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AUSTRALIAN TABANIDÆ [DIPTERA]. No. II.*

By FRANK H. TAYLOR, F.E.S.

(From the Australian Institute of Tropical Medicine, Townsville.)

The present paper contains the descriptions of a new genus and twelve new species, a change in the names of two species with notes and additional localities for previously known forms. The egg mass of *Silvius australis* Ricardo, is also described.

The new species are distributed in the following genera: *Diatomineura* (one), *Corizoneura* (one), *Elaphromyia* (2), *Silvius* (two), and *Tubanus* (seven).

The type-specimens have been deposited in the Australian collection.

Subfamily PANGONINÆ.

EREPHOPSIS GUTTATA Donovan.

Gener. Illustr. Ent., i., Hym. et Dipt. (1805); Ricardo, Ann. Mag. Nat. Hist. (8), xvi., p. 26 (1915).

Hab.—Eidsvold, Queensland (Dr. Bancroft).

For synonymy, see Ricardo.

EREPHOPSIS BANCROFTI Austen.

Ann. Mag. Nat. Hist. (8), ix., p. 2 (1912).

Hab.—Eidsvold, Queensland (Dr. Bancroft).

EREPHOPSIS AURECHIETA Ricardo.

Ann. Mag. Nat. Hist. (7), v., p. 116, Pl. i., fig. 10 (1900); *cit.*, (8), xvi., p. 23 (1915).

Hab.—Kuranda, Queensland (F. P. Dodd).

* Continued from Vol. xi., p. 806, 1915 (1916).

DIATOMINEURA CROCEA, sp.n.

Length, ♂, 8.9; ♀, 8.8-5: width of head, ♂, 3.3-5; ♀, 3: length of wing, ♂, 7.8; ♀, 8: width of front at vertex, 0.5; length of proboscis, 2.5 mm.

♂. *Head* orange-buff, beard similar; first two segments of antennae dull golden; the first swollen, about twice the length of second, and clothed with fairly long, orange-buff hairs; second and third two-thirds the width of the first, and clothed with fairly long, black hairs; third orange, annuli black; palpi pale orange, slender, tapering to a point, clothed with fairly long, orange hairs, with a few black ones at the apex, about one-third the length of the proboscis, the latter black; eyes black, pubescence black.

Thorax densely clothed with fairly long, orange-buff and black hairs; scutellum and pleurae densely covered with orange-buff hairs.

Abdomen darker than thorax, clothed with short, orange-buff and black hairs, with a median, fairly broad, orange-coloured stripe extending the full length of the abdomen, apex blackish, with a few black hairs; venter bright orange-buff.

Wings with the inner two-thirds almost hyaline, rest smoky; veins brown, costa black; stigma dark brown, elongate, conspicuous, squamæ clear. Halteres with pale stems and dark knobs.

Legs: fore- and mid-femora, and tibiae orange-buff; first tarsals brownish, with black apices; rest black, with narrow, pale, basal bands; hind tibiae and basal half of the first tarsals brown, femora clothed with orange-coloured hairs, apical half of the first tarsals and tarsi two to five black; spurs on mid- and hind-tibiae black, prominent.

♀. Similar to ♂, but not so brightly coloured. Front orange-buff, with numerous, erect, black hairs; no frontal callus; ocellar triangle darker than front, ocelli prominent; abdomen chocolate-brown, clothed with black hairs, with a dull, median, orange-buff stripe the full length of the abdomen; venter paler than in the ♂.

Hab.—Queensland: Kuranda (F. P. Dodd), Cairns (F. H. Taylor).

A very handsome and distinct little species, unlike any other with which I am acquainted.

DIATOMINEURA BREVIROSTRIS Macquart.

Dipt. Exot., Suppl. iv., p. 326 (1842) [*Pangonia*]; Ricard, Ann. Mag. Nat. Hist., (8), xvi., p. 28 (1915).

Hab.—Queensland: Montville (Dr. Turner), Kuranda (F. P. Dodd and F. H. Taylor).

