

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

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ABSTRACT. Five new species of Tipulidae from South India are described, these being *Tipula* (*Indotipula*) *tetradolos*, *Xipholimnobia* (*Xipholimnobia*) *madrasis*, *Gonomyia* (*Idiocera*) *megastigma*, *Styringomyia* *monochaeta*, and *S. pentachaeta*. In addition figures of the male hypopygium and venation of several previously described species of Indian craneflies are provided, virtually all belonging to the genus *Toxorhina* Loew, none of which had been illustrated previously.

The preceding part under this general title appeared in *Oriental Ins.*, 3 : 1-13, March 1969. At this time I am describing five new species of craneflies, all from various parts of South India where they were collected by Dr. Fernand Schmid and Mr. P. Susai Nathan, to whom I again express my sincere thanks for their appreciated efforts to make known the Tipulidae of the Indian fauna.

I also am providing figures that show the male hypopygium and venation of several other species that never have been illustrated. There remain some hundreds of still other species in this great family of flies that never have been adequately figured and in subsequent parts of this series of papers I hope to be able to treat many of these in similar manner.

The late Enrico Brunetti, between the years 1911 and 1924, described some 240 new species in this family of flies from the former British India and Burma, these having been listed in an earlier paper by the writer (*Rec. Indian Mus.*, 59 : 19-34, March 1963). A majority of these species appear to have been described satisfactorily and are recognizable but there remain a considerable number of obscure forms that are in doubt, chiefly because of Brunetti's failure to adequately describe and figure the male genitalia in these cases. It appears that our inability to recognize such doubtful species may prove to be a serious handicap to later work on this fauna. It is very desirable that in the species in question the male hypopygium should be removed, carefully treated and dissected, and then mounted permanently on a microscope slide. Such slides would not only help to provide certain determinations of the doubtful forms but are less liable to damage or destruction than are pinned materials.

SUBFAMILY TIPULINAE

1. *Tipula (Indotipula) tetradolos*, sp. nov. (Fig. 3)

Closely related to *belingana*, differing chiefly in hypopygial structure, including the tergite and inner dististyle, the latter with four spinoid setae on the dorsal crest.

Male: Frontal prolongation of head light yellow, sides restrictedly darkened, nasus long, tipped with conspicuous black setae, proximal two segments of palpi brownish-yellow, remainder brown, outer end of terminal segment yellowed. Antennae with proximal three segments obscure yellow, remainder very weakly bicolored, light brown, basal enlargements darker brown, outer segments more uniformly darkened; flagellar segments much as in *belingana*, the outer enlargement subtriangular in outline, verticils of outer segments very long. Head with front whitened with a restricted brown mark between the antennal bases; vertex more brownish-yellow with a very narrow darkened median line.

Pronotum light yellow, sides narrowly darkened. Mesonotal praescutum orange, disk with four narrow light brown stripes that are vaguely bordered by darker brown, sides of sclerite broadly light yellow; scutum with center of each lobe obscure orange, margined internally by light brown; scutellum light brown, parascutella brownish-orange; mediotergite yellowed on central part, with a vague pale brown stripe on either side of midline, posterior third more uniformly light brown, pleurotergite yellowed, katapleurotergite brown. Pleura chiefly light yellow, with brown areas on propleura, anepisternum, ventral sternopleurite and ventral meron. Halteres with stem brownish-yellow, knob small, darker brown. Legs with fore coxae light brown, remaining coxae light yellow; trochanters yellow; femora and tibiae light brown, tarsi darker brown; terminal tarsal segment at base with a conspicuous epicondylar brush of setae; outer tooth of claw long. Wings brownish-yellow, pre-arcular and costal fields clearer yellow; stigma light brown; veins light brown. Venation: Cell *2nd A* slightly narrower than in *belingana*.

Abdominal tergites brown, posterior and lateral borders narrowly yellowed, sternites yellow; hypopygium with the large eighth sternite brown, conspicuously patterned with obscure yellow as in certain other allied species, tergite chiefly yellowed. Male hypopygium (Fig. 3) generally as in *belingana*, differing especially in the tergite and inner dististyle. Ninth tergite, *t*, with the blackened outer end restricted in area, the lateral projections widely separated by a U-shaped emargination, lateral spines few. Inner dististyle, *d*, with four setoid spines on dorsal crest, these unusually stout; posterior lobe of style very large. Eighth sternite, *8s*, large, chiefly darkened, with a vague yellowed pattern on outer half including the posterior border,

Length : ♂, about 15 mm, wing 15 mm, antenna about 3.5 mm.

