

## Thirteen new species of the genus *Empis* Linnaeus (Diptera: Empididae) from Asiatic part of the Palaearctic region

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Thirteen new species of the genus *Empis* L. are described: *E. negrobovi* sp.n. (Middle Asia: Tajikistan, Uzbekistan), *E. golubi* sp.n. (Middle Asia: Tajikistan), *E. nartshuki* sp.n. (Middle Asia: Tajikistan), *E. zaslavskii* sp.n. (Middle Asia: Kirgizia), *E. jacutiensis* sp.n. (Russia: Yakutia), *E. keberlei* sp.n. (Middle Asia: Uzbekistan), *E. cushcaensis* sp.n. (Middle Asia: Turkmenistan), *E. sugonyaevi* sp.n. (Middle Asia: Kazakhstan), *E. gorodkovi* sp.n. (Middle Asia: Kirgizia), *E. otchontengriensis* sp.n. (Mongolia), *E. dushanbensis* sp.n. (Middle Asia: Tajikistan), *E. rohdendorfi* sp.n. (Middle Asia: Uzbekistan), *E. odessa* sp.n. (Ukraine: Odessa Prov.). A key to all species is presented. The subgeneric position of the new species is still unclear and their possible relationships with the subgenera *Polyblepharis* Bezzi, *Leptempis* Collin, *Planempis* Frey and *Kritempis* Collin are discussed.

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*Key words.* Diptera, Empididae, *Empis*, Palaearctic region, new species.

### Introduction

The genus *Empis* is very common and diverse in the Palaearctic Region with more than 300 described species. The European fauna of the group is rather well studied and includes the majority of the species listed, for instance, in the Palaearctic Catalogue (Chvála and Wagner, 1989). Asiatic species of the genus remain almost unknown. Engel (1943) and Frey (1953, 1954) reviewed all species of the genus *Empis* from this part of the Palaearctic Region. More recent studies were published by Saigusa (1964, 1992), Chvála (1998) and Shamshev (1998a, b; 2001). In this paper 13 new species of the genus *Empis* are described from Asiatic part of the Palaearctic Region.

### Materials and methods

This study is based on Empididae materials housed in the Zoological Institute, Russian Academy of Sciences, St.Petersburg (ZIN) and Zoological Museum of Moscow State University, Russia (ZMMU). Pinned adult specimens were examined only. The morphological terms mainly follow McAlpine (1981); the interpretation of the genital sclerites follows Sinclair et al. (1994) and Cumming et al. (1995). To facilitate observation, the male terminalia were macerated in cold 10% KOH and immersed in glycerin. Label data of the holotype is cited in full, with original language, spelling, punctuation and date. Lines are delimited by a slash mark (/), a semicolon sepa-

rates data quoted from different labels, and authors' remarks are given in square brackets.

### Taxonomy

#### *Empis negrobovi* sp. n.

(Figs 1—2)

**Holotype.** ♂, **Tajikistan:** [label printed in Cyrillic] Сталинабад [Stalinabad (=Dushanbe)] / Таджики. [Tajik. (=Tajikistan)] / 5.4.[1]942 Гуссаковский [Gussakovskiy].

**Paratypes.** **Tajikistan:** 3 males, 1 female, the same locality as in holotype, 20.3.942; 1 male, 2 females, the same locality as in holotype, 11.4.943 (all leg. Gussakovskiy); **Uzbekistan:** 2 males, 1 female, Kuropatkino, 4.4.1930 (all leg. S. Keberle). All material is housed in ZIN.

**Diagnosis.** Body with ordinary bristles in both sexes; frons narrow in male and broad in female; palpus yellow; thoracic spiracles pale; legs black brown.

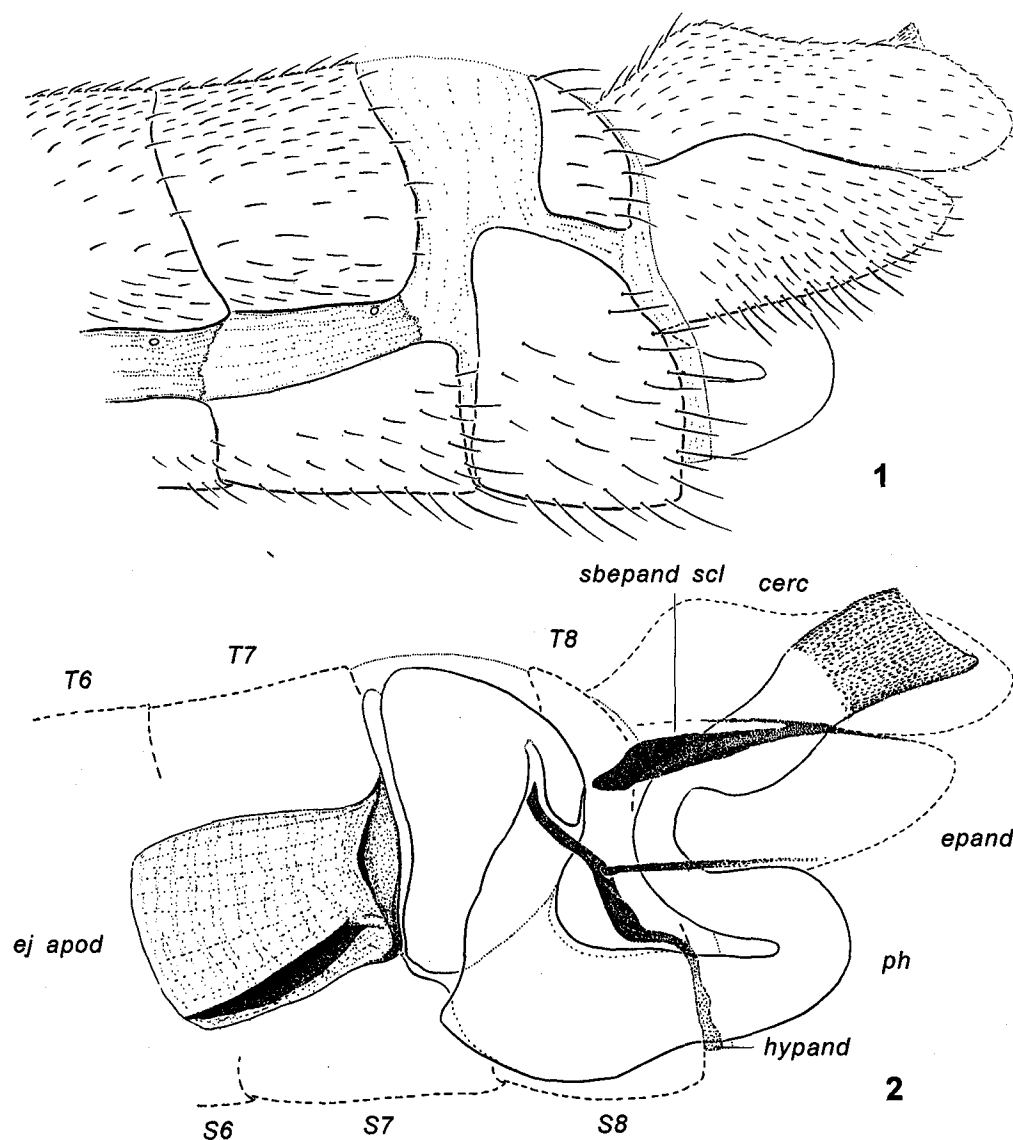
**Description.** Male. Head black in ground-colour, largely light greyish pollinose. Occipitals undifferentiated; occiput with numerous black bristles of different length in upper part and pale hair-like setae in lower one. Eyes dichoptic, upper ommatidia somewhat enlarged. Ocellar triangle prominent, dark (viewed dorsally). Ocellars undifferentiated; several black setae of different length present. Frons narrow, at middle nearly as wide as anterior ocellus, brownish, bearing marginal setulae, widened toward antennae. Face grey to shiny brown in lower part, bare, broad, parallel-sided. Antennae black. Scape short; clothed in sparse setulae, bare on inner side. Pedicel subglobular, ringed with fringe of sparse setulae. Postpedicel elongate, narrow at base; 3.0 times longer than wide and 2.0 times as long as style. Ratio of scape, pedicel and postpedicel length — 8:5:30. Proboscis moderately long; labrum nearly 2.0 (1.7—1.9, in holotype 1.8) times as long as head is high, reddish-brown; prementum and labella dark; labella short and narrow, bearing dark scattered setulae. Palpus yellow, finely pubescent with microtrichia, bearing several long black setae ventrally. Gena linear. Cervical sclerites bare.

Thorax black in ground-colour, largely densely light grey pollinose, only posterior corner of postpronotal lobe polished. Scutum with 4 dark

brown vittae (viewed dorsally). Antepronotum with numerous black spine-like bristles dorsally and longer pale hair-like setae laterally. Propisternum with few pale hair-like setae. Prosternum with cluster of long pale hair-like setae laterally. Postpronotal lobe with several thin short and 1—2 longer bristles. Main mesonotal bristles black, hardly differentiated; 1—2 thin presutural supra-alar, 4—5 notopleural, 1—2 postsutural supra-alar, 1 postalar and 6—8 scutellar bristles (number and position of bristles vary and in some specimens differ even on left and right sides of body); additionally, several pale and black setulae present on notopleural depression, just behind postpronotal lobe and suture. Acrostichals 2-serial, short and thin, ending before prescutellar depression. Dorsocentrals irregularly 3-serial anteriorly, becoming 1-serial toward scutellum, subequal in length to acrostichals, 2—3 prescutellars longest. Laterotergite with dense pale setae of different length (in some specimens black bristles present). Anterior and posterior spiracles pale.

Legs wholly black brown, densely grey pollinose, short and stout, unmodified. Fore coxa clothed in dense, long, pale setae; mid and hind coxae with intermixed pale and black setae. Trochanter of fore leg with scattered pale setae; trochanters of mid and hind legs with few pale and black setae. Femora subequal in thickness. Fore femur with moderately long hair-like black antero- and posteroventral bristles and similar intermixed pale and black setae posteriorly. Mid and hind femora bearing numerous spine-like bristles ventrally; additionally, mid femur with 1 row of longer posteroventral bristles; hind femur with 1 row of antero- and 1 row of posteroventral longer bristles. Tibiae ringed with few short apicals; bearing several scarcely differentiated dorsal bristles (longer on mid and hind tibiae). Fore tibia with ordinary, mid and hind tibiae with erect setulae ventrally. Hind tibia bearing short seta in posteroapical comb, with simple articulation. Tarsomeres 1—4 ringed with short and thin apical setae. Claws subequal in length to pulvilli.

Wing hyaline to somewhat infusate. Veins largely brownish yellow, becoming paler toward base of wing; complete (except Sc); mostly well sclerotized,  $A_1$  very faint in subapical portion. Anal angle very acute, subsequently anal lobe

Figs 1—2. *E. negrobovi* sp. n. (paratype).

1, postabdomen, lateral view; 2, genitalia, the same view.

Abbreviations: *cerc* – cercus, *ej apod* – ejaculatory apodeme, *epand* – epandrium, *hypd* – hypandrium, *ph* – phallus, *S* – sternite, *sbepand scl* – subepandrial sclerite, *T* – tergite.

well developed. Basicostal bristle lacking. Stigma very faint.  $R_{4+5}$  and  $M_1$  somewhat divergent near wing-apex. Radial fork acute. *dm* cell short. Squama yellow, pale fringed. Halter yellow.

Abdomen largely black, densely whitish grey pollinose; segments 1—7 unmodified, lacking posteromarginal bristles. Tergites with long, pale,

hair-like setae laterally and black setulae dorsally. Sternites mostly with scattered pale setae; sternite 8 with more numerous and somewhat longer pale and dark setae. Sternites and tergites 7—8 laying in same plane with preceded sternites and tergites, respectively. Sternite and tergite 7 rectangular, as large as sternite and tergite 6, re-

spectively. Sternite 8 U-shaped (viewed posteriorly), as broad as sternite 7; tergite 8 reduced to two triangular lateral sclerites narrowly connected in middle and bearing few setulae.

Hypopygium compressed laterally, unflexed and confined to end of abdomen. Cerci and epandrial lamellae in horizontal position. Cerci above epandrial lamellae, unilobate, elongate-oval, subequal in size to epandrial lamella, largely yellow, dark along upper margin, clothed in black setulae of subequal length, bearing few spinules on inner side. Epandrial lamellae triangular, with rounded apex, brownish, clothed only in pale setae which are denser and longer along lower margin of lamella. Hypandrium reduced to sclerotized lateral arms, hidden by sternite 8. Phallus, as in fig. 2, mostly hidden, zigzag bent, very thick, poculiformis in apical part, sulcate on subapical space.

Length: body 5.8—6.8 (in holotype 6.2) mm; wing 5.9—6.5 (in holotype 6.1) mm.

Female. Similar to male except the following characters. Occiput with less numerous and more differentiated bristles in upper part. Eyes dichoptic, with all ommatidia of equal size. Frons broader, nearly 3 times as wide as anterior ocellus, almost parallel-sided, somewhat widening toward antennae. Acrostichal and dorso-central bristles shorter. Legs with shorter setation, mid tibia somewhat thinner. Abdominal segments 1—6 with scattered pale setulae only and only tergites 1—2 with long hair-like setae laterally; segments 7—8 dark brown, covered with dark setulae. Cerci long and slender, dark brown, clothed in dark setulae.

Length: body 5.7—6.7 mm; wing 6.0—6.9 mm.

**Differential diagnosis.** *E. negrobobi* differs from all species described in this paper by narrowest frons and somewhat enlarged upper ommatidia in male. Like *E. keberlei*, *E. negrobobi* possesses only ordinary bristles on its body. However, it can be readily distinguished from the former in hyaline wing (milk white in *E. keberlei*) and details of terminalia in male. In *E. negrobobi*, cerci and epandrial lamellae are longer and phallus is very broad, poculiformis in apical part. Females of these two species are almost identical and, apparently, there are some slight differences in scutum colour only, as it is given in the Key to species.

**Etymology.** The new species is named in honour of Prof. Oleg P. Negrobov (Voronezh, Russia).

**Distribution.** Middle Asia: Tajikistan, Uzbekistan.

### *Empis golubi* sp.n.

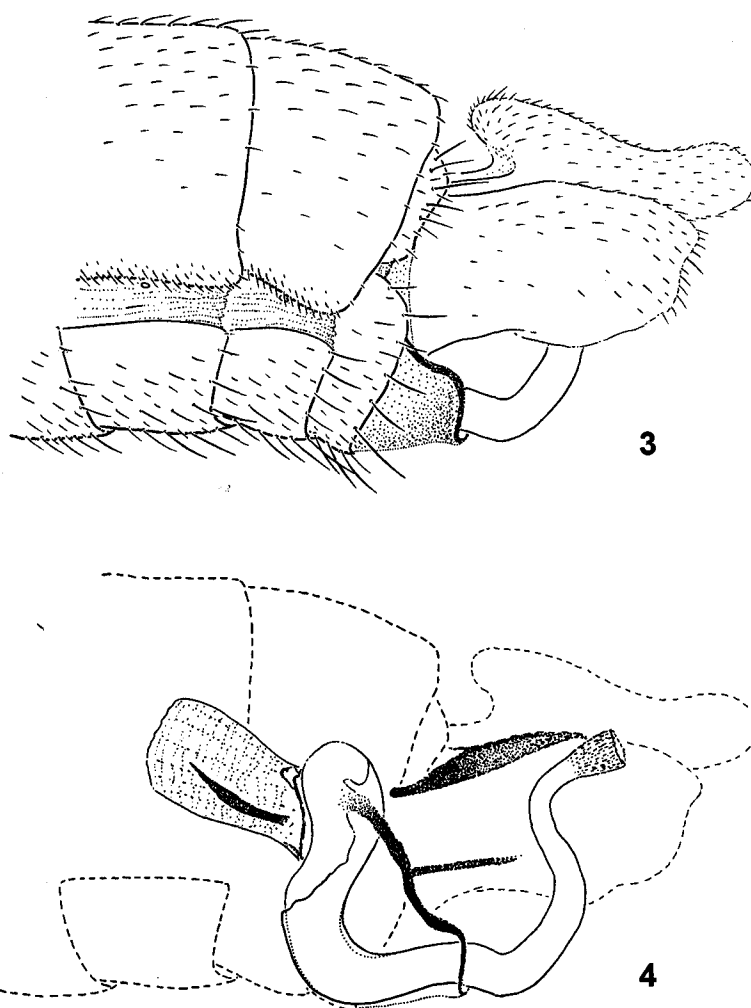
(Figs 3—4)

**Holotype.** ♂, **Tajikistan:** [label printed in Cyrillic] Сталинабад [Stalinabad (=Dushanbe)] / Таджики. [Tajik. (Tajikistan)] / 17.4.[1]942 Гуссаковский [Gussakovskiy]. The holotype is housed in ZIN.

