

ORIENTAL INSECTS

VOL. I

NOS. 3 & 4

DECEMBER 1967

published by
THE ASSOCIATION FOR THE STUDY OF ORIENTAL INSECTS
C/O DEPARTMENT OF ZOOLOGY, UNIVERSITY OF DELHI
DELHI-7, INDIA

March 1968

NEW AND LITTLE-KNOWN INDIAN CRANEFLIES (TIPULIDAE, DIPTERA) I

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ABSTRACT. New Indian species of the tribe Limoniini, chiefly the genus *Limonia* are described. These are: *Orimarga* (*O.*) *pachyrhyncha*, *Limonia* (*Afrolimonia*) *indra*, *L.* (*L.*) *submurcida*, *L.* (*Goniodineura*) *magnisiva*, *L.* (*Dicranomyia*) *amblymorpha*, *L.* (*D.*) *pristomera*, *L.* (*Geranomyia*) *deccanica*, and *L. tigriventris*.

During the past two decades the number of species of Indian Tipulidae virtually has tripled, the increase chiefly being due to the collections that had been made by Dr. Fernand Schmid in many parts of the country between 1953 and 1961. The species have been described by the writer in a number of publications, chiefly in the Philippine Journal of Science but also in the Annals and Magazine of Natural History, Proceedings and Transactions of the Royal Entomological Society of London, Transactions of the American Entomological Society, Entomological News, Bulletin of the Brooklyn Entomological Society, and the Journal of the New York Entomological Society. To this date only a few of the Oriental genera have been discussed in detail, including *Phyllolabis* Osten-Sacken (Alexander, 1961*a*, in literature cited at conclusion of the paper), and *Dasymallomyia* Brunetti and *Rhabdomastix* Skuse (Alexander, 1964*a*). Several other major groups have been discussed in detail, some in papers still in press, including the genera *Dolichozeza* Curtis, *Tipula* Linnaeus, *Nephrotoma* Meigen, *Limonia* Meigen, *Orimarga* Osten-Sacken, *Gonomyia* Meigen and *Molophilus* Curtis. As the study of this vast series of specimens nears completion a detailed consideration of the various genera is proposed.

The basic work on the Tipulidae of India was by Enrico Brunetti, who described some 240 species from this area. A recent listing of these species and their synonymy is available (Alexander, 1963). In the present report I am describing and figuring certain Indian species of the tribe Limoniini, chiefly in the major genus *Limonia* that had been discussed in earlier papers (Alexander, 1964 *b*, 1965).

My sincere thanks are extended to Dr. Schmid for the privilege of studying this unparalleled series of Oriental craneflies.

1. *Orimarga* (*Orimarga*) *pachyrhyncha*, sp. nov. (Fig. 3)

General coloration of thorax light brownish-grey; rostrum black, unusually long and stout, only a little shorter than remainder of head;

halteres light yellow; wings, including the veins, strongly yellowed, trichia of outer radial and medial veins abundant, forming almost continuous series, crowded outwardly; male hypopygium with basistyle simple, both dististyles elongate, slender.

Male and Female: Rostrum black, unusually long and stout, exceeding the palpi and nearly equal in length to remainder of head; palpi black. Antennae dark brown; flagellar segments oval, verticils inconspicuous. Head brownish-grey; anterior vertex broad.

Thorax almost uniformly light brownish-grey, dorsopleural membrane paler. Halteres clear light yellow. Legs with coxae brown; trochanters obscure yellow; remainder of legs light brown. Wings strongly yellowed, the pre-arcular and costal fields paler yellow; veins deeper yellow, the short trichia black. Macrotrichia of outer radial and medial veins abundant, forming almost continuous series, vein R_3 with about 25 trichia, R_{4+5} about 60, M_{1+2} and M_3 each about 50, M_4 about 25, at outer ends of the series the trichia more crowded and tending to be in pairs. Venation: R_s shorter than R_{2+3} , R_{1+2} about one-half longer than R_2 ; $m-cu$ opposite one-fourth R_s , about six times its own length before the fork of M ; vein $2nd A$ long.

Abdominal tergites brownish-black, sternites paler brown. Male hypopygium (Fig. 3) with the basistyle, b , simple, without modified lobes, surface with very long pale setae. Both dististyles, d , elongate, nearly as long as the basistyle; base of outer style dilated, the outer two-thirds a narrow blade that terminates in a long black spine; inner style slightly shorter, the diameter of the outer fourth subequal to that of the outer style at the same point, the more dilated basal part with very long pale setae. The phallosome of the unique type male is not clearly describable but differs in certain details from those of other generally similar species.