Holotype ♂, INDIA : Cherangode, Nilgiri Hills, South India, 3500 ft. xi. 1950, Coll. Susai Nathan.

Although the present fly is closely related to *Tipula* (*Indotipula*) *belingana* Alexander (*Philippine J. Sci.*, 94 : 274-276, fig. 21, venation ; figs. 47, 48, male hypopygium ; 1965), described from South Coorg, South India, I consider the two flies to be distinct, especially shown by the hypopygial characters, as described.

SUBFAMILY LIMONIINAE

TRIBE LECHRIINI

2. *Xipholimnobia* (*Xipholimnobia*) *madrasensis*, sp. nov. (Figs. 1, 2)

General coloration of mesonotum brownish-yellow, pleurotergite and pleura clear yellow, the latter without a darkened stripe ; wings weakly tinged with brown, broadest opposite cell *1st A* ; male hypopygium with apices of interbases very obtuse ; outer dististyle with base expanded, the slender lateral arm with two or three small spines before the terminal point.

Male : Rostrum brown ; palpi black. Antennae with scape testaceous, the enlarged pedicel black, flagellum brownish-black, the segments long-oval. Head light brown above, narrowly light gray on orbits.

Pronotum brownish-yellow, pretergites whitened. Mesonotal praescutum light brownish-yellow, pale laterally ; scutal lobes slightly darker brown, median region testaceous ; scutellum testaceous, darker posteriorly, parascutella yellow ; mediotergite brownish-yellow, pleurotergite and pleura clear yellow, the latter without a darkened stripe. Halteres with stem yellow, knob light brown. Legs with coxae and trochanters yellow, remainder light brown. Wings (Fig. 1) weakly tinged with brown, costal region more yellowed ; veins light brown. Wings of male broadest opposite cell *1st A* shortly beyond termination of vein *2nd A*. Longitudinal veins beyond cord with trichia, including also the outer two-thirds of *Rs*, lacking on both anal veins. Venation : *Sc*₁ ending about opposite five-sixth *Rs*, *Sc*₂ slightly removed ; *m-cu* at near two-thirds *M*₃₊₄.

Abdomen light brown, hypopygium yellowed. Male hypopygium (Fig. 2) with the interbase, *i*, nearly parallel-sided, tip very obtuse. Outer dististyle, *d*, with base expanded, lateral arm slender, its outer end gently curved, terminating in a subacute point, with two or three small spines on outer margin before apex ; inner style nearly as long, slender, narrowed outwardly, at end near apex with a small tubercle that bears a long bristle.

Length : ♂, about 2.5 mm, wing 3 mm.

Holotype ♂, INDIA : Varaiyattu Tittu, Madras, 1500 ft., 21.xii.1958, Coll. Schmid.

The regional *Xipholimnobia* (*Xipholimnobia*) *umbripennis* (Alexander) has the wings narrower and much darker, the thoracic pleura striped longitudinally with darker, and with the hypopygial details, especially the outer dististyle, quite distinct.

TRIBE ERIOPTERINI

3. *Gonomyia* (*Idiocera*) *megastigma*, sp. nov.

General coloration of thorax gray, praescutal stripes darker brownish-gray, pleura with a conspicuous ventral yellow stripe ; legs yellowed ; wings faintly yellow, stigma large, dark brown ; macrotrichia of veins sparse, on veins R_4 to M_3 , lacking on R_s and the anals.

Female : Rostrum black ; palpi dull black. Antennae with scape dark brown above, light yellow beneath, pedicel yellow, flagellum dark brown ; proximal flagellar segments oval, the outer ones progressively longer, subequal to their verticils. Head light gray, front and anterior vertex yellow.

