

NEW EXOTIC CRANE-FLIES
(TIPULIDAE: DIPTERA)
PART XXV¹

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ABSTRACT: Three new species of Oriental Tipulidae are described, these being *Tipula (Pterelachisus) mcdonaldi*, of Taiwan, *Limonia (Dicranomyia) recurvistyla* and *Helius (Helius) arunachalus*, of Arunachal Pradesh (formerly Kameng, Northeast Frontier Agency, Assam), India. In addition figures of venation and the male hypopygium for seven species of the Hexatomine genus *Epiphragma* not previously illustrated are provided.

The preceding part under this title was published in Entomological News, vol. 85: 1-8. The present paper is based almost entirely on the extensive collections of crane-flies made in various parts of India by the veteran collector Dr. Fernand Schmid. One species described as new was taken by John L. McDonald in Taiwan. I express my thanks and appreciation to the collectors of these particularly interesting materials. As has been done in previous parts under this title figures showing the venation and male hypopygium are provided, these concerning species of Oriental *Epiphragma* that have not been illustrated in earlier papers. The types of the new species are preserved in the Alexander Collection.

Tipula (Pterelachisus) mcdonaldi, NEW SPECIES

General coloration of thoracic dorsum brown, pleura and abdomen chiefly yellow; legs with femora brown, outer third yellowed, enclosing a narrow brown subterminal ring; wings weakly infuscated, prearcular field, costal border and stigma darker brown; abdomen yellowed, subterminal segments brown; male hypopygium with posterior border of tergite shallowly emarginate, the blackened border roughened, with a small central point; outer dististyle with beak long, blackened, outer basal region with two small points; basistyle and apex of eighth sternite with brushes of very long yellow setae.

¹ Accepted for publication: February 10, 1975

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MALE — Length about 11 - 14 mm.; wing 12 - 16 mm.; antenna about 3.5 - 5 mm.

FEMALE — Length about 15 - 18 mm.; wing 14 - 15 mm.; antenna about 3 mm.

Described from alcoholic specimens. Frontal prolongation of head brown, nasus slender; palpi with three proximal segments dark brown, incisures whitened, terminal segment subequal in length to the combined preceding segments, paler brown to yellowish brown. Antennae with scape and pedicel light yellow, flagellum black; flagellar segments with small basal enlargements, longest verticils subequal or slightly longer than the segment. Vertex apparently gray in fresh specimens, lower parts of head light brown.

