

REVISION OF THE AUSTRALIAN EUAESTHETINAE (COLEOPTERA: STAPHYLINIDAE)*

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* 25th contribution to the knowledge of Euaesthetinae.

Abstract

This paper revises all Australian Euaesthetinae hitherto described (4 genera, 9 species, 1 syn. nov.). It deals with the lectotypology of one Oke species, and includes descriptions of one new genus and nine new species (*Mesoaesthetus tasmanicus*, *Tasmanosthetus okei* gen. et sp. nov., *Austroesthetus tasmanicus* n. sp. *Edaphus australicus*, *E. brittoni*, *E. invidiosus*, *E. nevoissi*, *E. zwicki*, *E. zwickianus*). Three species are described from Tasmania and are the first records of the Euaesthetinae for that state. Tentative zoogeographic and phylogenetic analysis shows that there is a remarkable endemism at the generic level, that the fauna of Tasmania is very close to that of Victoria, and that the new genus *Tasmanosthetus* represents a gondwanian element, close to another genus of the subfamily from Chile.

Introduction

With at present 25 genera, the staphylinid subfamily Euaesthetinae has a world wide distribution. All species are tiny, mostly less than 2 mm in length, many are wingless and microphthalmous-anophthalmous. Our knowledge of their ecology is very poor; most species belong to the humicolous fauna, some live in soil.

So far nine taxa have been described from Australia. The present revision is based on the holotypes of all described species, undescribed specimens from the collection of the National Museum of Victoria, Melbourne, and on material recently collected by H. Franz and P. Zwick.

These are the results:

1. First record of Euaesthetinae from Tasmania.
2. There are six genera in Australia of which two are new.
3. In total there are now 21 known species, of which six remain unnamed for various reasons. Nine new species are described.
4. *Edaphus melculus* var *camponoti* (Oke) is a junior synonym of *E. termitophilus* Bernhauer.

Discussion

A substantial zoogeographic and phylogenetic analysis of the Australian Euaesthetinae cannot be given now. I am sure that only a

small proportion of the existing species has been collected so far. Some remarks, however, can be made:

- (a) The Australian fauna contains the highest number of endemic genera found in any continent. Except *Edaphus* Motschulsky the other five genera (Gen. spec.; *Mesoaesthetus* Cameron; *Tasmanosthetus* n. gen; *Austroesthetus* Oke; *Geosthetus* Oke) are restricted to Australia, for comparison: one genus is endemic in New Zealand (*Agnosthaetus* Bernhauer), three genera are endemic in Chile (*Chilioesthetus* Saiz, *Notoesthetus* Saiz, *Alzadesthetus* Kistner), one in the Himalaya (*Orosthetus* Puthz), one in Madagascar (*Coiffaitia* Kistner and Shower), one in East Africa (*Gerhardia* Kistner), one in North America (*Fenderia* Hatch), and two in the mediterranean region (*Ctenomastax* Kraatz, *Euaesthetotyphlus* Coiffait and Decou).
- (b) The five endemic genera of Australia are restricted to the Bassian faunal province, but no species is so far known from Western Australia.
- (c) Two of the endemic genera are represented in Victoria and Tasmania, which support the view that the fauna of Tasmania is close to that of S.E. Australia.

- (d) The apterous new genus *Tasmanosthetus* is possibly phylogenetically near to *Chilioesthetus* Saiz. It represents a southern (gondwanian) element.
- (e) *Edaphus* Motschulsky is recorded from Northern Queensland to Adelaide, but has not been found in Tasmania. This genus has a worldwide distribution and is also known from various oceanic islands. It is probable that the insects have been dispersed as aerial plankton on prevailing winds. The Australian *Edaphus* undoubtedly represent younger northern elements.

I think that these tentative remarks make it clear that careful collecting of Euaesthetinae (mainly by sifting plant debris and by using the Berlese-method, especially in native forests) should be of great value in solving phylogenetic and zoogeographical questions of general interest. I am always prepared to study such materials.

In the key given below I have included those species which have not been named. In relation to the descriptions of *Edaphus* species I refer the reader to my remarks on the taxonomic characters of this genus (Puthz 1974).

Tribe STENAESTHETINI

1. Gen. spec. ?

There is one female in the collection of the National Museum of Victoria which has no locality label. The species has the tarsal formula 5-5-4 and the abdomen immargined. The antennae are 11-segmented and distinctly enlarged towards club, labrum denticulate at anterior margin, labium with rounded lobes and a triangular median excision.

Without any doubt this species belongs to the tribe Stenaesthetini and is distinctly different from *Stenaesthetus* Sharp, *Aulacosthaetus* Bernhauer, and *Gerhardia* Kistner. Because the sole remaining genus of the tribe, *Agnosthaetus* Bernhauer (New Zealand), is insufficiently described, a clear decision on the generic status of this female is impossible at present. But it is highly probable (following the description of *Agnosthaetus*) that the Australian specimen represents a new genus.

Tribe AUSTROESTHETHINI

Genus *Mesoaesthetus* Cameron.

Mesoaesthetus Cameron, 1944, *Ann. Mag. nat. Hist.* (11)11: 68.

Type species: Mesoaesthetus wilsoni Cameron, 1944.

2. *Mesoaesthetus wilsoni* Cameron, 1944
Mesoaesthetus wilsoni Cameron, 1944, *Ann. Mag. nat. Hist.* (11) 11: 69f.

Material examined: ♂-holotype: Victoria: Warburton, 4000', in tussocks, 20.XI.1927, F. E. Wilson (BMNH); 1 ♀: Victoria: Cumberland Falls, 1.XI.1966, J. Ramsay (NMV).

Proportional measurements of the ♂-holotype: Width of head: 47; width of pronotum: 48.5; length of pronotum: 50; greatest width of elytra: 50; greatest length of elytra: 33; sutural length: 25. Length of body: 1.7-2.1 mm. *Male:* 8th sternite with a deep notch in posterior half (length of sternite: depth of notch = 47:27). Aedeagus (figs. 1, 2).

3. *Mesoaesthetus tasmanicus* sp. nov.

Ferruginous, slightly shining, densely coriaceous, densely pubescent. Antennae, palpi, and legs reddish yellow.

Length: 1.8-2.2 mm.

♂-holotype and ♀-paratype: Tasmania: 'Parawee' (Parrawe), XII. 1939, F. E. Wilson.

Because the new species is very close to *M. wilsoni* Cam. a full description is not necessary. A detailed comparison should be sufficient to characterize this new species.

Proportional measurements of the holotype: Width of head: 49; length of frontoclypeus: 35; distance between eyes: 39; width of pronotum: 50; length of pronotum: 52; greatest width of elytra: 51; greatest length of elytra: 35; sutural length: 25.

