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109. Bibionidae
Ergebnisse der zoologischen Forschungen von Dr. Z. Kaszab in der Mongolei *

(Diptera)

mit 31 Figuren

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The collections made by Dr. Z. KASZAB during his three expeditions to Mongolia contained 194 specimens of *Bibionidae*. The fauna of this region is very poorly known and this collection adds much valuable data.

Penthetria motschulskii (GIMMERTHAL) (figs. 1a–b)

Crapitula motschulskii GIMMERTHAL, 1845, Soc. Imp. Nat. Moscou, Bul. 18: 330.
Penthetria motschulskii (GIMMERTHAL), HARDY and TAKAHASHI, 1960, Pac. Ins. 2(4) 391, figs. 3 b–c.

This species belongs in the complex which is characterized by having at least the hind portion of the mesonotum bright orange to rufous and the anterior portion dull black. It resembles *P. japonica* (WIEDEMANN) in body coloration and in most other respects but the characteristics of the wing venation, male genitalia, antennae, and the more slender legs will readily differentiate *motschulskii*. It is characterized by having vein M1 not joined with the r–m crossvein, M1+2 extends distinctly beyond the crossvein so that cell M1 is petiolate. *P. japonica* has vein M1 joined directly to the r–m crossvein. The apical segment of the antenna of *motschulskii* is about as wide as long, rather than nearly two times longer than wide as in *japonica*. The male genitalia are strikingly different in the two species. In *motschulskii* (figs. 1a and 1b) the ninth sternum has a small U-shaped cleft in the middle of the hind margin and the claspers are rather broad and blunt except for a prominent apico-ventral point. In *japonica* the ninth sternum is rather deeply and evenly cleft on the hind margin, the concavity extends almost one-half the length of the segment. The claspers are slender, evenly tapered to the apex (loc. cit., figs. 2 c–d).

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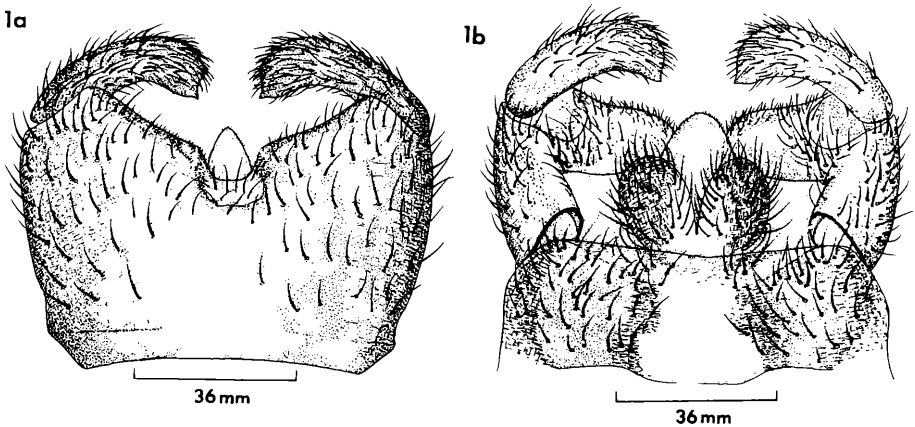


1. *Penthetria motschulskii* Gimmerthal: a. male genitalia, dorsal; b. genitalia ventral.

Length of male, body 6.5—7.5 mm; wings 7.0—7.7 mm. Female, body 9.0—9.5 mm; wings, 10.0—10.7 mm.

Type locality: eastern Siberia. The type should have been in the GIMMERTHAL collection at the Zoological Museum, Riga. Dr. A. STACKELBERG at the Zoological Institute, Leningrad has informed the author that the type is not as in GIMMMERTHAL's collection. It probably has been lost.

This species has been recorded from north China (Mongolia and Manchuria), Siberia and from the Sakhalin Islands.

