

UNDESCRIBED SPECIES OF CRANE-FLIES
FROM THE HIMALAYA MOUNTAINS
(DIPTERA: TIPULIDAE), VIII*

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ABSTRACT

The following new species are defined: *Gonomyia (Progonomyia) bisiculifera*; *G. (P.) protensa*; *G. (Gonomyia) tanaocantha*, from Sikkim; *G. (Lipophleps) kama*; *G. (L.) varsha* from Kumaon and West Bengal, and *G. (L.) mizoensis* from the Lushai Hills, Assam.

The preceding part under this general title was published in the *Journal of the New York Entomological Society*, 70: 10-16; 1962. As was the case in all recent parts the materials were included in vast series of these flies collected by Dr. Fernand Schmid, collections so rich as to have virtually doubled the number of species of these flies previously known from India. My deep thanks again are extended to Dr. Schmid for the privilege of studying this important series. The types of the new species are in my personal collection of Tipulidae.

***Gonomyia (Progonomyia) bisiculifera* new species**

Size medium (wing of male about 5.5 mm.); mesonotal praescutum and scutum polished black, posterior sclerites and the pleura more pruinose, scutellum darkened; knobs of halteres whitened; legs black, fore femora narrowly yellowed at bases; wings grayish white, beyond cord more darkened,

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with a still darker band at cord; male hypopygium with outer apical angle of basistyle extended into a broad plate; two dististyles, the inner including a heavy blackened blade and two outer slender spines from a short common base; apex of aedeagus produced into a spine.

MALE Length about 6 mm.; wing 5.6 mm.; antenna about 1.2 mm.

Rostrum and palpi black. Antennae black; flagellar segments very strongly produced beneath, narrowed into apical pedicels, outer segments gradually more slender; verticils very conspicuous, those on outer face at base longer than the segments. Head gray.

Pronotum black, the pleura more polished. Mesonotal praescutum and scutal lobes intense polished black, midregion of suture more yellowed; posterior sclerites of mesonotum, including the midregion of scutum, black, gray pruinose; posterior border of scutellum vaguely paler. Pleura black, surface very slightly dulled by pruinosity, sternopleurite more polished; dorsopleural region and conspicuous membrane behind the propleura whitish yellow, meral region more obscure yellow. Halteres with stem infuscated, knob whitened. Legs with coxae black, posterior pair more pruinose; trochanters black; remainder of legs black, fore femora narrowly yellowed basally. Wings grayish white before cord, weakly infuscated beyond, more evidently so outwardly; a darker brown band from stigma over the cord; veins brownish black. Macrotrichia on longitudinal veins beyond general level of origin of R_s , more sparse on 1st A . Venation: Sc very long, Sc_1 ending about opposite six-sevenths the long R_s ; R_{2+3+4} and R_{3+4} subequal, both a little longer than R_2 ; cell 2nd M_2 about one-half longer than its petiole; $m-cu$ about two-thirds its length beyond the fork of M .

Abdomen, including hypopygium, black. Male hypopygium with outer apical lobe of basistyle a broad flattened plate or flange, its outer end short pointed, surface with setae. Dististyles complex; outer style a yellow blade narrowed to the obtuse tip; inner style distinctive, black, including a broad inner blade and a narrow outer one that forks just beyond base into two slender slightly unequal spines, both acutely pointed at tips; outer spine slightly more slender, surface microscopically roughened. Aedeagus broad, the apex narrowed into an acute spine.

HOLOTYPE, ♂, Yugang, Sikkim, 5700 feet, May 14, 1959 (Schmid).

Gonomyia (Progonomyia) bisiculifera is generally similar to *G. (P.) protensa* new species, differing conspicuously in the structure of the male hypopygium, particularly the spine of the basistyle, dististyles and aedeagus. These two flies are the first members of the subgenus *Progonomyia* Alexander to be discovered in India. In both species the basal attachment of the dististyles is peculiar, apparently being interconnected at base and attached to condyles at the inner apical angle of the basistyle. In this regard these flies differ from the more normal condition found in the Neotropical and South African species of the subgenus.

