

NEW AND LITTLE-KNOWN INDIAN CRANEFLIES (DIPTERA : TIPULIDAE)—V

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ABSTRACT. Three new species of Indian Tipulidae are described, these being *Limonia* (*Melanolimonia*) *latemarginata*, *L. (Sivalimnobia) clavula* and *Pilaria tiro* all from Kameng, Assam. In addition, figures of the venation and male hypopygium of several Indian species of the Hexatomine genus *Paradelphomyia* Alexander, not previously illustrated, are provided.

The preceding part under this general title was published in *Oriental Ins.*, 5 : 73-82, January 1971. The novelties described are from Kameng, Assam where they were collected by Dr. Fernand Schmid, to whom I am indebted for numerous species of these flies. Continuing the policy previously adopted I am providing figures of several species of Indian craneflies not previously illustrated, all of these belonging to the Hexatomine genus *Paradelphomyia* Alexander.

SUBFAMILY LIMONIINAE

1. *Limonia* (*Melanolimonia*) *latemarginata*, sp. nov. (Figs. 1, 4)

General coloration of thoracic dorsum brown, sparsely pollinose; antennae with scape and pedicel obscure yellow, flagellum black; halteres elongate; legs brown, tarsi black; wings light brown, stigma oval, darker brown; abdomen brownish-black; male hypopygium having posterior border of tergite with small lateral lobes, the emargination broad; dorsal dististyle long and slender.

Male : Rostrum obscure yellow, silvery pruinose, palpi black. Antennae with scape and pedicel obscure yellow, flagellum black; proximal flagellar segments oval, outer ones progressively more elongate, shorter than the longest verticils; terminal segment on outer third about one-half longer than the penultimate. Front obscure yellow, anterior vertex broad, silvery, posterior vertex brownish black.

Pronotum brown, gray pruinose. Mesonotal prescutum dull brown, sparsely yellow pollinose, with indications of darker stripes, humeral region more yellowed; scutal lobes yellow pollinose; posterior sclerites gray pruinose. Pleura blackened, heavily pruinose. Halteres elongate, stem dark brown with yellow base, knob black. Legs with fore coxae blackened, remaining coxae and all trochanters obscure yellow; femora and tibiae brown, tarsi black; claw with a

long slender nearly basal spine. Wing (Fig. 1) light brown, stigma oval, darker brown; veins light brown. Longitudinal veins beyond general level of origin of R_s with trichia. Venation: Sc_1 ending shortly before origin of R_s , Sc_2 not apparent; cell $1st\ M_2$ shorter than vein M_4 ; $m-cu$ shortly before fork of M .

Abdomen brownish-black, ventral dististyle of hypopygium more yellowed. Male hypopygium (Fig. 4) with ninth tergite, t , transverse, slightly narrowed outwardly, posterior border with lateral lobes small, separated by a very broad emargination that is about twice the diameter of the lobe at base. Proctiger with setae fewer and less conspicuous than in *nigrithorax*. Basistyle, b , with ventromesal lobe low, the long delicate setae conspicuous. Dorsal dististyle, d , long and slender, curved gently to the acute tip; ventral style with a single stout pale rostral spine from a membranous basal lobe, the spine subequal in length to the prolongation beyond it. Gonapophysis, g , with mesal-apical lobe small, acute. Aedeagus, a , with apical lobe of moderate size, lateral margins of base with abundant microscopic setulae.

Length: ♂, about 6.5 mm, wing 7.2 mm, antenna about 1.3 mm.

Holotype ♂, INDIA: ASSAM: Shergaon, Kameng, North-East Frontier Agency, 6400 feet, 8. v. 1961, Coll. Schmid.

There are rather numerous regional species in the subgenus *Melanolimonia* Alexander, the one that is most similar to the present fly being *Limonia* (*Melanolimonia*) *nigrithorax* (Brunetti) which differs in the coloration of the thorax and abdomen and in hypopygial structure, especially the tergite where the outer lateral lobes are much larger and more approximated.