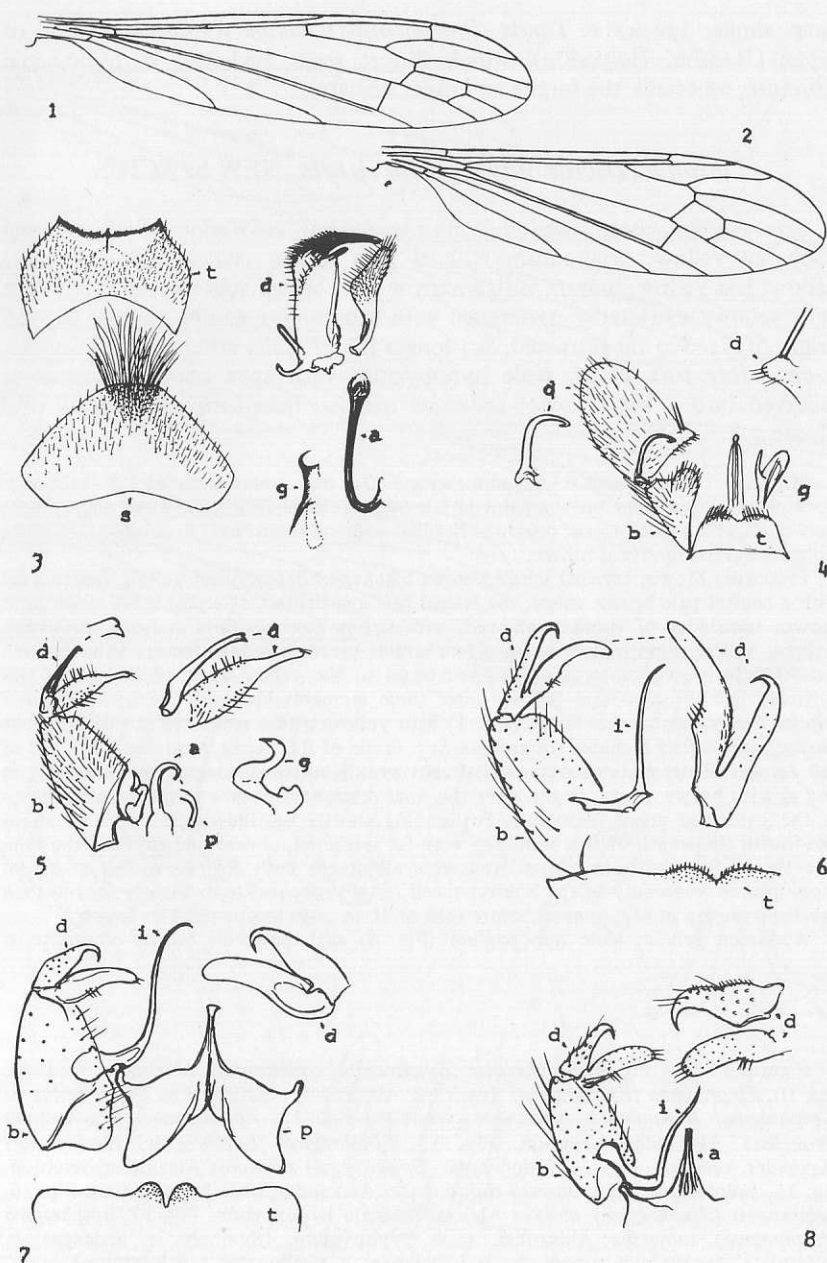
Pronotum yellowed. Mesonotum with sides of praescutum light yellow, disk with four grayish brown stripes that are narrowly bordered by darker brown, interspaces with conspicuous darkened setigerous punctures; scutal lobes and central parts of scutellum and postnotum darker brown than the sides. Pleura and pleurotergite yellowed, dorsopleural membrane clearer yellow. Halteres pale, base of knob weakly darkened, apex whitened. Legs with coxae and trochanters yellow; femora basally narrowly yellowed, remainder brown, the extreme tip and a much more extensive subterminal to nearly apical ring yellowed, including approximately one-third the segment, this area usually with a very narrow nearly terminal paler brown ring, about equal in extent to the yellow apex; tibiae brownish yellow, tips blackened; tarsi black; claws of male with a conspicuous spur at near midlength, female with claws very small, simple. Wings weakly infuscated, prearcular field, cells *C* and *Sc*, and the stigma darker brown; veins brown. Venation: Cell *1st M*₂ small; cell *M*₁ long-petiolate, the petiole about three times *m*; *m-cu* at fork of *M*₃₊₄.

Abdomen chiefly yellowed, segment eight and midregions of tergites six and seven brown; hypopygium yellowed. Male hypopygium (Fig. 3) with the tergite, *t*, broad, posterior border very shallowly emarginate, margin very narrowly blackened, with low roughenings including a more evident median point. Basistyle with numerous very long setae. Outer dististyle, *d*, dilated at near midlength, outer half with numerous relatively short setae; inner style with outer beak blackened, elongate and slightly curved, lower beak smaller, appearing as a straight slender black rod; region of outer basal lobe with two points, the more basal slender, curved, apex acutely pointed, outer spur stouter, apex obtuse. Phallosome with aedeagus, *a*, short and stout, blackened; gonapophysis, *g*, appearing as a blackened plate with both ends extended into points, the dorsal one more curved. Eighth sternite, *8s*, broad basally, narrowed outwardly, apex with a brush of long yellow setae, remainder of plate with abundant small setae.

HABITAT — Taiwan. Holotype: ♂, on slide, Chung-Ta Shan, 8,600 feet, August 11, 1971 (John L. McDonald). Allotype: ♀. Paratopotypes, about 40 ♂♀ in alcohol, with the types.

The species is named for Dr. John L. McDonald, University of Arizona, who collected the material, together with several associated Tipulidae. The

Figures 1 - 8 — Fig. 1, *Limonia (Dicranomyia) recurvistyla*, new species; venation. Fig. 2, *Helius (Helius) arunachalus*, new species; venation. Fig. 3, *Tipula (Pterelachisus) mcdonaldi*, new species; male hypopygium. Fig. 4, *Limonia (Dicranomyia) recurvistyla*, new species; male hypopygium. Fig. 5, *Helius (Helius) arunachalus*, new species; male hypopygium. Fig. 6, *Epiphragma (Epiphragma) commoptera* Alexander; male hypopygium. Fig. 7, *Epiphragma (Epiphragma) dysaithria* Alexander; male hypopygium. Fig. 8, *Epiphragma (Epiphragma) dysommata* Alexander; male hypopygium. (Symbols: *a*, aedeagus; *b*, basistyle; *d*, dististyle; *g*, gonapophysis; *i*, interbase; *p*, phallosome; *s*, 8th sternite; *t*, 9th tergite.)



most similar species is *Tipula (Pterelachisus) taikun* Alexander, 1921, of Japan (Honshu, Hokkaido), which differs most evidently in hypopygial structure, especially the tergite and inner dististyle.

