

Material Examined.—Nicaragua: Volcano Conception, Mungogalpa, 1 ♂, 1 ♀, 29 April 1964 (E. C. Bay) [University of California]; 4 ♂♂, 4 ♀♀ same data [ANSP].

LITERATURE

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New Exotic Crane-Flies (Tipulidae: Diptera). Part X

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The preceding part under this general title was published in ENTOMOLOGICAL NEWS, Vol. 75 (3): 57–65. The present paper includes descriptions of various species of the Hexatomine genus *Paradelphomyia* Alexander from Pakistan and India, all taken by Dr. Fernand Schmid. The types are preserved in my personal collection.

Paradelphomyia (*Oxyrhiza*) *dichromata*, new species

Thorax uniformly polished black, abdomen abruptly yellow, the outer segments weakly infuscated; halteres yellow; legs yellow, the tips of the femora narrowly blackened; wings of male widened opposite termination of vein 2nd A, yellow, re-

¹Contribution from the Entomological Laboratory, University of Massachusetts.

strictedly patterned with brown, cells basad of cord without markings; macrotrichia of stigma and outer radial cells virtually lacking; male hypopygium with posterior border of tergite produced into an oval setuliferous lobe; apical blade of basistyle slender, glabrous, tip obtuse; spines of ventral fork very long and slender, almost setoid.

♂. Length about 6–6.5 mm.; wing 6–6.8 mm.

Rostrum and palpi black. Antennae with scape black, pedicel and flagellum dark brown. Head dark gray.

Thorax polished black throughout; scutum and posterior part of praescutum with sparse long black setae, those of scutellum smaller. Halteres pale yellow, especially the enlarged club. Legs with fore coxae uniformly polished black, midcoxae yellow, the basal half dark brown, posterior coxae uniformly yellow; trochanters yellow; femora light yellow, tips narrowly but conspicuously brownish black; tibiae and tarsi yellow, the extreme tips very narrowly and vaguely infuscated. Wings yellow, the prearcular and costal fields more saturated; a restricted brown pattern, including narrow seams at origin of R_s , cord, R_2 and fork of R_{2+3+4} , fork of M_{1+2} and outer end of cell 1st M_2 ; no darkenings basad of origin of R_s or behind vein Cu ; veins light yellow, brown in the patterned areas. Wing of male widened opposite termination of vein 2nd A . Macrotrichia of cells sparse, including only two or three in stigmal area and few in outer ends of cells R_3 , R_5 and M_1 . Venation: Sc_1 ending opposite fork of R_s , the latter angulated at origin; R_{2+3+4} about twice the basal section of R_5 ; cell M_1 subequal to its petiole; $m-cu$ beyond midlength of M_{3+4} .

Abdomen yellow, contrasting abruptly with the darkened thorax, outer three segments weakly infuscated; in the paratype the proximal segments are somewhat more infuscated. Male hypopygium with the posterior border of tergite produced into an oval lobe that is provided with abundant delicate setae. Basistyle with apical blade slender, glabrous, apex obtuse. Outer dististyle blackened, slender, gently dilated outwardly, with two unequal terminal spines, with an additional acute spine on lower margin at near three-fourths the length. Spines of

ventral fork very long and slender, almost setoid, exceeding the aedeagus. Gonapophysis broadly dilated, the outer contour more thickened.

Habitat. INDIA (Assam; Sikkim). *Holotype:* ♂, Chingsao, Manipur, Assam, 3,800 feet, June 13, 1960 (Fernand Schmid). *Paratype:* ♂, Chateng, Sikkim, 8,000 feet, July 28, 1959 (Fernand Schmid).

The most similar species is the Burmese *Paradelphomyia* (*Oxyrhiza*) *amabilis* Alexander, which has the abdomen dark brown, concolorous with the thorax, differing further in the coloration of the halteres and legs and in the venation and trichiation of the wings, as the long vein Sc_1 .