**Diagnosis.** Occiput with intermixed ordinary and flattened bristles on sides behind eyes; palpus yellow; prosternum with cluster of flattened bristles; laterotergite with black bristles; hind tarsus largely yellowish brown; abdomen greyish brown pollinose, with black setation, sternites 2—5 with flattened bristles.

**Description.** Male. Head black in ground-colour. Occiput greyish pollinose, mostly with black setation, bearing pale hair-like setae in lower part. Occipitals undifferentiated, numerous, intermixed with somewhat flattened bristles on sides behind eyes. Eyes dichoptic, all ommatidia of equal size. Ocellar triangle prominent, concolorous with frons (viewed dorsally). Ocellars undifferentiated; several black setae of different length present. Frons broad, at middle 3.0 times as wide as anterior ocellus, dark brown, bearing marginal setulae, widened toward antennae. Face grey to shiny brown in lower part, bare, broad, somewhat widened toward below. Antennae black. Scape short; clothed in sparse setulae, bare on inner side. Pedicel subglobular, ringed with fringe of sparse setulae. Postpedicel elongate, 2.9 times longer than wide and 2.6 times as long as style. Ratio of scape, pedicel and postpedicel length — 9 : 8 : 26. Proboscis moderately long; labrum 1.5 times as long as head is high, reddish-brown; prementum and labella dark; labella short and narrow, bearing dark scattered setulae. Palpus yellow, pubescent with microtrichia, bearing several long black setae ventrally. Gena linear. Cervical sclerites bare.

Thorax black in ground-colour, largely greyish pollinose, only posterior corner of postpronotal lobe polished. Scutum with 4 dark brown vittae (viewed dorsally). Anteprenotum with numer-



**Figs 3—4.** *E. golubi* sp. n. (holotype).  
3, postabdomen, lateral view; 4, genitalia, the same view.

ous black spine-like bristles dorsally and hair-like setae laterally. Proepisternum bare. Prosternum with cluster of long black, somewhat flattened setae laterally. Postpronotal lobe with numerous thin black bristles. Main mesonotal bristles black, hardly differentiated; 4 notopleural, 2 postalar and 8 scutellar (4 long and 4 short) bristles; additionally, several black setulae of different length present on notopleural depression, just behind postpronotal lobe and suture. Acrostichals 2-serial, moderately long and thin,

ending before prescutellar depression. Dorso-centrals irregularly 4—5-serial anteriorly, becoming 1-serial toward scutellum, nearly as long as acrostichals, 2—3 prescutellars longest. Laterotergite with dense black setae of different length. Anterior and posterior spiracles brownish.

Legs almost wholly dark brown, greyish pollinose, short, with black setation; hind tarsus largely yellowish brown, with tarsomere 1 in apical half, tarsomeres 2 and 3 at base paler. Fore and mid femora subequal in thickness and

relatively slender, hind femur thickened. Mid and hind tibiae somewhat arcuate, tapered in apical half. Tarsomeres unmodified. Fore femur with thin, moderately long anteroventral bristles; covered with numerous long hair-like bristles posteriorly. Mid and hind femora bearing numerous spine-like bristles ventrally; additionally, mid femur with 1 row of longer posteroventral bristles; hind femur with 1 row of antero- and 1 row of posteroventral longer bristles. Tibiae ringed with few very short apicals; fore and mid tibiae bearing several hardly differentiated dorsal bristles. Fore tibia with ordinary setulae, mid and hind tibiae with erect setulae ventrally. Hind tibia bearing short seta in posteroapical comb, with simple articulation. Tarsomeres 1—4 of all legs ringed with very short and thin apicals; tarsomere 1 of foreleg with few spinules ventrally. Claws subequal in length to pulvilli.

Wing hyaline. Veins largely brownish yellow, becoming paler toward base of wing; complete (except *Sc*); mostly well sclerotized,  $A_1$  very faint in subapical portion. Anal angle very acute, subsequently anal lobe well developed. Basicostal seta lacking. Stigma very faint.  $R_{4+5}$  and  $M_1$  somewhat divergent near wing-apex. Radial fork acute. *dm* cell short. Squama yellow, pale fringed. Halter largely yellow, stem darker.

Abdomen black in ground-colour, greyish brown pollinose, with black setation; segments 1—7 unmodified, lacking posteromarginal bristles. Tergites with longer setae laterally and short setulae dorsally. Sternites 2—5 with numerous long flattened bristles; sternites 6—8 with sparser ordinary bristles which are longer on posterior margin. Sternites and tergites 7—8 laying in same plane with preceded sternites and tergites, respectively. Sternite and tergite 7 rectangular, as large as sternite and tergite 6, respectively. Sternite 8 U-shaped (viewed posteriorly), as broad as sternite 7; tergite 8 reduced to two elongate-triangular lateral sclerites narrowly connected in middle.

Hypopygium compressed laterally, unflexed and confined to end of abdomen. Cerci and epandrial lamellae in horizontal position. Cerci above epandrial lamellae, unilobate, elongate-oval, somewhat produced posteriorly, dark brown, with black setulae which are more numerous near base, bearing few spinules on inner side. Epandrial lamellae almost trapeziform,

black brown, covered with short black setae. Hypandrium narrowly sclerotized along margin. Phallus, as in Fig. 4, mostly hidden, zigzag bent, thick in basal part, becoming thinner toward apex but poculiformis at tip, sulcate on subapical portion.

Length: body 5.5 mm; wing 5.1 mm.

Female. Unknown.

**Differential diagnosis.** *E. golubi* belongs to a complex of species having flattened setae on occiput and prosternum, as it is given in the Key. This species is distinguished from all species described here in broader epandrial lamella and relatively thin phallus.

**Etymology.** The new species is named in honour of Dr. Viktor B. Golub (Voronezh, Russia).

**Distribution.** Middle Asia: Tajikistan.

#### *Empis nartshuki* sp.n.

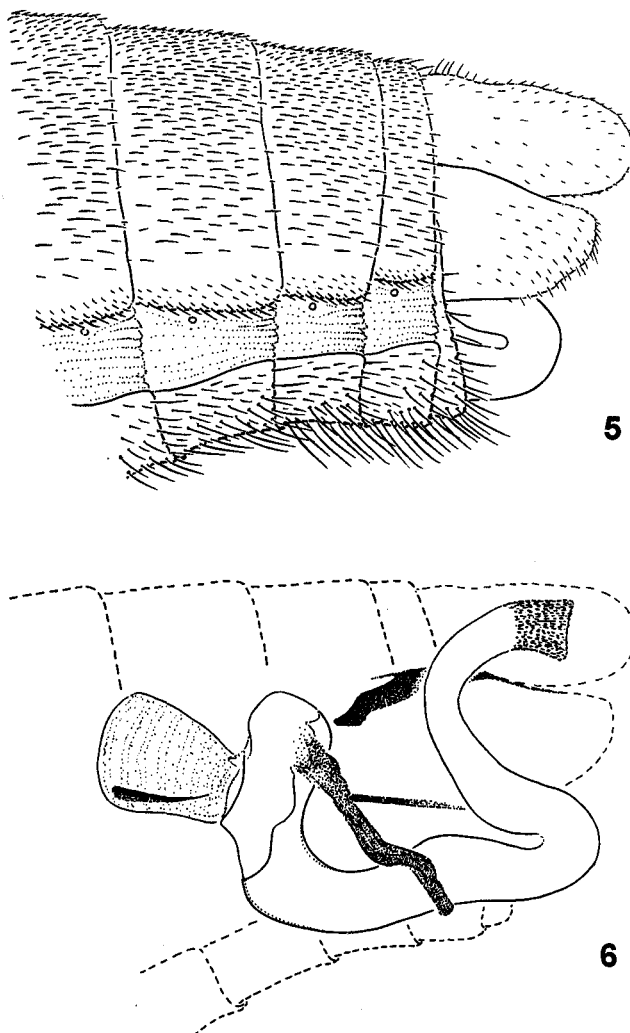
(Figs 5—6)

**Holotype.** ♂. **Tajikistan:** [label printed in Cyrillic] Кызылработ [Kyzylrabot] 4200 / В Памир [E Pamir] / Нарчук [Nartshuk] 28.VII.[1]965.

**Paratypes.** 2 females, same data as in holotype. All material is housed in ZIN.

**Diagnosis.** Rather small species; occiput with long flattened bristles on sides behind eyes in male; palpus black; thoracic spiracles black; laterotergite with black bristles; halter dark; legs entirely dark brown.

**Description.** Male. Head black in ground-colour, with black setation only. Occiput greyish brown pollinose; occipitals undifferentiated, mostly hair-like, very long; numerous flattened long bristles present on sides behind eyes. Eyes dichoptic, all ommatidia of equal size. Ocellar triangle prominent, concolorous with frons (viewed dorsally). Ocellars undifferentiated; several long hair-like bristles present. Frons broad, at middle 3.0 times as wide as anterior ocellus, dark brown, bearing long marginal setulae, widened toward antennae. Face grey to shiny brown in lower part, bare, broad, somewhat widened toward below. Antennae black. Scape short; clothed in sparse setulae, bare on inner side. Pedicel subglobular, ringed with fringe of sparse setulae. Postpedicel elongate, 3.0 times longer than wide and 2.0 times as long as style.



Figs 5—6. *E. nartshuki* sp. n. (holotype).  
5, postabdomen, lateral view; 6, genitalia, the same view.

Ratio of scape, pedicel and postpedicel length — 10 : 7 : 24. Proboscis moderately long; labrum 1.6 times as long as head is high, reddish-brown; prementum and labella dark; labella short and narrow, bearing dark scattered setulae. Palpus black, pubescent with microtrichia, bearing several long black setae ventrally. Gena linear. Cervical sclerites bare.

Thorax black in ground-colour, largely greyish brown pollinose, only posterior corner of postpronotal lobe polished. Scutum with 4 dark brown vittae (viewed dorsally). Antepronotum with

numerous, black, spine-like bristles dorsally and hair-like setae laterally. Proepisternum bare. Prosternum with cluster of long, black, flattened setae laterally. Postpronotal lobe with 1 strong and numerous thinner bristles. Main mesonotal bristles black, hardly differentiated; 3 notopleural, 1 postalar and 8 scutellar (4 long and 4 shorter and thinner) bristles; additionally, several long hair-like setae present on notopleural depression, just behind postpronotal lobe and suture. Acrostichals 2-serial, long and thin, ending before prescutellar depression. Dorsocentrals 2-serial

anteriorly, becoming 1-serial toward scutellum, nearly as long as acrostichals, 2—3 prescutellars longest. Laterotergite with dense, long, black setae. Anterior and posterior spiracles black.

Legs wholly dark brown, greyish pollinose, short, with black setation. Fore and mid femora subequal in thickness, hind femur thickened. Mid and hind tibiae somewhat arcuate, tapered in apical half. Tarsomeres unmodified. Fore femur with thin moderately long anteroventral bristles, covered with numerous long hair-like setae posteriorly. Mid and hind femora bearing numerous spine-like bristles ventrally; additionally, mid femur with 1 row of longer posteroventral bristles; hind femur with 1 row of antero- and 1 row of posteroventral longer bristles. Tibiae ringed with few very short apicals; bearing several scarcely differentiated dorsal bristles (more prominent on fore and mid tibiae). Fore tibia with ordinary setulae, mid tibia with erect setulae, hind tibia pubescent with microtrichia ventrally. Hind tibia bearing short seta in postero-apical comb, with simple articulation. Tarsomeres 1—4 ringed with very short and thin apical setae; tarsomere 1 of foreleg with few spinules ventrally. Claws subequal in length to pulvilli.

Wing hyaline. Veins largely brownish yellow, becoming paler toward base of wing; complete (except *Sc*); mostly well sclerotized, *A*<sub>1</sub> very faint in subapical portion. Anal angle not very acute, almost right, anal lobe well developed. Basicostal bristle lacking. Stigma very faint. *R*<sub>4+5</sub> and *M*<sub>1</sub> somewhat divergent near wing-apex. Radial fork acute. *dm* cell short. Squama dirty yellow, dark fringed. Halter dark.

Abdomen black in ground-colour, greyish brown pollinose, subshining, with black setation; segments 1—7 unmodified, lacking postero-marginal bristles. Tergites mostly covered with long bristles laterally and setulae dorsally; additionally, tergites 2—4 with somewhat flattened bristles dorsally. Sternites 2—6 with numerous long intermixed ordinary and somewhat flattened bristles; sternites 7—8 with ordinary bristles. Sternites and tergites 7—8 laying in same plane with preceded sternites and tergites, respectively. Sternite and tergite 7 rectangular, as large as sternite and tergite 6, respectively. Sternite 8 U-shaped (viewed posteriorly), as broad as sternite 7; tergite 8 reduced to two small lateral sclerites lacking setation.

Hypopygium compressed laterally, unflexed and confined to end of abdomen. Cerci and epandrial lamellae in horizontal position. Cerci above epandrial lamellae, unilobate, rather broad, elongate-oval; largely yellowish, brownish basally; pubescent with microtrichia, clothed in scattered black setulae, lacking spinules on inner side. Epandrial lamellae trapeziform, dark brown, pubescent with microtrichia, clothed in black setulae which are more numerous in apical part. Hypandrium hidden, sclerotized along upper margin. Phallus yellowish brown (in visible part), as in Fig. 6, mostly hidden, zigzag bent, very thick basally, poculiformis in apical part, on subapical space sulcate and with spinules arranged in longitudinal rows.

Length: body 4.2 mm; wing 3.9 mm.

Female. Similar to male except the following characters. Body more greyish. Frons almost parallel-sided. Occiput with ordinary, sparser and shorter bristles. Prosternum with cluster of ordinary bristles laterally. Postpronotal lobe and scutum with shorter bristles. Legs slender. Coxae and trochanters with sparser and shorter bristles. Fore femur with 1 row of short hair-like antero- and 1 row of posteroventral bristles, covered with ordinary setulae posteriorly; mid and hind femora with short ventral spine-like bristles. Tibiae with ordinary setation ventrally. Wing somewhat brownish. Halter yellow. Abdomen largely densely brownish grey pollinose, with scattered setulae which are more numerous and longer on segments 1—2; apical segments subshining. Cerci black brown, long and slender, covered with dark setulae.

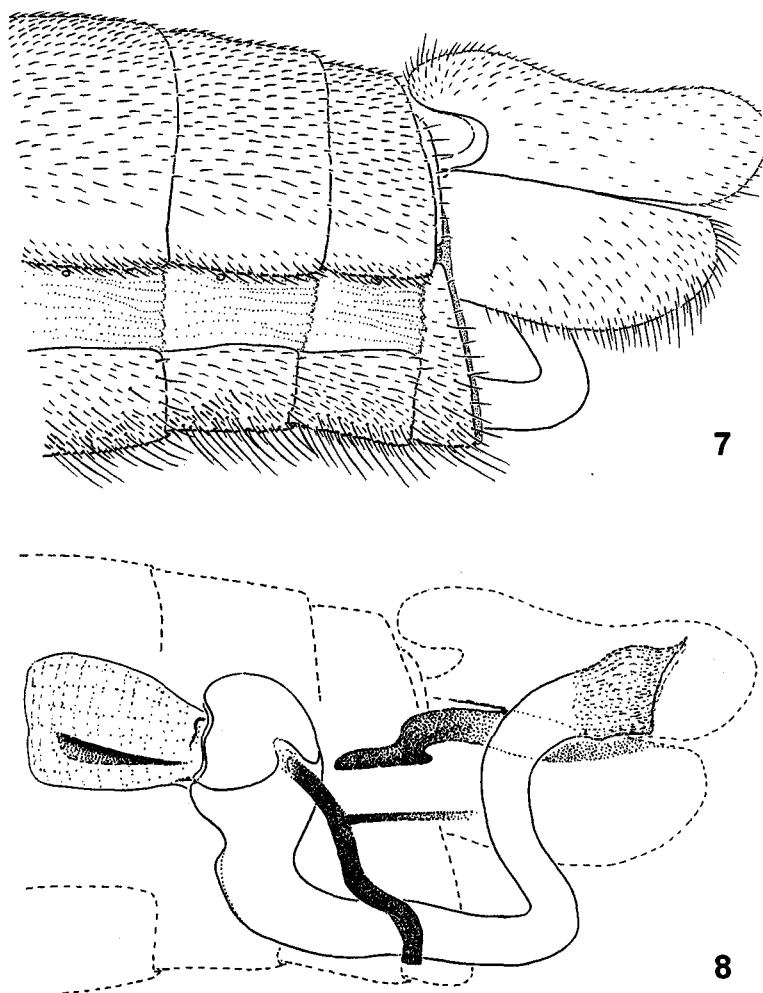
Length: body 4.6—4.8 mm; wing 5.0—5.4 mm.