I am indebted to Mr. Austen for the identification of this species, which is apparently a common one at Kuranda.

DIATOMINEURA VIOLACEA Macquart.

Dipt. Exot., Suppl. iv., p. 326, Pl. xi., fig. 3 (1849) [*Pangonia*]; Ricardo, Ann. Mag. Nat. Hist., (8), xvi., p. 30 (1915).

Hab.—Q.: Mount Tambourine (W. W. Froggatt), Barron Falls (F. H. Taylor).

The specimens from Mount Tambourine agree perfectly with those from Kuranda, a district where it is a fairly common species.

CORIZONEURA KURANDÆ, sp. n.

♀. Length, 13.15; width of head, 4.5; width of front at vertex, 0.4-0.6; length of wing, 11.5-13 mm.

Head: face, cheeks, and front grey, face and cheeks with short, white hairs, beard white; frontal callus black, spear-shaped, gradually tapering to a fine point, reaching the ocellar triangle, the latter dark, with a golden tinge, ocelli prominent; subcallus grey; antennae and palpi black, first and second segments of the former densely clothed with black hairs, third with the base triangular, palpi about two-thirds the length of the proboscis, the latter short, black; eyes black, inner margins parallel.

Thorax grey, with three, well-defined, black stripes, clothed with semi-erect, grey hairs; scutellum dusky-brown, with a narrow posterior, grey margin, clothed with grey hairs, posterior tinge grey, fairly long; pleurae black, with grey tomentum, and fairly long, grey hair.

Abdomen mahogany-red, becoming darker toward the apex, clothed with black hairs; first segment dark, first six segments with median, triangular, white, apical flecks; second segment with a border of black round the white fleck; all the segments with lateral, greyish-white spots, those on the first and second largest; in addition, there are narrow, apical, grey bands to all the segments; venter black, first three segments pale, tinged with black, second to the apex all with grey-white, apical banding.

Wings smoke-coloured, except the discoidal and inferior basal cells, which are clear; veins dark brown; stigma brown, elongate, inconspicuous; squamæ clear. Halteres dark brown; no appendix to upper branch of third long vein.

Legs black, femora densely covered with short, grey hairs; tibiae similarly covered with black ones; spurs on mid- and hind-tibiae black, conspicuous.

Hab.—Q.: Kuranda (F. P. Dodd), Cairns (F. H. Taylor).

A striking species owing to the general resemblance to species of the genus *Tabanus*, being not unlike some of the northern forms of that genus.

ELAPHROMYIA, gen. nov.

Ocelli, and spurs on hind-tibiae present. Antennae with six divisions to the third joint, with the last two divisions indistinct, which is broad and *Tabanus*-like at the base, the first segment almost bell-shaped, about half as wide again, laterally, at the apex, second segment about one-third the length of the first. Palpi very small, cylindrical, about one-fourth the length of the proboscis, the latter comparatively long. Wings with all posterior cells open; no appendix.

Type, *E. carteri* Taylor. ♀ unknown.

ELAPHROMYIA CARTERI, sp. n.

♂. Length, 21; width of head, 5; length of wing, 16; length of abdomen, 14; greatest width of thorax, 4.5 mm.

Head: subcallus yellow, clothed with yellow tomentum and scattered golden hairs; face and cheeks orange, the former pro-

duced into a large, blunt tubercle between the antennæ and palpi; cheeks and undersurface of head densely clothed with fairly long orange-coloured hairs; antennæ testaceous, first and second segments densely clothed with fairly long, mixed, black and orange hairs; base of third segment broadly triangular, with scattered short, black and golden hairs; palpi very short, two-jointed, cylindrical, densely clothed with long, black hairs; apical segment testaceous; eyes black, shining, facets small, nude; proboscis dark brown, apex and upper basal two-thirds testaceous.

Thorax: with three, fairly broad, black stripes, yellowish on each side of the median one, and orange laterally, clothed with golden hairs; pleuræ black, clothed with golden tomentum and scattered, golden hairs; scutellum similar to thorax.

