

## A Revision of the Genus *Austrogorytes* Bohart (Hymenoptera: Sphecidae)

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### Abstract

*Austrogorytes* Bohart is an endemic Australian genus in the tribe Gorytini, with 31 known species of which the following are described as new: *cardaleae*, *carinatus*, *evansi*, *exleyae*, *fimbriatus*, *grahami*, *houstoni*, *humphreysi*, *interruptus*, *meesi*, *musgravei*, *naumanni*, *norrisi*, *occidentalis*, *permaculatus*, *rieki*, *rufidulus*, *tindalei* and *turneri*.

### Introduction

Most members of the tribe Gorytini in Australia belong to the genus *Austrogorytes* Bohart (1967). There are 31 species known including the 19 here described as new. As in other gorytins, *Austrogorytes* (as far as known) provision their nests with Homoptera. Evans and Matthews (1971) reported prey of *belliosus* F. Smith as adults and nymphs in the homopterous family Eurymelidae. I have seen one female *perkinsi* Turner pinned with a small cicada, which it had captured.

### Terminology and Abbreviations

Terminology follows Bohart and Menke (1976). Additional terms are 'macropunctures' with a diameter 0.2-0.5 that of the median ocellus, and 'micropunctures' with a diameter of 0.001-0.15 that of the median ocellus.

Abbreviations used in the key and descriptions are: MOD, median ocellus diameter; FI, FII, etc., flagellomeres; TI, TII, etc., terga; SI, SII, etc., sterna; LID, least interocular distance; PD, puncture diameter.

Acronyms used for museums which have kindly loaned specimens are: ANIC, Australian National Museum in Canberra; AM, Australian Museum in Sydney; SAM, South Australian Museum in Adelaide; WAM, Western Australian Museum in Perth; UQ, University of Queensland Museum in Brisbane; BMNH, British Museum of Natural History, London; EVC, H. E. Evans collection, Fort Collins, Colorado; LMH, Natural History Museum, Leiden, Netherlands; HMB, Humboldt Museum, East Berlin, German Democratic Republic; UCD, University of California at Davis Museum.

### Species Characters

Two of the secondary sexual features, midtibial spurs in the male and the foretarsal IV plantula in the female, are of special interest. The first character was recognized by Turner (1915) and incorporated into his key to species. The single-spurred condition of the male, unusual in the Gorytini, occurs in 20 of the 23 species of *Austrogorytes* for which males are known. The three exceptions with two spurs are *aurantiacus* Turner, *frenchii* Turner and *tindalei*, sp. nov. The tarsal plantula was first identified as a structure of taxonomic significance by Bohart and Menke (1976). It is a translucent, pad-like appendage inserted beneath and distally on the tarsomeres of some Hymenoptera. In *Austrogorytes* females the plantula of foretarsomere IV may be small and similar to those of tarsomeres I-III; or it may

be 2-3 times as long as its basal breadth, straight, curved, subtriangular, or filiform. The 21 species with known females are divided almost equally, nine with a small plantula and 12 with the longer sort. The short-plantula species are: *browni* Turner, *ciliatus* Handlirsch, *cygnorum* Turner, *exleyae*, sp. nov., *frenchii* Turner, *grahami*, sp. nov., *musgravei*, sp. nov., *perkinsi*, sp. nov. and *tindalei*, sp. nov. Those with the long plantula are: *bellicosus* Smith, *carinatus*, sp. nov., *chrysozonus* Turner, *evansi*, sp. nov., *houstoni*, sp. nov., *humphreysi*, sp. nov., *cardaleae*, sp. nov., *permaculatus*, sp. nov., *rieki*, sp. nov., *rufidulus* Bohart, *spryi* Turner, and *tarsatus* Smith. Note: unless stated otherwise all have pubescence short and inconspicuous except for silvery appressed hair on lower frons and clypeus, one midtibial spur (males) or two spurs (females), hindwing *MCU* stem (Fig. 2) longer than *cu-a*.

Illustrations were drawn with the aid of a camera lucida. They are comparative rather than drawn to scale.

### Genus *Austrogorytes* Bohart

*Austrogorytes* Bohart, 1967, p. 155. Type-species: *Gorytes bellicosus* Smith, 1862, by original designation.

**Diagnosis.** Male flagellomeres with tyli beneath most articles; eyes converging below, mandible bidentate on inner margin, female foretarsal rake with 1 or 2 basitarsal setae, female with foreleg arolium enlarged, lateral margin of scutum with oblique carina opposite posterior edge of tegula, prescutellar sulcus foveate, omaulus present, acetabular carina and sternaulus sometimes developed, spiracular groove of propodeum present, hindwing media diverging beyond crossvein *cu-a*, hindwing jugal lobe smaller than outline of tegula, midtibia with 2 spurs or usually in males only 1, female with pygidial plate, male sterna IV-VI usually with a fimbriarum.

**Geographic range.** Widespread in Australia: except Tasmania.

### Key to the Species of *Austrogorytes*

1. Metanotum punctate (Fig. 22) rather than longitudinally ridged (Fig. 20) and/or propodeal enclosure mostly smooth (Fig. 22), hindwing *MCU* stem various ..... 2  
Metanotum roughly punctate and longitudinally ridged (Fig. 25), hindwing *MCU* stem longer than *cu-a* (Fig. 2) ..... 7
2. Propodeal enclosure with complete ridging (as in Fig. 19), hindwing *MCU* stem various, mesopleuron various ..... 3  
Propodeal enclosure largely smooth but with a median groove (Fig. 22), *MCU* stem shorter than *cu-a* (Fig. 1), mesopleuron largely punctate, hypopimeron mostly smooth (as in Fig. 7) .... 4
3. Mesopleuron extensively ridged, hindwing *MCU* stem longer than *cu-a* (as in Fig. 2); female with forebasitarsus twice as long as broad, foretarsomere V nearly as broad as long, foretarsomere IV plantula long and slender ..... *chrysozonus* (Turner)  
Mesopleuron with coarse separated punctures, *MCU* stem shorter than *cu-a* (as in Fig. 1); female forebasitarsus 3-5 × as long as broad, foretarsal V twice as long as broad, foretarsal IV plantula short and stout ..... *aurantiacus* (Turner)
4. Propodeum adjacent to enclosure with coarse transverse ridging, ..... 5  
Propodeum adjacent to enclosure with fine to coarse punctation but not obviously ridged except medially below, ..... 6
5. Midfemur strongly swollen toward base, propodeum below enclosure with thick and rather long (1-2 MOD) erect hair, male forefemur with a prominent basal knob, ..... *perkinsi* (Turner)  
Midfemur not unusually swollen toward base, propodeum below enclosure with short pubescence (less than 1 MOD), male forefemur simple, ..... *turneri*, sp. nov.
6. Scutum and scutellum with fine sparse punctures, terga IV and following orange, male foretarsus strongly flattened but tarsomeres II-IV not laterally produced (Fig. 15), *ciliatus* (Handlirsch)  
Scutum and scutellum with coarse separated punctures, terga II and following black, male foretarsus with tarsomeres II-IV strongly produced laterally (Fig. 18), ..... *browni* (Turner)