Eyes as large or slightly larger than temporal depression, sculpture of frons slightly denser than in *M. wilsoni*. Pronotum about as in *M. wilsoni* but the sides posteriorly slightly concave, basally on each side with two impressions, the inner one distinctly smaller than the lateral one, about as large as largest cross section of 2nd antennal segment. No further

impressions (in *M. wilsoni* there are two shallow longitudinal impressions in the posterior half of pronotum). Sculpture slightly denser than in *M. wilsoni*. Elytral sculpture less dense and more shallow than that of pronotum, with a moderately fine, indistinct punctation. Abdominal sculpture somewhat denser than in *M. wilsoni*.

Male: 7th sternite broadly emarginated at posterior margin. 8th sternite with a deep oval notch, which is slightly longer than half of the sternite and has a membranous margin basally. 9th sternite sharply pointed at apex. Aedeagus (figs. 3, 4) distinctly broader than in *M. wilsoni*; no distinctly separated parameres.

Holotype in the National Museum of Victoria, paratype in the author's collection.

Tasmanosthetus gen. nov.

Type species: Tasmanosthetus okei sp. nov.

This new genus belongs to the tribe Austroesthetini because all the tarsi are 4-segmented and the abdomen is immargined.

Head large, eyes extremely small, consisting of about three ommatidia, frons regularly rounded, deeply shagreened, neck distinctly separated. Gular sutures distinctly separated anteriorly, not so in posterior portion. Labrum (fig. 14) distinctly denticulate anteriorly, mandibles (fig. 13) long and slender, acute and with an acute tooth near middle. Maxillae resembling those of *Geosthetus* (Oke 1933 fig. 37), palpi 4-segmented: 1st segment slightly shorter than 2nd, both slender, 3rd segment large, about as long as 2nd but nearly twice as broad, 4th very small, subulate. Labium slightly broader than long, anterior margin subtriangularly emarginate, sides rounded, palpi with 3 segments, 1st small, 2nd large, 3rd thin, subulate. Antennae (fig. 12) 11-segmented, basal 2 segments larger than the following ones, club distinct, last segments distinctly separate.

Pronotum about as broad as head, with a small basal fovea laterally and four shallow longitudinal impressions dorsally. Anterior margin of prosternum indistinctly crenulate, not distinctly denticulate, prosternal process short and narrow. Elytra very short, epipleurae separated from dorsal surface by a narrow but

distinct margin, no sutural margination. Wings absent. Mesosternum about as long as metasternum, mesosternal process short, narrow, acute, mesocoxae posteriorly contiguous. Metasternum smooth but basally with a median carina, metasternal process short, posterior coxae distinctly separate.

Abdomen ellipsoid, very elongate, longer than fore body, immargined except segments 7 and following. 7th sternite without an apical membranous fringe. Valvifera apically pointed.

Legs short, tibiae apically with a row of stronger setae, tarsi 4-segmented.

Male: unknown.

Female: 8th sternite apically moderately narrowly rounded. Spermatheca weakly sclerotized, inconspicuous.

Tasmanosthetus n. gen. can be distinguished from other Euaesthetine genera which have 4-segmented tarsi and an immargined abdomen as follows: from *Mesoesthetus* Cameron by smaller eyes and not impressed temporal region of head, from *Austroesthetus* Oke by smaller eyes, differently shaped antennae, rounded labial lobes, and the lateral margin of elytra, from *Chilioesthetus* Saiz by the distinctly separated segments of the antennal club and the immargined 3rd abdominal segment.

Unfortunately no male of the new genus is known. At present from exoskeletal characters, *Chilioesthetus* Saiz is regarded as very closely related to *Tasmanosthetus*.

4. *Tasmanosthetus okei* sp. nov.

Apterous, very slender, testaceous, rather shining. Antennae, palpi, and legs yellowish. Head and pronotum densely shagreened, elytral sculpture less dense, more irregular and more shining, abdomen with the ground sculpture pineapple-like, the most shining portion of the insect.

Length: 1.3-1.9 mm (extended).

♀-holotype and ♀-paratype Tasmania: Mt. Wellington, Oct., C. Oke.

Head nearly as broad as elytra (28:29), length of front (from anterior margin up to beginning of neck: 23), ocelli slightly smaller than minute eyes, distance between ocelli and

eyes about the same. Antennal tubercles moderately prominent. Front without any impression, extremely densely shagreened, rather dull.

Pronotum about as broad as head (28, 5: 28), somewhat longer than broad (31: 28.5). Impressions (see above). Ground sculpture about as on head, very slightly less dense, that of the sides somewhat granulate.

Elytra much broader than long (29: 19), shoulders rounded off, sides nearly parallel in posterior half, posterior margin broadly emarginate (sutural length: 14). Ground sculpture irregular, distinctly less dense than that of pronotum, slightly granulate.

Abdomen very long and broad, densely pubescent. Ground sculpture resembling that of a pineapple surface, somewhat less dense than that of elytra.

Legs moderately slender, meta tarsi about three-fifths as long as metatibiae, 1st segment of the simple tarsi nearly as long as the 4th.

Female: 8th tergite with a small rounded median posterior process. 8th sternite narrowly rounded posteriorly. Valvifera apically pointed.

I dedicate this remarkable new species to the late Charles Oke, specialist of Australian Staphylinidae.

Holotype in the National Museum of Victoria, paratype in the author's collection.

Genus *Austroesthethus* Oke.

Austroesthethus Oke, 1933, *Proc. r. Soc. Vict.* 45: 112.

Type species: Austroesthethus passerculus Oke, 1933.

5. *Austroesthethus passerculus* Oke, 1933

Austroesthethus passerculus, Oke 1933, *Proc. r. Soc. Vict.* 45: 112 f. figs.

Austroesthethus passerculus; Neboiss, 1964, *Mem. natn. Mus. Vict.* 26: 147.

Male: 8th sternite with a broad emargination in about posterior 6th. 9th sternite as in fig. 11. Aedeagus (fig. 8).

Material examined: ♂-holotype: Victoria: Warburton, 4080', 15.II.1931, C. Oke; 1 ♀-paratype: Vic., Belgrave—Mt. Kosciusko NSW (two labels), C. Oke; 1 ♂-paratype: Belgrave, 2.VII.1921, C. Oke; 1 ♂, 1 ♀-paratypes: Belgrave, 1.VII.1921, C. Oke, in moss

with ants on stone; 1 ♀-paratype: Ferntree Gully, 16.IV.1927, C. Oke; 1 ♀: ibidem, 9.VII.1921, F. E. Wilson; 1 ♀: Warburton, 25.IV.1920, from moss, F. E. Wilson; 1 ♀: Healesville, V.1929, F. E. Wilson; 1 ♂: 9 mi. W. Cement Creek, Acheron River, 8.IV.1972, P. Zwick; 1 ♂: Belgrave, Sherbrook Forest, 21.VII.1972, P. Zwick; 1 ♂, 2 ♀♀: Dandenong Ranges, Belgrave, 21.VII.1972, P. Zwick (NMV, Museum Geneva, the author's collection).

