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Part IV.—The First Record of Orgeriinae (Fulgoroidea; Dictyopharidae) from Australia

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The new genus *Austrorgerius* and the new species *A. collinus* are described and compared with related forms. This is the first record of the subfamily from the Australian region. The species was collected from a cushiony mat-rush on wind-exposed rocky ledges at the summit of Mt. Tibrogargan, South Queensland. Further species might be looked for in the more arid parts of Australia. Nymphal instars are described and figured.

ORGERIINAE Fieber, 1872

ORGERIINI Fieber, 1872

Austrorgerius gen. n.

Body oval. *Head* subtriangular, at least twice as long as eye, about two thirds as wide as pronotum posteriorly. Eyes contiguous with pronotum, the anterior margin of which is excavated on each side to receive them. No callosity behind eye. Crown horizontal, broad, more than two thirds as wide at base as long, produced in front of eyes for more than one half its length; median carina distinct except at apex, on the same plane a distinct submedian carina on each side; lateral margins carinate but not laminately expanded, upcurved, parallel along mesial margins of eyes, thence anteriorly convergent. Anterior part of frons very strongly and carinately convex, so that, in lateral view, head process (in front of eyes) strongly sloping in to mid-ventral line, not bent or curved, longer than deep, narrowing to rounded apex. Central tablet of frons broad in middle between eyes, gradually narrowed anteriorly and posteriorly; median carina strong anteriorly, absent posteriorly; lateral carinae weak posteriorly, in front widely separated at junctions with vertex. Lateral compartments of frons without obvious large pores, of similar granular appearance to that of central tablet; laterofrontal carinae angulate at anterior margin of eye, anteriorly obsolete, not reaching margin of crown. Clypeus without a median carina. Apical plate of head (seen from in front) very small, triangular. Antennae with pedicel reaching to or a little beyond outer margin of eye; flagellum about twice as long as eye. Rostrum reaching to hind coxae. *Pronotum* transverse, not greatly narrowed anteriorly; whole surface finely pitted; anterior margin nearly straight except where excavated behind eyes; posterior margin broadly and shallowly excavated; lateral margins carinate; median carina present; a central tablet demarcated by two carinae in line with lateral margins of crown. *Mesoscutellum* longer than pronotum, finely pitted, with a well developed median carina and weaker lateral carinae. Tegulae absent. *Tegmina* brachypterous, apical margins nearly transverse; five longitudinal raised veins with a series of shallowly depressed granular areolae between them. Hind wings absent. *Abdomen* short, dorso-ventrally compressed; terga finely pitted, with a median series of segmental carinae and two other series on each side. *Legs* very short, stout; all femora and front and middle tibiae moderately compressed, with edges somewhat produced but not laminately expanded; hind tibiae with two lateral spines, one near base, one at about half-length.

Type species: *Austrorgerius collinus*, sp. n.

Austrorgerius seems to be fairly close to *Orgerius* Stål, one of the larger and more widespread (Holarctic) genera, and to *Risius* Stål (South Africa). It differs from the former in its much shorter legs, the smaller number of hind tibial spines, the much shorter rostrum, the three frontal carinae not meeting basally, and the broadly excavated posterior pronotal margin. From *Risius* it is distinguished by the more produced head, the frons with lateral carinae present and the median carina absent posteriorly, and the excavated posterior margin of the pronotum. Although differing from the South African genera *Strongylolemas* Stål and *Capenopsis* Melichar in having a normally inserted clypeus lacking a median carina or lateral plates, *Austrorgerius* however resembles these two genera in most other features and in general facies, except that the head is more strongly produced than in the former and less produced than in the latter.

The genus is named for the locality of its type species, the most southerly record for the subfamily.