7. Scutum with punctures on either side of admedian lines more anteriorly coarse and averaging less than a PD apart. .... 8  
 Scutum with punctures on either side of admedian lines more anteriorly fine to moderate or averaging more than a PD apart. .... 15
8. Scutellum with sparse macropunctures, mesopleuron (at least in female) not ridged anteriorly. .... *permaculatus*, sp. nov.  
 Scutellum closely and coarsely sculptured, mesopleuron almost completely ridged-punctate. .... 9
9. Hindtarsus not strongly banded. .... 10  
 Hindtarsus strongly banded. .... 12
10. Frons above scapal basin closely micropunctate and with a few scattered macropunctures; male flagellum all pale orange beneath, clypeus pale yellow, TIII immaculate. .... *norrisi* Bohart  
 Frons above scapal basin with numerous moderately coarse punctures; male flagellum nearly all black, clypeus black or partly orange, TIII with a narrow to broad orange band. .... 11
11. Fl c. 1.5× as long as broad (female), mesopleuron with an orange spot behind pronotal lobe, femora orange, propodeal enclosure rather regularly ridged. .... *humphreysi*, sp. nov.  
 Fl c. 3.0× as long as broad (male), mesopleuron black, femora black to dark red, propodeal enclosure quite irregular. .... *humbriatus*, sp. nov.
12. TIV and usually TV extensively maculate. .... 13  
 TIV at most narrowly banded, TV immaculate. .... 14
13. Scutellum punctate medially but not completely ridged, male foretarsal V approximately rectangular (Fig. 14). .... *evansi*, sp. nov.  
 Scutellum punctate and completely ridged, male foretarsal V nearly oval (Fig. 13). .... *ricki*, sp. nov.
14. Omaulus quite prominent and mesopleural carinae unusually strong with few associated punctures (Fig. 9), T1 orange mark broken medially. .... *carinatus*, sp. nov.  
 Omaulus not prominent, mesopleural carinae moderate and associated with coarse punctures, T1 orange band entire. .... *tarsatus* (Smith)
15. Punctuation of scutum overall fine and close, hindtarsus not distinctly banded. .... 16  
 Punctuation of scutum somewhat irregular, fine to rather coarse but not uniformly close (in doubtful cases hindtarsus is distinctly banded). .... 18
16. Scutellum of male completely and rather finely ridged, T1-II and IV-V extensively orange; female unknown. .... *occidentalis*, sp. nov.  
 Scutellum not distinctly ridged but finely and closely punctate; T1 dark or with separated yellow spots, III black, IV-V narrowly maculate at most; female foretarsal IV with a short plantula (Fig. 31). .... 17
17. TIV-V distinctly banded, female pygidial plate closely punctate; male unknown. .... *musgravesi*, sp. nov.  
 TIV-V slightly red posteriorly but not banded, female pygidial plate with sparse punctures and much reticulation. .... *grahami*, sp. nov.
18. Scutellum punctate only (Fig. 26), or less than half ridged. .... 19  
 Scutellum more than half ridged. .... 23
19. Mesopleuron (except hypopimeron) mostly polished and with practically no ridging (Fig. 8), male midtibia with 2 spurs. .... 20  
 Mesopleuron proper mostly ridged between scattered punctures, male midtibia with 1 spur (as far as known). .... 21
20. Scutal macropunctures quite small, metanotal ridges prominent, mesopleuron all black and with extensive weak macropunctuation, clypeus black. .... *frenchii* (Turner)  
 Scutal macropunctures moderate, metanotal ridges not unusually prominent, mesopleuron with scattered macropunctures and a yellow spot behind pronotal lobe, clypeus yellow. .... *tindalei*, sp. nov.
21. Fl not more than 1.5× as long as broad, LID greater than length of scape and pedicel together, clypeus black, female only known, foretarsal IV plantula 3× as long as broad. .... *naumanni*, sp. nov.  
 Fl at least twice as long as broad (Fig. 32), LID less than length of scape and pedicel together, clypeus yellow. .... 22
22. Hindtarsus strongly banded, propodeum largely finely areolate, SI-III light orange to yellow, mesopleuron with an orange spot behind lobe, male only known. .... *meesi*, sp. nov.  
 Hindtarsus not banded, propodeum coarsely areolate, SI (at least) and mesopleuron immaculate, female foretarsal IV plantula short. .... *cygnorum* (Turner)

23. LID not greater than scape length, and c. half as broad as clypeus (Fig. 6). ..... 24  
 LID greater than scape length and more than half as broad as clypeus (as in Fig. 5). ..... 26
24. FI c. twice as long as broad, scutellum with exceptionally fine ridging (Fig. 24), T1-IV with separated transverse yellow spots, mesopleuron partly smooth with micropunctures and macropunctures, female pygidial plate rather closely punctate and reticulate. .... *interruptus*, sp. nov.  
 FI more than twice as long as broad, scutellum with moderately coarse ridging (Fig. 27), T1-IV various but not with separated transverse spots, mesopleuron completely ridged, female pygidial plate polished between somewhat spaced punctures. .... 25
25. Propodeal enclosure without a definite median sulcus, SI-III brownish to black, TIV-V extensively yellow, female foretarsal IV plantula short. .... *exleyae*, sp. nov.  
 Propodeal enclosure with a definite median sulcus, SI-III extensively orange, TIV-V dark, female foretarsal IV plantula long and filiform (Fig. 29). .... *rufidulus* Bohart
26. T1-II marked with red and yellow, others black; male FXI not spiculate at base beneath; female unknown. .... 27  
 T1 and TII, at least, pale banded; male flagellum not banded, FXI sometimes spiculate beneath (Fig. 11); female foretarsal IV plantula at least twice as long as broad. .... 28
27. Flagellum somewhat banded, midtarsal II strongly projecting laterally, FI longer than FII, FXI strongly curved. .... *spiniornis* (Turner)  
 Flagellum reddish beneath but not banded, midtarsal II not strongly projecting, FI-II subequal in length, FXI not strongly curved. .... *pretiosus* (Turner)
28. Propodeal enclosure coarsely areolate (Fig. 21), mesopleural ridging largely obscured by coarse punctation, T1-III with orange bands, TIV dark or with a weak band, TV dark, male FXI not incurved beneath (Fig. 35), female foretarsal IV plantula subtriangular. .... *houstoni*, sp. nov.  
 Propodeal enclosure more ridged than areolate, mesopleural ridging extensive, tergal banding various, male FXI strongly incurved beneath (Fig. 11), female foretarsal IV plantula long and straight. .... 29
29. Erect propodeal pubescence about as long as 3.0 MOD, T1 and TIII yellow banded but other terga dark, male FI longer than FII or FIII, FXI not spiculate beneath, foretarsal V as long as foretarsals II-IV together. .... *bellicosus* (Smith)  
 Erect propodeal pubescence about as long as 1.0 MOD, TIV-V (at least) pale marked, male FI-III all of equal length, FXI spiculate beneath near base (Fig. 11), foretarsal V shorter than II-IV together. .... 30
30. Scutum and vertex closely and heavily reticulate, male TIII yellow band about as strong as on TIV. .... *spryi* (Turner)  
 Scutum and vertex with little reticulation, shiny between scattered punctures, male TIII dark, TIV-VI with median pale spots. .... *cardalcae*, sp. nov.

*Austrogorytes aurantiacus* (Turner)

*Arpactus aurantiacus* Turner, 1915, p. 71. Holotype ♂, Anketell, Western Australia (SAM).

*Material Examined*

Western Australia: Holotype ♂; 19 Jan., 10 miles S. Coolgardie, on *Eucalyptus salubris* (UQ).

*Comments*

By its extensive orange markings, large size (18-20 mm long), and short hindwing *MCU* stem, *aurantiacus* is related to *ciliatus*. However, it differs in one important particular: the ridged propodeal enclosure. Other characters, besides those given in the key, are: upper frons unusually narrow, ocellocular distance c. 1.1 MOD, scutellum with sparse small punctures on a reticulate background, wings reddish and a little darker apically, sternaulus absent, T1-II narrowly black posteriorly, TIII broadly black basally. Male features are: LID as great as FI length, 2 midtibial spurs, SIV-VI fimbriate, SVIII very broad. Additional female characters are: LID about scapal length, FI 3.5× as long as broad, foretarsal IV plantula short and nearly as broad as long, pygidial plate closely and longitudinally rugosopunctate.

*Austrogorytes bellicosus* (Smith)

*Gorytes bellicosus* Smith, 1862, p. 53. Holotype ♀, Adelaide, South Australia (BMNH).

*Gorytes dizonus* Handlirsch, 1895, p. 873. Holotype ♂, Victoria (Stuttgart Museum, Germany).

*Material Examined*

Holotype ♀, New South Wales: 17♀, Nov.-Feb., Mt Irvine (NNW, Sydney), Hornsby, Galong Creek (SW, Katoomba), Breakfast Creek (near Rylstone), Maldon, Mt Kosciusko. Australian Capital Territory: 3♂, 11♀, Blundells, Bendora, Canberra. Victoria: 1♂, Jan.-Mar.

*Comments*

This species is the generotype, and the unusually long hair over much of the body, together with the yellow bands restricted to T1 and TIII, aid in recognition. Other characters of value, not given the key, are: body length 10-14 mm, tibiae mostly red, hypopleural area not more coarsely ridged than mesopleuron proper, forewing brownish along anterior third, flagellum all dark, and SII evenly convex. Male features are: FXI curved, FI 2.5× as long as broad, foretarsus (Fig. 16), and fimbriarum prominent on SIV-VI. Additional female characters are: foretarsal IV with plantula 2.5× as long as broad, foretarsal V 1.3 times, pygidial plate with scattered small punctures on a reticulate background, apical third or more of pygidium deep red.

*Austrogorytes browni* (Turner)

*Arpactus browni* Turner, 1936, p. 540. Lectotype ♂, Dedari, Western Australia (BMNH). Here designated.

*Material Examined*

Western Australia: lectotype ♂; 5♂, 2♀, Dedari (45 km WSW, Coolgardie) (WAM, UCD); 1♂, Fields Find (WAM); 1♀, Yellowdine (WAM); 2♂, Moorine Rock near Southern Cross (WAM); all January.

*Comments*

The all black abdomen after the first segment, the peculiar male forefarsus (Fig. 18), and the short *MCU* stem (as in Fig. 1) make this one of the most easily recognized species of the genus. Other characters, not given in the key, are: body length 14-15 mm, LID about scapal length, clypeus yellow with a black free rim, frons with coarse separated punctures on a reticulate background, forefemur with large separated punctures ventrally, forewing brownish in anterior third, no sternaulus, SII a little humped toward base. Additional male features are: FI 2.5× as long as broad, SIV-VI with rows of short fimbriarum. Females have FI about 4× as long as broad, foretarsal I 3.5×, foretarsal IV plantula small and 1.5×, foretarsal V 2×; pygidial plate with coarse and close punctures which have a slight longitudinal orientation.