6. *Austroesthethus gippsensis* oke, 1933

Austroesthethus gippsensis, Oke 1933, *Proc. r. Soc. Vict.* 45: 114 figs.

Austroesthethus gippsensis; Neboiss, 1964, *Mem. natn. Mus. Vict.* 26: 138.

Male: 8th sternite with a deep and broad notch in about posterior 3rd (length of sternite: depth of notch = 44:16). Aedeagus (figs. 5, 6).

Material examined: ♂-holotype: Victoria: Pakenham, 21.IX.1925, C. Oke; 1 spec. (Last abdominal segments missing): ibidem, 20.X.1925, C. Oke; 3 ♀♀: no locality (NMV, 1 ♀ in the author's collection).

7. *Austroesthethus tasmanicus* sp. nov.

Brachypterous, ferruginous, abdomen darker, castaneous; moderately shining. Antennae, palpi, and legs reddish yellow. Head and pronotum moderately finely and moderately densely punctate, elytral punctation very fine and sparse. Pubescence of fore body sparse, that of abdomen moderately long and dense.

♂-holotype and ♀-paratype: Tasmania: 'Parawee' (Parrawe), XII.1936, F. E. Wilson; 1 ♀-paratype Mt. Wellington, 4.X.1954, C. Oke.

Head about as broad as elytra (46: 45), distance between eyes: 35. Eyes large, coarsely faceted, temples distinct, about one-third as long as eyes (seen from above). Front strongly and densely shagreened and with a moderately fine and moderately dense punctation.

Antennae about as in *A. passerculus* Oke.

Pronotum slightly narrower than head (44: 46), about as long as broad, widest about anterior half, sides towards anterior margin convex, towards posterior margin strongly, somewhat concavely narrowed. Base on each side with a moderately large impression, be-

tween lateral impressions with about 6 small fovea. Punctuation about as on head but microsculpture less deep and less dense: pronotum more shining than head.

Elytra slightly narrower than head (45: 46), distinctly broader than long (45: 38), shoulders rounded off, sides arcuate, slightly constricted posteriorly, posterior margin broadly emarginated (sutural length 26). A fairly narrow and deep sutural impression can be seen. Microsculpture even shallower than on pronotum, and irregular, punctuation very fine and sparse, indistinct.

Abdomen moderately coarsely and very closely granulate-punctate.

Male: 7th sternite with a small triangular process in the middle of the posterior margin. 8th sternite with a semicircular emargination in about posterior 5th (length of sternite: depth of emargination = 37:8). 9th sternite sharply pointed. Aedeagus (fig. 7), internal sac with expulsion mechanisms which are strongly sclerotized.

Female: 8th sternite narrowly rounded at posterior margin.

Austroesthethus tasmanicus n. sp. can be distinguished from *A. gippsensis* Oke by its smaller eyes and punctate fore body, from *A. passerculus* Oke by the densely shagreened pronotum, and from *A. punctatus* Oke by its colouration, very fine and indistinct elytral punctuation, and denser sculpturation of the abdomen, from all these species by its sexual characters.

Holotype and 1 paratype in the National Museum of Victoria, 1 paratype in the author's collection.

8. *Austroesthethus punctuatus* oke, 1933

Austroesthethus punctatus, Oke 1933, *Proc. r. Soc. Vict.* 45: 114 f.

Austroesthethus punctatus; Neboiss, 1964, *Mem. natn. Mus. Vict.* 26: 149.

Male: 8th sternite with a moderately broad and deep notch in about posterior third (length of sternite: depth of notch = 41: 12). 9th sternite (fig. 11). Aedeagus (figs. 9, 10).

Material examined: ♂-holotype: Victoria: Grampians, C. Oke. (NMV).

Genus. *Geothethus* Oke.

Geothethus Oke, 1933, *Proc. R. Soc. Vict.* 45: 111.

Type species: *Geothethus attenuatus* Oke, 1933.

9. *Geothethus attenuatus* oke, 1933

Geothethus attenuatus, Oke 1933, *Proc. r. Soc. Vict.* 45: 111 f. figs.

Geothethus attenuatus, Neboiss 1964, *Mem. natn. Mus. Melb.* 26: 130.

Oke says that he also found this species at Warburton: probably that specimen has been dissected by him. I dissected the holotype; its labrum, labium, and one maxilla (exactly as figured 1933 by Oke) are now mounted on a microscope slide.

Proportional measurements: Width of head: 20.5; length of frontoclypeus (up to beginning of neck): 16; width of pronotum: 19; length of pronotum: 21; greatest width of elytra: 20; greatest length of elytra: 16; sutural length: 12.

Length of body: 1.1-1.4 mm.

Material examined: ♀-holotype: Victoria: Belgrave, 19.IV.1927, C. Oke (NMV).

Tribe EUAESTHETINI

Genus *Edaphus* Motschulsky

Edaphus Motschulsky, 1857, *Etud. ent.* 5: 7.

Type species: *Edaphus nitidus* Motschulsky, 1857.

10. *Edaphus zwicki* sp. nov.

Brachypterous, castaneous, shining, very finely punctate, distinctly pubescent. Antennae light brown, 11th segment can be paler. Palpi and legs yellowish brown.

Length: 1.4-1.7 mm.

♂-holotype and 1 ♂-paratype: Victoria: Dandenong Range, Belgrave, 21.VIII.1972, P. Zwick.

1 ♂-paratype: Queensland: Dividing Range, highway to Warwick, 800 m, rain forest, sifting debris, 13.IX.1970, H. Franz.

Head distinctly narrower than pronotum (28:32), eyes moderately large, temples short but distinct, somewhat prominent, posterior furrow of front distinct, distance between eyes: 19.5, lateral anterior furrows distinct, con-

vergent, median frontoclypeus slightly broader than each of the side portions, slightly elevated. No punctation. Antennae robust, club distinctly 2-segmented, 10th segment distinctly but slightly broader than long, 11th segment nearly twice as long as 10th.

Pronotum about as broad as long (32:33), moderately constricted behind, base with distinct lateral carinae, a fine median carina extending to base proper, and four moderately large foveae, the lateral ones distinctly broader than the median two (can be indistinctly divided into two smaller foveae: in this case pronotum with 6 basal foveae!). Punctation very fine and sparse.

Elytra short, trapezium-like, distinctly broader than pronotum (41:32) and much broader than long (41:31), shoulders rounded off, sides moderately divergent towards posterior margin, posterior margin broadly and shallowly emarginated (sutural length 26). Sutural margination distinct though very fine, humeral impression distinct. Punctation fine (but less fine than on pronotum), shallow, and sparse, distinct. Abdomen with a fine and moderately dense punctation.

Male: 8th sternite (fig. 22). Aedeagus (fig. 25) relatively large. 'Sperm pump' (Puthz, 1973) about 1.5 x as long as the median lobe.

Variability: the paratype from Queensland has a slightly narrower, more parallel anterior frontoclypeus and 6 basal foveae of the pronotum.

This new species is warmly dedicated to my friend, its collector, Dr P. Zwick, Schlitz.

