

NEW OR LITTLE-KNOWN SPECIES OF EXOTIC TIPULIDAE
(DIPTERA).—VIII

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THE preceding part in this series of papers was published in these *Proceedings* in 1950 (*Proc. R. ent. Soc. Lond.* (B) 19: 85–89). In this part I am describing an interesting series of Pedicine crane-flies from the western Himalayas, in Kumaon, Uttar Pradesh, India, where they were collected by Dr. Fernand Schmid. I am very deeply indebted to Dr. Schmid for the time and care that he has devoted to the collecting and preparation of these fragile flies.

The species here considered belong to the genus *Dicranota* Zetterstedt, which is evidently highly developed throughout the Himalayan region and western China. Types of the new species are preserved in my personal collection.

***Dicranota (Dicranota) strepens* sp. n.**

Size large (wing, male, over 10 mm.); general coloration light brown, praescutum with three darker stripes; antennae 15-segmented, black throughout; wings very pale yellow, restrictedly patterned with darker; *Rs* weakly angulated before midlength; male hypopygium with the interbase appearing as a broad plate that terminates in an acute spine, with a smaller tooth on the outer margin.

Male: length about 9 mm.; wing 10.5 mm.; antenna about 1.8 mm.

Rostrum and palpi black. Antennae 15-segmented, black throughout; flagellar segments oval, the outer ones more elongate, longer than the verticils; terminal segment much shorter than the penultimate. Head blackened, pruinose.

Pronotum light brown, variegated by darker. Mesonotum chiefly light brown, the praescutum with three darker stripes; posterior sclerites more brownish-yellow, postnotum faintly patterned. Pleura medium brown, metapleura more yellowed. Halteres with stem whitened, knob slightly darker. Legs with coxae and trochanters yellowish-brown to light brown; remainder of legs light brown, the outer tarsal segments blackened. Wings (fig. 1) very pale yellow, prearcular and costal fields slightly more saturated; stigma pale brown; a very narrow brown cloud over the anterior cord; veins brown, *M* and most of 1st *A* very delicate, pale yellow. Abundant macrotrichia on longitudinal veins beyond cord, with fewer on *Rs*; long series on outer ends of both anal veins. Venation: *Rs* weakly angulated before midlength; *R*₂₊₃₊₄ present, shorter than the basal section of *R*₅; *m-cu* just beyond one-third the length of *M*₃₊₄.

Abdomen brownish-black, hypopygium somewhat paler. Male hypopygium (fig. 6) of type broken, the various parts mounted on a microscope slide. Tergite produced, the surface with abundant delicate setae; lateral tergal arms appearing as circular disks, each with an acute spine. Interbase (*i*) a broad plate that terminates in an acute spine, with a smaller tooth on outer margin before tip. Basistyle and dististyle (*b*, *d*) about as shown, terminating in an oval lobe that is provided with very long setae; pendant lobe of basistyle with abundant short spine-like setae. Aedeagus terminating in two obtusely rounded lobes.

Holotype ♂, INDIA: Badrinath, Pauri Garhwal, 11,000 ft., 18.vi.1958 (*F. Schmid*).

The most similar regional species is *D. (D.) longisector* Alexander, of the western Himalayas, readily distinguished by the smaller size, venation, as the long *Rs*; and especially in all details of structure of the male hypopygium.

***Dicranota (Dicranota) garhwalensis* sp. n.**

Size medium (wing, female, 7 mm. or less); general coloration of mesonotum yellowish-grey, praescutal disk with three confluent darker brown stripes; knobs of halteres weakly infuscated; wings brownish-yellow, restrictedly but conspicuously patterned with darker brown; vein *R*₂ slightly oblique.

Female: length about 5.5–5.5 mm.; wing 6.5–7 mm.

Rostrum and palpi dark brown. Antennae brownish-black throughout; basal flagellar segments short and crowded, the outer ones more elongate, exceeding their verticils. Head grey.