*Austrogorytes cardaleae*, sp. nov.*Types*

Holotype ♂, 53 km NE, Alice Springs, Northern Territory, 6.x.1978, J. C. Cardale (ANIC). Paratype ♂, James Ranges, Northern Territory, 22.x.1978, J. C. Cardale (UCD).

*Male Holotype*

Length 6 mm. Black; yellow are: scape and pedicel below, pronotal ridge and tubercle, tibiae and tarsi basally (hindtarsus distinctly banded), posterior bands on T1-II, expanded in

lateral third on II, lateral spot and weak posterior margin on III (immaculate in paratype), large median spots on IV-VI; legs partly reddish; forewing nearly clear. Frons with close micropunctuation and scattered small macropunctures, vertex and scutum lightly reticulate and with small punctures well separated by shiny or polished interspaces, punctures on T1 small and scattered, those on TII moderate and 1-2 PD apart, those on SII larger and well separated. LID 1.5× scapal length and 2.5× F-I length, flagellum somewhat expanded toward distal third, FXI curved beneath and spiculate near base (Fig. 11), foretarsal I c. 5 times as long as broad, foretarsal V obovate and nearly as long as II-IV together, scutellum and metanotum ridged-punctate, propodeal enclosure irregularly ridged and without a distinct median groove, propodeum mostly areolate, mesopleuron ridged-punctate, SIV-VI with rather sparse fimbriarum, SII gently convex.

### Comments

Among those species with scutellum, metanotum and propodeal enclosure strongly ridged, *cardaleae* differs by the following combination: scutum with light and separated punctuation but little reticulation, and a relatively broad LID. The species is named for the collector of this and many other Australian Hymenoptera, Josephine Cardale.

### *Austrogorytes carinatus*, sp. nov.

#### Types

Holotype ♂, King George Sound, Western Australia (AM). Paratype ♀, Albany, Western Australia, 19.i.1935, K. R. Norris (WAM).

#### Male Holotype

Length 9 mm. Black; yellow are: clypeus except free rim, inner orbital spot, pronotal rim, lobe, foretibia partly, mid and hindtibiae basally, foretarsals I-IV partly, mid and hindtarsi broadly toward base (distinctly banded), apical bands on T1-II, that on II broken medially; wings stained, more heavily in anterior third. Frons with close moderate punctures, those on scutum rather coarse and most less than a PD apart, those on T1-II small and 1-2 PD apart, those on SII coarse and 1-3 PD apart. LID 1.8× scapal length and 2.2× FI length, FI 1.9× as long as broad, FXI curved but not spiculate, fore and midtarsal V unusually flattened and as long as II-IV together, scutellum and metanotum ridged-punctate, propodeum areolate, enclosure with a median groove, mesopleuron strongly ridged behind projecting omalulus (Fig. 9), SIV-VI with long fimbriarum, SII swollen and ridged subbasally.

#### Female

Length 10 mm. Foretarsus mostly whitish yellow above, TIII narrowly maculate apically. Foretarsomere I twice as long as broad, IV with a long filiform plantula, V enlarged and 1.3× as long as broad; propodeal enclosure strongly ridged, pygidial plate weakly reticulate and with scattered moderate punctures.

### Comments

*A. carinatus* belongs to the group of species with ridged scutellum and metanotum, coarsely punctate scutum, and banded hindtarsus. The unusually strong omalulus is a diagnostic feature.

### *Austrogorytes chrysozonus* (Turner)

*Arpactus chrysozonus* Turner, 1915, p. 72. Holotype ♀, Brisbane, Queensland (BMNH).

*Material Examined*

Queensland: holotype ♀; 1♀, Dec., Highvale near Brisbane (AM).

*Comments*

The species is known from two females only. In size (13 mm long) and general orange and black appearance *chrysozonus* resembles *ciliatus*. On the other hand, the long *MCU* stem of the hindwing and the ridged propodeal enclosure seem to place it elsewhere.

Additional characters, not given in the key, are: LID 1.9 × scapal length and 2.1 times FI length, the latter 1.9 × as long as broad and only slightly longer than FII or FIII, clypeus as well as scape and pedicel yellow, frons broad and with close small punctures, foretarsal IV plantula 3 × as long as broad, forewing brown on anterior third, sternaulus nearly complete, TI and TIII-V broadly orange posteriorly, TII black, pygidial plate orange as well as polished and with scattered small punctures, SII slightly humped and ridged subbasally.

*Austrogorytes ciliatus* (Handlirsch)

*Gorytes ciliatus* Handlirsch, 1895, p. 874. Holotype ♂, Adelaide, South Australia (HMB).

*Material Examined*

Holotype ♂, New South Wales: 3♂, 3♀, Oct.-Nov., 20 miles SE, Bourke (ANIC, UCD), 25 miles W, Nyngan (EVC), 30 miles W, Cobar (ANIC). Queensland: 5 miles N, Nockatunga (ANIC). Western Australia: 2♂, 3♀, Aug., 5 km NW, Boulathana HS. (WAM, UCD).

*Comments*

This rather large (11-15 mm long), orange and black species is easily recognized by the colour pattern: TI and TIV-VI all or nearly all orange, TII with distal half black, and TIII all or mostly black. The peculiar black-spined male foretibia and flattened foretarsus (Fig. 15) are also distinctive. The short *MCU* stem of the hindwing (as in Fig. 1) and mostly smooth propodeal enclosure are characters of *ciliatus* and related species.

Other features, not given in the key, are: LID equal to scapal length, clypeus and antenna as well as upper mesopleural spot orange yellow, frons with scattered small punctures on a reticulate background, forewing darkened in anterior third, SII evenly convex. Additional male characters are: FI 2.5 × as long as broad, foretarsal I 2 ×, foretarsal V 1.5 × (Fig. 15), SIV-VI with golden fimbriarum. Females have FI 3 × as long as broad; foretarsal I 3 ×, foretarsal IV plantula 1 ×, foretarsal V 2 ×; pygidial plate closely and rather finely punctate.

*Austrogorytes cygnorum* (Turner)

*Arpactus cygnorum* Turner, 1908, p. 501. Holotype ♂, Swan River, near Perth, Western Australia (BMNH).

*Material Examined*

Western Australia: Holotype ♂; 1♀, National Park near Perth (WAM). Northern Territory: 3♂, 3♀ km E, Alice Springs, 5.x.1978 (ANIC, UCD).

*Comments*

This species has previously been known only from the male type. Diagnostic features taken together are the sparsely punctate scutum, frons with fine close punctation and scattered small punctures, clypeus yellow, wings evenly stained, scutellum incompletely

ridged, legs unbanded, propodeum proper coarsely areolate, T1-II and following with orange bands (III dark in female), body length 7.0-8.5 mm.

Additional male features are: FI 1.8× as long as broad, FXI simple, and golden fimbriarum on SIV-VI. Female characters are: FI 2.5× as long as broad, foretarsal I 2.8×, plantula of IV 1.5×, and foretarsal V 1.5×. LID about equal to scapal length, pygidial plate with well spaced striatiform punctures on a reticulate background.

*Austrogorytes evansi*, sp. nov.

*Types*

Holotype ♂, Ororoo, South Australia, 13.xii.1943 (SAM). Paratypes: 3♂, 3♀, Ororoo, South Australia, 15.xii-20.xi.1943 (SAM, ANIC, BMNH, EVC, UCD); 1♀, Bamawm, Victoria, W. F. Hill (SAM); 1♂, Yundamindra HS., Western Australia, 16.iii.1979, T. F. Houston *et al.* (WAM); 1♀, 7.5 km SE. Banjiwarn HS., Western Australia, 22.ii.1980, T. F. Houston *et al.* (WAM).

*Male Holotype*

Length 9 mm. Black, yellow are: clypeus except free rim, lower orbital spot, scape at apex, pedicel below, legs partly including front edge of foretarsals I-V, hindtarsus banded whitish yellow basally and black apically, broad bands on T1 and III-IV; orange are: pronotal ridge, scutellar spot, legs partly, tinges on terga including a weakly defined apical band on TII, apicomedial spot on SII; wings clear except brownish in cells bordering on stigma. Frons with close micropunctures and small to moderate punctures about a PD apart, scutum with coarse punctures less than a PD apart, scutellum ridged on periphery but rather smooth and irregularly punctate medially, T1-II with moderate punctures about a PD apart, SII with coarse separated punctures. LID 1.5× scapal length (Fig. 5), flagellum rather stout, FI 1.3× as long as broad (Fig. 33), FXI incurved below but not spiculate, foretarsals II-IV with posterior nodular extensions (Fig. 14), V rectangular, metanotum and propodeal enclosure ridged (as in Fig. 19), latter with median sulcus, rest of propodeum areolate, mesopleuron ridged-punctate, SII humped toward base, SIII-VI fimbriate.

