

AN ANNOTATED CATALOGUE OF DESCRIBED AUSTRALIAN TABANINAE
(DIPTERA, TABANIDAE).

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(Nine Text-figures.)

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Synopsis.

The described Australian species and subspecies of Tabaninae are arranged according to the modern classification of the subfamily, the numbers recognized as valid being: *Tabanus*, 20; *Paracanthocera*, 1; *Chalybosoma*, 2; *Cydistomyia*, 20; *Dasybasis*, 56. Six remain unrecognized, three are removed to other subfamilies, and nine are excluded as having been recorded wrongly from Australia. New synonymy:

In *Tabanus*: *queenslandii* Ferg. nec Ric. = *australicus* Tayl.; *geraldi* Tayl. = *concolor* Walk.; *aprepes* Tayl. = *townsvilli* Ric.; *diminutus* Walk. = *praepositus* Walk.; *nigritarsis* Tayl. = *dorso-bimaculatus* Macq.

In *Cydistomyia*: *postica* (Hardy nec Wied.) = *avida* (Big.); *sanguinaria* (Big.) = *nigropicta* (Macq.).

In *Dasybasis*: *darwinensis* (Tayl.) = *clavicallosa* (Ric.); *quadrata* (Tayl.) = *constans* (Walk.); *pseudopalpis* Ferg. & Hill = *nemotuberculata* (Ric.); *adeloidae* (Ferg. & Hill) = *rufifrons* (Macq.); *bassii* (Ferg.) = *tasmanica* (Ferg.) = *neocirrus* (Ric.); *geraldtonensis* (Tayl.) = *regis-georgii* (Macq.); *regis-georgii* (auct. nec Macq.) = *spadix* (Tayl.); *pseudobasalis* (Tayl.) = *postica* (Wied.); *oraria* (English) = *macrophthalma* (Schin.); *acutipalpis* (auct. nec Macq.) = *exulans* (Erich.); *whitei* (Hardy) = *nepos* (Walk.) = *hebes* (Walk.); *gentilis imminutus* (Hardy) = *gentilis* (Erich.); *antecedens* (Walk., 1854 nec 1848) = *edentula* (Macq.); *flindersi* (Ferg.) = *antecedens* (Walk., 1848) = *gregaria* (Erich.); *brevidentata* (Macq.) = *fratercula* (Macq.) = *circumdata* (Walk.); *edentula* (auct. nec Macq.) = *abstersa* (Walk.) = *acutipalpis* (Macq.).

The subfamily Tabaninae is characterized by lacking functional ocelli and apical spurs on the hind tibiae, and by having the third antennal segment composed of a basal plate and four (occasionally three) terminal annuli, the style of the male hypopygium truncate, and the caudal ends of the spermathecal ducts of the female provided with mushroom-like expansions. It contains a large number of intergrading forms, which are exceedingly difficult to classify at both specific and supra-specific levels. I have recently been able to study the types of nearly all the Australian species, and the present paper is designed to clarify their synonymy, which had inevitably been obscure, as many of the crucial specimens had not been available to workers in Australia.

It will probably be a considerable time before a full revision of the subfamily can be completed, and the classification adopted here is, to some extent, tentative. The short definitions of the supra-specific divisions apply to Australian species only. They are intended primarily to indicate natural congeries of species, which may be raised or lowered in taxonomic status as subsequent investigations may indicate. Similarly, the species are arranged within the groups in a natural rather than alphabetical sequence, so that related forms can be compared. There are about 18 undescribed species (6 *Cydistomyia*, 12 *Dasybasis*) in the collections studied, but they do not affect the present discussion.

This work would not have been possible without helpful cooperation from a great many authorities. The type specimens in Australia were studied through the kindness of the Directors and Entomologists of the Queensland Museum, Brisbane, the Australian Museum, Sydney, the School of Public Health and Tropical Medicine, Sydney, the

Macleay Museum, Sydney, the National Museum, Melbourne, and the South Australian Museum, Adelaide. Mr. H. Oldroyd, of the British Museum (Natural History), compared many specimens with types, including the types of Erichson's species, which were borrowed for the purpose by Mr. H. F. Mattingly of the same institution. Mr. Oldroyd also provided facilities for me to work in his Department, as did Professor E. Séguéy, of the Muséum National d'Histoire Naturelle, Paris. Professor Fritz Peus, of the Zoologisches Museum, Berlin, and Dr. Max Beier, of the Naturhistorisches Museum, Vienna, also compared specimens with types, and sent me types on loan when any difficulties of interpretation arose. To all of these I would express my most grateful thanks.

Species of which the types have been examined personally are indicated by an asterisk (*) in the body of the paper.†

Tribe TABANINI.

Basicosta covered with short, strong setulae, similar to those on the adjacent, swollen part of the costa (Mackerras, 1956, Fig. 6, C). This character seems to hold absolutely in the Australasian and Pacific faunas. The fronts of the females narrow towards the antennae, and their palpi are usually swollen at the base and taper to a relatively sharp point.

Genus TABANUS Linnaeus.

Type species: *Tabanus borinus* Linn., Europe. No Australian synonyms.

This faunal element is of strictly Oriental origin, and none of the species can be separated from the widespread genus *Tabanus*, as it is at present recognized. The eyes are hairy (pattern not known) in *umbripennis*, bare in all the other species; conspicuously banded in *pallipennis*, *particaecus* and *ceylonicus*, bicoloured brown and green in *australicus*, concolorous green or brown in the remaining species.

The pallipennis Group.

Vein R_4 with strong appendix; frons of female relatively wide (index not more than 3); callus usually divided into two parts.

TABANUS PALLIPENNIS Macquart.

Tabanus pallipennis Macquart, 1846. *Dipt. exot.*, Suppl. 1, p. 32. Type ♀, from New Holland, not found in London or Paris.

**Tabanus rufinotatus* Bigot, 1892. *Mem. Soc. zool. Fr.*, 5, p. 673. Type ♀, from Australia, in the British Museum (Natural History).

**Tabanus elestchem* Summers, 1912. *Ann. Mag. nat. Hist.*, (8), 10, p. 224. Cotype ♀♀, from Darwin, N.T., in the British Museum (Natural History).

**Tabanus lineatus* Taylor, 1913. *Rpt. Aust. Inst. Trop. Med.* for 1911, p. 65. Type ♀, from Bowen, N.Q., in the School of Public Health and Tropical Medicine, Sydney. Not *T. lineatus* Fabricius, 1781 (= *giganteus* Degeer, 1776), Nearctic.

The type of *pallipennis* is evidently lost. It could not be found by Ricardo (1914), by Dr. P. Grenier, who searched for it in Paris for me last year, or by myself, in July-August, 1958. Under the circumstances, it is unfortunate that Hardy (1948) upset Ferguson and Hill's (1920) tentative identification of *pallipennis* as another species, and displaced the name *rufinotatus* under which this one was well known. *Tabanus designatus* Ricardo, 1913, from New Guinea, is an additional synonym.

Distribution.—Northern Territory; north and east coastal Queensland; north coastal New South Wales. Also New Guinea.

TABANUS PARTICAECUS Hardy.

Tabanus particaecus Hardy, 1948. *Proc. R. Soc. Qd.*, 58, p. 178. No type designated.

Hardy proposed *particaecus* as a "new name" for the species which he considered Ferguson and Hill (1920) had wrongly identified as *T. pallipennis* Macq. In order to

† The types of *Dasybasis gentilis* (Erichson) and *D. gregaria* (Erichson) were received from Professor Peus, and Mr. Oldroyd's interpretation of them confirmed, after this paper had gone to press.

avoid further confusion, I now propose to validate it by designating as lectotype a ♀ from the original bred series from Eidsvold, S.Q., referred to by Hardy, and now in the School of Public Health and Tropical Medicine, Sydney.

Distribution.—Southern Queensland; New South Wales, west of the Divide; north-western Victoria.

TABANUS UMBRIFENNIS Ricardo.

**Tabanus cinereus* Walker, 1848. *List Dipt. Brit. Mus.*, 1, p. 167. Type ♀, from Western Australia, in the British Museum (Natural History). Not *T. cinereus* Wiedemann, 1821, Neotropical.

Tabanus umbrifennisi Ricardo, 1915. *Ann. Mag. nat. Hist.*, (8), 16, p. 283. Nom. nov. This species is, superficially, remarkably like the predominantly Holarctic genus *Hybomitra*.

Distribution.—South-western Western Australia.

The innotabilis Group.

Vein R_4 rarely with short appendix; frons of female relatively narrow (index more than 3); callus single, usually elongate.

(A) A black species, with shining subcallus and creamy white tarsi.

TABANUS CEYLONICUS Schiner.

Tabanus ceylonicus Schiner, 1868. *Reise Novara Dipt.*, p. 93. Type ♀, from Ceylon, in the Vienna Museum; a ♀ from Bramston Beach, N.Q., was sent to Dr. Beier, who reported that it agreed fully with the type.

**Tabanus kershawi* Ricardo, 1917. *Ann. Mag. nat. Hist.*, (8), 19, p. 221. Type ♀, from Claudie R., N.Q., in the National Museum, Melbourne.

The synonymy was known to Ferguson, but apparently not published until Oldroyd's (1949) revision of the Papuan species.

Distribution.—Widely in the Oriental region; north to the Philippine Is.; east to New Guinea, New Ireland and the Solomon Is.; and in north-eastern Queensland as far south as Innisfail.

(B) Species with a continuous, median, pale vitta on most or all abdominal tergites.

TABANUS QUEENSLANDII Ricardo.

**Tabanus queenslandii* Ricardo, 1914. *Ann. Mag. nat. Hist.*, (8), 14, p. 393. Type ♀, from N.E. Queensland, in the British Museum (Natural History).

**Tabanus walteri* Taylor, 1919. *PROC. LINN. SOC. N.S.W.*, 44, p. 48. Type ♀, from Hay, N.S.W., in the School of Public Health and Tropical Medicine, Sydney.

The name *queenslandii* has usually been applied to another species (*australicus*) which is common in Queensland; but the above synonymy was published by Taylor (1926), and subsequently confirmed by Oldroyd (*in lit.*) and by examination of the types.

Distribution.—Rare in north coastal Queensland; most specimens from western New South Wales.

TABANUS STRANGMANI Ricardo.

**Tabanus strangmannii* Ricardo, 1914. *Ann. Mag. nat. Hist.*, (8), 14, p. 393. Type ♂♀, from Darwin, N.T., in the British Museum (Natural History).

**Tabanus mastersi* Taylor, 1917. *PROC. LINN. SOC. N.S.W.*, 41, p. 754. Type ♀, from Bowen, N.Q., ♂ from Mackay, N.Q., in the School of Public Health and Tropical Medicine, Sydney.

Miss Ricardo's name is now emended to *strangmani*, in accordance with the "Copenhagen Decisions". Taylor (1913) first misidentified the species as *gregarius* Erichson, but later named it and labelled types.

Distribution.—Northern Territory; eastern Queensland, from Moa I. to Eidsvold; western New South Wales (Moree).

TABANUS BREINLI Ferguson & Hill.

**Tabanus breinli* Ferguson and Hill, 1922. PROC. LINN. SOC. N.S.W., 47, p. 255. Type ♀, from Palm I., N.Q., in the School of Public Health and Tropical Medicine, Sydney.

Distribution.—North Queensland (Palm I. and adjacent coast).

TABANUS AUSTRALICUS Taylor.

**Tabanus australicus* Taylor, 1919. PROC. LINN. SOC. N.S.W., 44, p. 53. Type ♀, from Brisbane, Q., in the Queensland Museum, Brisbane.

This species was misidentified as *queenslandii* by Ferguson (1920), and it has commonly been so labelled in Australian collections.

Distribution.—Northern Territory; Queensland, from Gulf of Carpentaria and Cairns to Brisbane.

TABANUS CONCOLOR Walker.

