New or little-known Tipulidæ (Diptera).—LII. Australasian Species. By Charles P. Alexander, Ph.D., F.R.E.S., Massachusetts State College, Amherst, Massachusetts, U.S.A.

The new species of crane-flies herein described are all from various parts of eastern Australia, including Tasmania and Lord Howe Island. They were derived from a considerable variety of sources that are acknowledged herewith: material from New South Wales, Victoria, and Tasmania, collected by Mr. F. Erasmus Wilson, now preserved in the Wilson Collection; specimens preserved in the Macleay Collection, University of Sydney, sent to me through the kindness of Mr. Frank H. Taylor, collected by the latter, Miss Irwin-Smith, and Mr. Plomley; further specimens in the National Collection at Canberra, taken by Mr. André L. Tonnoir; one interesting species in the Deutsches Entomologisches Museum, sent through the friendly interest of Dr. Walther Horn; a few additional species preserved in my own series of these flies, collected by Miss Kathleen English and by Mr. William Heron. I wish to express my deepest thanks to all of the entomologists mentioned above for this continued aid in making known the Tipulidæ of Australia.

Ischnotoma fuscobasalis, sp. n.

Mesonotal præscutum with lateral margins goldenyellow, the disk with four conspicuous dark brown stripes, the interspaces obscured; pleura clear light grey; halteres dusky; femora yellow, the tips narrowly blackened; wings with a brownish tinge, variegated by obscure whitish areas, including the outer two-thirds of cell R_5 and across outer ends of cells Cu and 1st A.

Female.—Length about 16 mm.; wing 16.5 mm.

Frontal prolongation of head brown; nasus very long, approximately one-third the length of the prolongation itself; palpi dark brown. Antennæ with the scape and pedicel light brown, flagellum brownish black; flagellar segments nearly simple, with very inconspicuous verticils. Head dark brown, the orbits very narrowly

and insensibly grey.

Mesonotal præscutum with the lateral margins goldenyellow, the disk with four conspicuous dark brown stripes, the interspaces pale brown to yellowish brown; scutum and scutellum dark brown, the median region of former obscure yellow pollinose; mediotergite grey, with a basal triangular area. Pleura clear light grey, the dorsopleural region infuscated. Halteres dusky, the extreme base of stem pale yellow. Legs with the coxæ clear light grey; trochanters yellow; femora obscure yellow, the tips narrowly blackened; tibiæ light brown, the tips narrowly brownish black; tarsi black. Wings with a brownish tinge, the outer radial field more conspicuously darkened; stigma pale brown, its proximal end somewhat darker; whitish areas before stigma in cells C, Sc, and R_1 ; across bases of cells 1st M_2 and M_3 ; and with less evident pale areas in outer twothirds of cell R_5 , base of cell 2nd M_2 , and near outer ends of cells Cu and 1st A.

Abdominal tergites almost uniformly dark brown, the lateral portions narrowly obscure yellow; basal segments not reddish, as in *abnormalis* and other allied species; sternites brownish yellow, the caudal margins of the segments restrictedly pale. Ovipositor with the valves slender.

Hab. Victoria.

Holotype, \circ , bred from larva taken in mud at margin of permanent stream, mountains above Warburton, altitude 3800 feet, emerged January 13, 1931 (F. E. Wilson).

The nearest ally of the present fly seems to be *Ischnotoma abnormalis* Alexander, which differs in the obscure orange or reddish basal abdominal segments and the distinctive wing-pattern.

Dolichopeza (Dolichopeza) albescens, sp. n.

Allied to brevifurca; general coloration very pale, whitish, the præscutum with three scarcely indicated more reddish stripes; wings relatively broad, pale cream-yellow, the stigma and seams on anterior cord and m-cu brown; m-cu about its own length before fork of M; abdomen pale yellow; male hypopygium with the outer dististyle pale throughout.

Male.—Length about 10 mm.; wing 11 mm.

Frontal prolongation of head very pale yellow; palpi yellow. Antennæ with the scape and pedicel whitish

yellow, the flagellum pale brown. Head whitish.

Mesonotum whitish, the præscutum with three slightly more reddish stripes, the centres of the scutal lobes similarly patterned; posterior sclerites of mesonotum whitish or testaceous. Pleura pale whitish yellow. Halteres pale yellow, the bases of the knobs a little darker. Legs with the coxæ and trochanters whitish; remainder of legs pale yellow, the outer tarsal segments a trifle darker. Wings relatively broad, pale creamyellow throughout, the stigma, a small cloud on anterior cord, and a conspicuous seam on m-cu infuscated; veins yellow to brownish yellow, darker in the infuscated areas. Venation: outer medial forks deeper than in brevifurca; m-cu about its own length before fork of M; cell 2nd A relatively wide.

Abdomen pale yellow, the outer sternites somewhat darker, their caudal margins pale. Male hypopygium somewhat as in brevifurca and fuscoradialis, especially in the nature of the toothing of the tergite. Outer dististyle pale throughout, the more basal tooth at near mid-length, the smaller outer tooth placed far distad, being closer to the apex than the distance between the two teeth; apex of style beyond second tooth less than one-half the basal portion proximad of basal or first tooth.

Hab. New South Wales.

Paratopotype, 3.

The pale whitish or yellowish-white coloration of the present fly suggests *Dolichopeza* (*Dolichopeza*) pallidula Alexander, which is a quite distinct species. Despite its

coloration the present fly is most nearly allied to D. (D.) brevifurca Skuse and D. (D.) fuscoradialis Alexander, being readily told by the wing and body coloration and by the breadth of the wings. The pale spots before and beyond the stigma are inevident in the present fly, due to the uniformly pale colour of the wing-disk.

Dolichopeza (Dolichopeza) kurandensis, sp. n.

Allied to dorrigensis; mesonotum and pleura dark brown, the latter with a broad oblique pale stripe extending from præscutal humeri to posterior coxæ; legs dark brown, the genua, tips of all tibiæ, very narrow proximal ends of basitarsi, broad tips of basitarsi, and remaining tarsal segments snowy-white; wings with cells C and Sc distinctly infuscated; wing-apex and seams on cord narrowly but conspicuously darkened; cell 2nd A reduced to a narrow strip; male hypopygium with caudal margin of tergite with four blackened, microscopically serrulate lobes; outer dististyle short, dark-coloured.

Male.—Length about 7 mm.; wing 7.6 mm.