*Female*

Length 9.5 mm. Scape yellow in front, foretarsal V yellow, tergal markings yellowish red to red. Foretarsal I twice as long as broad, with plantula 3× as long as broad (Fig. 30), V enlarged and c. 1.2× as long as broad, pygidial plate reticulate and with moderate punctures 1-2 PD apart. One female has a yellow band on TII and scutellum all dark.

*Comments*

*A. evansi* is similar to *ricki* in having the hindtarsus banded, scutum coarsely punctate, and metanotum ridged. The former differs in the coarsely punctate but incompletely ridged scutellum (Fig. 28), and in the rectangular rather than oval male foretarsal IV (Figs. 13, 14). It is named for the well known expert on Hymenoptera and insect behaviour, my friend Howard Evans.

*Austrogorytes exleyae*, sp. nov.

*Types*

Holotype ♀, 30 miles N. Nockatunga, Queensland, 10.xi.1949, E. F. Riek (ANIC). Paratype ♀, Packsaddle, 11 miles N. Broken Hill, New South Wales, 31.x.1969, R. W. Matthews (UQ).



*Female Holotype*

Length 8 mm. Black, light yellow are: clypeus, lower frons, scape, pedicel, FI, pronotal ridge, lobe, forefemur partly, tibiae basally, tarsi mostly, hindtarsus weakly banded but IV and V dark, apical bands on TI-V, that on II much expanded laterally, that on III weak, IV-V entirely; orange-red are: femora and trochanters mostly, tegula and wing base, TI tinges, TII basomedially, TVI, SII indistinctly, wings faintly stained. Frons closely micropunctate and with scattered small macropunctures, scutum polished with moderate punctures 2-3 PD apart, TI-II with small and rather close punctures, SII with moderate punctures 1-3 PD apart. LID about equal to scapal length, FI 2.5× as long as broad, foretarsal I 3.1× as long as broad, IV with a short plantula, V stout and 1.5× as long as broad, scutellum (Fig. 27) and metanotum ridged-punctate, propodeal enclosure rather finely ridged without a definite median sulcus, rest of propodeum areolate, mesopleuron ridged-punctate; pygidial plate subtriangular, moderately narrow, with coarse separated punctures on a shiny and weak reticulation.

*Comments*

*A. exleyae* belongs to the group of species with the metanotum and scutellum ridged, scutum polished with separated moderate punctures, narrow frons, and FI more than twice as long as broad. It is known only from the female, which has a short plantula on foretarsal IV, and a polished pygidial plate bearing large separated punctures. It is named for the well known hymenopterist, Elizabeth Exley.

*Austrogorytes fimbriatus*, sp. nov.*Types*

Holotype ♂, Lane Cove, suburb of Sydney, New South Wales, 7.i.1947 (ANIC). Paratypes: Western Australia: 2♂, Cottesloe, Dec. 1936, L. Glauert (WAM, UCD); 1♂, Kukerin (WAM); 1♂, Crawley, Perth (WAM).

*Male Holotype*

Length 9.5 mm. Black, orange are: scape and pedicel mostly, pronotal ridge divided medially, lobe, femora at apex, tibiae mostly, tarsi partly, hindtarsus variegated but not distinctly banded, apical bands on TI-VII; forewing brownish along anterior third. Frons rough with coarse and fine punctation, scutum with coarse and close punctation; TI-II with moderate punctures 1-2 PD apart, SII with coarse separated punctures. LID 1.3× scape length, median groove deep in scapal basin but weak above, FI 3× as long as broad, FXI curved and basoventrally spiculate (as in Fig. 11) scutellum and metanotum ridged-punctate, propodeal enclosure irregularly ridged, rest of propodeum areolate, mesopleuron ridged-punctate (as in Fig. 10), SIII and following with long fimbrium.

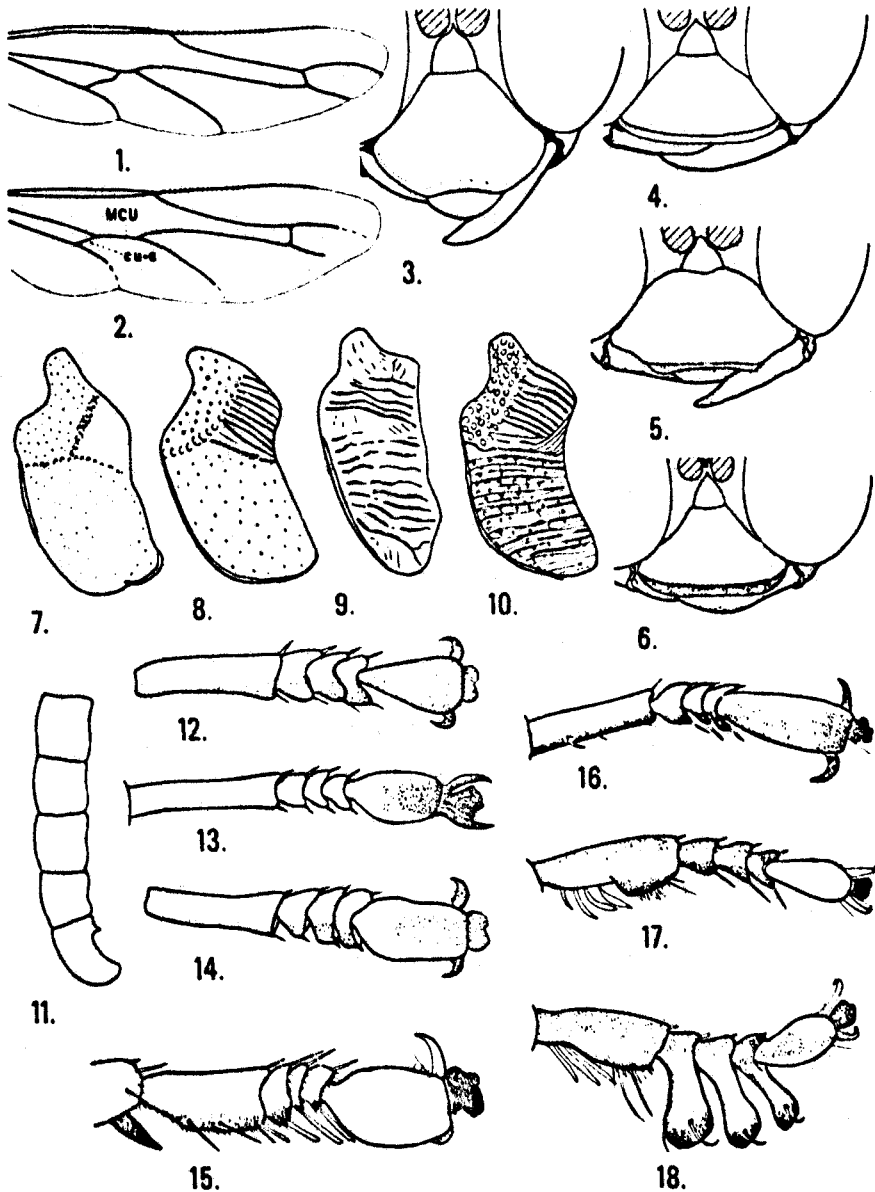
*Comments*

Known only from five males, *fimbriatus* belongs to the group of species with the metanotum and scutellum ridged, and scutum coarsely punctate. It differs by having the hindtarsus mostly dark rather than banded, and FI three times as long as broad.

*Austrogorytes frenchii* (Turner)

*Arpactus frenchii* Turner, 1908, p. 501. Holotype ♂, Victoria (BMNH).

*Arpactus consuetipes* Turner, 1915, p. 77. Holotype ♂, New South Wales (BMNH). New synonymy.



Figs 1, 2. Hindwing venation: 1, *perkinsi*, male; 2, *evansi*, female.

Figs 3-6. Lower half of face: 3, *perkinsi*, male; 4, *tindalei*, male; 5, *evansi*, female; 6, *rufidulus*, female.

Figs 7-10. Mesopleuron, left lateral view: 7, *turneri*, male; 8, *tindalei*, female; 9, *carinatus*, male; 10, *ricki*, female.

Fig. 11. Flagellomeres VII-XI, lateral view, *cardaleae*, male.

Figs 12-18. Foretarsus of male: 12, *tarsatus*; 13, *ricki*; 14, *evansi*; 15, *ciliatus*; 16, *bellicosus*; 17, *perkinsi*; 18, *browni*.

*Material Examined*

Both holotypes ♂ (above). New South Wales: 4♂, 2♀, Dec.-Feb.; Kiandra (ANIC, UCD), Blue Mts (AM), Mt Irvine nr Sydney (AM), Tubrabucca (AM), Mt Kosciusko (ANIC). Australian Capital Territory: 2♀, Dec., Feb.; Blundells (ANIC), Canberra (ANIC).

*Comments*

The type of *consuetipes* has the femora a little more extensively red than in typical *frenchii*, and the antennae are more reddish. However, these characters are variable, and considering the unusual features of two midtibial spurs in males, I think only a single species is involved. Characters of value in addition to those given in the key are: body length 9-12 mm, LID less than scapal length, wings evenly stained, tibiae mostly red, TI longer than broad, and SII evenly convex. Additional male features are: FI twice as long as broad, FXI not curved, foretarsal I c. 6× as long as broad, midtarsal I curved, and midtarsals I-IV somewhat projecting beneath distally, SIV-VI thinly fimbriate. Female characters are: foretarsal IV plantula small, and pygidial plate irregularly but closely rugosopunctate.

