

**STUDIES ON THE TIPULIDAE OF CHINA (DIPTERA)  
VI. NEW CRANE-FLIES FROM YUNNAN, KWEICHOW  
AND KWANGTUNG**

---

By CHARLES P. ALEXANDER

*Massachusetts State College, Amherst, Massachusetts*

---

The novelties discussed herewith were derived from a variety of sources. Most of the specimens were secured by Mr. J. Linsley Gressitt in Yunnan and Kweichow during the summer of 1940. A further important series was taken by Mr. Gressitt, accompanied by Mr. F. K. To, on a profitable trip to the Kau-lin San, Lien-p'ing District, northern Kwangtung, in the spring of 1940. A few further specimens were taken by Mr. E. R. Tinkham in Yunnan in the early autumn of 1934. Still other material discussed at this time is included in extensive lots of material received for determination from the Heude Museum, Shanghai, this particular series being from Loh fau shan, Kwangtung. Except where indicated to the contrary, the types of the novelties will be returned to the Zoological Museum, Lingnan University, Canton, when conditions permit.

**Tipulinae**

**1. *Tipula (Acutipula) persegnis* n. sp. (Fig. 1)**

Allied to *biramosa*; size large (wing, male, over 21 mm.); general coloration of mesonotum brown, the praescutal stripes scarcely indicated; basal flagellar segments bicolored; wings with a strong brownish tinge, costal border narrowly darker; male hypopygium with the tergal lobe bilobulate at apex; outer dististyle relatively narrow, its tip obtuse; inner dististyle with the rostrum unusually high, the face of style with two strong spines, the lower or discal one with a small lateral spine near base; caudal margin of eighth sternite very shallowly concave, the sides of the emargination with abundant and conspicuous long yellow setae.

*Male*.—Length, about 18 mm.; wing, 21.5 mm.; antenna, about 3 mm.

Frontal prolongation of head of moderate length, reddish brown, sparsely pruinose; nasus very long, blackened, a trifle expanded outwardly; palpi black. Antennae with scape elongate, brownish yellow; pedicel clear yellow; basal flagellar segment yellow, the succeeding ones bicolored, the basal enlargement blackened, the outer portions yellow, the bicolored nature persisting for the entire length of the flagellum excepting the terminal segment; basal enlargements moderately developed; verticils exceedingly long, the longest a little less than twice the segments. Head dark brownish gray, without vertical tubercle; eyes large, anterior vertex correspondingly reduced, a little less than twice the diameter of scape.

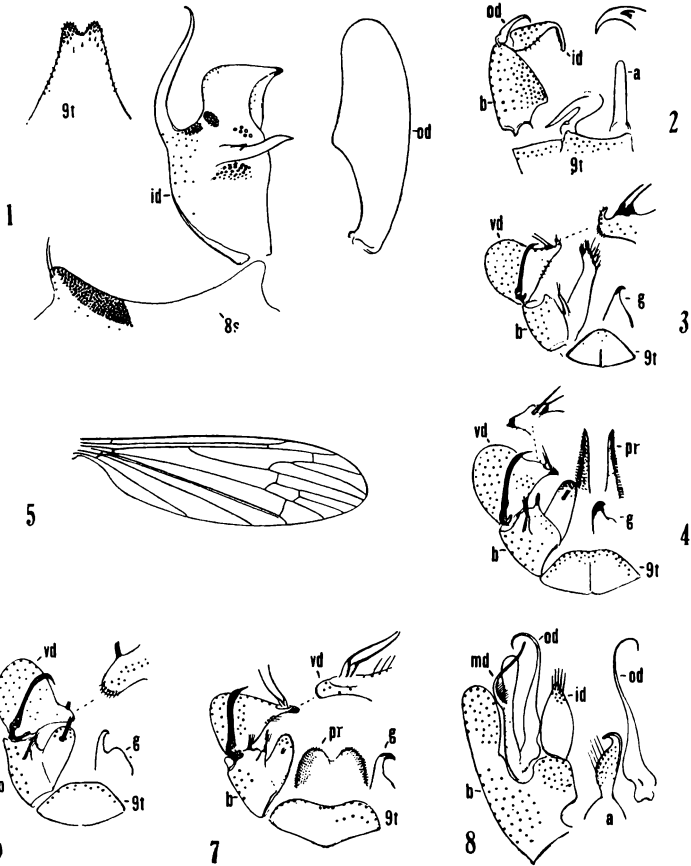


Fig. 1. *Tipula (Acutipula) persegnis* n. sp., male hypopygium;  
 2. *Helius (Helius) lienpingensis* n. sp., male hypopygium;  
 3. *Limonia (Dicranomyia) rhinoceros* n. sp., male hypopygium;  
 4. *Limonia (Dicranomyia) tenuifilamentosa* n. sp., male hypopygium;  
 5. *Hexatoma (Eriocera) elevata* n. sp., venation;  
 6. *Limonia (Dicranomyia) peroblusa* n. sp., male hypopygium;  
 7. *Limonia (Dicranomyia) subtristoides* n. sp., male hypopygium;  
 8. *Gonomyia (Prologonomyia) praetenuis* n. sp., male hypopygium.

(Symbols: *a*, aedeagus; *b*, basistyle; *g*, gonapophysis; *id*, inner dististyle; *md*, intermediate dististyle; *od*, outer dististyle; *pr*, proctiger; *s*, sternite; *t*, tergite; *vd*, ventral dististyle.)

