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New Exotic Crane-Flies (Tipulidae: Diptera).

Part XI

CHARLES P. ALEXANDER, Amherst, Massachusetts ¹

The preceding part under this general title was published in ENTOMOLOGICAL NEWS, Vol. 76 (2): 41-48. The species discussed at this time were taken in Assam and Kumaon, India, by Fernand Schmid, with the exception of a single fly that was collected in Nepal by Edward I. Coher. I am greatly indebted to the collectors for these interesting specimens.

Epiphragma (Epiphragma) dysommata, new species

Size small (wing of male 9 mm); mesothorax variegated with buffy yellow, brownish yellow and dark brown; antennae

¹ Contribution from the Entomological Laboratory, University of Massachusetts.

short, fusion-segment yellow, comprised of two segments; femora yellow with two pale brown rings, one median, the other subterminal; wings pale yellow with a pale brown pattern that includes very broad ocelli with narrow darkened margins, their centers at origin of *Rs*, anterior cord, outer end of cell *1st M*₂ and the outer fork of *M*; darkened pattern heaviest in the cubital and anal cells; *Rs* spurred near origin; male hypopygium with more than the outer half of the interbase a long slender rod, acute at tip.

♂. Length about 9 mm; wing 9 mm; antenna about 1.6 mm.

Rostrum brownish yellow; palpi black. Antennae relatively short; scape and pedicel brownish black, fusion-segment of flagellum yellow, the remainder dark brown; fusion-segment consisting of two completely fused elements, remaining segments becoming progressively more elongate, subcylindrical, shorter than the very long verticils. Head light brownish yellow, center of posterior vertex narrowly darker brown.

Pronotum yellow, scutum with a narrow brown central line. Mesonotal praescutum variegated with buffy yellow, brownish yellow, and dark brown; intermediate stripes brownish yellow, narrowly blackened on posterior fourth and at cephalic end, lateral stripes more yellowed, humeral and lateral borders dark brown; scutum brown, posterior margins of lobes narrowly yellow pollinose; scutellum yellow pollinose, parascutella brown; mediotergite grayish yellow on anterior half, infuscated behind and on sides, katapleurotergite similarly darkened, with a small pruinose central area. Pleura chiefly dark brown, variegated with still darker brown areas on the dorsopleural membrane, before the wing root, as a narrow stripe that includes the propleura and ventral anepisternum, and on the dorsal sternopleurite, continued across the central part of the pteropleurite and the ventral sternopleurite. Halteres brownish yellow, base of stem narrowly yellow, knob dark brown, its apex very narrowly yellowed. Legs with coxae and trochanters yellowed; femora yellow with two pale brown rings, one at near midlength, the other subterminal, slightly wider than the yellow tip; tibiae

yellow, very narrowly and vaguely darkened at apex; tarsi yellowed, outer two segments pale brown. Wings with ground pale yellow, slightly more saturated on anterior fourth; a pale brown pattern, heaviest in the cubital and anal fields; anterior half of wing with very broad ocelli with narrow darker margins, the most evident of these with their centers at origin of R_s , anterior cord, outer end of cell $1st M_2$ and the outer fork of M ; an X-shaped area at basal third of cells R and M ; cell $2nd A$ uniformly darkened except for two small ground spots at one-third the length and before the apex; veins yellow, pale brown in the darkened parts. Longitudinal veins beyond general level of origin of R_s with short macrotrichia, lacking on $1st A$, present on outer half of $2nd A$. Venation: R_s long-spurred at origin; R_{1+2} about two-thirds R_{2+3+4} ; cell M_1 subequal to its petiole; $m-cu$ just before one-third the length of M_{8+4} .

Abdominal tergites light brown, the lateral borders blackened; outer sternites with posterior borders yellowed; hypopygium and preceding segments more uniformly darkened. Male hypopygium with the tergal lobes very small, darkened, triangular, with short delicate setulae. Interbase with almost the basal half dilated, the long apical rod nearly straight, terminating in an acute spine. Outer dististyle setiferous on basal half, the outer end a decurved slender spine; inner style a flattened paddle, the tip obtuse.

HABITAT. INDIA (Manipur, Assam). *Holotype*: ♂, Hkayam Boum, 8,500 feet, June 21, 1960 (Fernand Schmid).

Epiphragma (Epiphragma) dysommata is readily told from the other regional species by the pattern of the wings and especially of the legs, including the two darkened femoral rings.