Paradelphomyia (Oxyrhiza) hkayamensis, new species

Size medium (wing 6 mm); mesonotal praescutum brownish yellow, with a central dark brown stripe, pleura chiefly dark brown; antennae 16-segmented, flagellum black; halteres and legs yellow; wings subhyaline, unpatterned, with macrotrichia in cells R_2 to 1st A , inclusive; Sc_1 long, subequal to R_{2+3+4} ; male hypopygium with apical point of basistyle very slender, setiferous; outer dististyle with four unequal spines, inner style with a basal lobe on outer margin; spines of ventral fork unusually long and slender.

♂. Length about 5.5 mm; wing 6 mm; antenna about 1 mm.

♀. Length about 6 mm; wing 6 mm.

Rostrum brown; palpi black. Antennae 16-segmented; scape light brown, the remainder black; all flagellar segments distinct, the more proximal ones short, outer segments elongate, nearly equal to their verticils. Head gray; anterior vertex broad, about four times the diameter of the scape.

Pronotum dark brown. Mesonotal praescutum brownish yellow, clearer laterally, with a single dark brown central stripe; scutal lobes dark brown, central area and posterior callosities testaceous yellow; scutellum brownish black, parascutella yellow; mediotergite brown, yellowed laterally, pleurotergite chiefly yellow, weakly darkened beneath. Pleura chiefly brown to dark brown, including the dorsopleural membrane. Halteres

yellow. Legs with fore coxae brown, remaining coxae and all trochanters yellow; remainder of legs yellow, outer tarsal segments weakly darkened. Wings subhyaline, prearcular and costal fields slightly more yellowed, no stigmal darkening; veins pale brown. Macrotrichia on longitudinal veins of about the outer two-thirds of wing; in cells sparse but well-distributed from R_2 to 1st A , inclusive. Venation: Sc_1 ending immediately beyond fork of Rs , Sc_2 removed, Sc_1 alone subequal to R_{2+3+4} ; R_{2+3} and R_2 subequal; cell M_1 less than twice its petiole; $m-cu$ at near midlength of M_{3+4} .

Abdomen dark brown, subterminal segments in male slightly darker, hypopygium brownish yellow. Male hypopygium with apical point of basistyle very slender, with weak setae. Outer dististyle relatively slender, with four spines, two being large, the others very small; inner style triangularly dilated, with a relatively small basal lobe on outer margin. Spines of ventral fork unusually long and slender.

Habitat. INDIA (Assam). *Holotype*: ♂, Hkayam Boum, Manipur, 7,500 feet, June 20, 1960 (Fernand Schmid). *Allotopotype*: ♀.

In comparison with other regional members of the genus with unpatterned wings, including *Paradelphomyia* (*Oxyrhiza*) *dissita* Alexander, *P. (O.) distivena* Alexander, *P. (O.) flavescens* (Brunetti) and *P. (O.) newar* Alexander, the present fly is most readily told by the hypopygial structure, especially the outer dististyle and the ventral fork. *P. (O.) flavescens* is the most isolated, each half of the ventral fork including numerous strong spines from a stout reticulated base; *P. (O.) distivena* has three outer spines on the outer dististyle, *P. (O.) newar* only two.

***Paradelphomyia* (*Oxyrhiza*) *myriacantha*, new species**

Size relatively large (wing of male 6.5 mm); general coloration of thorax fulvous, praescutum and scutal lobes with vaguely differentiated more shiny areas; legs yellow, all tibiae with long hairy spines; wings brownish yellow, stigma and a vague seam over $r-m$ slightly darkened; R_{2+3+4} long, nearly three times R_2 ;

male hypopygium with outer dististyle blackened, trispinous, inner style dusky, with a low lobe on basal half; gonapophyses slender; ventral fork consisting of two groups of long reddish spines, the outermost long and needlelike.

♂. Length about 5.5 mm; wing 6.5 mm.

Rostrum dark brown; palpi black. Antennae brownish black. Head dark brown.