Pronotum infuscated medially, paler on sides. Mesonotum with praescutum and scutum brown, the former paler on sides and in humeral region; scutal lobes darker; scutellum dark gray, the sunken parascutella lighter; postnotum light gray, the mediotergite with abundant appressed yellow setae; pleurotergite obscure yellow, the anapleurotergite darker. Pleura obscure yellow, the dorsopleural region more fulvous orange. Halteres elongate, brownish black, the extreme base of stem brightened. Legs with the coxae brownish yellow, sparsely pruinose; trochanters reddish yellow; remainder of legs very long, femora obscure yellow, the tips passing into black, the amount of the latter subequal on all legs; tibiae and tarsi reddish brown; claws toothed. Wings with a strong brownish tinge, the prearcular field, costal border and stigma still darker brown; in the ground area there is an indication of a vague cloud near outer end of cell *M* immediately basad of *m-cu*; veins dark brown. Venation: *Rs* nearly straight, only a little longer than *m-cu*; cell *R*<sub>2</sub> pointed at base, *R*<sub>1</sub> and *R*<sub>2</sub> meeting at an acute angle; vein *R*<sub>3</sub> elongate and gently sinuous; second section of *M*<sub>1+2</sub> gently arcuated; petiole of cell *M*<sub>1</sub> varying from about two-thirds to three-fourths *m*; *m-cu* a little less than the distal section of *Cu*<sub>1</sub>.

Basal abdominal tergites dark reddish brown, sparsely pruinose, the outer segments still darker; posterior borders of tergites very narrowly, the lateral borders somewhat more broadly, yellow; basal sternites reddish, the outer four dark brown. Male hypopygium (Fig. 1) with the ninth tergite, *9t*, relatively broad, depressed, at apex divided into two small lobes by a V-shaped apical notch; each lobe with abundant blackened spinous points which continue basad down the lobe, merging gradually with the elongate setae of the sides and base of lobe. Basistyle near the insertion of the dististyles with a low semioval lobe that is densely covered with pale erect setulae. Outer dististyle, *od*, narrow at base, widest across midlength, the apex broadly obtuse. Inner dististyle, *id*, with the beak unusually deep, the actual blackened point very small; two conspicuous spines, the outer very powerful and strongly curved, narrowed to the acute tip; lower spine arising near base of beak, about one-half the length of the outer spine, appearing as a short, nearly straight spike, bearing a small accessory spinule near its base; a group of very long setae lying between base of outer spine and the oval sensory group at base of beak; a second group of stouter black bristles before midlength of style. Ninth sternite with long hair-brushes on either side. Eighth sternite, *8s*, sheathing, the caudal margin broadly but very shallowly concave, the sides provided with abundant long yellow setae, the narrower median area lacking such vestiture.

*Hab.*—China (Yunnan).

*Holotype*, ♂, An Ning Djou, 25 miles west of Yunnan-fu, September 4, 1934 (E. R. Tinkham); Alexander Collection.

Most similar to *Tipula* (*Acutipula*) *biramosa* Alexander and *T. (A.) dicladura* Alexander, of southwestern China, differing especially in the structure of the male hypopygium, particularly the ninth tergite, outer dististyle, inner dististyle and eighth sternite. In *dicladura*, the tergal

lobe is much broader, with a deep U-shaped notch at its apex, the terminal lobes correspondingly large; the outer dististyle is broader, with the apex very narrowly obtuse; armature of the inner dististyle quite distinct, the beak much smaller and more slender; eighth sternite without modified vestiture. *Tipula biramosa* is similarly distinct in all details of the hypopygium.

## 2. *Tipula (Oreomyza) ingenua* n. sp.

Allied to *mutiloides*; antennal flagellum black, segments very slightly incised; mesonotal praescutum gray, the praescutum with four brown stripes, with an additional capillary median vitta; legs black; claws (male) toothed; wings with a very weak brown tinge, vaguely patterned with more subhyaline areas and darker brown washes; cells *C* and *Sc*, with the stigma, more infuscated;  $R_{1+2}$  atrophied or with only a short spur; cell 1st  $M_2$  short-petiolate; cell  $M_1$  about two and one-half times its petiole; abdominal tergites brownish yellow, brownish black medially, the sternites and outer segments more uniformly darkened; male hypopygium with the suture between basistyle and sternite incomplete; outer dististyle relatively slender; inner dististyle with the beak slender, gently decurved, lower beak with its upper margin produced into a lobe or flange; eighth sternite with an apical median brush of long yellow setae.

*Male*.—Length, about 11 mm.; wing, 11.5 mm.; antenna, about 3.5 mm.

*Female*.—Length, about 13 mm.; wing, 13.5 mm.

Frontal prolongation of head unusually long, nearly equal to the remainder of head, dark gray above, more reddened or piceous on sides; nasus slender; palpi black. Antennae (male) moderately long; scape infuscated basally, obscure yellow at tip; pedicel yellow, flagellum black; flagellar segments only very slightly incised; verticils of the intermediate segments a little shorter than the segments. Head gray, somewhat clearer in front and on orbits; vertical tubercle only slightly developed; anterior vertex about three times the greatest diameter of scape.

Pronotum infuscated medially above, gray on sides. Mesonotum gray, the praescutum with four brown stripes, the intermediate pair narrowed and interconnected behind, the gray ground stripe further divided by a capillary brown vitta; praescutal interspaces with conspicuous brown setigerous punctures; scutum clear gray, each lobe patterned with brown, with an additional central brown spot; posterior sclerites of notum clear gray. Pleura clear gray, the dorsopleural membrane pale yellow. Halteres infuscated, the base of stem obscure yellow. Legs with the coxae clear gray; trochanters obscure brownish yellow; remainder of legs black; claws (male) toothed. Wings with a very weak brown tinge, vaguely patterned with more subhyaline areas and darker brown washes; cells *C* and *Sc*, with the stigma, more infuscated; very restricted brown seams along cord and vein *Cu* in cell *M*, the latter interrupted by a pale ground spot at near three-fourths the length; distal portions of outer radial cells slightly infuscated; a small dark cloud at origin of *Rs*; veins brown. Venation: *Rs* about twice *m-cu*;  $R_{2+3}$  lying relatively close to  $R_1$ ,

narrowing the cell; vein  $R_{1+2}$  atrophied except for a short basal spur; cell 1st  $M_2$  short-pentagonal,  $m$  the shortest element; cell  $M_1$  about two and one-half times its petiole, the latter nearly four times  $m$ .