2. *Limonia* (*Sivalimnobia*) *clavula*, sp. nov. (Figs. 2, 5)

Size large (wing approximately 10 mm); general coloration of thorax yellow, prescutum more or less darkened anteriorly; wings strongly tinged with brown, unpatterned except for the darker brown stigma, Sc long, Sc_1 ending beyond midlength of R_s ; male hypopygium with tergal lobes conspicuous, separated by a V-shaped emargination; gonapophyses clavate, enlarged distally, tips obtuse.

Rostrum brown, palpi black. Antennae with scape black, pedicel obscure yellow, flagellum brown, darker outwardly; proximal flagellar segments short-oval, succeeding ones more lengthened, the outer three subequal; verticils very long, about one-half longer than the segments. Head dark brown, sparsely pruinose; anterior vertex broad, nearly twice the diameter of scape.

Pronotal scutum dark brown, yellowed laterally, scutellum usually concolorous, in cases yellowed. Mesonotal prescutum obscure yellow, in cases (including type) with anterior end darkened to form a short central stripe; remainder of notum and the pleura pale yellow. Halteres with stem obscure yellow, knob darkened. Legs with coxae and trochanters yellow; femora brownish-black, bases narrowly yellowed, remainder of legs black; claw long and slender, with

a long spine at near midlength, with few smaller more basal denticles. Wings (Fig. 2) strongly tinged with brown, stigma oval, darker brown; veins dark brown. Longitudinal veins beyond general level of origin of R_s with trichia, including a few at tips of both anal veins, more numerous on *2nd A*. Venation: Sc long, Sc_1 ending some distance beyond origin of R_s , in cases to about two-thirds the length of vein, Sc_2 near its tip; free tip of Sc_2 slightly before R_2 ; $m-cu$ at or slightly before fork of M .

Abdominal tergites dark brown to brownish-black, sternites light yellow, in cases the bases of intermediate segments narrowly darkened, hypopygium black. Male hypopygium (Fig. 5) with lateral lobes of ninth tergite, t , conspicuous, the emargination broadly V-shaped. Dististyles, d , generally as in *fortis*. Gonapophysis, g , diagnostic, clavate, outer ends dilated, apex obtuse.

Length: ♂, about 7.5-8 mm, wing 9-10 mm, antenna about 2-2.2 mm; ♀, about 8-9 mm, wing 10-11 mm, antenna 2.1-2.2 mm.

Holotype ♂, INDIA: ASSAM: Shergaon, Kameng, North-East Frontier Agency, 6400 feet, 8. v. 1961, Coll. Schmid. Allotype ♀, Talung Dozong, Kameng, 7800 feet, 6. vi. 1961. Paratopotypes 2 ♂♂, 1 ♀, with type. Paratypes 6 ♂♂ ♀♀, with allotype.

The most similar regional species appears to be *Limonia* (*Sivalimnobia*) *fortis* (Brunetti) which is smaller, having the wings paler, with Sc short, Sc_1 ending shortly beyond origin of R_s , and with the hypopygial details distinct, including the tergite and gonapophyses. It may be noted that the types of *fortis* are females, not males as indicated and described by Brunetti, as was corrected by Edwards (*Records Indian Museum*, 26: 296; 1924). This latter species is the type of the subgenus *Sivalimnobia* Alexander (*Philippine J. Sci.*, 92: 220-221; 1963).

3. *Pilaria tiro*, sp. nov. (Figs. 3, 6)

General coloration of thorax and abdomen fulvous and yellow; antennae with scape light yellow, remainder brownish-black; anterior vertex broad, polished brown; legs brownish-black, femoral bases yellowed; wings light brown, stigmal darkening very small, veins R_2 and R_{2+3} subequal, vein R_3 straight, nearly parallel to R_{1+2} , cell R_2 at margin about one-fifth as extensive as cell R_3 , cell M_1 subequal in length to its petiole; male hypopygium with gonapophysis extended into a slender spine, the posterior angle with a comparable curved narrow blade.

Rostrum brown, palpi black. Antennae with scape short and stout, light yellow, remainder of organ brownish-black; proximal flagellar segments short, beyond the third becoming progressively longer and more slender, those at midlength with long verticils, the longest nearly three times the segment, on outer segments much shorter, lacking on outer three. Front yellowed, remainder of head brownish-black, anterior vertex broad, polished brown.