Epiphragma (Epiphragma) scoptes, new species

General coloration of head and thorax yellow; antennae of male relatively long, black, first flagellar segment brownish yellow, tip darkened; flagellar segments with a dense pale pubescence and short verticils; scutum, scutellum and posterior part of praescutum brown; pleura with a short more or less inter-

rupted brown stripe; femora obscure yellow with a narrow brown nearly terminal ring that is preceded by a vague more yellowed annulus; wings cream yellow with a conspicuous brown pattern that is paler in the male, the discal areas more or less ocelliform, becoming confluent; *m-cu* before midlength of cell *1st M*₂; outer abdominal segments darkened; male hypopygium with the interbase long and slender, tip acute.

♂. Length about 8.5 mm; wing 9.5 mm; antenna about 3 mm.

♀. Length about 8 mm; wing 8 mm; antenna about 2.2 mm.

Rostrum obscure yellow; palpi black. Antennae of male relatively long; scape and pedicel brownish black, first flagellar segment brownish yellow basally, the tip blackened, succeeding segments black; flagellar segments long-cylindrical, with a dense pale pubescence and scarcely longer verticils that are only one-third to one-fourth as long as the segments. In the female, antennae uniformly blackened, pubescence lacking, verticils longer and more numerous, scattered over the segment. Head orange, center of vertex more chestnut brown; vertical tubercle relatively conspicuous, microscopically notched.

Pronotal scutum light yellow, posterior half in front narrowly margined with dark brown; scutellum testaceous. Mesonotal praescutum obscure brownish yellow in front, the posterior two-thirds darker brown; extreme lateral border before suture with a dark brown spot; scutum and scutellum brown; postnotum brownish yellow. Propleura dark brown; mesopleura yellow with a small brown area on ventral anepisternum, the two dark markings more or less confluent to form a short pleural stripe. Halteres long, stem obscure yellow, knob infuscated. Legs with coxae yellow, fore pair vaguely more darkened on anterior face; trochanters yellow; femora obscure yellow with a narrow brown nearly terminal ring that is preceded by a vague more yellowed annulus; tibiae and tarsi brownish yellow to pale brown. Wings cream yellow with a conspicuous brown pattern that is much paler and less distinct in the male than in the female; dark and yellow areas subequal in extent; most of the discal dark markings ocellate, becoming crowded and confluent at and beyond the cord; before cord the yellow color more extensive, especially

in the medial, cubital, and anal fields; outer cells with circular yellow spots at or just back from margin, smaller in the radial and medial fields, very extensive in the anal cells; prearcular field chiefly darkened; veins brown in the patterned areas, yellow in the ground portions. Venation: *m-cu* before midlength of cell *1st M*₂. In the type male, vein *M*₁ is interrupted before midlength.

Abdominal tergites of male brown, the basal impressed lines yellow, proximal sternites light yellow; outer segments more uniformly darkened. In the female the abdominal tergites more variegated with pale on the lateral and posterior borders. Male hypopygium with the posterior margin of tergite slightly produced medially, with a shallow V-shaped emargination to form two triangular lobes. Interbase long and slender from a darkened sinuous base, the apex acute. Dististyles much shorter than the interbase, outer style strongly curved at tip into an acute spine; inner style subequal in length, tip broadly obtuse, lower margin near base with a group comprising several strong setae. Aedeagus short.

Habitat. NEPAL. *Holotype:* ♂, Simbhanjang Pass, Mahabharat Range, 8,197 feet, June 24, 1957 (Edward I. Coher). *Allotopotype:* ♀.

Although it is generally similar to certain other regional species, including *Epiphragma (Epiphragma) kempfi* Brunetti, *E. (E.) ornatipennis* (Brunetti) and *E. (E.) vicina* Brunetti, the present fly appears to be quite distinct in the coloration of the body, legs, and wings, and in the details of venation.

Pseudolimnophila (Pseudolimnophila) spatiosa, new species

Size very large (wing 10 mm or more); general coloration of mesonotum light brown, pronotum and praescutum with a capillary darker central vitta; legs brown, tarsi passing into black; wings strongly tinged with medium brown, only vaguely patterned; *R*₁₊₂ long, *R*₂₊₃₊₄ short, strongly arcuated; abdominal tergites dark brown, sternites yellow.

♂. Length about 8.5 mm; wing 10 mm.

♀. Length about 10–12 mm; wing 10–11.5 mm.

Rostrum very short, buffy; palpi brownish black. Antennae black, pedicel more brownish black, base of first flagellar segment obscurely yellowed; flagellar segments elongate, shorter than the longest verticils. Head gray above, in cases (including the type) more brownish yellow on front and beneath.