Frontal prolongation of head white; palpi dark brown, the incisures somewhat paler. Antennæ with basal two segments yellow, flagellum black; flagellar segments cylindrical, gradually decreasing in length outwardly, the last a tiny thimble-shaped structure; verticils shorter (on proximal segments) to subequal to the segments. Front and anterior vertex whitish; remainder of head

rich brown, the occipital region somewhat paler.

Pronotum dark brown. Mesonotum chiefly dark brown, the humeral region of præscutum obscure yellow; præscutum with indications of darker stripes, including a median line that is further split by a capillary pale vitta. Pleura dark brown, with a broad oblique pale stripe extending from the præscutal humeri across the anepisternum, and ventral pteropleurite, on to the meral region and posterior coxæ. Halteres elongate, pale, knobs darkened. Legs with the fore and mid-coxæ darkened basally, the tips pale, posterior coxæ chiefly pale; trochanters pale yellow; femora dark brown, the bases paler, the extreme tips snowy-white; tibiæ brown, the bases very narrowly, the tips broadly, white,

the amount of the latter least on fore and middle tibiæ, becoming two or three times as extensive on the posterior tibiæ, where approximately the outer fifth is pale; basitarsi darkened, the extreme base white, the tips conspicuously snowy-white, narrowest on fore tarsi, widest on posterior tarsi where the dark subbasal ring is only about twice as extensive as the white tibial apex; remainder of tarsi snowy-white. Wings with a strong brown tinge, cells C and Sc distinctly infuscated; wingapex and margin of posterior border as far back as tip of Cu narrowly darkened; stigma conspicuous, dark brown; cord narrowly but conspicuously darkened, more broadly so on anterior cord; veins dark brown. Venation: anterior cord transverse to somewhat oblique, with Rs lying opposite or slightly more distad than the other elements; cell 2nd A reduced to a linear strip.

Abdominal tergites dark brown; sternites light yellow, the incisures broadly dark brown; hypopygium pale. Male hypopygium with the caudal margin of tergite crenate into four low lobes, the border heavily blackened and microscopically serrulate; lateral ventral lobes likewise heavily blackened and serrulate. Outer dististyle unusually short, dusky in colour, not exceeding two-thirds the total length of the inner style, provided with long coarse setæ that are approximately one-half the length of the style itself. Inner dististyle with the apical half narrowed into a long dark-coloured beak.

Hab. North Queensland.

Holotype, \Im , Kuranda, altitude about 1100 feet (F, H, Taylor).

The nearest described ally of the present fly is undoubtedly Dolichopeza (Dolichopeza) dorrigensis Alexander (northern New South Wales), which is the only other Australian species having cell 2nd A similarly long and narrow. In the present fly, the cell is even narrower than in dorrigensis, and so marks the culmination, as known, of this condition in the Australian fauna. The wings of dorrigensis are not or scarcely patterned, except for the conspicuous stigma. Other species of Australian Dolichopeza having the leg-pattern of this general nature include the species that centre about annulipes Skuse and oresitropha Alexander, readily told by the conspicuous bilobed setiferous phallosome.

Dolichopeza (Dolichopeza) segnis, sp. n.

Mesonotum dark brown; pleura yellow, only the anepisternum a little darkened, the sternopleurite and meron clear yellow; femoral tips narrowly dirty white; tibiæ brownish black, the tips paling to dirty white, on the posterior legs including about the distal third; wings greyish, the small brown stigma conspicuous; outer longitudinal veins and m-cu not seamed with brown.

Female.—Length about 9 mm.; wing 7.5 mm.

Frontal prolongation of head yellow; palpi dark brown. Antennæ broken beyond the third segment, dark brown. Front and anterior vertex light yellow; remainder of head dark brown.

Mesonotum dark brown, the præscutum with four scarcely apparent darker brown stripes; median area of scutum, scutellum and mediotergite slightly more testaceous-brown. Pleura yellow, including the sternopleurite and meron, only the anepisternum a little more darkened; dorsopleural region infuscated. Halteres elongate, brownish black. Legs with the coxæ and trochanters light yellow; femora testaceous at base, passing into brown, the tips of the femora very narrowly and insensibly paling to dirty white; tibiæ brownish black, the tips narrowly and insensibly paler, most conspicuous on the posterior tibiæ, where the entire distal third fades from brown to dirty white; tarsi of all legs chiefly white. Wings greyish, the brown stigma conspicuous, smaller than in davidsoni; outer radial field only vaguely darkened; a very narrow dark seam on anterior cord; whitish areas before and beyond stigma small but conspicuous; longitudinal veins beyond cord, together with m-cu, not seamed with brown, as in davidsoni. Venation: elements of anterior cord, including Rs, in perfect transverse alignment; davidsoni, these are slightly oblique, with cell R_5 lying a little more distad; R_3 decurved outwardly, paralleling R_{4+5} throughout its length; m-cu nearly its own length before fork of M; cell 2nd A a little wider than in davidsoni, vein 2nd A lying opposite mid-length of basal

Abdominal tergites almost uniformly brownish black, the lateral portions of the outer segments paler; sternites

dark, the caudal margins of the outer segments conspicuously paler.

Hab. New South Wales.

Holotype, ♀, Dorrigo, eastern Dorrigo, altitude about

2000 feet, February 12, 1933 (W. Heron).

The nearest described ally of the present fly is undoubtedly *Dolichopeza* (*Dolichopeza*) davidsoni Alexander, which differs in the conspicuously darkened sternopleurite and meral region, the abruptly whitened tips of the femora and tibiæ, and in the heavily patterned outer cells of the wing. Other small species of the genus, as D. (D.) dorrigensis Alexander and D. (D.) kurandensis, sp. n., are readily told from all regional forms by the unusually long and very narrow cell 2nd A of the wings.

Limonia (Libnotes) plomleyi, sp. n.

Belongs to the *notata* group; general coloration dark brownish grey; thoracic pleura almost uniformly darkened, heavily pruinose; halteres black; fore femora almost uniformly blackened, middle and hind femora dark brown with the tips broadly and conspicuously blackened; wings with a restricted pale brown pattern that is confined to the vicinity of the veins; free tip of Sc_2 and R_2 in transverse alignment; abdomen dark brown, sparsely pruinose; cerci at tips strongly bifid.

Female.—Length about 13 mm.; wing 15 mm.

Rostrum and palpi black. Antennæ with scape and pedicel dark brown, flagellum paler brown. Head brownish grey; anterior vertex reduced to a narrow

strip.