*Austrogorytes grahami*, sp. nov.*Types*

Holotype ♂, Blundells, Australian Capital Territory, 21.i.1931, L. F. Graham (ANIC). Paratypes: Australian Capital Territory 1♂ (UCD), 1♀ (ANIC), same data as holotype, 1♂ (UCD), 1♀ (ANIC); Blundells, 6.i.1961, E. F. Riek (ANIC); 1♀, Corin Dam, 35 miles W. Canberra, 9.iii.1970, H. E. Evans and R. W. Matthews (UCD).

*Male Holotype*

Length 8.5 mm. Black; pale yellow are: clypeus, subantennal triangle, scape and pedicel beneath, pronotal ridge, forefemur partly, foretibia and midtarsals I-II mostly, separated transverse spots on TI (absent in paratypes), narrow band on TII somewhat expanded laterally; orange are: wing base, foretarsals I and V partly, mid and hindfemora distally, mid and hindtibia mostly, hindtarsal I; hindtarsus not distinctly banded; wings lightly stained. Frons and scutum with close small punctures, scutellum the same except a faint indication of microridging, TI-II with close reticulation and scattered fine punctures; SII with well spaced, moderate, striatiform punctures. LID slightly more than scapal length, flagellum relatively simple, FI 1.6× as long as broad, metanotum coarsely ridged-punctate, propodeal enclosure more areolate than ridged, rest of propodeum coarsely areolate, mesopleuron completely and rather finely ridged, relatively small fimbriarum on SIV-VI.

*Female*

Length 9 mm. Fore and midtarsal V pale. Foretarsomere I 3× as long as broad, IV with a short plantula (Fig. 31), V enlarged and 1.5× as long as broad; propodeal enclosure ridged-punctate; pygidial plate narrow, closely reticulate, punctures moderate and 1-2 PD apart.

*Comments*

*A. grahami* and *musgravei* both have the upper frons, scutum and scutellum finely and closely punctate along with a ridged metanotum and mesopleuron. The former species differs in having TIV-V mostly dark rather than yellow-banded, and the female pygidial plate heavily reticulate but sparsely punctate. The species is named for L. F. Graham, who collected the holotype.

*Austrogorytes houstoni*, sp. nov.*Types*

Holotype ♂, 10 km W. Tamala HS., Western Australia, 23.viii.1980, C. A. Howard and T. F. Houston (WAM). Paratypes: 2♂, 2♀, same data as holotype (WAM, UCD).

*Male Holotype*

Length 7 mm. Black; orange are: clypeus, scape mostly, pronotal ridge, wing base, legs mostly but hindtarsals II-V black, TI-II mostly, wide band on TIII; wings moderately infumate. Frons with close micropunctuation, scutum with small to moderate punctures which are somewhat irregularly spaced, TI-II with moderate punctures 1-3 PD apart, SII with well separated coarse punctures. LID  $1.6 \times$  scapal length, flagellum somewhat nodular beneath on IV-X (Fig. 35), FI  $2.5 \times$  as long as broad, FXI stout and simple, scutellum finely ridged-punctate, metanotum coarsely so, propodeal enclosure (Fig. 21) and rest of propodeum coarsely areolate, mesopleuron areolate with a few ridges, long fimbriarum on SIV-VI.

*Female*

Length 8.5 mm. Pedicel and femora nearly all orange. FI  $2.8 \times$  as long as broad; foretarsal I  $3 \times$  as long as broad, IV plantula long (about as in Fig. 29), foretarsal V enlarged and  $2.5 \times$  as broad as long, pygidial plate reticulate and with scattered macropunctures.

*Comments*

Among the species with scutellum and metanotum ridged but scutum moderately punctate, *houstoni* differs in having TI-III extensively orange-red, and propodeal enclosure areolate rather than longitudinally ridged. Also notable are the unusually broad abdominal segment II, LID more than scape length, and female foretarsal IV plantula long as well as subtriangular. The species is named for the hymenopterist, my friend Terry Houston.

*Austrogorytes humphreysi*, sp. nov.*Types*

Holotype ♀, Yundamindra, Western Australia, WAM Goldfields Survey, 3.x.1980, W. F. Humphreys (WAM). Paratype ♀ (headless), same data as holotype (UCD).

*Female Holotype*

Length 9.5 mm. Black; orange-yellow are: basal clypeal spot and associated orbital spot, scape, pedicel, base of FI, front margin of pronotum, mesopleural spot behind lobe, scutum laterally, scutellum, metanotum, sublateral spot on propodeal enclosure, legs mostly, hindtarsus variegate and not distinctly banded but V all dark, TI-III mostly but basally black, TIV-V, SII mostly; forewing dark on anterior third. Frons micropunctate and with macropunctures about a PD apart, scutum with moderately coarse and close punctures, TI-II with small to moderate punctures 1-2 PD apart on a reticulate background, SII with scattered coarse punctures. LID  $1.5 \times$  scapal length, foretarsal I  $2.4 \times$  as long as broad, plantula of IV stoutly bladelike and  $2.5 \times$  as long as basal breadth, V enlarged and nearly as broad as long, scutellum and metanotum ridged-punctate, propodeal enclosure closely ridged and with a median sulcus, rest of propodeum areolate; mesopleuron ridged-punctate, TI broader than long, SII strongly humped, pygidial plate subtriangular and polished between well separated and moderate punctures.

### Comments

*A. humphreysi*, known only from the female, is related to those species with metanotum and scutellum ridged, and scutum coarsely punctate. In addition the hindtarsus is not clearly banded, the upper frons is moderately punctate, LID is more than length of scape, FI is 1.5 times as long as broad, foretarsal IV plantula is long, and TI-V mostly orange-yellow. The species is named for W. F. Humphreys, who collected the types.

### *Austrogorytes interruptus*, sp. nov.

#### Type

Holotype ♀, Katoomba, Blue Mountains, New South Wales, 25.xii.1912, C. S. Betton (AM).

#### Female Holotype

Length 9 mm. Black; pale yellow are: clypeus, scape and pedicel beneath, pronotal ridge narrowly, foreleg partly, mid and hindtibia basally, transverse bands on TI-IV broken medially and enlarged laterally, wings lightly stained. Frons closely micropunctate, scutum with scattered small punctures on a shallowly micropunctate surface, scutellum with scattered small punctures on a finely and closely ridged surface (Fig. 24), mesopleuron with scattered small punctures on a shiny and sparsely micropunctate surface with weak posterior microridging, TI-II with scattered minute punctures. LID about equal to scape length, FI 1.8× as long as broad, a distinct median groove on propodeal enclosure, foretarsal I 3× as long as broad, foretarsal IV with plantula short (as in Fig. 31), V missing, propodeal enclosure irregularly ridged, propodeum proper areolate; pygidial plate narrowly subtriangular, closely punctate and reticulate.

### Comments

Known only from the female, *interruptus* derives its name from the medially interrupted pale bands on TI-IV. In addition LID is quite narrow, the scutellum and metanotum are ridged, the mesopleuron is partly smooth, the scutum is reticulate and with small separated punctures, and the reticulate pygidial plate is closely punctate.

### *Austrogorytes meesi*, sp. nov.

#### Type

Holotype ♂, Sturt Creek Camp 1, Kimberley, Western Australia, 26.xiii.1968, G. F. Mees (LMH).

#### Male Holotype

Length 8.5 mm. Black, orange to orange-yellow are: clypeus, inner orbital line, antenna mostly but darkened beneath on FV-VIII, pronotal ridge and lobe, adjacent mesopleural spot, scutellum, metanotum, wing base, legs mostly, hindtarsus distinctly banded, TI-V mostly, basal spot on TVI, SI-III (yellower posteriorly on TI-II and SII-III); wings moderately stained on distal half. Frons closely micropunctate and with a few slightly larger punctures, scutum and scutellum (Fig. 26) as well as TI-II with moderate punctures 1-3 PD apart, SII with moderate to coarse spaced punctures. LID a little more than scapal length, median groove of frons rather deep, flagellum flattened beneath beyond FIII and broadened on FV-IX; FI 2.8× as long as broad, FXI curved and weakly denticulate basoventrally (Fig. 32), midtarsals I-II projecting distally, metanotum and propodeal enclosure ridged-

punctate, enclosure divided medially by a triangular sulcus, mesopleuron ridged-punctate, no visible sternal fimbriarum.

#### Comments

In *meesi* the abdomen is extensively orange to yellow on T1-V and S1-III. It is related to *spryi* and *cardaleuc* with male FXI denticulate beneath (Figs 11, 32). It differs from these by the narrower LID, non-ridged scutellum, and longer FI (2.8 times as long as broad). More general characters are: scutum rather shiny with separated moderate punctures, hindtarsus banded, metanotum ridged, and propodeum proper finely areolate. The species is named for the collector of the holotype, G. F. Mees.