Abdomen as wide as thorax, becoming narrower toward the apex; first five segments pale, the first and second with large, median, black spots as broad as the segments, and broad lateral patches also; third to fifth segments with broad black basal banding, expanding laterally, and clothed with short, golden hairs; venter with first segment pale, second with two, basal and apical, pale spots; third to fifth black, with pale, apical spots, sixth with a narrow, black band, rest of segment and remaining ones testaceous; all segments with a lateral fringe of orange-coloured hairs.

Legs testaceous, spurs on the mid-tibiæ stout, black, the mid- and hind-tibiæ testaceous and slenderer; the claws black, sickle-shaped, fairly large.

Wings orange-yellow; veins brown, except the subcostal, which is reddish; the apex and inner margin to the base of the anal cells dusky, pale on the axillary cell; a pale spot in the middle of the cubital cell, the discoidal and inferior basal pale, also the basal half of the anal cell. Halteres orange.

Hab.—Q.: Kuranda (F. P. Dodd).

Described from a single specimen. A second specimen was submitted to Mr. Austen, who informed me that it belonged to a new genus and species allied to *Oeca* (subgenus *Cochranella*). It is an easily recognised species on account of its slender

markings, and extreme length in proportion to the width of the thorax.

It affords me great pleasure to associate the name of my friend, Mr. H. J. Carter, with this striking species.

SILVIUS ATER, sp. n.

♂. Length, 13.14; width of head, 4; width of front at vertex, 0.6; length of wing, 12.13 mm.

Head: front ashen-grey; frontal callus spear-shaped, dull black, rounded, with a fairly deep, median groove on its apical half, about two-thirds the width of front at its base; ocellar triangle dark brown, prominent, ocelli black; face ashen-grey; antennæ pitch black; first two segments clothed with black hairs, base of the third broadly triangular, forming an obtuse angle on its upper edge; palpi black, nearly as long as proboscis, the latter black; eyes black, nude, their inner margins parallel.

Thorax: black, denuded, with traces of black and yellowish hairs on the sides; scutellum denuded; pleuræ black.

Abdomen black, clothed with short, black hairs; first segment broadly marked with grey at the apex and on the sides, second segment with the grey not so prominent on the sides, remaining segments with narrow, more or less distinct, apical bands; venter black, segments two to four with narrow, white, apical bands, rest to apex with pale, narrow, apical bands.

Wings black, a semitransparent streak in the cubital cell along part of the third long vein, the apical, first to fourth posterior, the discal and inferior basal cells with semitransparent spots; no appendix to upper branch of the third long vein.

Legs black, spurs on mid- and hind-tibiæ conspicuous.

Hab.—Northern Territory: Brock's Creek and Mary River (G. Hill).

An easily recognised species, and very different from other Australian forms on account of its general black colour, and subterminal markings.

♂-type in Coll. Hill.

SILVIUS SUBLURIDUS, sp(n).

♀. Length, 12; width of head, 5; width of front at vertex, 0.75; length of wing, 10 mm.

Head: front brown, black when denuded; frontal callus a small plug, black, shining, tumid, about three-fourths as wide as the front, base a short distance from the subcallus, apex ending in a blunt point; subcallus shining black, protuberant; first and second segments of antennae yellowish, clothed with numerous black hairs, markedly so on their dorsal apices, first cup-shaped, second very small, third reddish, its base fairly large and broad; palpi pale reddish, nearly the length of the proboscis, the labial black; eyes bare, inner margins slightly converging toward the bases.

Thorax slate coloured, denuded, with traces of short, golden hairs; scutellum similar; pleurae slate-coloured, with scattered grey hairs.

Abdomen yellowish-brown, the two apical segments darker; basal segments of venter paler than dorsum, penultimate and apical segments blackish.

Legs: basal half of femora slate-coloured, the remainder and tibiae reddish, the former clothed with grey hairs, the latter with short black ones. Tarsal black. Hind and hind claws, yellow.