Thoracic dorsum almost uniformly fulvous, the praescutum with three scarcely differentiated more shiny stripes, scutal lobes similarly colored. Pleura more yellowed, dorsal sclerites slightly infuscated. Halteres pale yellow. Legs with coxae and trochanters yellow; remainder of legs yellow, the outer tarsal segments dark brown; all tibiae with long conspicuous hairy spines. Wings tinged with brownish yellow, stigma and a small cloud at *r-m* slightly darker brown; veins yellow. No macrotrichia in wing cells with the exception of two or three in outer end of R_4 . Venation: R_{2+3+4} long, nearly three times R_2 ; *m-cu* beyond midlength of M_{3+4} .

Abdominal tergites dark brown, sternites obscure yellow; hypopygium yellow. Male hypopygium with dististyles terminal, outer style black, widened outwardly, trispinous, there being a strong point on lower margin; inner style dusky, with a low lobe on basal half. Gonapophyses unusually slender. Ventral fork generally as in *flavescens*, consisting of two elongate groups of many reddish spines, the more basal ones shorter, the outermost long and slender, needlelike.

Habitat. INDIA (Sikkim). *Holotype*: ♂, Chumzomoi Choka, in *Rhododendron* association, 11,800 feet, July 8, 1959 (Fernand Schmid).

The only other regional species with the ventral fork of the male hypopygium comprised of densely clustered reddish spines is *Paradelphomyia* (*Oxyrhiza*) *flavescens* (Brunetti), a smaller fly with slightly different hypopygial structure, including the bispinous outer dististyle and broad pale inner style. The valid name of this latter species is *flavescens* (described as a *Cladura*, 1911), with *furcata* (Brunetti) as a synonym (described as a *Gnophomyia*, 1912). The types of both of these supposed spe-

cies were taken at Darjiling, eastern Himalayas, in August 1909 by Paiva, a paratype of *furcata* being preserved in my collection. It may be noted that there is a later *furcata* (Kuntze), described from Denmark as the type of a supposedly new genus, *Gonomyiella* Kuntze, 1919, now known to be a synonym of *fuscula* (Loew), described as a *Cladura* in 1873. The generic name *Gonomyiella* Kuntze is preoccupied by the earlier *Gonomyiella* Meunier, 1899.

Paradelphomyia (Oxyrhiza) ruficolor, new species

Size large (wing of male to 7.5 mm); mesothorax shiny rufous; antennae 16-segmented, flagellar segments elongate, with very long verticils; femora yellow, tips narrowly brown; wings weakly suffused with brownish yellow, proximal third clearer yellow, including the veins; cell M_1 present; male hypopygium with dististyles terminal, inner style with a small basal axillary lobule; gonapophyses very broad; spines of ventral fork short and stout, at tips narrowed into hairlike points.

♂. Length about 6–6.5 mm; wing 6.8–7.5 mm; antenna about 1.5 mm.

Rostrum brownish yellow; palpi black. Antennae 16-segmented, dark brown; flagellar segments elongate, verticils very long and conspicuous, fully one-half longer than the segments. Head dark brownish gray; anterior vertex very broad.

Pronotum dark brown, paler laterally. Mesonotum almost uniform shiny rufous or fulvous, anterior half of praescutum darker medially; setae of praescutal interspaces and scutal lobes long and conspicuous, of scutellum shorter and paler. Pleura fulvous yellow. Halteres with stem yellowed, especially at base, knobs weakly darkened. Legs with coxae and trochanters light fulvous; femora yellow, clearer basally, tips narrowly brown; tibiae yellow, tips more narrowly darkened; tarsi brown. Wings weakly suffused with brownish yellow, prearcular field, costal area and vein Cu_2 clear yellow; veins light brown, light yellow in the basal third of wing. Abundant macrotrichia in cells R_2 to Cu , including about the outer half of cells R_4 and R_5 . Venation: Vein R_1 arcuated before R_2 , the lat-

ter very faint to nearly obsolete; cell M_1 variable in length, in the type subequal to its petiole, in the paratype only about one-third to one-fourth this length; $m-cu$ far distad, at near three-fifths to two-thirds M_{3+4} ; vein $2nd\ A$ long.

