

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

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The preceding part under this general title was published in ENTOMOLOGICAL NEWS, 73: 209–216, 1962. As in that article I am describing species from Assam, India, all belonging to the genus *Hexatoma*, which is greatly developed throughout south-eastern Asia. The materials were taken by Dr. Fernand Schmid to whom my sincere thanks are extended for this cooperation in making known the crane-flies of India. The types are retained in my personal collection.

### *Hexatoma* (*Hexatoma*) *kinnara*, new species

Size small (wing of female 5.8 mm); general coloration black, more or less pruinose; antennae of female 9-segmented; halteres black; wings strongly infuscated, stigma not or scarcely differentiated; radial fork short;  $R_2$  shorter than  $R_{2+3}$ .

♀. Length about 4.5 mm; wing 5.8 mm; antenna about 1.3 mm.

Rostrum black, moderately long, subequal to the antennal scape; palpi black. Antennae black; in female 9-segmented; flagellar segments gradually decreasing in length outwardly, the first a little shorter than the second and third combined; segments with scattered verticils. Head dull black, front and orbits more pruinose, vertical tubercle more clearly blackened, very broad and low, weakly bilobed.

Thorax uniformly black, praescutal stripes more polished black, virtually confluent; posterior sclerites weakly pruinose. Halteres black. Legs with coxae black, weakly pruinose; trochanters brownish black; remainder of legs dark brown. Wings strongly infuscated, stigma not or scarcely differentiated; linear pale streaks in centers of cells *R* and *M* and base of cell *1st A*; veins brown. Veins unusually glabrous, beyond cord with a complete series of more than 20 long trichia, with about two

<sup>1</sup> Contribution from the Entomological Laboratory, University of Massachusetts.

more near outer end of vein  $R_4$ ; veins  $R$  and  $R_1$  with abundant trichia throughout their lengths; no trichia on  $Sc$  or on veins basad of cord. Venation:  $Sc_1$  ending immediately before fork of  $Rs$ ,  $Sc_2$  at its tip;  $R_2$  far before fork, a little shorter than  $R_{3+4}$ , the latter about one-half  $R_3$ ;  $m-cu$  subequal to distal section of  $Cu_1$ , about one-third its length beyond fork of  $M$ .

Abdomen black, sides of tergites paler brown; ovipositor black, all valves very blunt.

*Habitat.* INDIA (Assam). *Holotype:* ♀, Bongba Khunov, Manipur, 4,800 feet, July 27, 1960 (Fernand Schmid).

*Hexatoma (Hexatoma) kinnara* is readily told from all other regional members of the subgenus by the venation and trichiation of the wings and by the structure of the antennae. *H. (H.) khasiensis* Alexander is readily told by the coloration and pattern of the wings.

### **Hexatoma (Eriocera) agni, new species**

Size large (wing about 20 mm); thorax and abdomen almost uniformly dull fiery orange; head brownish black, paler brown on front; antennal scape and pedicel dark brown, flagellum light yellow; legs yellow, tips of femora and tibiae narrowly black; wings strongly fulvous, cell  $M$ , present; abdomen deep orange, opaque, tergites six and seven dull black.

♂. Length about 18 mm; wing 20 mm; antenna about 5 mm.

♀. Length about 18–25 mm; wing 18–23 mm; antenna about 4.8–5 mm.

Rostrum yellowish brown, palpi darker brown. Antennae of male 7-segmented; scape and pedicel dark brown, flagellum uniformly light yellow; flagellar segments long-cylindrical, gradually decreasing in length outwardly; in female, antennae 11-segmented, flagellar segments gradually decreasing in length, terminal segment nearly twice the penultimate. Head behind brownish black, chestnut brown in front; orbits and a vague central line gray; posterior vertical tubercle entire, anterior tubercle low-quadrituberculate.