Length: ♂, about 10 mm, wing 6.8 mm, antenna about 1.1 mm; ♀, about 9 mm, wing 6 mm.

Holotype ♂, SIKKIM: Dikchu, 701m, 9. v. 1959, Coll. Schmid.

Allotopotype ♀, pinned with type.

Distribution: Sikkim.

The most similar regional species are *Orimarga (Orimarga) asura* Alexander and *O. (O.) tenuistyla* Alexander, which differ in the more slender rostra, trichiation of the wing veins, and in the details of the male hypopygium, particularly the outer dististyle and phallosome.

2. *Limonia (Afrolimonia) indra*, sp. nov. (Figs. 1, 4)

Allied to *imperspicua*; general coloration of thorax obscure fulvous-yellow; knobs of halteres dark brown; legs light brown; wings tinged with brown, the oval stigma darker brown; male hypopygium with

tergite very large, posterior border strongly convex; rostral prolongation of ventral dististyle long and slender, spines two, subbasal in position; aedeagus at apex produced into divergent oval lobes.

Male: Rostrum short, brown; palpi dark brown, terminal segment slender. Antennae dark brown; basal flagellar segments oval, more elongate outwardly, terminal segment nearly twice the penultimate, distal half narrowed; lower face of flagellar segments with a single very long seta that is about two and one-half times the length of the segment. Head dark brown; eyes very large.

Pronotum very small, brown, pretergites yellow. Mesonotum and pleura almost uniformly obscure fulvous-yellow, dorsopleural region narrowly darker; vestiture of notum short and sparse. Halteres with stem dusky, base restrictedly yellowed, knob dark brown. Legs with coxae and trochanters yellow; remainder of legs light brown, femoral bases vaguely paler, tarsi slightly darker brown; claws long, each with a strong erect spine at base and a smaller appressed point at near mid length. Wings (Fig. 1) tinged with brown, stigma oval, darker brown; very vague narrow darkenings at origin of R_s , cord and outer end of cell $1st M_2$; veins brown, those beyond cord darker. Longitudinal veins beyond general level of origin of R_s with macrotrichia, including also the outer ends of both anal veins. Venation: Sc relatively long, Sc_1 ending about opposite two-thirds R_s , the subequal Sc_2 near its tip; free tip of Sc_2 and R_2 nearly in transverse alignment; cell $1st M_2$ slightly longer than distal section of M_{1+2} ; $m-cu$ close to fork of M , subequal to distal section of Cu_1 .

Abdominal tergites brown, proximal sternites yellowed, hypopygium clearer yellow. Male hypopygium (Fig. 4) with the tergite, t , large, posterior border strongly convex, cephalic margin subtruncate to very slightly convex; a row of about a dozen long setae in back of posterior border, more concentrated on either side of midline. Basistyle, b , with ventromesal lobe relatively narrow, tip obtuse. Dorsal dististyle, d , a slender gently curved rod that narrows gradually to the acute tip; ventral style somewhat smaller than the basistyle, rostral prolongation very long and slender, near its base with two closely approximated curved spines from a single small tubercle, the spines shorter than the prolongation beyond them; accessory lobe on face of style relatively short, tipped with a single very long bristle. Gonapophysis, g , long-triangular in outline, narrowed outwardly, extreme tip slightly recurved. Aedeagus, a , broad, pale, the enclosed genital tubes contiguous, apex produced into divergent oval lobes.

Length: ♂, about 7.5 mm, wing 8.5 mm, antenna about 2 mm.

Holotype ♂, SIKKIM: Dikchu, 701m, 9. v. 1959, Coll. Schmid.

Distribution: Sikkim.

The most similar species is *Limonia* (*Afrolimonia*) *imperspicua* Alexander, of Luzon, which differs chiefly in the details of hypopygial structure, particularly the tergite, ventral dististyle and aedeagus. The subgenus *Afrolimonia* Alexander (*Trans. Amer. ent. Soc.*, **91**: 48-49; 1965) has numerous Ethiopian species with fewer in the Oriental Region. The structure of the male hypopygium approaches that of *Libnotes* Westwood but the venation is almost exactly as in the typical subgenus *Limonia* Meigen.

