MALLOCH for segregating species in the wide concept of *Oscinella* is the degree of pubescence or shine of the ocellar triangle. DUDA (1930: 71) erected the two new



Figs. 1—4. *Gaurax festivus:* (1) male genitalia; (2) hypopygium (Maryland, U.S.A.); *Lioscinella sulfurihalterata* var. *ignorata;* (3) male genitalia; (4) hypopygium (Paraguay).

genera *Conioscinella* and *Lioscinella* with the ocellar triangle in the former described as pubescent, mat, in the latter as shining, without pubescence. Many species in this complex can certainly be immediately separated by this character but intermediate forms occur where the generic assignment becomes a matter of subjective interpretation. In the species I have examined referable to these two genera I find no significant difference in the genitalia or form of the hypopygium. The types of both genera, *Conioscinella soluta* Becker and *Lioscinella sulfurihalterata* Enderlein (cf. SABROSKY, 1941) are both neotropical. However, I am fully satisfied that species congeneric with these concepts occur widely throughout the world. I have not been able to examine the genotypes of *Conioscinella* and *Lioscinella* (or of *Tropidoscinis* Enderlein possibly in the same complex) but I have seen two females from the type locality in Costa Rica determined by DUDA as *Lioscinella sulfurihalterata* and also a male from Paraguay, determined by DUDA as *L. sulfurihalterata* var. *ignorata.* This latter specimen is without question congeneric with the specimens from Costa Rica and the male genitalia are shown in Fig. 3, the hypopygium in Fig. 4. The similarity between this species and others placed in *Lioscinella* in Australia and New Zealand (SPENCER, in press) confirms that this genus has been correctly identified in Australia.

In this paper I am assigning to *Conioscinella* species in which the ocellar triangle is small and not shining, but with due reserve pending further clarification of the status of this genus. Malloch (1940) included 10 species in *Conioscinella* in Australia. In the Oriental Region Sabrosky (1977) records 28 species in *Conioscinella* but surprisingly none in *Lioscinella*. However, I have seen a number of unidentified species from New Guinea definitely referable to *Lioscinella* and it seems probable that with further collecting the genus will be found to be represented in the main part of the Oriental Region.

Genus *Lioscinella* Duda

Lioscinella australiensis **sp. n.** (Figs. 5, 6)

Type material. — Holotype ♂, New South Wales: Whale Beach, emerged 25. II. 65, coll. 5. I. 65, ex *Chelepteryx collesi* Gray (Anthelidae); paratypes: 11 ♂, 9 ♀, same data (all Croft); Mandourama, 1 ♀, emerged 15. XII. 61, ex "large galls" on Kurrajong, coll. 14. XI. 61 (Dunhill). Holotype and paratypes in Anic, further paratypes in U. S. N. M., B. M., Forestry Commission and author's collection.

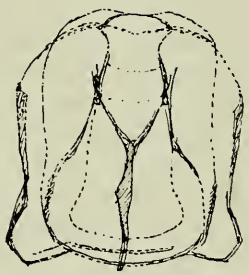
Small, shining black species with frons orange in front; dimorphic, with knob of halteres blackish in male, whitish-yellow in female.

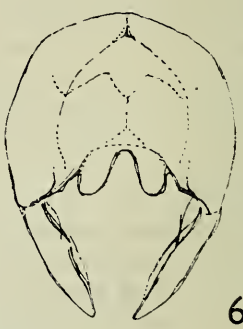
Male. Head: orbits with a row of 10 weak bristles along eye margin and a similar row adjoining margin of ocellar triangle, this bare, broad, large, filling entire area between orbits on upper 3/4 of frons, apex extending for 3/4 of distance to margin of lunule; frons with scattered setulae on lower 1/4; jowls slightly extended at rear but narrow, in centre below eye 1/20 vertical height of eye; eye with long, whitish pilosity; third antennal segment rounded, distinctly broader than long, finely pubescent; arista distinctly pubescent.