Gonomyia (Progonomyia) protensa new species

Size relatively small (wing of male 4.5 mm.); mesonotal praescutum and scutal lobes polished black, the posterior sclerites more pruinose, scutellum and dorsopleural membrane light yellow; knobs of halteres pale yellow; legs black, fore and middle femora paler basally; wings with cells before cord whitened, outer cells more suffused, stigma and a seam over cord darker brown; R_2 present; abdomen black; male hypopygium with outer apical angle of basistyle produced into a slender spine; two dististyles, the inner one blackened, biramous.

MALE Length about 5.5 mm.; wing 4.5 mm.; antenna about 1.2 mm.

Rostrum shiny black; palpi black. Antennae black throughout; proximal flagellar segments suboval, the lower face more produced; outer segments long-oval, all flagellar segments with long conspicuous verticils. Head gray.

Pronotum black, pretergites yellow. Mesonotal praescutum and scutal lobes uniformly polished black, central region of scutum broadly gray pruinose, point of the V-shaped suture obscure yellow; scutellum light yellow, parascutella black; mediotergite black, surface slightly opaque by a vague bloom. Pleura and pleurotergite polished black, dorsopleural membrane broadly light yellow; dorsal part of meron and the metapleura restrictedly yellowed. Halteres with stem blackened, knob very pale yellow. Legs with coxae black; trochanters brownish black; remainder of legs black, the proximal fourth or fifth of fore and middle femora brownish yellow. Wings with cells before cord chiefly whitened, beyond this chiefly weakly darkened, the bases of the cells slightly paler; stigma and a conspicuous seam over cord darker brown; veins dark brown, prearcular veins slightly paler. Veins beyond general level of origin of R_s with conspicuous macrotrichia, including also the outer third of *1st A* and most of *2nd A*. Venation: Sc long, Sc_1 ending shortly before fork of R_s , Sc_2 far retracted; vein R_2 preserved, as in the subgenus; R_{2+3+4} and R_{3+4} subequal; cell *2nd M*₂ subequal to its petiole; *m-cu* from two-thirds to three-fourths its length beyond fork of *M*.

Abdomen polished black, segments eight and nine slightly paler. Male hypopygium with outer apical angle of basistyle produced into a long slender spine, near its base with several very long setae. Two dististyles, the outer a flattened yellow blade that narrows gradually to the obtuse tip; inner style blackened, biramous, including a large outer sickle-shaped structure that narrows to the acute tip and a shorter inner arm that is very unequally bispinous. Aedeagus with tip subacute; surface with few but very long setae.

HOLOTYPE, ♂, Manu, Sikkim, 4920 feet, May 10, 1959 (Schmid).

In its general appearance, *Gonomyia (Progonomyia) protensa* is very similar to the larger *G. (P.) bisiculifera*, differing conspicuously in hypopygial structure.

Gonomyia (Gonomyia) tanaocantha new species

Allied to *multiacuta*; mesonotum dark brown, variegated with yellowish brown; legs brownish black; wings with Sc_1 ending about opposite one-

third *Rs*; male hypopygium with spine of inner dististyle very long; aedeagus elongate, terminating in two small recurved spines.

MALE Length about 4.5 mm.; wing 5.2 mm.

Rostrum dark brown; palpi black. Antennae with scape and pedicel brownish black; flagellum broken. Head dark gray.

Pronotum yellow. Mesonotal praescutum and scutal lobes chiefly dark brown, paler laterally; central region of scutum, scutellum, sides of mediotergite and pleurotergite yellowish brown. Pleura obscure yellow, more darkened on anepisternum and less evidently on ventral sternopleurite. Halteres with stem obscure yellow, knob destroyed by insect pests. Legs with fore coxae dark brown, middle pair less darkened on anterior face, remainder of coxae yellow; trochanters yellow; remainder of legs brownish black. Wings weakly tinged with brown, prearcular and costal fields more yellowed; stigma pale brown; veins darker brown, paler in the brightened fields. Macrotrichia on longitudinal veins beyond general level of origin of *Rs*, lacking on about the basal third of *Sc*, narrow bases of *M* and 1st *A*, present on outer third or less of basal section of *Cu*₁ and 2nd *A*. Venation: *Sc* relatively long, *Sc*₁ ending about opposite one-third *Rs*, *Sc*₂ faint, placed near tip; *R*₂₊₃₊₄ only a little longer than *R*₃; *m-cu* far distad, about three-fourths its length beyond fork of *M*.