Basal abdominal tergite brownish gray, succeeding tergites obscure brownish yellow, brownish black medially, the outer segments and most of sternites brownish black; caudal borders of segments narrowly pale; hypopygium brownish yellow. Ovipositor with genital shield obscure yellow; cerci straight and slender, hypovalvae strongly compressed. Male hypopygium with the tergite entirely separated from the sternite; accessory sclerite complete and unusually large; basistyle with its dorsal and ventral sutures well-indicated but with about one-fourth of the central portion fused with sternite. Ninth tergite having the caudal border with a very broad V-shaped notch, the lateral lobes low and obtuse; dorsal surface of tergite with an impressed median line for the entire length. Outer dististyle relatively slender, its greatest width less than one-sixth the length. Inner dististyle with the beak slender, slightly decurved at apex; dorsal crest with a row of about nine or ten strong setae, near their tips extended laterad into long hairlike points; lower beak with its upper margin dilated into a low lobe or flange; outer basal lobe only slightly developed. Gonapophyses brownish yellow, their surface microscopically setuliferous. Eighth sternite relatively large and sheathing, the posterior margin rounded, the median region and adjoining membrane with a brush of setae.

*Hab.*—China (Yunnan).

*Holotype*, ♂, Western Hills, Yunnan-fu, altitude 7,000–8,000 feet, September 1, 1934 (E. R. Tinkham); Alexander Collection. *Allotopotype*, ♀.

The most similar species is *Tipula (Oreomyza) mutiloides* Alexander, of southwestern China, which, while generally similar and evidently allied, differs conspicuously in its general appearance, wing pattern, venation, and structure of the male hypopygium. Both species have the conspicuous brush of setae at apex of the eighth sternite and the conspicuous lobe on upper margin of lower beak of inner dististyle. The row of spinous setae along the dorsal crest of the inner dististyle is much stronger and more abundant in *mutiloides*, as is also the outer basal lobe. Likewise in *mutiloides*, the beak is conspicuously stouter and flatter, while the tergal lobes are more obliquely truncated.

### 3. *Tipula (Oreomyza) gemula* n. sp.

General coloration gray; antennae yellow; femora obscure yellow basally, the tips blackened, more extensive on the fore legs; wings yellow, the prearcular field and cell *Sc* clearer yellow, patterned with brown, including conspicuous seams along veins *Cu* and 2nd *A*; outer radial field strongly darkened; *Rs* relatively long, nearly two and one-half times *m-cu*;  $R_{1+2}$  atrophied; cell  $M_1$  about one-half longer than its petiole.

*Female*.—Length, about 13 mm.; wing, 12.5 mm.

Frontal prolongation of head relatively long, nearly equal in length to the remainder of head, dark brown, the dorsal surface heavily gray pruinose; sides near apex a trifle more yellow; nasus slender; palpi dark

brown, the terminal segment broken. Antennae with scape and pedicel yellow, the former short, only about twice as long as the latter; flagellar segments yellow, the outer ones broken. Head gray, with indications of a capillary brown median vitta.

Pronotum dark brownish gray. Mesonotum dark gray, badly discolored in type. Pleura gray; dorsopleural membrane yellow. Halteres yellow, the knobs a trifle darker. Legs with coxae gray; trochanters obscure yellow; femora obscure yellow basally, the tips blackened, very extensively so on the fore pair, on posterior legs with only about the distal third darkened; tibiae obscure yellow, the tips blackened; tarsi black. Wings with the ground color yellow, the prearcular field and cell *Sc* clear light yellow, cell *C* a trifle more brownish yellow; a conspicuous brown pattern, as follows: Stigma elongate, confluent with a large area over fork of *Rs* and anterior cord; wing-apex, more intense in outer radial field; distal two-thirds of vein *Cu* in cell *M*, more interrupted before *m-cu*; posterior cord, outer end of cell *1st M*<sub>2</sub> and outer medial veins much less distinctly seamed with brown; a conspicuous brown seam over virtually the entire length of vein *2nd A*; axillary border narrowly darkened; in one wing of type with a small cloud at origin of *Rs*, lacking on opposite side; the yellow ground color includes most of the cells basad of cord and a broad post-stigmal band that virtually crosses the wing, becoming more widened in the outer medial field; veins yellow, darker in the patterned areas. Squama naked; veins beyond cord with abundant trichia. Venation: *Rs* relatively long, nearly two and one-half times *m-cu*; *R*<sub>1+2</sub> atrophied; cell *1st M*<sub>2</sub> slightly narrowed outwardly, *m* being about two-thirds as long as the basal section of *M*<sub>1+2</sub>; basal section of *M*<sub>3</sub> longer than *M*<sub>3+4</sub>; cell *M*<sub>1</sub> about one-half longer than its petiole.

Abdominal tergites dark brownish gray, the more basal segments reddened laterally; basal sternites blackened, the intermediate ones more reddened. Ovipositor with genital shield piceous, elongate, exceeding the slender cerci, the latter slender, virtually straight.

*Hab.*—China (Kwangtung).

*Holotype*, ♀, Kau-lin San, Lien-p'ing District, altitude 700–900 meters, April 21, 1940 (J. L. Gressitt & F. K. To).

The most similar regional species are *Tipula (Oreomyza) obnata* Alexander, of Formosa, and *T. (O.) percara* Alexander, of Kweichow, particularly the latter. While very similar in general appearance, the latter differs in certain important details of wing venation and pattern, especially the shorter *Rs* and the deep cell *M*<sub>1</sub> which is fully twice as long as its petiole. Unfortunately the male sex in both of these flies remains unknown.

### Limoniinae

#### 4. *Limonia (Dicranomyia) rhinoceros* n. sp. (Fig. 3)

Belongs to the *tristis (liberta)* group; general coloration gray; antennae black throughout; knobs of halteres infuscated; fore legs blackened, with only the femoral bases restrictedly reddened; wings relatively long and narrow, grayish subhyaline; *m-cu* before the fork of *M*; 1. ale hypo-

pygium with the tergite narrowed posteriorly, its apex obtusely rounded; ventral dististyle with the rostral prolongation bearing at its extreme tip a small upturned slender lobe; rostral spines arising from individual tubercles placed at the ends of a transverse blackened plate.