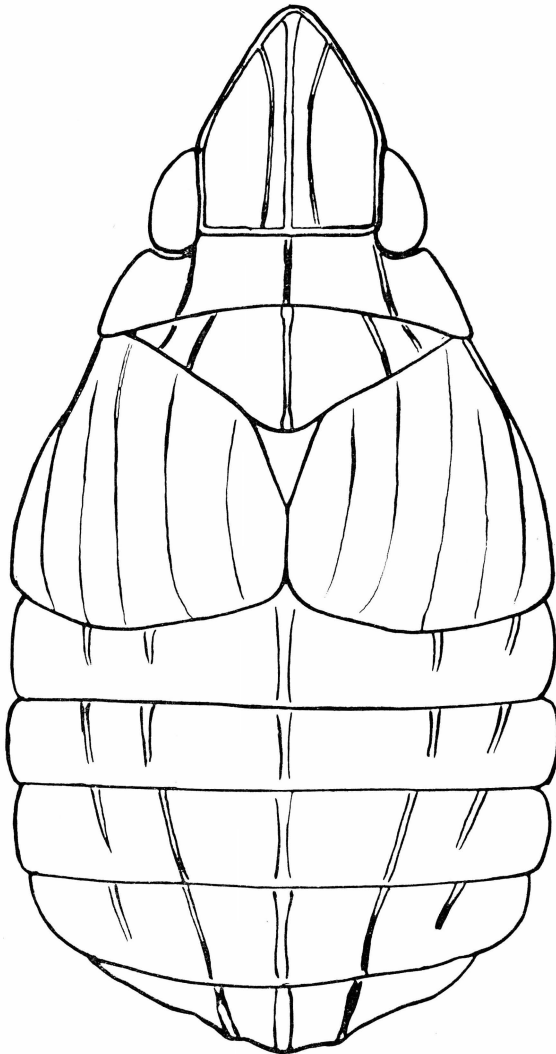


FIG. 1.—*Austrorgerius collinus*, male.

Austrorgerius collinus sp. n.

A small, ovoid species a little more than half as wide as long; without significant differences in size or proportions between the sexes.

Size.—Length 2.6-2.8 mm. Width 1.4-1.5 mm.

Colour.—Males above more or less infuscated brown; dorsal carinae and raised veins of tegmina paler; ventral surface and legs more deeply fuscous; eyes more or less infuscated reddish brown. Females above with background colour paler brown than in males, so that dark patches on either side of median carina of head, marginally and in four rows on abdominal terga, are more obvious.

Head.—Total length 0.67-0.70 mm. Width across eyes 0.72-0.75 mm. Crown 1.2-1.3 times as long as wide at base (0.57-0.63 mm. : 0.45-0.48 mm.); here 3.3-3.9 times as wide as an eye (0.13-0.14 mm.). Eye 0.30 mm. long. Head process anterior to eyes 0.37-0.40 mm., 0.6-0.8 times as long as entire crown (usually 0.6).

Thorax.—Pronotum 5.0-5.6 times as wide at base as long in middle (0.97-1.05 mm. : 0.18-0.20 mm.). Length of mesoscutellum 0.33-0.35 mm. Tegmina reaching on to abdominal tergum III; 0.73-0.82 mm. long.

Male abdomen and genitalia.—Posterior segments ventrally deflected, so that from above (in normally retracted condition of terminalia) the last visible tergum is VII, which posteriorly slopes ventrad; terga VIII and IX facing posteriorly. Median carina most strongly raised on terga VI and VII. Outer lateral carinae obsolescent on tergum VII, and both pairs of lateral carinae obsolescent or absent on terga VIII and IX. Segment IX has form of large, ovoid, ventral plate, with a central ellipsoid opening. Segment X small, not produced into a supragenital anal flap. Claspers (gonostyles, harpagones, parameres) nearly rectangular, with inner (dorsal) surface longitudinally grooved where it embraces phallus; lateral (dorsal) margin with a long recurved hook. Theca elongate, slightly curved ventrad toward apex, which is acute.

Female abdomen and genitalia.—Relationships of abdominal terga and development of carinae as in male. Posterior margin of tergum IX deeply concave, directed postero-ventrally. Segment X short, not produced into a supragenital flap. Sternum VIII membranous except for a median sclerotized region between bases of the large, lobe-like, heavily sclerotized first valvifers, which are conspicuous plates behind sternum VII. First valvulae subtriangular, with long setae basally; semi-membranous except marginally, its thickened dorsal margin with seven teeth, the apical one longest, spine-like, recurved, the second close to it, separated from a row of four, which decrease in size toward base; seventh spine at about half-length, curved toward apex. Third valvulae each divided into a triangular, membranous dorsal lobe, normally concealed below anal segment, and a subtriangular, strongly sclerotized ventral lobe with outer surface broadly convex, apex rounded, and mesial margin fringed by long setae; ventral lobe in repose covering toothed dorsal margin of first valvula and apex contiguous with sternum of anal segment. Second valvulae completely concealed by first and third valvulae; comprising a broad transverse sclerite formed of their fused bases and two partly membranous, narrowly triangular processes widely separated basally but apically converging.

Locality.—S.E. QUEENSLAND: Summit of Mt. Tibrogargan (from *Lomandra confertifolia* (Juncaceae of Qd. Flora), holotype male, 5 paratype males, 3 paratype females, 2 nymphs, 19.vii.1959, T. E. Woodward).