#### *Austrogorytes musgravei*, sp. nov.

##### Type

Holotype ♀, Kurrajong, New South Wales, 25.i.1913, A. Musgrave (AM).

##### Female Holotype

Length 9 mm. Black; yellow are: clypeus, scape and pedicel mostly, frons along lower inner orbit and below antennae, pronotal ridge but not lobe, spot on forefemur, foretibia distally, foretarsal V; narrow tergal bands on I, II, IV, V, that on I interrupted medially; reddish are: tegula and wing base, femora distally, tibiae and tarsi mostly, hindtarsus indistinctly banded; wings lightly stained. Frons as well as scutum and scutellum closely micropunctate, mesopleuron with slightly spaced micropunctures grading posteriorly into fine ridging, T1-II with small separated punctures on reticulate background, SII with large separated punctures. LID about equal to scapal length, FI 2.2× as long as broad, forebasitarsus 3.5× as long as broad, IV with plantula short, V stout and 1.5× as long as broad, metanotum and propodeal enclosure strongly ridged, median groove of enclosure not distinct, rest of propodeum coarsely areolate, pygidial plate narrowly subtriangular and with close small punctures.

##### Comments

Known only from the female, *musgravei*, like *grahami*, has the upper frons, scutum and scutellum finely and closely punctate. Also, the metanotum and propodeal enclosure are coarsely ridged, and the foretarsal IV plantula is rather short. However, in *musgravei* the mesopleuron is more punctate than ridged, and the pygidial plate is closely punctate. The species is named for the collector of the type, A. Musgrave.

#### *Austrogorytes naumanni*, sp. nov.

##### Types

Holotype ♀, 40 miles N. Broken Hill, New South Wales, 10.ix.1949, E. F. Rick (ANIC). Paratype 1♀, same data as holotype (UCD).

##### Female Holotype

Length 8 mm. Black; whitish yellow are: scape, pedicel and FI below, inner orbital spot, pronotal ridge, lobe, tegula partly, scutellum medially, forefemoral spot, tibiae basally, tarsi except for distal black bands on middle and hindlegs, wide posterior bands on T1-V; red are: FII and following beneath, femora mostly, distal 1/2-3/5 of tibiae, TVI at apex; wing veins

reddish to brown, membrane lightly and rather evenly stained. Frons heavily reticulate and with well separated as well as small shallow punctures, scutum with small punctures about a PD apart on a reticulate background, scutellum ridged peripherally but centrally with moderate scattered punctures, propodeal enclosure with slightly oblique ridges and a broad median groove, rest of propodeum areolate, mesopleuron ridged-punctate, TI-II with moderate punctures about a PD apart, SII with large well spaced punctures, LID  $1.6\times$  scape length and  $3\times$  FI length, FI  $1.5\times$  as long as broad, slightly longer than FII, foretarsal I  $2.5\times$  as long as broad, IV with curved plantula  $3\times$  as long as basal breadth, V  $1.5\times$  as long as broad, TI a little broader than long, SII somewhat humped subbasally, pygidial plate polished and with scattered moderate punctures.

#### Comments

The species, represented by two females, has the following combination of characters: FI short ( $1.5$  times as long as broad), LID more than scape length, metanotum ridged, reticulate scutum with small separated punctures, scutellum not completely ridged, foretarsal IV plantula three times as long as broad, TI-V pale banded, hindtarsus banded, pygidial plate polished with separated moderate punctation. The species is named for the CSIRO hymenopterist, Ian Naumann.

#### *Austrogorytes norrisi*, sp. nov.

#### Type

Holotype  $\delta$ , Crawley (Perth), Western Australia, 24.xii.1954, K. R. Norris (WAM).

#### Male Holotype

Length 8.0 mm. Black; yellow are: mandible, clypeus, lower frons, scape, foretibia mostly, other tibiae beneath, transverse lateral spot on TII; orange are: pedicel and flagellum, femora mostly, mid and hindtibia above, tegula and basal wing veins; wings lightly shaded. Punctures of frons moderate and sparse on reticulate surface, moderate and spaced on scutum but closer anteriomedially, coarse and about a PD apart on scutellum, moderate and about a PD apart on TI-II, close and coarse to somewhat separated on SII, metanotum coarsely ridged-punctate, LID equal to scape length and twice FI length, FI  $1.5\times$  as long as broad, FXI simple (as in Fig. 35), hindtarsus not distinctly banded but IV and V mostly dark, lower mesopleuron completely ridged-punctate, propodeum including enclosure areolate, SII weakly humped subbasally, SIV-VI fimbriate.

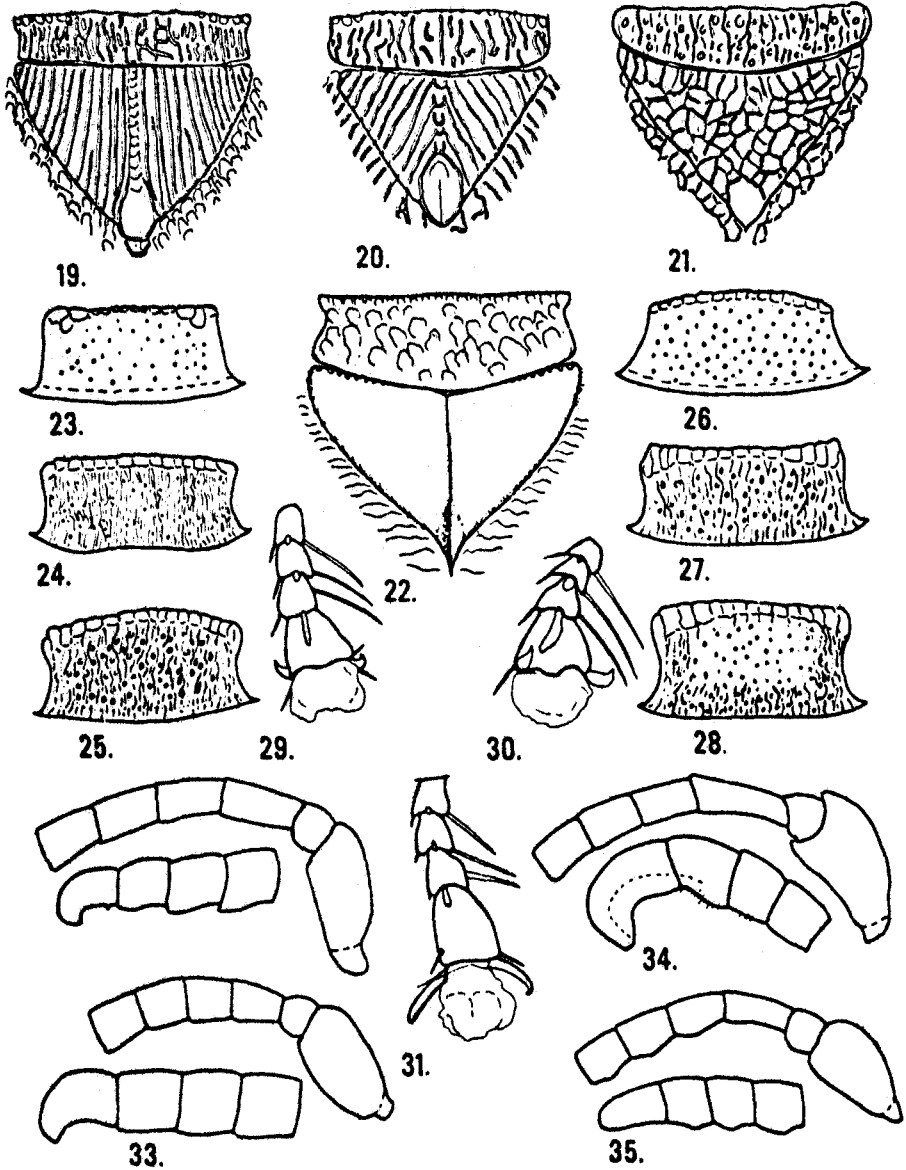
#### Comments

Known only from the male, *norrisi* can be recognized by the following combination of characters: LID equal to scape length, FI short ( $1.5$  times breadth), FXI simple, scutum and scutellum coarsely punctate, metanotum ridged, hindtarsus not distinctly banded, upper frons with unusual punctation, and flagellum mostly orange. The species is named for the collector of the type, K. R. Norris.

#### *Austrogorytes occidentalis*, sp. nov.

#### Type

Holotype  $\delta$ , 10 km ESE, Meeco HS., Western Australia, 23-26.viii.1980, C. A. Howard and T. F. Houston (WAM).



Figs 19-22. Metanotum and propodeal enclosure: 19, *evansi*, female; 20, *rufidulus*, female; 21, *houstoni*, female; 22, *perkinsi*, male.

Figs 23-28. Scutellar sculpture: 23, *turneri*, male; 24, *interruptus*, female; 25, *rieki*, male; 26, *meesi*, male; 27, *exleyae*, female; 28, *evansi*, female.