Limonia (Dicranomyia) recurvistyla, NEW SPECIES

Size medium (wing about 7 mm.); general coloration of thorax and abdomen yellow, praescutum with a pale brown central stripe; halteres yellow; legs yellow, femora with a narrow light brown subterminal ring; wings light yellow, restrictedly patterned with brown, *Sc*₁ ending shortly beyond origin of *Rs*, *Sc*₂ far retracted, *Sc*₁ longer than *Rs*, the latter square at origin, *m-cu* before fork of *M*; male hypopygium with apex of dorsal dististyle recurved into a short spine; aedeagus narrow, terminating in a small oval blade.

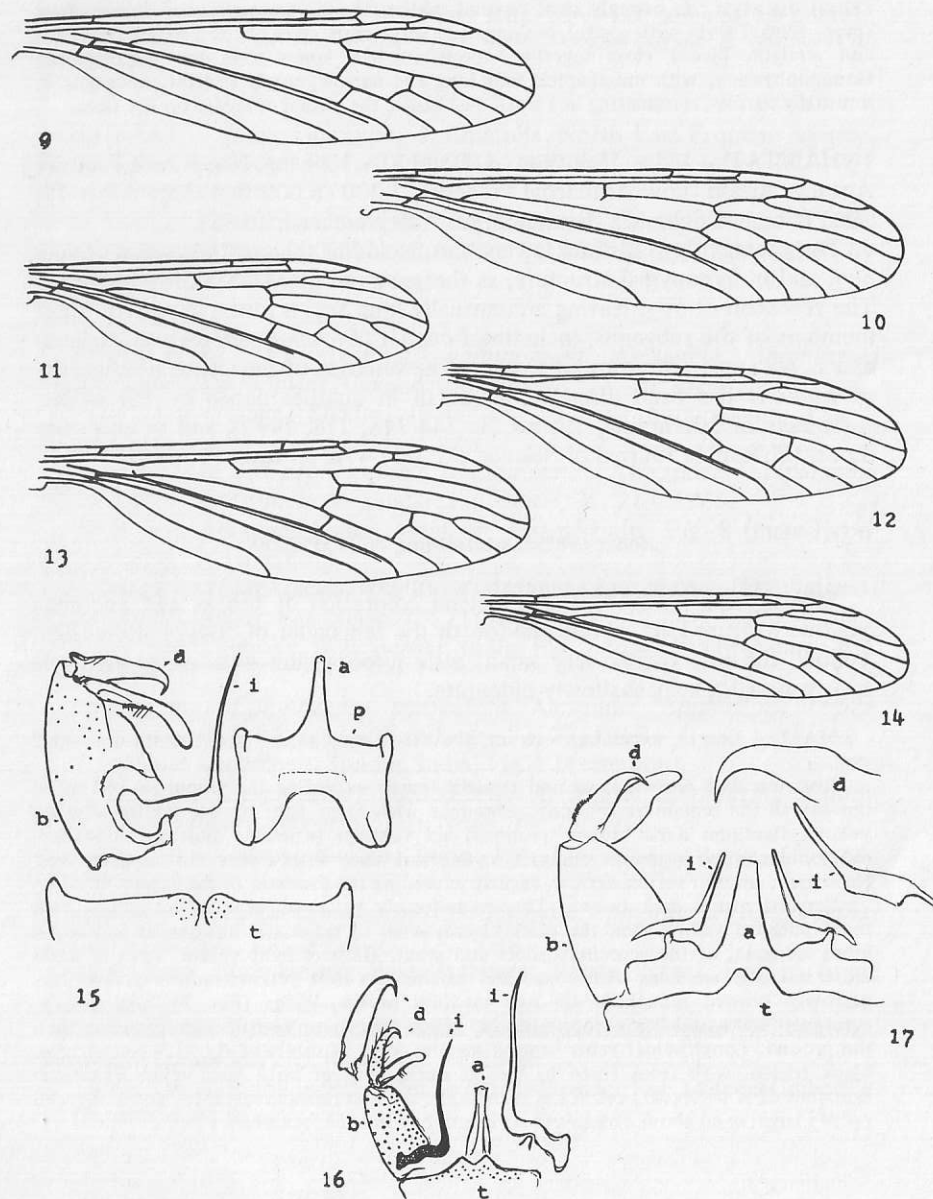
MALE — Length about 6 - 6.2 mm.; wing 7 - 7.2 mm.; antenna about 1.2 - 1.25 mm.