*Male*.—Length, about 7.5 mm.; wing,  $8.2 \times 1.7$  mm.

Rostrum and palpi black. Antennae black throughout; flagellar segments oval, constricted at their bases; terminal segment a little longer than the penultimate; longest verticils subequal in length to the segments. Head dark gray; anterior vertex reduced to a strip that is about one-half as wide as the diameter of scape, eyes correspondingly large; head narrowed behind.

Thorax with most of surface badly discolored by moisture, apparently clear light gray pruinose, this color still evident on the posterior sclerites of mesonotum despite the discoloration; evidences of three darker praescutal stripes persist. Halteres relatively long, stem yellow, knob infuscated. Legs with coxae dark, gray pruinose; trochanters reddish brown; fore legs black, with only the proximal fifth or sixth of the femora more reddened; posterior femora paler brown, the tips more narrowly and insensibly blackened; claws almost simple, with a basal mass of scarcely developed tubercles; empodia small, setiferous. Wings relatively long and narrow, as shown by the measurements; grayish subhyaline, the base restrictedly more whitened; stigma very small to scarcely evident, very pale brown, subcircular in outline; veins brown, those along cord with conspicuous oblitative areas; prearcular veins paling to yellow. Venation:  $Sc_1$  ending just beyond origin of  $Rs$ ,  $Sc_2$  some distance from its tip,  $Sc_1$  alone about one-fourth as long as  $Rs$ ; cell 1st  $M_2$  about as long as the distal section of  $M_{1+2}$ ;  $m-cu$  about one-third its length before the fork of  $M$ .

Abdomen, including hypopygium, brownish black, the surface chiefly pruinose. Male hypopygium (Fig. 3) with the ninth tergite,  $9t$ , strongly narrowed outwardly, the caudal margin obtusely rounded. Basistyle relatively small, its ventromesal lobe elongate, subcylindrical, the apex obliquely truncated and further produced into a smaller cylindrical lobule, at extreme apex with two modified flattened spinous setae, additional to numerous longer bristles of various sizes; at base of prolongation with a small, elongate-cylindrical lobe, at its apex bearing two or three long setae. Dorsal dististyle a long, nearly straight, slender rod, on distal fifth curved, terminating in an acute spinous point. Ventral dististyle,  $vd$ , large and fleshy, its area about twice that of the basistyle and its lobes; rostral prolongation stout, at tip bearing a small upturned slender lobe that bears a few setae; rostral spines two, from a common basal plate that is further produced into short individual tubercles that bear the spines, the latter slender, blackened, subequal. Gonapophyses,  $g$ , erect, produced directly into the slender blackened mesal-apical lobe, the latter small, strongly curved to the acute tip.

*Hab.*—China (Yunnan).

*Holotype*, ♂, Western Hills, near Kunming, altitude 2,100 meters, July 7, 1940 (J. L. Gressitt).

Allied to other regional species, such as *Limonia* (*Dicranomyia*) *sordida* (Brunetti), *L. (D.) subtristis* Alexander, *L. (D.) tristis* (Schummel) and others, differing from all in the large size, unusually narrow wings, and, especially, the structure of the male hypopygium, as the curious lobe at apex of the rostral prolongation, this feature suggesting the specific name.

5. *Limonia* (*Dicranomyia*) *tenuifilamentosa* n. sp. (Fig. 4)

Belongs to the *tristis* (*liberta*) group; size large (wing, male, over 7 mm.); mesonotal praescutum gray, with three brown stripes; male hypopygium with the rostral prolongation of the ventral dististyle blackened at apex and more or less emarginate; rostral spines very unequal in size, the smaller one from a conspicuous basal tubercle; proctiger produced into two long pale filamentous lobes that are fringed with numerous elongate spinous points.

*Male*.—Length, about 7–7.5 mm.; wing, 7.5–8.3 mm.

*Female*.—Length, about 7.5–8.5 mm.; wing, 8–8.5 mm.

Rostrum and palpi black. Antennae black throughout; flagellar segments oval, the outer ones becoming more elongate; terminal segment about one-third longer than the penultimate. Head gray; anterior vertex relatively narrow, only about one-third the diameter of scape; head narrowed behind.

Pronotum dark gray. Mesonotum gray, the praescutum with three dark brown stripes; scutal lobes patterned with brown; posterior sclerites of notum lighter gray. Pleura gray, more or less variegated with darker, especially on sternopleurite; dorsopleural membrane brownish yellow. Halteres with stem whitened, knob infuscated. Legs with coxae dark brown, pruinose; trochanters brownish yellow; femora pale brown, passing into darker brown at tips; tibiae and tarsi black. Wings narrow, whitish subhyaline, the prearcular field pale yellow; stigma very small, pale brown, becoming darker over vein  $R_2$ ; very narrow to scarcely indicated dusky seams over the cord; veins brown, more yellowish in the prearcular field. Venation: *Sc* short,  $Sc_1$  ending a slight distance beyond origin of  $R_s$ ,  $Sc_2$  opposite this origin; *m-cu* shortly before fork of *M*; vein *2nd A* sinuous, narrowing cell *1st A* just beyond level of arculus.