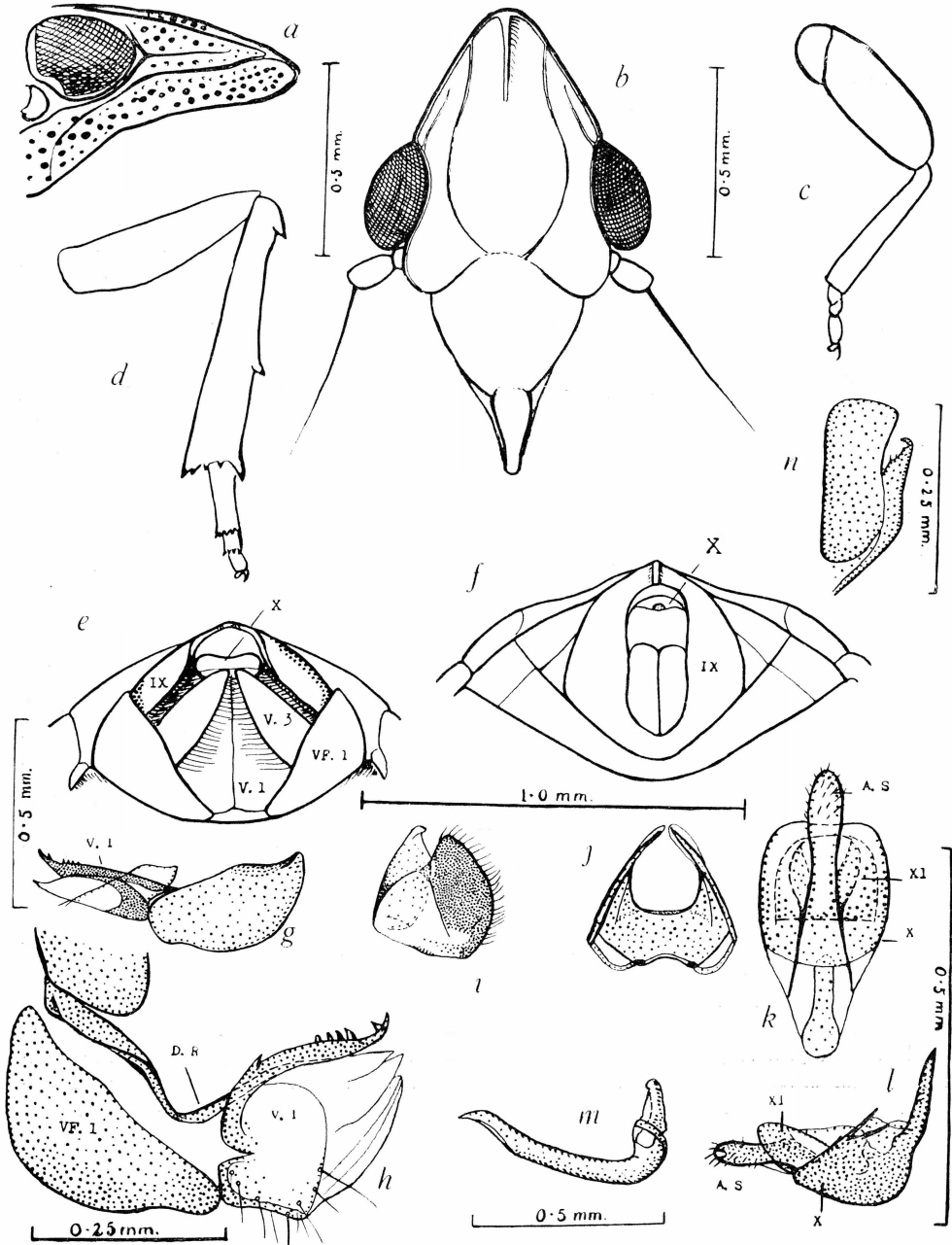


FIG. 2.—*Austrorgerius collinus*. *a*, head (lateral, male). *b*, head (ventral, male), *c*, left front leg (mesial aspect, male). *d*, left hind leg (mesial aspect, male). *e*, female terminalia (ventral, *in situ*). *f*, male terminalia (ventral, *in situ*). *g*, right first valvifer and first valvula (flattened and aligned). *h*, the same (pulled sideways to show attachments). *i*, left third valvula (flattened). *j*, second valvulae (dorsal aspect). *k*, female terminalia (dorsal). *l*, male terminalia (lateral). *m*, phallus (lateral). *n*, right clasper.

A.S., anal style; CL, clasper; D.R., dorsal ramus of first valvula; V.1, first valvula; V.3, third valvula; VF.1, first valvifer; IX, X, XI, 9th, 10th, 11th abdominal segments; 7, sternum of 7th abdominal segment.