**Tabanus concolor* Walker, 1848. *List Dipt. Brit. Mus.*, 1, p. 179. Type ♀, from New Holland, in the British Museum (Natural History).

Tabanus geraldii Taylor, 1920. *Proc. R. Soc. Vic.*, 32, p. 166. The type ♀, from Bathurst I., N.T., was stated to be in the collection of G. F. Hill, but it could not be found in Mr. Hill's lifetime, and must be presumed lost. I therefore select as neotype a ♀ in the School of Public Health and Tropical Medicine, Sydney, from Groote Eylandt, Northern Territory, N. B. Tindale, identified by Taylor and agreeing with his description.

T. concolor has not been recognized previously in Australian collections. The type is rather a small (13 mm.), faded specimen, but there is no doubt of its identity.

Distribution.—Northern Territory (Bathurst I., Groote Eylandt).

(C) Brown to greyish species, usually with an abdominal pattern of pale or dark triangles or spots.

TABANUS CINERESCENS Macleay.

Tabanus cinerescens W. S. Macleay, 1826. In: King's Narrative of a Survey of the Intertropical and Western Coasts of Australia, 2, p. 467. Mr. J. R. Henry searched the Macleay Collection in the University of Sydney for me, but could find no type specimen.

**Tabanus tetralineatus* Taylor, 1913. *Rpt. Aust. Inst. Trop. Med.* for 1911, p. 68. Type ♀, from Darwin, N.T., in the School of Public Health and Tropical Medicine, Sydney.

It is desirable to stabilize the name *cinerescens*, which is well established in the literature. I therefore select as neotype a ♀, from Katherine R., Northern Territory, Brown, in the School of Public Health and Tropical Medicine, Sydney. This specimen agrees with females in the British Museum, determined by E. E. Austen, who appears to have been the first modern worker (Austen, 1914) to recognize the species, and also with Ferguson's and Taylor's concept of it.

Distribution.—North-western Australia; Northern Territory.

TABANUS INNOTABILIS Walker.

**Tabanus innotabilis* Walker, 1848. *List Dipt. Brit. Mus.*, 1, p. 177. Type ♀, from New Holland, in the British Museum (Natural History).

**Tabanus kurandae* Taylor, 1919. PROC. LINN. SOC. N.S.W., 44, p. 58. Type ♀, from Kuranda, N.Q., in the School of Public Health and Tropical Medicine, Sydney.

Miss Ricardo (1915a) wrongly listed *dorsobimaculatus* Macq. as a synonym of *innotabilis*, and was followed by Ferguson and Hill (1920) and Surcouf (1921). Taylor (1917a) misidentified specimens as *duplonotatus* Ric., and Ferguson and Hill (1920) corrected the error. *T. daruensis* Oldroyd, 1949, from New Guinea, is an additional synonym.

Distribution.—North-western Australia; Northern Territory; Queensland, from the Gulf of Carpentaria and the Torres Strait Is. down the east coast to Rockhampton. Also New Guinea, Solomon Is., Santa Cruz Is.

TABANUS DAVIDSONI Taylor.

**Tabanus davidsoni* Taylor, 1919. *Proc. Linn. Soc. N.S.W.*, 44, p. 65. Type ♀, from Mt. Tamborine, S.Q., in the School of Public Health and Tropical Medicine, Sydney.

This is the southern representative of *innotabilis*; I believe that it may be regarded as at least subspecifically distinct.

Distribution.—South coastal Queensland; north coastal New South Wales.

TABANUS PARVICALLOSUS Ricardo.

**Tabanus parvicallus* Ricardo, 1914. *Ann. Mag. nat. Hist.*, (8), 14, p. 394. Type ♀, from Moreton I., S.Q., in the British Museum (Natural History).

Distribution.—South-eastern Queensland; north coastal and inland New South Wales.

TABANUS TOWNSVILLI Ricardo.

**Tabanus townsvilli* Ricardo, 1915. *Ann. Mag. nat. Hist.*, (8), 15, p. 281. Type ♀♂, from Townsville, N.Q., in the British Museum (Natural History). The original mislabelling noted by Ferguson and Hill (1922) has been corrected.

**Tabanus aprepes* Taylor, 1919. *Proc. Linn. Soc. N.S.W.*, 44, p. 56. Type ♀, from Kuranda, N.Q., in the School of Public Health and Tropical Medicine, Sydney.

**Tabanus batchelor* Taylor, 1919. *Proc. Linn. Soc. N.S.W.*, 44, p. 58. Type ♀, from Batchelor, N.T., in the School of Public Health and Tropical Medicine, Sydney.

The synonymy of *aprepes* with *townsvilli* was suggested by Mr. Oldroyd, and confirmed when the type was examined.

Distribution.—Northern Territory; coastal and inland Queensland; coastal and inland New South Wales; south-western Western Australia (possibly a distinct race).

TABANUS NOTATUS Ricardo.

**Tabanus notatus* Ricardo, 1915. *Ann. Mag. nat. Hist.*, (8), 15, p. 283. Type ♀, from Ching Do, N.Q., in the British Museum (Natural History).

This species is closely related to *T. lenticulatus* Oldr. of New Guinea.

Distribution.—North coastal Queensland, from Cape York to Mackay.

TABANUS SEQUENS Walker.

**Tabanus sequens* Walker, 1848. *List Dipt. Brit. Mus.*, 1, p. 178. Type ♀, from Port Essington, N.T., in the British Museum (Natural History).

Distribution.—Northern Territory; east coastal Queensland, from Moa I. to Brisbane.

(D) Pale, unadorned species, with grey or fawn scutum, and predominantly yellowish abdomen.

TABANUS PRAEPOSITUS Walker.

**Tabanus praepositus* Walker, 1848. *List Dipt. Brit. Mus.*, 1, p. 158. Type ♀, from Port Essington, N.T., in the British Museum (Natural History).

**Tabanus diminutus* Walker, 1848. *List Dipt. Brit. Mus.*, 1, p. 183. Type ♀, from Port Essington, N.T., in the British Museum (Natural History).

**Tabanus obscurimaculatus* Taylor, 1919. *Proc. Linn. Soc. N.S.W.*, 44, p. 51. Type ♀, from Darwin, N.T., in the School of Public Health and Tropical Medicine, Sydney.

T. diminutus had not been recognized previously, but the type is in fair condition, and is clearly only a small specimen of *praepositus*; the description also agrees.

Distribution.—North-western Australia; Northern Territory; north Queensland (Moa I. and Lockhart R.).

TABANUS DORSOBIMACULATUS Macquart.

**Tabanus dorsobimaculatus* Macquart, 1850. *Dipt. exot.*, Suppl. 4, p. 29. Type ♀, from E. coast of New Holland, in the Paris Museum.

**Tabanus nigritarsis* Taylor, 1913. *Rpt. Aust. Inst. Trop. Med.* for 1911, p. 67. Type ♀, from Ching Do, N.Q., in the School of Public Health and Tropical Medicine, Sydney.

Miss Ricardo (1915a) listed *dorsobimaculatus* as a synonym of *innotabilis*, but the type, which is in fair condition, is undoubtedly the same as *nigritarsis*, and the description also agrees better with *nigritarsis* than with *innotabilis*.

Distribution.—Northern Territory; north Queensland, from Cape York to Townsville.

TABANUS NIGRIMANUS Walker.

**Tabanus nigrimanus* Walker, 1848. *List Dipt. Brit. Mus.*, 1, p. 183. Type ♀, from Port Essington, N.T., in the British Museum (Natural History).

**Tabanus badius* Summers, 1912. *Ann. Mag. nat. Hist.*, (8), 10, p. 225. Two cotype ♀♀, from Darwin, N.T., in the British Museum (Natural History).

**Tabanus daphoenus* Taylor, 1919. *Proc. Linn. Soc. N.S.W.*, 44, p. 54. Type ♀, from near Darwin, N.T., in the School of Public Health and Tropical Medicine, Sydney.

Walker's type is in good condition, and the others agree with it. The species is poorly represented in Australian collections.

Distribution.—Northern Territory; north Queensland (Lockhart R.).

TABANUS OBSCURILINEATUS Taylor.

**Tabanus obscurilineatus* Taylor, 1919. *Proc. Linn. Soc. N.S.W.*, 44, p. 50. Type ♀, from Darwin, N.T., in the School of Public Health and Tropical Medicine, Sydney.

A small, yellow species, notable for its extremely small callus, but it shows no other resemblance to the predominantly Holarctic genus *Atylotus*.

Distribution.—North-western Australia; Northern Territory; north Queensland (Townsville).

Tribe DIACHLORINI.

Basicosta without strong setulae, contrasting with the costa (Mackerras, 1956, Fig. 6, B). Fronts of females usually diverging towards the antennae, occasionally parallel; their palpi usually slender, tapering gently to a rounded end.

Genus PARACANTHOCERA Enderlein.

Type species: *Acanthocera australis* Ric., Australia.

Antennae much longer than head, first segment three times as long as wide; slender, *Chrysops*-like species, with bulging, shining face, and conspicuous, brown pattern on wings. I had thought (These PROCEEDINGS, 82, p. 291) that this genus was a synonym of the earlier *Lissimas* End., but the type of the latter (**fenestratus* End., Celebes) proved to be a much less specialized insect.

PARACANTHOCERA AUSTRALIS (Ricardo).

**Acanthocera australis* Ricardo, 1915. *Ann. Mag. nat. Hist.*, (8), 16, p. 16. Type ♀, from Kuranda, N.Q., stated to be in the Berlin Museum, but the specimen in the British Museum (Natural History) is labelled as type.

Distribution.—North Queensland (Kuranda and Cairns district). A second species, **parallelus* (Walk.), is known from Batchian.

Genus CHALYBOSOMA Oldroyd.

Type species: *Tabanus metallicus* Ric., New Guinea.

Metallic blue-green, calliphorid-like flies, with subcallus, parafacials and face rather bare and shining.

CHALYBOSOMA CYANEA (Wiedemann).

Tabanus cyaneus Wiedemann, 1828. *Ausser. zweifl. Ins.*, 1, p. 152. Type ♀ in the Berlin Museum. Dr Peus has reported that a ♀ from south Queensland, sent to him for comparison, agreed perfectly with the type, which is labelled "Nov. Holl., Melly."

**Tabanus cyaneoviridis* Macquart, 1850. *Dipt. exot.*, Suppl. 4, p. 31. Type ♀, from "Tasmanie" (erroneous), in the Paris Museum.

Except for its metallic coloration, this species might be included with almost equal propriety in the genus *Cydistomyia*.

Distribution.—Central and south coastal Queensland; eastern New South Wales.

CHALYBOSOMA CASUARINAE English, Mackerras & Dyce.

**Chalybosoma casuarinae* English, Mackerras and Dyce, 1957. Proc. LINN. Soc. N.S.W., 82, p. 292. Holotype ♀, allotype ♂, morphotype larva, and pupal skins of types, from Merricumbene, N.S.W., in the Division of Entomology, C.S.I.R.O., Canberra.

A remarkable species, which breeds in rot-holes in *Casuarina* trees.

Distribution.—North and south coastal Queensland; south coastal New South Wales.

Genus CYDISTOMYIA Taylor.

Type species: *Cydistomyia doddi* Tayl. (= *albithorax* Ric.), New Guinea.

Smooth-bodied, non-metallic species; eyes bare in both sexes; vein R_1 without appendix; frons of female relatively narrow (index usually greater than 4).

CYDISTOMYIA TORRESI (Ferguson & Hill).

**Tabanus torresi* Ferguson and Hill, 1922. Proc. LINN. Soc. N.S.W., 47, p. 257. Type ♀, from Moa I., Torres Strait, in the School of Public Health and Tropical Medicine, Sydney.

This species belongs to the Papuan *laetus* group. It and *palmensis* form part of a recent intrusion from New Guinea.

Distribution.—Torres Strait Is.

CYDISTOMYIA PALMENSIS (Ferguson & Hill).