*Differential diagnosis.* In having black palpus, *E. nartshuki* can be compared with *E. cushcaensis* only. However, *E. cushcaensis* is larger, has ordinary setae on thorax, densely whitish gray tergites of abdomen and pale halter in both sexes. The new species is most closely related to *E. sugonyaevi*, *E. jacutiensis*, *E. zaslavskii* and *E. otchontengriensis* in many features including characters of male terminalia. Main differences for these species are given in the Key.

*Etymology.* The new species is named in honour of Dr. Emilia P. Nartshuk (St. Petersburg, Russia).

*Distribution.* Middle Asia: Tajikistan.





Figs 7—8. *E. zaslavskii* sp. n. (holotype).  
7, postabdomen, lateral view; 8, genitalia, the same view.

***Empis zaslavskii* sp. n.**  
(Figs 7—8)

**Holotype.** ♂. **Kirgizia:** [label printed in Cyrillic] р. [г.] Чон-Кызыл-Су [Tshon-Kyzyl-Su] / Киргизия [Kirgizia] Терск. [Tersk.] Алатау [Alatau] / Заславский [Zaslavskiy] 1.07.[1]959; зона еловника и субальпийского луга, 2500—2700 [zone of fir forest and subalpine meadow, 2500—2700]. The holotype is housed in ZIN.

**Diagnosis.** Occiput on sides behind eyes, palpus, prosternum, postpronotal lobe and laterotergite with very long flattened bristles; legs wholly dark brown; hind femur with very long

flattened bristles dorsally; abdomen brownish pollinose, subshining.

**Description.** Male. Head black in ground-colour. Occiput brownish grey pollinose, mostly with black brown to black setation, bearing pale hair-like setae in lower part. Occipitals undifferentiated, numerous, very long; flattened bristles present on sides behind eyes. Eyes dichoptic, all ommatidia of equal size. Ocellar triangle prominent, concolorous with frons (viewed dorsally). Ocellars undifferentiated; several black setae of different length present. Frons broad, at middle 3.0 times as wide as anterior ocellus,

dark brown, bearing marginal setulae, widened toward antennae. Face grey to shiny brown in lower part, bare, broad, somewhat widened toward below. Antennae black. Scape short; clothed in sparse setulae, bare on inner side. Pedicel subglobular, ringed with fringe of sparse setulae. Postpedicel elongate, 2.3 times longer than wide and 1.6 times as long as style. Ratio of scape, pedicel and postpedicel length — 8 : 10 : 23. Proboscis moderately long; labrum 1.7 times as long as head is high, reddish-brown; prementum and labella dark; labella short and narrow, bearing dark scattered setulae. Palpus yellow, finely pubescent with microtrichia, bearing several long, brown, flattened setae ventrally. Gena linear. Cervical sclerites bare.

Thorax black in ground-colour, largely greyish brown pollinose, only posterior corner of postpronotal lobe polished. Scutum with 4 dark brown vittae (viewed dorsally). Antepronotum with numerous black bristles dorsally and somewhat flattened setae laterally. Proepisternum bare. Prosternum with cluster of very long, black, flattened setae laterally. Postpronotal lobe with numerous very long, flattened, black brown setae. Main mesonotal bristles black, hardly differentiated; 4 notopleural, 1 postsutural supra-alar, 1 postalar and 6 scutellar bristles; additionally, several black, very long and somewhat flattened bristles present on notopleural depression and just behind postpronotal lobe. Acrostichals 2-serial, long, hair-like, ending before prescutellar depression. Dorsocentrals irregularly 2—3-serial and very long anteriorly, short and becoming 1-serial toward scutellum. Laterotergite with dense, moderately long, black flattened setae. Anterior and posterior spiracles black.

Legs wholly dark brown, greyish pollinose, short, subshining, mostly with black setation. Fore and mid femora subequal in thickness, hind femur thickened. Mid and hind tibiae somewhat arcuate, tapered in apical half. Tarsomeres unmodified. Fore coxa with long, black, intermixed flattened and ordinary bristles; mid coxa with pale hair-like setae; hind coxa with pale hair-like setae anteriorly and few dark flattened setae on outer side. Trochanters of all legs with scattered pale hair-like setae. Fore femur bearing long hair-like antero- and posteroventral bristles and covered with similar bristles posteriorly. Mid and hind femora bearing numerous spine-

like bristles ventrally; additionally, mid femur with 1 row of longer posteroventral bristles; hind femur with 1 row of antero- and 1 row of posteroventral longer bristles, covered with very long flattened bristles dorsally, with few long, pale, hair-like setae near base anteriorly. Tibiae ringed with few very short apicals; only fore and mid tibiae bearing several scarcely differentiated dorsal bristles. Fore tibia with ordinary setulae, mid and hind tibiae finely whitish pubescent and with erect setulae ventrally. Hind tibia bearing short seta in posteroapical comb, with simple articulation. Tarsomeres 1—4 of all legs ringed with very short and thin apical setae. Claws subequal in length to pulvilli.

Wing hyaline. Veins largely brownish yellow, becoming paler toward base of wing; complete (except *Sc*); mostly well sclerotized,  $A_1$  very faint in subapical portion. Anal angle acute, subsequently anal lobe well developed. Basicostal bristle lacking. Stigma very faint.  $R_{4+5}$  and  $M_1$  somewhat divergent near wing-apex. Radial fork acute. *dm* cell short. Squama yellow, pale fringed. Halter yellow.

Abdomen black in ground-colour, brown pollinose, subshining, with dark brown to black setation; segments 1—6 unmodified, lacking posteromarginal bristles. All tergites with scattered setulae dorsally; tergites 1—3 with numerous long flattened bristles laterally; tergites 4—7 with shorter ordinary setae laterally. Sternites mostly with rather long, somewhat flattened bristles; sternites 6—8 with ordinary setae. Sternites and tergites 7—8 laying in same plane with preceded sternites and tergites, respectively. Sternite 7 rectangular, as large as sternite 6; tergite 7 deeply concave in middle. Sternite 8 U-shaped (viewed posteriorly), as broad as sternite 7; tergite 8 reduced to two triangular lateral sclerites bearing few setulae.

Hypopygium compressed laterally, unflexed and confined to end of abdomen. Cerci and epandrial lamellae in horizontal position. Cerci above epandrial lamellae, unilobate, similar in shape to epandrial lamellae, yellow in apical half and brownish in basal one; covered with sparse black setulae, bearing few spinules on inner side. Epandrial lamellae elongate-oval, brown, with black setae which are longer along lower margin. Hypandrium hidden, sclerotized along upper margin. Phallus yellowish, as in Fig. 8, mostly

hidden, zigzag bent, thick, poculiformis in apical part, on subapical space sulcate and with spinules arranged in longitudinal rows.

Length: body 5.1 mm; wing 5.5 mm.

Female. Unknown.

**Differential diagnosis.** This species has a very peculiar setation of the body. Occiput on sides behind eye, palpus, prosternum, postpronotal lobe and laterotergite bear very long, flattened bristles and, additionally, even hind femur has very long flattened bristles dorsally. The only species, namely *E. otchontengriensis*, possesses similar characters. But, *E. otchontengriensis* has hair-like setae on postpronotal lobe and largely yellow hind tarsus.

**Etymology.** The new species is named after the collector.

**Distribution.** Middle Asia: Kirgizia.

#### *Empis jacutiensis* sp. n.

(Figs 9–10)

**Holotype.** ♂. Russia: [collector's name printed in Cyrillic] Tundra Fl. Tyria / 7.VIII. [1]875 Чекановский [Tchekanovskiy]; 86526.

**Paratypes.** 5 males, 5 females, same data as in holotype. All material is housed in ZIN.

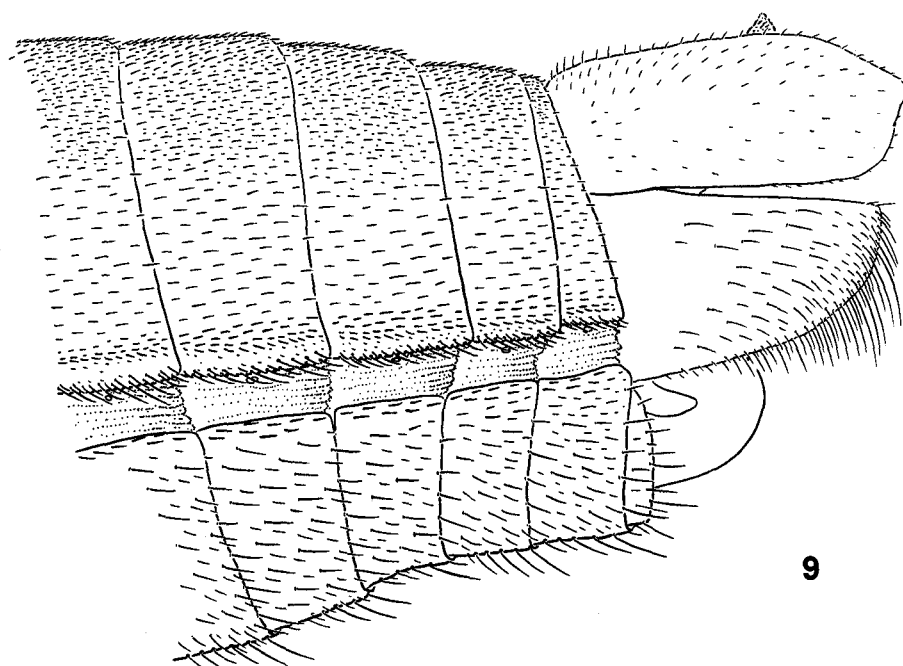
**Diagnosis.** Occiput strongly swollen and with flattened bristles on sides behind eyes; frons very broad, almost as wide as face; legs with yellowish brown to yellowish pattern; hind femur with numerous flattened bristles; abdomen mostly covered with flattened setae.

**Description.** Male. Head black in ground-colour. Occiput with strong swelling on sides behind eye, greyish pollinose, mostly with black setation, bearing pale hair-like setae in lower part. Occipitals undifferentiated, numerous; moderately long, flattened bristles present on sides behind eyes. Eyes dichoptic, all ommatidia of equal size. Ocellar triangle prominent, concolorous with frons (viewed dorsally). Ocellars undifferentiated; several black setae of different length present. Frons very broad, almost as wide as face and at middle 4.0 times as wide as anterior ocellus, dark brown, subshining, bearing marginal setulae, widened toward antennae. Face grey to shiny brown in lower part, bare, broad, somewhat widened toward below. Postpedicel and style black, scape and pedicel

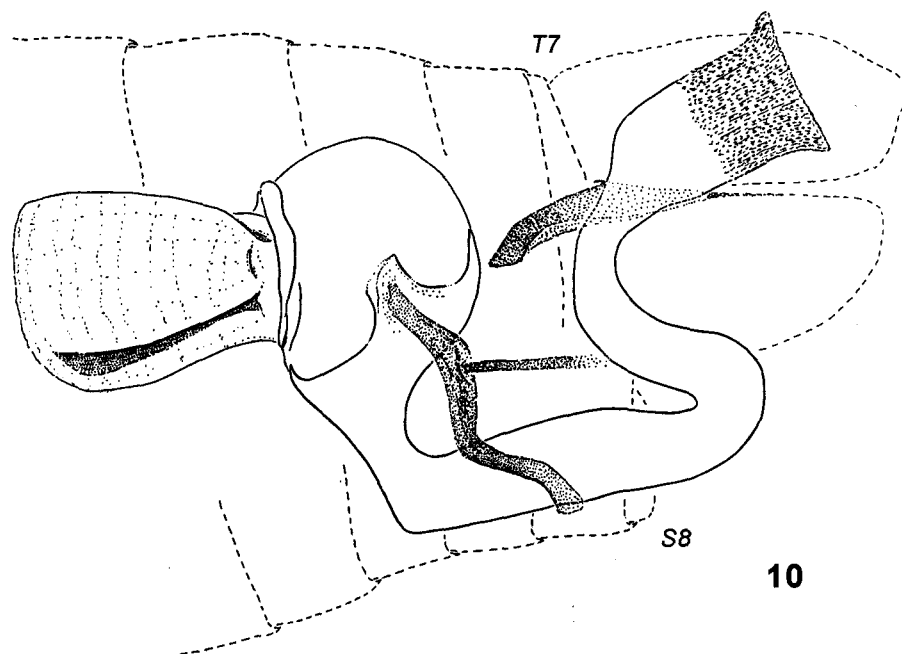
brown. Scape short; clothed in sparse black setulae, bare on inner side. Pedicel subglobular, ringed with fringe of sparse black setulae. Postpedicel elongate, 2.5 times longer than wide and 1.5 times as long as style. Ratio of scape, pedicel and postpedicel length — 10 : 8 : 27. Proboscis moderately long; labrum 1.5–1.7 (in holotype 1.5) times as long as head is high, reddish-brown; prementum and labella dark; labella short and narrow, bearing dark scattered setulae. Palpus yellow, finely pubescent with microtrichia, clothed in numerous, moderately long, black setae. Gena linear. Cervical sclerites bare.

Thorax black in ground-colour, largely densely brownish grey pollinose, only posterior corner of postpronotal lobe polished. Scutum with 4 dark brown vittae (viewed dorsally). Antepnotum with numerous, black, short, spine-like bristles. Proepisternum bare. Prosternum with cluster of long, dark brown and somewhat flattened setae laterally. Postpronotal lobe with numerous, thin, black setae of different length. Main mesonotal bristles black, hardly differentiated and varying in number, position and length; 1–2 presutural supra-alar, 3–4 notopleural, 1 postsutural supra-alar, 2 postalar and 12 scutellar bristles; additionally, several thin bristles of different length present on notopleural depression, just behind postpronotal lobe and suture. Acrostichals 2-serial, moderately long and thin, ending before prescutellar depression. Dorso-centrals irregularly 3–4-serial anteriorly, becoming irregularly 2-serial toward scutellum, nearly as long as acrostichals, prescutellars longest. Laterotergite with numerous dark brown, somewhat flattened bristles intermixed with ordinary setulae. Anterior and posterior spiracles brownish.

Legs largely dark brown, finely greyish pollinose, subshining, rather short, with black setation; fore and mid tibiae yellowish brown at base; hind tibia brownish yellow, becoming paler toward apex; hind tarsus largely yellow, tarsomere 5 brownish (in darker specimens tibiae entirely brownish; in paler specimens fore and mid tarsi paler, sometimes largely reddish brown). Fore and mid femora subequal in thickness, hind femur somewhat thickened. Mid and hind tibiae somewhat arcuate, tapered in apical half. Hind tibia and tarsus thin. Coxae and trochanters of



9



10

**Figs 9—10.** *E. jacutiensis* sp. n. (paratype).  
9, postabdomen, lateral view; 10, genitalia, the same view.

all legs mostly with ordinary, dark, hair-like bristles; fore coxa with somewhat flattened bristles in basal part; hind coxa with few flattened setae on outer side. Fore femur with moderately long antero- and posteroventral bristles, covered with numerous long hair-like bristles posteriorly. Mid and hind femora with numerous spine-like bristles ventrally; bearing 1 row of antero- and 1 row of posteroventral longer bristles; hind femur with numerous flattened anterodorsal bristles. All femora finely pubescent with microtrichia ventrally (more distinct on mid and hind femora). Tibiae ringed with few very short apicals; dorsal bristles scarcely differentiated. Fore tibia with ordinary setulae, mid and hind tibiae finely pubescent with microtrichia and bearing erect setulae ventrally. Hind tibia bearing short seta in posteroapical comb, with simple articulation. Tarsomeres 1—4 of all legs ringed with very short and thin apical setae; tarsomere 1 of fore and mid legs with few spinules ventrally. Claws longer than pulvilli.