Pronotum gray, narrowly yellowed laterally and on pretergites, sides brown. Mesonotal praescutum light gray with broad intermediate darker brownish-gray stripes, humeral and lateral borders light yellow, pseudosutural foveae shining black, conspicuous ; scutum gray, posterior callosities obscure yellow ; scutellum brownish-gray, posterior border obscure brownish-yellow ; postnotum dark gray. Pleura dark gray with a conspicuous ventral light yellow longitudinal stripe, extending from behind the fore coxae to base of abdomen, behind more expanded to include parts of the metapleura, ventral pteropleurite and restrictedly on pleurotergite; dorsopleural, region yellow. Halteres with stem yellow, knob pale brown. Legs with fore coxae and trochanters dark brown, remaining coxae yellow, bases narrowly darkened, trochanters yellow ; femora light yellow, tips narrowly very pale brown, remainder of legs yellowed. Wings faintly yellowed, pre-arcular and costal fields clearer yellow ; stigma dark brown, unusually large, subrectangular in outline, reaching costa in front, behind vein R_3 ; vague darkenings at arculus, origin of R_s and the cord, indicated chiefly by darkening of the veins, remaining veins light brown, costa brownish-yellow. Macrotrichia on veins R_4 , R_5 and all branches of M , lacking on R_s and the anals. Venation : Sc_1 ending opposite origin of R_s , Sc_2 far retracted, Sc_1 alone about four-fifths R_s ; R_{2+3+4} short, about one-third R_s , cell R_3 relatively small ; cell 2nd M_2 shallow, less than its petiole, the veins slightly divergent, widening the cell at wing margin.

Abdomen dark brown, extreme posterior borders of the sternites yellowed.

Length : ♀, about 6.8-7 mm, wing 5.5-5.7 mm.

Holotype ♀, INDIA : Sathuparai, Madras, 1500 feet, 1.xii.1958, Coll. Schmid.
Paratype ♀, Nagodi, Mysore, 2500 feet, 28.i.1959, Coll. Schmid.

The most similar regional species is *Gonomyia (Idiocera) recens* Alexander, likewise from South India, which in the female sex differs in the venation of the outer radial and medial fields and in the abundant trichiation of the wing veins, including all longitudinal veins beyond origin of *Rs* and extensively on both anal veins.

4. *Styringomyia monochaeta*, sp. nov. (Fig. 4)

Allied to *kempiana*, differing especially in hypopygial structure.

Male : Rostrum and palpi black. Antennae with scape and pedicel brownish-black, basal flagellar segment yellow, succeeding segments slightly darker, outer ones brownish-black. Head dark brown, restrictedly variegated with obscure yellow on anterior orbits.

Pronotum chiefly light yellow, darker on sides. Mesonotal praescutum with three dark gray stripes, the interspaces brownish-black, scutum similarly dark gray; posterior sclerites of notum darkened, scutellum variegated with obscure yellow, mediotergite with a vague central yellowed vitta. Pleura brownish-black. Halteres infuscated. Legs with coxae dark brown, trochanters slightly paler; femora brownish-black with a narrow obscure yellow nearly complete ring before apex; tibia similarly dark brown, the extreme base and a subterminal ring yellow; fore tarsi brownish-black, mid tarsi with proximal half of basitarsi yellowed, posterior tarsi more uniformly pale, tips of proximal three segments narrowly darkened, outer segments uniformly infuscated. Wings brownish-yellow to pale brown, unpatterned, in cases the basal fourth clearer yellow; veins light brown, more yellowed in the basal field.

Abdomen dark brown. Male hypopygium (Fig. 4) generally as in *kempiana*, differing especially in the structure of the complex dististyle, the major outer setiferous arm broad and entire, as in *kempiana*, the narrow inner arm with a single very large black spinoid seta on margin at near midlength, in *kempiana* with two much smaller such setae, in *pentachaeta* with five or more. Other structures of the hypopygium about as shown.

Length : ♂, about 7.8-8 mm, wing 5-5.5 mm.

Holotype ♂, INDIA : Naduvatam, Nilgiri Hills, South India, 6000 feet, 20.v.1950, Coll. Susai Nathan. *Paratopotypes* 7 ♂♂ with type; 1 ♂, ix.1950.

Formerly I had placed this fly with *Styringomyia kempiana* Alexander, from the North Kanara District, South India, but it now appears that in South India there are other generally similar but distinct species, including the present fly and also *S. pentachaeta*, sp. nov., all most readily told among themselves by the hypopygial structure.

5. *Styringomyia pentachaeta*, sp. nov. (Fig. 5)

Allied to *kempiana*, differing especially in hypopygial structure.