**Tabanus palmensis* Ferguson and Hill, 1922. Proc. LINN. Soc. N.S.W., 47, p. 256. Type ♀, from Palm I., N.Q., in the School of Public Health and Tropical Medicine, Sydney.

Distribution.—North Queensland, from Cairns to Townsville.

CYDISTOMYIA AVIDA (Bigot).

**Atylotus avidus* Bigot, 1892. *Mem. Soc. zool. Fr.*, 5, p. 673. Type ♀, from Australia, in the British Museum (Natural History).

**Tabanus fuscipes* Taylor, 1913. *Rpt. Aust. Inst. Trop. Med.* for 1911, p. 62. Type ♀♂, from Magnetic I., N.Q., in the School of Public Health and Tropical Medicine, Sydney. Not *Tabanus fuscipes* Ricardo, 1908, Ethiopian.

Tabanus taylori Austen, 1914. *Ann. Mag. nat. Hist.*, (8), 13, p. 265. Nom. nov.

Tabanus posticus Hardy, 1944, nec Wiedemann, 1828.

Hardy followed a suggestion by Ricardo (1915a), but the type of *posticus* has proved to be a *Dasybasis* of the *vetusta* group.

Distribution.—Coastal Queensland, from Palm I. (abundant) to Brisbane (rare).

CYDISTOMYIA NIGROPICTA (Macquart).

**Tabanus nigropictus* Macquart, 1855. *Dipt. exot.*, Suppl. 5, p. 24. Type ♀, from "Inde" (erroneous), in the British Museum (Natural History).

**Atylotus sanguinarius* Bigot, 1892. *Mem. Soc. zool. Fr.*, 5, p. 675. Type ♀, from Australia, in the British Museum (Natural History).

Miss Ricardo (1915a) pointed out that nothing like *nigropicta* was known from India, whereas it was close to, if not identical with, the Australian *sanguinaria*. Comparison of the types shows that they are conspecific.

Distribution.—South-eastern Queensland; north-eastern New South Wales.

CYDISTOMYIA PSEUDOARDENS (Taylor).

**Tabanus pseudoardens* Taylor, 1913. *Rpt. Aust. Inst. Trop. Med.* for 1911, p. 66. Type ♀, from Kuranda, N.Q., in the School of Public Health and Tropical Medicine, Sydney.

A red-brown species, which is related to *C. lorentzi* (Ric.) in New Guinea and *hyperythrea* in south-eastern Australia.

Distribution.—North Queensland, from Cairns to Mt. Spec.

CYDISTOMYIA HYPERYTHREA (Bigot).

**Atylotus hyperythreus* Bigot, 1892. *Mem. Soc. zool. Fr.*, 5, p. 674. Type ♀, from Australia, in the British Museum (Natural History).

Distribution.—South Queensland (Mt. Tamborine); eastern New South Wales, from Dorrigo to Sydney.

CYDISTOMYIA DUPLONOTATA (Ricardo).

**Tabanus duplonotatus* Ricardo, 1914. *Ann. Mag. nat. Hist.*, (8), 14, p. 396. Type ♀, from S. Queensland, in the British Museum (Natural History).

Taylor (1917a) misidentified *innotabilis* as *duplonotatus*, and later (1917b, 1918) misidentified *duplonotatus* as *parvicallus*.

Distribution.—South-eastern Queensland; eastern New South Wales (Sydney).

CYDISTOMYIA LATICALLOSA (Ricardo).

**Tabanus laticallosus* Ricardo, 1914. *Ann. Mag. nat. Hist.*, (8), 14, p. 395. Type ♀, from Moreton I., S.Q., in the British Museum (Natural History).

**Tabanus rufoabdominalis* Taylor, 1917. *Proc. Linn. Soc. N.S.W.*, 42, p. 525. Type ♀♂, from Stradbroke I., S.Q., in the Queensland Museum, Brisbane.

Distribution.—South coastal Queensland; north coastal New South Wales (Richmond R.).

CYDISTOMYIA LATICALLOSA var. HERONI (Ferguson).

**Tabanus heroni* Ferguson, 1921. *Rec. S. Aust. Mus.*, 1, p. 372. Type ♀, from Dorrigo, N.S.W., in the South Australian Museum, Adelaide.

The status of this form is puzzling. It seems to be consistently larger and more broadly built than *laticallosa*, and to link *laticallosa* with the normally very different *victoriensis*. I have used the old, vague term "var." to indicate lack of precise knowledge.

Distribution.—South Queensland (McPherson Range); northern New South Wales (Dorrigo plateau and adjacent coast).

CYDISTOMYIA DODDI (Taylor).

**Tabanus doddi* Taylor, 1917. *Proc. Linn. Soc. N.S.W.*, 41, p. 758. Type ♀, from Kuranda, N.Q., in the School of Public Health and Tropical Medicine, Sydney.

This species is not to be confused with the genotype, **Cydistomyia doddi* Taylor, 1919, which is restricted to New Guinea. Taylor (1913) originally recorded it as *abstersus* Walk., but described it and labelled a type, after Austin (1914) had pointed out the error. It is remarkable for having a long dorsal process on the third antennal segment, almost like *Dichelacera*. *C. doddi*, *magnetica*, *alternata* and *wentworthi* are best treated, either as distinct species, or as forming a north to south array of subspecies. The former arrangement is more convenient here.

Distribution.—North Queensland, from Kuranda to Townsville.

CYDISTOMYIA MAGNETICA (Ferguson & Hill).

**Tabanus alternatus* var. *magneticus* Ferguson and Hill, 1922. *Proc. Linn. Soc. N.S.W.*, 47, p. 258. Type ♀, from Magnetic I., N.Q., in the School of Public Health and Tropical Medicine, Sydney.

Distribution.—Coastal Queensland, from Magnetic I. to Rockhampton.

CYDISTOMYIA ALTERNATA (Ferguson & Hill).

**Tabanus limbatinevis* Macquart, 1850. *Dipt. exot.*, Suppl. 4, p. 29. Type ♀, from E. coast of New Holland, in the Paris Museum. Not *T. limbatinevis* Macquart, 1847 (see under "Excluded Species"). Macquart had evidently considered changing the later name, because he labelled the type in Paris "*T. fuscinevis* Macq., n. sp.", but that name had already been used for a Neotropical species.

Tabanus macquarti Ricardo, 1915. *Ann. Mag. nat. Hist.*, (8), 15, p. 277. Nom. nov. Not *T. macquarti* Schiner, 1868, Neotropical.

Tabanus alternotus Ferguson and Hill, 1922. PROC. LINN. SOC. N.S.W., 47, p. 258. Nom. nov.

Distribution.—South-eastern Queensland; north-eastern New South Wales.

CYDISTOMYIA WENTWORTHI (Ferguson & Hill).

**Tabanus wentworthi* Ferguson and Hill, 1922. PROC. LINN. SOC. N.S.W., 47, p. 259. Holotype ♀ from Leura, allotype ♂ from Blue Mts., N.S.W., in the Australian Museum, Sydney.

The frons index is slightly less than 4 in some specimens, but usually between 4 and 4.5.

Distribution.—New South Wales (Blue Mts.).

CYDISTOMYIA VICTORIENSIS (Ricardo).

**Tabanus victoriensis* Ricardo, 1915. *Ann. Mag. nat. Hist.*, (8), 15, p. 275. Type ♀, from Dandenong Ranges, Victoria, in the British Museum (Natural History).

This is the southern and highland representative of the *doddi-wentworthi* series. Usually it is quite distinct, but some specimens vary towards *wentworthi*, and the frons index is also sometimes less than 4.

Distribution.—South Queensland (Mt. Tamborine and McPherson Range); highland and coastal New South Wales; Victoria.

The remaining six described species provisionally included in *Cydistomyia* are small (8–12 mm.), and of uncertain relationships. *C. silviformis* is fairly typical, but the *musgravi* complex may lead into the *microdonta* group of *Dasybasis*, and *brevior* and *griseicolor*, in different ways, into the *clavicallosa* group.

CYDISTOMYIA ATMOPHORA (Taylor).

**Tabanus atmophorus* Taylor, 1919. PROC. LINN. SOC. N.S.W., 44, p. 59. Type ♀, from Kuranda, N.Q., in the School of Public Health and Tropical Medicine, Sydney.

This may be no more than a northern subspecies of *musgravi*.

Distribution.—North Queensland, from Lockhart R. to Mackay.

CYDISTOMYIA MUSGRAVII (Taylor).

**Tabanus musgravi* Taylor, 1918. *Rec. Aust. Mus.*, 12, p. 64. Type ♀, from Underbank, N.S.W., in the Australian Museum, Sydney.

This species is remarkable in having a narrow green band across the eye of the female. The frons index is 3 to 4.

Distribution.—South-eastern Queensland, principally in the mountains; New South Wales, in high country from Dorrigo to the Blue Mts., and on the coast near Sydney.

CYDISTOMYIA RIVULARIS (Ferguson & Hill).

**Tabanus pygmaeus* Ferguson and Henry, 1920. PROC. LINN. SOC. N.S.W., 44, p. 842. Type ♀, from Kendall, N.S.W., in the Australian Museum, Sydney. Not *T. pygmaeus* Williston, 1887, Nearctic.

Tabanus rivularis Ferguson and Hill, 1922. PROC. LINN. SOC. N.S.W., 47, p. 264. Nom. nov.

This form is typically smaller than *musgravi* (about 10 mm., as against 11–12), and has a shorter callus and shorter, paler antennae; but there is considerable variation, and I doubt that it can be maintained as distinct.

Distribution.—South-eastern Queensland; north coastal New South Wales and Barrington Tops.

CYDISTOMYIA SILVIFORMIS (Taylor).

**Tabanus silviformis* Taylor, 1919. PROC. LINN. SOC. N.S.W., 44, p. 62. Type ♀, from Stradbroke I., S.Q., in the Queensland Museum, Brisbane.

A small (8–10 mm.), brown species, with frons index 4 to 4.5 and banded abdomen. Known only from three females of type series.

Distribution.—South Queensland.

CYDISTOMYIA BREVIOR (Walker).

**Tabanus brevior* Walker, 1848. *List Dipt. Brit. Mus.*, 1, p. 188. Type ♀, from Port Essington, N.T., in the British Museum (Natural History).

Tabanus marginatus var.B Walker, 1848. *List Dipt. Brit. Mus.*, 1, p. 189. ♀, from Port Essington, in the British Museum (Natural History). Miss Ricardo (1915a) recorded the synonymy. I did not see this specimen; the true **marginatus* (Walk.) is a *Mesomyia* (Chrysopinae).

**Tabanus anellosus* Summers, 1912. *Ann. Mag. nat. Hist.*, (8), 10, p. 226. Three cotype ♀♀, from Darwin, N.T., in the British Museum (Natural History).

**Tabanus australis* Taylor, 1917. *Proc. Linn. Soc. N.S.W.*, 41, p. 757. Type ♀, from Stapleton, N.T., in the School of Public Health and Tropical Medicine, Sydney.

**Tabanus crypserythrus* Taylor, 1919. *Proc. Linn. Soc. N.S.W.*, 44, p. 60. Type ♂♂, from near Darwin, N.T., in the School of Public Health and Tropical Medicine, Sydney.

The enlarged upper facets of the eyes of the male are bare, and the frons index of the female is 4 to 4.5; but cell R_4 is wide, and vein R_1 more or less angulate, though without definite appendix.

Distribution.—Northern Territory.

CYDISTOMYIA GRISEICOLOR (Ferguson & Hill).

**Tabanus griseicolor* Ferguson and Hill, 1922. *Proc. Linn. Soc. N.S.W.*, 47, p. 262. Type ♀, from Hughenden, N.Q., in the School of Public Health and Tropical Medicine, Sydney.

A typical, small, greyish *Cydistomyia*, except for the wide frons, with an index of 2 to 2.5. Known only from four females.