Thoracic dorsum almost uniformly dull fiery orange, praescutum with two vaguely indicated more yellowed stripes, post-

notum more yellowed; scutellum conspicuously protuberant; setae of praescutum erect, yellow, of the scutellum more elongate. Pleura dark orange; conspicuous erect setae on dorsal anepisternum, before the wing root, sparse and scattered on the dorsal sternopleurite. Halteres short, dark brown, base of stem yellowed. Legs with coxae orange, with very long pale setae; trochanters orange; femora yellow, tips narrowly and conspicuously black, the amount subequal on all legs, on fore pair including about the outer sixth to eighth; tibiae light yellow, tip and base very narrowly darkened; basal two tarsal segments yellow, tips narrowly blackened, outer segments passing into black; claws with a conspicuous basal tooth, more obtuse in female. Wings strongly fulvous, extreme base darkened, costal border more saturated; stigma lacking; veins yellow. Costal fringe short, in male on proximal two-thirds very sparse and scattered, short but abundant in female; macrotrichia on  $R_{2+3}$ ,  $R_3$ ,  $R_4$  and  $R_5$ , sparse on outer medial branches. Venation:  $Sc_1$  ending opposite  $R_2$ ,  $Sc_2$  removed;  $R_{2+3+4}$  longer than  $R_{2+3}$ , shorter than  $R_{1+2}$ ; cell  $M_1$  subequal to or longer than its petiole;  $m-cu$  opposite or just beyond midlength of  $M_{3+4}$ .

Abdomen deep orange, opaque; tergites six and seven dull black, margined with orange; sternites uniformly orange; tergites with narrow transverse silvery lines beyond base and before apex. Ovipositor with shield dark orange; cerci darkened on basal half, very long and slender.

*Habitat.* INDIA (Assam). *Holotype*: ♂, Huiahu, Manipur, 4,300 feet, July 1, 1960 (Fernand Schmid). *Allotopotype*: ♀, pinned with type. *Paratypes*: 2 ♀♀, Longbi Khulen, Manipur, 4,500 feet, June 30, 1960 (Fernand Schmid).

The specific name, *agni*, is from Agni, the Fire God in Hindu mythology. The most similar species is *Hexatoma (Eriocera) quadriaurantia* Alexander, of South India, which differs conspicuously in the coloration of the thorax and legs.

### **Hexatoma (Eriocera) homochroa, new species**

Size medium (wing of female 13 mm); general coloration dull black, praescutum with four narrow more grayish stripes; sides

of intermediate abdominal segments with major silvery areas; antennae and halteres black; femora yellow, tips narrowly brownish black; wings strongly blackened, with a conspicuous white band before cord; vein  $R_2$  oblique.

♀. Length about 10 mm; wing 13 mm; antenna about 3.2 mm.

Rostrum and palpi black. Antennae of female 10-segmented; scape and pedicel black, proximal two flagellar segments obscure yellow, remainder black; flagellar segments gradually decreasing in length, terminal segment about one-half longer than the penultimate; segments with scattered coarse setae. Head dull black; anterior vertex with two low slightly porrect tubercles, behind which is a smaller more erect elevation.

Pronotum dull black. Mesonotal praescutum dull black, with four scarcely differentiated narrow more grayish stripes, remainder of notum dull black, hind border of mediotergite slightly more pruinose; scutum, scutellum and posterior part of praescutal interspaces with delicate erect setae. Pleura dull black, the dorsopleural membrane even more intense. Halteres black. Legs with coxae and trochanters black; femora yellow, tips rather narrowly but conspicuously brownish black, on posterior pair including about the outer sixth; tibiae yellow, tips more narrowly blackened; proximal two tarsal segments brownish yellow, tips and remainder of tarsi black; claws small, with a stout basal tooth. Wings strongly blackened, cell *1st A* with a paler streak along the vein, cell *2nd A* paler along margin; a conspicuous white band before cord, extending from vein  $R_1$  across cells  $R_1$ ,  $R$  and  $M$ , slightly entering cell  $Cu$ ; veins light brown, more yellowed in the whitened band. About two scattered trichia on veins  $R_3$  and  $R_4$ , with about seven on  $R_5$ . Venation:  $Sc_1$  ending opposite proximal end of the very oblique  $R_2$ , the latter about three times  $R_{2+3}$ ; cell  $M_1$  lacking;  $m-cu$  beyond midlength of  $M_{3+4}$ , subequal to the distal section of  $Cu_1$ .

Abdomen dull black, basal half of tergite two and very narrow bases of tergites three and four more nacreous; sides of tergites three and four with major silvery areas, less distinct on tergites two and five; genital tergal shield dull black, sternum fulvous. Ovipositor with valves horn-yellow, cerci with tips slightly upcurved.