Male : Fore and middle femora chiefly dark brown with a narrow incomplete obscure yellow ring more than its own length before apex ; tibia with base and a subterminal ring narrowly yellow ; fore tarsi black, mid tarsi with proximal two segments obscure yellow, tips broadly brownish-black, outer segments uniformly black ; posterior femora obscure brownish-yellow with an obscure yellow subterminal ring, the darkened tip slightly broader ; tibia almost uniformly medium brown, the pale rings diffuse to scarcely evident ; tarsi obscure yellow, tips of the individual segments slightly darker. Wings brownish-yellow, unpatterned, pre-arcular and costal fields clearer yellow ; veins light brown. Venation : Cell *2nd M*₂ short-sessile ; vein *2nd A* curved very gently to margin, the cell narrow.

Abdomen brown. Male hypopygium (Fig. 5) generally as in *kempiana*, the basistyle, *b*, trispinous, one spine much smaller. Dististyle, *d*, distinctive, one arm deeply emarginate to form two narrow blades, each with long black setae ; inner arm shorter, with similar black setae, its margin with five more powerful black bristles, the outermost shorter and slightly stouter, lower pair longest, certain of the remaining setae on disk virtually as long and similarly conspicuous ; elongate outer rod of style with numerous black setae at base including a comb of about 10 stouter spinoid setae.

Length : ♂, about 6 mm, wing about 4.2 mm.

Holotype ♂, INDIA : Cinchona, Anamalai Hills, South India, 1067 m, v.1959, Coll. Susai Nathan.

The deeply emarginate arm of the dististyle differs from the condition found in *Styringomyia kempiana* Alexander and *S. monochaeta*, sp. nov.

6. *Styringomyia tarsatra* Alexander (Fig. 6)

Styringomyia tarsatra Alexander, 1966, *J. New York Ent. Soc.*, 74 : 183-184.

Types from Parewavir and Amlekhgang, Nepal, 1957, Coll. Coher.
Male hypopygium (Fig. 6).

7. *Toxorhina (Ceratocheilus) bistyla* Alexander (Figs 7, 11)

Toxorhina (Ceratocheilus) bistyla Alexander, 1967, *J. New York Ent. Soc.*, 75 : 184-185

Type ♂, Bilo La, Kameng, North-East Frontier Agency, Assam, 6000 ft, 10.vi.1961, Coll. Schmid.

Venation (Fig. 7), male hypopygium (Fig. 11).

8. *Toxorhina (Ceratocheilus) brevifrons* (Brunetti)

Conithorax brevifrons Brunetti, 1918, *Rec. Indian Mus.*, **15** : 300.

Toxorhina (Ceratocheilus) brevifrons : Alexander, 1936, *Philippine J. Sci.*, **61** : 202 (re-description of type ♀).

Toxorhina (Ceratocheilus) brevifrons : Alexander, 1952, *Rec. Indian Mus.*, **50** : 357, fig. 15 e (venation).

9. *Toxorhina (Ceratocheilus) fulvicolor* Alexander (Figs. 8, 12)

Toxorhina (Ceratocheilus) fulvicolor Alexander, 1967, *J. New York Ent. Soc.*, **75** : 185.

Type ♂, Khaorum, Manipur, Assam, 3750 ft., 28.viii.1960, Coll. Schmid.

Venation (Fig. 8), male hypopygium (Fig. 12).

10. *Toxorhina (Ceratocheilus) fuscolimbata* Alexander (Figs. 9, 13)

Toxorhina (Ceratocheilus) fuscolimbata Alexander, 1967, *J. New York Ent. Soc.*, **75** : 185-186.

Type ♂, Hkyam Boum, Manipur, Assam, 7500 ft., 20.vi.1960, Coll. Schmid.

Venation (Fig. 9), male hypopygium (Fig. 13).

11. *Toxorhina (Ceratocheilus) luteibasis* Alexander (Figs. 10, 14)

Toxorhina (Ceratocheilus) luteibasis Alexander, 1962, *Ent. News*, **73** : 124-125.

Type ♂, Chateng, Sikkim, 8700 ft., 22.v.1959, Coll. Schmid.

Venation (Fig. 10), male hypopygium (Fig. 14).

12. *Toxorhina (Ceratocheilus) mesorrhyncha* Alexander (Fig. 19)

Toxorhina (Ceratocheilus) mesorrhyncha Alexander, 1936, *Philippine J. Sci.*, **61** : 200-201, pl. 1, fig. 24 (venation), pl. 2, fig. 34 (male hypopygium).