Pronotum brownish black. Mesonotal præscutum dark brownish grey, vaguely marked with somewhat darker brown, most evident as lateral and posterior intermediate stripes, the latter produced behind into narrow points that almost reach the suture; scutum pale medially, the lobes variegated with somewhat darker brown; scutellum chiefly pale, the parascutella darker; mediotergite chiefly pale, darker laterally. Pleura almost uniformly dark brownish grey, the mesepisternum, pteropleurite, and pleurotergite uniformly darkened, pruinose. Halteres blackened throughout. Legs with the coxæ darkened; trochanters obscure yellow; fore

femora almost uniformly blackened, only the bases narrowly paler; middle and posterior femora dark brown, the tips broadly and conspicuously blackened, the amount subequal on both pairs; tibiæ brown, the tips narrowly blackened, the bases more narrowly and vaguely so; tarsi brown, passing into black. Wings with a weak brown tinge, restrictedly patterned with pale brown clouds, including vague areas at origin of Rs; along cord and outer end of cell $1st\ M_2$; tip of Sc_1 ; free tip of Sc_2 and R_2 ; and as vague seams at outer ends of veins R_{4+5} , M_4 , Cu_1 , $1st\ A$, and $2nd\ A$; veins brownish yellow, darker in the clouded areas; prearcular region blackened. Venation: free tip of Sc_2 and R_2 in transverse alignment; m-cu at between one-fourth and one-fifth the length of the lower face of cell $1st\ M_2$.

Abdomen dark brown, sparsely pruinose; cerci brownish black basally, strongly bifid at tips.

Hab. New South Wales.

Holotype, \circlearrowleft , Barrington Tops, January 10, 1934 (N. J. B. Plomley).

I take great pleasure in naming this fly in honour of the collector, Mr. N. J. B. Plomley. The nearest described ally is *Limonia* (*Libnotes*) clintoni Alexander (north-eastern Papua), which differs especially in the coloration of the thoracic notum and pleura and in the yellow antennal flagellum. Both species differ conspicuously from other members of the notata complex of forms by the black fore femora.

Limonia (Geranomyia) deleta, sp. n.

Allied to austropicta; rostrum short; mesonotum reddish brown, the præscutum with three darker brown stripes; pleura uniformly brownish yellow; wings greyish with a scarcely evident pattern; Sc ending just beyond one-fourth the length of Rs; m-cu its own length before the fork of M; male hypopygium with long rostral spines, arising from the summit of a common blackened tubercle; mesal-apical lobe of gonapophysis smooth.

Male.—Length, excluding rostrum, about 5 mm.; wing 6 mm.; rostrum 1.6 mm.

Rostrum dark brown throughout, relatively short and stout. Antennæ dark throughout; flagellar segments oval, with long verticils. Head dark, the anterior vertex more silvery.

Pronotum grey. Mesonotal præscutum reddish brown, grey pruinose, with three slightly darker brown stripes, the median one subobsolete in front; posterior sclerites of mesonotum reddish, the centres of the scutal lobes darkened; a median dark vitta on scutum and scutellum; mediotergite pale, with indications of a capillary dark vitta. Pleura uniformly brownish yellow, without darkening. Halteres pale, the knobs darkened. Legs with the coxæ and trochanters obscure yellow; remainder of legs yellowish brown, the outer tarsal segments darker. Wings with a greyish tinge, the stigma and a circular cloud at origin of Rs very slightly darker; remainder of cord, outer end of cell 1st M_2 , and wing-tip not darkened; veins brown. Venation: Sc short, Sc_1 ending just beyond one-fourth the length of Rs, Sc_2 at its tip; m-cuits own length before the fork of M; vein 2nd A strongly sinuous at mid-length.

Abdominal tergites brownish black, the sternites paler. Male hypopygium with the ventral dististyle relatively small, fleshy, the two long straight rostral spines equal in length, but the inner appearing slightly shorter because of arising slightly lower down on the face of the common basal tubercle; in slide mounts, the spines reach to opposite the summit of the small fleshy style. Gonapophyses with mesal-apical lobe darkened, with smooth margins.

Hab. New South Wales.

Holotype, ♂, Tallong, altitude 2013 feet, October 1931 (F. H. Taylor).

The unique type is apparently somewhat teneral, but since the body-colours are distinct it would appear that the wing-pattern, if normally present, would be indicated. The nearly immaculate wings contrast notably with the condition found in *Limonia* (*Geranomyia*) austropicta Alexander (picta Skuse, preoccupied). The details of the male hypopygium, as the small fleshy ventral dististyle and the smooth margins of the gonapophyses, furnish other distinctions.

Limonia (Geranomyia) conjurata, sp. n.

Size very large (wing, δ , 9.5 mm.); general coloration of thorax black, the præscutum and dorsal pleura with four linear velvety-black dashes; femora brown, the tips narrowly blackened; wings with a strong brown tinge, variegated by a series of about four darker brown subcostal areas; Sc relatively short, Sc_1 ending shortly beyond the origin of Rs; basal section of Sc_2 lacking; free tip of Sc_2 lying far before R_2 so R_1 is unusually long, only a little shorter than R_{2+3} ; male hypopygium with the lateral lobes of tergite produced into spinous points; a single long rostral spine on ventral dististyle.

Male.—Length, excluding rostrum, about 8 mm.;

wing 9.5 mm.; rostrum about 3 mm.

Rostrum relatively short, only a little longer than the antennæ, light brown; labial palpi short; maxillary palpi apparently 3-segmented. Antennæ black throughout; flagellar segments oval, strongly constricted at both ends, giving a bead-like appearance to the organ; verticils coarse, longer than the segments. Head dark grey; anterior vertex narrower than diameter of the scape.

Pronotum and mesonotum dull black; mesonotal præscutum with humeral and lateral portions paler, more buffy, the lateral borders of the præscutal disk velvety-black; extreme lateral border of the sclerite before the suture similarly lined with velvety-black; median region of scutum scarcely brightened; mediotergite sparsely pruinose. Pleura dark plumbeous brown, the dorso-pleural membrane more buffy, with two linear velvety-black streaks lying just ventrad of the two on the præscutum. Halteres dusky, the base of stem restrictedly pale. Legs with the coxe dark; trochanters obscure yellow; femora brown, the tips narrowly blackened, the amount subequal on all legs; tibiæ and tarsi black. Wings (fig. 1) with a strong brown tinge, the interspaces of cell Sc more yellowish; a series of about four darker subcostal areas, the first just beyond arculus, the second at the supernumerary cross-vein in cell Sc, the third at origin of Rs, the fourth, paler and ill-defined, at free tip of Sc_2 ; cord and outer end of cell 1st M_2 narrowly and very insensibly seamed with

darker; veins dark. Venation: Sc relatively short, Sc_1 ending shortly beyond origin of Rs; basal section of vein Sc_2 lacking; a supernumerary cross-vein in cell Sc at near mid-length of the vein; free tip of Sc_2 lying far before R_2 , so vein R_1 is unusually long, not much shorter than R_{2+3} or Rs; m-cu shortly beyond fork of M.