*Habitat.* INDIA (Assam). *Holotype:* ♀, Tairenpokpi, Manipur, 4,000 feet, May 31, 1960 (Fernand Schmid).

*Hexatoma (Eriocera) homochroa* is generally similar to *H. (E.) nepalensis* (Westwood), differing evidently in the unicolorous ground color of the wing and the yellowed femora. *H. (E.) flavipes* (Brunetti) also is generally similar, differing evidently in the body coloration and in the venation, including the transverse  $R_2$  and small cell *1st*  $M_2$ .

### **Hexatoma (Eriocera) mikirensis, new species**

Belongs to the *verticalis* group; size relatively small (body and wing of male about 8.5 mm); antennae short, 6-segmented; entire body, including also the antennae, halteres and legs, black; wings strongly infuscated, cells *C* and *Sc* darker; veins unusually glabrous, with a series of about 15 trichia on distal section of  $R_5$ ;  $R_{2+3}$  very short, about one-third  $R_2$ ; cell  $M_1$  lacking, *1st*  $M_2$  long-rectangular; *m-cu* at near one-fourth  $M_{3+4}$ , about one-third longer than the distal section of  $Cu_1$ .

♂. Length about 8.5 mm; wing 8.5 mm; antenna about 2 mm.

Rostrum and palpi black. Antennae of male 6-segmented; scape and pedicel brown, flagellum black; first flagellar segment longest, stouter at base, second segment about two-thirds the third, terminal segment nearly equal to the preceding two combined, with a weak constriction shortly before apex; all segments with strong setae, more numerous and appressed on last segment. Head dull black.

Thorax dull black; praescutum with conspicuous erect black setae. Halteres and legs black throughout; no scales on legs. Wings strongly infuscated, cells *C* and *Sc*, with the stigma, darker brown; veins dark brown. Veins unusually glabrous, with a series of about 15 trichia on distal section of  $R_5$ ; medial veins paler and fainter than other outer veins. Venation:  $Sc_1$  ending about opposite *r-m*,  $Sc_2$  near its tip;  $R_{1+2}$  a little longer than  $R_2$ ;  $R_{2+3}$  very short, about one-third  $R_2$ ; *Rs* about one-half longer than  $R_1$ ; cell  $M_1$  lacking, *1st*  $M_2$  long-rectangular; *m* transverse, about one-half the basal section of  $M_3$ ; *m-cu* at near one-fourth  $M_{3+4}$ , one-third longer than distal section of  $Cu_1$ .

Abdomen, including hypopygium, black, surface subnitidous.

*Habitat.* INDIA (Assam). *Holotype:* ♂, Bangku, Mikir Hills, United District of Mikir and North Cachar Hills, 700 feet, May 7, 1960 (Fernand Schmid).

The most similar regional species include *Hexatoma (Eriocera) fusca* (Edwards), *H. (E.) walayarensis* Alexander, and *H. (E.) yerburyi* (Edwards), all readily distinguished by the size, venation and structure of the antennae. The unusually short 6-segmented antennae of the present fly are noteworthy.

### *Hexatoma (Eriocera) rudra*, new species

Size medium (wing of male 12 mm); general coloration black, praescutum with four narrow plumbeous stripes; antennae, halteres and legs black; wings brownish yellow, base and outer costal border narrowly blackened; cell  $M_1$  present; abdomen black, proximal two-thirds of individual tergites more plumbeous, shiny.

♂. Length about 13 mm; wing 12 mm; antenna about 2.2 mm.

Rostrum and palpi black. Antennae of male 8-segmented, black throughout; flagellar segments outwardly gradually decreasing in length and diameter; terminal segment about one-third longer than the penultimate. Head dull black, with very large porrect black setae; posterior vertical tubercle entire; anterior vertex roughened, with a low tubercle.