Holotype in the National Museum of Victoria, paratypes in coll. H. Franz (Vienna), and in the author's collection.

11. *Edaphus* spec. A

In the National Museum of Victoria there is one female without a locality label, which belongs to a species clearly different from all other Australian *Edaphus*. It resembles closely the holarctic *E. beszedesi* Reiter, but the antennal club is longer, the middle foveae at base of pronotum are shorter, the elytral punctation is distinctly finer.

A description should be postponed as the male and the locality are unknown.

12. *Edaphus* spec. B

An almost impunctate, reddish yellow species with 4 basal foveae and no complete median carina at pronotum, very close to numerous Oriental species. In the absence of the male a description should be postponed.

Material examined: 1 ♀: N. Queensland: Coen, 16.V.1951, C. Oke (NMV).

In coll. H. Franz (Vienna) there is a female from New Caledonia labelled 'Tiouandé near Hyenghene, sifting decaying wood and debris in forest, 1.IX.1970, H. Franz', which could belong to the same species.

13. *Edaphus* spec. C

Ferruginous, abdomen brown, posterior margin of tergites lighter, finely and densely punctate, densely pubescent. Antennae, palpi, and legs yellowish brown.

Length: 1.1-1.4 mm.

Material examined: 1 ♀: S. Australia: env. Adelaide, savanna, 18.IX.1970, H. Franz.

Head slightly narrower than pronotum (30:31.5), eyes large, without distinct temples, posterior furrow of front distinct, straight, distance between eyes: 19.5, lateral anterior furrows indistinct, median frontoclypeus about twice as broad as each of the side portions, slightly elevated, punctate anteriorly. Vertex (behind transverse posterior furrow) and lateral portions finely, densely, and distinctly punctate. Antennae moderately slender, short, club distinctly 2-segmented, 10th segment somewhat longer than broad, 11th segment about 1.7 x as long as the 10th.

Pronotum slightly broader than head (31.5:30), somewhat broader than long (31.5:28), moderately constricted behind, base with distinct lateral carinae, a median carinae extending to base proper, and 6 small foveae (middle foveae twice as long as broad, lateral foveae less distinct). Punctation distinct, fine, and dense, punctures nearly as large as facets of eyes.

Elytra distinctly broader than pronotum (42:31.5), as long as broad, shoulders moderately prominent, sides moderately divergent, slightly constricted behind, posterior margin broadly emarginate (sutural length: 35). No

special humeral characters. Sutural margination fine, distinct. Punctuation similar to that of pronotum but somewhat more dense. Abdomen finely and densely punctate.

Male: unknown.

Edaphus spec. C. resembles *E. loebli* Comellini, but its pronotal punctuation is less coarse and less dense, and the anterior frontoclypeus is not divided by a transverse furrow.

14. *Edaphus neboissi* sp. nov.

Ferruginous, hind margin of elytra lighter, shining, finely punctate, moderately densely pubescent. Antennae reddish yellow, palpi and legs yellowish.

Length: 1.3-1.6 mm.

♂-*holotype*: S. Australia: Englebrook Nat-Trust Res. near Adelaide, 17.IX.1970, H. Franz; 1 ♂-*paratype*: Victoria: Dandenong Ranges, Monbulk, 13.VIII.1972, P. Zwick.

Head distinctly narrower than pronotum (31:35), eyes large, temples extremely short, indistinct, posterior furrow of front distinct, distance between eyes: 21.5, lateral anterior furrows distinct, median frontoclypeus about as broad as each of the side portions, slightly elevated, impunctate. Vertex (behind transverse posterior furrow) and anterior lateral portions very finely punctate. Antennae moderately slender, short, club distinctly 2-segmented, 10th segment as long as broad, 11th segment twice as long as 10th.

Pronotum distinctly broader than head (35:31), as long as broad, pretty constricted behind, base with distinct lateral carinae, a median carina extending to base proper, and 6 small foveae (middle foveae more than twice as long as broad, lateral foveae can be indistinctly separate, confluent). Punctuation fine and dense, punctures nearly as large as one facet of eye.

Elytra much broader than head (51:31), about as long as broad, shoulders prominent, sides feebly arcuate, posterior margin broadly emarginated (sutural length: 41). No special humeral characters. Sutural margination very narrow. Punctuation similar to that of pronotum but shallower and slightly denser. Abdomen very finely, densely punctate.

Male: 8th sternite (fig. 21). Aedeagus (fig. 28). 'Sperm pump' nearly three times as long as aedeagus.

Variability: The paratype has an indistinct elytral punctuation, the punctuation of front is subobsolete.

I dedicate this new species to Dr A. Neboiss, NMV, to whom I am greatly indebted for his kind help in sending me Euaesthetinae from the collections of the National Museum of Victoria.

Holotype in coll. H. Franz (Vienna), *paratype* in the National Museum of Victoria.

15. *Edaphus spec. D*

Castaneous, shining, elytra finely punctate, pubescence distinct. Antennae and legs reddish yellow, palpi yellowish.

Length: 1.5-1.7 mm.

Material examined: 1 ♂: Queensland: Dividing Range, highway to Warwick, 800 m, rain forest, sifting debris, 13.IX.1970, H. Franz.

Head distinctly narrower than pronotum (36:41), eyes large, minute temples acutely prominent, posterior furrow of front distinct, distance between eyes: 23, lateral anterior furrows distinct, median frontoclypeus slightly broader than each of the side portions, slightly elevated. Impunctate. Antennae robust, short, with a large 2-segmented club, 10th segment slightly broader than long, 11th segment about twice as long as 10th.

Pronotum distinctly broader than head (41:36), slightly broader than long (41:38), moderately strongly constricted behind, base with distinct lateral carinae, a median carina extending to base proper, and 6 foveae, middle foveae more than twice as long as broad. Anterior to the median carina there can be seen a narrow and very shallow impression. No distinct punctuation.

Elytra large, much broader than pronotum (62:41), about as long as broad (60:62), shoulders strongly prominent, sides feebly rounded, distinctly constricted behind, hind margin shallowly emarginate (sutural length: 50). No special humeral characters. Suture finely margined. Punctuation fine and moderately sparse, distinct. Abdomen finely and densely punctate.

Male: 7th sternite shallowly emarginated at posterior margin. 8th sternite with a semicircular emargination in about posterior third. Aedeagus (fig. 26).

16. *Edaphus melculus* (Oke, 1933)

Edaphellus melculus, Oke 1933, *Proc. r. Soc. Vict.* 45: 110 f. figs.

Edaphellus melculus; Neboiss, 1964, *Mem. natn. Mus. Melb.* 26: 143.

Proportional measurements (δ from Evelyn): Width of head: 38; distance between eyes: 27; width of pronotum: 42; length of pronotum: 39; greatest width of elytra: 62; greatest length of elytra: 60; sutural length: 49.

Length of body: 1.5-1.8 mm.