Pronotum brownish-grey. Mesonotal praescutum with the ground colour yellowish-grey, the disk with three confluent darker brown stripes, the scutal lobes similarly darkened; median region of scutum and the posterior sclerites light brown. Thorax unusually short and deep. Pleura and pleurotergite testaceous brown. Halteres with stem yellowed, knob weakly infuscated. Legs with the coxae and trochanters obscure yellow; remainder of legs light brown, the outer tarsal segments slightly darker. Wings (fig. 2) brownish-yellow, restrictedly but conspicuously patterned with darker brown, as follows: clouds beyond arculus in cells *Sc* to *M*, *Sc*₂, origin of *Rs*, cord, stigma, and over veins *R*₁₊₂ and *R*₂; less evident markings at the outer medial forks and vaguely indicated at ends of veins *M*₁ to 2nd *A*; veins light brown, slightly darker in the patterned areas. Macrotrichia of veins of moderate length. Venation: *Sc* long, *Sc*₁ ending beyond the supernumerary crossvein; *Rs* in the type weakly angulated and spurred beyond origin, in the paratype more nearly straight; vein *R*₂ slightly oblique, much exceeding *R*₁₊₂; veins *M*₁ and *M*₂ strongly divergent; *m-cu* beyond fork of *M*, in transverse alignment with *r-m*.

Abdomen dark brown; valves of ovipositor, including both cerci and hypovalvae, stout and blade-like, yellow.

Holotype ♀, INDIA: Manghu Chatti, Pauri Garhwal, 9000–9270 ft., 21.v.1958; *paratype* ♀, Badrinath, Pauri Garhwal, 11,000 ft., 19.vi.1958 (*F. Schmid*).

D. (D.) garhwalensis is readily differentiated from all other regional members of the subgenus by the patterned wings.

Dicranota (Rhaphidolabina) reticularis sp. n.

Size medium (wing, 7–9 mm.); general coloration of praescutum brownish-yellow, with four conspicuous black stripes, the intermediate pair united behind; halteres clear light yellow; legs yellow, femora vaguely darkened just before tips; wings whitish, with a conspicuous reticulated brown pattern; vein *R*₂ oblique, cell 1st *M*₂ closed; male hypopygium with tergal arms stout, dististyle single, terminal in position; interbase a powerful rod that narrows gradually into a long spine.

Male: length about 5.5–6.5 mm.; wing 7–7.8 mm.; antenna about 0.9–1.0 mm.

Female: length about 5.5–7.5 mm.; wing 7–9 mm.

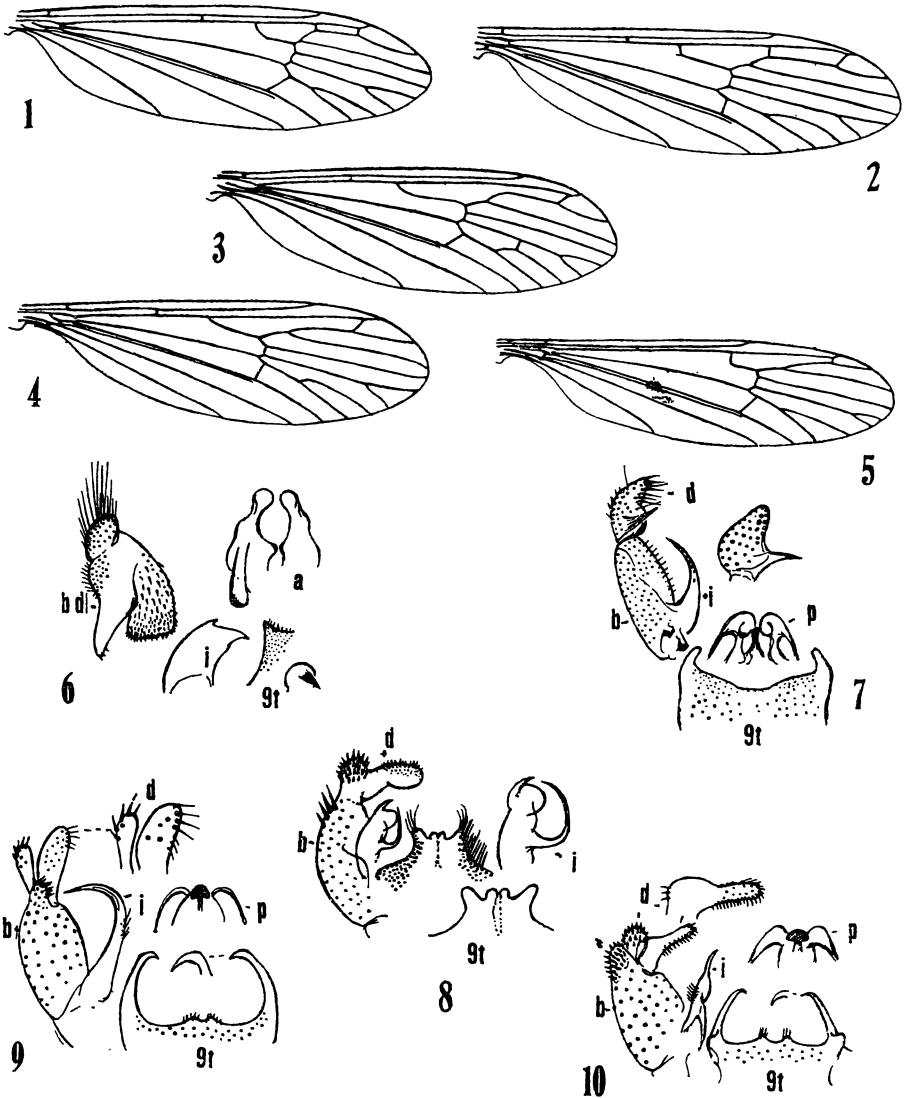
Rostrum and palpi black. Antennae short, 15-segmented, black throughout; flagellar segments long-suboval, subequal to or longer than the verticils. Head brownish-grey.