Wing somewhat brownish. Veins largely brownish yellow, becoming paler toward base of wing; complete (except *Sc*); mostly well sclerotized, *A*<sub>1</sub> very faint in subapical portion. Anal angle acute, subsequently anal lobe well developed. Basicostal bristle lacking. Stigma very faint. *R*<sub>4+5</sub> and *M*<sub>1</sub> somewhat divergent near wing-apex. Radial fork acute. *dm* cell short. Squama yellow, dark fringed. Halter yellow.

Abdomen black in ground-colour, greyish brown pollinose, with black to dark brown setation; segments 1—7 unmodified, lacking posteromarginal bristles. Tergites with long, somewhat flattened setae laterally and scattered setulae dorsally. Sternites 2—5 with numerous somewhat flattened bristles; sternites 6—8 with sparser ordinary bristles which are longer on posterior margin. Sternites and tergites 7—8 laying in same plane with preceded sternites and tergites, respectively. Sternite and tergite 7 rectangular, as large as sternite and tergite 6, respectively. Sternite 8 U-shaped (viewed posteriorly), as broad as sternite 7; tergite 8 reduced to narrow rectangular sclerite bearing few setae laterally.

Hypopygium compressed laterally, unflexed and confined to end of abdomen. Cerci and epandrial lamellae in horizontal position. Cerci

above epandrial lamellae, unilobate, broad, elongate-oval, largely yellow, brownish in basal part, black setulose. Epandrial lamellae elongate-triangular, with straight upper margin and somewhat convex lower one, largely dark brown, somewhat paler along lower margin (in some specimens epandrial lamellae entirely dark-brown or yellowish brown along lower margin), covered with black setae which are longer along lower margin. Hypandrium hidden by tergites 7—8, sclerotized along posterior margin. Phallus yellow to brownish yellow (in visible part) as in Fig. 10, mostly hidden, zigzag bent, very thick, poculiformis in apical part, on subapical space sulcate and with spinules arranged in longitudinal rows.

Length: body 5.3—5.6 (in holotype 5.4) mm; wing 5.5—5.7 (in holotype 5.7) mm.

Female. Similar to male except the following characters. Body with ordinary setation, lacking flattened bristles. Occiput without swelling on sides behind eyes; covered with rather sparse, moderately long bristles, postoculars differentiated. Prosternum with hair-like bristles laterally. Postpronotal lobe, scutum and laterotergite with shorter bristles. Legs denser greyish pollinose. Hind tibia and tarsus darker, almost wholly yellowish brown. Coxae and trochanters of all legs with short bristles. Hind femur slender; hind tibia and hind tarsus ordinary. Fore femur with ordinary setulae posteriorly. Mid and hind femora with shorter and sparser ventral spine-like bristles; mid and hind tibiae with ordinary setulae ventrally; femora and tibiae of all legs lacking ventral pubescence. Wing infusate. Abdomen almost entirely light grey, apical segments (including cerci) brown, subshining; covered with very scattered setulae, terga 1—2 with longer hair-like bristles. Cercus longer than wide, black setulose.

Length: body 5.4—5.5 mm; wing 5.7—5.8 mm.

*Differential diagnosis.* *E. jacutiensis* is most closely related to *E. otchontengriensis*. Main differences between these species are shown in the Key.

*Etymology.* The species is named after the whole region of the type locality, Yakutia.

*Distribution.* Russia: Yakutia.

***Empis keberlei* sp. n.**

(Figs 11–12)

**Holotype.** ♂. **Uzbekistan:** [label printed in Cyrillic] Узбекистан [Uzbekistan] ст. [st.] / Куропаткино [Kuropatkino] / С. Кеберле [S. Keberle] 4.IV.[1]940.

**Paratypes.** 1 male, 1 female, same data as in holotype. All material is housed in ZIN.

**Diagnosis.** Body lacking flattened bristles; prosternum and laterotergite with pale setae; thoracic spiracles pale; legs almost wholly black brown, hind tarsus somewhat paler; abdomen bicolour in male, with dorsum largely whitish grey pollinose, tergites 7–8 and venter darker.

**Description.** Male. Head black in ground-colour. Occiput greyish pollinose, mostly with black setation, bearing pale hair-like setae in lower part. Occipitals undifferentiated, numerous, long, ordinary. Eyes dichoptic, ommatidia of equal size. Ocellar triangle prominent, concolorous with frons (viewed dorsally). Ocellars undifferentiated; several black setae of different length present. Frons broad, at middle 3.0 times as wide as anterior ocellus, dark brown, bearing marginal setulae, widened toward antennae. Face grey to shiny brown in lower part, bare, broad, somewhat widened toward below. Postpedicel and style black, scape and pedicel somewhat paler. Scape short; clothed in sparse setulae, bare on inner side. Pedicel subglobular, ringed with fringe of sparse setulae. Postpedicel elongate, 3.0 times longer than wide and 3.0 times as long as style. Ratio of scape, pedicel and postpedicel length — 9 : 7 : 29. Proboscis moderately long; labrum 1.5 times as long as head is high, reddish-brown; prementum and labella dark; labella short and narrow, bearing dark scattered setulae. Palpus yellow, finely pubescent with microtrichia, bearing several long black setae ventrally. Gena linear. Cervical sclerites bare.

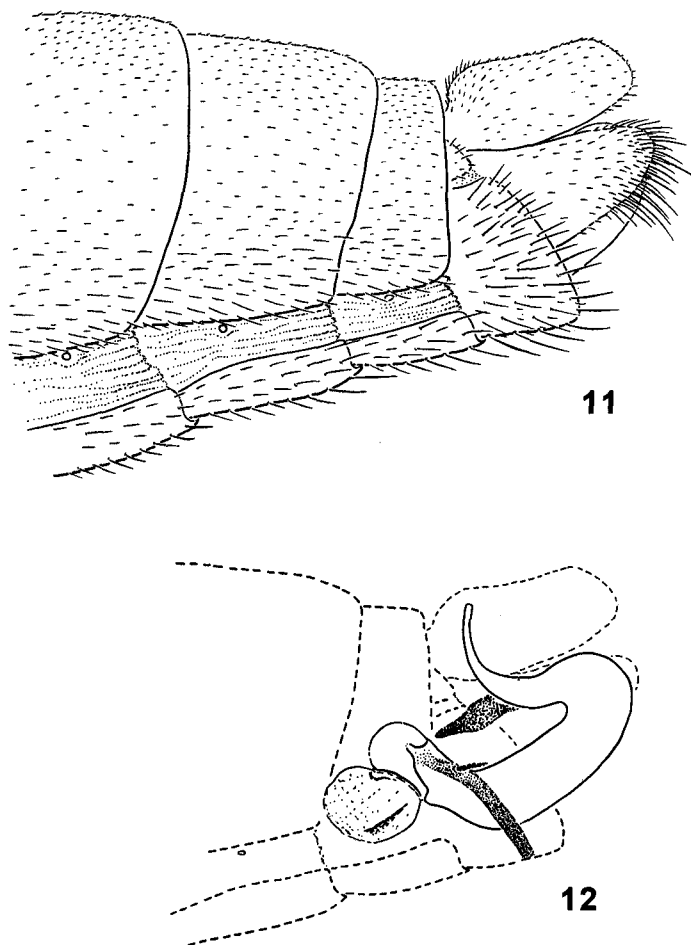
Thorax black in ground-colour, largely greyish pollinose, only posterior corner of postpronotal lobe polished. Scutum with 4 dark brown vittae (viewed dorsally). Antepronotum with numerous black spine-like bristles dorsally and few pale hair-like setae laterally. Proepisternum bare. Prosternum with cluster of long pale setae laterally. Postpronotal lobe with numerous black setae of different length. Main mesonotal bristles black, hardly differentiated, varying in

number and position; 1 presutural supra-alar, 4–5 notopleural, 3–5 postsutural supra-alar, 1 postalar and 6–8 scutellar bristles; additionally, several black setae of different length present on notopleural depression, just behind postpronotal lobe and suture. Acrostichals 2-serial, long, ending before prescutellar depression. Dorsocentrals irregularly 2–3-serial, nearly as long as acrostichals, prescutellars longest. Laterotergite with dense, long, pale setae of different length. Anterior and posterior spiracles pale.

Legs almost wholly black brown, finely greyish pollinose, subshining, short, mostly with black setation; hind tarsus somewhat paler. All femora slender, subequal in thickness. Mid and hind tibiae somewhat arcuate, tapered in apical half. Tarsomeres unmodified. Fore coxa with intermixed pale and black setae; mid and hind coxae mostly with black setae. Trochanters of all legs black setose; trochanter of hind leg with numerous bristles anteriorly. Fore femur with thin, moderately long antero- and shorter posteroventral bristles; bearing numerous hair-like black and few pale bristles posteriorly. Mid and hind femora with numerous spine-like bristles ventrally; mid femur with 1 row of longer posteroventral bristles; hind femur with 1 row of antero- and 1 row of posteroventral longer bristles, anteriorly covered with hair-like bristles becoming longer toward base of femur. Tibiae ringed with few moderately long apicals; with few hardly differentiated dorsal bristles. Fore tibia with ordinary setulae, mid and hind tibiae finely pubescent and with erect setulae ventrally. Hind tibia bearing short seta in posteroapical comb, with simple articulation. Tarsomeres 1–4 ringed with moderately long apical bristles; tarsomere 1 of all legs with short spine-like bristles ventrally. Claws subequal in length to pulvilli.

Wing milk-white. Veins largely brownish yellow, becoming paler toward base of wing; complete (except *Sc*); mostly well sclerotized, *A*<sub>1</sub> very faint in subapical portion. Anal angle acute, subsequently anal lobe well developed. Basicostal bristle lacking. Stigma very faint. *R*<sub>4+5</sub> and *M*<sub>1</sub> somewhat divergent near wing-apex. Radial fork acute. *dm* cell short. Squama yellow, pale fringed. Halter yellow.

Abdomen tapered, black in ground-colour, bicolour (viewed laterally), tergites largely



Figs 11—12. *E. keberlei* sp. n. (paratype).  
11, postabdomen, lateral view; 12, genitalia, the same view.

densely whitish grey pollinose, tergites 7—8 concolorous with sternites, sternites largely greyish brown pollinose, sternite 8 somewhat darker; segments 1—7 unmodified, lacking postero-marginal bristles. Tergites with pale setation only; bearing scattered minute setulae dorsally and moderately long hair-like setae laterally. Sternites 1—6 mostly with pale hair-like bristles, bearing few black bristles laterally; sternites 7—8 with black bristles only. Sternites and tergites 7—8 laying in same plane with preceded sternites and tergites, respectively. Sternite and tergite 7 rectangular, as large as sternite and tergite 6, respectively. Sternite 8 U-shaped (viewed posteriorly), as broad as sternite 7,

produced almost to upper margin of epandrial lamellae; tergite 8 reduced to two very narrow, triangular lateral sclerites narrowly connected in middle.

Hypopygium compressed laterally, unflexed and confined to end of abdomen. Cerci and epandrial lamellae in horizontal position. Cerci above epandrial lamellae, unilobate, elongate-oval, largely yellow, dark brown in basal part, covered with black scattered setulae, bearing few spinules on inner side near base. Epandrial lamellae triangular, dark brown, covered with black setae which are longer along lower margin. Hypandrium hidden, sclerotized along upper margin. Phallus yellowish brown (in visible part),

as in Fig. 12, mostly hidden, zigzag bent, very thick in basal part, becoming narrower toward apex, with tubular and smooth subapical portion.

Length: body 5.5—5.6 (in holotype 5.5) mm; wing 5.3—5.4 (in holotype 5.3) mm.

**Female.** Similar to male except the following characters. Occipitals shorter, especially on sides behind eyes. Scutum and laterotergite with shorter and more differentiated bristles. Acrostichal and dorsocentral setae short. Laterotergite with 3 black bristles surrounded by numerous pale setae. Coxae and trochanters of all legs with shorter and sparser setation. Fore coxa with pale hair-like setae only; mid and hind coxae with intermixed pale and black bristles. Trochanter of hind leg with numerous pale hair-like bristles anteriorly. Legs densely greyish pollinose, slender. Mid and hind tibiae with ordinary ventral setation. Wing somewhat infusate. Abdomen almost wholly light grey pollinose and bare, with very scattered pale setulae; apical segments brown, subshining; tergites 1—2 with longer hair-like setae laterally, tergite 7 on posterior margin and segments 8—9 with dark setulae. Cercus longer than wide, brown, dark setulose.

Length: body 6.6 mm; wing 6.1 mm.

**Differential diagnosis.** *E. keberlei* differs from all species of this group by milk white wing in male. It is most closely related to *E. negroboli* in many characters. However, the latter has narrower frons, somewhat enlarged upper ommatidia of eyes and different terminalia in male.

**Etymology.** The new species is named after the collector.

**Distribution.** Middle Asia: Uzbekistan.

### *Empis cushcaensis* sp. n.

(Figs 13—14)

**Holotype.** ♂. **Turkmenistan:** [label printed in Cyrillic] 1-й перевал [1st pass] / окр. Кушки [env. of Kushka] / Моргуновка [Morgunovka] / В. Ковалев [V. Kovalev] / 13.04.[1]976 ; в траве [in grass].

**Paratypes.** 3 males, same data as in holotype; 1 female, same locality and date as in holotype, on flowers of *Ranunculus* sp., (all leg. V. Kovalev). The holotype and 2 male paratypes are deposited in ZMMU, 1 male and 1 female are housed in ZIN.

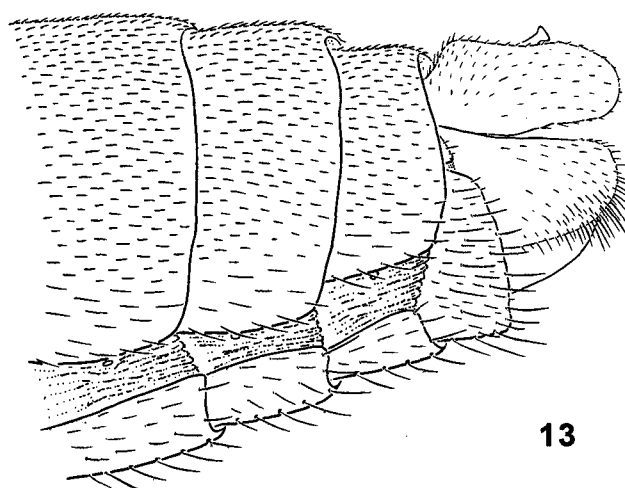
**Diagnosis.** Occiput with flattened bristles on sides behind eyes; palpus black; prosternum with pale setae; laterotergite with 3—4 black and

numerous pale bristles; legs wholly black brown; abdomen with whitish grey pollinose dorsum and darker venter.

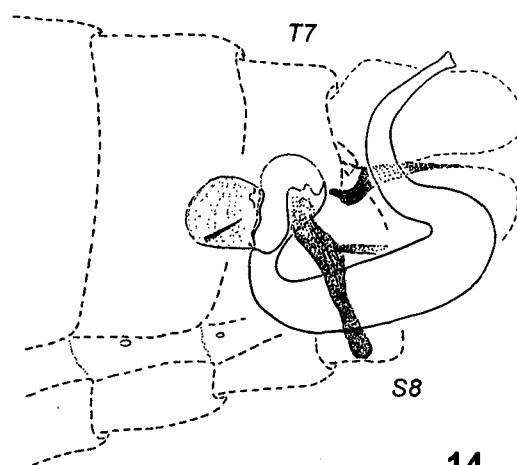
**Description.** Male. Head black in ground-colour. Occiput densely greyish pollinose, mostly with black setation, bearing pale hair-like setae in lower part. Occipitals undifferentiated; numerous flattened bristles present on sides behind eyes. Eyes dichoptic, all ommatidia of equal size. Ocellar triangle prominent, concolorous with frons (viewed dorsally). Ocellars undifferentiated; several black setae of different length present. Frons broad, at middle nearly 2.5 (in holotype 2.4) times as wide as anterior ocellus, greyish, bearing marginal setulae, almost parallel-sided, somewhat widened toward antennae. Face grey to shiny brown in lower part, bare, broad, somewhat widened toward below. Antennae black. Scape short; clothed in sparse setulae, bare on inner side. Pedicel subglobular, ringed with fringe of sparse setulae. Postpedicel elongate, 3.0 times longer than wide and 3.0 times as long as style. Ratio of scape, pedicel and postpedicel length — 9 : 7 : 28. Proboscis moderately long; labrum nearly 1.5 (in holotype 1.6) times as long as head is high, reddish-brown; prementum and labella dark; labella short and narrow, bearing dark scattered setulae. Palpus black, finely pubescent with microtrichia, bearing several long black setae ventrally. Gena linear. Cervical sclerites bare.