Eyes large, temples minute, not very distinct, median frontoclypeus about as broad as each of the side portions. No punctation. Last antennal segments (δ) (fig. 16). Pronotum moderately strongly constricted behind, at base with distinct lateral carinae, a median carina extending to base proper, and 6 small foveae. No punctation. Elytra indistinctly punctate.

Male: 7th sternite broadly emarginate at posterior margin. 8th sternite (fig. 17). Aedeagus (fig. 24).

Edaphus melculus Oke very much resembles *E. termitophilus* Bernhauer. For sure identification antennal and genital characters of the males should be used.

Material examined: ♀-type: Victoria: Belgrave, 2.VII.1921, in moss with ants on stone, C. Oke; ♀-paratype: ibidem, 1.VII.1921, C. Oke; 1 ♂: Evelyn, 5.VI.1922, C. Oke; 3 ♀♀: Ferntree Gully, 6.IX.1919, F. E. Wilson; 1 ♀: ibidem, 27.IX.1919; 1 ♂: Nariel, 12.II.1963, A. Neboiss (NMV).

17. *Edaphus termitophilus* Bernhauer, 1916

Edaphus termitophilus, Bernhauer 1916, *Ark. Zool.* 10 no. 5: 2 f.

Edaphellus melculus var. *camponoti*, Oke 1933, *Proc. r. Soc. Vict.* 45: 111 nov. syn.

Edaphellus melculus var. *camponoti*, Neboiss, 1964, *Mem. natn. Mus. Vict.* 26: 133.

In coll. Oke there are only specimens with the label '*Edaphellus melculus* Oke'. Following his description of *melculus* and *melculus* var. *camponoti* the specimens listed below were syntypes of *melculus* var. *camponoti* except 1 ♂ from Evelyn which is a true *mel-*

culus. I designated a lectotype and paralectotypes see below). Although no male was found among the syntypes of *E. termitophilus* Bernhauer, a detailed comparison of the respective material led to the result that *E. melculus* var. *camponoti* is a junior synonym of *E. termitophilus*. In addition, both seem to live with ants. Contrary to Oke's note (1933: 110) the figure given by Bernhauer (1916) is not taken from *E. termitophilus* but from *E. mjobergi* Bernhauer.

Proportional measurements (δ from Ferntree Gully): Width of head: 30; distance between eyes: 20; width of pronotum: 33.5; length of pronotum: 30; greatest width of elytra: 47; greatest length of elytra: 46; sutural length: 36.

Length of body: 1.2-1.6 mm.

Male: 7th sternite broadly emarginated posteriorly. 8th sternite (fig. 20). Aedeagus (fig. 23) with strongly sclerotized expulsion mechanisms. Last antennal segments (fig. 15).

Material examined: 3 ♀♀-syntypes: Queensland: Blackall Range, Mjöberg (Field Museum of Natural History, Chicago and Naturhistorisk Riksmuseet, Stockholm); 1 ♂: S. Australia: Mt. Torrens E. of Adelaide, 600 m, savannah woodland, 18.IX.1970, H. Franz (coll. H. Franz); 1 ♂ (lectotype of *E. melculus* var. *camponoti* (Oke)): Victoria: Ferntree Gully, 26.VIII.1930, C. Oke (genitalia dissected, embedded in a medium soluble in alc. abs.); 2♂♂, 2♀♀ (paralectotype of *E. melculus* v. *camponoti*): ibidem, 23.VII.1922, Sept., in tussocks, C. Oke; 1 ♀ (paralectotype as above): Lilydale, 1.IV.1928, C. Oke; 2 ♀♀: Warburton, C. Oke; 1 ♀: Beaconsfield, 26.XII.1921, F. E. Wilson; 1 ♂, 3 ♀♀: Coburg, 16.V.1925, C. Oke; 1 ♀: Lorne, 28.X.1918, host: *Aphaenogaster longiceps*, F. E. Wilson; 1 ♀ (det.?): Ringwood, 2.VII.1922, under leaves, C. Oke (NMV and author's collection).

18. *Edaphus Invidiosus* sp. nov.

Brownish, shining, extremely finely, indistinctly punctate, densely pubescent. Antennae light brown, palpi and legs yellowish brown.

Length: 1.2-1.4 mm.

♀ -*holotype* and 3 ♀♀ -*paratypes*: Queensland: Dividing Range, highway to Warwick, 800 m, rain forest, sifting debris, 13.IX.1970, H. Franz.

Head distinctly narrower than pronotum (26.5:31), eyes moderately large, temples

minute, posterior furrow of front distinct, distance between eyes: 18, lateral anterior furrows confluent with a transverse furrow at frontoclypeus, median frontoclypeus about as broad as each of the side portions, moderately elevated. Punctuation extremely fine, indistinct. Antennae short, with a distinctly 2-segmented club, 10th segment about as long as broad, 11th segment about twice as long as 10th.

Pronotum distinctly broader than head (31:26.5), slightly broader than long (31:29), moderately constricted behind, base with distinct lateral carinae, a median carina extending to base proper, and 6 small foveae, middle ones more than twice as long as broad. Punctuation extremely fine, sparse, indistinct.

Elytra much broader than pronotum (46:31), somewhat broader than long (46:43), shoulders prominent, sides moderately divergent posteriorly, moderately constricted behind, posterior margin shallowly emarginate (sutural length: 34). No special humeral characters. Sutural margination distinct though very fine. Punctuation very fine, nearly indistinct. Abdomen very finely punctate.

Male: unknown.

Edaphus invidiosus n. sp. is distinguished from all other Australian *Edaphus* by the anterior middle of front which is completely margined all around (i.e. clypeus is separated from frons).

Holotype and 1 paratype in coll. H. Franz (Vienna), paratypes also in the National Museum of Victoria, and in the author's collection.

19. *Edaphus zwickianus* sp. nov.

Ferrugineous, abdomen slightly darker, moderately shining, finely and densely punctate, densely pubescent. Antennae reddish yellow, club infusate. Palpi yellow. Legs yellowish brown.

Length: 1.4-1.6 mm.

♀-holotype: Victoria: Tolmie near Whitfield, 1.IX.1972, P. Zwick.

Head distinctly but slightly narrower than pronotum (34:37), eyes moderately large, temples small but distinct, not prominent, posterior furrow of front sharp and straight, distance between eyes: 23, lateral anterior fur-

rows distinct, parallel, median frontoclypeus about as broad as each of the side portions; moderately elevated. Impunctate. Antennae with a distinctly 2-segmented club, 10th segment about as broad as long, 11th segment about twice as long as 10th.

Pronotum distinctly broader than head (37:34), slightly broader than long (37:35), moderately constricted behind, base with distinct lateral carinae, a median carina extending to base proper, and 6 small foveae of about the same size, the two lateral ones can be indistinctly separate. Punctuation dense and very fine, distinct.