Pronotum with scutum narrowly blackened medially, sides and the scutellum yellow. Mesonotal prescutum and scutal lobes dark fulvous, posterior sclerites and the pleurae clearer yellow. Halteres with stem yellow, knob brownish-black. Legs with coxae and trochanters light yellow; femora dark brown, bases yellowed, tibiae and tarsi brownish-black; claws long and slender. Wings (Fig. 3) light brown, prearcular and costal fields light yellow, stigma very small, brown, veins darker brown. Venation: Sc_1 ending about opposite four-fifths R_s , Sc_2 near its tip; R_s nearly twice R_{2+3+4} ; R_2 subequal to R_{2+3} ; vein R_3 short and straight, nearly parallel to R_{1+2} , cell R_2 at margin about one-fifth as extensive as cell R_3 ; cell M_1 subequal in length to its petiole; *m-cu* shortly beyond midlength of M_{3+4} .

Abdomen light brown, subterminal segments, especially the eighth, dark brown, hypopygium obscure yellow. Male hypopygium (Fig. 6) as in the genus, outer dististyle, *d*, slender, outer apical angle extended into a slender spine, gonapophysis, *g*, outwardly extended into a long narrowly acute spine posterior angle with a similar slender curved narrow blade.

Length: ♂, about 8 mm, wing 7.5 mm, antenna about 1.8 mm.

Holotype ♂, INDIA: NEFA: Shergaon, Kameng, 6400 feet, 8.v.1961, Coll. Schmid.

Other regional species, as *Pilaria amica* (Alexander) and *P. coorgensis* Alexander, have cell M_1 of the wings lacking. Other species that have this cell retained differ from the present fly in the venation of the radial field, including the loss of vein R_{2+3} and the broader cell R_2 in comparison with cell R_3 .

4. *Paradelphomyia (Oxyrhiza) dichromata* Alexander (Figs. 7, 10)

Paradelphomyia (Oxyrhiza) dichromata Alexander, 1965, *Ent. News.*, 76: 41.

Type ♂, Chingsao, Manipur, Assam, 3800 feet, 13.vi.1960. Venation (Fig. 7), male hypopygium (Fig. 20).

5. *Paradelphomyia (Oxyrhiza) flavescens* (Brunetti) (Fig. 11)

Cladura flavescens Brunetti, 1911, *Rec. Indian Mus.*, 6: 284.

Gnophomyia furcata Brunetti, 1912, *Fauna British India* Diptera, Nematocera, p. 491.

Male hypopygium (Fig. 11).

6. *Paradelphomyia (Oxyrhiza) hkayamensis* Alexander (Figs. 8, 12)

Paradelphomyia (Oxyrhiza) hkayamensis Alexander, 1965, *Ent. News.*, 76: 43.

Type ♂, Hkayam Boum, Assam, 7500 feet, 20.vi.1960. Venation (Fig. 8), male hypopygium (Fig. 12).

7. *Paradelphomyia (Oxyrhiza) myriacantha* Alexander (Figs. 9, 15)

Paradelphomyia (Oxyrhiza) myriacantha Alexander, 1965, *Ent. News.*, 76: 44.

Type ♂, Chumzomoi Choka, Sikkim, 11,800 feet, 8.vii.1959.

Venation (Fig. 9), male hypopygium (Fig. 15).

8. *Paradelphomyia (Oxyrhiza) newar* Alexander (Fig. 16)

Paradelphomyia (Oxyrhiza) newar Alexander, 1965, *J. New York Ent. Soc.*, 65: 156.

Type ♂, Simbhanjang Pass, Nepal, 8190 feet, 1.x.1956. Male hypopygium (Fig. 16).