3. *Limonia* (*Limonia*) *submurcida*, sp. nov. (Fig. 5)

Allied to *murcida*; general coloration of thorax obscure yellow, prescutum with a central brown stripe; pleura yellowed, with a broad dark brown longitudinal stripe; legs light brown; wings very faintly suffused, stigma subcircular, dark brown, cell *1st M*₂ subrectangular, subequal to the distal section of vein *M*₃; proximal abdominal segments bicolored, basal rings yellowed, apices brown; male hypopygium with posterior border of tergite nearly truncate; basistyle with ventromesal lobe very large, produced into a slender blackened glabrous rod, dististyle only about one-fourth the basistyle, with very long setae, body small, rostral prolongation very long.

Male: Rostrum moderately long, brownish-black; palpi black. Antennal scape dark brown; remainder broken. Front light grey, posterior vertex dark brownish-grey, with long black setae; head broadly holoptic, eyes large.

Pronotum brownish-yellow, pretergites light yellow. Mesonotal prescutum polished obscure yellow with a light brown central stripe that widens behind, scutal lobes similarly darkened, prescutal borders and central region of scutum broadly yellow; scutellum dark brown, posterior border and parascutella yellow; mediotergite yellowish-brown, pleurotergite yellowed dorsally, the katapleurotergite brown; mesonotal vestiture long and erect, black. Pleura yellowed, with a broad dark brown longitudinal stripe that includes the cervical region, propleura, anepisternum and pteropleurite, narrowed behind. Halteres broken. Legs with fore coxae dark brown, remaining coxae and all trochanters yellow; remainder of legs yellowish-brown to light brown; claws long and slender, with a straight spine close to base. Wings very faintly suffused, stigma small, subcircular, dark brown; veins dark brown. Longitudinal veins beyond general level of origin of *Rs* with numerous black trichia, including also the end of *2nd A*, vein *1st A* glabrous. Venation: *Sc* long, *Sc*₁ ending shortly before fork of *Rs*, *Sc*₂ near its tip; cell *1st M*₂ subrectangular, slightly widened outwardly, subequal in length to distal section of vein *M*₃; *m* and basal section of *M*₃ subequal,

in nearly transverse alignment, *m-cu* just beyond the fork of *M*; anal veins generally parallel to one another at origin, *2nd A* gently sinuous.

Proximal abdominal segments bicolored, especially the sternites, yellowed, the apices brown, outer segments and hypopygium more uniformly dark brown. Male hypopygium (Fig. 5) with the tergite, *t*, transverse, broadest across base, slightly narrowed outwardly, posterior border virtually truncate. Basistyle, *b*, large, including the conspicuous ventromesal lobe, the total area about four times the dististyle; ventromesal lobe, broad, the outer angle produced into a slender blackened rod. Dististyle, *d*, with body very small, subglobular, with very long setae; rostral prolongation longer than the diameter of the body, appearing as a slender gently curved rod. Gonapophysis, *g*, with mesal-apical lobe long and slender, erect. Aedeagus long, narrowed outwardly, genital tubes contiguous, the openings closely approximated.

Length : ♂, about 7 mm, wing 8.5 mm,

Holotype ♂, INDIA : Perumalmalai (Madras State), 1219-1372m, 6.xii.1958, Coll. Schmid.

Distribution : India : Madras State.

The most similar species is *Limonia* (*Limonia*) *murcida* Alexander, described from northern Thailand. This differs in slight details of venation, especially in the medial field, and in the structure of the male hypopygium, including the rostral prolongation of the dististyle and the apex of the aedeagus.

4. *Limonia* (*Goniodineura*) *magnisiva*, sp. nov. (Fig. 6)

Closely resembling *siva* but much larger, the wing 10 mm or more; thorax light yellow, prescutum with a blackened discal shield, posterior sclerites of notum blackened, patterned with pale; legs obscure yellow, outer tarsal segments light brown; wings whitened, patterned with brown, the more conspicuous areas at arculus, origin of *Rs* and the stigma.

Male and Female : Rostrum and palpi black, the former relatively slender. Antennae short; scape black, remainder of organ greenish yellow; flagellar segments oval, the outer ones longer. Head blackened, dark gray pruinose; eyes very large.