Thorax: mesonotum with dorso-centrals scarcely differentiated but with numerous rows of short setulae; scutellum with margin rounded, apical scutellar bristles at angle of some 60° but variable, somtimes less erect, preapical pair weaker, disc clothed in numerous setulae.

Wing: length 1,7 — 1,8 mm; vein R3 conspicuously curving up to costa, R5 and M_1, parallel, costal sections in ratio 21:15:9.

Legs: normal.





Figs. 5, 6. *Lioscinella australiensis:* (5) male genitalia; (6) hypopygium.

Male terminalia: genitalia as in Fig. 5, hypopygium (Fig. 6) with elongate, narrowing surstyli and short rounded cerci.

Colour: ocellar triangle brillantly shining black; upper frons and orbits black, on lower 1/4 both orange-yellow; entire hind-margin of eye and occiput black; face whitish; third antennal segment blackish on outside but paler, orange, on inside; arista and palps black; mesonotum, scutellum and sides of thorax brilliantly shining black; legs: coxae and femora largely black but latter normally yellow at base and apex; tibiae yellow with broad black ring centrally, tarsi entirely yellow; wings clear; halteres blackish.

F e m a l e : differing from male in having halteres pale, whitish-yellow; larger, wing length up 2,1 mm.

Biology: main series bred "ex *Chelypteryx collesi*" Gray (Anthelidae, Lepidoptera); one specimen recorded as "ex large gall on Kurrajong" (= *Brachychiton populneum*, Sterculiaceae). It seems probable that the larva is a scavenger and not truly parasitic on *Chelepteryx* but details of the life history remain to be established.

Remarks. On external characters this species is indistinguishable from *Lioscinella neozealandica* (Malloch 1931b), a widespread species in New Zealand. Examination of the holotype in the Canterbury Museum by R. A. Harrison and of paratypes in the USNM by the author has shown that in the male the knob of the halteres is distinctly blackish, a character which was overlooked by Malloch.

In *L. australiensis* the hypopygium is broader and the cerci are substantially larger; in the genitalia the hypandrium is distinctly more angular. The close relationship of these two species is obvious and it is suggested that the New Zealand population has speciated from a relatively recent, late Pleistocene immigrant of the ancestral stock of *australiensis*.

Among Australian species *L. australiensis* is close to *nigroviolacea* Malloch, 1931a (couplets 2 or 3a in Malloch's 1941 key to *Lioscinella*).

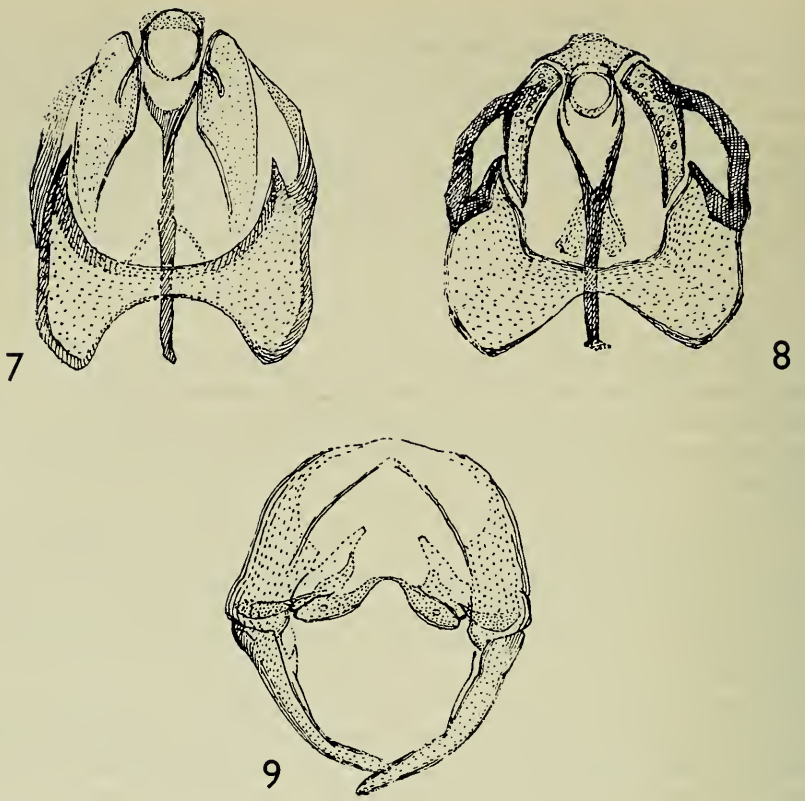
L i o s c i n e l l a t o n n o i r i (Malloch, 1931), **comb. nov.** (Figs. 7—9)