Abdominal tergites black, the caudal borders of the intermediate segments obscurely paler; subterminal

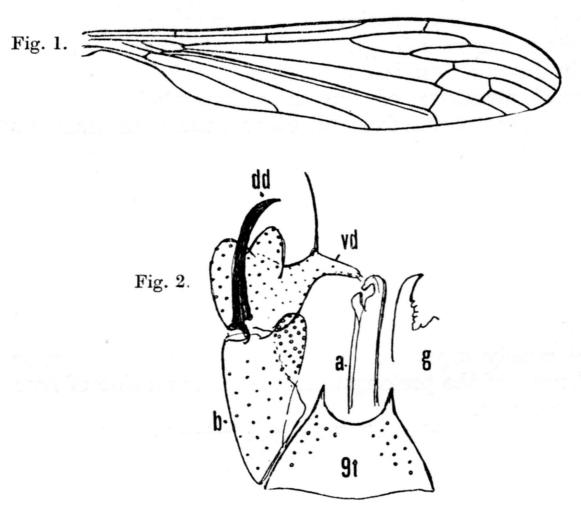


Fig. 1.—Limonia (Geranomyia) conjurata, sp. n.; venation. Fig. 2.—The same; male hypopygium.

(Symbols: a, ædeagus; b, basistyle; dd, dorsal dististyle; g, gonapophysis; t, 9th tergite; vd, ventral dististyle.)

segments uniformly black; sternites brown; hypopygium brownish black. Male hypopygium (fig. 2) with the caudal margin of the tergite, 9t, with a deep U-shaped emargination, the lateral lobes produced into acute spinous points. Dorsal dististyle, dd, a gently curved black rod, the tip acute. Ventral dististyle, vd, deeply bilobed, the mesal lobe nearly equal in size to the outer lobe, the dorsal dististyle lying in the notch; rostral prolongation strong and powerful, shortly beyond

mid-length bearing a single long spine that is about one-half longer than the prolongation beyond the point of its insertion; rostral spine sessile or arising from a scarcely evident basal tubercle. Gonapophyses, g, with the mesal-apical lobe straight, its outer edge with a few microscopic denticles.

Hab. New South Wales.

Holotype, 3, Barrington Tops, altitude 5000 feet,

January 10, 1934 (N. J. B. Plomley).

Limonia (Geranomyia) conjurata is very different from all other regional species of the subgenus. In some respects it suggests L. (G.) sakaguchii (Alexander) of the Riukiu Islands, but is only distantly allied. The great size and structure of the male hypopygium readily separate the species from all other Australian members of the subgenus.

Limonia (Dicranomyia) muta, sp. n.

General coloration dark brown; antennæ black throughout; rostrum relatively elongate; sides of mesonotal præscutum obscure yellow; halteres dark brown; the base of stem narrowly yellow; wings tinged with brown, the stigma darker; male hypopygium with the rostral spines widely separated, the outermost placed at near mid-length of the prolongation, the inner on side of base of the rostrum.

Male.—Length about 5-5.5 mm.; wing 5.8-6.6 mm.

Rostrum pendant, relatively elongate, fully one-half the remainder of head, dark brown; palpi brownish black. Antennæ black throughout; flagellar segments oval, the outer segments more elongate. Head yellowish brown to dark brown.

Mesonotal præscutum obscure yellow laterally, the disk dark brown or black, the posterior sclerites of the notum brownish black; thorax relatively gibbous. Pleura brownish testaceous to dark brown. Halteres dark brown, the base of stem narrowly yellow. Legs with the coxæ and trochanters brownish testaceous; remainder of legs yellowish brown to brown, the tarsi still darker. Wings tinged with brown, the stigma darker brown; very narrow and scarcely evident cloudings along cord and outer end of cell $1st\ M_2$; veins brown. Venation: Sc_1 ending a short distance before origin

of Rs, Sc_1 alone from one-half to two-thirds Rs; Rs relatively short, arcuated, a little longer than the basal

section of R_{4+5} ; m-cu close to fork of M.

Abdominal tergites dark brown, the sternites more obscure yellow. Male hypopygium with the caudal margin of tergite deeply notched, the conformation of the incision being almost exactly like that of the lobes. Dorsal dististyle relatively slender, curved, the tip obtuse. Ventral dististyle with the rostral prolongation long and slender, with two very widely separated spines, the distance between the two approximately three-fourths the length of a single spine; outer spine placed at or near mid-length of the prolongation, the inner one on the side of the base of the rostrum; spines not arising from basal tubercles. Gonapophyses with mesal-apical lobe slender, smooth, gently curved.

Hab. Victoria.

Holotype, 3, Belgrave, in tree-fern gully, March 31, 1929 (F. E. Wilson).

Paratopotype, 3, paratype, 3, Macedon, in tree-fern

gully, March 24, 1929 (F. E. Wilson).

The widely separated spines of the rostral prolongation of the male hypopygium, in conjunction with the infumed wings, readily separate the present fly from other regional allies.

Limonia (Dicranomyia) saxemarina, sp. n.

General coloration dark brown; rostrum a little exceeding the remainder of head; antennæ black throughout; wings strongly tinged with blackish, stigma lacking; Sc short; cell 1st M_2 open by the atrophy of m; male hypopygium with the ventral dististyle fleshy, the rostral prolongation bispinous.

Male.—Length about 4.5 mm.; wing 5.5 mm.

Rostrum brown, relatively elongate, a little exceeding the remainder of head; palpi dark brown. Antennæ black throughout; flagellar segments oval. Head dark brown; anterior vertex of moderate width, subequal to the diameter of the scape.

Mesonotum almost uniformly dark brown, the præscutum and scutum somewhat paler near the suture; præscutum gibbous. Pleura brown. Halteres brownish black throughout. Legs with the coxæ and trochanters

brown; remainder of legs paler yellowish brown. Wings strongly tinged with blackish; stigma indistinct; veins a little darker than the ground-colour. Almost complete series of macrotrichia on veins beyond cord. Venation: Sc short, Sc_1 ending some distance before origin of Rs, Sc_2 a little shorter than Sc_1 ; free tip of Sc_2 and R_2 both pale and in transverse alignment; cell 1st M_2 open by the atrophy of m; cell M_3 subequal in length to its petiole; m-cu at fork of M, subequal to distal section of Cu_1 ; cell 2nd A wide.