Abdomen brownish black, including the hypopygium with the exception of the chiefly yellow ventral dististyles. Male hypopygium (Fig. 4) with the tergite transverse, broadest across base, narrowed outwardly but with the apex broadly truncated and obtuse. Basistyle, *b*, relatively small, its total area less than that of the ventral dististyle; ventromesal lobe long-cylindrical, its tip obtuse, with the setae grouped on the distal third; besides the normal bristles, some of which are unusually strong, a small pencil comprising about eight setae on the face of style at near two-thirds the length; besides the ventromesal lobe, the main body of style provided with two tubercles, a longer one on face, tipped with several unusually long setae that exceed the tubercle in length; on mesal face near apex with a smaller tubercle that is tipped with about five long setae. Dorsal dististyle a strong blackened rod, its tip very gradually narrowed



into a long spine. Ventral dististyle, *vd*, yellow; rostral prolongation stout, its apex blackened, obliquely truncated or weakly emarginate; on outer face of prolongation back from tip with two rostral spines, these very unequal in size, placed close together; longer spine from a scarcely developed slender basal tubercle that merges gradually with the spine, the total length about twice that of the smaller, more slender spine which arises from a stout conspicuous tubercle. Gonapophyses, *g*, with mesal-apical lobes blackened, the tip decurved into a short spinous point; margin of lobe with coarse, irregular lobes or obtuse teeth. What is interpreted as representing the proctiger, *pr*, appears as two long pale filamentous lobes or blades, narrowed outwardly, their surface, particularly the margins, produced into very numerous elongated points; these latter are not setae but direct spinous extensions of the surface.

*Hab.*—China (Yunnan).

*Holotype*, ♂, Kunming, altitude 1,900 meters, July 5, 1940 (J. L. Gressitt). *Allotopotype*, ♀, July 1, 1940. *Paratopotypes*, 1 ♂, 1 ♀, with the allotype; *paratypes*, 3 ♀ ♀, Western Hills, near Kunming, altitude 2,100 meters, July 7, 1940 (J. L. Gressitt).

The present fly is very different from the other regional species of the group in the structure of the male hypopygium, especially the filamentous lobes of the proctiger and the rostral prolongation of the ventral dististyle. Superficially it most resembles *Limonia (Dicranomyia) rhinoceros* n. sp., but is entirely distinct.

#### 6. *Limonia (Dicranomyia) perobtusa* n. sp. (Fig. 6)

Belongs to the *tristis (liberta)* group; general coloration gray, the praescutum with a brown median stripe and somewhat less evident lateral ones; wings grayish subhyaline, very restrictedly patterned with brown, including the small inconspicuous stigma; cell 1st *M*<sub>2</sub> elongate; male hypopygium with the tergite transverse, the central portion of its caudal margin truncate; rostral prolongation of the ventral dististyle unusually broad and obtuse at apex; rostral spines two, unusually small, only about one-third the width of the prolongation opposite their point of insertion; gonapophyses with mesal-apical lobe long and slender, with smooth margins.

*Male.*—Length, about 6 mm.; wing, 7 mm.

Rostrum and palpi black. Antennae black throughout; flagellar segments relatively short-oval. Head gray.

Pronotum dark gray. Mesonotum chiefly gray, the praescutum with a conspicuous median brown stripe that is slightly constricted at near midlength, the lateral stripes less evident; scutal lobes similarly darkened; posterior sclerites of notum lighter gray. Pleura light gray, vaguely patterned with darker. Halteres with stem whitened, knob weakly darkened. Legs with coxae dark gray; trochanters obscure testaceous yellow; femora brown, the tips passing into brownish black; tibiae and basitarsi light brown, their tips darker; remainder of tarsi black. Wings relatively long and narrow, pale grayish subhyaline, the base more whitened; very restricted to scarcely indicated darkenings at arculus; fork of *Sc* and

origin of  $R_s$ ; a stigmal seam over  $R_2$ ; very vague to scarcely indicated clouds over the cord and outer end of cell 1st  $M_2$ ; veins brown, very pale at wing-base. Venation:  $Sc_1$  ending just beyond origin of  $R_s$ ,  $Sc_2$  at its tip;  $R_2$  in alignment with and much longer than the free tip of  $Sc_2$ ; cell 1st  $M_2$  elongate, exceeding vein  $M_{1+2}$  beyond it and approximately three times as long as  $M_4$ ;  $m-cu$  close to fork of  $M$ .

Abdomen dark gray; hypopygium brownish black, the ventral dististyle pale yellow. Male hypopygium (Fig. 6) with the tergite,  $9t$ , transverse, broadest subbasally, narrowed outwardly, the apex extensively truncated. Basistyle,  $b$ , small, its total area approximately two-thirds that of the ventral dististyle; ventromesal lobe large and bulbous, the setae arranged at distal end, including a pencil of unusually long setae; two additional darkened tubercles tipped with long setae, the larger one on face of style beyond midlength, the second on mesal face near the outer angle. Dorsal dististyle a long slender rod, before apex a trifle wider, thence narrowed into a long straight apical spine. Ventral dististyle,  $vd$ , with the rostral prolongation unusually broad and obtuse at apex, the two rostral spines unusually small, placed close together at near midlength of outer margin of the prolongation; spines subequal in length, about one-third the width of the rostrum opposite the point of their insertion. Proctiger a broad transverse pale membrane, its caudal margin broadly rounded, the median region very shallowly emarginate; surface with abundant spinous points. Gonapophyses,  $g$ , with mesal-apical lobe long and slender, its tip slightly decurved, the margins smooth; notch formed between the lobe and the body of apophysis relatively small.

*Hab.*—China (Yunnan).

*Holotype*, ♂, Kunming, altitude 2,100 meters, July 7, 1940 (J. L. Gressitt).

The present fly is most similar to species such as *Limonia* (*Dicranomyia*) *sordida* (Brunetti), widespread in southern Asia, and particularly to the subspecies *brevicula* Alexander, of Luzon, differing especially in the venation and in the structure of the male hypopygium, including the tergite, basistyle, rostral prolongation and gonapophyses.

#### 7. *Limonia* (*Dicranomyia*) *subtristoides* n. sp. (Fig. 7)

Belongs to the *tristis* (*liberta*) group; general coloration gray, the praescutum with a conspicuous median brown stripe and less evident lateral ones; knobs of halteres weakly infuscated; wings whitish subhyaline, almost unpatterned; male hypopygium with the ninth tergite transverse, its caudal border very gently emarginate, the cephalic margin convex, so the sclerite is widest at the midline; dorsal dististyle slightly surpassing the width of the ventral dististyle; rostral prolongation long and slender, the two spines unusually long, from conspicuous basal tubercles; gonapophyses with margins of mesal-apical lobes smooth.