Oscinosoma tonnoiri Malloch, 1931a: 62
Botanobia tonnoiri, Malloch, 1941: 58; Hickman, 1971: 9

Type material. — Holotype ♂ from Burnie, Tasmania in School of Public Health and Tropical Medicine, Sydney.

Material examined. — Tasmania: Hobart, 1 ♀, 20. XII. 1912 (A. White); East Risdon, 3 ♂, 8. III. 61, ex egg-sacs of *Arachnura higginsi* (L. Koch); 2 ♀, 2. III. 67, ex ctenid spider; 14 exx., Seven Mile Beach, 8. II. 56, ex unidentified spider (all V. V. Hickman). — Australian Capital Territory: Gunghalin, 2 ♀, 30. IV. 64, ex oothecae of mantid *Tenodera australasiae* (W. Vestjens). — New South Wales: Paschendaele, 2 ♀, 3 sex indet. (damaged), Dec. 1956, on *Pinus* sp., ex *Hyalarcta huebneri* (Westwood), Lepidoptera: Psychidae (A. R. B.); Mt. Toppers State Forest, 4 ♂, 5 ♀, 30. I. 63, ex *H. huebneri* (K. M. Moore); Tuena, 1 ♂, 1 ♀, coll. 2. VII. 63, emerged 21. VIII. 63, ex oothecae of *Tenodera australasiae* (E. Callan).

I am satisfied that this species correctly belongs in *Lioscinella*, to which it is now transferred.



Figs. 7—9. *Lioscinella tonnoiri:* (7) male genitalia, ex egg-sacs of spider *Arachnura higginsi*, East Risdon, Tas.; (8) same, ex oothecae of mantid *Tenodera australasiae*, Tuena, N.S.W.; (9) hypopygium, ex moth *Hyalarcta huebneri*, Mt. Toppers State Forest, N.S.W.

Malloch (1931a) and also later (1941), when transferring the species from *Oscinosoma* to *Botanobia*, had before him only the unique male holotype. Moore (1963: 341) briefly refers to the series bred from *Hyalarcta huebneri* in New South Wales as *Botanobia* sp. With the additional material now available, it is clear that the species is partly dimorphic and variable in colour in both sexes.

Colour variation has been noted as follows:

Third antennal segment: normally distinctly darkened above but not infrequently uniformly orange.

Palps: normally black in male, orange in female, but some males have the palps orange-yellow and one female has been seen in which they are brownish-orange.

Jowls: varying from black through brown to yellow.

Mesonotum: uniformly shining black in male holotype, in female from Hobart and all specimens seen from New South Wales; normally divided into bands in both sexes in series bred from spiders' eggs in Tasmania (Hickman, 1971: Fig. 3).

Legs: holotype described as "legs yellow, all coxae and exterior side of anterior femora black." The female from Hobart has the femora as described by Malloch but only the fore-coxae are black. In Hickman's series I have seen two males

from East Risdon, Tas., 8. III. 61, with the fore-coxae and the other femora bright yellow, while a further male with the same data has only the fore-coxae slightly darkened and legs otherwise yellow; in two females from East Risdon, 2. III. 67, the legs are entirely yellow; in 14 specimens seen from Seven Mile Beach, Tas. 8. II. 56, some males and all females have the legs entirely yellow, only in some males is there a slight darkening of the fore-coxae and fore-femora.