Type ♂, Cherrapunji, Khasi Hills, Assam, 4000 ft., viii.1935, Coll. Sircar. Further material from Lathong, Sikkim, 6560 ft., 26.vii.1959, Coll. Schmid.

The following description and figure are more accurate than those provided earlier. Male hypopygium (Fig. 19) with mesal face of proximal end of basistyle, *b*, produced into a conspicuous tubercle that is tufted with about 12 strong setae in a compact group. Interbase, *i*, unusually slender, especially at base. Dististyle, *d*, single, beak long-produced, narrowed gradually to the obtuse tip, on its face with a long low flange; outer margin of proximal third with a slender tubercle. Arms of aedeagus, *a*, relatively long, slender, tips gently divergent.

13. Toxorhina (Ceratocheilus) monostyla Alexander (Figs. 15, 20)

Toxorhina (Ceratocheilus) monostyla Alexander, 1962, *Ent. News*, **73** : 123-124.

Type ♂, Dikchu, Sikkim, 2300 ft., 9.v.1959, Coll. Schmid.

Venation (Fig. 15), male hypopygium (Fig. 20).

14. Toxorhina (Ceratocheilus) simplicistyla Alexander (Fig. 22)

Toxorhina (Ceratocheilus) simplicistyla Alexander, 1967, *J. New York Ent. Soc.*, **75** : 186-187.

Type ♂, Nakhu, Kameng, North-East Frontier Agency, Assam, 4800 ft. 3.vii.1961, Coll. Schmid.

Male hypopygium (Fig. 22).

15. Toxorhina (Ceratocheilus) tuberifera Alexander (Figs. 16, 21)

Toxorhina (Ceratocheilus) tuberifera Alexander, 1966, *J. New York Ent. Soc.*, **74** : 184.

Type ♂, Lathing, Sikkim, 6560 ft. vii.26.1959, Coll. Schmid.

Venation (Fig. 16), male hypopygium (Fig. 21).

16. Toxorhina (Toxorhina) brevirama Alexander

Toxorhina (Toxorhina) brevirama Alexander, 1953, *Ann. Mag. Nat. Hist.*, (12) **6** : 191-192.

Toxorhina (Toxorhina) brevirama : Alexander, 1953, *Rec. Indian Mus.*, **50** : 357, fig. 15 *f* (male hypopygium).

Type ♂, Naduvatam, Nilgiri Hills, South India, ix.1950, Coll. Susai Nathan.

17. Toxorhina (Toxorhina) scita Alexander (Figs. 17, 23)

Toxorhina (Toxorhina) scita Alexander, 1962, *Ent. News*, **73** : 126-127.

Type ♂, Cherangode, Nilgiri Hills, South India, 13.ix.1950, Coll. Susai Nathan.