9. *Paradelphomyia (Oxyrhiza) ruficolor* Alexander (Figs. 13, 17)

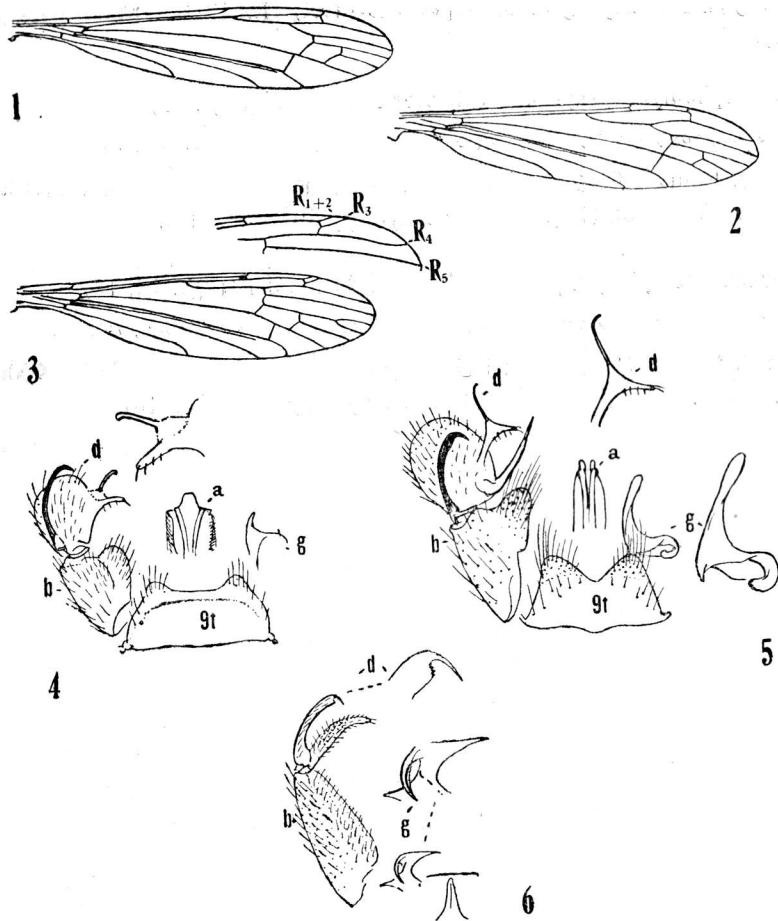
Paradelphomyia (Oxyrhiza) ruficolor Alexander, 1965, *Ent. News.*, 76: 46.

Type ♂, Bourzil R.H., Northwest Frontier Province, Pakistan, 11,150 feet, 10.xi.1953. Venation (Fig. 13), male hypopygium (Fig. 17).

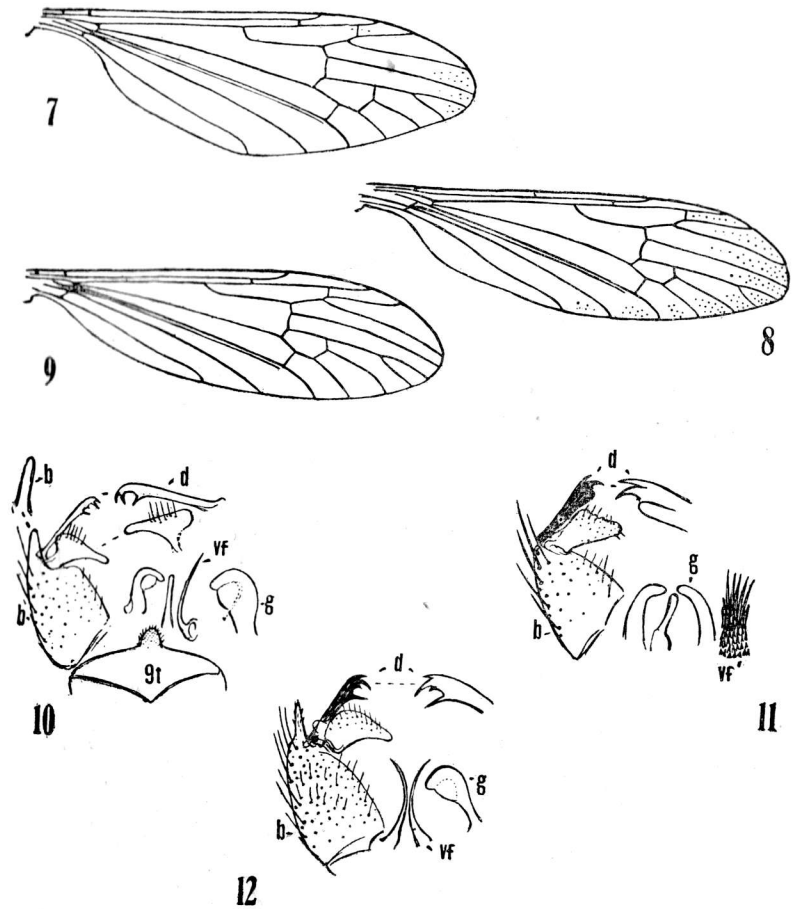
10. *Paradelphomyia (Oxyrhiza) tritumula* Alexander (Figs. 14, 18)