Pronotal scutum yellowish brown with a dark central vitta; scutellum and propleura light yellow. Mesonotal praescutum with the very restricted ground buffy, with four vaguely indicated reddish brown to light brown stripes, the intermediate pair divided by a capillary darker vitta; scutum light brown; scutellum light brown, the posterior border broadly more yellowed; mediotergite light gray, the anterolateral parts more yellowed. Pleura and pleurotergite obscure yellow, the anepisternum and sternopleurite vaguely more reddened, dorsopleural membrane weakly darkened. Halteres with stem yellow, knob slightly infuscated. Legs with coxae and trochanters light yellow; femora yellow basally, passing into brown, darkest outwardly; tibiae brown, tarsi passing into black. Wings strongly tinged with medium brown, the prearcular and costal fields vaguely more yellowed, stigma slightly indicated; veins brown, more yellowed in the brightened fields and along vein *Cu*. Macrotrichia present on outer veins, lacking on proximal two-thirds of *M* and the bases of *Cu* and the Anals. Venation: Sc_1 ending about opposite fork of *Rs*; R_{2+3+4} short, strongly arcuated; R_{1+2} unusually long, at least one-half longer than R_{2+3} ; cell M_1 deep; *m-cu* shortly beyond fork of *M*.

Abdominal tergites dark brown, sternites yellow; female with genital shield light brown; cerci long and slender, horn yellow.

Habitat. INDIA (Kumaon). *Holotype*: ♀, Tungnath, Pauri Garhwal, 9,000 feet, June 1, 1958 (Fernand Schmid). *Allotopotype*: ♂. *Paratopotypes*: 2 ♀♀, on a single pin.

Pseudolimnophila (*Pseudolimnophila*) *spatiosa* is most similar to the smaller *P. (P.) apicinigra* Alexander, of Kashmir, which differs in the gray coloration of the thorax and the black tipped femora. The present fly is one of the largest members of the genus so far discovered.

Hexatoma (Eriocera) citrina, new species

Allied to *aurantia*; size small (wing of male 8 mm); general coloration of body uniformly orange or yellowed, with a small darkened spot on the dorsal anepisternum; legs darkened; wings strongly darkened, especially the base and costal region; cell M_1 present, relatively shallow, its petiole from two to four times m .

♂. Length about 7 mm; wing 8 mm; antenna about 1.4 mm.

♀. Length about 9.5 mm; wing 10 mm; antenna about 1.8 mm.

Rostrum orange yellow; palpi black. Antennae of male 8-segmented; scape orange, pedicel brownish black; basal flagellar segments black, the outer ones paler; first flagellar segment stout, remainder slender, all with long coarse setae. Head orange; vertical tubercle low, entire.

Thoracic dorsum almost uniformly dark orange, scutellum slightly more yellowed; pleura, pleurotergite, and posterior end of mediotergite strongly yellowed; a circular brownish black spot before wing root on dorsal anepisternum. Halteres brown, knobs brownish black. Legs with coxae and trochanters yellow; remainder of legs dark brownish yellow, appearing to be more darkened by abundant dark colored setae and elongate flattened scales. Wings strongly darkened, the prearcular and costal regions more intensely so; veins brown. Longitudinal veins beyond cord with long macrotrichia, present also on Sc , lacking on Cu and the Anals, a few on outer ends of R and M . Venation: Sc_1 ending opposite or shortly before $r-m$; R_2 slightly oblique; cell M_1 variable in length from subequal to nearly three times its petiole, the latter from two to four times m ; $m-cu$ at near midlength of M_{8+4} .

Abdominal tergites orange, the outer ones slightly more brownish orange, sternites more orange yellow. Ovipositor with cerci very long and slender.

Habitat. INDIA (Assam). *Holotype*: ♂, Nongrim, Khasi-Jaintia, 3,500 feet, October 10, 1960 (Fernand Schmid). *Allotopotype*: ♀, October 11, 1960.

The present fly is allied to *Hexatoma (Eriocera) aurantia* (Brunetti), being distinguished by the small size and the details of venation, especially of the medial field.

Hexatoma (Eriocera) rufoantica, new species

General coloration of body and appendages black, anterior part of praescutum, the scutellum and mediotergite orange or yellow; wings strongly blackened, extreme apex and a larger discal area white; cell M_1 lacking; abdomen relatively long, dull black, the intermediate segments with shiny basal rings.

♂. Length about 13–16 mm; wing 12–13 mm; antenna about 3–3.3 mm.