Abdomen brown, hypopygium yellowed. Male hypopygium with the dististyles terminal, the outer style slender, black, with two outer spines, the apical one smaller, with an additional stout arm along the inner margin; inner style large, triangular, pale, with a small axillary lobule. Gonapophyses very broad, pale. Spines of ventral fork relatively short and stout, the tips suddenly narrowed into hairlike points.

Habitat. PAKISTAN. *Holotype*: ♂, Bourzil R. H., North-west Frontier Province, 11,150 feet, September 10, 1953 (Fernand Schmid). *Paratype*: ♂, Salf-ul-Maluk Sar, 11,000 feet, July 2, 1963 (Fernand Schmid).

Paradelphomyia (Oxyrhiza) ruficolor is quite distinct from other large-sized regional species, including especially *P. (O.) distivena* Alexander and *P. (O.) newar* Alexander. The venation and male hypopygium are distinct in all three species, including in the latter the basistyle, dististyles and ventral fork.

Paradelphomyia (Oxyrhiza) tritumula, new species

General coloration of mesonotal praescutum brownish fulvous, posterior sclerites and pleura yellow; head gray; antennae black; femora yellow, tips narrowly brownish black; wings brownish yellow, the base and costal border clearer yellow, stigma very pale brown; male hypopygium with the inner dististyle very large, trilobed; ventral fork with each arm appearing as a slender black rod, at tip narrowed into an acute spine.

♂. Length about 5.5 mm; wing 6.3 mm; antenna about 1.2 mm.

Rostrum light brown; palpi brownish black. Antennae 16-segmented, black, scape more pruinose; basal flagellar segments enlarged, the succeeding ones more elongate, all segments with very low verticils. Head dark gray.

Pronotum brown, the scutellum more yellowed. Mesonotal praescutum brownish fulvous, subnitidous, posterior sclerites

more yellowed. Pleura clear yellow. Halteres with stem yellow, knob infuscated. Legs with coxae and trochanters yellow; femora yellow, tips narrowly brownish black; remainder of legs brownish yellow, the tips of the segments narrowly darkened, ends of the tarsi black; setae of legs relatively long and conspicuous. Wings relatively narrow, brownish yellow, base and costal region clearer yellow; stigma very pale brown; veins brown, those in the brightened basal fields yellow. Macrotrichia of cells long and conspicuous, in outer ends of cells R_2 through M_3 . Venation: Sc_1 ending nearly opposite fork of Rs , Sc_1 alone more than three times Sc_2 ; vein R_2 faint, shortly beyond the fork; R_{2+3+4} and R_3 in direct longitudinal alignment; cell M_1 about one-half its petiole; $m-cu$ at near midlength of M_{3+4} ; cell 2nd A narrow.

Abdominal tergites dark brown, basal sternites more reddened; hypopygium slightly paler brown. Male hypopygium with basistyle stout, the outer setae very long, yellow, the longest about equal to the dististyle; dististyles terminal, broadly fused basally. Outer dististyle black, with three outer points, the intermediate one longer and slightly curved; inner style unusually large, trilobed, the more cephalic lobe slender, apex obtusely rounded, provided with sparse setae, the outer two lobes with abundant setulae and fewer scattered setae. Gonapophyses very large, yellow, outwardly divided into an inner or mesal beak, its apex obtuse, outer blade recurved. Spines of ventral fork appearing as slender black rods, their tips narrowed into an acute point.

Habitat. INDIA (Kumaon). *Holotypes:* ♂, Manghu Chatti, Pauri Garhwal, 9000–9270 feet, May 31, 1958 (Fernand Schmid).

Paradelphomyia (Oxyrhiza) tritumula is most similar to species such as the larger *P. (O.) ruficolor*, new species, differing evidently in the details of structure of the male hypopygium, particularly the dististyles and gonapophyses.



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