Elytra much broader than pronotum (51:37), about as long as broad (50:51), shoulders prominent, sides moderately divergent, posteriorly slightly constricted, posterior margin very shallowly emarginate (sutural length: 40). No special humeral characters. Sutural margination fine, distinct. Punctuation fine and very dense, diameter of punctures about as large as one facet of eye. Abdomen very finely and moderately densely punctate.

Male: unknown.

I am pleased to name this new species after Drs Peter and Heide Zwick, who made fine collections in Australia.

Holotype in the National Museum of Victoria.

20. *Edaphus brittoni* sp. nov.

Ferrugineous, shining, punctuation fine, clytral punctuation distinct, pubescence moderately dense. Antennae brownish, palpi yellowish, legs yellowish brown.

Length: 1.2-1.4 mm.

♀-holotype (somewhat immature, coloration light ferrugineous): Queensland: Wine-scrub forest near Maipoton, 350 m, sifting debris, 11.IX.1970, H. Franz; 1 ♀-paratype: Dividing Range, highway to Warwick, 800 m, rain forest, sifting debris, 13.IX.1970, H. Franz.

Head distinctly narrower than pronotum (28:36), eyes moderately small, temples distinctly developed, about one-third of the length of eyes (seen from above), rather prominent,

posterior furrow of front distinct, distance between eyes: 22 (front broad!), lateral anterior furrows distinct, median frontoclypeus about as broad as each of the side portions, feebly elevated. Some very fine scattered punctures on anterior lateral portions. Antennae short, club distinctly 2-segmented, 10th segment slightly transverse, 11th segment about twice as long as broad.

Pronotum distinctly broader than head (36:28), slightly broader than long (36:34), strongly constricted behind, base with distinct lateral carinae, a median carina extending to base proper, and 4 basal foveae. Punctuation very fine, nearly indistinct.

Elytra distinctly broader than pronotum (50:36), distinctly broader than long (50:44), shoulders moderately prominent, sides distinctly but not strongly divergent towards posterior margin, moderately constricted behind, posterior margin shallowly emarginate (sutural length: 36). No special humeral characters. Sutural margination distinct though very fine. Punctuation fine, shallow, and moderately dense, punctures nearly as large as one facet of eyes. Abdomen finely punctate.

Male: unknown.

This new species is kindly dedicated to Dr E. B. Britton (CSIRO Canberra).

Holotype in coll. H. Franz (Vienna), paratype in the author's collection.

21. *Edaphus mjobergi bernhauer*, 1916

Edaphus Mjobergi, Bernhauer 1916, *Ark. Zool.* 10 no. 5: 3 f. fig.

Edaphus mjobergi; Oke 1933, *Proc. r. Soc. Vict.* 45: 110.

This is the most remarkable *Edaphus* from Australia because its prominent temples and its very sparse pubescence.

Material examined: ♂-holotype: Queensland, Blackall Range, Mjöberg (Naturhistorisk Riksmuseet, Stockholm).

Proportional measurements: Width of head: 38; distance between eyes: 28; width of pronotum: 49; length of pronotum: 41; greatest width of elytra: 66; greatest length of elytra: 61; sutural length: 50.

Length: 1.6-1.9 mm.

Eyes flat, very slightly prominent, temples about one-third of the greatest length of eyes (seen from above), remarkably prominent. Front posteriorly with a distinct, moderately broad, transverse furrow, which is interrupted medially by a very small fovea, anterior lateral furrows become indistinct anteriorly, median frontoclypeus distinctly elevated in posterior middle where it has the above described small fovea. Base of pronotum with 4 foveae.

Male: 7th sternite broadly emarginate at posterior margin. 8th sternite with a deep, parallel notch nearly in posterior half. Aedeagus (fig. 30).

22. *Edaphus australicus* sp. nov.

Ferruginous, strongly shining, impunctate, very sparsely pubescent. Antennae light brown, palpi yellow, legs yellowish brown.

Length: 1.1-1.5 mm.

♂ -holotype and 3 ♂♂, 8 ♀♀ -paratypes: Queensland: Winescrub forest near Maipoton, sifting debris, 11.IX.1970, H. Franz; 1 ♂, 7 ♀♀ -paratypes: Dividing Range, highway to Warwick, 800 m, rain forest, sifting debris, 13.IX.1970, H. Franz; 1 ♀ -paratype: Atherton, VI.1951, C. Oke.

Head distinctly narrower than pronotum (26:32.5), eyes moderately large, minute temples distinct, somewhat prominent in the male, posterior furrow of front distinct, distance between eyes: 20, lateral anterior furrows distinct, median frontoclypeus distinctly broader than each of the side portions, slightly elevated (see also below). Some 2 or 3 very fine punctures anteriorly or impunctate. Antennae short, club distinctly 2-segmented, 10th segment distinctly but slightly transverse, 11th segment nearly twice as long as 10th.

Pronotum distinctly broader than head (32.5:26), somewhat broader than long (32.5:29), strongly constricted behind, base with distinct lateral carinae, a median carina extending to base proper, and 4 small foveae, the lateral ones broader than the middle ones. No punctuation.

Elytra distinctly broader than pronotum (43:32.5), slightly (or not) broader than long,

shoulders prominent, sides moderately divergent posteriorly, moderately constricted behind, posterior margin shallowly emarginate (sutural length: 35). No special humeral characters. Sutural margination distinct though very fine. Punctuation extremely fine, indistinct. Abdomen very finely and sparsely punctate.

Male: 8th sternite (fig. 18). Aedeagus (fig. 27). 'Sperm pump' about 1.5 x as long as the medianlobe.

Variability: One ♀-paratype from Dividing Range has the median frontoclypeus distinctly elevated.

Edaphus australicus n. sp. very much resembles *E. pygmaeus* Szekessy from New Guinea, but can be distinguished from it by its broader front (*pygmaeus*-♂: width of head: 25.5, distance between eyes: 16.5), smaller eyes, its length, and the genitalia.

Holotype and paratypes in coll. H. Franz (Vienna), paratypes also in the National Museum of Victoria, and in the author's collection.

23. *Edaphus* spec. E

This species is very similar to *E. australicus*. A full description is not necessary, a detailed comparison should be sufficient.

Ferruginous, shining, indistinctly punctate, moderately sparsely pubescent. Antennae brownish, palpi and legs yellowish.

Length: 1.1-1.4 mm.

Material examined: ♂: Queensland: Dividing Range, highway to Warwick, 800 m, rain forest, sifting debris, 13.IX.1970, H. Franz.

Proportional measurements: Width of head: 27; distance between eyes: 18; width of pronotum: 29; length of pronotum: 25; greatest width of elytra: 44; greatest length of elytra: 44; sutural length: 36.

Slightly less robust than *E. australicus*, median frontoclypeus slightly narrower than each of the side portions, more elevated, 11th antennal segment shorter, about 1.5x as long as the 10th. Pronotum distinctly narrower. Elytra with a very fine, nearly indistinct punctuation.

Male: 8th sternite (fig. 19). Aedeagus (fig. 29; note scale), very small.