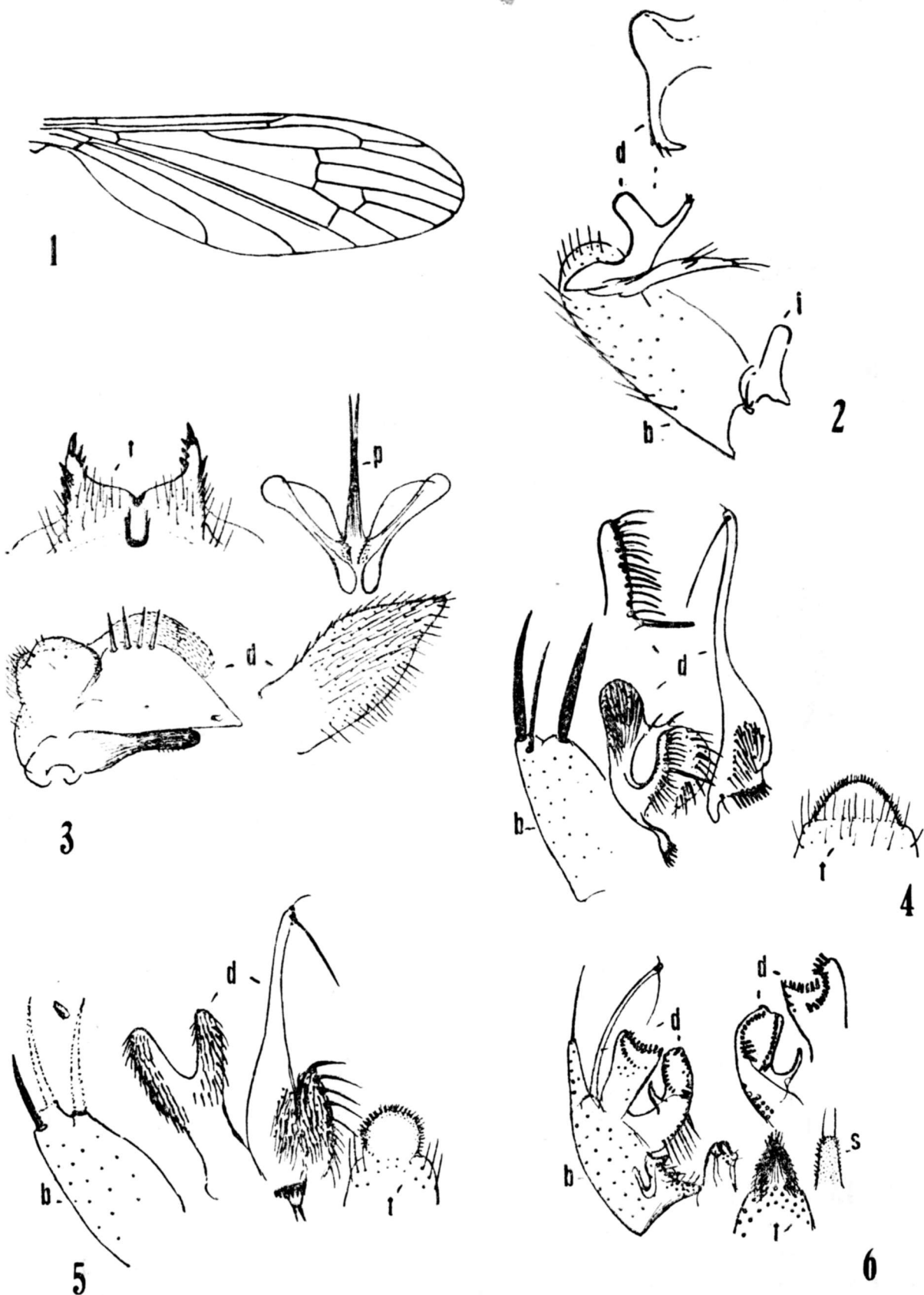
Venation (Fig. 17), male hypopygium (Fig. 23).