Wings clear, veins dark except the subcostal, which is yellowish; stigma yellowish; all posterior cells widely open, no apical crossvein; hind wings with a narrow, yellowish, apical band; hind wings with a narrow, yellowish, apical band.

Hab..—Northern Territory: Darwin (G. F. Hill).

A specimen closely resembling *S. luridus* Walker, from York, Stephens, N.S.W., but differing in the antennae, legs, etc. Described from a single specimen, sent by Mr. Hill, labelled "on horse, eyes brown."

SILVIUS DODDI Ricardo.

Ann. Mag. Nat. Hist., (8), xvi., p.261 (1915).

Hab.—Q.: Kuranda (F. P. Dodd).

SILVIUS FRONTALIS Ricardo.

SILVIUS FRONTALIS Ricardo.

Ann. Mag. Nat. Hist., (8), xvi., p.262(1915).

Hab.—N. Territory: Darwin and 34-Mile Siding (G. F. Hill). This appears to be rather a common species.

SILVIUS INDISTINCTUS Ricardo.

Ann. Mag. Nat. Hist., (8), xvi., p.262 (1915).

Hab.—Q: Ching Do (F. H. Taylor), Bowen.

This would appear to be a widely distributed species, as it was described from the Adelaide River, and Palmerston, Northern Territory.

SILVIUS AUSTRALIS Ricardo.

Ann. Mag. Nat. Hist., (8), xvi., p.263 (1915).

The egg mass of this species is very long and narrow, measuring 1.5 mm., by an average of 1.5 mm., and contains a very large number of eggs, which are a light amber-brown, cylindrical, and pointed like a cigar at the apex, and measure 1.3×0.2 mm. (vix).

They were found on a blade of grass overhanging a small, sandy creek in Townsville, just as the fly had finished laying an egg. It is a common species at Ching Do and Kuranda.

Hub.—Q.: Eidsvold (Dr. Bancroft), Townsville, Ching Lo (F. Taylor), Kuranda (F. P. Dodd).

Subfamily TABANINÆ.

Group iv. Forehead with no callus.

TABANUS GRISEOHIRTUS, SP. N.

Length, 11.5-13.75; width of head, 4.4-5; width of front at vertex, 0.5-0.75; length of wing, 9.5-11 mm.

Head: face and cheeks grey; beard white; front creamy, with numerous black hairs; frontal callus absent; subcallus grey; antennae reddish-yellow, first two segments paler, clothed with black hairs and a few black ones on their dorsal apices, third segment at the base with an obtuse angle; palpi pale creamy, with white hairs, about one-half the length of the proboscis, the latter brown; eyes bare, inner margins converging toward the apex.

Thorax: grey, clothed with mixed black and golden, appressed hairs, the latter predominating; scutellum similar to those of *pleuræ* grey, with scattered white hairs.

Abdomen black, entirely covered with grey tomentum, clothed with mixed, pale yellowish and black hairs, the black ones being long on the posterior margin of the apical segment; all segments with narrow, apical, yellowish banding; venter similar to those clothed with short, whitish hairs.

Legs: femora and tibiae yellowish, the former clothed with black pubescence.

Wings clear, veins yellowish-brown; stigma pale; anterior branch of the third long vein with an appendix.

Hab.—Northern Territory: Melville Island (G. F. Hill, North). Allied to *T. nemopunctatus* Ricardo, but differing in not having the inner margins of the eyes parallel, and the general colour being grey, besides other points of difference. The appendix on the anterior branch of the third long vein of the wing is variable in length, being longer in some than in others.

Co-type in Coll. Hill.

TABANUS NEMOPUNCTATUS Ricardo.

Ann. Mag. Nat. Hist., (8), xiv., p. 388 (1914).

This species, originally described from Dunk Island, Queensland, has been forwarded from the Northern Territory by Mr. Hill.

These specimens show slight variation in the size of the base on the base of the third joint of the antennæ, and also have the tip black instead of ferruginous, but, in all other respects, they are typical.