Deposition of types.—Holotype (T5766) in Queensland Museum, Brisbane. Paratypes in Australian Museum, Sydney; British Museum (Natural History); C.S.I.R.O., Division of Entomology, Canberra; National Museum of Victoria, Melbourne; South Australian Museum, Adelaide; U.S. National Museum, Washington; University of Kansas, Department of Entomology; University of Queensland, Department of Entomology, Brisbane.

Named for the type locality, at the top of a hill.

NYMPHS

Two nymphs, together with one of the adult females, were extracted from leaf litter and soil accumulations beneath the host plants. It may be that the paler and softer bodied nymphs spend more time at these lower levels, which are moister and less exposed to the desiccating effects of sun and wind than the upper portions of the plants.

The younger nymph appears to be of the second instar and the older, by comparison of head widths, to be of the third. If Dyar's Law holds approximately, this species then would have five nymphal instars.

The specimens are preserved in glycerin-alcohol.

Early instar (probably second).—Length 1.35 mm. Width 0.80 mm.

Colour.—Head and thorax yellowish brown, darker below. Abdomen pale creamish brown above, cream below. Antennae and legs fuscous brown. Red markings on coxae, thoracic pleura and on genae and at sides of frons.

Head much less produced than in adult. Total length 0.28 mm. Width across eyes 0.41 mm. Crown 1.2 times as wide at base as long (0.27 mm. : 0.23 mm.). Eye 0.15 mm. long, 0.73 mm. wide. Head process (anterior to eyes) 0.13 mm. long. Crown without carinae except on lateral margins. Frons flat, with only an obsolescent indication of median carina at extreme apex; without other carinae except along margins; on each side, margining central tablet, a row of eight large, contiguous pores.

Thorax.—Pronotum four times as wide at base as long in middle (0.53 mm. : 0.13 mm.); two large pores just mesad of each lateral carina, another close to lateral margin. Mesonotum transverse without a developed scutellum or wing pads; in mid-line subequal in length to pronotum. Mesonotum exposed, half as long again as pronotum, with a median carina and two sublateral carinae in line with those of pro- and mesonota. Hind tibiae without lateral spines. All femora and tibiae margined with fine tubercles. Posterior margin of hind trochanters with ten short, black, cog-like projections.

Abdomen.—Median dorsal carinae weak except on terga VI and VII, that on VI prominent and infuscated on each side; other carinae obsolescent.

Intermediate Instar (female; probably third).—Length 1.52 mm. Width 0.92 mm.

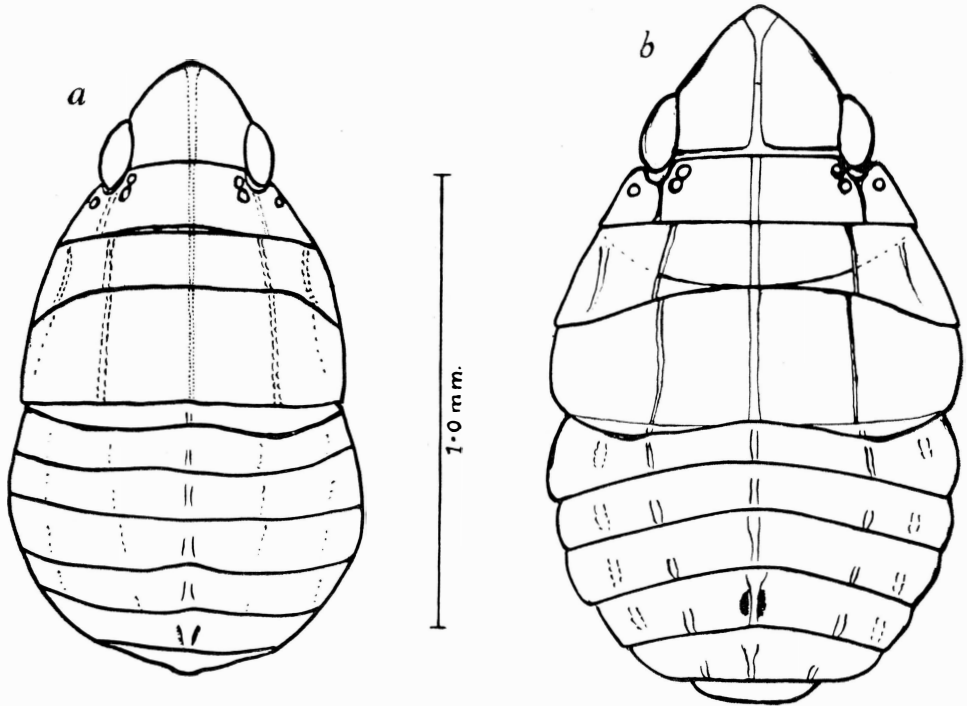


FIG. 3.—*Austrorgerius collinus*, nymphs. *a*, early instar (probably second). *b*, intermediate instar (probably third).