Abdominal tergites brownish black; sternites a little paler. Male hypopygium with the tergite relatively long, narrowed outwardly, the apex shallowly emarginate. Basistyle with the ventro-mesal lobe low, conspicuously setiferous. Dorsal dististyle a strongly curved sclero-tized rod, the distal fourth more narrowed. Ventral dististyle fleshy; rostral prolongation very slender, at its base with two black spines, the more basal from a low tubercle, the outer spine nearly sessile. Gonapophyses with mesal-apical lobe slender, the margins

 $\mathbf{smooth}.$

Hab. Lord Howe Island.

Holotype, 3, North Bay, on rock by the sea-shore, February 11, 1934 (V. Irwin-Smith).

I am indebted to Miss Irwin-Smith for the privilege

of retaining the type-specimen.

Limonia (Dicranomyia) saxemarina is readily told from all other Australasian members of the subgenus by the coloration and venation of the wings, especially the open cell $1st\ M_2$.

Austrolimnophila irwin-smithæ, sp. n.

General coloration grey, the præscutum with three dark brown stripes, the median one broadest; antennal flagellum black; femora obscure brownish yellow, the tips narrowly infuscated; wings yellowish, with rather numerous pale brown spots that are confined to the vicinity of the veins; R_{2+3+4} subequal in length to the basal section of R_5 ; R_{2+3} and R_3 subequal.

Female.—Length about 7.5-8 mm.; wing 7.5-8 mm.

Rostrum grey; palpi brownish black. Antennæ with the scape grey; pedicel reddish brown; flagellum black; flagellar segments oval, the terminal segment

a little longer than the penultimate. Head brownish, the anterior vertex light grey; a narrow dark brown

line on posterior vertex.

Pronotum grey. Mesonotal præscutum grey, with three dark brown stripes, the median one broadest; pseudosutural foveæ reduced; median region of scutum grey, the lobes extensively dark brown; scutellum obscure yellow, the parascutella dark; mediotergite dark brown; pleurotergite darkened, paler along the posterior border. Pleura chiefly pale, the anepisternum and dorsal sternopleurite more pruinose; ventral sternopleurite darkened. Halteres chiefly pale yellow, the knobs weakly darkened. Legs with the coxæ reddish, sparsely pruinose; trochanters reddish yellow; femora obscure brownish yellow, the tips narrowly infuscated; tibiæ and tarsi yellowish brown, the outer segments of the latter a little darker. Wings yellowish, with rather numerous small pale brown spots, distributed as follows: arculus; origin of Rs; Sc_2 ; stigma; tips of all longitudinal veins excepting R_5 ; forks of R_{2+3+4} and M_{1+2} ; cord and outer end of cell $1st\ M_2$; a darkened cubital seam; veins brown, darker in the clouded areas. Venation: Sc_1 and Sc_2 subequal; R_{2+3+4} subequal to basal section of R_5 or r-m; R_{2+3} and R_3 subequal; m-cu more than one-half its length beyond fork of M.

Abdomen dark, the caudal margin of tergites narrowly

reddish, of the sternites more broadly so.

Hab. Tasmania.

Holotype, ♀, Mount Wellington, bred from larva collected February 13, 1921; pupated March 8–10, 1921; emerged March 18, 1921 (V. Irwin-Smith); collector's no. Q 3.

Paratopotypes, 2 damaged \$\parallel \text{p}\$, emerged March 15 and 18, 1921, one with the cast pupal skin; collector's

nos. Q 2 and 4.

Type in the University of Sydney Collection, through Miss Irwin-Smith.

I take great pleasure in naming this very distinct crane-fly in honour of the collector, Miss Vera Irwin-Smith, who has done such excellent work on the biology of the Australian Diptera. The species is readily told from all other Australian and Tasmanian members of the genus by the small size and pattern and venation of the

wings. The most similar form in Tasmania is the large and conspicuous Austrolimnophila relicta Alexander. The present fly is more generally similar to certain small Chilean and New Zealand species, as A. hazelæ Alexander and A. truncata (Alexander). In addition to the bred adults described above Miss Irwin-Smith sent me a small lot of preserved larvæ and pupæ that will be described by later students of the immature stages of these flies.

Gynoplistia (Paralimnophila) englishæ, sp. n.

Size small (wing, \Im , 7–8 mm.); antennæ of male very long, exceeding one-half the length of body, with twelve or thirteen long branches; flagellum bicolorous; mesonotal præscutum and pleura lined with black; legs with genua narrowly whitened; tarsi chiefly snowywhite; wings creamy, with a heavy brown pattern; m-cu from one-third to one-fifth its length beyond the fork of M; abdominal tergites brown, the caudal borders of the segments rather broadly blackened.

Male.—Length 9-10 mm.; wing 7-8 mm.; antenna about 5.5 mm.

Rostrum dark brown; palpi somewhat paler brown. Antennæ (3) elongate, exceeding one-half the length of the body, with 15 or 16 segments, the formula being 2+12+1 or 2+13+1; scape and pedicel pale yellow; flagellar segments bicolorous, black, the apical portion adjoining the origin of the branch pale yellow, clearest and most conspicuous on the basal and intermediate segments, becoming more restricted and obscure on the outer segments; flagellar branches long, the longest (about mid-length of the organ) exceeding one-fourth the length of the antenna or nearly four times the length of the segment; segments unusually long, widely separating the branches; pubescence of branches pale, conspicuous. Head brownish grey, the centre of the vertex darkened.