Rostrum short, light brown; palpi dark brown. Antennae with scape and pedicel light brown, flagellum pale brown; proximal flagellar segments short oval to subglobular, more elongate outwardly. Head brown.

Pronotum brown, cervical sclerites more blackened. Mesonotum yellow, praescutum with a central pale brown stripe, the lateral pair and centers of scutal lobes much paler brown; remainder of thorax yellowed, with strong greenish tints in fresh specimens. Halteres yellow. Legs with coxae and trochanters greenish yellow; femora yellow with a narrow light brown subterminal ring, subequal to the yellow apex; tibiae yellow, tips narrowly light brown; tarsi yellow, outer three segments brownish black; claw with a slender nearly basal spine. Wings (Fig. 1) light yellow with a restricted but conspicuous brown pattern that includes the arculus, *Sc*₂, origin of *Rs*, stigma, cord and outer end of cell *1st M*₂; distal ends of outer radial cells weakly suffused; longitudinal veins *M*₃ to *2nd A* with brown seams, largest over the Anal veins; veins yellow in the ground, brown in the patterned areas. Venation: *Sc*₁ ending shortly beyond origin of *Rs* to about one-fourth the length of this vein, *Sc*₂ very far retracted, at near midlength of the vein; free tip of *Sc*₂ short, in virtual transverse alignment with *R*₂; *Rs* square at origin, short-spurred, especially in the holotype; cell *1st M*₂ subequal to or slightly shorter than the distal section of *M*₁₊₂; *m-cu* before fork of *M*, in cases to one-third its length.

Abdomen yellow. Male hypopygium (Fig. 4) with posterior border of tergite, *t*,

Figures 9 - 17 — Fig. 9, *Epiphragma (Epiphragma) commoptera* Alexander, venation. Fig. 10, *Epiphragma (Epiphragma) dysaithria* Alexander, venation. Fig. 11, *Epiphragma (Epiphragma) dysommata* Alexander, venation. Fig. 12, *Epiphragma (Epiphragma) perocellata* Alexander, venation. Fig. 13, *Epiphragma (Epiphragma) rhododendri* Alexander, venation. Fig. 14, *Epiphragma (Epiphragma) subvicina* Alexander, venation. Fig. 15, *Epiphragma (Epiphragma) rhododendri* Alexander, male hypopygium. Fig. 16, *Epiphragma (Epiphragma) scoptes* Alexander, male hypopygium. Fig. 17, *Epiphragma (Epiphragma) subvicina* Alexander, male hypopygium. (Symbols: *a*, aedeagus; *b*, basistyle; *d*, dististyle; *g*, gonapophysis; *i*, interbase; *p*, phallosome; *t*, 9th tergite.)



shallowly emarginate, the lobes with numerous setae. Basistyle, *b*, less than one-third the size of the ventral dististyle, ventromesal lobe oval with numerous moderately long setae. Dorsal dististyle, *d*, strongly bent beyond midlength, the apex recurved into a short spine; ventral style with rostral prolongation very small, apex obtuse; spines two, long and straight, placed close together, about one-half longer than the prolongation. Gonapophysis, *g*, with mesal-apical lobe long and narrow, nearly straight. Aedeagus, *a*, unusually narrow, terminating in a small oval blade, the genital openings on the sides.

HABITAT – India. Holotype: ♂, Bombi La, Kameng, North East Frontier Agency, Assam (now Arunachal Pradesh), 7,200 - 8,000 feet, September 19, 1961 (Fernand Schmid). Paratopotype, ♀, September 15, 1961.

The present fly is distinct in venation, including the great recession of vein *Sc*₂, and in hypopygial structure, as the recurved tip of the dorsal dististyle. The recession of *Sc*₂, leaving an unusually long *Sc*₁, is found in various other members of the subgenus, including *Limonia* (*Dicranomyia*) *chorea* (Meigen) and *L. (D.) mitis* (Meigen), of Europe. The venation of the Oriental subgenera of *Limonia* has been discussed in detail in another paper by the writer – (Insects of Micronesia, 12, no. 8: 744-748, 778; 1972), and in an earlier report (Philippine Journal of Science, 93: 427-478, 54 figs.; 1964).