Pronotum above narrowly black, sides broadly yellow. Mesonotal prescutum yellow laterally, with a conspicuous black discal shield that includes a broad central stripe and confluent slightly paler lateral areas, the latter crossing the suture to include the scutal lobes and scutellum; a narrow median silvery-yellow line from posterior end of prescutum over the mid areas of the scutum and scutellum: mediotergite blackened, parascutella, pleurotergite and pleura light yellow. Halteres with stem

greenish-yellow, knob dark brown. Legs with coxae and trochanters yellow; remainder of legs obscure yellow, outer tarsal segments light brown. Wings whitened, the pre-arcular and costal regions light yellow, the veins, especially *C*, tinged with green; a restricted brown pattern that includes areas at arculus, origin of *Rs*, reaching *M* behind, and a narrow seam at cord from *r-m* to the margin at *Cu*₁ not including *R*₄₊₅; further seams at *Sc*₂ and the wing tip in cells *R*₂ to *R*₅ inclusive; very small marginal clouds at ends of longitudinal veins, darker and more extensive on 2nd *A*, virtually lacking on 1st *A*, axillary border narrowly darkened; veins yellow, dark brown in the patterned areas. Venation: *Sc* long, *Sc*₁ ending opposite *r-m*, *Sc*₂ retracted, opposite fork of *Rs*, the latter square at origin; *R*₂₊₃ nearly straight; *m-cu* beyond fork of *M*, in cases forming a straight angle with distal section of *Cu*₁; anal veins divergent basally, 1st *A* sinuous, 2nd *A* bent strongly to margin.

Abdominal tergites dark brown, sternites yellowed, hypopygium chiefly obscure yellow. Male hypopygium (Fig. 6) with tergite, *t*, nearly as long as broad, lobes rounded, separated by a broader emargination; apex of each lobe with a concentration of strong setae, those nearest the mid line smaller and weaker. Basistyle, *b*, with ventromesal lobe small, with sparse setae. Dorsal dististyle, *d*, a powerful blackened rod, bent beyond mid length, outwardly narrowed into a long spine; ventral style very large and fleshy, its area nearly three times that of the basistyle; rostral prolongation small, darkened, triangular in outline, outer spine strong, nearly equal in length to the prolongation, the second weaker spine more basal in position. Gonapophysis, *g*, with mesal-apical lobe nearly straight, the narrowed tip blackened.

Length: ♂, about 9.5-15.5 mm, wing 10-11.5 mm, antenna about 1.4-1.5 mm; ♀, about 9-9.5 mm, wing 10-11.5 mm.

Holotype ♂, SIKKIM: Lachung, 2623m, 2. vii. 1959, Coll. Schmid; *Allotopotype* ♀, pinned with types. *Paratopotypes* ♂, ♀, with the types. *Paratypes*: Bichu, 2438-2591m, 14.vii.1959; Chumtang, 1561m, 23.vii.1959; Chumzomoi Choka, in *Rhododendron* association, 3597m, 8.vii.1959; Namnasa, 3048m, 1.vii.1959, all Coll. Schmid.

Distribution: Sikkim.

Limonia (Goniodineura) magnisiva is almost exactly like *L. (G.) siva* Alexander, differing in the large size and unpatterned femora. The wings are at least twice as larger as *siva* with the other parts of proportionate size. A single specimen has the femoral tips darkened but all others of the type series have the legs unpatterned, as described.

5. *Limonia (Dicranomyia) amblymorpha*, sp. nov. (Fig. 7).

Allied to *lemmonae*; general coloration of mesonotum dull orange,

pleura yellowed; anterior vertex broad, silvery; wing strongly suffused with brown, stigma darker, *Sc* long, *m-cu* shortly before fork of *M*; male hypopygium with a small accessory lobule at base of ventromesal lobe of basistyle; dorsal dististyle a long slender gently curved rod with the tip obtuse; rostral prolongation of ventral style with two unequal spines from a common tubercle.

Male: Head of type badly distorted. Antennae black throughout, basal segments enlarged; outer flagellar segments elongate, with a dense white pubescence. Rostrum light brown; anterior vertex broad, silvery, remainder of head dorsally dark brown, sparsely pruinose.