Abdomen dark brown, hypopygium slightly paler. Male hypopygium generally as in *multiacuta*, but with various structures extended, notably the inner dististyle and aedeagus. Tergal plate conspicuous, subquadrate in outline, posterior border slightly concave, lateral angles and sides with dense coarse setae. Basistyle with apical lobe small. Outer dististyle a darkened blade, constricted beyond base, widest at midlength, thence narrowed to an acute point; lower surface with abundant delicate erect setae; inner style with body short and obtuse, the fasciulate setae very long; darkened spine on face of style long-extended into a blackened rod, before apex on outer margin with a single strong recurved bristle. Phallosome including symmetrical gonapophyses at base, narrowed outwardly into acute points, decussate at midlength; aedeagus elongate, terminating in two small recurved spines.

HOLOTYPE, ♂, Chumtang, Sikkim, 5120 feet, July 18, 1959 (Schmid).

Although it obviously is allied to *Gonomyia* (*Gonomyia*) *multiacuta* Alexander, the present fly is quite distinct in the structure of the male hypopygium, especially the dististyles and aedeagus.

***Gonomyia* (*Lipophleps*) *kama* new species**

General coloration of mesonotum brownish gray, scutellum broadly obscure yellow; pleura dark brown, with a conspicuous white longitudinal stripe; femora obscure yellow with a brownish black subterminal ring; wings weakly darkened, with vague paler areas on disk, *Sc* short; abdominal tergites dark brown, their posterior borders obscure yellow; male hypopygium with two terminal dististyles, the outer blackened, bifid; apical fasciulate bristles of inner style very short; phallosomic complex including paired needlelike spines.

MALE Length about 3.5 mm.; wing 3.9–4.2 mm.

FEMALE Length about 4.5 mm.; wing 4.8–5 mm.

Rostrum and palpi black. Antennae brownish black, scape and pedicel above light yellow; flagellar segments elongate, with very long verticils. Head yellow, vertex patterned with brown.

Pronotum and pretergites light yellow. Mesonotal praescutum and scutum almost uniformly brownish gray, posterior margin of scutal lobes yellowed, pseudosutural foveae reddish brown; scutellum broadly obscure yellow, narrowly darkened medially at base; mediotergite dark gray, pleurotergite yellowed. Pleura dark brown, pruinose, dorsal pteropleurite more yellowed; a broad conspicuous whitened longitudinal stripe extending from and including the fore coxae to the base of abdomen. Halteres light yellow, base of knob more infuscated. Legs with coxae pale yellow, fore pair more whitened, base narrowly more darkened; trochanters yellow; femora obscure yellow with a brownish black subterminal ring, the pale tip narrow; tibiae brownish yellow, tarsi passing into black. Wings weakly darkened, stigma oval, pale brown; prearcular and costal fields light yellow; vague paler areas on disk, especially before and beyond cord, before and beyond stigma and in the Anal cells; veins brownish yellow, cord darker, veins in costal field clearer yellow. Most longitudinal veins beyond cord with macrotrichia, lacking on anterior branch of *Rs*. Venation: *Sc* short, *Sc*₁ ending some distance before origin of *Rs*, branches of the latter strongly divergent, cell *R*₅ at margin very extensive.