Mesonotal præscutum buffy-grey, narrowly lined with dark brown or brownish black, including three intermediate stripes, the median one longer and more distinct than the laterals; anterior and lateral portions of the lateral præscutal stripes bordered by blackish, the mark confluent with the lateral intermediate stripes; pseudo-sutural foveæ pale; posterior sclerites of mesonotum

pale, with a broken median brown line; scutal lobes and posterior border of mediotergite variegated by darker. Pleura pale, sparsely grey pruinose, with a relatively broad black longitudinal stripe extending from the ventral cervical sclerites to the mediotergite; dorsopleural region yellow. Halteres dusky, the brownish black. Legs with the coxæ and trochanters femora brownish yellow, becoming darker outwardly, deepening to a subterminal dark brown ring, the extreme tips pale; tibiæ dark brown, the bases narrowly white, subequal in degree to the femoral tips; tips of tibiæ very narrowly pale; tarsi snowy-white, fore and middle basitarsi with about the proximal half blackened, the posterior pair entirely white. Wings with the ground-colour creamy, chiefly obscured by brown suffusions, best indicated in the radial and outer medial fields; cells C and Sc infuscated; stigma dark brown; a dark cloud in cell R at about one-third the length of cell; smaller clouds at outer ends of veins R_4 and R_5 ; most longitudinal veins narrowly seamed with darker, in the outer medial field more or less broken into dots; a large dark cloud at origin of Rs, enclosing a pale central spot immediately beyond this origin; an incomplete ocelliform area near the outer end of Rs; veins dark. Venation: m-cu from one-third to one-fifth its length beyond the fork of M.

Abdominal tergites brown, the caudal borders of the segments rather broadly blackened; sternites clear yellow with dark posterior borders; hypopygium chiefly darkened. Male hypopygium with the gonapophyses appearing as pale blades, the apex of each produced laterad into a small acute point.

Hab. New South Wales.

Holotype, ♂, Buckmaster's Crossing, Yass, November 25, 1933 (K. English).

Paratopotypes, 233, November 22, 1933.

I dedicate this very distinct crane-fly to the collector, Miss Kathleen English, to whom I am particularly indebted for much interesting material from the vicinity of Yass. Among the described species, the fly is most similar to *Gynoplistia* (Paralimnophila) leucophæata (Skuse), from which it is readily told by the bicolorous antennæ, wing-pattern, and details of venation. The

latter species is still known only from the type-specimens, taken by Skuse in the near vicinity of Sydney. Building operations in recent years have destroyed the type-stations for *leucophæata*. The species has 17–segmented antennæ, not 16-segmented as intimated by Skuse, with the flagellum uniformly dark brown.

Gynoplistia (Paralimnophila) gracilirama, sp. n.

General coloration grey, the præscutum with four brown stripes; antennæ (3) 14-segmented, with nine long branches; femora obscure yellow, the tips broadly and abruptly blackened; posterior tarsi extensively yellow; wings whitish, spotted and washed with dark and pale brown; male hypopygium with the apex of tergite convexly rounded; gonapophyses appearing as narrow yellow blades, the tips extended into slender points.

Male.—Length about 9 mm.; wing 8·2 mm.; antenna about 4·2 mm.

Rostrum light grey; palpi black. Antennæ (3) 14-segmented, the formula being 2+9+3; black, the scape pruinose, the incisures of the basal two flagellar segments obscure yellow; flagellar branches long and slender, the longest (about flagellar segment five) one-fourth the length of the entire organ; last branch a trifle longer than the penultimate segment; penultimate segment about one-half longer than the terminal. Head grey, the region of the vertical tubercle a little darker.

Mesonotum light grey, the præscutum with four brown stripes, the intermediate pair narrow, separated by a ground line of approximately one-half their own width; pseudosutural foveæ black, conspicuous; scutal lobes variegated with two brown areas. Pleura light grey, with two more blackish-grey longitudinal stripes, the more dorsal one longer, extending from the cervical region to beneath the wing-root; ventral pleural stripe darkened. Halteres obscure yellow, the knobs black. Legs with the coxæ pale brown, pruinose; femora obscure yellow, the tips broadly and abruptly blackened; tibiæ yellow, the bases narrowly, the tips more broadly, blackened; mid-tarsi black; fore tarsi black with the basitarsi a little paler; posterior tarsi with the proximal

two segments yellow, narrowly tipped with black, the remaining segments black. Wings with the ground whitish, heavily spotted and washed with dark and paler brown; cells C and Sc, together with the prearcular region, light yellow; two major dark areas in the subcostal field, not involving cell C, the first at mid-distance between arculus and origin of Rs, the second, larger and quadrate in outline, at origin of Rs, not reaching vein M behind; small and inconspicuous brown areas at arculus and Sc_2 ; stigmal area large, confluent with a broad seam along cord; a dark area at outer end of vein R_3 ; slightly paler brown clouds at outer end of cell 1st M_2 and fork of M_{1+2} ; paler greyish-brown washes in apical cells, in cells M to 2nd A, inclusive, and as a conspicuous seam along the outer end of vein M; veins pale brown, darker in the clouded areas, more yellowish in the interspaces of anterior half. Venation: cell M_1 about one-half longer than its petiole; m-cu not far beyond the fork of M.

Abdominal tergites brownish grey, the margins of the segments darker brown; sternites obscure yellow, narrowly bordered by dark brown. Male hypopygium with the apex of tergite gently convex, not truncated as common in the subgenus. Apex of inner dististyle simple. What appears to be the anal tube lies beneath the tergite, its apex conspicuously emarginate. Gonapophyses appearing as slender glabrous yellow blades, the tips prolonged into long, spear-like points.

Hab. Tasmania.

Holotype, 3, National Park, January 11-15, 1933 (F. E. Wilson).

The only other *Paralimnophila* with fourteen antennal segments in the male sex, with the flagellum bearing nine long branches, is *Gynoplistia* (*Paralimnophila*) shewani Alexander of northern New South Wales. The latter is readily told by the pattern of the legs, having the genua pale, and the tarsi chiefly whitened.

Gynoplistia (Paralimnophila) pectinella, sp. n.

General coloration grey, the præscutum with three dark brown stripes; antennæ 13-segmented, with seven branched segments, the branches unusually short;

femora black, the bases yellow; tarsi black; wings whitish, heavily patterned with brown; male hypopygium with the gonapophyses densely covered with yellowish spines or spinous setæ.

Male.—Length about 8.5 mm.; wing 8.2 mm.; antenna

about 1.6 mm.

Rostrum grey; palpi brownish black. Antennæ small, 13-segmented, the formula being 2+7+4; branches unusually short for the male sex in this subgenus, the longest (flagellar segment four) about a fifth longer than the segment itself; branch of the seventh flagellar segment merely protuberant; penultimate segment small and subglobular, possibly abnormal in the unique type. Head dark grey, the centre of vertex somewhat more

brownish; vertical tubercle faintly apparent.