Prothorax small; scutum brown, scutellum and pretergites yellowed. Mesonotum almost uniformly dull orange, scutellum and postnotum slightly darker. Pleura more yellowed, anepisternum vaguely darkened. Halteres dark brown, base of stem yellowed. Legs with coxae and trochanters yellow; remainder of legs broken. Wings strongly suffused with brown, the oval stigma darker; veins darker brown, trichia black. Trichia on longitudinal veins beyond general level of origin of *Rs*, including also a few at outer end of vein *2nd A*. Venation: *Sc* long, *Sc*₁ ending about opposite mid length of *Rs*, *Sc*₂ slightly longer; free tip of *Sc*₂ and *R*₂ pale, in transverse alignment, *R*₁₊₂ beyond them about as long, with five crowded trichia; *m-cu* shortly before fork of *M*, subequal to the distal section of *Cu*₁; anal veins beyond their bases convergent.

Abdominal tergites brownish-black, sternites clear light yellow, hypopygium darkened. Male hypopygium (Fig. 7) with the tergite, *t*, transverse, posterior border nearly truncate, the margins thickened but without developed lobes, setae relatively long and numerous. Basistyle, *b*, subequal in area to the ventral dististyle; ventromesal lobe long, with a low rounded lobule at its base, setae of lobe long. Dorsal dististyle, *d*, a long slender gently curved darkened rod, tip obtuse; ventral style with rostrum slender, angularly bent at near mid length; spines two, slightly unequal, from a low tubercle; face of style at base of beak slightly produced, provided with five or six longer setae. Gonapophysis, *g*, with mesal-apical lobe erect, slightly dilated at mid length, the small apex slightly recurved. Aedeagus slender, apex simple, gently curved.

Length: ♂, about 5.5 mm, wing 6 mm.

Holotype ♂, INDIA: Lifakpo, Kameng in NEFA, Assam, 945m, 15. v. 1961, Coll. Schmid.

Distribution: India: Assam.

Limonia (Dicranomyia) amblymorpha is quite distinct from other generally similar regional species in hypopygial structure, including the basistyle, both dististyles and the aedeagus. The closest such relative appears to be *Limonia (Dicranomyia) lemmonae* Alexander, from northern Thailand, which lacks the accessory lobule of the basistyle, has a single

rostral spine, and with the apex of the aedeagus distinct. It should be noted that the original spelling for this latter species was given as *lemonae* but should be emended as given. An account of the type station and work of Miss Sadie Lemmon has been provided in another paper (*Ann. Mag. nat. Hist.* (12) 7: 593; 1954).

6. *Limonia (Dicranomyia) pristomera*, sp. nov. (Fig. 8)

Size medium (wing to about 7 mm); thorax obscure yellow, mesonotal prescutum and scutal lobes patterned with brown; antennae with outer flagellar segments elongate, with long verticils; legs brown; wings weakly darkened, stigma scarcely indicated; male hypopygium with the dorsal dististyle curved into a long terminal spine; rostral prolongation of ventral style very small, with two widely separated spines, the outer one shorter and stouter; margin of mesal-apical lobe of gonapophysis blackened and toothed.

Male and Female: Rostrum yellow; palpi dark brown, short, terminal segment very small, subglobular. Antennae light brown; proximal flagellar segments oval, outer segments elongate but shorter than the unusually long verticils. Head with anterior vertex brownish-black, very narrow, only about one-half the diameter of the scape; posterior part of head dark brown.

Pronotal scutum brown, scutellum obscure yellow. Mesonotal prescutum obscure yellow laterally and at the suture, disk with three confluent light brown stripes; scutal lobes brown, central region broadly light yellow, the color extended medially onto the base of the scutellum; remainder of mesonotum light brown, yellowed laterally. Pleura and pleurotergite light yellow. Halteres with stem obscure yellow, lighter at base, knob brown. Legs with coxae and trochanters yellowed; remainder of legs brown, femoral bases slightly more yellowed; claws long and slender, with a straight basal spine. Wings very weakly darkened, stigma scarcely differentiated; veins light brown, trichia black. Macrotrichia on longitudinal veins beyond general level of *Rs*, lacking on anal veins excepting their extreme tips. Venation: *Sc*₁ ending opposite or just beyond origin of *Rs*, *Sc*₂ removed, *Sc*₁ alone nearly one-half *Rs*, *m-cu* at or shortly before fork of *M*.