Some variation in colour may be expected in a polyphagous species but it is clear that this is in no way associated with the differing hosts, as the extreme dark and pale forms are represented in the same rearing by HICKMAN, as noted above.

The apical scutellar bristles may be cruciate, as shown by HICKMAN (1971: Fig. 3) but more normally they are convergent or even parallel.

HICKMAN (1971), after breeding *tonnoiri* from egg-sacs of three different species of spider, gives a detailed re-description which is essentially accurate, but it is misleading in stating „Legs yellow". The anterior margin of the hypandrium is also not as illustrated (HICKMAN: Fig. 7) but the corners are substantially more rounded.

The male genitalia have been examined of two specimens bred from the spider *Arachnura higginsi* in Tasmania, one with the femora black, the other with the legs entirely yellow. These are identical, as in Fig. 7. Further preparations have been examined of males from the mantid *Tenodera australasiae* and from the moth *Hyalarcta huebneri*. Differences between these two appear to be insignificant but the genitalia of the male from the mantid (Fig. 8) distinctly differs from those from the spider, particularly in the wider division of the aedeagal apodeme before it links with the aedeagus, in the larger diagonal sclerites between the midpoint of the hypandrium and the base of the aedeagal apodeme, and in the form of the aedeagus itself.

The hypopygium of a specimen from the moth *Hyalarcta huebneri* is shown in Fig. 9. It will be seen that the cerci are greatly reduced, while the surstyli are conspicuously long. The form of cerci is identical in the two specimens examined from spiders but the surstyli are marginally shorter. Unfortunately the hypopygium of the mantid specimen was damaged during preparation and no direct comparison is possible.

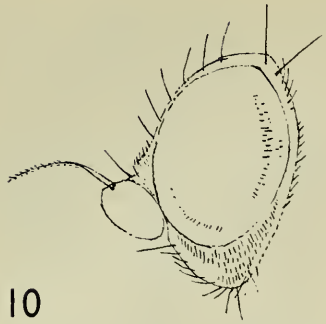
Insufficient material has been studied to be sure whether these differences represent geographical races or incipient speciation on different hosts. No differences are apparent in the external morphology of the adults from the differing areas and hosts. It is nevertheless hoped that this preliminary review will encourage more detailed study of this species, as further material becomes available.

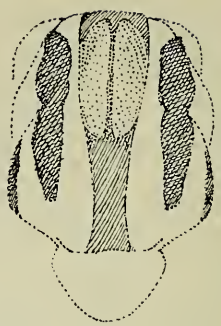
In addition to the egg-sacs of spiders, oothecae of mantids and larvae of Lepidoptera recorded above as hosts, reference is also made by COLLESS and MC ALPINE (1970: 732) to an additional host, "cocoon masses of sawflies".

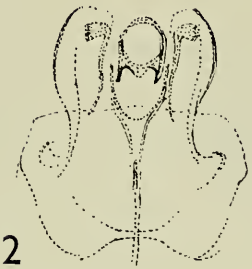
Genus *Conioscinella* Duda

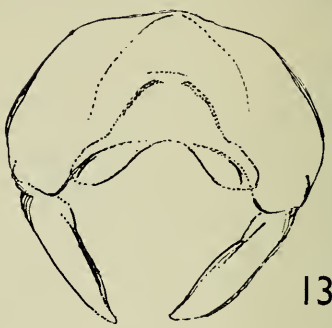
Conioscinella apiomorphae **sp. n.** (Figs. 10—13)

Type material. — Holotype ♂, New South Wales: Dubbo, 15. IX. 26, ex galls of *Apiomorpha ovicola* (lowest of 3 ♂ on same mount); paratypes: 2 ♂, 7 ♀, same data (all W. W. F.); Western Australia: Rottnest Is., Jan., 1946, 2 ♂,









Figs. 10—13. *Conioscinella apiomorphae:* (10) head; (11) mesonotum; (12) male genitalia; (13) hypopygium.