KEY TO THE AUSTRALIAN SPECIES OF *EUAESTHETINAE*

(including unnamed taxa mentioned in this paper)

- 1 (2) Tarsal formula 5-5-4, abdomen immargined. 3.0 mm. . . gen. spec. ?
- 2 (1) Tarsal formula 4-4-4.
- 3 (16) Abdomen not margined.
- 4 (7) Temporal region of head with a large impunctate depression limited all around by a fine raised keel. . . *Mesoaesthetus* Cameron
- 5 (6) Eyes distinctly smaller than temporal depression. Base of pronotum on each side with one distinct impression. Sculpture of fore body slightly less dense. ♂: aedeagus (figs. 1, 2). 1.7-2.1 mm. Victoria . . . *Mesoaesthetus wilsoni* Cameron
- 6 (5) Eyes as large as or slightly larger than temporal depression. Base of pronotum with two impressions on each side, the inner one distinctly smaller than the lateral one. Sculpture of fore body extremely dense. ♂: aedeagus (figs. 3, 4). 1.8-2.2 mm. Tasmania . . . *Mesoaesthetus tasmanicus* n. sp.
- 7 (4) Temporal region of head normal, without impunctate depression.
- 8 (9) Microphthalmous species, elytra with a narrow lateral margin. Antenna (fig. 12), club narrow. Very narrow and elongate species. Male unknown. 1.3-1.9 mm. Tasmania . . . *Tasmanosthetus okei* n. gen. n. sp.
- 9 (8) Macrophthalmous species, elytra without lateral margin. Antennae with conspicuously enlarged club (Oke 1933, fig. 32). More robust species. *Austroesthetus* Oke
- 10 (13) Pronotum impunctate or almost impunctate.

- 11 (12) Eyes very large, no distinct temples. Head indistinctly punctate. ♂: notch of 8th sternite longer than broad, aedeagus (figs. 5, 6).
2.0-2.4 mm. Victoria
.....*Austroesthetus gippsensis* Oke
- 12 (11) Eyes smaller, temples about one-third the length of eyes. Head distinctly punctate. ♂: notch of 8th sternite broader than long, aedeagus (fig. 8).
1.8-2.5 mm. Victoria
.....*Austroesthetus passerculus* Oke
- 13 (10) Pronotum distinctly punctate.
- 14 (15) Eyes very large, no distinct temples. Elytra distinctly punctate. ♂: aedeagus (figs. 9, 10).
1.8-2.1 mm. Victoria
.....*Austroesthetus punctatus* Oke
- 15 (14) Eyes smaller, temples about one-third to one-fourth the length of eyes. Elytra almost impunctate. ♂: aedeagus (fig. 7).
2.0-2.2 mm. Tasmania
.....*Austroesthetus tasmanicus* n. sp.
- 16 (3) Abdomen margined throughout.
- 17 (20) Narrow and elongate species. Head without impressions. Pronotum without foveae or carinae at base.
- 18 (19) Labium at its anterior margin with a median triangular process (Oke 1933, fig. 35). Male unknown.
1.1-1.4 mm. Victoria
.....*Geosthetus attenuatus* Oke
- 19 (18) Labium anteriorly deeply emarginate (Coiffait 1958, fig. 5).
.....(*Octavius* Fauvel)
Distribution worldwide (see map: Puthz 1977), no record, however, so far from Australia, but known from New Guinea and neighbouring islands; probably also in Australia.
- 20 (17) Broader, less elongate species. Head mostly with furrows or impressions. Pronotum cordiform, its base with small carinae and (mostly) small foveae.
.....*Edaphus* Motschulsky
Worldwide distribution, mainly in the tropics. For details concerning exoskeletal characters see Puthz 1974.
- 21 (22) Brachypterous, elytra at suture shorter than the pronotum. ♂: 8th sternite (fig. 22), aedeagus (fig. 25).
1.4-1.7 mm. Victoria, Queensland.....*Edaphus zwicki* n. sp.
- 22 (21) Macropterous, elytra at suture longer than pronotum.
- 23 (26) Median basal carina of pronotum not extending to base proper. To observe this character specimens should be clean and magnification at least 60x.
- 24 (25) Base of pronotum with 6 small foveae.
1.2 mm.....*Edaphus* spec. A
- 25 (24) Base of pronotum with 4 small foveae.
1.2-1.4 mm. N. Qld.
.....*Edaphus* spec. B
- 26 (23) Median basal carina of pronotum extending to base proper.
- 27 (40) Base of pronotum with at least 6 small foveae.
- 28 (33) Pronotum distinctly punctate, punctures nearly as large as one facet of eye.
- 29 (30) Lateral portions of front (especially anteriorly) densely and very finely punctate. Male unknown.
1.1-1.4 mm. S. Australia
.....*Edaphus* spec. C.
- 30 (29) Lateral portions of front only with very few very small punctures or impunctate.

- 31 (32) The two middle foveae at base of pronotum much longer than the lateral foveae, more than twice as long as broad. Elytral punctation somewhat less dense or indistinct. δ : 8th sternite (fig. 21), aedeagus (fig. 28). 1.3-1.6 mm. S. Australia, Victoria *Edaphus nevoissi* n. sp.
- 32 (31) The two middle foveae at base of pronotum slightly longer than the lateral foveae, not quite twice as long as broad. Elytra more densely punctate. Male unknown. 1.4-1.6 mm. Victoria (*Edaphus zwickianus* n. sp.)
- 33 (28) Pronotal punctation considerably finer, indistinct, or absent.
- 34 (35) Elytra distinctly punctate. Larger species with acutely prominent minute temples. δ : aedeagus (fig. 26). 1.5-1.7 mm. Queensland *Edaphus* spec. D.
- 35 (34) Elytra impunctate or at most extremely finely, indistinctly punctate.
- 36 (39) Median frontoclypeus simple. Two very similar species.
- 37 (38) Somewhat larger, more shining species, last two segments of antennae broader (fig. 16). δ : 8th sternite (fig. 17), aedeagus (fig. 24). 1.5-1.8 mm. Victoria *Edaphus melculus* Oke
- 38 (37) Somewhat smaller, less shining species, last two segments of antennae narrower (fig. 15). δ : 8th sternite (fig. 20), aedeagus fig. 23). 1.2-1.6 mm. (extended). Victoria, Queensland . . . *Edaphus termitophilus* Bernhauer
- 39 (36) Median frontoclypeus with distinct transverse furrow, confluent with the anterior lateral furrows to form a horseshoe-shaped line. Male unknown. 1.2-1.4 mm. Queensland *Edaphus invidiosus* n. sp.
- 40 (27) Base of pronotum with 4 small foveae.
- 41 (44) Elytra distinctly but very finely punctate.
- 42 (43) Elytral punctation very dense, surface only moderately shining. Pronotum with dense and very fine punctation. 1.4-1.6 mm. Victoria *Edaphus zwickianus* n. sp.
- 43 (42) Elytral punctation less dense, surface more shining. Pronotum extremely finely and sparsely, almost imperceptibly punctate. Male unknown. 1.2-1.4 mm. Queensland *Edaphus brittoni* n. sp.
- 44 (41) Elytra impunctate or indistinctly punctate.
- 45 (46) Head posteriorly widened, widest behind eyes. Pronotum very strongly constricted at base. Large species. δ : aedeagus (fig. 30). 1.6-1.9 mm. Queensland *Edaphus mjobergi* Bernhauer
- 46 (45) Head not widened posteriorly, broadest across eyes. Pronotum less constricted at base. Smaller and very similar species.
- 47 (48) Pronotum distinctly broader than head (f.e. 32.5: 26). δ : 8th sternite (fig. 18), aedeagus (fig. 27). 1.1-1.5 mm. Queensland *Edaphus australicus* n. sp.
- 48 (47) Pronotum slightly broader than head (f.e. 29: 27). δ : 8th ster-

nite (fig. 19), aedeagus (fig. 29).