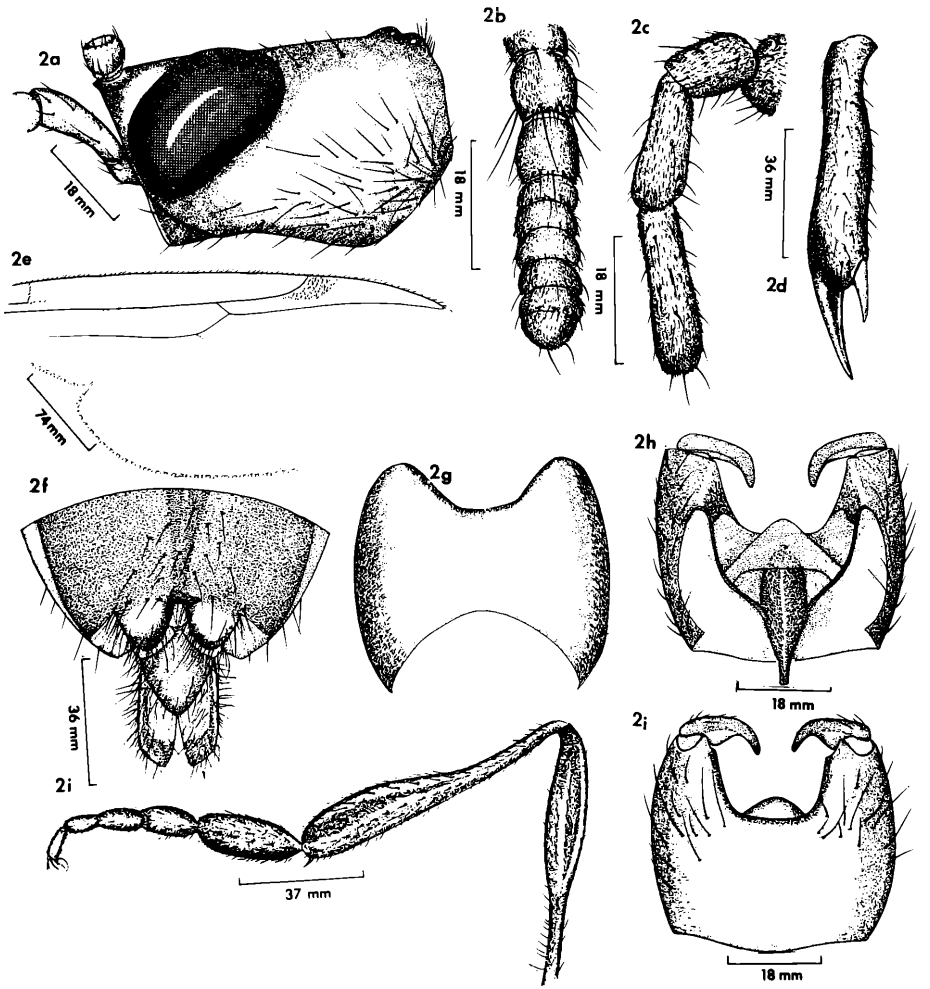
Two male specimens are in the collection from Mongolia, Central aimak Ulan-Baator, Zaisan im Bogdo ul, 1450—1500 m, Nr. 124, 13. VI. 1964.

Bibio clavipes MEIGEN (figs. 2a—j)

Bibio clavipes MEIGEN, 1818, Syst. Beschr. der Europäischen Zweifl. Insekten 1: 317.

This species has been treated rather thoroughly by DUDA (1930: 49). It is considered to be rather variable and it is possible that the present concept may comprise a species group. The biology and morphology of this species was treated in considerable detail by BOLLOW (1954: 211—216) and it was used as the type of a new subgenus (*Bibiophus*) by BOLLOW. I do not agree with his conclusions and have placed *Bibiophus* as a synonym of *Bibio* (refer to HARDY and TAKAHASHI, 1960: 402).

I doubt that the species studied by BOLLOW was actually *clavipes*, certainly the specimens which I have seen from Europe (from England and Austria) do not conform with his illustrations. I find only the typical five segments in the palpi and the segments are very differently shaped than shown by BOLLOW The terminal segment of the antenna is not pointed, as he had drawn, and the hind basitarsi of the



2. *Bibio clavipes* Meigen: a. head of female, lateral; b. antenna; c. palpus; d. front tibia; e. wing; f. female terminalia, ventral; g. ninth tergum of male; h. male genitalia, dorsal with tergum dissected off; i. hind tibia of male; j. male genitalia, ventral.

male are distinctly swollen as shown by DUDA (fig. 21) and as in figure 2i; the hind leg illustrated by BOLLOW is short and stubby.