Distribution.—North-western Queensland (Hughenden, Richmond).

Genus DASYBASIS Macquart.

Type species: *Dasybasis appendiculata* Macq., Australia.

Dolichapha Enderlein, 1930. Type species: *Tabanus gregarius* Erichs., Tasmania.

Non-metallic species, of varied habitus from smooth to relatively broad and hairy; eyes hairy, at least on the upper facets of the male; vein R_4 with appendix (except in the *microdonta* group); frons of female relatively wide (index usually less than 3).

This genus consists, partly of a clearly definable faunal element, and partly of a series of groups of uncertain affinities but seeming to find closer relationship here than elsewhere in the tribe. Some of these may require subgeneric recognition when the whole complex has been worked out. As the synonymy is complicated, it will be necessary to include brief definitions of the species to which the names are applied.

The microdonta Group.

Small to large (10–16 mm.), dark, parallel-sided species, distinguished by the combination of a smoothly curved vein R_4 , without appendix, and (usually) hairy eyes in both sexes. Males with eyes not markedly swollen and upper facets not conspicuously enlarged. Females with frons wide to moderately narrow (index 2 to 4.5); callus usually elongate and nearly full width of frons at base; terminal abdominal segments dorsoventrally compressed.

This small group of four species (two undescribed) is difficult to place. It could have evolved from the *victoriensis* and *musgravii* stocks of *Cydistomyia*; or it may represent the New Zealand subgenus *Dasybasis* (*Protodasyommia*) in Australia. It seems better, at the moment, to include it here.

DASYBASIS MICRODONTA (Macquart).

**Tabanus microdonta* Macquart, 1847. *Dipt. exot.*, Suppl. 2, p. 17. Type ♀, from Tasmania, in the British Museum (Natural History).

Tabanus wynyardensis Hardy, 1916. *Pap. Proc. R. Soc. Tas.* for 1916, p. 269. Location of the type ♂, from Wynyard, Tasmania, not known, but I have seen specimens from the type series.

A large (15–16 mm.), distinctive species, with wide frons (index 2·5 to 3) and relatively narrow callus.

Distribution.—Victoria; Tasmania.

DASYBASIS RAINBOWI (Taylor).

**Tabanus rainbowi* Taylor, 1918. *Rec. Aust. Mus.*, 12, p. 66. Type ♂, from King George Sound, W.A., in the Australian Museum, Sydney.

A small (11–12 mm.), undistinguished species, with relatively narrow frons (index 3·5 to 4·5). One of the new species (from Western Australia) is related; the other (from Mt. Kosciusko) is like a hairy *C. musgravii* with a wide frons (index 2 to 2·5).

Distribution.—South-western Western Australia.

The clavicallosa Group.

Small to medium-sized (8–13, occasionally 15 mm.), smooth, yellowish to greyish species, with unpatterned scutum, and abdominal pattern usually rather vague. Eyes of known males (five species) markedly swollen, with conspicuously enlarged, densely hairy, upper facets. Females with eyes bare; frons medium to rather narrow (index 2·5 to 4·5), parallel to slightly diverging; callus narrower than frons, often reduced, sometimes absent; terminal abdominal segments dorsoventrally compressed.

This is a predominantly northern group; but the presence of an appendix (often a long one) on *R.*, the hairy eyes of the male, the usually rather wide frons of the female (index 2·5 to 3 in ten of the species), and the evident relationship with the *oculata* group, suggest origin from *Dasybasis* rather than *Cydistomyia* stock. It extends into New Guinea (three species) and Bougainville (one species).

DASYBASIS GRISEOANNULATA (Taylor).

**Tabanus griseoannulatus* Taylor, 1917. *Proc. Linn. Soc. N.S.W.*, 41, p. 756. Type ♀, from Brock's Ck., N.T., in the School of Public Health and Tropical Medicine, Sydney.

An obscure, greyish species, with unusually narrow frons (index 4·5); known only from a single female.

Distribution.—Northern Territory.

DASYBASIS ANGSTICALLUS (Ricardo).

**Tabanus angusticallus* Ricardo, 1917. *Ann. Mag. nat. Hist.*, (8), 19, p. 218. Type ♀, from Melville I., N.T., in the South Australian Museum, Adelaide.

A small (9–10 mm.), grey species, distinguished by the short, linear callus on the lower part of the relatively narrow frons (index 3 to 3·5).

Distribution.—Northern Territory.

DASYBASIS TRYPHERA (Taylor).

**Tabanus trypherus* Taylor, 1917. *Proc. Linn. Soc. N.S.W.*, 41, p. 755. Type ♀, from near Darwin, N.T., in the School of Public Health and Tropical Medicine, Sydney.

A very small (8 mm.), greyish species, with relatively wide frons (index 2·5 to 3) and large, pear-shaped callus. Known only from two females, it may be an extreme variant of *clavicallosa*.

Distribution.—Northern Territory (Darwin).

DASYBASIS CLAVICALLOSA (Ricardo).

**Tabanus clavicallosus* Ricardo, 1917 (Feb.). *Ann. Mag. nat. Hist.*, (8), 19, p. 219. Type ♀, from Milson I., N.S.W., in the British Museum (Natural History).

**Tabanus darwinensis* Taylor, 1917 (Apr.). *Proc. Linn. Soc. N.S.W.*, 41, p. 758. Type ♀, from Darwin, N.T., in the School of Public Health and Tropical Medicine, Sydney.

**Tabanus griseus* Taylor, 1919. *Proc. Linn. Soc. N.S.W.*, 44, p. 55. Type ♀, from Brisbane, Q., in the Queensland Museum, Brisbane.

A small (9–12 mm.), grey species, with frons index 2.5 to 3, and pear-shaped callus; eyes of ♀ with just perceptible hairs. Ferguson and Hill (1922) established the synonymy of *griseus*; the type of *darwinensis* almost completely lacks the normal paler banding on the abdominal tergites, but is otherwise identical.

Distribution.—Northern Territory (Darwin); coastal Queensland (Townsville, Brisbane); coastal New South Wales (Newcastle to National Park south of Sydney). Though the species is not uncommon, its distribution seems to be patchy.

DASYBASIS CLAVICALLOSA BANKSIENSIS (Ferguson & Hill).

**Tabanus clavicallosus* var. *banksiensis* Ferguson and Hill, 1922. PROC. LINN. SOC. N.S.W., 47, p. 262. Type ♀, from Moa (Banks) I., Torres Strait, in the National Museum, Melbourne.

This form may prove to be a distinct species, when sufficient specimens are available for study.

Distribution.—Northern Territory (Melville I.); north Queensland (Moa I.). Also New Guinea.

DASYBASIS NEOGERMANICA (Ricardo).

**Tabanus neogermanicus* Ricardo, 1915. *Ann. Mag. nat. Hist.*, (8), 15, p. 283. Type ♀, from Darwin, N.T., in the British Museum (Natural History).

**Tabanus fugitivus* Taylor, 1919. PROC. LINN. SOC. N.S.W., 44, p. 61. Type ♀, from Darwin, N.T., in the School of Public Health and Tropical Medicine, Sydney.

**Tabanus hilli* Taylor, 1919. PROC. LINN. SOC. N.S.W., 44, p. 64. Type ♀, from Darwin, N.T., in the School of Public Health and Tropical Medicine, Sydney.

One of the larger species of the group (11–14 mm.); yellowish-brown, with frons index 2.5 to 3, long, narrow callus, and well-defined abdominal bands.

Distribution.—North-western Australia; Northern Territory.

DASYBASIS GERMANICA (Ricardo).

**Tabanus germanicus* Ricardo, 1915. *Ann. Mag. nat. Hist.*, (8), 15, p. 282. Type ♀, from Cairns, N.Q., in the British Museum (Natural History).

A small (7–11 mm.), variable, fawn and brown to yellowish-brown species, with wide third antennal segment, frons index 2.5 to 3.5, pear-shaped callus, and deep brown to blackish fore femora.

Distribution.—Northern Territory; eastern Queensland, from Torres Strait Is. (Saibai, Moa) and Cape York to Gladstone. Also New Guinea.

DASYBASIS CONSTANS (Walker).

**Tabanus constans* Walker, 1848. *List Dipt. Brit. Mus.*, 1, p. 186. Type ♀, from New Holland, in the British Museum (Natural History).

**Tabanus quadratus* Taylor, 1919. PROC. LINN. SOC. N.S.W., 44, p. 52. Type ♀, from Darwin, N.T., in the School of Public Health and Tropical Medicine, Sydney.

**Tabanus minor* Taylor, 1919. PROC. LINN. SOC. N.S.W., 44, p. 64. Type ♀, from Darwin, N.T., in the School of Public Health and Tropical Medicine, Sydney. Not *T. minor* Macquart, 1850, Neotropical.

Tabanus minusculus Ferguson and Hill, 1920. PROC. LINN. SOC. N.S.W., 45, p. 466. Nom. nov. Not *T. minusculus* Hine, 1907, Nearctic.

Tabanus palmerstoni Ferguson and Hill, 1922. PROC. LINN. SOC. N.S.W., 47, p. 263. Nom. nov.

A small (7–11 mm.), greyish fawn, rather variable species, with frons index 2.5 to 3, callus usually oval and tapering to a point above, entirely yellowish antennae and femora, and banded abdomen. The synonymy of *minor* was established by Taylor (1926) on the authority of Austen; *quadratus* differs only in having the frons usually a little wider, and the callus oblong rather than oval.

Distribution.—North-western Australia; Northern Territory.

DASYBASIS PARVA (Taylor).

**Tabanus parvus* Taylor, 1913. *Rpt. Aust. Inst. Trop. Med.* for 1911, p. 69. Type ♀, from Darwin, N.T., in the School of Public Health and Tropical Medicine, Sydney.

D. parva, neopalpalis and *pseudocallosa* are small (8–10 mm.), obscure, yellowish species, of which only a few specimens are known. The frons index of *parva* is 3·5, and the callus is light brown, wedge-shaped.

Distribution.—Northern Territory.

DASYBASIS NEOPALPALIS (Ferguson & Hill).

**Tabanus palpalis* Taylor, 1919. *Proc. Linn. Soc. N.S.W.*, 44, p. 66. Type ♀, from Batchelor, N.T., in the School of Public Health and Tropical Medicine, Sydney. Not *T. palpalis* Ricardo, 1911, Oriental.

Tabanus neopalpalis Ferguson and Hill, 1920. *Proc. Linn. Soc. N.S.W.*, 45, p. 465. *Nom. nov.*

Frons index 2·5 to 3; callus dark brown, small, rounded.

Distribution.—Northern Territory.

DASYBASIS PSEUDOCALLOSA (Ferguson & Hill).

**Tabanus pseudocallosus* Ferguson and Hill, 1922. *Proc. Linn. Soc. N.S.W.*, 47, p. 254. Type ♀, from Darwin, N.T., in the National Museum, Melbourne.

Frons index 2·5; callus light yellow, triangular, resting on the shining yellow subcallus; costal cell brown.

Distribution.—Northern Territory; north Queensland.

DASYBASIS NEMOTUBERCULATA (Ricardo).

**Tabanus nemotuberculatus* Ricardo, 1914. *Ann. Mag. nat. Hist.*, (8), 14, p. 388. Type ♀, from Cape York, N.Q., in the British Museum (Natural History).

Tabanus pseudopalpalis Ferguson and Hill, 1922. *Proc. Linn. Soc. N.S.W.*, 47, p. 252. The type ♀ was stated to be in Mr. Hill's collection, but it cannot now be found. I therefore designate as neotype the remaining ♀ of the type series, from Batchelor, N.T., G. F. Hill, No. 1405, now in the collection of the School of Public Health and Tropical Medicine, Sydney. This may be the original type, unlabelled; but one cannot be sure, because the field observation numbers included series taken at the same time and place.