Hab.—N. Territory: Darwin, Stapleton, and Batchelor.

Group vii. Abdomen with one or more stripes, usually continuous.

TABANUS MASTERSI, nom. nov.

Tabanus gregarius Taylor, *neo* Erichson.

Rep. Aust. Inst. Trop. Med., 1911, p. 63 (1913). *Ann. Mag. Nat. Hist.*, (8), xiii., p. 265 (1914).

Length, 13.15-5; width of head, 5.5-7; length of wing, 11-12.75 mm.

Similar to *Q.*, but the dorsum of thorax and abdomen darker. Eyes with the large facets copper-coloured, and occupying about two-thirds of the surface, reaching about the middle of the frontal triangle, leaving a narrow border of small, blue-black facets, which extend to the vertex.

This species appears to be very variable in size, judging from the specimens before me—a *Q.* measuring 17.5 mm. in length, whilst the smallest specimen, a *♂*, measures only 13 mm.

I have much pleasure in dedicating this handsome species to the memory of the late Mr. George Masters, for many years the curator of the Macleay Museum, Sydney.

Hab.—N. Territory: Darwin (G. F. Hill).—Queensland: Bowen, Mackay, Cardington, and Townsville (F. H. Taylor).

It is closely related to *T. Strangmanii* Ricardo, but differs in the antennæ and legs. The extension on the frontal callus also differs in being extended to the ocellar triangle.

TABANUS DUPLONOTATUS Ricardo.

Ann. Mag. Nat. Hist., (8), xiv., p. 396 (1914).

Specimens received from the Northern Territory differ from the description of the specimens from S. Queensland only in having the venter dark, femora reddish, and the veins of the wing brown.

Hab.—N. Territory: Darwin (G. F. Hill, No. 65).

Group ix. Species with paler bands, and sometimes spots on the abdomen.

TABANUS TRYPHERUS, sp. n.

Length, 7.25-8; width of head, 2.75-3; width of front at vertex, 0.25; length of wing, 6.75-7 mm.

Head: face grey, with scanty grey hairs; beard white, scanty; front black, covered with dull golden tomentum, about one-third narrower posteriorly; frontal callus black, almost square, with a short, thick extension, tumid, shining, nearly the width of the

front at base, and about one-half the length of front, no lineal extension; subcallus chestnut, with pale yellowish tomentum; palpi pale creamy-white, about two-thirds the length of the proboscis, pubescence black, with some fairly long, white hairs basally, first two segments of antennæ creamy-yellow, with black pubescence, third with the base reddish-yellow, forming an obtuse angle; tooth small, with some black pubescence, annuli dark.

Thorax denuded, ash-coloured, with lateral and posterior margins paler; scutellum paler; pleure grey, pubescence grey.

Abdomen chocolate-brown, with fairly broad, grey bands, pubescence black; venter black, with grey tomentum.

Wings clear, veins brown; stigma yellow-brown, elongate, conspicuous; anterior branch of third long vein with a long appendix.

Legs: fore and hind femora blackish; mid with apical pale yellowish, tibiae yellowish, apical half of fore-tibiae blackish, tarsi black, hind ones with pale bases, pubescence on femora and tibiae mixed pale and black, black on tarsi.

Hab.—N. Territory: Pamie Bay, near Darwin (G. F. Hill No. 104).

A species readily distinguished from the other Australian members of Group ix., by its small size, colour, and the lines converging toward the apex.

Co-type in Coll. Hill.

TABANUS GRISEOANNULATUS, sp.n.

♀. Length, 10; width of head, 4; width of front at vertex, 0.5; length of wing, 10.75 mm.

Head: front grey at base and vertex, blackish elsewhere, frontal callus black, tumid, nearly square, about two-thirds the width of the front at the base, with a lineal extension reaching the middle of the front; subcallus dark ashen, face and cheeks grey, pubescence grey, beard white; palpi black, about two-thirds the length of the proboscis, with grey tomentum and black hairs, with a few fairly long, grey ones at the base; first joint of antennæ black, with black hairs; second joint light reddish-yellow, with black hairs, about one-third the length of the first.

third reddish-brown, with minute, grey pubescence, base broad and flat, no tooth present, with a very shallow angle, annuli darker; inner margins of eyes parallel.