Pronotum black, lateral borders of scutum produced into a small tubercle. Mesothorax dull black, praescutum with four narrow more plumbeous stripes that are only vaguely differentiated; praescutum, scutum and scutellum with abundant erect to retrorse setae. Pleura with numerous setae on sternopleurite and ventral anepisternum. Halteres and legs uniformly black. Wings brownish yellow, base narrowly blackened; outer costal border narrowly blackened, the color continued distad along margin to beyond the wing tip; centers of the more basal cells paler; veins light brown. Veins chiefly glabrous; some outer radial veins with macrotrichia, including  $R_4$ ,  $R_5$  and outer end of  $R_3$ . Venation:  $Sc_1$  opposite the transverse  $R_2$ ;  $R_{2+3+4}$  and basal section of  $R_3$  subequal, about one-half  $R_{1+2}$ ; cell  $M_1$

shorter than its petiole; *m-cu* before midlength of  $M_{3+4}$ ; distal section of  $Cu_1$  in virtual alignment with basal section.

Abdomen black, the proximal two-thirds of the individual tergites more plumbeous, shiny; posterior borders and outer segments, including the hypopygium, intensely black; eighth sternite projecting as a broad scoop, margin very obtuse, surface with sparse setae, virtually lacking at and near margin.

*Habitat.* INDIA (Assam). *Holotype:* ♂, Huiahu, Manipur, 4,300 feet, July 1, 1960 (Fernand Schmid).

*Hexatoma (Eriocera) rudra* is most similar to *H. (E.) atrodorsalis* (Alexander) and *H. (E.) artifex* Alexander, both of South India, differing evidently in the coloration of the body and wings and in the number of antennal segments.

### **Hexatoma (Eriocera) triflava, new species**

Allied to *furtiva*; size large (wing of male about 16 mm); mesonotal praescutum gray with four shiny plumbeous black stripes that are narrowly bordered by dull black; antennae, halteres and legs black; wings strongly blackened, prearcular field and costal border more intensely so; outer radial and medial veins with macrotrichia, more numerous in female; abdomen black, segments two to four orange yellow, the tergites with blackened borders.

♂. Length about 17 mm; wing 16 mm; antenna about 3.5 mm.

♀. Length about 23 mm; wing 17 mm; antenna about 3.8 mm.

Rostrum brownish gray; palpi black. Antennae of male 7-segmented, of female 11-segmented; in male terminal segment with a weak constriction but not forming a separate segment; black, scape slightly pruinose; flagellar segments gradually decreasing in length outwardly, with conspicuous setae, smallest on outer segments. Head dark gray; vertical tubercle simple, conical, porrect.

Pronotum dark gray. Mesonotal praescutum with the ground gray, with four shiny plumbeous black stripes that are narrowly bordered by dull black; posterior sclerites of notum black, chiefly polished, posterior borders slightly pruinose. Pleura dull brownish black, surface pruinose. Halteres and legs black, coxae

sparsely pruinose. Wings blackened, the prearcular field, with cells *C* and *Sc*, more strongly so, stigma not differentiated; veins brown. Macrotrichia on veins  $R_3$ ,  $R_4$ ,  $R_5$ ,  $M_1$  and  $M_2$  very sparse and scattered in male, very numerous in female, where vein  $M_3$  also is included. Venation:  $Sc_1$  ending opposite  $R_2$ ,  $Sc_2$  slightly removed;  $Rs$  about one-half longer than  $R$ ;  $R_{2+3}$  longer than  $R_2$ ;  $R_{2+3+4}$  about three times  $R_{2+3}$ ; cell  $M_1$  present, subequal to or shorter than its petiole;  $m-cu$  at near one-third  $M_{3+4}$ ; distal section of  $Cu_1$  curved into wing margin.

Abdomen with first segment dull black, segments two to four orange-yellow, the posterior borders of tergites narrowly blackened; remainder of abdomen, including hypopygium, black; in female, posterior borders of sternites three and four similarly blackened, genital segment orange; valves of ovipositor elongate, cerci very slender.

*Habitat.* INDIA (Assam). *Holotype*: ♂, Haflong, Mikir Hills, United District of Mikir and North Cachar Hills, 1,500 feet, May 5, 1960 (Fernand Schmid). *Allotype*: ♀, Bandarkhal, Cachar District, 500 feet, May 9, 1960 (Fernand Schmid).

The most similar species is *Hexatoma (Eriocera) furtiva* Alexander, of Kumaon, which likewise has three yellow abdominal segments, differing in the smaller size, details of coloration of the thorax and abdomen, and in the venation and trichiation of the wings. *H. (E.) semilimpida* (Brunetti) is more distantly allied, being most readily distinguished by the extensive yellowing of the wing disk.