Pronotum brownish grey. Mesonotal præscutum grey, with three dark brown stripes, the laterals slightly more posterior interspaces a little suffused with brown; pseudosutural foveæ large, black; posterior sclerites of notum grey, the scutal lobes variegated with dark brown; mediotergite somewhat darker laterally. Pleura light grey, with a blackish longitudinal stripe across the dorsal anepisternum and pteropleurite; ventral sternopleurite somewhat darkened but pruinose. Halteres yellow, the knobs brownish black. Legs with the coxe and trochanters light yellow; femora black, the bases yellow, the amount subequal on all legs and including about the proximal fourth or fifth; fore and middle tibiæ and tarsi black; posterior tibiæ and basitarsi obscure brownish yellow, narrowly tipped with brown; remainder of tarsi black. Wings with the groundcolour whitish, heavily patterned with brown; arcular region clear light yellow; cells C and Sc brown; the dark pattern appears chiefly as three more or less interrupted brown bands, the first at the level of origin of Rs, the second at cord, the third at wing-tip; an extensive wash in cells M and Cu, connecting the first two dark bands along vein M; a quadrate area in cell Rat near mid-distance between arculus and origin of Rs; the darkened apical band variegated by pale spots near outer end of cell R_5 and in base of cell M_1 ; somewhat darker brown areas at tip of vein R_3 and fork of M_{1+2} ; centre of cell 1st M_2 pale; brown washes in outer ends of cells M_4 , Cu, 1st A, and 2nd A; axillary region slightly darkened; veins yellow, darker in the clouded areas, the prearcular veins brighter yellow; bullate areas on R_5 on both sides of r-m, basal section of M_{1+2} , basal section of M_3 , and across m-cu. Venation: cell M_1 about one-third longer than its petiole; r-m reduced; m-cu more than one-third its length beyond the fork of M.

Abdomen dark brown, more or less pruinose. Male hypopygium with the inner dististyle very shallowly emarginate at apex. Gonapohyses appearing as slightly divergent yellow blades, the tips weakly bidentate, the surface with abundant appressed yellow spines, arranged in more or less distinct longitudinal rows or crests.

Hab. Tasmania.

Holotype, \Im , National Park, January 1933 (F. E. Wilson). Gynoplistia (Paralimnophila) pectinella is readily told from all regional allies by the unusually reduced number of antennal segments and the shortness of the flagellar branches, the extensively blackened legs, the distinctly banded wing-pattern and the structure of the gonapophyses of the male hypopygium. The most similar described species is G. (P.) decincta Alexander, which is in all regards a very distinct fly.

Gymnastes (Paragymnastes) fulvogenualis, sp. n.

Mesonotal præscutum yellow, with three confluent blue-black stripes; pleura yellow, the mesepimeron with a sparse whitish bloom; femora and tibiæ (\mathcal{P}) black, the genua conspicuously and abruptly fulvous; wings black, fasciate with white; cell 1st M_2 closed; abdominal tergites purplish black, the sternites and genital segment orange.

Male.—Length about 6.5 mm.; wing 6.3 mm. Female.—Length about 8.5 mm.; wing 7.3 mm.

Female.—Rostrum and palpi black. Antennæ with the scape and pedicel black above, more yellowish on lower face; flagellum black; segments oval, decreasing in size outwardly. Head above black, sparsely pruinose, beneath obscure yellow.

Pronotum orange. Mesonotal præscutum with the humeri and broad lateral margins orange-yellow, the

remainder of disk covered by three confluent blue-black stripes, the mid-region at suture narrowly yellow and vaguely split behind by a capillary pale vitta; scutal lobes similarly blue-black, the median area yellow; scutellum yellow, the parascutella more obscured; postnotum yellow, the posterior third of mediotergite blackened. Pleura yellow, the mesepimeron with a sparse whitish bloom. Halteres obscure yellow, the knobs dark brown. Legs with the coxe and trochanters yellow; femora black, the bases not brightened, the tips narrowly and abruptly fulvous; tibiæ black, the bases narrowly fulvous, the amount a trifle less than the femoral tips; basal two segments of tarsi more or less yellow, tipped with black, on the second segment including about the distal half of the segment, on the posterior legs much more extensive on the fore and middle legs; terminal tarsal segments black. Wings black, fasciate with white, the latter colour including a nearly complete subterminal band that is nearly as wide as the darkened apex beyond; a white band before cord. extending from R to margin, subequal in width to the subterminal band, parallel-sided; broken pale areas at and near wing-base, including the axillary region in anal cells, in cell 1st A involving more than the basal half of cell, at its outer end the area encroaching upon the outer end of cell 2nd A; subbasal whitish areas in cells R and M; prearcular region more yellowish; veins dark brown, paler in the whitish fasciæ. Venation: R_{1+2} and R_2 subequal, the latter rather faintly indicated; cell $1st M_2$ closed, the veins issuing from it elongate; m-cu a little less than its own length beyond fork of M.

Abdominal tergites purplish black; sternites orange, narrowly ringed on caudal margins with yellow; genital segment and ovipositor orange; cerci elongate, gently upcurved.

Male.—The male that is considered as belonging to this species is very different in coloration, as is frequent in the Australian members of the subgenus. It differs from the female, as above described, as follows:—Postnodal mediotergite uniformly pale. Legs beyond trochanters uniformly blackened. Wings with the disk chiefly pale, the margins, and especially the apex, darkened; a pale brown fascia crosses the wing at the

level of Rs. Abdomen orange, the seventh tergite blackened.

Hab. New South Wales (Federal Capitol Territory).

Holotype, \circlearrowleft , Blundell's, January 7, 1930 (A. L. Tonnoir). Allotopotype, \circlearrowleft , with the type.

Paratopotype, \circlearrowleft , December 21, 1930 (R. J. Tillyard).

Gymnastes (Paragymnastes) fulvogenualis is most nearly allied to G. (P.) nigripes Alexander, differing especially in the thoracic pattern and the conspicuous and abrupt fulvous genua on the otherwise black femora and tibiæ of the female.

Gymnastes (Paragymnastes) clitellaria, sp. n.

General coloration yellow, the præscutum with three confluent black stripes that form a dorsal shield; dorsal mesepimeron and sternopleurite blackened, pruinose; legs of male black, of female with tips of femora broadly orange; wings of male almost uniformly darkened beyond cord, of female dark brown, fasciate with whitish; abdominal tergites of male blackened, of female purplish black.

Male.—Length about 6.5 mm.; wing 7 mm.

Female.—Length about 7-7.5 mm.; wing 6.5-7.3 mm.

Male.—Rostrum and palpi black. Antennæ with scape obscure yellow, pedicel and flagellum black. Head

black, silvery grey pruinose, especially in front.