Thorax black, denuded, with traces of grey pubescence, scutellum similar to thorax; pleure covered with grey tomentum and white hairs.

Abdomen black, covered with black hairs, all the segments with fairly broad, greyish-white, apical bands, and fairly broad, grey, lateral patches; venter covered with grey tomentum, with mixed grey and black hairs.

Legs black, pubescence black, with a yellow knee-spot on the mid-legs.

Wings grey, costa black, veins dark brown, stigma black, elongate, conspicuous; anterior branch of the third long vein with a short appendix.

Hab.—N. Territory: Brock's Creek (G. F. Hill).

A medium-sized, compact species, not closely related to any other species of Ricardo's Group ix. The tricoloured antennæ, and the yellow knee-joint on the mid-legs are very distinctive. Type unique.

TABANUS AUSTRALIS, n.sp.

♀. Length, 10; width of head, 3.75; width of front at vertex, 0.5; length of wing, 9.5 mm.

Head: front creamy-yellow, subcallus similar; rest of head covered with grey tomentum, beard white; frontal callus chestnut, darker toward apex, oblong, with a lineal extension tapering to a fine point; antennæ reddish-yellow, first two segments paler, with black pubescence; third segment with the base broad, and forming an obtuse angle on the dorsal surface, with black pubescence on the apex of the angle, annuli black; palpi creamy, with pale hairs on the base, black elsewhere, about one-half the length of the proboscis; eyes black, nude, inner margins parallel.

Thorax ash-coloured, with scattered, short, black, appressed hairs, lateral black and grey hairs fairly long, scutellum similar to thorax; pleura grey, with scattered, grey hairs.

Abdomen: first three segments reddish-brown, the remainder dark brown, with scattered, yellow, short, appressed hairs, all the segments with narrow, grey, apical bands, venter similar.

Legs: fore-legs dusky, except basal half of tibiae, which is yellowish; mid- and hind-femora dusky, mid- and hind-tibiae almost all femora with pale pubescence, remaining tarsi of both legs dusky with pale pubescence, tibiae and tarsi with black.

Wings clear, veins brown; no appendix.

Hab.—N. Territory: Stapleton (G. F. Hill).

A specimen of the above was submitted to Mr. Austen, who informed me that it was close to *T. nigrescens* Walker, from which it may be distinguished, *inter alia*, by the colour of the antennæ and legs.

TABANUS DODDI, nom. nov.

Tabanus abstersus Taylor, *rev* Walker, Rept. Aust. Inst. Trop. Med., 1911, p. 60 (1913); Austen, Ann. Mag. Nat. Hist. (8), vol. p. 264 (1914).

A change of name becomes necessary for this species, due to a misidentification of Walker's species, as pointed out by Austen, and also because, as far as I am able to judge from all the descriptions of Australian Tabani, it remains unnamed.

It is a very distinct and easily recognised species, owing to the white-haired fleck on the hind margin of each of the first five segments, the black ground-colour of the dorsum of the abdomen, and the angle on the expanded portion of the third joint of the antennæ, which is produced into a long, thumb-like process. All the specimens before me (19) show the annuli of the third joint of the antennæ with a marked, upward curve.

Hab.—S. Queensland (H. Tryon).—Q.: Kuranda (F. P. Dodd), Mourilyan (F. H. Taylor).

Group x. Species with the abdomen unicolorous, or almost sometimes darker at apex.

TABANUS DARWINENSIS, sp. n.

♀. Length, 10.5; width of head, 3.8; width of front of vertex, 0.5; length of wing, 9.5 mm.