Helius (Helius) arunachalus, NEW SPECIES

Size medium (wing 7 mm.); general coloration of thorax and abdomen yellow; rostrum long, about one-fourth the remainder of body; halteres light yellow, the pale stigma very small; male hypopygium with outer dististyle nearly straight, apex shallowly bidentate.

MALE – Length, excluding rostrum, about 7.5 mm.; wing 7 mm.; rostrum about 2 mm.

Rostrum dark brown, long and straight, much exceeding the antennae and about one-fourth the remainder of body. Antennae with scape light brown, pedicel obscure yellow, flagellum dark brown; proximal six flagellar segments short and crowded, subglobular, outer segments elongate, cylindrical, each with a very long delicate seta. Head gray; anterior vertex narrow, slightly exceeding the diameter of the scape.

Cervical region dark brown. Thorax uniformly yellowed, praescutum and scutum more polished yellow than the paler pleura; setae of praescutal interspaces and scutal lobes elongate, of the scutellum short and stout. Halteres light yellow, apex of knob more intensely so. Legs with coxae and trochanters light yellow; femora yellow, tips narrowly brown; remainder of legs medium brown. Wings (Fig. 2) light yellow, prearcular and costal fields more saturated yellow; stigma very small, slightly darker than the ground. Longitudinal veins beyond general level of origin of *R*s with conspicuous black trichia, with from three to five at outer ends of both Anal veins. Venation: Branches of *R* divergent, cell *R*₄ at margin about three times as extensive as cell *R*₂; cell *1st M*₂ large; *m-cu* about one-fourth its length beyond the fork of *M*.

Abdomen yellow, eighth segment slightly darker. Male hypopygium (Fig. 5) with outer dististyle slender, nearly straight, apex very shallowly bidentate; inner style longer, basal three-fourths stouter, with conspicuous setae, outer end narrowed, apex obtuse, with conspicuous setae. Phallosome, *p*, as shown. Gonapophyses, *g*, distinctive in conformation.

HABITAT – India. Holotype: ♂, Amatulla, North East Frontier Agency, Assam (now Arunachal Pradesh), 1,500 - 1,800 meters, October 18, 1961 (Fernand Schmid).

In its elongate rostrum, the most similar regional species is *Helius (Helius) stenorhynchus* Alexander, of Northeastern Burma, readily distinguished by the coloration of the body and wings.

Epiphragma (Epiphragma) commoptera Alexander *Epiphragma (Epiphragma) commoptera* Alexander; Ent. News, 77: 70; 1966.

Type from Nanga, Sikkim, India. Fig. 6 male hypopygium; Fig. 9 (venation).

Epiphragma (Epiphragma) dysommata Alexander *Epiphragma (Epiphragma) dysommata* Alexander; Ent. News, 76: 213; 1965.

Type from Hkayam Boum, Manipur, Assam, India. Fig. 8 (male hypopygium); Fig. 11 (venation).

Epiphragma (Epiphragma) dysaithria Alexander *Epiphragma (Epiphragma) dysaithria* Alexander; Ent. News, 77: 71; 1966.

Type from Lingsoka, West Bengal, India. Fig. 7 (male hypopygium); Fig. 10 (venation).

Epiphragma (Epiphragma) perocellata Alexander *Epiphragma (Epiphragma) perocellata* Alexander; Ent. News, 77: 73; 1966.

Type from Kechoiperi, Sikkim, India. Fig. 12 (venation).

Epiphragma (Epiphragma) rhododendri Alexander *Epiphragma (Epiphragma) rhododendri* Alexander; Ent. News, 77: 75; 1966.

Type from Yedang, Sikkim, India. Fig. 13 (venation); Fig. 15 (male hypopygium).

Epiphragma (Epiphragma) scoptes Alexander *Epiphragma (Epiphragma) scoptes* Alexander; Ent. News, 77: 77; 1966.

Type from Simbhanjang Pass, Mahharat Range, Nepal. Fig. 16 (male hypopygium).

Epiphragma (Epiphragma) subvicina Alexander *Epiphragma (Epiphragma) subvicina* Alexander; Ent. News, 77: 77; 1966.

Type from Mount Kinabalu, British North Borneo. Fig. 14 (venation); Fig. 17 (male hypopygium).