Thorax black in ground-colour, largely densely greyish pollinose, only posterior corner of postpronotal lobe polished. Scutum with 4 dark brown vittae (viewed dorsally). Antepronotum with numerous black bristles. Proepisternum with 2—3 hair-like setae. Prosternum with cluster of long, pale, hair-like bristles laterally. Postpronotal lobe with numerous thin and 1 stronger bristles. Main mesonotal bristles black, hardly differentiated, varying in number and position; 1—2 presutural supra-alar, 4—5 notopleural, 2—3 postsutural supra-alar, 1 postalar and 6 scutellar bristles; additionally, several black setulae of different length present on notopleural depression, just behind postpronotal lobe and on pre- and postsutural space laterally. Acrostichals 2-serial, moderately long and thin, ending before prescutellar depression. Dorsocentrals irregularly 3—4-serial, nearly as long as acrostichals, prescutellars longest. Laterotergite with 3—4 black





13



14

Figs 13—14. *E. cushcaensis* sp. n. (paratype).  
13, postabdomen, lateral view; 14, genitalia, the same view.

bristles surrounded by numerous pale hair-like setae. Anterior and posterior spiracles black.

Legs wholly black brown, finely greyish pollinose, subshining, short, with black ordinary setation; coxae denser greyish pollinose. Mid and hind femora subequal in thickness, somewhat thicker than fore femur. Mid and hind tibiae somewhat arcuate, tapered in apical half. Tarsomeres unmodified. Fore femur with thin, moderately long antero- and posteroventral bristles, covered with similar numerous bristles posteriorly. Mid and hind femora bearing numerous spine-like bristles ventrally; additionally, mid femur with 1 row of longer posteroventral bristles;

hind femur with 1 row of antero- and 1 row of posteroventral longer bristles. All tibiae ringed with few short apicals; bearing several hardly differentiated dorsal bristles. Fore tibia with ordinary setulae, mid and hind tibiae with erect setulae ventrally. Hind tibia bearing short seta in posteroapical comb, with simple articulation. Tarsomeres 1—4 of all legs ringed with short and thin apical setae; tarsomere 1 with few spinules ventrally. Claws subequal in length to pulvilli.

Wing somewhat infusate. Veins largely brownish yellow, becoming paler toward base of wing; complete (except *Sc*); mostly well

sclerotized,  $A_1$  very faint in subapical portion. Anal angle acute, subsequently anal lobe well developed. Basicostal bristle lacking. Stigma very faint.  $R_{4+5}$  and  $M_1$  somewhat divergent near wing-apex. Radial fork acute.  $dm$  cell short. Squama yellow, pale fringed. Halter yellow.

Abdomen black in ground-colour; segments 1—7 unmodified, lacking posteromarginal bristles. Tergites largely densely whitish grey pollinose, with long pale bristles laterally and black setulae dorsally. Sternites darker than tergites, largely brownish grey pollinose; sternite 8 brown, with intermixed longer pale hair-like and black setae. Sternites and tergites 7—8 laying in same plane with preceded sternites and tergites, respectively. Sternite and tergite 7 rectangular, as large as sternite and tergite 6, respectively. Sternite 8 U-shaped (viewed posteriorly), as broad as sternite 7; tergite 8 reduced to two triangular lateral sclerites.

Hypopygium compressed laterally, unflexed and confined to end of abdomen. Cerci and epandrial lamellae in horizontal position. Cerci above epandrial lamellae, unilobate, somewhat narrower than epandrial lamellae, largely yellowish, brownish in basal part, covered with black setulae, bearing few spinules on inner side. Epandrial lamellae elongate-oval, dark brown, covered with black setae which are longer along lower margin. Hypandrium hidden, sclerotized along upper margin. Phallus yellowish brown (in visible part), as in Fig. 14, mostly hidden, zigzag bent, very thick basally, little poculiformis and smooth in subapical portion.

Length: body 5.5—5.8 (in holotype 5.6) mm; wing 5.3—5.6 (in holotype 5.3) mm.

Female. Similar to male except the following characters. Occiput with sparser and ordinary setation; postoculars differentiated. Postpronotal lobe and scutum with shorter bristles. Laterotergite with more numerous black bristles. Legs long and slender, densely greyish pollinose, with black shorter setation. All femora subequal in thickness, mid and hind tibiae straight. All tibiae with more prominent dorsal bristles; mid and hind tibiae with ordinary setulae and several longer bristles ventrally. Abdomen almost wholly densely light grey pollinose and with scattered, mainly black setation; tergite 8 dark brown and subshining on anterior margin and laterally, sternite 8 dark brown; tergites 1—

2 with pale hair-like setae laterally. Cercus black brown, longer than wide, black setulose.

Length: body 6.1 mm; wing 5.7 mm.

*Differential diagnosis.* *E. cushcaensis* can be readily distinguished from all species described in this paper in a set of the following characters: palpus black, prosternum with pale setae, legs wholly black brown, abdomen with tergites densely whitish grey and sternites darker pollinose. In male terminalia, it is most closely related to *E. keberlei* and *E. odessa*. However, apical part of phallus is somewhat broadened in *E. cushcaensis*.

*Etymology.* The new species is named after the type locality, Kushka (a small town on extreme south of Turkmenistan).

*Distribution.* Middle Asia: Turkmenistan.

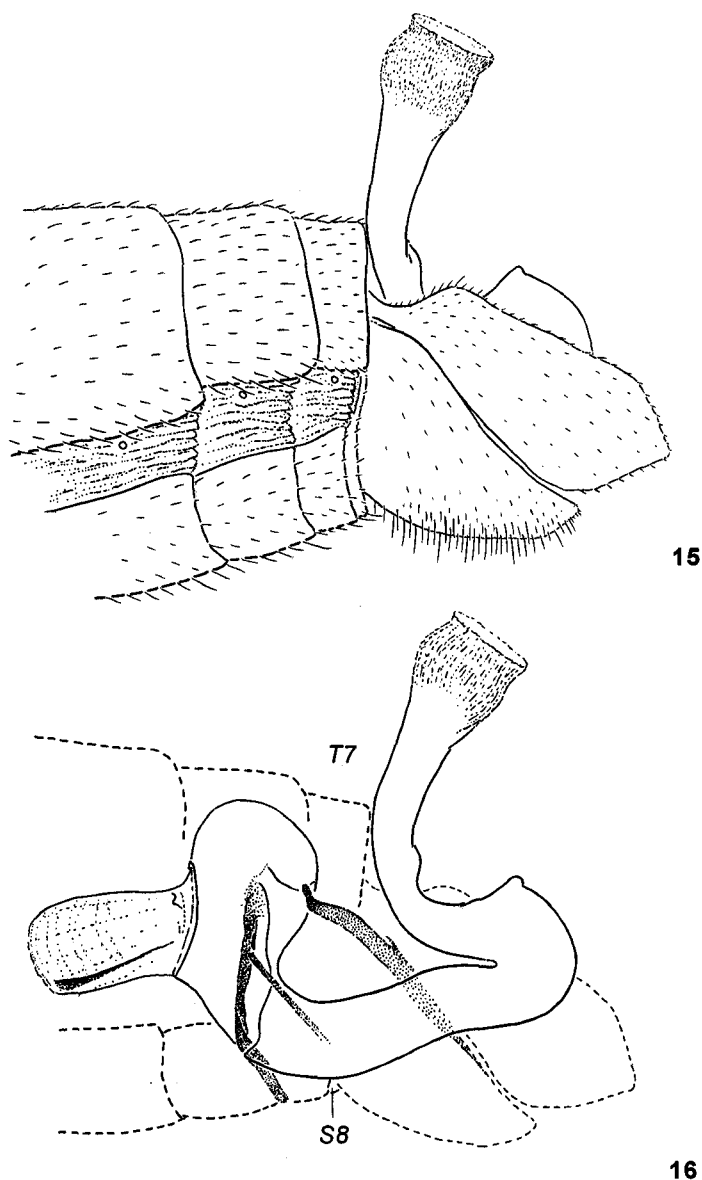
#### *Empis sugonyaevi* sp. n.

(Figs 15—16)

*Holotype.* ♂. **Kazakhstan:** [label printed in Cyrillic] Зайлийск. Алатау [Zailiysk. Alatau] / ущ. Лев. Талгар [usch. (= ravine) Lev. (=Levy) Talgar] / Сугоняев [Sugonyaev] 24.07.[1]963; ельник, 2000—2200 м [fire forest, 2000—2200 m]. The holotype is housed in ZIN.

*Diagnosis.* Occiput with flattened bristles on sides behind eyes; palpus yellow; scutellum with 4 bristles; laterotergite with black bristles; hind tarsus largely yellowish; abdomen greyish brown pollinose, tergites 1—4 with flattened bristles laterally.

*Description.* Male. Head black in ground-colour. Occiput densely greyish pollinose, mostly with black setation, bearing pale hair-like setae in lower part. Occipitals undifferentiated; numerous flattened brown bristles present on sides behind eyes. Eyes dichoptic, all ommatidia of equal size. Ocellar triangle prominent, concolorous with frons (viewed dorsally). Ocellars undifferentiated; several black setae of different length present. Frons broad, at middle 2.9 times as wide as anterior ocellus, brownish grey, bearing marginal setulae, widened toward antennae. Face grey to shiny brown in lower part, bare, broad, somewhat widened toward below. Antennae black. Scape short; clothed in sparse setulae, bare on inner side. Pedicel subglobular, ringed with fringe of sparse setulae. Postpedicel



**Figs 15—16.** *E. sugonyaevi* sp. n. (holotype).  
15, postabdomen, lateral view; 16, genitalia, the same view.

elongate, 3.0 times longer than wide. Ratio of scape, pedicel and postpedicel length — 8 : 6 : 26. Proboscis moderately long; labrum 1.7 times as long as head is high, reddish-brown; prementum and labella dark; labella short and narrow, bearing dark scattered setulae. Palpus yellow, finely pubescent with microtrichia, bearing several long black setae ventrally. Gena linear. Cervical sclerites bare.

Thorax black in ground-colour, largely densely greyish pollinose, only posterior corner of postpronotal lobe polished. Scutum with 4 dark brown vittae (viewed dorsally). Antepronotum with several black bristles. Proepisternum bare. Prosternum with cluster of long, black, flattened setae laterally. Postpronotal lobe with few short black and 1 longer bristles. Main mesonotal bristles black; 3 presutural supra-alar, 4 noto-

pleural, 1 postsutural supra-alar, 1 postalar and 4 scutellar bristles; additionally, several black setae of different length present on notopleural depression, just behind postpronotal lobe and suture. Acrostichals 2-serial, moderately long and thin, ending before prescutellar depression. Dorsocentrals irregularly 2—3-serial anteriorly, becoming 1-serial toward scutellum, nearly as long as acrostichals, 2—3 prescutellars longest. Laterotergite with dense black setae of different length. Anterior and posterior spiracles brownish.

Legs almost wholly dark brown, finely greyish pollinose, subshining, short, mostly with black setation; hind tarsus largely yellowish, with tarsomeres 1—4 somewhat brownish at apex and tarsomere 5 wholly brownish. Fore and mid femora subequal in thickness, hind femur thickened. Mid and hind tibiae somewhat arcuate, tapered in apical half. Tarsomeres unmodified. Coxae densely greyish pollinose, with ordinary setae; fore coxa with intermixed pale and black thin bristles anteriorly. Trochanters of all legs with short setae. Fore femur with moderately long antero- and posteroventral bristles. Mid and hind femora bearing numerous spine-like bristles ventrally; additionally, mid femur with 1 row of longer posteroventral bristles; hind femur with 1 row of antero- and 1 row of posteroventral longer bristles, bearing few dorsal short flattened bristles in apical part. All femora finely pubescent with microtrichia ventrally. Tibiae ringed with few short apicals. Fore tibia with ordinary setulae, mid and hind tibiae finely pubescent and with erect setulae ventrally. Hind tibia bearing short seta in posteroapical comb, with simple articulation. Tarsomeres 1—4 of all legs ringed with short apical setae; tarsomere 1 of fore and mid legs with few spinules ventrally. Claws subequal in length to pulvilli.

Wing hyaline. Veins largely brownish yellow, becoming paler toward base of wing; complete (except *Sc*); mostly well sclerotized, *A*<sub>1</sub> very faint in subapical portion. Anal angle not very acute, similar to right, anal lobe well developed. Basicostal bristle lacking. Stigma very faint. *R*<sub>4+5</sub> and *M*<sub>1</sub> somewhat divergent near wing-apex. Radial fork acute. *dm* cell short. Squama yellow, pale fringed. Halter yellow.

Abdomen black in ground-colour, greyish brown pollinose; segments 1—7 unmodified,

lacking posteromarginal bristles. Tergites 1—4 with moderately long flattened bristles; tergites 5—8 with long hair-like pale setae laterally and black setulae dorsally. Sternites with sparse, pale, moderately long, hair-like bristles. Sternites and tergites 7—8 laying in same plane with preceded sternites and tergites, respectively. Sternite and tergite 7 rectangular, as large as sternite and tergite 6, respectively. Sternite 8 U-shaped (viewed posteriorly), as broad as sternite 7; tergite 8 reduced to two triangular lateral sclerites.

Hypopygium compressed laterally, unflexed and confined to end of abdomen. Cerci and epandrial lamellae in horizontal position. Cerci above epandrial lamellae, unilobate, broad ovate, largely yellowish, brownish basally, black setulose. Epandrial lamellae triangular, largely yellowish, brownish in basal part, covered with short black setae which are longer along lower margin. Hypandrium hidden, sclerotized along upper margin. Phallus yellowish (in visible part), as in Fig. 16, mostly hidden, zigzag bent, thick; in subapical portion poculiformis, sulcate and with spinules arranged in longitudinal rows; bearing 2 tubercles in middle.

Length: body 4.4 mm; wing 5.1 mm.

Female. Unknown.

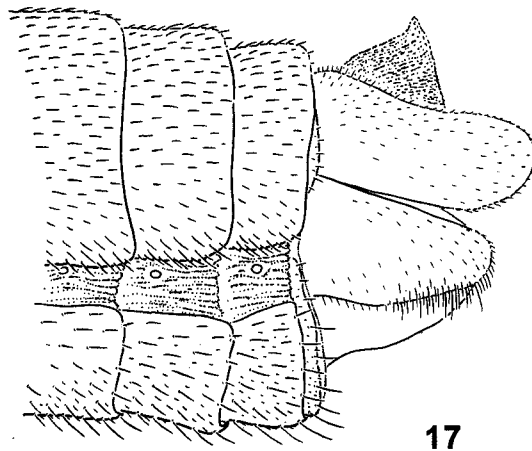
*Differential diagnosis.* *E. sugonyaevi* differs from all species described in this paper by characters of male terminalia. In the new species, cerci are broad and as large as epandrial lamellae; phallus has two tubercles in middle part and is spherically broadened in apical part. *E. sugonyaevi* is similar in many external characters to *E. jacutiensis*, *E. zaslavskii* and *E. otchontengriensis*. Main differences between these species are given in the Key.

*Etymology.* The new species is named in honour of Dr. Evgeniy S. Sugonyaev (St. Petersburg, Russia) who collected it.