Head: front dull golden, covered with numerous, black, erect hairs; frontal callus black, pear-shaped, tumid; subcallus dull golden, light chestnut when denuded, rest of head grey, beard grey-white; first two segments of antennæ golden-yellow, clothed with numerous, fairly long, black hairs; base of third joint reddish-brown, covered with minute, pale hairs, an obtuse angle on the upper margin, annuli black; palpi creamy, clothed with fairly long, black and short, pale hairs, about one-half the length of proboscis; eyes black, the inner margins converging toward the vertex.

Thorax: grey-black, clothed with mixed, pale and black hairs; scutellum similar to thorax; pleuræ slate-coloured, clothed with grey hairs.

Abdomen: grey-black, clothed with numerous, mixed, black and pale hairs, venter similar, posterior margins of segments with a narrow band.

Wings clear, veins black; stigma yellowish-brown, elongate; anterior branch of the third long vein with an appendix.

Legs: basal third of the fore- and mid-femora slate-coloured, the rest reddish-brown, hind slate-coloured, apical third reddish-brown, tibiae reddish-brown, fore-tibiae darker on the apical third, tarsi black, femora clothed with mixed, black and pale hairs, tibiae and tarsi clothed with black ones.

Hab.—N. Territory: Darwin (G. F. Hill, No. 107). Described from two specimens. It is related to *T. juncebris* Macq., but differs, *inter alia*, in having the wings clear. *T. juncebris* is described as being entirely black, and having the veins shaded brown.

Co-type in Coll. Hill.

Group xi. Species with pubescence on the eyes (*Theriotiplectes*).

TABANUS ANTECEDENS Walker.

List Dipt., i., p. 178 (1848); Ricardo, Ann. Mag. Nat. Hist., (8), xvi., p. 279 (1915).

Melbourne specimens differ from Ricardo's description in having the antennæ black, the first segment with fairly long,

mixed, black and golden hairs; and the broad, basal portion of the third segment lacking a distinct angle, the tooth being very small.

In other respects, they conform to a specimen determined as *T. antecedens* Walker, by Mr. Austen, for the writer.

Hab.—Victoria: Melbourne (Dr. Cumpston).

TABANUS MILSONI, sp.n.

♀. Length, 10; width of head, 4; width of front at vertex, 0.75; length of wing 9 mm.

Head: face ashen-grey, pubescence grey; beard grey, frons almost parallel, grey with traces of dark yellow, pubescence pale, ocellar triangle brown; frontal callus square, resting on the subcallus, black, tumid, shining, as wide as front, with a short, stout extension; subcallus chestnut, with grey tomentum; first two segments of antennæ black, with grey tomentum, and long, black pubescence; third joint reddish-yellow, annuli black, basal portion broad, with an obtuse angle, tooth small, with a few black hairs; palpi dull red-brown, above two-thirds the length of proboscis; tomentum grey, pubescence mixed pale and black; eyes with very scanty, pale pubescence.

Thorax: chocolate-brown, tomentum grey, with three, well defined, dark stripes, pubescence grey and black, long on the lateral margins; scutellum chocolate-brown, pubescence similar to thorax, pleuræ grey, pubescence grey.

Abdomen dark chocolate-brown, all segments from the second with grey bands expanding laterally, the second with an additional one, which does not meet in the middle; segments two to five with median, grey, triangular spots, pubescence black, long on the apical segments, grey on the bands and spots, long on the lateral, grey expansions; venter chocolate-brown, grey bands prominent, pubescence dense, mixed grey and black.

Wings clear, veins dark brown; stigma yellowish-brown; anterior branch of the third long vein with a small appendix.

Legs black, coxæ and trochanters with long, grey pubescence; basal half of the fore-tibie yellowish-brown, mid- and hind tibiae

yellowish, femoral pubescence grey, tibial and tarsal pubescence black, very dense.

Hab.—N.S.W.: Milson Island, Hawkesbury River (Dr. Cleland). Closely resembling *T. imperfectus* Walker, but differs in having the base of the third joint of the antennæ reddish-yellow, the frontal callus shorter, with a lineal extension; and the thorax with three, well-defined, dark stripes. There are also well-defined, grey, median spots on the second to fifth segments; whilst, in *T. imperfectus* Walker, these are present only on the second to fourth segments.