Colour.—Yellowish-brown above, with paired infuscated areas on crown, mesonotum, and more extensively on metanotum; a darker stripe on each side of median carina of abdominal tergum V. Eyes reddish brown. Frons, clypeus, antennae, legs and pro- and mesothorax beneath fuscous brown; red markings on genae, coxae and metapleura, and a very small one near apex of seventh abdominal sternum.

Head.—Total length 0.37 mm. Width across eyes 0.48 mm. Crown as wide as base as long (0.32 mm.). Eye 0.19 mm. long, 0.08 mm. wide. Head process (anterior to eyes) 0.17 mm. long, Carinae and pores of head as in previous instar, except that anterior median carina of frons is more strongly developed and in side view there is an indication of a carina along the inner margin of each row of frontal pores.

Thorax.—Pronotum 0.71 mm. wide, 0.13 mm. long in middle; posterior margin nearly straight; carinae and pores as in previous instar. Mesoscutellum partially demarcated by an arcuate suture posteriorly; 0.16 mm. long. Metanotum 0.27 mm. long. Meso- and metanotal carinae and processes of hind trochanters as in previous instar. Hind tibiae with two short spines, pale except at extreme apex, and placed as in adult.

Abdomen.—Carinae as in previous instar, but better developed, white. First valvifers present as a pair of plates.

DISCUSSION

As at present constituted, the two tribes of Orgeriinae, the Orgeriini and Lyncidini, are distinguished by length of tegmina. Considering the great variability of this character among other Fulgoroidea, it would seem that more extensive work is needed on comparative morphology to determine whether these are natural groups, and if so their limits. Similar considerations apply to the subfamily, which is distinguished entirely by characters of reduction (tegmina shortened, without claval suture; hind wings and tegulae absent; ocelli absent or minute). However, the general similarity of habits perhaps supports the monophyletic concept of the Orgeriinae.

The Orgeriini were monographed by Melichar (1912: 179-213; pl. 5) and more recently the genera and species were catalogued with full synonymy and bibliography by Metcalf (1946: 184-230). Reviews of and keys to the genera and species of different regions have been given by Oshanin (1913), Ball and Hartzell (1922), Kusnezov (1930a, b, c; 1933) and Doering (1955).

The tribe has previously been recorded from the mainly drier parts of North America, Europe, Asia and Africa, and is not known from the wet tropics of the Oriental and Neotropical regions. The nearest recorded localities are thus distant from Australia, so that it is not surprising that *A. collinus* cannot be accommodated in any of the overseas genera. Further, most species of Orgeriini have a restricted geographic range, a characteristic associated with their inability to fly, a tendency to a high degree of host specificity, and a general restriction to arid and semi-arid areas. Thus one would expect considerable additions to the Australian fauna when other groups of volcanic necks and the extensive arid areas of this continent have been searched for them.

The summit of Mt. Tibrogargan, where *A. collinus* was taken, though not characteristic of typical arid areas, shares some of their environmental conditions and is very different from the surrounding coastal zone. Although only 1,186 feet in altitude, Tibrogargan rises quite abruptly from the coastal plain and is composed of trachytes, being, like the other Glasshouses, a residual mass usually regarded as a volcanic neck of probably early Tertiary age. The Glasshouses thus differ from their surroundings in the nature and age of their constituent rocks, relative lack of soil, and exposure to wind. The rapid run-off and the exposure to insolation and wind would result in considerable and speedy water loss, particularly effective during the dry season. Several species of plants, so far as known, are endemic or almost restricted to them, while on the more exposed parts the growth-form even of more widely distributed plants is of a dwarfed, wind-swept type. The mat-rush from which the specimens were collected, *Lomandra confertifolia* (F. M. Bail.) Fahn (at present usually known as *Xerotes confertifolia*), was growing on exposed rock ledges and had a cushiony growth-form; this plant is known only from the Glasshouses and a few other localities in S.E. Queensland.

In view of these peculiarities of Orgeriine species and of the habitat and host species of *A. collinus*, one would expect the range of this bug to be extremely limited. The population which it comprises is apparently a relict one long isolated from the extensive arid areas typical of the usual Orgeriine habitat.

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