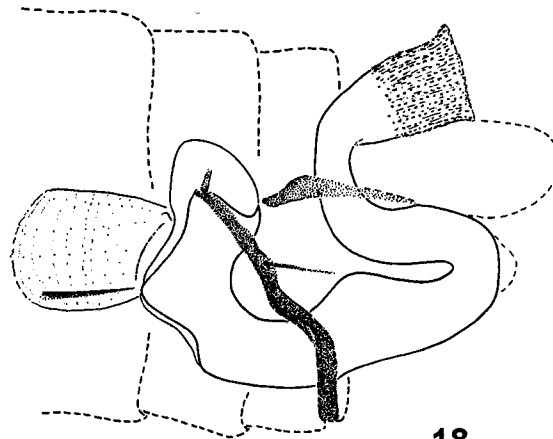
*Distribution.* Middle Asia: Kazakhstan.

***Empis gorodkovi* sp. n.**  
(Figs 17—18)

*Holotype.* ♂. Kirgizia: [label printed in Cyrillic] дол. р. Чигирчик [dol. (= valley) r. Tshigirtshik], 108 км [km] / от Ош [ot Osh] (по тракту) [po traktu (= Pamirsky Trakt)] / Киргизия [Kirgizia] /



17



18

Figs 17—18. *E. gorodkovi* sp. n. (holotype).  
17, postabdomen, lateral view; 18, genitalia, the same view.

Городков [Gorodkov] 10.06.[1]1958. The holotype is housed in ZIN.

**Diagnosis.** Occiput with long flattened bristles on sides behind eyes; palpus yellow; prosternum and laterotergite with black hair-like setae; thoracic spiracles black; scutellum with 4 bristles; hind tarsus largely yellowish; abdomen finely greyish brown pollinose, with ordinary black bristles.

**Description.** Male. Head black in ground-colour. Occiput densely dark greyish pollinose, mostly with black setation, bearing pale hair-like setae in lower part. Occipitals undifferentiated; numerous long flattened bristles present on sides behind eyes. Eyes dichoptic, all ommatidia of equal size. Ocellar triangle promi-

nent, concolorous with frons (viewed dorsally). Ocellars undifferentiated; several black setae of different length present. Frons broad, at middle 3.0 times as wide as anterior ocellus, dark brown, bearing marginal setulae, widened toward antennae. Face brownish grey to shiny brown in lower part, bare, broad, somewhat widened toward below. Antennae black. Scape short; clothed in sparse setulae, bare on inner side. Pedicel subglobular, ringed with fringe of sparse setulae. Postpedicel elongate, 3.0 times longer than wide and 2.5 times as long as style. Ratio of scape, pedicel and postpedicel length — 7 : 6 : 26. Proboscis moderately long; labrum 1.3 times as long as head is high, reddish-brown; prementum and labella dark; labella short and narrow, bearing

dark scattered setulae. Palpus yellow, finely pubescent with microtrichia, bearing several long black setae ventrally. Gena linear. Cervical sclerites bare.

Thorax black in ground-colour, largely densely greyish pollinose, only posterior corner of postpronotal lobe polished. Scutum with 4 dark brown vittae (viewed dorsally). Anteprenotum with several black bristles. Proepisternum bare. Prosternum with cluster of long, black, hair-like setae laterally. Postpronotal lobe with several black, moderately long and 1 longer bristles. Main mesonotal bristles black; 1 presutural supra-alar, 3 notopleural, 1 postsutural supra-alar, 1 postalar and 4 scutellar bristles; additionally, several black setulae of different length present on notopleural depression, just behind postpronotal lobe and suture. Acrostichals 2-serial, moderately long and thin, ending before prescutellar depression. Dorsocentrals irregularly 2—3-serial anteriorly, becoming 1-serial toward scutellum, nearly as long as acrostichals, prescutellars longest. Laterotergite with dense, black setae of different length. Anterior and posterior spiracles black.

Legs almost wholly dark brown, finely greyish pollinose, largely subshining, short, with black setation; coxae denser pollinose; hind tarsus largely yellowish, tarsomeres 1—4 somewhat brownish at apex, tarsomere 5 entirely brownish. Fore femur rather slender, mid and hind femora somewhat thickened. Mid and hind tibiae somewhat arcuate, tapered in apical half. Tarsomeres unmodified. Fore coxa with ordinary black setae of different length; mid and hind coxae and trochanters of all legs with scattered black bristles. Fore femur with thin moderately long antero- and posteroventral bristles, clothed in similar numerous bristles posteriorly. Mid and hind femora bearing numerous spine-like bristles ventrally; additionally, mid femur with 1 row of longer posteroventral bristles; hind femur with 1 row of antero- and 1 row of posteroventral longer bristles. Tibiae ringed with few very short apicals; bearing several hardly differentiated dorsal bristles. Fore tibia with ordinary setulae, mid tibia with erect setulae; hind tibia finely pubescent with microtrichia ventrally, bearing short seta in posteroapical comb, with simple articulation. Tarsomeres 1—4 of all legs ringed with very short and thin apical setae; tarsomere 1 of fore and mid legs

with few spinules ventrally. Claws subequal in length to pulvilli.

Wing hyaline. Veins largely brownish yellow, becoming paler toward base of wing; complete (except *Sc*); mostly well sclerotized, *A*<sub>1</sub> very faint in subapical portion. Anal angle acute but very similar to right, anal lobe well developed. Basicostal bristle lacking. Stigma very faint. *R*<sub>4+5</sub> and *M*<sub>1</sub> almost parallel near wing-apex. Radial fork acute. *dm* cell short. Squama yellow, pale fringed. Halter yellow.

Abdomen black in ground-colour, finely greyish brown pollinose, subshining, with black ordinary setation; segments 1—7 unmodified, lacking posteromarginal bristles. Tergites with long hair-like setae laterally and short setulae dorsally. Sternites with scattered hair-like setae. Sternites and tergites 7—8 laying in same plane with preceded sternites and tergites, respectively. Sternite and tergite 7 rectangular, as large as sternite and tergite 6, respectively. Sternite 8 U-shaped (viewed posteriorly) but narrower than sternite 7; tergite 8 reduced to two triangular lateral sclerites bearing few setae.

Hypopygium compressed laterally, unflexed and confined to end of abdomen. Cerci and epandrial lamellae in horizontal position. Cerci above epandrial lamellae, unilobate, elongate-oval, yellowish in apical half and brownish in basal one, bearing few spinules on inner side. Epandrial lamellae triangular, with rounded apex, somewhat shorter than cerci, black brown, covered with short black setae. Hypandrium hidden, sclerotized along upper margin. Phallus brownish (in visible part), as in Fig. 18, mostly hidden, zigzag bent, very thick, poculiformis at apex, on subapical portion sulcate and with spinules arranged in longitudinal rows.

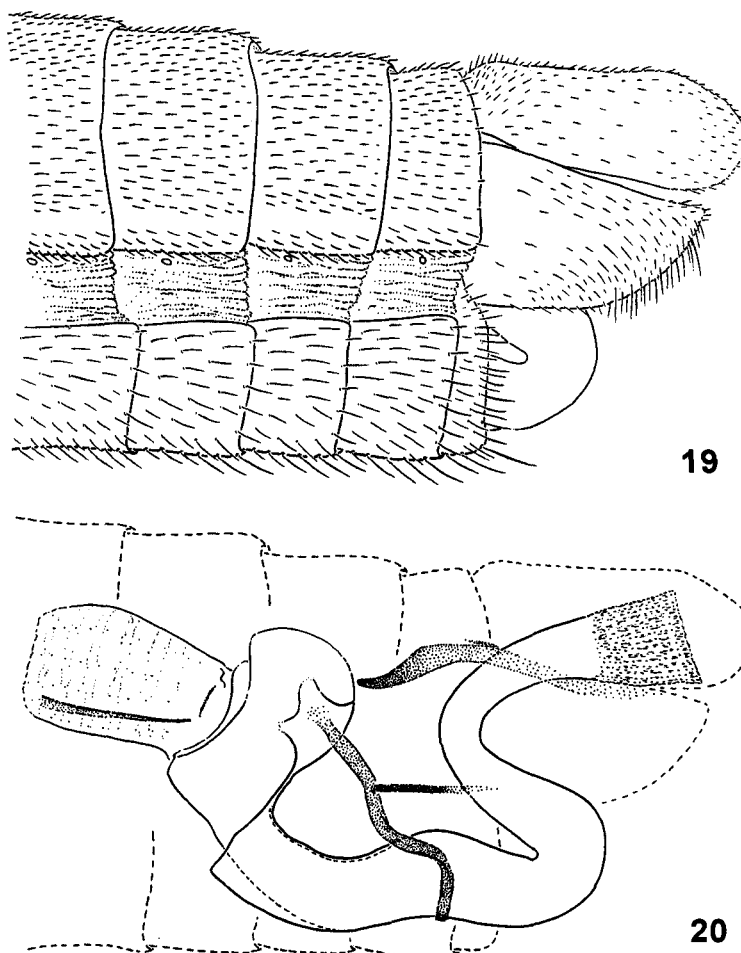
Length: body 4.4 mm; wing 4.8 mm.

Female. Unknown.

*Differential diagnosis.* *E. gorodkovi* is similar to *E. dushanbensis* differing from it by four scutellar bristles, largely yellowish hind tarsus, entirely setose dorsum of abdomen and some other characters.

*Etymology.* The new species is named in memory of Dr. Kiril B. Gorodkov (St. Petersburg, Russia) who collected it.

*Distribution.* Middle Asia: Kirgizia.



Figs 19—20. *E. otchontengriensis* sp. n. (holotype).  
19, postabdomen, lateral view; 20, genitalia, the same view.

***Empis otchontengriensis* sp. n.**  
(Figs 19—20)

**Holotype.** ♂. **Mongolia:** [label printed in Cyrillic] г. [g. (= mount)] Отхон-тэнгри [Otchon-tengri] / с.-з. Монголия [NW Mongolia] / Козлова [Kozlova] 3.VII.[1]929. The holotype is housed in ZIN.

**Diagnosis.** Occiput with very long flattened bristles on sides behind eyes; postpronotal lobe with very long hair-like bristles; prosternum and laterotergite with black flattened bristles; thoracic spiracles black; hind tarsus largely yellow; abdomen brown pollinose, subshining.

**Description.** Male. Head black in ground-colour. Occiput brownish grey pollinose, mostly

with black brown to black setation, bearing pale hair-like setae in lower part. Occipitals undifferentiated, numerous, very long; flattened bristles present on sides behind eyes. Eyes dichoptic, all ommatidia of equal size. Ocellar triangle prominent, concolorous with frons (viewed dorsally). Ocellars undifferentiated; several black setae of different length present. Frons broad, at middle 3.5 times as wide as anterior ocellus, dark brown, bearing marginal setulae, widened toward antennae. Face grey to shiny brown in lower part, bare, broad, somewhat widened toward below. Antennae black. Scape short; clothed in sparse setulae, bare on inner side. Pedicel subglobular, ringed with fringe of sparse setulae.

Postpedicel elongate, 2.5 times longer than wide and 2.0 times as long as style. Ratio of scape, pedicel and postpedicel length — 10 : 7 : 25. Proboscis moderately long; labrum 1.5 times as long as head is high, reddish-brown; prementum and labella dark; labella short and narrow, bearing dark scattered setulae. Palpus yellow, finely pubescent with microtrichia, bearing several long, brown, flattened setae ventrally. Gena linear. Cervical sclerites bare.

Thorax black in ground-colour, largely greyish brown pollinose, only posterior corner of postpronotal lobe polished. Scutum with 4 dark brown vittae (viewed dorsally). Antepronotum with numerous black bristles dorsally and somewhat flattened setae laterally. Proepisternum bare. Prosternum with cluster of long, black, flattened setae laterally. Postpronotal lobe with numerous very long hair-like setae. Main mesonotal bristles black, hardly differentiated; 1 presutural supra-alar, 4 notopleural, 1—2 postsutural supra-alar, 1 postalar and 6 scutellar bristles; additionally, several long hair-like bristles present in anterior part of notopleural depression and just behind postpronotal lobe and suture. Acrostichals 2-serial, long, hair-like, ending before prescutellar depression. Dorsocentrals irregularly 2—3-serial and very long anteriorly, shorter in middle part and becoming 1-serial toward scutellum.

Laterotergite with dense, moderately long, brown flattened setae. Anterior and posterior spiracles black.

Legs largely dark brown, greyish pollinose, short, subshining, with dark brown to black setation; hind tarsus largely yellowish, with tarsomere 5 somewhat darkened. Fore and mid femora subequal in thickness and rather slender, hind femur thickened. Mid and hind tibiae somewhat arcuate, tapered in apical half. Tarsomeres unmodified. Fore coxa with short flattened setae in basal part and ordinary bristles at apex; mid coxa with hair-like setae; hind coxa with hair-like setae anteriorly and few flattened setae on outer side. Trochanters of all legs with scattered hair-like setae. Fore femur with antero- and posteroventral bristles becoming longer and more numerous toward apex of femur, covered with numerous long hair-like bristles posteriorly. Mid and hind femora bearing numerous spine-like bristles ventrally; additionally, mid femur

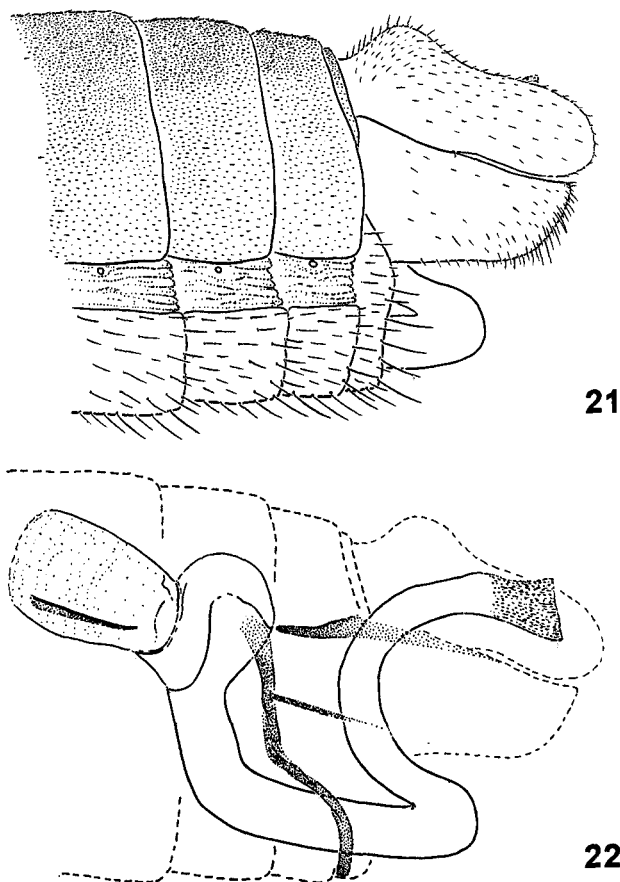
with 1 row of longer posteroventral bristles; hind femur with 1 row of antero- and 1 row of posteroventral longer bristles, covered with moderately long flattened bristles dorsally. Tibiae ringed with few very short apicals; bearing few scarcely differentiated dorsal bristles. Fore tibia with ordinary setulae, mid and hind tibiae finely pubescent and with erect setulae ventrally. Hind tibia bearing short seta in posteroapical comb, with simple articulation. Tarsomeres 1—4 ringed with very short and thin apical setae. Claws subequal in length to pulvilli.

Wing hyaline. Veins largely brownish yellow, becoming paler toward base of wing; complete (except *Sc*); mostly well sclerotized, *A*<sub>1</sub> very faint in subapical portion. Anal angle acute but similar to right, anal lobe well developed. Basicostal bristle lacking. Stigma very faint. *R*<sub>4+5</sub> and *M*<sub>1</sub> somewhat divergent near wing-apex. Radial fork acute. *dm* cell short. Squama yellow, pale fringed. Halter yellow.

Abdomen black in ground-colour, brown pollinose, subshining, with dark brown to black setation; segments 1—7 unmodified, lacking posteromarginal bristles. Tergites 1—3 with sparse setulae dorsally and numerous, moderately long, flattened bristles laterally; tergites 4—7 with shorter ordinary setae intermixed with somewhat flattened bristles. Sternites mostly with rather long, somewhat flattened bristles; sternites 7—8 with ordinary setae only. Sternites and tergites 7—8 laying in same plane with preceded sternites and tergites, respectively. Sternite and tergite 7 rectangular, as large as sternite and tergite 6, respectively. Sternite 8 U-shaped (viewed posteriorly), as broad as sternite 7; tergite 8 reduced to two triangular lateral sclerites.