TABANUS SPADIX, sp.n.

♀. Length, 9; width of head 4; width of front at vertex, 0.5; length of wing, 8.5 mm.

Head: face pale creamy; beard pale creamy; front golden, distinctly narrower at vertex; pubescence black; frontal callus pear-shaped, tumid, shining, dark chestnut-brown, about one-half the width of the front; subcallus chestnut, tomentum golden; first two joints of antennæ yellow, pubescence black, third joint reddish-yellow, annuli darker, tooth small; palpi yellowish, stout, apical third thin, tapering to a fine point; pubescence on eyes pale, scanty.

Thorax ashen-grey, with five, dark chocolate-brown stripes, the median one very narrow, the two submedian ones short, extending to the middle of the thorax, pubescence mixed pale and black, dorsal hairs long; scutellum black, tomentum grey, pubescence very pale; pleuræ grey, pubescence long, grey.

Abdomen: first three segments light brown, fourth to the apex dark brown, segments two to the apex with pale bands, expanding laterally, the second segment basally pale also, the second to fifth segments also with indistinct, median, pale, triangular spots, pubescence black, pale on the segmentations; venter creamy, pubescence pale, penultimate and apical segments dark.

Legs: coxæ and trochanters with long, grey pubescence, fore-tibiae black, basal two-thirds of tibiae yellowish, apical two-thirds of mid-femora and tibiae yellowish, apex of hind femora and the

tibiae yellowish, rest of mid-and hind-legs blackish, pubescence black.

Wings clear, veins dark brown; stigma dark yellowish-brown; anterior branch of the third long vein with a short appendix.

Hab.—N.S.W.: Sydney (Dr. Cleland).

Both this and *T. milnei* mihi, known from single specimens only, are closely related. *T. spadicæ* may be distinguished, *inter alia*, by its broader front, differently shaped, frontal callus, the thorax having five stripes; and the paler abdomen.

TABANUS VETUSTUS Walker.

List Dipt., i., p. 179 (1848); Ricardo, Ann. Mag. Nat. Hist., (8), xvi., p. 277 (1915); White, Pap. and Proc. Roy. Soc. Tas., 1915, p. 15.

Hab.—Tasmania: Launceston (Sinson, Coll. W. W. Froggatt).

This specimen has the third joint of the antennæ black, and, in addition, the abdomen is entirely clothed with thick, grey pubescence, except for two, small, median patches of yellowish pubescence on the first and second segments.

SOME NOTES ON THE BIONOMICS OF THE BUFFALO-FLY (*LYPEROSIA EXIGUA* de Meijere).

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(Plate liii.)

The Buffalo-fly, under which name it is best known to stock-owners in the Northern Territory, is well-known as an important pest, owing to the annoyance and suffering it causes to cattle and horses, and to the loss in condition so often observed in stock grazing upon fly-infested country.

The greater number of individuals of this species and the longer period of their seasonal occurrence make *Lyperosia* a more formidable pest than the larger and more voracious blood-sucking flies of the genera *Tabanus* and *Silvius*, both of which are well represented in this country.

During the early part of the wet season (November and December) certain species of *Tabanus*, notably *T. nigritarsis* Taylor, are responsible for perhaps more annoyance to horses than is caused by Buffalo-flies during these months. The actual loss of blood due to these larger *Tabanids* is, no doubt, considerable, and this, combined with the fact that horses, in particular, are kept in a constant state of motion from before sunrise until after nightfall, accounts in a large measure for the poverty of stock in certain localities at a season when pasturage is most abundant. But *Tabanidæ* do not attack abraded surfaces, sores, or the sites of recent bites, as *Lyperosia* does; hence, after a momentary flinch or a kick as the skin is pierced, little notice is generally taken of the fly by the host. The species which dash at their victim with most noise are more dreaded than the more sluggish species.