Pronotum blackened, paler sublaterally. Mesonotal praescutum with the restricted ground yellow, with four conspicuous black stripes, the intermediate pair confluent behind, sublateral stripes narrow; additional blackened spots at humeri and on lateral border; posterior sclerites dark brown to brownish-black, parascutella and pleurotergite paler. Pleura brown, variegated with darker. Halteres clear light yellow. Legs with coxae brownish-black, fore pair more yellowed behind; trochanters brown; femora yellow, vaguely more darkened just before tips; tibiae brownish-yellow; tarsi pale brown, outer segments darker. Wings (fig. 3) whitish, with a conspicuous reticulated brown pattern, involving all cells, the areas narrowly transverse, in the posterior and anal cells becoming irregularly anastomosing; somewhat larger areas at origin of *Rs*, stigma, cord, *R*₂ and fork of *M*₁₊₂; veins brownish-yellow in the interspaces, darker in the patterned areas. Macrotrichia of veins relatively short and inconspicuous, occurring on most veins except near wing base. Venation: *Sc* long, *Sc*₁ ending about opposite midlength of *R*₂₊₃; vein *R*₂ oblique, variable in length, in cases subequal to *R*₁₊₂; cell 1st *M*₂ closed; *m-cu* from about one-fourth to nearly its own length before the fork of *M*; cell *M*₁ subequal to or longer than its petiole.

Abdomen, including hypopygium, dark brown. Ovipositor with the valves yellow, both the cerci and hypovalvae blade-like. Male hypopygium (fig. 7) with the tergite (*t*) large, transverse, posterior border shallowly emarginate, lateral arms stout, with obtuse tips. Basistyle (*b*) relatively slender; interbase a very powerful simple structure that narrows very gradually into a long spine, on outer half with about six or seven large punctures that bear small setae. Dististyle (*d*) single, terminal in position; main body with numerous setae, those of the inner face very long and stout, at base with a strong spine.

Holotype ♂, INDIA: Manghu Chatti, Pauri Garhwal, 9000–9270 ft., 21.v.1958; *allotype* ♀, Dhur, Almora, 7400 ft., 8.ix.1958 (*F. Schmid*). *Paratypes*, 9 ♀♀, with the allotype; ♂, Gaurikund, Pauri Garhwal, 6400–7200 ft., 10.v.1958; Saran, Almora, 7,200 ft., 17.ix.1958 (*F. Schmid*).

Dicranota (Raphidolabina) reticularis is entirely different from all known species of the genus in the extreme development of reticulation in the wing pattern. In this latter regard it suggests the condition found in *Trichocera reticulata* Alexander, of the Himalayas and western China.



FIGS. 1–10.—(1–5) Venation of: (1) *Dicranota (Dicranota) strepens* sp. n.; (2) *D. (D.) garhwalensis* sp. n.; (3) *D. (Raphidolabina) reticularis* sp. n.; (4) *D. (R.) trichoneura* sp. n.; (5) *D. (Raphidolabias) brachyneura* sp. n. (6–10) Male hypopygium of: (6) *D. (D.) strepens* sp. n.; (7) *D. (Raphidolabina) reticularis* sp. n.; (8) *D. (R.) trichoneura* sp. n.; (9) *D. (Raphidolabias) brachyneura* sp. n.; (10) *D. (R.) khumyaræ* sp. n. (a, aedeagus; b, basistyle; d, dististyle; i, interbase; p, phallosome; t, tergite.)

Dicranota (Rhaphidolabina) trichoneura sp. n.