Hypopygium compressed laterally, unflexed and confined to end of abdomen. Cerci and epandrial lamellae in horizontal position. Cerci above epandrial lamellae, unilobate, elongate-oval, largely yellow, brownish in basal part, covered with sparse black setulae, bearing few spinules on inner side. Epandrial lamellae elongate-triangular, brown, with black setae which are longer along lower margin. Hypandrium hidden, sclerotized along upper margin. Phallus yellowish brown (in visible part), as in Fig. 20, mostly hidden, zigzag bent, very thick, poculiformis at apex, on subapical portion sulcate and with spinules arranged in longitudinal rows.





**Figs 21—22.** *E. dushanbensis* sp. n. (paratype).  
21, postabdomen, lateral view; 22, genitalia, the same view.

Length: body 4.9 mm; wing 4.8 mm.

Female. Unknown.

**Differential diagnosis.** The species is most closely related to *E. zaslavskii*. The latter has flattened setae on postpronotal lobe, wholly dark brown legs and somewhat different male terminalia.

**Etymology.** The species is named after the type locality, Otchon-tengri, a mount in the north-western part of Mongolia.

**Distribution.** Mongolia.

***Empis dushanbensis* sp. n.**

(Figs 21—22)

**Holotype.** ♂. **Tajikistan:** [label printed in Cyrillic] Сталинабад [Stalinabad (= Dushanbe)] / лессовые холмы [loess hills] / 5.IV.[1]944 Штакельберг [Stackelberg].

**Paratypes.** 3 males, 1 female, same data as in holotype. All material is housed in ZIN.

**Diagnosis.** Occiput with flattened bristles on sides behind eyes in male; prosternum and laterotergite with ordinary black bristles; thoracic spiracles pale; scutellum with 2 bristles; legs dark brown; abdominal tergites 3—7 with greatly reduced setation.

**Description.** Male. Head black in ground-colour. Occiput densely greyish pollinose, with black setation. Occipitals undifferentiated, numerous; moderately long flattened bristles present on sides behind eyes. Eyes dichoptic, all ommatidia of equal size. Ocellar triangle prominent, concolorous with frons (viewed dorsally). Ocellars undifferentiated; several setae of different length present. Frons rather narrow, at middle nearly 2.0 (in holotype 1.8) times as wide as anterior ocellus, greyish brown, bearing mar-

ginal setulae, widened toward antennae. Face grey to shiny brown in lower part, bare, broad, somewhat widened toward below. Postpedicel and style black, scape and pedicel brown. Scape short; clothed in sparse setulae, bare on inner side. Pedicel subglobular, ringed with fringe of sparse setulae. Postpedicel elongate, nearly 3.0 (in holotype 2.8) times longer than wide and 2.0 (in holotype 1.9) times as long as style. Ratio of scape, pedicel and postpedicel length — 8 : 6 : 25. Proboscis very long, nearly 3.0 (in holotype 2.8) times as long as head is high; labrum 1.5 times as long as head is high, reddish-brown; prementum and labella dark; labella short and narrow, bearing dark scattered setulae. Palpus largely yellow, darker in basal part, finely pubescent with microtrichia, bearing few long black setae ventrally. Gena linear. Cervical sclerites bare.

Thorax black in ground-colour, largely densely brownish grey pollinose, with black setation, posterior corner of postpronotal lobe polished. Scutum with 4 dark brown vittae (viewed dorsally). Antepronotum with numerous spine-like bristles. Proepisternum bare. Prosternum with cluster of long setae laterally. Postpronotal lobe with numerous bristles of different length. Main mesonotal bristles hardly differentiated; 1 presutural supra-alar, 4 notopleural, 1 postsutural supra-alar, 1 postalar and 2 long scutellar bristles; additionally, several thin setae of different length present on notopleural depression, just behind postpronotal lobe and suture. Acrostichals 2-serial, moderately long and thin, ending before prescutellar depression. Dorsocentrals irregularly 2—3-serial anteriorly, becoming 1-serial toward scutellum, nearly as long as acrostichals, 2—3 prescutellars longest. Laterotergite with dense black setae of different length. Anterior and posterior spiracles pale.

Legs wholly dark brown, finely greyish pollinose, largely subshining, short, with black setation, coxae denser pollinose. Hind femur thickened. Mid and hind tibiae somewhat arcuate, tapered in apical half. Tarsomeres unmodified. Coxae and trochanters of all legs with sparse hair-like setae. Fore femur with thin short antero- and posteroventral bristles, covered with numerous long hair-like bristles posteriorly. Mid and hind femora with numerous spine-like bristles ventrally; bearing 1 row of antero- and 1 row of posteroventral longer bristles; hind femur with

dense, short, somewhat flattened anterodorsal setae. Tibiae ringed with few very short apicals; bearing several scarcely differentiated dorsal bristles. Fore tibia with ordinary setulae, mid and hind tibiae finely pubescent and with erect setulae ventrally. Hind tibia bearing short seta in posteroapical comb, with simple articulation. Tarsi finely pubescent with microtrichia ventrally; tarsomeres 1—4 ringed with very short and thin apical setae; tarsomere 1 of fore and mid legs with few spinules ventrally. Claws subequal in length to pulvilli.

Wing hyaline. Veins largely brownish yellow, becoming paler toward base of wing; complete (except *Sc*); mostly well sclerotized,  $A_1$  very faint in subapical portion. Anal angle very acute, subsequently anal lobe well developed. Basicostal bristle lacking. Stigma very faint.  $R_{4+5}$  and  $M_1$  somewhat divergent near wing-apex. Radial fork acute. *dm* cell short. Squama yellow, pale fringed. Halter yellow.

Abdomen black in ground-colour, largely finely greyish brown pollinose, subshining, mostly with black setation; segments 1—7 unmodified, lacking posteromarginal bristles. Tergites 1—2 with moderately long bristles laterally and shorter bristles dorsally; tergites 3—7 with greatly reduced setation, almost bare, covered with scattered setulae, finely whitish pubescent with microtrichia. Sternites with sparse, moderately long hair-like bristles. Sternites and tergites 7—8 laying in same plane with preceded sternites and tergites, respectively. Sternite and tergite 7 rectangular, as large as sternite and tergite 6, respectively. Sternite 8 U-shaped (viewed posteriorly), as broad as sternite 7; tergite 8 reduced to two triangular lateral sclerites.

Hypopygium compressed laterally, unflexed and confined to end of abdomen. Cerci and epandrial lamellae in horizontal position. Cerci above epandrial lamellae, unilobate, elongate-oval, dark brown, nearly as long as epandrial lamella, pubescent with microtrichia, dark setulose. Epandrial lamellae almost trapeziform, black brown, pubescent, covered with black setae which are longer along lower margin. Hypandrium hidden, sclerotized along upper margin. Phallus yellowish brown (in visible part), as in Fig. 22, mostly hidden, zigzag bent, thick, poculiformis in apical part, on subapical portion sulcate and with spinules arranged in longitudinal rows.

Length: body 5.0—5.3 (in holotype 5.2) mm; wing 5.3—5.4 (in holotype 5.3) mm.

Female. Similar to male except the following characters. Occiput densely light grey pollinose; with ordinary, sparser bristles, 1 row of postoculars. Thorax lighter, with shorter and sparser setation, main bristles long and well differentiated. Postpronotal lobe with 1 bristle surrounded by several shorter setulae. Legs long and slender, finely light grey pollinose. Coxae and trochanters with scattered short bristles. Femora with shorter, sparser and thinner ventral bristles, lacking pubescence ventrally; fore and hind femora with ordinary setulae posteriorly and dorsally, respectively. Tibiae with 5 antero- and 5 posterodorsal short bristles; mid and hind tibiae straight, with 5 anteroventral short bristles and ordinary setulae ventrally, lacking pubescence. Hind tarsus with few short ventral bristles; all tarsomeres lacking pubescence ventrally. Abdomen largely densely light grey pollinose; apical segments and cerci dark brown, finely brownish pollinose, subshining. Tergites 1—2 with shorter and sparser bristles; sternites with scattered minute setulae. Cercus longer than wide, dark setulose.

Length: body 5.1 mm; wing 4.9 mm.

*Differential diagnosis.* This species can be readily distinguished from all species described in this paper by 2 scutellar bristles and greatly reduced setation on tergites 3—7 of abdomen.

*Etymology.* The species is named after the type locality, Dushanbe.

*Distribution.* Middle Asia: Tajikistan.

***Empis rohdendorfi* sp. n.**  
(Figs 23—24)

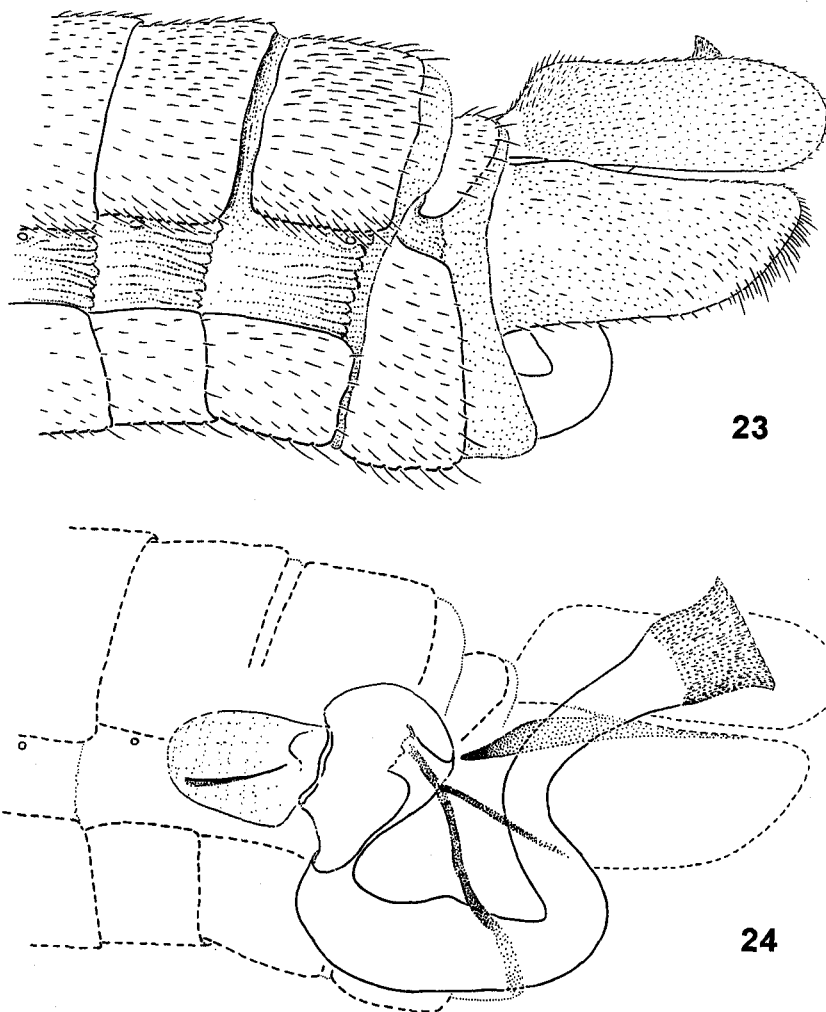
*Holotype.* ♂. **Uzbekistan:** [label printed in Cyrillic] Ташкент [Tashkent] / 30.03.1929 / Б. Родендорф [B. Rohdendorf]. The holotype is housed in ZIN.

*Diagnosis.* Occiput with somewhat flattened setae on sides behind eyes; palpus yellow; thorax with ordinary setae; prosternum with pale hair-like bristles; scutellum with 4 bristles; laterotergite with intermixed pale and black setae of different length; thoracic spiracles pale; legs wholly dark brown; dorsum of abdomen light grey pollinose, with pale setae laterally.

*Description.* Male. Head black in ground-colour. Occiput greyish pollinose, mostly with black setation, bearing pale hair-like setae in lower part. Occipitals undifferentiated, numerous, moderately long, intermixed with somewhat flattened bristles on sides behind eyes. Eyes dichoptic, all ommatidia of equal size. Ocellar triangle prominent, concolorous with frons (viewed dorsally). Ocellars undifferentiated; several black setae of different length present. Frons broad, at middle 2.5 times as wide as anterior ocellus, brownish grey, bearing marginal setulae, widened toward antennae. Face grey to shiny brown in lower part, bare, broad, somewhat widened toward below. Antennae black. Scape short; clothed in sparse setulae, bare on inner side. Pedicel subglobular, ringed with fringe of sparse setulae. Proboscis moderately long; labrum 1.5 times as long as head is high, reddish-brown; prementum and labella dark; labella short and narrow, bearing dark scattered setulae. Palpus yellow, finely pubescent with microtrichia, bearing several long black setae ventrally. Gena linear. Cervical sclerites bare.

Thorax black in ground-colour, greyish pollinose, only posterior corner of postpronotal lobe polished. Scutum with 4 dark brown vittae (viewed dorsally). Antepronotum with numerous black spine-like bristles dorsally and few pale and black hair-like setae laterally. Proepisternum bare. Prosternum with cluster of long pale setae laterally. Postpronotal lobe with numerous black thin and 1 longer and stronger bristles. Main mesonotal bristles black, hardly differentiated; 1—2 presutural supra-alar, 4 notopleural, 1 postsutural supra-alar, 2 postalar and 4 scutellar bristles; additionally, several black setulae of different length present on notopleural depression, just behind postpronotal lobe and suture. Acrostichals 2-serial, moderately long and thin, ending before prescutellar depression. Dorsocentrals irregularly 3-serial anteriorly, becoming 1-serial toward scutellum, nearly as long as acrostichals, 2—3 prescutellars longest. Laterotergite with intermixed pale and black setae of different length. Anterior and posterior spiracles pale.

Legs wholly dark brown, finely greyish pollinose, subshining, short, mostly with black ordinary setation; coxae denser greyish pollinose. Fore and mid femora subequal in thickness and



Figs 23—24. *E. rohdendorfi* sp. n. (holotype).  
23, postabdomen, lateral view; 24, genitalia, the same view.

rather slender, hind femur somewhat thickened. Mid and hind tibiae somewhat arcuate, tapered in apical half. Tarsomeres unmodified. Coxae and trochanters with moderately long, pale, hair-like setae intermixed with stronger bristles; fore coxa mostly with pale setae. Fore femur with thin antero- and posteroventral bristles, covered with numerous, long (becoming longer toward apex of femur), hair-like setae posteriorly. Mid and hind femora bearing numerous spine-like bristles ventrally; additionally, mid femur with 1 row of longer posteroventral bristles; hind femur with 1 row of antero- and 1 row of posteroventral longer bristles. All femora finely

pubescent with microtrichia ventrally (fore femur less distinct). Tibiae ringed with few very short apicals; bearing several scarcely differentiated dorsal bristles (more distinct on mid and hind tibiae). Fore tibia with ordinary setulae, mid and hind tibiae with erect setulae and finely pubescent ventrally. Hind tibia bearing short seta in posteroapical comb, with simple articulation. Tarsomeres 1—4 ringed with short and thin apical setae; tarsomere 1 with few ventral spinules (more distinct on fore and mid tarsi). Claws subequal in length to pulvilli.

Wing hyaline. Veins largely brownish yellow, becoming paler toward base of wing; com-

plete (except *Sc*); mostly well sclerotized, *A*<sub>1</sub> very faint in subapical portion. Anal angle acute, subsequently anal lobe well developed. Basicostal bristle lacking. Stigma very faint. *R*<sub>4+5</sub> and *M*<sub>1</sub> somewhat divergent near wing-apex. Radial fork acute. *dm* cell short. Squama yellow, pale fringed. Halter pale.

Abdomen black in ground-colour; segments 1—7 unmodified, lacking posteromarginal bristles. Tergites light grey pollinose, with long pale hair-like setae laterally and black setulae dorsally (becoming denser and longer toward hypopygium). Sternites somewhat darker, with scattered black setulae becoming longer and stronger toward hypopygium. Sternites and tergites 7—8 laying in same plane with preceded sternites and tergites, respectively. Sternite and tergite 7 rectangular, as large as sternite and tergite 6, respectively. Sternite 8 U-shaped (viewed posteriorly), as broad as sternite 7; tergite 8 rectangular, very narrow, setose.