Abdominal tergites and hypopygium brown, sternites light yellow. Male hypopygium (Fig. 8) with the tergite, *t*, transverse, posterior border very shallowly emarginate to nearly truncate; a concentration of about 10 setae on either side near mid length, with about four stronger lateral bristles. Basistyle, *b*, with ventromesal lobe relatively small, with long setae. Dorsal dististyle, *d*, a strongly curved sickle, the outer third narrowed into a long slender spine; ventral style subequal in area to

the basistyle, rostral prolongation very small, with a stout spine near base, and with a second more slender spine at its base, the distance separating the two about equal to the length of the outer spine. Gonapophysis, *g*, with mesal-apical lobe blackened, especially the terminal point, the margin of the lobe with five or six smaller points.

Length: ♂, about 6-5.5 mm, wing 6.5-7 mm, antenna about 1.2-1.3 mm; ♀, about 6.5-7 mm, wing 6.5-7 mm.

Holotype ♂, India: Piriapatna, Mysore State, 853m, 14. i. 1959, Coll. Schmid. *Allotopotype* ♀, pinned with type. *Paratopotypes*: several of both sexes, on six pins. *Paratypes*: Coimbatore, Madras, 457m, 23. xii. 1958; 1 ♂, Honnatlu, Mysore, 823m, 20. i. 1959; both sexes, on three pins, Malbidu, Mysore, 244-698m, 18. i. 1959; both sexes, on one pin, Satanwara, Madhya Pradesh, 396m, 8. ii. 1959, Coll. Schmid.

Distribution: India: Madras and Mysore States.

Limonia (Dicranomyia) pristomera has somewhat the appearance of species such as the Holarctic *L. (D.) modesta* (Meigen) or the New World *L. (D.) distans* (Osten-Sacken), differing especially in hypopygial structure, notably the gonapophyses. The species appears to be common and widely distributed in southern India.

7. *Limonia (Geranomyia) deccanica*, sp. nov. (Fig. 9)

General coloration of mesonotum fulvous-yellow, prescutum with three narrow brown stripes, pleura yellowed, with a weak dorsal darkened stripe; legs yellowed; wings very slightly darkened, with a brown costal pattern, with narrower markings elsewhere, vein *Sc* long; male hypopygium with ventral dististyle bearing very long widely separated rostral spines, the outer spine stouter, from a large basal tubercle that is larger than the prolongation beneath it.

Male: Rostrum relatively short, the labrum about three-fourths the labial palpi; maxillary palpus 3-segmented, the small terminal segment partly fused with the second. Antennae dark brown, about equal in length to the labial palpi; flagellar segments oval, exceeding their verticils. Head brown.

Pronotum small, scutum light brown, scutellum yellowed. Mesonotal prescutum obscure fulvous yellow with three narrow brown stripes, the lateral pair extended backward across the suture to cover the scutal lobes; median region of scutum and the scutellum testaceous-yellow with vague indications of a darker central line; mediotergite fulvous, pleurotergite slightly more yellowed. Pleura yellow, weakly darkened dorsally to produce a vague stripe. Halteres with stem obscure yellow, knob dark brown. Legs with coxae and trochanters yellow; remainder of legs yellowed. Wings very slightly darkened, pre-arcular and costal fields

clearer yellow; holotype with a relatively restricted brown costal pattern that includes six small areas, the first at the supernumerary cross-vein in cell *Sc*, second at origin of *Rs*, third at tip of *Sc*, all areas barely entering the radial cells; stigmal area largest, oval, appearing as a circular spot in cell *R*₃; in the paratype the costal darkenings more extensive, involving cell *R* but not reaching vein *M*; further smaller dark spots more distally at ends of veins *R*₃ and *R*₄₊₅; very narrow seams over cord, outer end of cell 1st *M*₂, and as small marginal spots on vein *M*₃ to 2nd *A* inclusive; veins light brown, scarcely darker in the patterned areas; costal fringe of male short; longitudinal veins beyond cord with trichia, including also *Rs* and outer end of *M*. Venation: *Sc* long, *Sc*₁ ending about opposite four-fifths *Rs*, *Sc*₂ near its tip; cell 1st *M*₂ long, gently widened outwardly, subequal to distal section of *M*₁₊₂; *m-cu* about one-third its length before fork of *M*.

Abdominal tergites brown, sternites more brownish-yellow. Male hypopygium (Fig. 9) with the tergite, *t*, transverse, posterior border with a broad emargination that is subequal in size to the lateral lobes, the latter with numerous long setae. Basistyle, *b*, with ventromesal lobe relatively small. Dorsal dististyle, *d*, a strongly curved rod, the outer third narrowed into a very long slender spine; ventral style large, its area from about two and one-half to nearly three times that of the basistyle, the setae small; rostral prolongation small, with two long spines, including a very long hair-like outer bristle from an enlarged basal tubercle that is larger than the rostrum itself, second spine far basad, almost as long as the outer bristle but more delicate. Gonapophysis, *g*, with mesal-apical lobe erect, outer end slightly curved into a slender point. Apex of aedeagus bilobed.