6 ♀, ex *Apiomorpha egeria* (J. R. Short). Holotype in ANIC, paratypes in ANIC, BM, Forestry Commission N. S. W. and author's collection.

Largely yellow species, with 5 black mesonotal bands, the central one interrupted, reddish-orange in front (Fig. 11).

Head (Fig. 10): frons distinctly raised above eye towards antennae; ocellar triangle inconspicuous, small, extending only half way from foremost ocellus to upper margin of lunule; a line of weak orbital bristles, further lines of weaker setulae from inner margin of orbits to margin of the bare ocellar triangle; ocellar bristles similar in length to orbitals, upright, cruciate; frons in front with scattered short setulae; jowls deepest at rear, almost 1/3 height of eye; eye round, thickly pubescent; third antennal segment wider than long, arista only finely pubescent; proboscis short.

Thorax: mesonotum with 1 pair of dc, thickly covered with short setulae; 3 distinct, shallow grooves present centrally and each side of the median dark band; notopleura with 1 + 2 equal bristles; scutellum rounded, weakly arched, apical bristles long, approximated, preapical pair distinctly weaker; otherwise covered with numerous short setulae.

Wing: length from 2,5 mm in male to 2,75 in female, costal sections 2, 3, 4 in ratio 30:20:9.

Colour: frons and lunule yellow, with both vertical bristles on yellow but hind-margin of eye black beyond outer vertical; ocellar plate black but triangle beyond ocelli yellow, scarcely shining; jowls, palps, first and second antennal segments yellow, third entirely black; ocellar bristles black, all others on head and thorax yellow; occiput yellow for width of ocellar plate, black below; mesonotum (Fig. 11) basically orange, with 5 moderately shining black bands, the central one fully black only at rear, deeper orange in front, intermediate bands entire, not reaching scutellum, short lateral bands behind notopleura; sides of thorax largely yellow, with a small darker patch on humerus and around thoracic spiracle below, lower front corner of mesopleura black with weak extensions along lower and front margins; lower 3/4 of pteropleura black; scutellum entirely pale yellow; legs: uniformly bright yellow but all tarsal claws contrasting black; abdomen with tergite 1 largely bright yellow but narrowly black on hind-margin and at sides, other tergites black or at least dark; halteres yellow.

Male terminalia: aedeagus as in Fig. 12, hypopygium (Fig. 13) with long surstyli but short, scarcely developed cerci.

Biology/Early stages: The larva feeds in galls of the coccid, *Apiomorpha ovicola* Schrader and *A. egeria* Short (Eriococcidae) on *Eucalyptus* spp.; puparium 3,3 mm × 1 mm, yellowish-orange, dull, with posterior spiracles on two small conical projections each with 4 bulbs.

Remarks. In Malloch's (1941) composite key to species of the *Lioscinella* group of genera this species runs to couplet 37 which includes *nigrohirta* Malloch and *bivittigera* Malloch; however it is readily distinguishable by the larger size and entirely black third antennal segment.

Dr. Sabrosky has informed me in correspondence that an additional part of the series from Rottnest Is., W. A., now in the U. S. N. M., was seen by Malloch and a description was prepared as *Oscinosoma apiomorphae*. This description was to have been sent to Australia but apparently this was never done.

The 12 specimens from New South Wales are mounted with their puparia and it has therefore seemed appropriate to select as holotype a male of this series.

It is of interest to note that this species is distributed from New South Wales to Western Australia but occurs on a different *Apiomorpha* sp. in the two States. This has an exact parallel in the Agromyzidae, in which a number of species occurring from N. S. W. to W. A. feed on distinct though related hosts in the West and in the East.