Rostrum and palpi black. Antennae of male 8-segmented, black throughout; flagellar segments outwardly gradually decreasing in length and diameter; terminal segment from about two-thirds to nearly equal to the penultimate; all segments with long coarse setae. Head dull black; posterior vertical tubercle low, rounded; anterior tubercles unequally trilobed.

Pronotum dull brownish black. Mesonotal praescutum with the posterior half or more dull black, the anterior part bright rufous to orange, the blackened color extended slightly more cephalad on central portion; scutum uniformly black; scutellum light orange, mediotergite more yellowed, parascutella and pleurotergite blackened; sparse erect setae on praescutal interspaces, with still fewer on scutellum. Pleura dull black, ventral sternopleurite slightly more pruinose. Halteres and legs black. Wings strongly blackened, Anal cells paler, especially *1st A*; a conspicuous whitened discal area before cord, involving cell *R* and parts of R_1 and M ; wing tip in cell R_4 with a small but conspicuous white spot; veins brown, yellowed in the white areas. Certain longitudinal veins beyond cord with trichia, including R_{2+3} , R_3 , R_4 and especially R_5 . Venation: Sc_1 ending beyond fork of R_{2+3+4} ; R_{1+2} from about one and one-half to nearly twice R_{2+3} ; R_2 transverse; cell M_1 lacking; *m-cu* at from about three-fourths to four-fifths M_{3+4} .

Abdomen relatively long; segments with conspicuous shiny

more nacreous rings on bases of segments two to seven, broader on the tergites; remainder dull black, including the hypopygium.

Habitat. INDIA (Assam). *Holotype:* ♂, Litan, Manipur, 4,000 feet, August 11, 1960 (Fernand Schmid). *Paratopotypes:* 3 ♂♂, with the type. *Paratype:* ♂, Hanggoi, Manipur, 3,300 feet, July 31, 1960 (Fernand Schmid).

By means of Edward's key to the Old World species of *Eriocera* (1921), *Hexatoma (Eriocera) rufoantica* runs to species such as *H. (E.) leucotela* (Walker), of Singapore, and *H. (E.) selene* (Osten Sacken), of Sumatra. There are no more closely related species in the Indian fauna.

Hexatoma (Eriocera) cincta fuscithorax, new subspecies

♂. Length about 13.5 mm; wing 14 mm; antenna about 3 mm.

Characters as in typical *cincta* (Brunetti), described from the Darjiling District, Eastern Himalayas, differing especially in the coloration of the thorax. Mesonotum almost entirely dark brown with faint tints of reddish, these most evident on sides of praescutum and scutum and posterior borders of the scutellum and postnotum. Pleura brownish black, including the dorsopleural region. Tips of femora rather broadly and abruptly black, of the tibiae less so. Abdomen dull black, the bases of tergites three to six shiny nacreous, more silvery on sides.

In typical *cincta*, the mesonotal praescutum and scutum are dark reddish brown, the posterior sclerites of notum and the pleura black.

Habitat. INDIA (Assam). *Holotype:* ♂, Minghti, Manipur, 2,500 feet, July 30, 1960 (Fernand Schmid).

Hexatoma (Eriocera) cincta ignithorax, new subspecies

♂. Length about 17 mm; wing 14 mm; antenna about 3 mm.

Rostrum light brown; palpi dark brown. Antennae with scape and pedicel brown, proximal flagellar segments yellowish brown, outer segments dark brown. Head light gray.

Pronotum light brown. Entire mesonotum fiery orange, with conspicuous erect setae on praescutum, scutum, and scutellum.

Pleura dull orange below, the dorsal pleurites and dorsopleural region more infuscated; an extensive light silvery gray sheen over the dorsal sternopleurite and anterior pteropleurite. Halteres infuscated. Legs with coxae reddish brown, pruinose; trochanters brown; femora yellow, tips on dorsal surface very narrowly dark brown; tibiae and tarsi brown. Wings generally as in *cincta*, the whitened spot in cell R_1 very small. Venation: Sc_1 ending opposite R_2 .

Abdomen with first tergite orange, second tergite obscure orange at base, posterior border dull velvety black, the intervening ring shiny silvery nacreous; succeeding segments with bases nacreous, this becoming more extensive on outer segments, restricting the black borders; sixth and seventh segments with bases more brightened with orange; hypopygium light orange.

Habitat. INDIA (Assam). *Holotype:* ♂, Hat Nongshken, Manipur, 200 feet, April 4, 1960 (Fernand Schmid).

The general coloration of typical *cincta* (Brunetti) has been diagnosed briefly in the account of the preceding subspecies.