Figs 29-31. Foretarsomeres II-V, ventral view, female: 29, *rufidulus*; 30, *evansi*; 31, *grahami*.

Figs 32-35. Basal and apical antennal articles, lateral view, male: 32, *meesi*; 33, *evansi*; 34, *perkinsi*; 35, *houstoni*.



*Male Holotype*

Length 8.5 mm. Black; orange are: scape and pedicel mostly, pronotal ridge, lobe partly, large scutellar spot, femora partly, tibiae mostly, broad bands on T1-II and TV-VI, apical spot on TIV, broad band on SII; wings nearly clear except brown in forewing marginal cell area. Frons and scutum with fairly coarse but close micropunctuation, T1-II with punctures moderate and 1-2 PD apart among micropunctures, SII with coarse separated punctures. LID  $1.5 \times$  scapal length, FI  $3 \times$  as long as broad, FXI curved and basoventrally spiculate (as in Fig. 11), scutellum and metanotum ridged-punctate, propodeal enclosure somewhat irregularly ridged, rest of propodeum coarsely areolate, mesopleuron ridged-punctate, SIII and following with long fimbriarum.

*Comments*

In combination the following characters will distinguish *occidentalis*: metanotum as well as scutellum and mesopleuron ridged, upper frons and scutum with fine close punctuation, LID more than scapal length, FI long and XI spiculate beneath, body markings orange, hindtarsus not banded.

*Austrogorytes perkinsi* (Turner)

*Gorytes perkinsi* Turner, 1912, p. 57. Holotype ♀, Cairns, Queensland (BMNH).

*Material Examined*

Queensland: holotype ♀; 1♀, Mt Walsh, Biggenden, carrying small cicada (ANIC). New South Wales: 1♂, 1♀, Southwest Rocks, Trial Bay (AM). All Dec.

*Comments*

This species is the largest of those related to *ciliatus*, which are especially characterized by the nearly smooth propodeal enclosure (Fig. 22), and hindwing *MCU* stem shorter than *cu-a* (Fig. 1). Only the female has been known previously, but I have seen both sexes from Trial Bay, N.S.W. The male has spectacularly modified legs as well as peculiar antennae.

Characters in addition to those given in the key are: body length 18 mm, clypeus all yellow and apically emarginate, LID a little less (male) or more (female) than scapal length, wings reddish with a dark subapical spot, scutum and scutellum heavily reticulate, scutal punctures moderate and well separated, those of scutellum small and scattered, TII all black. Features of the male are: basally projecting fore and midfemora, distally swollen midtibia and hindfemur, peculiar foretarsal I (Fig. 17), midtibia with only one very short spur, FI twice as long as broad, FXI stoutly curved and distally compressed (Fig. 34), no visible sternal fimbriarum. Female characters are: FI  $3 \times$  as long as broad, foretarsal IV plantula short, pygidial plate closely and finely striatopunctate.

*Austrogorytes permaculatus*, sp. nov.*Type*

Holotype ♀, 7.5 km SE. Banjiwarn HS., Western Australia 22-28.ii.1980, at honeydew on foliage of *Hakea*, T. F. Houston (WAM).

*Female Holotype*

Length 8.5 mm. Black; yellow are: scape and pedicel, large median clypeal spot, pronotal ridge and lobe, scutellum mostly; whitish yellow are: tarsi except black distal bands on

hindtarsus; orange yellow arc: trochanters, femora, tibiae, TV-VI, TI-IV except V-shaped basal dark marks; wings brown-stained, a little darker anteriorly. Punctures on frons and on scutellum moderately coarse and about a PD apart, those on scutum coarse and less than a PD apart, those on mesopleuron moderate and about a PD apart but grading posteriorly into ridging, those of terga fine to moderate and somewhat spaced, those of SII coarse and separated. Ridging coarse on propodeal enclosure and hypocpimeron, becoming areolate on metanotum and propodeum proper. LID  $1.5 \times$  scape length, FI  $2.5 \times$  as long as broad, frons and propodeal enclosure with well marked median sulcus; foretarsus with  $1.3 \times$  as long as broad, IV with a long slender plantula, V enlarged and  $1.8 \times$  as long as broad; pygidial plate broadly rounded at apex, reticulate with coarse separated punctures.

#### Comments

This species is known only from the female but should be easily distinguished by the extensively maculate terga, dark wings, banded hindtarsus, and coarse separated punctures on the scutellum and mesopleuron. In addition FI is rather long, LID is greater than scapal length, and foretarsal IV plantula is long and slender.

#### *Austrogorytes pretiosus* (Turner)

*Arpactus pretiosus* Turner, 1915, p. 75. Holotype ♂, Yallingup, Western Australia (BMNH).

#### Material Examined

The holotype only.

#### Comments

This species is known only from the type male. The red and yellow TI-II, with TIII and following immaculate, together with the relatively broad LID, simple FXI, one-spurred midtibia, scattered small scutal punctures, and FI-II each twice as long as broad, characterize *pretiosus*.

Other features, not given in the key, are: body length 7.5 mm, clypeus yellow, wings evenly stained, mesopleuron ridged-punctate, TI red, TII yellow band divided medially, SII evenly convex, SIV-VI long fimbriarum.

#### *Austrogorytes rieki*, sp. nov.

#### Types

Holotype ♂, 25 miles S. Tibooburra, New South Wales, 1.xi.1949, S. J. Paramonov (ANIC). Paratypes: New South Wales: 4♂, 1♀, same data as type but also coll. E. F. Rick (ANIC, BMNH, UCD); 2♂, Carrathool, 1920, W. W. Froggatt (AM, ANIC); 2♂, 2♀, Clifton Downs, 31.x.1949, E. F. Rick (ANIC, UCD); 1♂, 3 miles W. Wentworth, 27.xi.1969, R. W. Matthews (UQ); Northern Territory: 3♂, 1♀, 33 km WNW. Alice Springs, 30.ix.1978, J. C. Cardale (ANIC, AM, UCD, WAM); 1♂, 155 km ENE. Alice Springs, 13.x.78, J. C. Cardale (ANIC).

#### Male Holotype

Length 8 mm. Black; deep yellow arc: clypeus centrally, scape and pedicel in front, pronotal ridge, lobe, scutellar spot, forefemur partly, tibiae basally, broad bands on TI-V; orange arc: flagellum toward apex, tibiae distally, TVII; whitish yellow arc: fore and midtarsi mostly but V dark centrally, basal bands on hindtarsals (distinctly banded); wings stained,

darker anteriorly on distal half. Frons with close small to moderate punctures, scutum with moderately coarse punctures mostly less than a PD apart, scutellum ridged-punctate (as in Fig. 25), SII with very large coarse punctures to moderate ones. LID  $1.5\times$  scapal length, flagellum rather stout, FI  $1.3\times$  as long as broad (about as in Fig. 33), XI incurved beneath but not spiculate, foretarsal V roughly oval (Fig. 13), midtarsal V similar but a little more slender, scutellum and metanotum ridged-punctate, propodeal enclosure ridged-punctate but without a median division, rest of propodeum areolate, mesopleuron ridged-punctate, SII humped toward base, SIV-VI fimbriate.

#### Female

Length 9 mm. Clypeus sometimes all black, metanotum often with an orange dot; foretarsal V all pale. FI  $1.6\times$  as long as broad; foretarsal I  $2.5\times$  as long as broad, foretarsal IV plantula curved and  $3.5\times$ , foretarsal V enlarged and  $1.5\times$ ; pygidial plate reticulate and with scattered moderate punctures.

#### Comments

*A. rieki* is similar to *evansi* and both have FI short, metanotum and mesopleuron ridged, hindtarsus banded, LID more than scapal length, and female foretarsal IV plantula long. However, *rieiki* has the scutellum completely ridged (Fig. 25), terga usually more extensively maculate, and male foretarsal V nearly oval rather than rectangular (Figs 13 v. 14). The species is named for my friend E. F. Riek, who collected much of the *Austrogorytes* material on which this paper is based.

#### *Austrogorytes rufidulus*, sp. nov.

#### Type

Holotype ♀, 10 km S. Perenjori, Western Australia, 1.xi.1958, E. F. Riek (ANIC).

#### Female Holotype

Length 9 mm. Black; orange are: clypeus mostly, scape and pedicel, pronotal ridge, lobe, tegula and wing base, legs almost entirely but hindtarsus with black and whitish bands, TI-III and SI-III almost totally but a little black medially on TIII; wings lightly shaded. Frons with somewhat coarse micropunctures and a few scattered macropunctures, scutum with moderate punctures 2-3 PD apart, scutellum and mesopleuron ridged-punctate, propodeal enclosure obliquely ridged and grooved medially (Fig. 20), rest of propodeum ridged to finely areolate, TI-II with small punctures 1-2 PD apart, SII with spaced moderate punctures. LID slightly less than scape length and a little more than FI length (Fig. 6), FI  $2.5\times$  as long as broad, foretarsal I  $3.5\times$  as long as broad, IV with long slender plantula (Fig. 29), V  $1.6\times$  as long as broad, TI nearly  $1.5\times$  as long as broad, SII gently convex, pygidial plate narrowly subtriangular and polished between scattered moderate punctures.