A further closely related species has recently been bred from galls on *Eucalyptus woolsiana* R. T. Baker at Howlong, Murray River, N. S. W., coll. 6. XII. 66, emerged Dec. 66 (R. S. McInnes). *O. apiomorphae* can be distinguished by the interrupted central mesonotal band which continues broadly to the margin of the scutellum, which is distinctly convex (not flattened) and by the black tarsal claws. This new species will be described later.

Conioscinella araeceri **sp. n.** (Fig. 14)

Type material. — Holotype ♀, New South Wales: Somersby, 29. XI. 61, ex *Araecerus bicristatus* Blackburn (Coleoptera, Eumolpinae), coll. K. M. Moore, in ANIC.

Medium-sized yellowish species with small black patch at rear of mesonotum (Fig. 14).

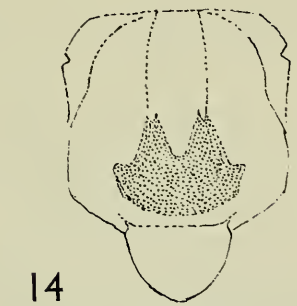
F e m a l e. Head: row of orbital bristles rather strong; ocellar triangle extending only to midpoint of frons, closely covered with fine pubescence; frons with many scattered hairs on lower half; jowls about 1/7 height of eye, lower margin with a row of relatively strong hairs; eye distinctly pilose; third antennal segment wider than long, with a fringe of distinct pubescence; arista conspicuously pubescent, rays longer than its basal width.

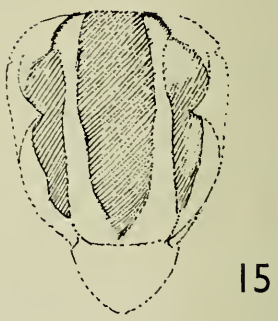
Thorax: mesonotum with 1 pair of dc and numerous rows of irregular setulae, those behind longest, notopleura with only 1+1 bristles; scutellum with apical bristles only slightly convergent, pre-apicals strong, disc with numerous short setulae.

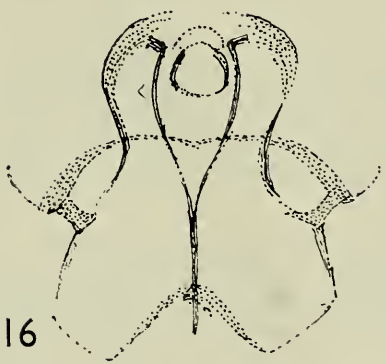
Wing: length 2,5 mm. costal sections 2, 3, 4 in ratio 34:18:12.

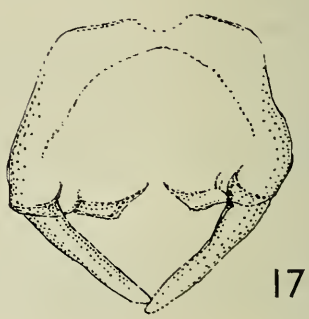
Legs: mid-tibiae with yellow apical bristle, slightly longer than maximum width of femora.

Colour: frons black on upper half, yellowish-orange below; ocellar triangle entirely black, only weakly shining; occiput entirely black; jowls, face, palps and proboscis orange-yellow; third antennal segment black, second yellow; mesonotum (Fig. 14) largely orange-yellow, with a broad black mark behind in centre, slightly divided by yellow in front; pleura largely yellow but mesopleura and pteropleura with a faint blackish streak along front margin, sternopleura black









Figs. 14—17. *Conioscinella araeceri:* (14) mesonotum; *C. eucalypti:* (15) mesonotum; (16) male genitalia; (17) hypopygium.

below merging into yellow above; scutellum and legs entirely yellow; abdomen with segments 1 and 2 entirely yellow, 3, 4 and 5 entirely black; halteres yellow.

Biology: parasite of *Araecerus bicristatus* (Coleoptera, Eumolpinae).