*Male*.—Length, about 6.5 mm.; wing, 7.2 mm.

Rostrum and palpi black. Antennae black, the scape slightly pruinose; flagellar segments oval. Head gray.

Thoracic notum gray, the praescutum with a conspicuous brown

median stripe, the lateral stripes small and much less evident; scutal lobes weakly patterned with darker; parascutella and posterior border of scutellum obscure yellow. Pleura gray, the dorsopleural region dark. Halteres long and slender, stem pale, knob weakly infuscated. Legs with coxae gray; trochanters brownish yellow; femora pale yellowish brown, the tips slightly more darkened; tibiae and tarsi passing through brownish black to black. Wings narrow, whitish subhyaline, the prearcular field even clearer; stigma barely indicated as a seam over  $R_2$ ; seams over cord and elsewhere as found in allied species are here virtually lacking; veins pale brown, more yellowed in the brightened fields. Venation:  $Sc$  relatively short,  $Sc_1$  ending a distance before origin of  $R_s$  that slightly exceeds its own length;  $R_s$  oblique, in approximate longitudinal alignment with basal section of  $R_{4+5}$ ; cell  $1st M_2$  about equal in length to vein  $M_{1+2}$  beyond it.

Abdomen brownish black, the hypopygium more brownish yellow, the ventral dististyles even more conspicuously yellow. Male hypopygium (Fig. 7) with the ninth tergite,  $9t$ , transverse, its caudal margin very gently emarginate, leaving very low and broad lateral lobes; cephalic margin of tergite convex in outline so that the sclerite is longest (across the sclerite) at the midline. Basistyle,  $b$ , with its total area subequal to that of the ventral dististyle; ventromesal lobe cylindrical, with the setae apical and distributed obliquely down the outer margin almost to base of lobe; a group of modified stronger bristles beyond midlength of lobe; on face of style the usual two additional lobes characteristic of the group, the larger one placed near base of the ventromesal lobe, tipped with long setae; smaller lobe very low and obtuse, darkened, its position indicated chiefly by four long dark-colored bristles. Dorsal dististyle a moderately slender rod, its tip acute; the style just exceeds the width of the ventral dististyle at the point where it normally rests. Ventral dististyle,  $vd$ , relatively large, as compared with *tristoides*, broadest across the outer portion, narrowed very gradually into the rostral prolongation, the latter blackened and obtuse at tip; rostral spines unusually long, gently curved, both from strong basal tubercles that are slightly unequal in size. Gonapophyses,  $g$ , with mesal-apical lobe slender, its acute tip feebly decurved, the margins smooth. Proctiger,  $pr$ , consisting of two broad lobes separated by a median notch, the outer surface provided with abundant spinulose points, the portion near the notch glabrous or virtually so.

*Hab.*—China (Yunnan).

*Holotype*, ♂, Kunming, Yunnan-fu, altitude 1,900 meters, July 5, 1940 (J. L. Gressitt).

The most similar described species is *Limonia (Dicranomyia) tristoides* Alexander, of Manchuria. This is best distinguished by the structure of the male hypopygium, particularly the tergite, basistyle, dististyles and gonapophyses. The ventral dististyle in *tristoides* is even narrower, with the dorsal dististyle extending some distance beyond its outer margin. The shape of the structure herein called the proctiger is described in general terms only for the various species discussed. Undoubtedly excellent specific characters will be found in this structure when it is more carefully studied in *Dicranomyia*.

8. *Limonia (Alexandriaria) unibrunnea* n. sp.

General coloration of thoracic notum dark brown; thoracic pleura with anterior portion dark brown, the posterior sclerites yellow; fore coxae darkened, the others yellow; remainder of legs yellowish brown; wings with a faint brownish tinge; *Sc* relatively long, *Sc*<sub>1</sub> ending just before origin of *Rs*, *Sc*<sub>1</sub> long, nearly equal to vein *R*<sub>1</sub>; *Rs* subequal in length to basal section of *R*<sub>4+5</sub>; male hypopygium with the tergite notched medially, forming broadly rounded lateral lobes; rostral prolongation of ventral dististyle slender, with two slightly unequal rostral spines.

*Male*.—Length, about 4.5 mm.; wing, 5 mm.

Rostrum light brown; palpi somewhat darker. Antennae dark brown, the pedicel somewhat darker; basal flagellar segments oval, the first one-half longer than the second and with a conspicuous basal pedicel; outer segments more elongate, the terminal one only slightly less than twice as long as the penultimate. Head dark brown, brighter on occiput; anterior vertex reduced to a narrow strip.

Thoracic dorsum almost uniform dark brown, the humeral region of praescutum and the median region of scutum near the suture paler brown; pleurotergite abruptly paler, brownish yellow. Pleura with the propleura and mesepisternum dark brown; dorsopleural membrane, mesepimeron and metapleura abruptly pale. Legs with the fore coxae dark brown, the remaining coxae yellow; trochanters testaceous yellow; legs light brown or yellowish brown throughout; claws with a slender basal spine. Wings with a very faint brownish tinge, the prearcular and proximal costal fields more yellow; stigma oval, very pale brown, only a trifle darker than the ground; veins pale brown. Costal fringe at near midlength of wing long and conspicuous, becoming much shorter near wing base. Venation: *Sc* relatively long, *Sc*<sub>1</sub> ending immediately before origin of *Rs*, *Sc*<sub>2</sub> far from its tip so that *Sc*<sub>1</sub> alone is nearly equal to vein *R*<sub>1</sub>; *Rs* relatively long, arcuated, subequal to basal section of *R*<sub>4+5</sub>; free tip of *Sc*<sub>2</sub> and *R*<sub>2</sub> in transverse alignment; *m-cu* immediately before the fork of *M*, a little longer than the distal section of *Cu*<sub>1</sub>; vein 2nd *A* evenly convex, not gently sinuous, as in allied species.