18. Toxorhina (Toxorhina) sparsiseta Alexander (Figs. 18, 24)

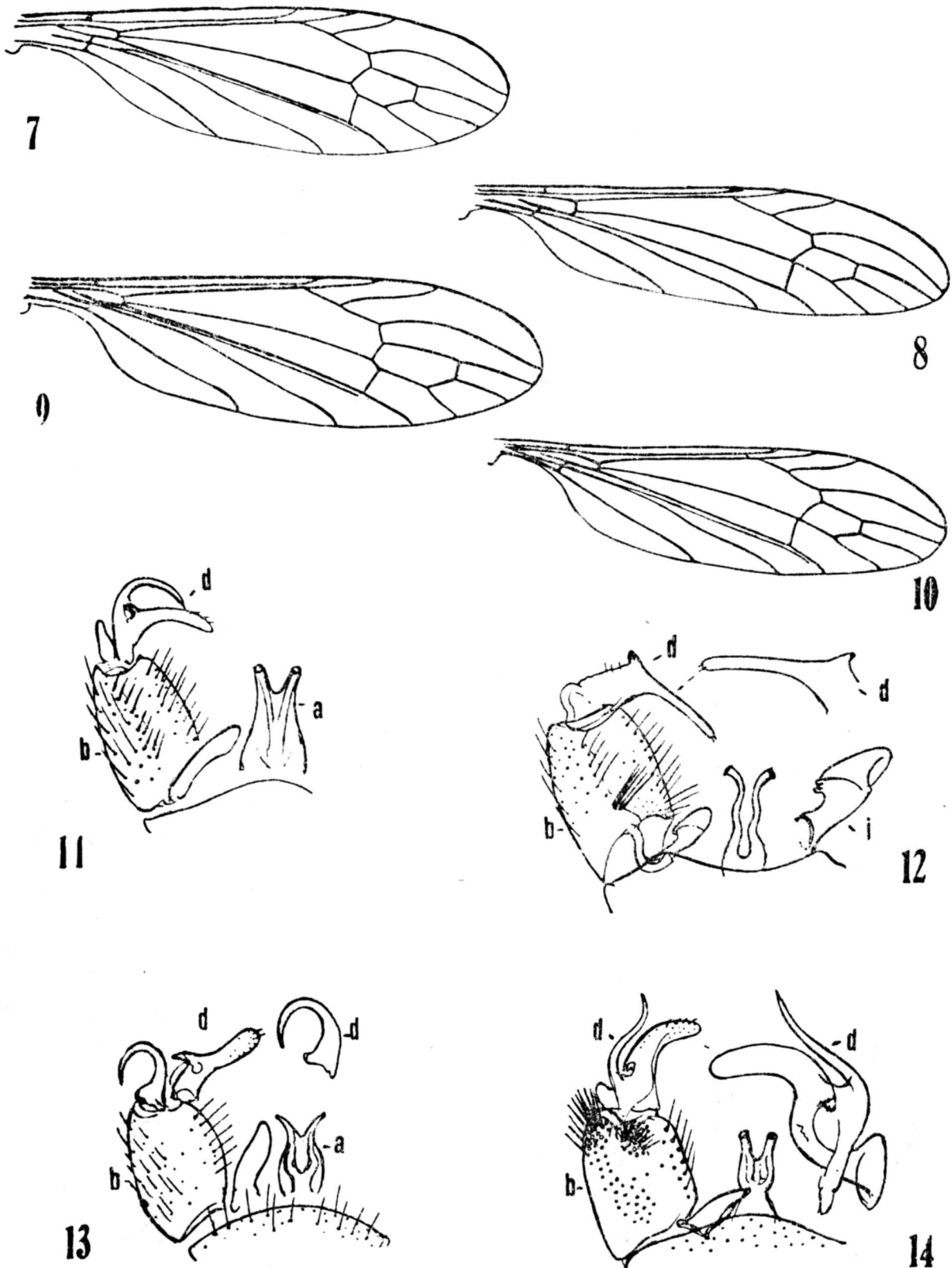
Toxorhina (Toxorhina) sparsiseta Alexander, 1962, *Ent. News*, **73** : 127-129.

Type ♂, Cinchona, Anamalai Hills, South India, 1067 m, v.1959, Coll. Susai Nathan.

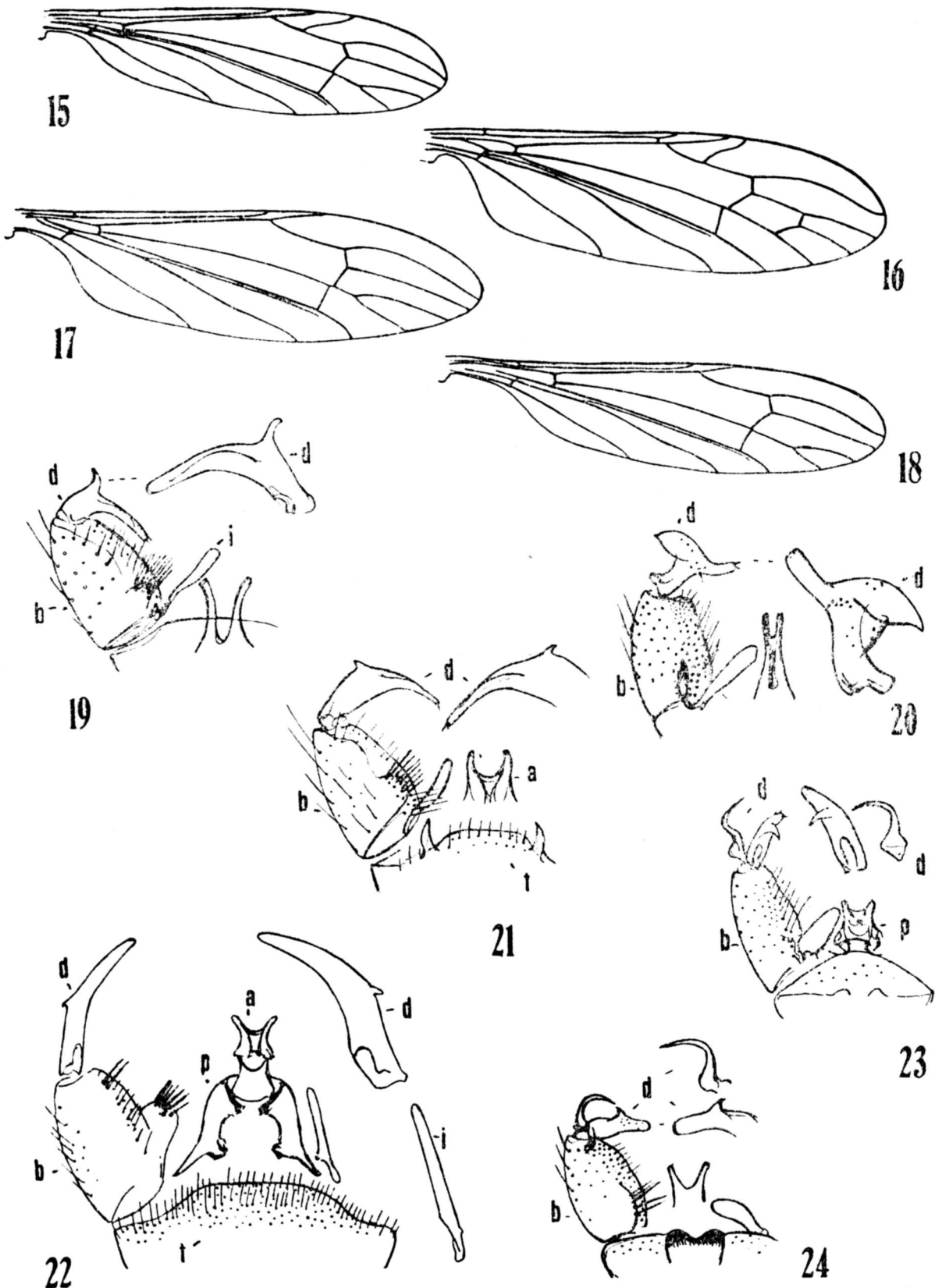
Venation (Fig. 18), male hypopygium (Fig. 24).