Length, excluding rostrum, about 6.5-7 mm, wing 6-7 mm, rostrum about 2-2.2 mm.

Holotype ♂, INDIA: Senbaganur, Madras State, 1676-1981m, 3. xii. 1958, Coll. Schmid. *Paratopotypes* 3 ♂♂ with type. *Paratype* ♂, Perumal-malai, Madras, 1219-1372m, 6. xii. 1958, Coll. Schmid.

Distribution: India: Madras State.

The most similar regional species is *Limonia* (*Geranomyia*) *semistriata* (Brunetti), differing very evidently in the hypopygial structure, particularly the spines of the rostral prolongation of the ventral dististyle.

8. *Limonia tigriventris*, sp. nov. (Fig. 2)

Size medium (wing of female 7.8 mm); head black; mesonotum dark brown or black patterned with orange, disk of prescutum and scutal lobes with dense microscopic shallow pits; pleura yellow, anepisternum blackened; legs brownish-black, posterior tarsi extensively,

light yellow; wings brown, the oval stigma darker brown; abdominal segments black, their apices more narrowly yellow.

Female : Rostrum polished castaneous, palpi black. Antennae with scape and pedicel dark brown, flagellum black ; proximal flagellar segments produced slightly ventrad, outer ones elongate oval, beneath with short dense white setulae, verticils longer than the segments. Head above black, the restricted front polished, vertex more opaque ; anterior vertex broad, nearly four times the diameter of scape.

Pronotum small and crowded, scutum black, scutellum orange. Mesonotal prescutum laterally obscure orange, the disk with a dark brown shield, lateral borders behind the humeri with a darker circular spot ; praescutal interspaces sparsely pruinose, with dense microscopic shallow pits : scutal lobes dark brown, microscopically pitted, anterior borders yellowed, mid area more pruinose; scutellum dark chestnut-brown, subnitidous; mediotergite with more than the posterior half polished yellow, anterior part brown, the sides and most of the pleurotergite brownish-black, ventral margin of the latter yellow. Pleura with anepisternum and dorsopleural membrane blackened, remainder of pleura polished yellow. Halteres blackened. Legs with coxae and trochanters reddish-yellow; femora brownish-black, bases vaguely paler ; tibiae brownish-black; tarsi of fore and middle legs brownish-yellow, the posterior pair with segments two to four and outer end of basitarsi light yellow. Wings (Fig. 2) tinged with brown, the oval stigma darker brown. Macrotrichia on longitudinal veins beyond general level of origin of R_s , lacking on both anal veins. Venation : Sc_1 ending about opposite one-half to three-fifths R_s , Sc_2 subequal ; free tip of Sc_2 and R_2 pale, in transverse alignment, with a subequal spur of R_{1+2} beyond, provided with about three trichia; cell 1st M_2 at fork of M ; anal veins convergent basally.

Abdominal tergites conspicuously banded with black and yellow, involving the proximal seven segments, the yellow apices narrower than the black bases; sternites deep yellow, posterior margins broadly yellowed; genital segment black. Ovipositor with valves dull orange; cerci slender, nearly straight, hypovalvae longer.

Length : about 7.5 mm, wing 7.8 mm, antenna about 2.2 mm.

Holotype ♀, INDIA : Senbaganur, Madras State, 1676-1981 m, 7. xii. 1958, Coll. Schmid.

Distribution : India : Madras State.