1·1-1·4 mm. Queensland

.....*Edaphus* spec. E.

Acknowledgements

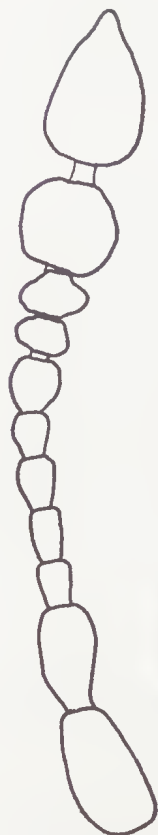
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- Figures 1-4—Ventral (1, 3) and lateral (2, 4) aspect of aedeagus.
1, 2—*Mesoaesthetus wilsoni* Cameron (holotype).
3, 4—*Mesoaesthetus tasmanicus* n. sp. (holotype).
Scale = 0·1 mm.
- Figures 5-7—Ventral (5, 7) and lateral (6) aspect of aedeagus.
5, 6—*Austroesthetus gippsensis* Oke (holotype).
7—*Austroesthetus tasmanicus* n. sp. (holotype).
Scale = 0·1 mm.
- Figures 8-11—Ventral (8, 9) and lateral (10) aspect of aedeagus, 9th sternite of male (11).
8—*Austroesthetus passerculus* Oke (internal sac somewhat expelled) (Belgrave).
9-11—*Austroesthetus punctatus* Oke (holotype).
Scale = 0·1 mm.





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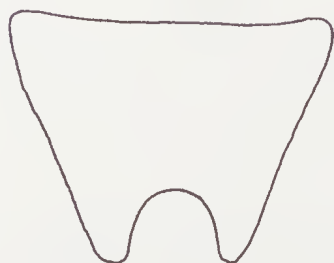
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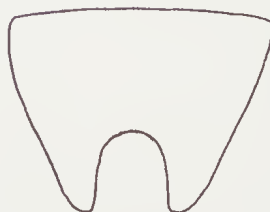
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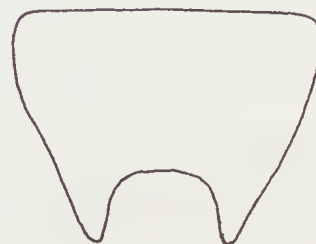
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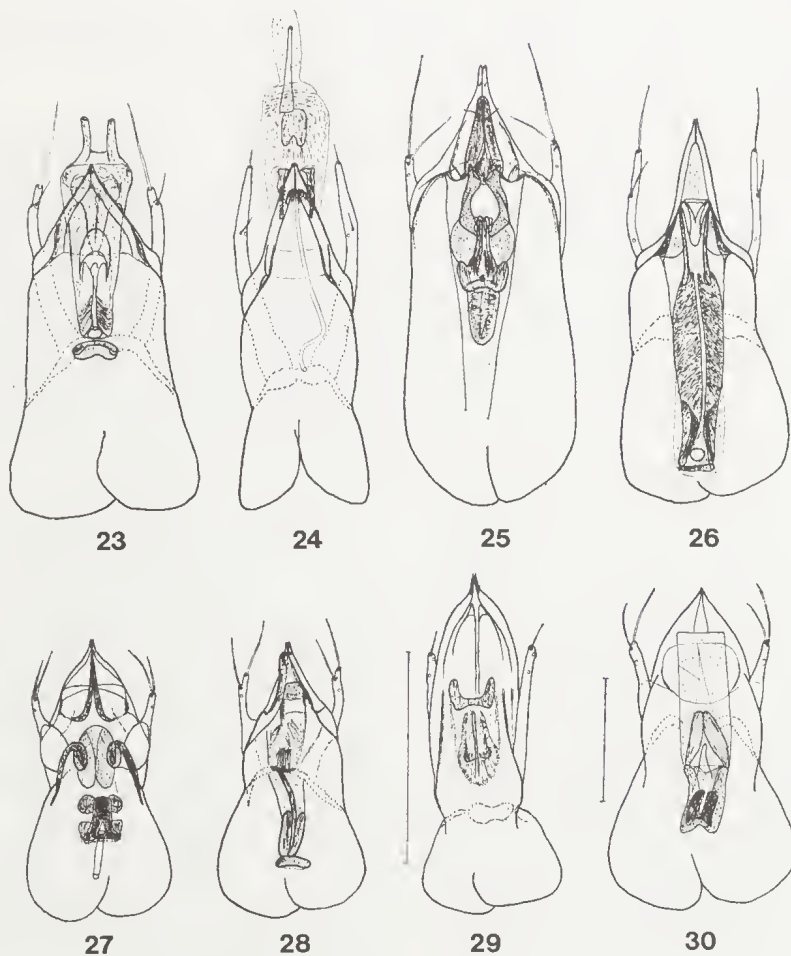
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Figures 12-14—Antenna (12), mandible (13), and labrum (14) of *Tasmanosthetus okei* n. gen. n. sp. (paratype).

Figures 15, 16—Last 3 antennal segments of *Edaphus termitophilus* Bernhauer (Coburg) and *Edaphus melculus* Oke (Nariel), males.

Figures 17-19—8th sternite of male. 17: *Edaphus melculus* Oke. 18: *E. australicus* n. sp. 19: *E. spec. E.* 20: *E. termitophilus* Bernhauer. 21: *E. nevoissi* n. sp. 22: *E. zwicki* n. sp. Scale = 0.1 mm.

Figures 23-30—Ventral (23-26, 28-30) and dorsal (27) aspect of aedeagus. 23: *Edaphus termitophilus* Bernhauer (Ferntree Gully). 24: *E. melculus* Oke (Evelyn). 25: *E. zwicki* n. sp. (holotype). 26: *E. spec. D.* 27: *E. australicus* n. sp. (paratype). 28: *E. nevoissi* n. sp. (holotype). 29: *E. spec. E.* 30: *E. mjobergi* Bernhauer (holotype). Scale = 0.1 mm.