Abdominal tergites dark brown, posterior borders obscure yellow, narrowly interrupted at the midline; sternites brownish yellow medially, darker on sides; outer segments more uniformly brownish black; hypopygium ferrugineous, especially beneath. Male hypopygium with the basistyle stout. Two dististyles, the blackened outer style bifid near base into a long slender outer arm and a strong basal spine; margin of longer arm with appressed spinules, more abundant near apex; inner style simple, slightly narrowed outwardly, apex truncate and bearing two unusually stout fasciculate bristles or spines, with additional normal setae on outer half of style. Phallosome unusually complex, including elements as follows: two lateral apophyses that extend caudad into subhyaline needlelike spines, at base of mesal margin with a shorter curved arm that narrows to an acute point; a further complex central sclerotized scaffolding.

HOLOTYPE ♂, Sutol, Pauri Garhwal, Kumaon, 7250 feet, August 18, 1958 (Schmid). Allotype, ♀, Kanol, Pauri Garhwal, 8530 feet, August 19, 1958. Paratypes, ♂♂♀♀, with the allotype; other ♂♂♀♀, Dhar, Pauri Garhwal, 7220 feet, August 17, 1958; Taproban, Pauri Garhwal, 7300 feet, July 28, 1958; Tarak Tal, Pauri Garhwal, 7540 feet, August 14, 1958 (all Schmid).

Gonomyia (Lipophleps) kama is generally similar to *G. (L.) flavomarginata* Brunetti and a few regional allies, differing from all in the hypopygial structure.

***Gonomyia (Lipophleps) mizoensis* new species**

Allied to *diacantha*; general coloration of mesonotal praescutum and

scutum brownish black, sparsely pruinose, scutellum broadly yellow; pleura conspicuously striped longitudinally with brown and white; legs brownish black; wings grayish, base and costal region more yellowed, disk with extensive slightly darker clouds; *Sc* short, basal section of R_s elongate; male hypopygium with outer dististyle strongly bispinous at base, inner style terminating abruptly in a blackened spine; phallosome chiefly pale, broadly transverse, lateral blades each bearing two small blackened points.

MALE Length about 4.5 mm.; wing 3 mm.

Rostrum and palpi black. Antennae black, dorsal face of scape obscure yellow; basal flagellar segments very long and slender, verticils very long, as in the subgenus. Head light yellow, disk of posterior vertex with a broad brown subtriangular area.

Pretergites and dorsal pronotum light yellow, cervical region and sides of pronotum brown. Mesonotal praescutum and scutum brownish black, sparsely pruinose, humeral region very restrictedly obscure orange; pseudo-sutural foveae polished dark brown; central region of scutum vaguely yellowed; scutellum yellow, darkened at base; postnotum brown posteriorly, base obscure yellow, being a continuation of a long pale pleural stripe. Pleura pale brown, above bordered by the pale yellow dorsopleural region, beneath by a pale yellow longitudinal stripe, beginning on fore coxae; ventral sternopleurite and meron purplish brown. Halteres with stem and base of knob medium brown, remainder of knob light yellow. Legs with coxae yellow, bases of mid pair very narrowly darkened; trochanters darkened anteriorly, more yellowed behind; remainder of legs brownish black; posterior femora with a series of erect elongate setae. Wings grayish, base and costal border light yellow; stigma pale brown, preceded and followed by light yellow areas; extensive slightly darker brown clouds, chiefly in cells *R* and *M*, at anterior cord and in outer radial field; veins pale brown, scarcely brighter in the costal field. Veins R_s , M_{1+2} and M_3 with macrotrichia. Venation: *Sc* short, Sc_2 close to tip of Sc_1 , distance on margin between Sc_1 and origin of *Rs* nearly equal to *Rs*, branches of the latter divergent; basal section of R_s long; *m-cu* shortly before fork of *M*.

Abdominal tergites and hypopygium brown, sternites paler. Male hypopygium with dististyles terminal; outer style a stout blackened rod, apex obtuse, on face of rod beyond midlength with about four microscopic spines; inner margin of basal half produced into two stout spines, the outer one much stouter; inner style a simple stout yellow rod, apex abruptly narrowed into a blackened spine. Phallosome complex in structure, entirely different from that of *diacantha*; transverse, with lateral flattened disks each of which bears two small blackened points, the inner one an acute spine; inner arm of either side produced into a pencil of long yellow bristles.