Remarks. In MALLOCH's (1941) key to the *Lioscinella* group of genera, this species runs to couplet 30 but all species included in subsequent couplets have 3 or 5 distinct mesonotal bands. The distinctive coloration of the mesonotum (Fig. 14) thus immediately distinguishes *araeceri*.

Conioscinella eucalypti sp. n. (Figs. 15—17)

Holotype ♂, New South Wales: Lisarow, emerged 27. III. 58, coll. III. 58, "leaf-miner? on *E. camaldulensis*", in ANIC (K. M. MOORE).

Small yellowish species, mesonotum with 3 black bands.

Head: frons broad, twice width of eye, only slightly projecting above eye near base of antennae; ocellar triangle inconspicuous, only slightly extended beyond ocellar plate; orbital bristles greatly reduced, only uppermost strong, others hairlike, decreasing in size anteriorly; ocellars and post-verticals erect, cruciate, the former two-thirds length of latter; inner vertical similar to post-verticals and sligthly stronger than upper orbital, outer distinctly stronger; frons with numerous irregularly scattered setulae; jowls about 1/4 height of eye in centre, slightly deeper at rear, vibrissa reduced to a weak setula; eye conspicuously slanting, strongly pilose; third antennal segment large, broader than long, arista only finely pubescent.

Thorax: mesonotum with single pair of strong dorso-centrals and numerous coarse setulae; scutellum little longer than wide, rounded apically, slightly arched, apical and pre-apical scutellars strong, about six weak bristles arranged irregularly along each lateral margin, only few setulae on disc; 1+2 notopleurals (other pleural bristles damaged).

Legs: normal.

Wing: length 2,3 mm, costal sections 2, 3, 4 in ratio 30:16:9.

Colour: frons, jowls, face and palps yellowish-orange; ocellar triangle yellow, though plate bearing ocelli black; occiput brownish centrally, yellow at sides; third antennal segment black, first and second segments orange; mesonotum (Fig. 15) basically yellow, with 3 moderately shining black bands; scutellum entirely yellow; pleura largely yellow (detailed examination not possible owing to crushing from pinning) but lower margins of both mesopleura and sternopleura each with conspicuous black patch; legs entirely yellow; abdomen yellowish; wing clear, veins dark; halteres yellow; bristles and setulae mainly black but a few setulae near front margin of frons and towards front of mesonotum somewhat yellowish.

Male terminalia: genitalia as in Fig. 16, hypandrium weakly sclerotized, posterior arms closed; hypopygium (Fig. 17) with slender surstyli, cerci greatly reduced.

Biology/Early stages: bred together with *Japanagromyza eucalypti* Spencer (Agromyzidae) from leaf-mines on *Eucalyptus camaldulensis* Dehnhardt, larva parasitic or more probably a scavenger; puparium dark brown, 2,6 mm long, with posterior spiracles each on a large conical projection, with 3 well-defined bulbs.

Remarks. Although this species has a number of characters in common with *confluens,* particularly the banding of the mesonotum, the largely black third antennal segment and the entirely yellow ocellar triangle with the black not extending beyond the foremost ocellus, in MALLOCH's (1941) key the second alternative of couplet 42 aplies with the palps yellow; this leads not to *confluens* but to *tincticornis* and *communis.* However, both these species differ in a number of characters.

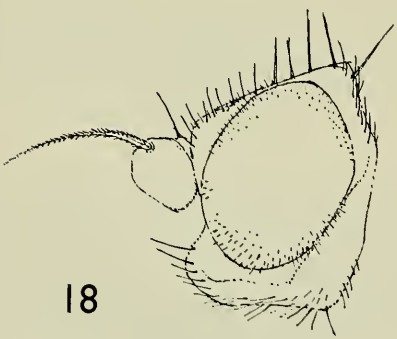
Although the holotype is mounted with its puparium which was obtained from leaves of *Eucalyptus,* it is doubtful whether the larva is actually a leaf-miner as tentatively labelled; it is more probably parasitic or a scavenger on *Japanagromyza eucalypti* with which it was reared. Nevertheless the association with *Eucalyptus* is clearly established.