A small (10–11 mm.), slender, yellow-brown species, with rather narrow frons (index 3 to 3·5), only a variable indication of a light yellow callus, the costal cell yellow or brown, and the radial cells sometimes darkened also. Northern Territory specimens (*pseudopalpalis*) have a wider antennal plate and less darkened wings than those from Queensland (*nemotuberculata*), and subspecific separation may ultimately be desirable.

Distribution.—Northern Territory; north Queensland (both sides of Cape York Peninsula).

DASYBASIS SPATIOSA (Ricardo).

**Tabanus spatiosus* Ricardo, 1915. *Ann. Mag. nat. Hist.*, (8), 15, p. 288. Type ♀, from Stannary Hills, N.Q., in the British Museum (Natural History).

Distinguished from *nemotuberculata* by being somewhat longer (11–12 mm.) and paler, with a somewhat wider frons (index 2·5 to 3), and a more definite, brown callus.

Distribution.—North Queensland.

DASYBASIS NEMOPUNCTATA (Ricardo).

**Tabanus nemopunctatus* Ricardo, 1914. *Ann. Mag. nat. Hist.*, (8), 14, p. 388. Type ♀, from Dunk I., N.Q., in the British Museum (Natural History).

**Tabanus aurihirtus* Ricardo, 1915. *Ann. Mag. nat. Hist.*, (8), 15, p. 290. Type ♀♂, from Townsville, N.Q., in the British Museum (Natural History).

**Tabanus hackeri* Taylor, 1917. *Proc. Linn. Soc. N.S.W.*, 42, p. 522. Type ♀, from Bribie I., S.Q., in the Queensland Museum, Brisbane.

A larger (10–15 mm.), stouter species than the preceding; pale grey to yellow, with rather vague or no abdominal pattern; frons index 3 to 4; no callus. Taylor (1919) misidentified a specimen from Stradbroke I. as *spatiosa*. Yellow specimens may be mistaken for *vespiformis*, but can be recognized by the flat terminal abdominal segments.

Distribution.—East coast, from Cape York to northern New South Wales (apparently strictly littoral).

DASYBASIS OCHREOFLAVA (Ferguson & Henry).

**Tabanus ochreoflavus* Ferguson and Henry, 1920. *Proc. Linn. Soc. N.S.W.*, 44, p. 845. Type ♀, from Kendall, N.S.W., in the Australian Museum, Sydney.

A medium-sized (11–14 mm.), relatively robust species, distinguished from *nemopunctata* by darker general colour, more definitely banded abdomen, and well-defined, narrow, brown callus.

Distribution.—South Queensland (Moreton I.); northern New South Wales (Kendall).

The oculata Group.

Differs from the *clavicallosa* group principally in having the eyes hairy in both sexes, the frons of the female usually wider (index 2 to 3), the general coloration more brownish, and scutum and abdomen with more definite pattern. The eyes of the known males (seven species) are usually not markedly swollen, nor with the upper facets conspicuously enlarged. Terminal abdominal segments of females dorsoventrally compressed, except *regis-georgii*, in which they are markedly narrowed.

The distribution is essentially southern, only *oculata* and *spadix* extending into north Queensland.

DASYBASIS RUFIFRONS (Macquart).

**Tabanus rufifrons* Macquart, 1855. *Dipt. exot.*, Suppl. 5, p. 28. Type ♀, from New Adelaide, N. Holland, in the British Museum (Natural History).

**Tabanus meridionalis* Ferguson, 1921. *Rec. S. Aust. Mus.*, 1, p. 376. Type ♀, from Adelaide, South Australia, in the South Australian Museum, Adelaide. Not *T. meridionalis* Thunberg, 1827, from unknown country.

Tabanus adelaidae Ferguson and Hill, 1922. *Proc. Linn. Soc. N.S.W.*, 47, p. 264. *Nom. nov.*

A pale, but patterned species, with an indefinite, light yellow callus. Macquart's type is somewhat greasy, which has made the frons seem reddish, but there is no doubt of its identity. Miss Ricardo (1917) misidentified this species as *postponens*.

Distribution.—South Australia.

DASYBASIS NEOCIRRUS (Ricardo).

**Tabanus neocirrus* Ricardo, 1917. *Ann. Mag. nat. Hist.*, (8), 19, p. 223. Type ♀ (not so labelled), from Swansea, Tasmania, in the British Museum (Natural History).

**Tabanus tasmanicus* Ferguson, 1921. *Proc. R. Soc. Vic.*, 33, p. 20. Type ♀, from Dunally, Tasmania, in the Australian Museum, Sydney.

**Tabanus bassii* Ferguson, 1921. *Proc. R. Soc. Vic.*, 33, p. 22. Type ♀, from Wilson's Promontory, Victoria, in the National Museum, Melbourne.

A small-medium (10–13 mm.), variable, greyish species with medium frons (index about 3), small, club- or pear-shaped callus, and banded abdomen. There is no doubt that the type of *neocirrus* was mis-labelled, as pointed out by Ferguson (1921a) and Hardy (1934). The specimen in the British Museum agrees with Miss Ricardo's description, and is from her stated type locality; the one in the South Australian Museum, labelled as the type, is from South Australia, is evidently her second specimen, and is not conspecific with the first. The three types differ appreciably from one another, but I believe that they all fall within the range of variation of the species.

Distribution.—Coastal New South Wales, south of Sydney; Victoria; Flinders I.; Tasmania.

DASYBASIS NEOBASALIS (Taylor).

**Tabanus basalis* Walker, 1848. *List Dipt. Brit. Mus.*, 1, p. 182. Type ♀, from New Holland, in the British Museum (Natural History). Not *T. basalis* Macquart, 1838, Oriental.

Tabanus neobasalis Taylor, 1918. *Rec. Aust. Mus.*, 12, p. 67. Nom. nov.

A relatively robust (11–14 mm.), fawn-brown species, with distinctive abdominal pattern, medium frons (index 2.5 to 3), relatively wide, heart-shaped callus, and wide antennal plate.

Distribution.—South Queensland (Eukey); mountain and coastal districts of New South Wales; Victoria. There is also a complex of related forms, some of which may require specific recognition, from Victoria, Tasmania and Western Australia.

DASYBASIS OCVLATA (Ricardo).

**Tabanus pusillus* Macquart, 1855. *Dipt. exot.*, Suppl. 5, p. 29. Type ♀, from Sydney, N. Holland, in the British Museum (Natural History). Not *T. pusillus* Macquart, 1838, China.

Tabanus oculatus Ricardo, 1915. *Ann. Mag. nat. Hist.*, (8), 16, p. 276. Nom. nov.

**Tabanus kendallensis* Taylor, 1919. *Proc. Linn. Soc. N.S.W.*, 44, p. 68. Type ♀, from Kendall, N.S.W., in the School of Public Health and Tropical Medicine, Sydney.

Distinguished from *neobasalis* by generally smaller size (10 mm.), somewhat wider frons (index 2.5), smaller, more rounded callus, and narrower antennal plate. I would have been doubtful of the value of these characters, but Miss English has informed me that the pupae also differ significantly.

Distribution.—Eastern Queensland, from Cairns to the McPherson Range; coastal and mountain districts of New South Wales, from the Queensland border to Canberra.

DASYBASIS POSTPONENS (Walker).

**Tabanus postponens* Walker, 1848. *List Dipt. Brit. Mus.*, 1, p. 179. Type ♀, from New Holland, in the British Museum (Natural History).

A small-medium (10–12 mm.), nondescript, brown species, with banded abdomen; like a small *acutipalpis*, but immediately distinguishable by the somewhat wider frons (index 2.5 to 3), and narrowly oval callus with short extension.

Distribution.—Coastal New South Wales, from Kendall to Nowra. There are what may be variants in South Australia and Western Australia, but their status is uncertain.

DASYBASIS DIXONI (Ferguson).

**Tabanus dixoni* Ferguson, 1921. *Proc. R. Soc. Vic.*, 33, p. 23. Type ♀, from Lake Hattah, Victoria, in the National Museum, Melbourne.

A small-medium (10–12 mm.), fairly brightly patterned species, with a wider frons than *postponens* (index 2 to 2.5) and a markedly narrower callus than *spadix*. Specimens from South Australia were identified as *regis-georgii* (Ric. nec Macq.) by Miss Ricardo (1917).

Distribution.—Victoria; South Australia; south-western Western Australia.

DASYBASIS SPADIX (Taylor).

**Tabanus spadix* Taylor, 1917. *Proc. Linn. Soc. N.S.W.*, 41, p. 761. Type ♀, from Sydney, N.S.W., in the School of Public Health and Tropical Medicine, Sydney.

**Tabanus brisbanensis* Taylor, 1917. *Proc. Linn. Soc. N.S.W.*, 42, p. 526. Type ♀, from Brisbane, S.Q., in the Queensland Museum, Brisbane.

Tabanus regis-georgii Ricardo, 1915, and subsequent authors, nec Macquart.

A small (9–11 mm.), compact, brightly patterned species, with wide frons (index 2) and large, heart-shaped callus. It was wrongly identified by Miss Ricardo (1915*b*) as *regis-georgii*, and Australian workers have universally followed her determination, in spite of the fact that it is not known from Western Australia (see comment by Ferguson and Hill, 1920, p. 466).

Distribution.—Eastern Queensland, from Cairns to Stradbroke I.; coastal New South Wales; Victoria (Mallacoota Inlet).

DASYBASIS SPADIX DIEMANENSIS (Ferguson).

**Tabanus diemanensis* Ferguson, 1921. *Proc. R. Soc. Vic.*, 33, p. 25. Type ♀ and allotype ♂, from Bream Ck., Tasmania, in the Australian Museum, Sydney.

This form has a slightly narrower frons and smaller callus than the mainland race, and the upper facets of the eyes of the male are only slightly enlarged over a relatively small area. It seems better to treat it as a subspecies than a full species. Taylor (1919) misidentified it as *brisbanensis*.

Distribution.—Victoria; Tasmania; one ♀ from South Australia may belong here.

DASYBASIS REGIS-GEORGII (Macquart).

**Tabanus regis-georgii* Macquart, 1838. *Dipt. exot.*, 1 (i), p. 132. Type ♀, from King George Sound, W.A., in the Paris Museum.

**Tabanus geraldtonensis* Taylor, 1919. *Proc. Linn. Soc. N.S.W.*, 44, p. 70. Type ♀, from Geraldton, W.A., in the School of Public Health and Tropical Medicine, Sydney.

A distinctive species, not only by the abdominal pattern, but by having the terminal segments of the female compressed, and the eyes of the male distinctly swollen, with considerably enlarged upper facets, suggesting relationship with the *macrophthalma* group. Macquart's specimen is old, rather wasted, and has only a label "Roï Georg.", but there is little doubt that it is the type; it is certainly the same species as Taylor's.

Distribution.—South-western Western Australia.

The vetusta Group.

Nearly concolorous, grey to yellowish, medium-sized to large (11–17 mm.) species. Eyes of males usually markedly swollen and with upper facets conspicuously enlarged, densely hairy. Females with eyes hairy in southern species, bare in northern ones; frons moderately wide (index 2.5 to 3), nearly parallel, with small callus or none; terminal segments of abdomen laterally compressed, producing a tent-like appearance of the cerci in end view (Text-fig. 1).

This is a very distinctive group of six (two undescribed), coastal, sand-haunting species, which may merit higher taxonomic status, but its precise relationship to the *macrophthalma* group has still to be defined.

DASYBASIS CAESIA (Walker).

**Tabanus caesius* Walker, 1848. *List Dipt. Brit. Mus.*, 1, p. 180. Type ♀, from unknown country, in the British Museum (Natural History).

Tabanus leucopterus van der Wulp, 1868. *Tijdschr. Ent.*, 11, p. 98. Type ♀, from Aru Is., in the Rijksmuseum Nat. Hist., Leyden.

**Tabanus griseohirtus* Taylor, 1917. *Proc. Linn. Soc. N.S.W.*, 41, p. 753. Type ♀, from Melville I., N.T., in the School of Public Health and Tropical Medicine, Sydney.