Figs. 1-6. Venation of *Xipholimnobia* (*Xipholimnobia*) *madrasensis*, sp. nov. Figs. 2-6. Male hypopygium of 2, *Xipholimnobia* (*Xipholimnobia*) *madrasensis*, sp. nov. ; 3, *Tipula* (*Indotipula*) *tetradolos*, sp. nov. ; 4, *Styringomyia* *monochaeta*, sp. nov. ; 5, *Styringomyia* *pentachaeta*, sp. nov. ; 6, *Styringomyia* *tarsatra* Alexander. (Symbols : *b*, basistyle ; *d*, dististyle ; *i*, interbase ; *p*, phallosome ; *s*, sternite ; *t*, tergite).



Figs. 7-14. Venation of 7, *Toxorhina (Ceratocheilus) bistyla* Alexander ; 8, *Toxorhina (Ceratocheilus) fulvicolor* Alexander ; 9, *Toxorhina (Ceratocheilus) fuscolimbata* Alexander ; 10, *Toxorhina (Ceratocheilus) luteibasis* Alexander. Figs. 11-14. Male hypopygium of 11, *Toxorhina (Ceratocheilus) bistyla* Alexander ; 12, *Toxorhina (Ceratocheilus) fulvicolor* Alexander ; 13, *Toxorhina (Ceratocheilus) fuscolimbata* Alexander ; 14, *Toxorhina (Ceratocheilus) luteibasis* Alexander. (Symbols: a, aedeagus ; b, basistyle ; d, dististyle ; i, interbase).



Figs. 15-24. Venation of 15, *Toxorhina (Ceratocheilus) monostyla* Alexander; 16, *Toxorhina (Ceratocheilus) tuberifera* Alexander; 17, *Toxorhina (Toxorhina) scita* Alexander; 18, *Toxorhina (Toxorhina) sparsiseta* Alexander. Figs. 19-24. Male hypopygium of 19, *Toxorhina (Ceratocheilus) mesorhyncha* Alexander; 20, *Toxorhina (Ceratocheilus) monostyla* Alexander; 21, *Toxorhina (Ceratocheilus) tuberifera* Alexander; 22, *Toxorhina (Ceratocheilus) simplicistyla* Alexander; 23, *Toxorhina (Toxorhina) scita* Alexander; 24, *Toxorhina (Toxorhina) sparsiseta* Alexander. (Symbols: a, aedeagus; b, basistyle; d, dististyle; i, interbase; p, phallosome; t, tergite).