#### Comments

Known only from the female, the abdominal markings of *rufidulus* are striking: segments I-III orange, IV-V and most of VI black. Other important characters are: scutum with scattered punctures, scutellum as well as metanotum and mesopleuron ridged, FI slender, LID narrow (Fig. 6), foretarsal IV plantula long (Fig. 29), and hindtarsus banded.

#### *Austrogorytes spinicornis* (Turner)

*Arpactus spinicornis* Turner, 1915, p. 76. Holotype ♂, Beverley, Western Australia (SAM).

*Material Examined*

The holotype only.

*Comments*

This species, known only from the type, seems to be related to *spryi* but SIV-VI are thinly fimbriate and there is no sharp spicule beneath FXI. The somewhat banded flagellum is quite unusual in *Austrogorytes*.

Other characters, not given in the key, are: body 11 mm long, FI c. 2.5 × as long as broad, wings rather evenly and slightly stained, midtarsal I rather strongly projecting posterodistally, SII evenly convex.

*Austrogorytes spryi* (Turner)

*Arpactus spryi* Turner, 1915, p. 73. Holotype ♂, Mordialloc, Victoria (BMNH).

*Arpactus obesus* Turner, 1915, p. 74. Lectotype ♂, present designation; Yallingup, Western Australia (BMNH). New synonymy.

*Material Examined*

The types. Queensland: 9♂, 3♀, Brisbane, Bororen, 35 miles SW, Collinsville, Mt Webb, 25 km S, Bundaberg, 5 km NW, Rounded Hill near Hope Vale Mission. New South Wales: 7♂, 5♀, Cheltenham, Lane Cove, Wagga Wagga, Sydney. Northern Territory: 1♂, 1♀, 12 km WSW, Alice Springs. Western Australia: 2♀, W. Subiaco, Bunbury. Aug.-Jan.

*Comments*

Turner's differentiation of *obesus* was based mainly on the interrupted yellow tergal bands. In a series of specimens from Western Australia to New South Wales and Queensland TI-V, at least, are banded and the pale marks may be yellow to orange yellow and complete or broken. More diagnostic in this variable species are the coarse close reticulation of the scutum with scattered small punctures, and in the male with FI-III equally long and FXI sharply spiculate beneath at base (as in Fig. 11).

Other characters, not given in the key, are: body length 7.0-8.5 mm, FI 2.3 × as long as broad, clypeus often all black but sometimes partly to all yellow, frons very finely and closely punctate, wings only a little stained except in marginal cell, hindtarsus distinctly banded, and SII rather evenly as well as gently convex. Additional male features are: foretarsal I 6 × as long as broad, T1 as long as broad, no visible sternal fimbriarum, concealed basal pubescence present on SIV-VI. Other female characters are: foretarsal I 3 × as long as broad, IV plantula long and filiform, pygidial plate polished and with scattered moderate punctures.

*Austrogorytes tarsatus* (F. Smith)

*Gorytes tarsatus* F. Smith, 1856, p. 366. Holotype ♂, Adelaide, South Australia (BMNH).

*Gorytes eximius* F. Smith, 1862, p. 55. Holotype ♀, Adelaide, South Australia (BMNH).

*Material Examined*

South Australia: holotypes; 5♂ (SAM, UCD). Western Australia: 2♂, 6 miles E. Darkan (AM); 1♂, nr Dedari (WAM); 1♂, Kukerin (WAM); 1♀, Nedlands (WAM). All in Jan.

*Comments*

*A. tarsatus* and related species (*evansi*, *rieki*, *carinatus*) are characterized by coarse and rather close scutal punctures together with strongly banded hindtarsi. The foretarsal

conformation in male *tarsatus* is especially diagnostic (Fig. 12). If my association is correct, the female of *tarsatus* has a yellow clypeus and the male a dark one with a median orange spot. This arrangement is somewhat unusual for *Austrogorytes*.

In addition, besides characters given in the key: body length is 7–9 mm, forewing dark in distal half of anterior third, frons with close moderate and fine punctures, T1–II with broad orange bands, TIII sometimes and TIV rarely orange-banded, SII swollen and somewhat ridged subbasally. Other male characters are: FI 1.5× as long as broad, FXI incurved, foretarsal I 1.5× as long as broad, II–IV expanded and nodular posteriorly (Fig. 12), SIV–VI with a fimbriarum. Additional female characters are: FI 1.8× as long as broad, foretarsal IV plantula stout but twice as long as broad, foretarsal V 1.5× breadth, pygidial plate with moderate well spaced punctures on weak reticulation.

### *Austrogorytes tindalei*, sp. nov.

#### *Types*

Holotype ♂, Groote Eylandt, Northern Territory, N. B. Tindale (SAM). Paratypes, 2♀, Port Darwin, Northern Territory, R. C. L. Perkins (BMNH, UCD).

#### *Male Holotype*

Length 9 mm. Black; yellow are: clypeus, subantennal area, lower orbital spot, scape and pedicel, FI mostly, pronotal ridge, scutum laterally, scutellum, medial spot on metanotum, pronotal lobe and adjacent mesopleural spot, fore and midfemora partly, fore and midtibiae mostly, foretarsal I, hindtibia basally, midtarsals I–III, hindtarsals I–III basally (distinctly banded), narrow apical bands on T1–III which are expanded laterally and incised medially, apical bands on TIV–VI; orange are: foretarsals IV–V, midfemur partly, hindfemur, SII mostly, bands on SIII–VI; wings lightly stained. Pubescence golden and appressed on scapal basin and below. Frons with weak reticulation and small punctures 1–2 PD apart, scutum and scutellum lightly reticulate and with moderate punctures, those of scutum 1–2 PD apart, those of scutellum 2–3 PD apart, mesopleuron (except hypopleuron) polished and with widely spaced small punctures (as in Fig. 8), T1–II with moderate punctures a PD apart or less, SII with rather close and coarse punctures. LID 1.2× scapal length (Fig. 4), median groove of frons sharp, flagellum slender, somewhat nodular beneath on FV–X, FI 1.5× as long as broad, FXI simple, foretarsus simple, midtibia with 2 apical spurs, metanotum and propodeal enclosure ridged-punctate, latter without a distinct median division, rest of propodeum coarsely areolate, SIV–VI with a fimbriarum.

#### *Female*

Length 9.5 mm. Foreleg and midleg beyond femur nearly all yellow, TVI and SI–VI all red, T1–II with some reddish. LID about equal to scapal length, foretarsomere I 3× as long as broad and with short rake setae, IV with a small plantula, V enlarged and 1.5× as long as broad, pygidial plate with dense elongate punctures, almost ridged.

#### *Comments*

The punctuation alone will distinguish this species: scutum with moderately coarse separated punctures, scutellum with moderate well spaced punctures, and mesopleuron polished with small punctures which are widely scattered. Other features are: LID narrow (Fig. 6), frons with dense golden pubescence, and male midtibia with two spurs. Female characters are the short plantula of foretarsal IV and the closely striatopunctate pygidial plate. The species is named for the collector of the holotype, N. B. Tindale.

*Austrogorytes turneri*, sp. nov.*Types*

Holotype ♂ (BMNH), Yanchep, Western Australia, 3.xii.1919, 1935, R. E. Turner (BMNH).

*Male Holotype*

Length 15 mm. Black; orange are: lower half of face, antennae (F-II etc. missing), pronotum, anterolateral scutal spots, scutellum, propodeum posteriorly, mesopleuron behind pronotal lobe, legs mostly, abdominal segments I and VII, TV-VI, wide posterior bands on TIII-IV; wings lightly reddish, a little darker in submarginal and marginal cells; foretarsus brown with a median pale stripe on I-IV. Punctures of frons moderate and spaced on reticulate surface, moderate and sparse on scutum and mesopleuron (Fig. 7), fine and sparse on reticulate scutellum (Fig. 23), practically absent on propodeal enclosure, fine and sparse on abdomen, coarse and rough on metanotum (as in Fig. 22). Face (as in Fig. 3), deep median groove on lower frons and on propodeal enclosure (as in Fig. 22), hindwing stem of *MCU* half as long as *cu-a* (as in Fig. 1), femora rather simple, foretarsus (about as in Fig. 17), apparently no midtibial spurs, SII weakly convex, SIV-VI with long golden fimbriarum.

*Comments*

*A. turneri* is somewhat smaller than *perkinsi* and more extensively orange but the two species have several important points in common: metanotum more punctate than ridged (Fig. 22), propodeal enclosure smooth (as in Fig. 22), propodeum proper transversely ridged, scutellum and mesopleuron mostly smooth, peculiar foretarsal I, hindwing *MCU* stem shorter than *cu-a*, and LID equal to scapal length. Major points of difference in *turneri* male are the nearly simple femora, smaller scattered punctures on the scutum, and much reduced pubescence overall. The species is named for R. E. Turner, who published the basic work in the genus.

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