Paradelphomyia (Oxyrhiza) tritumula Alexander, 1965, *Ent. News.*, 76: 47.

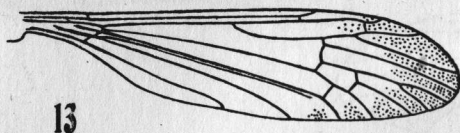
Type ♂, Mangu Chatti, Pauri Garhwal, Kumaon, Uttar Pradesh, 9000-9270 feet, 31.v.1958. Venation (Fig. 14), male hypopygium (Fig. 18).



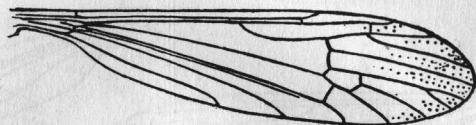
Figs. 1-6. Venation of : 1, *Limonia (Melanolimonia) latemarginata*, sp. nov.; 2, *Limonia (Sivalimnobia) clavula*, sp. nov.; 3, *Pilaria tiro*, sp. nov. Male hypopygium of : 4, *Limonia (Melanolimonia) latemarginata*, sp. nov.; 5, *Limonia (Sivalimnobia) clavula*, sp. nov.; 6, *Pilaria tiro*, sp. nov. (Symbols, venation, *R* Radius; male hypopygium, *a*, aedeagus; *b*, basistyle; *d*, dististyle; *g*, gonapophysis; *t*, 9th tergite).



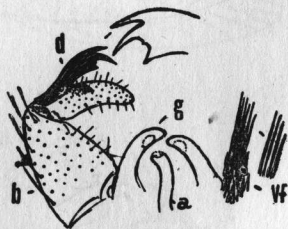
Figs. 7-12. Venation of : 7, *Paradelphomyia (Oxyrhiza) dichromata* Alexander; 8, *Paradelphomyia (Oxyrhiza) hkayamensis* Alexander; 9, *Paradelphomyia (Oxyrhiza) myriacantha* Alexander. Male hypopygium of : 10, *Paradelphomyia (Oxyrhiza) dichromata* Alexander; 11, *Paradelphomyia (Oxyrhiza) flavescens* (Brunetti); 12, *Paradelphomyia (Oxyrhiza) hkayamensis* Alexander. (Symbols *b*, basistyle; *d*, dististyle style; *g*, gonapophysis; *t*, 9th tergite; *vf*, ventral fork).



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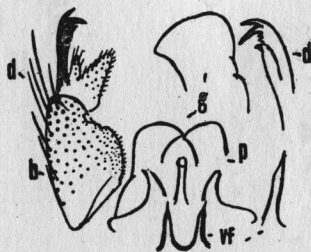
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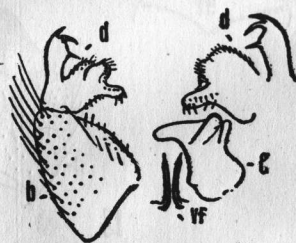
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Figs: 13-18. Venation of : 13, *Paradelphomyia (Oxyrhiza) ruficolor* Alexander; 14, *Paradelphomyia (Oxyrhiza) tritumula* Alexander. Male hypopygium of : 15, *Paradelphomyia (Oxyrhiza) myriacantha* Alexander; 16, *Paradelphomyia (Oxyrhiza) newar* Alexander; 17, *Paradelphomyia (Oxyrhiza) ruficolor* Alexander; 18, *Paradelphomyia (Oxyrhiza) tritumula* Alexander. (Symbols *a*, aedeagus; *b*, basistyle; *d*, dististyle; *g*, gonapophysis; *p*, phallosome, *vf*, ventral fork).