A grey species, with the eyes of the female bare, frons index 2.5, and no callus. The synonymy of *leucopterus* was established by Oldroyd (1949).

Distribution.—North-western Australia, including Montebello I.; Northern Territory; Torres Strait Is. (Murray, Moa, Thursday); north Queensland, from Cape York to Townsville. Also New Guinea and Aru Is.

DASYBASIS VETUSTA (Walker).

**Tabanus vetustus* Walker, 1848. *List Dipt. Brit. Mus.*, 1, p. 179. Type ♀, from Swan R., W.A., in the British Museum (Natural History).

An almost uniformly grey to yellowish-grey species, with eyes of the female hairy, frons index 2.5, and a small, dark callus.

Distribution.—The typical race is restricted to south-western Western Australia and South Australia. Specimens from Victoria and Tasmania belong to a distinct subspecies with entirely dark third antennal segment.

DASYBASIS VESPIFORMIS (Ferguson & Henry).

**Tabanus vespiiformis* Ferguson and Henry, 1920. *Proc. Linn. Soc. N.S.W.*, 44, p. 840. Type ♀, from Kendall, N.S.W., in the Australian Museum, Sydney.

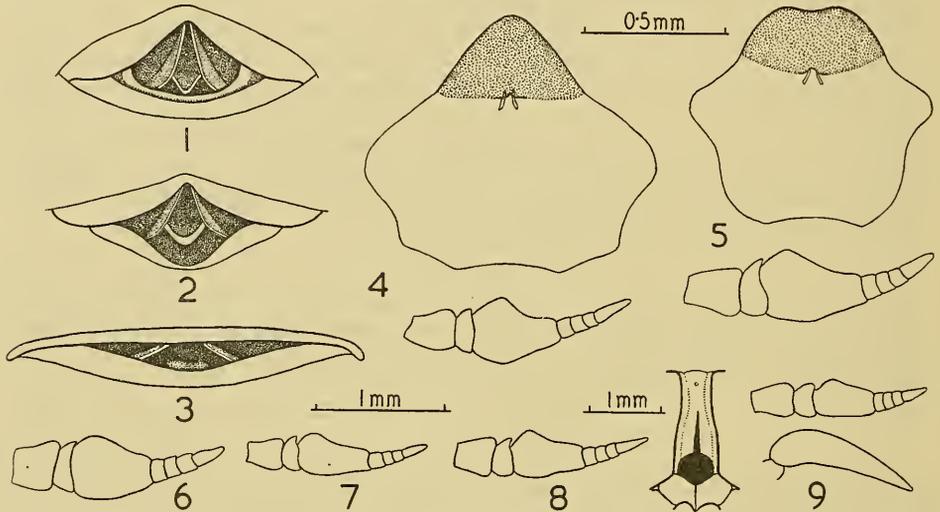
A large (15–17 mm.), yellow species, with frons index 3, and only vague indications of a callus. The type specimen was damaged, and neither the name nor the original description gives a true impression of the species.

Distribution.—Coastal New South Wales, from Kendall to National Park, south of Sydney.

DASYBASIS POSTICA (Wiedemann).

**Tabanus posticus* Wiedemann, 1828. *Ausser. zweifl. Ins.*, 1, p. 152. Type ♀, from Australasia, in the Berlin Museum.

**Tabanus pseudobasalis* Taylor, 1918. *Rec. Aust. Mus.*, 12, p. 68. Type ♀, from King George Sound, W.A., in the Australian Museum, Sydney.



Text-figs. 1-9.

1: End view of abdomen of *Dasybasis vetusta* (Walk.), ♀ from Western Australia. 2: Same of *D. hebes* (Walk.), ♀ from Tasmania. 3: Same of *D. circumdata* (Walk.), ♀ from Canberra. 4: Eighth sternite and antenna of *D. hebes*, ♀ from S. Queensland. 5: Same of *D. circumdata*, ♀ from Dorrigo plateau. 6: Antenna of *Dasybasis exulans* (Erich.), ♀ from Tasmania. 7: Antenna of *D. acutipalpis* (Macq.), ♀ from Victoria agreeing with type of *abstersa* (Walk.). 8: Same of typical ♀ from Tasmania. 9: Frons, antenna and palp of *D. tasmaniensis* (White), paratype ♀. Scales: top, for eighth sternites; lower left, for abdomens, antennae and palp; lower right, for frons.

A medium-sized (11–14 mm.), plump, unadorned species, with olive scutum and yellow abdomen. The possibility that this species might be *postica* had not been considered until the type was received for study.

Distribution.—South-western Western Australia; South Australia.

Both the new species are robust and yellowish, like *vespiformis*. One, with eyes bare in the female, is from north-western Australia; the other, with eyes hairy in both sexes, is from south coastal New South Wales and Victoria.

The macrophthalma Group.

Robust (13–16 mm.), rather flat-bodied, grey or brown species, with well-developed scutal and abdominal patterns. Eyes densely hairy in both sexes; more or less swollen and with moderately to conspicuously enlarged upper facets in the males. Females with wide (index 2 to 3), almost parallel frons; callus usually full width of frons and restricted to its lower half; terminal abdominal segments narrowed, cerci tent-like, eighth sternite either small or pointed apically (Text-fig. 2).

There are eight Australian species (three undescribed) in this group, and they have a rather characteristic appearance, which is contributed to by a deep subcallus and

smoothly bulging parafacials and face in the females; in most species, too, the antennae are black, contrasting with the wide expanse of whitish tomentum below them. It is difficult to decide how far the characters they share with the *vetusta* group are expressions of relationship or of common adaptation to life in a sandy environment. On the one hand, they are reinforced by common, distinctive features in the known pupae (Miss English, personal communication); but, on the other hand, the adults of *exulans* and its immediate allies seem to lead rather towards the *appendiculata* group.

Three species are known outside Australia, one from New Guinea, one from the Admiralty to the Santa Cruz Is., and one from New Caledonia and Loyalty Is. The eyes are bare in the females, but otherwise they are very like *macrophthalma*.

DASYBASIS MACROPHTHALMA (Schiner).

**Tabanus macrophthalmus* Schiner, 1868. *Reise Novara Dipt.*, p. 83. Type ♂, from Sydney, N.S.W., in the Vienna Museum.

**Tabanus orarius* English, 1949. *Proc. Linn. Soc. N.S.W.*, 74, p. 154. Holotype ♀, allotype ♀, morphotype larval and pupal skins, from Narooma, N.S.W., in the Macleay Museum, University of Sydney.

A distinctive, grey species, which breeds in the sand of ocean beaches. The type from Vienna is labelled "*megalops*" and "Sydney". It agrees perfectly with the description of *macrophthalma*, down to individual details, such as the retracted abdomen, and there is no *megalops* in the *Novara* Diptera, so there is no doubt that it is the specimen described. It also agrees perfectly with recent males of *oraria*.

Distribution.—South coastal New South Wales.

DASYBASIS ALBOHIRTIPES (Ferguson).

**Tabanus albohirtipes* Ferguson, 1921. *Rec. S. Aust. Mus.*, 1, p. 377. Type ♀, from South Australia, in the South Australian Museum, Adelaide.

A brownish-grey species, which falls naturally between *macrophthalma* and *cirrus*.

Distribution.—South Australia; south-western Western Australia. There is also a related, undescribed species in Western Australia.

DASYBASIS CIRRUS (Ricardo).

**Tabanus cirrus* Ricardo, 1917. *Ann. Mag. nat. Hist.*, (8), 19, p. 222. Type ♀, from Milson I., N.S.W., in the British Museum (Natural History).

**Tabanus robustus* Taylor, 1919. *Proc. Linn. Soc. N.S.W.*, 44, p. 69. Type ♀, from Brisbane, Q., in the Queensland Museum, Brisbane.

A large (16 mm.), dark greyish-brown species, with characteristic drop-shaped callus.

Distribution.—East coastal, from Palm I. in north Queensland to the Hawkesbury R. in New South Wales.

DASYBASIS EXULANS (Erichson).

**Tabanus exulans* Erichson, 1842. *Arch. Naturges.*, (1), 8, p. 270. Type ♀, from Tasmania, in the Berlin Museum.

Tabanus circumdatus var. White, 1915, *nec* Walker.

Tabanus acutipalpis auct. *nec* Macquart.

This robust (15–16 mm.), dark, southern species was wrongly identified as *acutipalpis* by Ricardo (1915*b*), Ferguson (1921*a*, 1921*b*) and Hardy (1934, 1939, 1948). The antennal plate is angulate dorsally in the type, but more usually rounded as in Text-figure 6. The eighth sternite is small, and more concave distally than in *circumdatus* (Text-fig. 5).

Distribution.—Eastern New South Wales (chiefly montane); Victoria; Tasmania.

DASYBASIS HEBES (Walker).

**Tabanus hebes* Walker, 1848. *List Dipt. Brit. Mus.*, 1, p. 159. Type ♀, from unknown locality, in the British Museum (Natural History).

**Tabanus nepos* Walker, 1848. *List Dipt. Brit. Mus.*, 1, p. 181. Type ♀, from unknown locality, in the British Museum (Natural History).

Tabanus circumdatus White, 1915, *nec* Walker; also other authors in part (records from Tasmania and most, if not all, from South Queensland; others probably represent a mixture, with this species in the minority).

Tabanus whitei Hardy, 1939. PROC. LINN. SOC. N.S.W., 64, p. 44. Proposed as a "new name" for *Tabanus circumdatus* White, 1915, *nec* Walker, 1848, and no type indicated. In order to fix its identity, I therefore select as lectotype a ♀ in the School of Public Health and Tropical Medicine, Sydney, from Mangalore, Tasmania, 18.i.1914, A. White, labelled "*T. circumdatus* Walk." in White's handwriting.

A slightly smaller (13–15 mm.), duller species than the preceding; antennal plate almost as wide, but with sharp dorsal angle; most easily recognized by its distinctive eighth sternite (Text-figs. 2, 4).

The types of *hebes* and *nepos* are large (15 mm.), brown females, with clearly visible, pointed eighth sternites. A female from Eidsvold, south Queensland, returned to Ferguson by Austen as agreeing with the type of *circumdatus*, agrees very well with these two, but not so well with the type of *circumdatus*. The type labels are very small, and it seems possible that Austen may have mistaken the specimen he picked out for comparison.

Distribution.—South-eastern Queensland; eastern New South Wales; Victoria; Tasmania; South Australia; south-western Western Australia.

The trilinealis Group.

Differs from the *appendiculata* group only in the females having bare eyes and relatively narrow fronts (index 3 to 4); otherwise they closely resemble *circumdatus* and its allies. No males are known.

DASYBASIS TRILINEALIS (Ferguson & Henry).

**Tabanus trilinealis* Ferguson and Henry, 1920. PROC. LINN. SOC. N.S.W., 44, p. 841. Type ♀, from Kendall, N.S.W., in the Australian Museum, Sydney.

An ornate species, with sharply defined scutal vittae, and almost confluent median abdominal triangles.

Distribution.—South-eastern Queensland; north coastal New South Wales to Sydney.

DASYBASIS KEWENSIS (Ferguson & Henry).

**Tabanus kewensis* Ferguson and Henry, 1920. PROC. LINN. SOC. N.S.W., 44, p. 843. Type ♀, from near Kendall, N.S.W., in the Australian Museum, Sydney.

Resembles a rather dark *circumdatus*.

Distribution.—South-east Queensland (Nerang); north coastal New South Wales to Sydney.

DASYBASIS EIDSVOLDENSIS (Taylor).

**Tabanus eidsvoldensis* Taylor, 1919. PROC. LINN. SOC. N.S.W., 44, p. 49. Type ♀, from Eidsvold, S.Q., in the School of Public Health and Tropical Medicine, Sydney.

Extremely like *acutipalpis*, except for bare eyes and wider antennal plate.