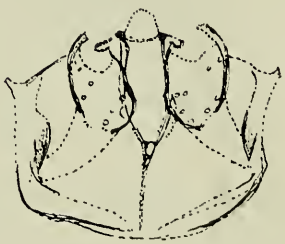
Conioscinella xyloryctae **sp. n.** (Figs. 18—21)

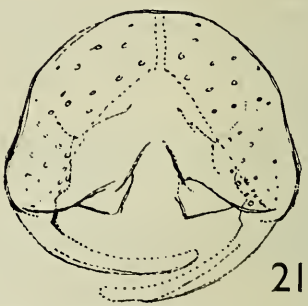
Type material. — Holotype ♂, New South Wales: Bouddi, emerged 16. XII. 62 ex *Xylorycta strigata,* coll. 16. XI. 62; paratypes: 1 ♂, 2 ♀, same data (all K. M. MOORE). Holotype in ANIC, paratypes in ANIC, BM and author's collection.

Very large brownish species, parasitic on *Xylorycta strigata* Lew. (Lepidoptera: Xyloryctidae).

M a l e. Head (Fig. 18): frons 1½ times width of eye, conspicuously projecting above eye in front; ocellar triangle small, ill-defined, apex extending to







Figs. 18—21. *Conioscinella xyloryctae:* (18) head; (19) mesonotum; (20) male genitalia; (21) hypopygium.

mid-distance between occiput and lower margin of frons; 2 fully developed orbitals above, below a line of about 9 weak reclinate hairs; ocellar triangle bare, with a line of inclined setulae along each margin, frons with numerous scattered setulae; post-verticals and ocellars strongly developed, upright; jowls flat below, about 1/3 vertical height of eye, slightly produced at vibrissal corner; eye conspicuously pilose; third antennal segment distinctly broader than long, arista finely pubescent; bases of antennae divided by narrow facial keel; proboscis elongate.

Thorax: 1 pair of normal dorso-centrals; mesonotum smooth, thickly covered with minute setulae; scutellum with apical bristles parallel or cruciate, 2 pairs of developed pre-apicals, disc smooth, with numerous decumbent setulae.

Wing: length 3,25 mm, costal sectors 2, 3, 4 in ratio 46:23:18, R3 almost straight, only slightly curving up to costa at end.

Legs: mid-tibia with strongly developed apical spur, equal to width of femora at midpoint.

Colour: head, including all antennal segments and palps orange; ocellar triangle dull orange, only slightly darker than the frons; occiput largely orange but a broad black area centrally with a semicircular orange indentation above; mesonotum (Fig. 19) uniformly orange with two small black patches in line of intermediate bands; sides of thorax orange with only black mark a triangle on lower half of sternopleura; scutellum, legs and abdomen entirely orange.

Male terminalia: genitalia as in Fig. 20, hypopygium (Fig. 21) with long, slender surstyli and short, angular cerci.

F e m a l e : similar to male but larger, wing length 3,75 mm.

Biology: parasitic on *Xylorycta strigata* but no further details recorded; puparium dark brown, up to 5, 75 mm long × 2 mm wide, irregularly covered by wrinkled folds of skin, posterior spiracles each on a low protuberance, with 3 bulbs.

Remarks. In Malloch's (1941) key *xyloryctae* runs to couplets 34/35 but the relevant species are all exceptionally small, with the "length" given as 1 mm. Despite superficial similarity it seems improbable that *xyloryctae* will be related to these species and its affiliations remain to be established.

Sabrosky has seen this species and noted that it might possibly represent a new genus near *Caviceps* Malloch. However, the postabdomen differs in no apparent way from the typical *Lioscinella/Conioscinella* complex and apart from its large size I find nothing to justify placing *xyloryctae* in a new genus.

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