Pronotum orange-yellow. Mesonotal præscutum orangeyellow, with three black stripes that are fused into a shield-shaped area, restricting the ground-colour to the humeral and lateral regions and to an area at the suture; postnotum yellow, the caudal portion of the mediotergite blackened. Pleura yellow, the anepisternum and sternopleurite blackened, pruinose. Halteres with stem obscure brownish yellow, the knobs dark brown. Legs beyond the trochanters black. Wings beyond the cord almost uniformly darkened, variegated only by slight washes; basal half of wing variegated by an incomplete fascia before cord and a similar brightening in bases of cells R and M; prearcular region, bases of anal cells, and basal portions of cells C and Sc pale. Venation: R_2 present; cell 1st M_2 closed; veins beyond cell 1st M_2 long.

Abdominal tergites chiefly black, the bases of segments 1 to 4 restrictedly yellow on either side of mid-line; sternites orange-yellow, the subterminal segments re-

strictedly darkened; hypopygium dark-coloured.

Female.—Differs from male, as described, in the following regards:—Legs with femora broadly yellow on outer third to half, the basal portion darkened; tibiæ chiefly obscure brown; basal two segments of tarsi yellow, tipped with black; succeeding segments black. Wings dark brown with whitish fasciæ, the outer two bands narrower than the darkened apex; outer pale band a little narrower than the one before cord; wingbase extensively variegated by pale. Abdominal tergites purplish black.

Hab. New South Wales.

Holotype, &, Dorrigo, altitude about 2600 feet, December 15, 1932 (W. Heron).

Allotopotype, ♀, February 10, 1931.

Paratopotypes, $3 \circlearrowleft \circlearrowleft$, November 30 to December 15, 1932; $2 \circlearrowleft \circlearrowleft$, March 29, 1931 (W. Heron).

The present species is most closely allied to Gymnastes (Paragymnastes) fulvogenualis, sp. n., in the male sex differing in the darkened thoracic pleura, black abdominal tergites, and the wing-pattern, especially the darkened cells beyond cord; in the female the darkened sternopleurite and the broad pale femoral tips readily separate the two flies.

Tasiocera nodulifera, sp. n.

General coloration of thorax light brown; antennæ (male) relatively short, not or scarcely exceeding the body in length, the flagellar segments strongly nodulose; R_{2+3+4} short; cell $1st\ M_2$ closed; abdomen dark brown, the hypopygium paler; male hypopygium with the dististyle massive, more or less mitten-shaped, terminal in position; phallosome appearing roughly lyriform, entirely yellow, the outer arms appearing as straight smooth spines that converge outwardly.

Male.—Length about 3 mm.; wing 4 mm.

Rostrum brown; palpi dark brown. Antennæ black throughout, of moderate length, a little longer than the body; flagellar segments with the basal enlargements unusually swollen, producing a nodulose or bead-like effect. Head brown.

Thorax rather light brown to yellowish brown throughout, the pleura a little paler. Halteres relatively elongate, dusky. Legs chiefly pale, the vestiture dark; outer segments more infuscated. Wings with a strong brown tinge, the veins and macrotrichia somewhat darker. Venation: R_{2+3+4} short, subequal to basal section of R_5 ; cell 1st M_2 closed; vein 2nd A relatively long, ending nearly opposite the origin of R_5 ; cell 2nd A long and narrow.

Abdomen dark brown; hypopygium large, testaceous-yellow. Male hypopygium with the dististyle terminal in position, short, broad and massive, gradually narrowed outwardly, the blunt tip blackened and coarsely but indistinctly toothed; surface of style roughened and provided with scattered coarse punctures. Phallosome very distinct, the structure appearing sublyriform; lateral arms appearing as straight yellow spines that converge outwardly, the tips nearly contiguous; these arms entirely smooth, gradually narrowed to the acute tips; from the centre of the lyriform mass protrude two much smaller yellow spines that lie side by side at the mid-line of the structure.

Hab. New South Wales.

Holotype, 3, Megalong Valley, October 20–30, 1930 (F. E. Wilson).

Paratopotype, 3.

Tasiocera nodulifera is strikingly different from all other regional species having the dististyle of the male hypopygium terminal in position. The shape of the phallosome suggests species such as T. bucephala Alexander, but the dististyle is quite different from that of any other described species. The general appearance of the fly, especially the strongly nodulose antennæ, is more like that of certain regional species of Molophilus, as M. distinctissimus Alexander, but the fly is a true Tasiocera.

Tasiocera otwayensis, sp. n.

General coloration black; antennæ (male) elongate, nearly twice the length of the entire body, the flagellar

segments only slightly nodulose; male hypopygium with the dististyle terminal in position, stout basally, the lower angle produced into a slender pale arm; phallosome appearing roughly lyriform, each side produced into a stout spine, with tiny denticles at base and with about two larger appressed lateral spines at mid-length of the axial one.

 $\it Male.$ —Length about $2\cdot 5-2\cdot 6$ mm.; wing $3\cdot 3-3\cdot 4$ mm.

Rostrum and palpi black. Antennæ elongate, nearly twice the length of the entire body, black throughout; flagellar segments very long, feebly constricted beyond

the slight basal swelling. Head black.

Thorax black. Halteres and legs black throughout. Wings with a strong dusky tinge, the veins slightly darker; macrotrichia brown. Venation: R_{2+3+4} approximately three times the basal section of R_5 ; cell 1st M_2 closed; vein 2nd A short, ending a short distance beyond

arculus, the cell narrow.

Abdomen black, the hypopygium brownish black. Male hypopygium with the dististyle terminal in position, the basal half broad, the apex concave or subtruncate, the outer angle produced into a blackened flange, the lower or inner angle drawn out into a slender pale arm, its tip obtuse. Tip of basistyle produced into a triangular pale point. Phallosome appearing as a conspicuous blackened spinous point on either side, these spines directed mesad to appear somewhat lyriform, the spine bearing small acute denticles in addition to two appressed major teeth that are approximately one-half the size of the primary point.

Hab. Victoria.

Holotype, 3, Beech Forest, Turton's Pass, Otway Peninsula, January 11–19, 1932 (F. E. Wilson).

Paratopotypes, 2 33; paratypes, 3, Crowes, January 11–19, 1932; 3, Hordern Vale, January 1932 (F. E. Wilson).

Tasiocera otwayensis is very different from all other described species of the genus. In the shape and terminal position of the dististyle the fly most nearly resembles the larger T. bucephala Alexander, but the structure of the phallosomic complex is entirely different.