Distribution.—South-eastern Queensland.

DASYBASIS MILSONIS (Ricardo).

**Tabanus milsonis* Ricardo, 1917. *Ann. Mag. nat. Hist.*, (8), 19, p. 220. Type ♀, from Milson I., N.S.W., in the British Museum (Natural History).

Larger (15 mm.) and more robust than the other members of the group, and with hairs on the eyes just perceptible at $\times 15$.

Distribution.—Northern New South Wales, from Narrabri to Hawkesbury R.

The appendiculata Group.

Small to fairly large (10–15 mm.), usually dark, compact, hairy species, with fairly well-defined scutal and abdominal patterns. Eyes densely hairy in both sexes; varying in males from unenlarged, with entirely small facets, to somewhat swollen, with moderately enlarged upper facets. Females with frons very wide to medium (index 1.5 to 3, rarely 3.5), markedly diverging to nearly parallel; callus nearly always full

width of frons at base, often with median extension; face usually truncate, and separated from parafacials by a clearly defined suture on each side (cf. *macrophthalma* group); terminal segments of abdomen dorsoventrally compressed (Text-fig. 3).

This group is essentially southern, not being known north of Eidsvold in south Queensland. Its nearest relatives are in southern South America and South Africa. Hardy (1948) separated the first four species, with very wide, strongly diverging frons, as the subgenus *Dasybasis* sens. strict., from the remainder, which he included in the subgenus *Dolichapha* Enderlein. It seems to me that the respective genotypes merely represent one end and about the middle of a continuous series in which any division is purely arbitrary. The group, as now defined, is sufficiently compact to stand as a single unit.

DASYBASIS APPENDICULATA Macquart.

**Dasybasis appendiculata* Macquart, 1847. *Dipt. exot.*, Suppl. 2, p. 25. Type ♂♀, from New Holland, in the British Museum (Natural History). The ♂ bears Macquart's "n. gen., n. sp." label, and must be regarded as the holotype.

A small, hairy, blackish species; with very wide, strongly diverging frons (index 1.5 to 1.8); transverse callus, with short median extension; slender, blackish antennal plate, which is gently curved dorsally; and spotted wings; the only member of the group with the eyes banded in life (cf. *Cydistomyia musgravii*). The antennal style usually has four annuli, but they are often obscure, and it was described as three-annulate by Macquart, which led Enderlein (1922) to include *Dasybasis* in the Haematopotini.

Females can be divided into two, fairly distinct variants. One, represented by the type female and two recent females from Victoria, is smaller (9–10 mm.), with almost the whole frons and subcallus shiny, and extensive shiny black areas on the parafacials and face. The other, much commoner, usually somewhat larger (10–12 mm.) race has the shiny areas limited to the callus and variably on the upper part of the subcallus, but the parafacials and face entirely tomentose; it tends to merge with the still larger (12–13 mm.) *froggatti* in southern New South Wales. Males have the parafacials and face tomentose, and can be distinguished only by size, slight differences in coloration and general appearance, and association with the females. The type male agrees best with males that were taken in company with the two Victorian females mentioned above, and it is to the rarer, southern race, therefore, that the name should be strictly applied.

Distribution.—New South Wales, from Mudgee to southern highlands (common race); Victoria (both races).

DASYBASIS FROGGATTI (Ricardo):

**Tabanus froggatti* Ricardo, 1915. *Ann. Mag. nat. Hist.*, (8), 16, p. 285. Type ♀, from S. coast of N.S.W., in the British Museum (Natural History).

Distinguished from the commoner race of *appendiculata* only by generally larger size, more robust build, somewhat narrower frons (index 2), and more extensively darkened tibiae. There are intermediates, particularly at Canberra, and I doubt that specific separation can be maintained.

Distribution.—New South Wales (Lismore, south coast, southern highlands); the only species that is abundant above the tree-line on Mt. Kosciusko.

DASYBASIS GENTILIS (Erichson).

Tabanus gentilis Erichson, 1842. *Arch. Naturges.*, (1), 8, p. 271. Type ♀, from Tasmania, in the Berlin Museum, compared with specimens from Australia by Mr. H. Oldroyd.

Tabanus gentilis imminutus Hardy, 1948. *Proc. R. Soc. Qd.*, 58, p. 171. No type nor definite type locality indicated.

A brightly marked, brown species, with wide frons (index 1.8 to 2) relatively wide, red-brown antennal plate, brown legs, and conspicuously spotted wings. The antennal character relied on by Hardy to distinguish the mainland race varies considerably in both mainland and Tasmanian specimens.

Distribution.—Mountains of New South Wales, from the Dorrigo plateau to Kiandra; Victoria; Tasmania.

DASYBASIS NEOLATIFRONS (Ferguson & Hill).

**Tabanus latifrons* Ferguson, 1921. *Proc. R. Soc. Vic.*, 33, p. 19. Type ♀♂, from Cradle Mt., Tasmania, in the Australian Museum, Sydney. Not *T. latifrons* Zetterstedt, 1842. Palaearctic.

Tabanus neolatifrons Ferguson and Hill, 1922. *Proc. Linn. Soc. N.S.W.*, 47, p. 264. *Nom. nov.*

A distinctive, medium-sized (12–13 mm.), black species, with frons index 2 to 2.5, antennal plate moderately wide and rounded dorsally, grey, unspotted wings, and small median white spots on abdominal tergites.

Distribution.—Flinders I.; Tasmania.

DASYBASIS IMPERFECTA (Walker).

**Tabanus imperfectus* Walker, 1848. *List Dipt. Brit. Mus.*, 1, p. 179. Type ♀, from New Holland, in the British Museum (Natural History). The label "New South Wales, ex col. Saunders" is a later addition.

A small (10 mm.), slender, black species, with greyish-white hairs on the eyes (a distinguishing feature of this and the next species), medium, diverging frons (index 2.5 to 3), slender, gently curved antennal plate, and narrow pale apical bands on abdominal tergites. It was correctly identified by White (1915) and Ferguson (1921*a*, 1921*b*), but not by Hardy (1952).

Distribution.—Tasmania.

DASYBASIS EDENTULA (Macquart).

**Tabanus edentulus* Macquart, 1846. *Dipt. exot.*, Suppl. 1, p. 34. Type ♀, from Tasmania, in the Paris Museum.

**Tabanus antecessens* Walker, 1854. *List Dipt. Brit. Mus.*, 5, Suppl. 1, p. 253. Type ♀, from Tasmania, in the British Museum (Natural History). Not *T. antecessens* Walker, 1848, ♂ (see under *gregaria*).

A black species, with white hairs on eyes, and narrow, pale bands on abdominal tergites. Distinguished from *imperfecta* by larger size (12–14 mm.), more parallel-sided frons, usually somewhat different callus, and wider antennal plate. It is quite easy to separate the two series, even with a hand-lens (×8), and I have no doubt that they are specifically distinct.

Macquart's name has been used by different authors for two different species. This proved to be due to the fact that, alone among his species that I have studied, he attached "n. sp." labels to two specimens. One, in the Paris Museum, agrees with his description and his statement that the specimen was in "Muséum", and I select it as lectotype in order to remove any doubt. It is now headless, but it is accompanied by a perfect specimen with the same collector's or accession number ("73 44"), and both are undoubtedly the species at present under consideration. This type is evidently the specimen referred to by Ferguson (1921*b*), when he suggested the synonymy accepted here. White (1915) and Ricardo (1915*b*) correctly identified the *antecessens* of 1854, but not *edentula*. Hardy (1934, 1939, not 1948) accepted Ferguson's suggested identification.

The second "type" specimen is in the British Museum, and it does not agree with Macquart's description. It is from the Bigot collection, is labelled "Van Dieman", and is a medium-sized (12.5 mm.), smooth, brown species, identical, I believe, with Tasmanian specimens of *acutipalpis*. It provided the basis for the name "*edentulus*" being attached to the common, smaller, brown Tasmanian species by White (1915), Ricardo (1915*b*), Taylor (1917*b*, 1918), Ferguson and Henry (1920), and Ferguson (1921*a*, 1921*b* in part).

Finally, Hardy (1948) synonymized *antecessens* Walker, 1854, with *flindersi* Ferg., which it does not at all resemble.

Distribution.—Tasmania.

DASYBASIS GEMELLA (Walker).

**Pangonia gemella* Walker, 1848. *List Dipt. Brit. Mus.*, 1, p. 139. Type ♀, from Western Australia, in the British Museum (Natural History).

This species had not been recognized, except that Ferguson had left an ms. note that it was a tabanine with hairy eyes, and there are two females correctly identified in the Australian Museum. It proved to be a not uncommon, western species, with a broad, strongly angled antennal plate, like *gregaria*, but with a wide frons (index 1.8 to 2) and the wings spotted as in *appendiculata*.

Distribution.—South-western Western Australia.

DASYBASIS GREGARIA (Erichson).

Tabanus gregarius Erichson, 1842. *Arch. Naturges.*, (1), 8, p. 271. Type ♀, from Tasmania, in the Berlin Museum; examined by Mr. Oldroyd, and a specimen returned by him as agreeing with it.

**Tabanus antecessens* Walker, 1848. *List Dipt. Brit. Mus.*, 1, p. 178. Type ♂, from New Holland, in the British Museum (Natural History). Not *T. antecessens* Walker, 1854 (see under *edentula*).

**Tabanus flindersi* Ferguson, 1921. *Rec. S. Aust. Mus.*, 1, p. 374. Type ♀, from Flinders I., Bass Strait, in the South Australian Museum, Adelaide.

A medium-sized (12–13 mm.), strongly built, dark brown species, characterized by a broad, blackish antennal plate with prominent, rectangular dorsal angle; frons index about 2.5; wings suffused with brown anteriorly and variably along the veins in southern specimens, more or less uniformly greyish in northern ones.

The identity of *gregaria* had been obscure, until Mr. Oldroyd returned a typical southern *flindersi* as agreeing with the type. Walker's 1848 type of *antecessens* has lost the antennae; it is dark, thickset, with the upper facets of the eyes moderately enlarged but not sharply differentiated from the lower, and the hairs on face and parafacials predominantly brown. It is difficult to identify precisely, but it agrees distinctly better with males of *gregaria* from coastal New South Wales than with males of *indefinita* from the same area.

Distribution.—Coastal New South Wales, from Woy Woy to Jervis Bay; Tasmania; possibly also South Australia.

DASYBASIS MORETONENSIS (Ferguson & Hill).

**Tabanus confusus* Taylor, 1917. *Proc. Linn. Soc. N.S.W.*, 42, p. 523. Type ♀, from Brisbane, S.Q., in the Queensland Museum, Brisbane. Not *T. confusus* Walker, 1848, Nearctic.

Tabanus moretonensis Ferguson and Hill, 1922. *Proc. Linn. Soc. N.S.W.*, 47, p. 264. *Nom. nov.*

The northern representative of *gregaria*, from which it differs in being smaller, smoother, with clearer wings, and the upper facets of the eyes of the males larger and more definitely marked off from the lower. It might be better treated as a subspecies than as a full species.

Distribution.—South-eastern Queensland.

DASYBASIS DUBIOSA (Ricardo).

**Tabanus dubiosa* Ricardo, 1915. *Ann. Mag. nat. Hist.*, (8), 16, p. 284. Type ♀, from Burnett R., S.Q., in the British Museum (Natural History).

A small-medium (10–13 mm.), compact, smooth, black species; frons index 3 to 3.5; antennal plate wide, with well-defined dorsal angle; wings clear; pale abdominal pattern well defined, with large median triangles on the tergites.

Distribution.—South-eastern Queensland.

DASYBASIS DUBIOSA INDEFINITA (Taylor).

**Tabanus indefinitus* Taylor, 1918. *Rec. Aust. Mus.*, 12, p. 68. Type ♀, from Nepean R., N.S.W., in the Australian Museum, Sydney.