HOLOTYPE ♂, Thingsat, Lushai Hills, Mizo District, Assam, 2000 feet, September 9, 1960 (Schmid).

The most similar regional species is *Gonomyia* (*Lipophleps*) *diacantha* Alexander, of Mindanao, which differs evidently in the hypopygial structure, especially the phallosome. *G.* (*L.*)

flavomarginata Brunetti still is insufficiently known to me. The additional notes on type material, as given by Edwards (Rec. Indian Mus., 26: 301; 1924), indicate a species distinct from the present fly.

***Gonomyia (Lipophleps) varsha* new species**

Size small (wing of male 3.5 mm.); mesonotum brown, scutellum broadly yellow; thoracic pleura brown with a conspicuous yellowish white longitudinal stripe; femora brownish yellow with a vague darker subterminal ring; wings weakly suffused, variegated with yellow; *Sc* short; abdominal tergites dark brown, their posterior borders paler; male hypopygium with outer dististyle profoundly bifid.

MALE Length about 3.2 mm.; wing 3.5 mm.

FEMALE Length about 4–5 mm.; wing 4–5 mm.

Rostrum and palpi black. Antennae with scape and pedicel darkened beneath, light yellow above, flagellum brownish black; flagellar segments elongate, the more proximal ones with the usual very long verticils. Head light yellow, vertex extensively dark brown.

Pronotum light yellow, scutellum medially weakly infuscated; pretergites conspicuously light yellow. Mesonotum brown, tuberculate pits and pseudo-sutural foveae brownish black; scutum brownish gray, scutellum clear light yellow, brownish gray medially at base; postnotum brown, variegated by obscure yellow. Pleura brown, lighter brown above; a conspicuous yellowish white longitudinal stripe from and including the fore coxae, extending to base of abdomen, narrowly bordered both above and beneath by slightly darker. Halteres light yellow, base of knob infuscated. Legs with fore coxae pale yellow, remaining coxae pale yellow, narrowly darkened basally; trochanters yellow; femora brownish yellow with a vague slightly darker subterminal ring, the actual tip narrower, obscure yellow; tibiae obscure yellow, tips narrowly infuscated; basitarsi brownish yellow, outer segments dark brown. Wings weakly suffused, prearcular and costal fields clearer yellow; vague pale areas before and beyond stigma and elsewhere on disk; veins pale brown, slightly darker along cord, yellowed in the brightened fields. *Rs* and its anterior branch glabrous, *R*₅ and outer medial branches with trichia. Venation: *Sc* short, *Sc*₁ ending a distance before origin of *Rs* about equal to one-half this vein; basal section of *R*₅ long; base of cell 1st *M*₂ unusually broad; *m-cu* at fork of *M*.

Abdomen dark brown, posterior borders of segments slightly paler; sternites and hypopygium brownish yellow. Male hypopygium with basistyle relatively small, the mesal face with numerous setae, some long. Two terminal dististyles; outer blackened, profoundly bifid into two subequal arms, outer arm stout on basal two-thirds, the slightly bent outer part a straight spine, surface with microscopic oval areas or reticulations; inner arm strongly bent at basal third, thence arcuated and narrowed to the truncated apex; inner style elongate, with strong setae on outer half, including two closely approximated fasciculate bristles at apex. Phallosome including a pair of flattened yellow blades that bear a strong appressed

spine on lower margin, tip blackened, acute; unpaired central mass generally pale, hyaline outwardly, produced into a strong black spine.

HOLOTYPE ♂, Pagna Malla, Pauri Garhwal, Kumaon, 5955 feet, August 11, 1958 (Schmid). Allotopotype, ♀, pinned with type. Paratypes, 1 ♂, 1 ♀, Git Dabling, West Bengal, 5100 feet, September 13, 1959 (Schmid).

The most similar regional species include *Gonomyia* (*Lipophleps*) *lanka* Alexander and *G. (L.) nexosa* Alexander, which likewise have the outer dististyle of the male hypopygium profoundly bifid but which differ in all other details of structure, including both dististyles and the phallosome.