Hypopygium compressed laterally, unflexed and confined to end of abdomen. Cerci and epandrial lamellae in horizontal position. Cerci above epandrial lamellae, unilobate, elongate-oval, yellowish in apical part and along lower margin, black setulose, bearing few spinules on inner side. Epandrial lamellae elongate-triangular, brown, covered with short black setae which are longer along lower margin. Subepandrial membrane sclerotized laterally. Hypandrium hidden, sclerotized laterally. Phallus yellowish brown (in visible part), as in Fig. 24, mostly hidden, zigzag bent, thick, poculiformis in apical part, on subapical portion sulcate and with spinules arranged in longitudinal rows.

Length: body 5.1 mm; wing 5.3 mm.

Female. Unknown.

*Differential diagnosis.* *E. rohndorfi* is similar to *E. odessa* in many external characters and can be distinguished from it as it is given in the Key.

*Etymology.* The new species is named in memory of Dr. B. B. Rohndorf (Russia).

*Distribution.* Middle Asia: Uzbekistan.

### *Empis odessa* sp. n.

(Figs 25—26)

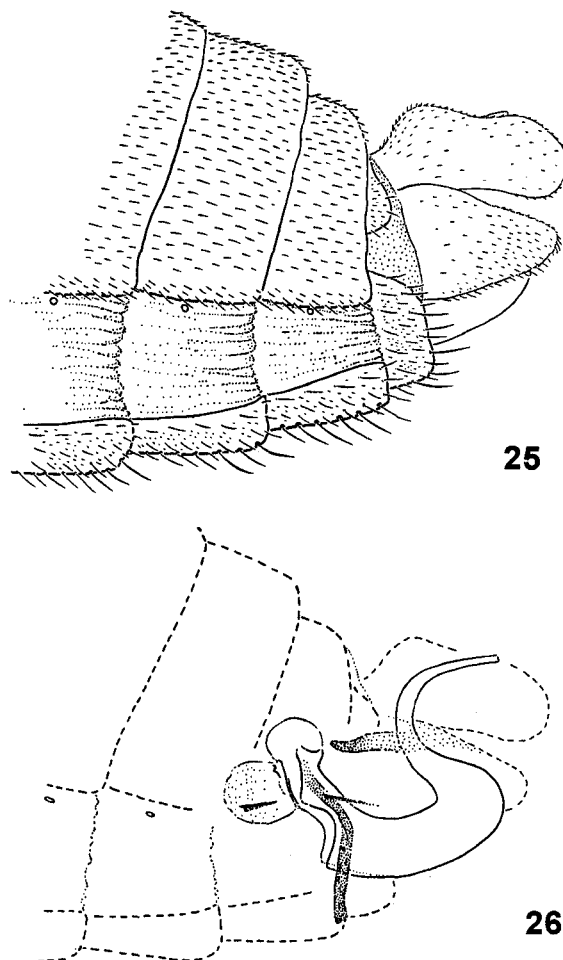
*Holotype.* ♂. **Ukraine:** [label printed in Cyrillic] Одесса [Odessa] C.-x. Оп. Ст. [S.-kh. Op. St. (=Ag-

ricultural Experimental Station)] / на меже [on side-land] / К.И.Ф.-3 [K.I.F.-z (apparently abbreviated name of unknown collector)] 26.04.[1]926. The holotype is housed in ZIN.

*Diagnosis.* Occiput with short flattened bristles on sides behind eyes; thorax with ordinary setae; thoracic spiracles brownish; prosternum and laterotergite mostly with pale setae; legs almost wholly dark brown, hind tibia and tarsus somewhat paler; abdomen greyish brown pollinose.

*Description.* Male. Head black in ground-colour. Occiput greyish pollinose, mostly with black setation, bearing pale hair-like setae in lower part. Occipitals undifferentiated, numerous; rather short flattened bristles present on sides behind eyes. Eyes dichoptic, all ommatidia of equal size. Ocellar triangle prominent, concolorous with frons (viewed dorsally). Ocellars undifferentiated; several black setae of different length present. Frons broad, at middle 2.8 times as wide as anterior ocellus, greyish brown, bearing marginal setulae, widened toward antennae. Face grey to shiny brown in lower part, bare, broader than frons, somewhat widened toward below. Postpedicel and style black, scape and pedicel brown. Scape short; clothed in sparse setulae, bare on inner side. Pedicel subglobular, ringed with fringe of sparse setulae. Postpedicel elongate, 2.7 times longer than wide and 2.2 times as long as style. Ratio of scape, pedicel and postpedicel length — 9 : 8 : 24. Proboscis moderately long; labrum 1.5 times as long as head is high, reddish-brown; prementum and labella dark; labella short and narrow, bearing dark scattered setulae. Palpus yellow, finely pubescent with microtrichia, bearing several long black setae ventrally. Gena linear. Cervical sclerites bare.

Thorax black in ground-colour, largely densely greyish pollinose, only posterior corner of postpronotal lobe polished. Scutum with 4 dark brown vittae (viewed dorsally). Antepnotum with numerous black spine-like bristles dorsally and 3—4 pale hair-like setae laterally. Proepisternum bare. Prosternum with 2 black hair-like bristles surrounded by pale setae. Postpronotal lobe with numerous, thin, black setae of different length, 2 bristles somewhat stronger. Main mesonotal bristles black, hardly differentiated; 1 presutural supra-alar, 4 notopleural, 1 postsutural supra-alar, 1 postalar and 6 scutellar bristles; addi-



**Figs 25—26.** *E. odessa* sp. n. (holotype).  
 25, postabdomen, lateral view; 26, genitalia, the same view.

tionally, pale and black setulae of different length present on notopleural depression, just behind postpronotal lobe and among dorsocentral bristles in presutural space. Acrostichals 2-serial, long and thin, ending before prescutellar depression. Dorsocentrals irregularly 4—5-serial anteriorly, becoming irregularly 2-serial toward scutellum, nearly as long as acrostichals, prescutellars longest. Laterotergite with numerous pale setae. Anterior and posterior spiracles brownish.

Legs almost wholly dark brown, finely greyish pollinose, subshining, short, mostly with black ordinary setation; hind tibia and tarsus some-

what paler. Fore and mid femora subequal in thickness, hind femur somewhat thickened. Mid and hind tibiae somewhat arcuate, tapered in apical half. Tarsomeres unmodified. Fore coxa mostly with pale hair-like setae; mid and hind coxae mostly black setose. Trochanters of all legs with scattered hair-like setae. Fore femur with thin moderately long antero- and posteroventral bristles, covered with similar but longer bristles posteriorly. Mid and hind femora pubescent with microtrichia and bearing numerous spine-like bristles ventrally; with 1 row of antero- and 1 row of posteroventral longer bristles. Tibiae ringed with few very short apicals;

dorsal bristles scarcely differentiated. Fore tibia with ordinary setulae, mid and hind tibiae with erect setulae ventrally (more distinct on mid tibia); hind tibia pubescent with microtrichia ventrally, bearing short seta in posteroapical comb, with simple articulation. Tarsomeres 1—4 ringed with very short and thin apical setae; tarsomere 1 of fore and mid legs with few spinules ventrally; hind tarsus pubescent with microtrichia ventrally. Claws subequal in length to pulvilli.

Wing hyaline. Veins largely brownish yellow, becoming paler toward base of wing; complete (except *Sc*); mostly well sclerotized, *A*<sub>1</sub> very faint in subapical portion. Anal angle very acute, subsequently anal lobe well developed. Basicostal bristle lacking. Stigma very faint. *R*<sub>4+5</sub> and *M*<sub>1</sub> somewhat divergent near wing-apex. Radial fork acute. *dm* cell short. Squama yellow, pale fringed. Halter yellow.

Abdomen tapered, black in ground-colour, wholly greyish brown pollinose, with ordinary setation; segments 1—7 unmodified, lacking posteromarginal bristles. Tergites with pale hair-like setae (longer on tergites 1—3) laterally and black setulae dorsally. Sternites with intermixed hair-like brownish to pale setae and longer black bristles. Sternites and tergites 7—8 laying in same plane with preceded sternites and tergites, respectively. Sternite and tergite 7 rectangular, as large as sternite and tergite 6, respectively. Sternite 8 U-shaped (viewed posteriorly), as broad as sternite 7, produced almost to upper margin of epandrial lamellae; tergite 8 reduced to two very narrow triangular lateral sclerites narrowly connected in middle.

Hypopygium compressed laterally, unflexed and confined to end of abdomen. Cerci and epandrial lamellae in horizontal position. Cerci above epandrial lamellae, unilobate, elongate-oval, dark brown, with scattered black setulae, bearing few spinules on inner side near base. Epandrial lamellae short, triangular, with rounded apex; dark brown, finely greyish pollinose, with sparse, black, short bristles. Hypandrium hidden, sclerotized along upper margin. Phallus yellowish brown (in visible part), as in Fig. 26, mostly hidden, zigzag bent, very thick in basal part, becoming narrower toward apex, with tubular and smooth subapical portion.

Length: body 4.9 mm; wing 4.8 mm.

Female. Unknown.

**Differential diagnosis.** The new species is most closely related to *E. cushcaensis* and *E. keberlei*. *E. kushkaensis* can be readily distinguished from *E. odessa* in black palpus and whitish grey pollinose dorsum of abdomen. *E. keberlei* differs from the new species by milk white wing in male, light grey pollinose abdomen in female and some other characters.

**Etymology.** The new species is named after the type locality, Odessa.

**Distribution.** Ukraine: Odessa Prov.

### Key to species

1. Male ..... 2  
— Female ..... 14
2. Eye with upper ommatidia little enlarged. Frons very narrow, as wide as anterior ocellus. Body with ordinary setation. Hind leg unmodified. Wing hyaline. Abdomen densely whitish grey pollinose ..... *E. negrobovi* sp. n.  
— Eye with all ommatidia of equal size. Frons broader, at least 2.0 times as wide as anterior ocellus ..... 3
3. Body (at least occiput) with flattened bristles. Hind femur more or less incrassate, hind tibia thin. Wing hyaline to somewhat infusate ..... 4  
— Body with ordinary setation. Hind leg unmodified. Wing milk-white. Abdomen bicolour, with dorsum densely whitish grey and venter darker pollinose ..... *E. keberlei* sp. n.
4. Prosternum with ordinary hair-like setae laterally ..... 5  
— Prosternum with flattened setae laterally ..... 9
5. Palpus black. Prosternum with pale setae. Legs wholly black brown. Abdomen bicolour, with dorsum densely whitish grey and venter darker pollinose ..... *E. cushcaensis* sp. n.  
— Palpus yellow ..... 6
6. Prosternum with black setae. Abdomen black setose ..... 7  
— Prosternum with pale hair-like setae, sometimes bearing 2 black bristles. Abdomen with tergites pale setose laterally ..... 8
7. Scutellum with 4 bristles. Hind tarsus largely yellowish, tarsomeres 1—4 at apex, tarsomere 5 wholly brownish. Abdomen with tergites bearing black long hair-like setae laterally and short setulae dorsally .. *E. gorodkovi* sp. n.

- Scutellum with 2 bristles. Legs wholly dark brown. Tergites 3—7 of abdomen with greatly reduced setation, covered with whitish microtrichia and scattered black setulae only ..... *E. dushanbensis* sp. n.
- 8. Abdomen wholly greyish brown pollinose. Thoracic spiracles brownish ..... *E. odessa* sp. n.
- Abdomen with tergites light grey pollinose. Thoracic spiracles pale ..... *E. rohdendorfi* sp. n.
- 9. Halter dark. Palpus black. Legs wholly dark brown ..... *E. nartshuki* sp. n.
- Halter and palpus yellow. At least hind tarsus largely yellowish (except *E. zaslavskii*) ..... 10
- 10. Laterotergite with ordinary, mostly hair-like setae ..... 11
- Laterotergite with flattened setae. Hind femur with numerous flattened dorsal setae ... 12
- 11. Hind femur lacking flattened setae. Scutellum with 8 bristles. Abdomen with black setation ..... *E. golubi* sp. n.
- Hind femur with few flattened dorsal setae in apical part. Scutellum with 4 bristles. Tergites 5—7 and all sternites with pale setae ..... *E. sugonyaevi* sp. n.
- 12. Palpus with flattened setae ventrally. Occiput, prosternum and postpronotal lobe with very long setae. Scutellum with 6 bristles ... 13
- Palpus with ordinary setae ventrally. Postpronotal lobe with relatively short setae. Scutellum with 12 bristles ..... *E. jacutiensis* sp. n.
- 13. Postpronotal lobe with flattened setae. Legs wholly dark brown .... *E. zaslavskii* sp. n.
- Postpronotal lobe with hair-like setae. Hind tarsus largely yellow, tarsomere 5 darkened ..... *E. otchontengriensis* sp. n.
- 14. Palpus black, sometimes paler at tip. Thoracic spiracles black ..... 15
- Palpus yellow. Thoracic spiracles usually pale ..... 16
- 15. Body brownish grey pollinose. Abdomen with black setation ..... *E. nartshuki* sp. n.
- Body light grey pollinose. Abdomen with tergites 1—2 pale setose ..... *E. cushcaensis* sp. n.
- 16. Abdomen largely densely whitish grey pollinose, with pale setation only ..... 17
- Abdomen largely light grey pollinose, mainly black setose ..... 18
- 17. Scutum light grey ..... *E. negrobovi* sp. n.
- Scutum brownish grey ... *E. keberlei* sp. n.
- 18. Abdomen with greatly reduced setation, tergites 1—2 short setose only. Scutellum with 2 bristles. Legs wholly black brown ..... *E. dushanbensis* sp. n.
- Abdomen more or less evenly covered with bristles. Scutellum with 6—8 bristles. Hind tarsus reddish brown .. *E. jacutiensis* sp. n.

### Discussion

The subgeneric classification of the genus *Empis* is a well-known problem for this group. There are many species (especially from eastern and southern areas of the Palaearctic region) which it is difficult to include in some current subgenera. According to Chvála (1994, 1999), the species described in this paper should be placed somewhere between subgenera *Polyblepharis* and *Kritempis*. However, the species included nowadays in *Polyblepharis* possess modified pregenital segments and a very distinctive structure of phallus. These characters are considered to be autapomorphies for the subgenus (Chvála, 1999). The species described resemble very much some *Polyblepharis* species from *ulrichi*-, *albicans*- and *haemorrhica*-groups. However, unlike *Polyblepharis*, this group shares unmodified pregenital segments (except tergite 8 which is usually reduced to two small lateral sclerites as it is known in *Polyblepharis*) (Chvála, 1994, 1999).

The subgenus *Kritempis* (with six species from Europe only) was recently defined on the bases of a considerably reduced hypandrium which is represented by its lateral arms in this group (Daugeron, 1999).

Apparently, these species are most similar to *E. luteipilosa* and three undescribed species noted by Saigusa (1992). According to Saigusa's original description (p. 79), *E. luteipilosa* is "small, stocky, greyish species with incrassate, ventrally spinose femora, slender tibiae clothed with erect pile ventrally, mostly pale setose body; male dichoptic and tip of aedeagus slightly dilated". Unlike *E. luteipilosa*, three undescribed species possess flattened ("subpennate" according to Saigusa) setae behind eyes. In the key given above, *E. luteipilosa* would run to *E. keberlei*. However, *E. keberlei* can be easily distinguished



from all species of this group by milk white wing in male. Additionally, *E. keberlei* has unmodified mid and hind legs whereas hind femur is incrassate in *E. luteipilosa*. Saigusa tentatively assigned *E. luteipilosa* (together with all Asiatic *Leptempis*-*Planempis*-like species) to the subgenus *Planempis* and compared with *E. microtheca* group. Daugeron (1999) hypothesised that *Leptempis* + *Kritempis* + *Planempis* form a monophyletic lineage in having a pair of large-sized male cerci. This feature is very distinctive for the new species and they could be included in this lineage as well. Detailed analysis of possible relationships between described species and other groups of *Empis* will be given in a separate paper (Shamshev, in prep.).

Males of almost all species described here bear more or less flattened (pinnate) setae on their body (at least on occiput behind eyes). This secondary sexual character is a well-known feature of females in the Empidinae but it is very rare in males (Cumming, 1994). Males of some species of *Lamprempis* have pinnate scales on their legs (Turner, 1988). Additionally, I have seen a *Polyblepharis* species from the North America which possesses flattened setae on sides of occiput in male.

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