Abdominal tergites and most of hypopygium dark brown, the sternites and ventral dististyles paler, more yellowish. Male hypopygium with the tergite transverse, the caudal margin with a broad V-shaped notch that isolates broadly rounded lateral lobes, these provided with coarse setae. Dorsal dististyle a strongly curved sickle, widest at and just beyond midlength, thence very gradually narrowed into a long spine. Ventral dististyle large and fleshy, oval, its area approximately twice that of the basistyle; rostral prolongation slender, the tip obliquely truncated; two slightly unequal rostral spines, placed close together near the base of prolongation, the inner spine slightly longer. Gonapophyses with mesal-apical lobe long and slender, with smooth margins, the tip narrowly darkened, stout but acute.

*Hab.*—China (Kwangtung).

*Holotype*, ♂, Lin-ping to Noi-koon, Lien-p'ing District, April 14, 1940 (J. L. Gressitt & F. K. To).

The only other species of the subgenus *Alexandriaria* Garrett known from China is *L. (A.) atayal* Alexander, known from Formosa and Fukien. This is apparently the closest relative of the present fly, differing especially in the coloration of the body and wings, and in the details of venation, as the length of *Rs*, the short distal section of *Cu<sub>1</sub>*, and the more sinuous vein *2nd A*.

9. **Helius (Helius) lienpingensis** n. sp. (Fig. 2)

General coloration dark brown, the scutellum, postnotum and ventral pleurites more testaceous yellow; anterior vertex (male) very narrow; wings strongly tinged with brown, stigma and apex slightly darker; cell *R<sub>3</sub>* at margin about two and one-half times as extensive as is cell *R<sub>2</sub>*; male hypopygium with the lateral tergal arms appearing as narrow oval blades, each with the outer margin produced laterad into a powerful spinous point, separated from the main body of blade by a narrow notch; outer dististyle with a short subapical spine; aedeagus straight.

*Male*.—Length, about 5.5 mm.; wing, 6 mm.

Rostrum about equal in length to the remainder of head, brown; palpi darker brown. Antennae with scape and pedicel dark brown; flagellum broken. Head dark brown, vaguely pruinose; anterior vertex reduced to a linear strip, eyes correspondingly large.

Pronotum and anterior portion of mesonotum dark brown, the scutellum and postnotum paler, more testaceous yellow. Propleura and dorsal portion of mesopleura, including the dorsopleural membrane and anepisternum, infuscated; ventral pleurites, with the pleurotergite, testaceous yellow. Halteres with stem infuscated, narrowly but abruptly yellow at base, knob broken. Legs with the coxae yellowish brown, the fore pair darker; trochanters yellow; remainder of legs broken. Wings strongly tinged with brown, slightly more yellowish brown in the prearcular and costal fields; stigma and wing apex in outer radial field a very little darker; veins brown. Costal fringe dense and relatively long. Venation: *Sc<sub>1</sub>* subatrophied, about opposite five-sixths the length of *Rs*, *Sc<sub>2</sub>* perpendicular to its tip, conspicuous; anterior branch of *Rs* gently sinuous; cell *R<sub>3</sub>* approximately two and one-half times as wide at margin as cell *R<sub>2</sub>*; cell *1st M<sub>2</sub>* generally rectangular in outline, a little narrowed outwardly, shorter than any of the veins beyond it; *m-cu* more than one-half its length beyond the fork of *M*.

Abdominal tergites light brown, narrowly bordered caudally and slightly more extensively on the sides with dark brown; basal sternites more uniformly pale; outer segments, including the hypopygium, more uniformly dark brown. Male hypopygium (Fig. 2) with the lateral tergal arms, *9t*, unusually narrow, appearing as slender oval blades, their outer margin produced laterad into a powerful flattened spinous point that is separated from the main body of blade by a narrow notch. Basistyle, *b*, without lobes. Outer dististyle a small blackened glabrous rod, at apex narrowed into a strongly curved point, with a small lateral denticle some distance back from tip. Inner dististyle, *id*, about twice as long as the outer, the distal half decurved. Aedeagus, *a*, apparently straight, not strongly spiraloid as in related species.

*Hab.*—China (Kwangtung).

*Holotype*, ♂, Lin-ping to Noi-koon, Lien-p'ing District, April 14, 1940 (J. L. Gressitt & F. K. To).

*Helius (Helius) lienpingensis* is most similar to *H. (H.) tienmuanus* Alexander, of northern Chekiang, which differs especially in the structure of the male hypopygium, particularly the tergal blades, dististyles and aedeagus. The apparently straight and relatively short aedeagus is quite different from all similar forms, yet the organ does not appear to be broken or mutilated in any manner. Although the unique type is in poor condition I do not hesitate to describe the species as new. The homologies of what I have here and elsewhere called "tergal blades" remain in question, as do certain phallosomic parts in various other groups of the Tipulidae. In some other papers I have considered these blades to represent gonapophyses but they seem rather to belong to the tergite.

10. *Hexatoma (Eriocera) elevata* n. sp. (Fig. 5)

Size small (wing, female, 8 mm.); general coloration of body dark brown; halteres relatively long, dark brown; legs yellow; wings with a strong reddish brown tinge; outer veins of wing with macrotrichia; vein  $R_{2+3+4}$  unusually arched, perpendicular at its origin;  $R_s$  and both sections of  $R_5$  in direct longitudinal alignment; cell 1st  $M_2$  about as long as vein  $M_3$  beyond it; *m-cu* at near two-thirds the length of cell 1st  $M_2$ ; ovipositor with unusually elongate valves.

*Female*.—Length, about 9 mm.; wing, 8 mm.