More hairy and more thickset than the northern race, usually more brown in general colour, and with smaller median and lateral triangles on the abdominal tergites. Hardy (1952) sank both *dubiosa* and *indefinita* under *imperfecta*, which he misidentified. As Queensland specimens can be distinguished even from the darkest ones from New South Wales, I feel that subspecific separation of the first two is justified, with *imperfecta* quite distinct.

Distribution.—South Queensland (Stanthorpe, Eukey); New South Wales, from the Dorrigo plateau to Canberra, and on the coast south of Sydney.

DASYBASIS HOBARTIENSIS (White).

**Tabanus hobartiensis* White, 1915. *Pap. Proc. R. Soc. Tas.* for 1915, p. 13. Type ♀, from Hobart, Tasmania, in the British Museum (Natural History).

A small (11 mm.), compact, brown species; apparently the Tasmanian representative of *indefinita*, from which it is distinguished by smaller size, paler hairs on eyes, somewhat wider frons (index 2.5), and antennal plate with rounded dorsal angle. Possibly it should be treated as a third subspecies in the complex.

Distribution.—Tasmania.

DASYBASIS TASMANIENSIS (White).

**Tabanus tasmaniensis* White, 1915. *Pap. Proc. R. Soc. Tas.* for 1915, p. 8. Type ♀, from Bagdad, Tasmania, in the British Museum (Natural History).

This species has not been identified correctly in Australia, Ferguson (1921*b*) giving the name to a small, black species close to (or a variant of) *imperfecta*, and Hardy (1934) treating it as a synonym of *gregaria*. It is apparently rare, because I brought the paratype female (from the same place and date as the type) back with me, and have not been able to match it exactly among 394 specimens of Tasmanian *Dasybasis* available for review. It is very close to *hobartiensis*, differing only in larger size (12 mm.), narrower frons (index 3), somewhat differently shaped callus, which is slightly narrower than the frons at the base (Text-fig. 9), narrower antennal plate, and brown suffusion of the wings anteriorly and narrowly along the veins. However, the two specimens of *tasmaniensis* do stand out when placed alongside specimens of *hobartiensis*, and I think that they probably represent a distinct species.

Distribution.—Tasmania.

DASYBASIS CIRCUMDATA (Walker).

**Tabanus circumdatus* Walker, 1848. *List Dipt. Brit. Mus.*, 1, p. 185. Type ♀, from unknown country, in the British Museum (Natural History).

**Tabanus fraterculus* Macquart, 1850. *Dipt. exot.*, Suppl. 4, p. 30. Type ♀, from "Tasmanie" (erroneous), in the Paris Museum.

**Tabanus brevidentatus* Macquart, 1855. *Dipt. exot.*, Suppl. 5, p. 28. Type ♀, from Sydney, N. Holland, in the British Museum (Natural History).

All three types are in poor condition (that of *circumdata* has had the head gummed on, and has lost the third antennal segment and the apical four segments of the abdomen), but they seem to me to agree better with the larger, common, eastern mainland species, than with either of the others that resemble it. In spite of White's and Austen's earlier determinations, I cannot associate *circumdata* satisfactorily with the species now identified as *hebes*.

This species is about the same size as *hebes*, but is distinguished from it by usually darker colour (melanic forms are frequent, especially in the mountains), more truncate face, better defined facial sutures, and especially by the shape of the eighth sternite (Text-fig. 5). Since returning to Australia, I have found that the terminal segments can be revealed without appreciable damage to the specimen, by simply chipping away the free parts of the seventh tergite and sternite with a fine pin, working inwards from each side to avoid risk of damaging the underlying structures.

Distribution.—Eastern New South Wales; Victoria; with possible extensions to south Queensland, South Australia and Western Australia; not known from Tasmania.

DASYBASIS ACUTIPALPIS (Macquart).

**Tabanus acutipalpis* Macquart, 1838. *Dipt. exot.*, 1. (i), p. 131. Type ♀, from King I., "Océanie" (at least latter erroneous), in the Paris Museum.

**Tabanus abstersus* Walker, 1850. *Insecta Saund. Dipt.*, 1, p. 58. Type ♀, from New South Wales, in the British Museum (Natural History).

Tabanus edentulus White, 1915, and other authors, *nec* Macquart (see under *edentula*).

There are three females in Paris identified by Macquart, the type being labelled "Nouv. Holl., Durville" (the description gives "De l'île King, dans l'Océanie. M. Durville. Muséum"), and there is also a female "cotype" in the British Museum labelled "Tasmanie". All four seemed to be conspecific, but I had difficulty in identifying them, until Professor Ségué very kindly sent me the series from Paris for more detailed study. The type proved to have a wide eighth sternite, like Text-figure 5, and to agree also in external characters with the smaller of the two, common, brown Tasmanian species, although the antennal plate was a little wider than is shown in Text-figure 8.

Mainland specimens, to which the name *abstersa* strictly applies, may represent a distinct race, and are usually distinguishable from *circumdata* by smaller size (10–12 mm.), slightly different frons, and narrower antennal plate, with more rounded dorsal angle (Text-fig. 7); melanism is equally common. I am inclined, at present, to think that *circumdata* and *acutipalpis* are separate, variable species, with overlapping phenotypes, but they may completely fuse.

Distribution.—All States, from south-eastern Queensland to Tasmania and south-western Western Australia.

DASYBASIS INNOTATA (Ferguson & Henry).

**Tabanus innotatus* Ferguson and Henry, 1920. *Proc. Linn. Soc. N.S.W.*, 44, p. 847. Type ♀, from Kendall, N.S.W., in the Australian Museum, Sydney.

A distinctive, slaty black, long-bodied (14–15 mm.) species, with moderately wide frons (index 2.5 to 3), blackish antennae, grey pleura, black legs, quite dark grey wings, and a row of small, white, median spots on the abdominal tergites.

Distribution.—Coastal New South Wales, from Kendall to Moruya. There is a closely related species (or subspecies) in Western Australia.

DASYBASIS MILSONIENSIS (Ferguson & Hill).

**Tabanus milsoni* Taylor, 1917 (Apr.). *Proc. Linn. Soc. N.S.W.*, 41, p. 760. Type ♀, from Milson I., N.S.W., in the School of Public Health and Tropical Medicine, Sydney. Not *T. milsonis* Ricardo, 1917 (Feb.), from same type locality (see under *trilinealis* group).

Tabanus milsoniensis Ferguson and Hill, 1922. *Proc. Linn. Soc. N.S.W.*, 47, p. 265. *Nom. nov.*

A small (10 mm.), obscure, greyish-brown species, with medium frons (index 3), short, wide, strongly angulate, orange-brown antennal plate, and well-defined pale median triangles on the abdominal tergites.

Distribution.—Coastal New South Wales, from Milson I. to Sydney.

There are also three small, greyish, undescribed species in this group. One is represented by the mislabelled "type" of *neocirrus* (Ric.) and other specimens from South and Western Australia; the second is from the same States; and the third is from western New South Wales.

UNIDENTIFIED SPECIES.

The types of the following species cannot be traced, and no one has been able to identify them satisfactorily from the descriptions. It may be noted that none of the types of Macquart's 1846 species which were recorded as from the collections of the Marquis Spinola and of Guérin and Reiche have been found in Paris or London. These include *Pangonia singularis*, *Pangonia bicolor* and *Tabanus pallipennis*, as well as those listed below.

Tabanus brevicitta Walker, 1848. *List Dipt. Brit. Mus.*, 1, p. 157. ♂. "New Holland. From Mr. Gould's collection."

Tabanus funebris Macquart, 1846. *Dipt. exot.*, Suppl. 1, p. 33. ♀. "De la Nouvelle-Hollande. MM. Reiche et Guérin."

Tabanus nigriventris Macquart, 1846. *Dipt. exot.*, Suppl. 1, p. 34. ♀. "De l'île Sidney. Collection de M. le Marquis Spinola."

Tabanus propinquus Macquart, 1855. *Dipt. exot.*, Suppl. 5, p. 27. ♀. "De la Nouvelle-Hollande. Sydney. M. Bigot." The type should be in the British Museum, but there is only a specimen labelled "*propinquus* ♂" in Bigot's handwriting. It has lost its head and half the abdomen, and Mr. Oldroyd thinks that "what is left of it looks uncommonly like an African *T. ustus*."

Tabanus remotus Walker, 1848. *List Dipt. Brit. Mus.*, 1, p. 177. ♀. "New Holland. Presented by the Haslar Hospital."

Tabanus sidneyensis Macquart, 1846. *Dipt. exot.*, Suppl. 1, p. 33. "De l'île Sidney. Collection de M. le Marquis Spinola."

EXCLUDED SPECIES.

Three, previously unrecognized, Australian species belong to other subfamilies.

Tabanus bifasciatus Macquart, 1834. *Hist. nat. Ins.*, Dipt., 1, p. 201. Believed to be a synonym of *Scaptia* (*Scaptia*) *guttata* (Don.), Pangoniinae.

**Tabanus erraticus* Walker, 1848. *List Dipt. Brit. Mus.*, 1, p. 189. Is a species of *Ectenopsis* (*Ectenopsis*), Pangoniinae, from Western Australia; does not displace any currently used name.

**Tabanus lunulatus* Bigot, 1892. *Mem. Soc. zool. Fr.*, 5, p. 688. Is a species of *Mesomyia* (*Vepriella*), Chrysopinae, replacing **insularis* (Ric.).

The following species are excluded from the Australian list.

**Atylotus claripennis* Bigot, 1892. *Mem. Soc. zool. Fr.*, 5, p. 675. Type ♀, from "Australie", in the British Museum (Natural History). Neotropical; replaces *Tabanus hookeri* Knab (Fairchild, 1956).

**Holcopsis fenestratus* Enderlein, 1925. *Mitt. zool. Mus. Berl.*, 11, p. 372. Type ♀, doubtfully from "S.W. Australia", in the Berlin Museum. Unlike any known element in Australian fauna; possibly Neotropical.

**Stibasoma hemiptera* Surcouf, 1912. *Bull. Mus. Hist. nat. Paris*, ann. 1912, (2), p. 62. Type ♀, from "Nov. Holl.", ex col. Bigot, in the Paris Museum. Neotropical; probably *Dasychela* (Fairchild, 1956).

**Tabanus leucophilus* Walker, 1848. *List Dipt. Brit. Mus.*, 1, p. 154. Type ♀, from "New Holland", in the British Museum (Natural History). Belongs to a distinctive group of southern Palaearctic (desert) species of *Tabanus*, but could not be matched exactly in the British Museum collection.

**Tabanus limbatinevris* Macquart, 1847. *Dipt. exot.*, Suppl. 2, p. 16. Type ♀, "De la Tasmanie. M. Bigot", in the British Museum (Natural History). (Not *T. limbatinevris* Macquart, 1850—see under *Cydistomyia alternata*.) A synonym of the Nearctic *Tabanus abdominalis* Fabricius, by comparison with named specimens; synonymy suggested, and concurred in, by Dr. C. B. Philip.

**Tabanus rubricollosus* Ricardo, 1914, New Caledonia. Recorded by Hardy (1948) from New South Wales; misidentification of *Dasybasis macrophthalma* (Schiner).

Tabanus serus Walker, 1862, Ceram. Recorded by Summers (1912) from Northern Territory; misidentification of *Tabanus dorsobimaculatus* Macquart.

**Tabanus similis* Macquart, 1850. *Dipt. exot.*, Suppl. 4, p. 31. Type ♀, "De la Tasmanie. M. Bigot", in the British Museum (Natural History). Agrees with the Nearctic **Tabanus lineola scutellaris* Walker, by comparison of types by Dr. C. B. Philip and I.M.M.

Tabanus spoliatus Walker, 1860, Celebes. Taylor (1918) noted that Miss Ricardo had identified a male in the Australian Museum as *T. spoliatus*. Hardy (1948) pointed out that the specimen was really *Tabanus parvicollosus* Ricardo.

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