Size medium (wing about 6 mm.); antennae 16-segmented; general coloration of praescutum reddish-brown, with three darker brown stripes; wings subhyaline, unpatterned, veins with long conspicuous trichia; cell M_2 open or closed; male hypopygium with the posterior border of tergite terminating in four lobes, the lateral margins fringed with long yellow setae; a single dististyle that is chiefly fused with the apex of the basistyle.

Male: length about 5.5–2 mm.; wing 6–6.2 mm.; antenna about 0.8–0.9 mm.

Female: length about 5.5 mm.; wing 6.5–6.7 mm.; antenna about 1.0 mm.

Rostrum and palpi light brown, mouthparts yellow. Antennae short, 16-segmented; scape and pedicel brownish-yellow, flagellum brown; basal flagellar segments short and crowded, especially in the male, all with numerous verticils that are subequal in length to the segments. Head brownish-grey behind, paler in front.

Pronotum brown, paler laterally, with long erect pale setae. Mesonotal praescutum reddish-brown with three darker brown stripes, the sides paler; posterior sclerites of notum brown; thorax unusually deep and gibbous. Pleura and pleurotergite obscure yellow, the sternites a little darker. Halteres with stem yellow, darker outwardly, knob brown. Legs with coxae and trochanters yellow; remainder of legs light brown. Wings (fig. 4) subhyaline, stigma barely indicated; veins brown, with long conspicuous trichia. Venation: Sc long, Sc_1 ending about opposite one-third the length of R_{2+3} ; Rs relatively long, R_{2+3+4} from about two-thirds to three-fourths the length of Rs ; vein R_2 strongly oblique, subequal to R_{1+2} ; cell M_2 open (in type), in cases closed, in which cases cell M_1 is subequal in length to its petiole; $m-cu$ about one-half its length beyond the fork of M .

Abdomen, including hypopygium, dark brown, clothed with long pale setae. Ovipositor with cerci yellow, compressed-flattened. Male hypopygium (fig. 8) with the tergite (t) transverse at base, narrowed posteriorly, terminating in four unequal lobes; posterior border and outer lobes fringed with abundant very long stout yellow setae, intermediate lobes small, with short inconspicuous setae. Basistyle (b) small, the interbase (i) very large and conspicuous, appearing as a flattened blade, on its mesal margin bearing a very long curved spine, margin of outer blade with a much smaller spine; outer surface of basistyle with numerous setae, the outermost very stout, black. Dististyle (d) single, merging with the basistyle, consisting of a small oval outer lobe beset with numerous black spinoid setae and a larger oval beak, its tip obtuse, surface with very abundant paler and more slender setae.

Holotype ♂, INDIA: Tungnath, Pauri Garhwal, 9000 ft., 1.vi.1958; *allotype* ♀, Tarsali, Pauri Garhwal, 6000–7000 ft., 6.v.1958 (*F. Schmid*). *Paratopotypes*, 2 ♂♂, with the type; *paratype*, 1 ♀, mounted with the allotype.

I am referring the present fly to the subgenus *Rhaphidolabina* Alexander rather than to *Rhaphidolabis* Osten Sacken, chiefly on the basis of cell 1st M_2 being closed in certain specimens. The fly is entirely distinct from all other regional members of the genus in the structure of the male hypopygium and in the long conspicuous trichia of the wing veins.

Dicranota (Rhaphidolabis) brachyneura sp. n.

General coloration of thorax dark brown; antennae black, 13-segmented; knobs of halteres infuscated; legs brownish-black; wings weakly infuscated, stigma darker; Sc unusually short, Sc_1 ending opposite or shortly beyond the origin of Rs ; male hypopygium with the posterior border of tergite bearing two small submedian lobes, lateral arms stout, narrowed to subcaltrate tips; interbase a long yellow blade that narrows to an acute tip; two dististyles, the larger inner one suboval.

Male: length about 4–4.3 mm.; wing 4.5–5 mm.; antenna about 0.7–0.75 mm.

Female: length about 5 mm.; wing 5 mm.

Rostrum and palpi black. Antennae short, black, 13-segmented; flagellar segments long-oval, exceeding the verticils. Head dark brown.

Pronotum dark brown. Mesonotum almost uniformly dark brown, lateral praescutal borders and central region of scutum paler. Pleura dark brown, vaguely patterned with paler. Halteres with stem pale, knob infuscated. Legs with coxae and trochanters testaceous yellow; remainder of legs brownish-black. Wings (fig. 5) weakly infuscated, stigma darker brown; veins dark brown. Venation: Sc unusually short, Sc_1 ending opposite origin of Rs or slightly beyond, the

latter short, strongly arcuated to weakly angulated; R_{2+3+4} long, subequal to $m-cu$; cell M_1 small to very small; $m-cu$ more than one-half its length beyond the fork of M .