Rostrum and palpi brownish black. Antennae with scape and pedicel dark brown to brownish black; flagellum broken. Head dark brown, the surface subopaque by a sparse pruinosity; vertical tubercle low but evident, depressed on either side; anterior vertex wide, approximately four times the diameter of scape.

Pronotum dark brown. Mesonotum almost uniformly dark brown to brownish black, the surface subnitidous, somewhat more pruinose on the scutellum and postnotum; no praescutal stripes or setae. Pleura brownish black. Halteres dark brown, relatively long. Legs with the coxae brownish black; trochanters somewhat paler; femora obscure yellow, the tips narrowly and weakly darkened; remainder of legs yellow, only the terminal tarsal segments darkened. Wings (Fig. 5) with a strong reddish brown ground, virtually undifferentiated or patterned; one wing of the unique type differs from the other as described, the proximal third or more being strongly darkened, the paler outer portion vaguely patterned by more yellowish spots, particularly in the vicinity of the cord; veins reddish. Macrotrichia of veins beyond cord numerous, long and conspicuous, occurring on  $R_3$ ,  $R_4$ ,  $R_5$ , distal sections of  $M_{1+2}$  and  $M_3$ , and on  $M_4$ . Venation:  $Sc_1$  ending about opposite *r-m*,  $Sc_2$  some distance from its tip,  $Sc_1$  alone subequal to *r-m*;  $R_s$  relatively long, fully equal to the distal section of  $R_5$ ;  $R_{2+3+4}$  unusually arched or elevated, at origin perpendicular or virtually so;  $R_{1+2}$  and  $R_{2+3}$  subequal;  $R_s$  in direct longitudinal alignment with both sections of  $R_5$ , forming a straight line to margin or virtually so; cell 1st  $M_2$  rectangular, about equal in length to vein  $M_3$  be-

yond it; *m-cu* at near two-thirds the length of cell 1st  $M_2$ , about one-half longer than the distal section of  $Cu_1$ ; cell 2nd  $A$  relatively narrow, the vein unusually straight.

Abdomen dark brown, including the genital shield, the sternites a little paler. Ovipositor with the cerci and hypovalvae yellowish horn color, elongate, especially the nearly straight, slender cerci.

*Hab.*—China (Kwangtung).

*Holotype*, ♀, Loh fau shan, altitude 4,200 feet, July 25, 1937 (received from the Heude Museum, type to be returned).

This small species is readily told from all other described regional forms by the venation. In the arched  $R_{2+3+4}$  it suggests species such as *Hexatoma (Eriocera) kamiyai* Alexander, *H. (E.) kariyai* Alexander, and others, but is entirely distinct.

#### 11. *Gonomyia (Protogonomyia) praetenuis* n. sp. (Fig. 8)

General coloration black, sparsely pruinose; antennae and legs black; wings whitish subhyaline, the stigma unusually long and narrow, brown; male hypopygium with the outer dististyle an unusually narrow pale blade that is drawn out into a long and slender spinous point, its tip curved; aedeagus moderately flattened, the apex a short decurved point.

*Male*.—Length, about 6 mm.; wing, 6.5 mm.

Rostrum and palpi black. Antennae with scape dark brown, sparsely pruinose; pedicel and flagellum black; flagellar segments elongate-oval to subcylindrical, the longest verticils about as long as the segments, unilaterally distributed. Head dark plumbeous gray, more reddened in front and on extreme posterior portion; anterior vertex broad, nearly three times the diameter of scape.

Pronotum black, the scutellum and pretergites orange yellow. Mesonotal praescutum black, the surface pruinose to produce a plumbeous effect, the stripes not or scarcely evident; humeral region orange-yellow; posterior border of scutellum vaguely reddened; postnotum plumbeous, the dorsal half of pleurotergite and extreme adjoining borders of mediotergite obscure yellow. Pleura black, sparsely pruinose, more variegated with obscure yellow on the dorsopleural membrane and ventral pteropleurite. Halteres blackened, base of stem narrowly yellow. Legs with coxae black, very sparsely pruinose; trochanters dark brown; remainder of legs black. Wings whitish subhyaline, the base a trifle more whitened; stigmal region brown, very long and narrow, adjoining vein  $R_1$ , not reaching vein  $R_3$  behind; veins dark brown, those in posterior portion of prearcular field paler. Venation: *Sc* long,  $Sc_1$  ending only a short distance before the fork of  $R_s$ ,  $Sc_2$  some distance from its tip so  $Sc_1$  alone is about two-fifths  $R_s$ ;  $R_{2+3+4}$  straight, about twice the basal section of  $R_s$ ; cell 2nd  $M_2$  nearly three times its petiole; *m-cu* immediately before the fork of  $M$ .

Abdomen, including hypopygium, black. Male hypopygium (Fig. 8) with the outer lobes of basistyle, *b*, stout, flattened. Outer dististyle, *od*, a very long slender yellow rod, slightly expanded at base, thence unusually narrowed and attenuated, tapering gradually to a hair-like curved

tip. Intermediate style, *md*, with the stem conspicuously hairy; branches very unequal in size and shape, the outer one unusually long and slender, with a fringe of long setae on the proximal third; inner branch a flattened paddle. Inner dististyle, *id*, a flattened-triangular dark lobe, with about a dozen strong setae at the subacute tip. Aedeagus, *a*, moderately flattened, the apex a short decurved point; surface of blade with numerous elongate setae.

*Hab.*—China (Kweichow).

*Holotype*, ♂, Kweiyang, altitude 1,000 meters, July 12, 1940 (J. L. Gressitt).

In its hypopygial structure, the present fly is most similar to the type of the subgenus, *Gonomyia* (*Protogonomyia*) *confluenta* Alexander, of Formosa, while being entirely different from the other species so far discovered in China, *G. (P.) perturbata* Alexander and *G. (P.) tienmuensis* Alexander. Whether the organ of the hypopygium above described as being an inner dististyle is actually a dististyle or an inner lobe of the basistyle remains somewhat in question but in the light of more abundant material received in late years, it now appears to represent a third dististyle, as above described.