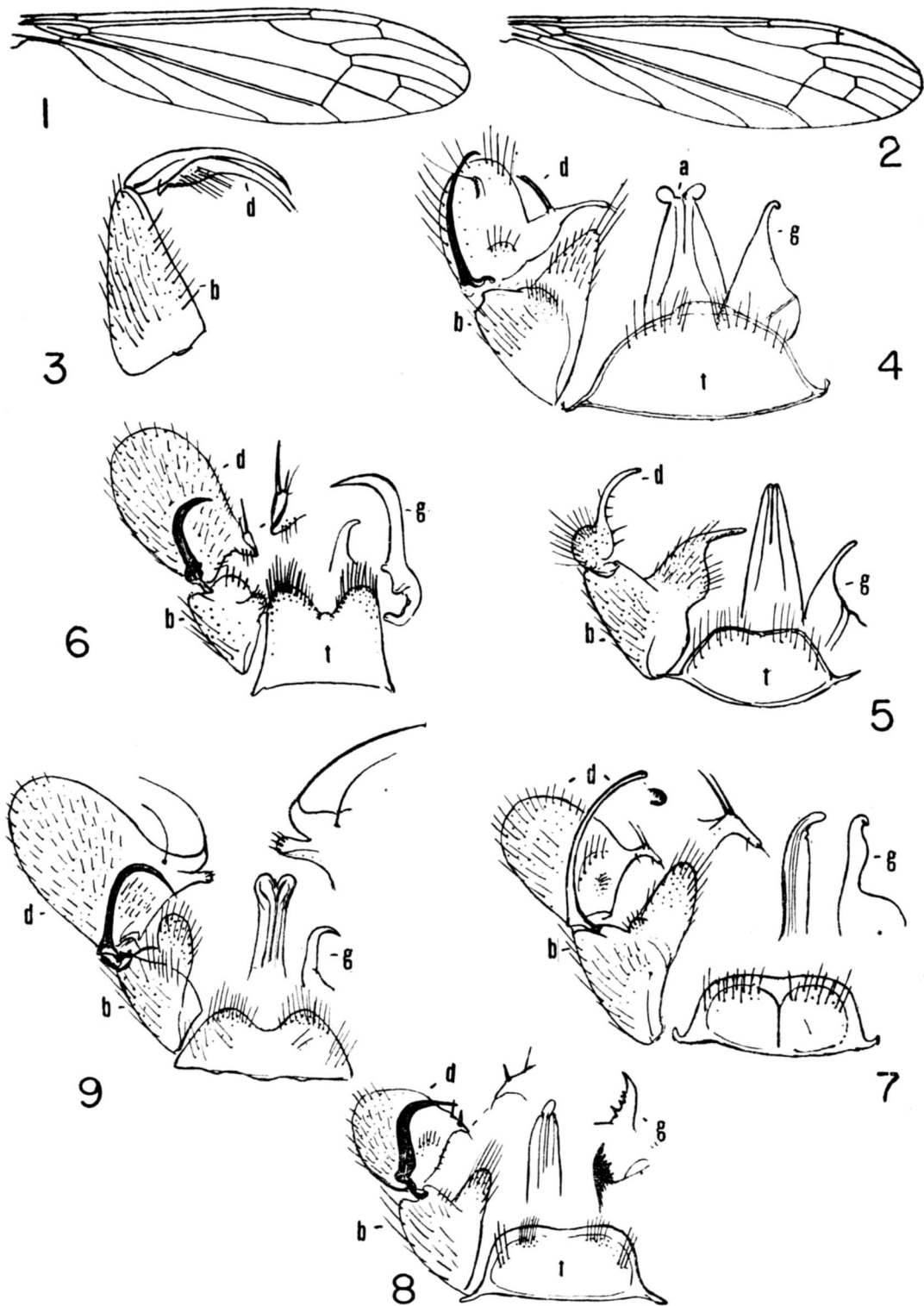
Other regional members of the genus that have the wings unpatterned or virtually so and with the posterior tarsi conspicuously pale include *Limonia aspropoda* Alexander, *L. longivena* (Edwards), *L. luteipostica* Alexander, *L. luteitarsis* Alexander and some others, all quite distinct from the present fly in body coloration, especially the abdomen. Some

of these species remain unassigned to subgenera since the male sex is unavailable.

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Figs. 1-2. Venation of 1. *Limonia (Afrolimonia) indra*; 2. *Limonia tigriventris*. Figs. 3-8. Male hypopygium of 3. *Orimarga (Orimarga) pachyrhyncha*; 4. *Limonia (Afrolimonia) indra*; 5. *Limonia (Limonia) submurcida*; 6. *Limonia (Goniodineura) magnisiva*; 7. *Limonia (Dicranomyia) amblymorpha*; 8. *Limonia (Dicranomyia) pristomera*; 9. *Limonia (Geranomyia) deccanica*. (Symbols: a, aedeagus; b, basistyle; d, dististyle; g, gonapophysis; t, 9th tergite. All new species).