Abdomen, including hypopygium, dark brown. Male hypopygium (fig. 9) with the tergite (t) transverse, posterior border subtruncate, with two very small submedian lobules; lateral arms conspicuous, appearing as pale flattened blades that narrow to subcultrate tips. Basistyle (b) at apex produced into a low lobe set with numerous black spinoid setae. Interbase a long yellow blade, curved and narrowed to the acute tip. Two dististyles (d), the outer style longer than the lobe of the basistyle, slightly expanded distally, the apical margin with a few spinoid setae; inner style longer and broader, suboval, with long pale setae.

Holotype ♂, INDIA: Jakhanr, Teri Garhwal, 3500 ft., 24.iv.1958; *allotype* ♀, Agra, Teri Garhwal, 3000–5000 ft., 5.iv.1958 (*F. Schmid*). *Paratopotypes*, 2 ♂♂, with the type; *paratypes*, 1 ♂, with the allotype, 6.iv.1958; 1 ♂, Salkhola, Pauri Garhwal, 4240 ft., 22.viii.1958; 1 ♂, Simra, Pauri Garhwal, 5800 ft., 2.x.1958; 1 ♂, Loharket, Almora, 5770 ft., 14.ix.1958 (all *F. Schmid*).

D. (R.) brachyneura is readily distinguished from all other described regional members of the subgenus, with the exception of the species next described, by the unusually short Sc , and by the structure of the male hypopygium, particularly the tergite, interbase and inner dististyle. Throughout the entire tribe Pediciini it is very difficult to state whether the lobes or appendages at the end of the basistyle actually are dististyles or are apical lobes of the basistyle itself. This condition has been discussed in various papers by the writer and by Edwards.¹

Dicranota (Rhaphidolabis) khumyaræ, sp. n.

Allied to *brachyneura*; general coloration of head and thorax grey, the praescutum with three blackened stripes; antennae 13-segmented; knobs of halteres dark brown; legs brownish-black; wings subhyaline, stigma pale brown; Sc short; male hypopygium with the lateral tergal arms slender, narrowed to curved acute points; interbase dilated on basal part, narrowed outwardly; inner dististyle with the beak long-produced.

Male: length about 4.5–4.6 mm.; wing 5–5.3 mm.; antenna about 0.7–0.8 mm.

Rostrum and palpi black. Antennae black, 13-segmented; flagellar segments long-oval, exceeding the verticils. Head brownish-grey.

Pronotum brownish-grey. Mesonotal praescutum grey, with three blackened stripes; remainder of notum grey, the scutal lobes brownish-black. Pleura light grey. Halteres with stem obscure yellow, knob dark brown. Legs with the coxae brownish testaceous to light brown; trochanters yellow; remainder of legs brownish-black. Wings subhyaline, extreme base yellowed, stigma pale brown; veins dark brown. Venation: Sc very short, Sc_1 ending just beyond the origin of Rs , Sc_2 at near mid-distance between level of arculus and origin of Rs ; R_{2+3+4} longer than $m-cu$; cell M_1 relatively deep; $m-cu$ more than one-half its length beyond the fork of M .

Abdomen dark brown, hypopygium paler brown. Male hypopygium (fig. 10) generally as in *brachyneura*, but differing in all details. Tergite (t) with the posterior border subtruncate, with two small submedian tubercles that are tufted with long setae; lateral tergal arms thickened at base, the blade-like outer part narrowed very gradually to an acute gently curved point. Outer apical lobe of basistyle with numerous spinoid setae. Interbase dilated on basal part, narrowed outwardly, on outer margin of the expanded part with several erect setae. Outer dististyle (d) oval, with numerous spinoid setae; inner style expanded basally, the beak long-produced. Phallosome (p) with lateral arms relatively short and stout.

Holotype ♂, INDIA: Khumyara, Pauri Garhwal, 4300–5000 ft., 4.v.1958 (*F. Schmid*). *Paratopotypes*, 3 ♂♂, 4–25.v.1958.

Although it is evidently closely allied to *D. (R.) brachyneura* sp. n., the present fly is quite distinct in the body coloration and, especially, in the structure of the male hypopygium, including the tergite, interbase and dististyles.

¹ Edwards, F. W., 1938, British short-palped craneflies. Taxonomy of adults. *Trans. Soc. Brit. Ent.* 5: 1–168, 5 pls., 31 figs. (reference p. 52).