A good series of specimens on hand from Mongolia would appear to fit typical *clavipes* although specimens I have on hand from Europe have the mesonotum entirely pale haired while it is covered with black hair in the male specimens from Mongolia; DUDA in his discussion says that the mesonotum is usually black haired and rarely whitish haired.

This species is characterized by its slender body and legs, the clavate hind femora and tibiae; by the swollen basitarsi and the colorless posterior veins, and pale, almost colorless, stigma in the wing of the male. Also the elongate palpi and short inner spurs of front tibiae are characteristic of both sexes.

In the specimens from Mongolia the body and legs of the male are entirely black except for the rufous tibial spurs; in specimens on hand from Europe the hind tibiae and tarsi are tinged with rufous. DUDA described the legs as black or blackish brown so the dark legs may be typical for this species. The dorsum of the thorax is polished black and covered with black pile, the remainder of the thorax, abdomen and legs are covered with yellow-white pile. The flagellum of the antenna is seven-segmented (fig. 2b), the last two segments are closely joined. The last segment of the palpus is about five times longer than wide and slightly longer than the penultimate segment (fig. 2c). The front tibia is slender, slightly tapered from base to apex; the inner spur is less than half as long as the outer (fig. 2d). The tibiae and femora of the hind legs are distinctly clavate and the first three tarsal segments are swollen. The hind basitarsus is about three times longer than wide and approximately equal in width to the tibia; the second tarsal segment is about half as long as the basitarsus (fig. 2i). The knobs of the halteres are black, the stems are tinged with pale yellow. The wings are hyaline, the anterior veins are brownish yellow, the posterior veins are colorless. The stigma is very faint, tinged with yellow-brown only beyond the apex of vein R1. The r—m crossvein is slightly longer than the base of Rs and the costa extends very slightly beyond the apex of radial sector (fig. 2e). The medial and cubital veins extend to the wing margin. The abdomen is slender, distinctly longer than the combined length of the head and thorax. The ninth tergum of the male has a broad U-shaped concavity in the middle of the hind margin which extends aproximately one-third of the segment (fig. 2g). The claspers are slender and the ventral aspect of the genitalia is as in figure 2j. The aedeagus is broad and blunt, shaped as in figure 2h.

Body: 4.5—5.5 mm; wings, 5.0 mm.

The female is less slenderly built, the hind tibiae are very straight sided and the tarsi are not swollen. Also the legs are almost entirely yellow, the pleura are tinged with yellow in the ground color and the posterior veins are faintly tinged with yellow. The head is short, the compound eyes are oblique in position, almost two times higher than wide and situated near the front edge of the head. As seen in lateral view the portion of the head behind the compound eyes is approximately two times longer than the eye (fig. 2a). As seen from dorsal view, the head, measured to the margins of the compound eyes, is as wide as long. The front is subshining black covered with scattered, erect, yellow setae. The ocellar tubercle is prominent. The pile of the mesonotum is pale and short. The propleura, pteropleura, metapleura and sternopleura are tinged with yellow. The coxae, femora and tibiae are almost entirely yellow to rufous. The basitarsi are yellow, tinged with brown at their apices, the other tarsal segments are brown to black. The terminalia are as in figure 2f.

Length: body, 4.2—5.3 mm; wings, 5.0—6.0 mm.

A large series of specimens (63) are on hand from the following localities in Mongolia:

C e n t r a l a i m a k Ulan-Baator, Nucht im Bogdo ul, 1600 m, Nr. 486, 27. VIII. 1965; 12 km O von Ulan-Baator, Nucht im Bogdo ul, 1500 m, Nr. 122, 12. VI. 1964. — C h e n t e j a i m a k 20 km SW von Somon Norovlin, 900 m, Nr. 449, 19. VIII. 1965. This species is widespread over Europe and Asia. For synonymy and a more detailed description refer to DUDA (1930: 49, fig. 21).

Bibio pomonae iwasugensis OUCHI (figs. 3a—e)

Bibio pomonae var. *iwasugensis* OUCHI, 1940, Shanghai Sci. Inst. Journ. Sec. 3, Vol. 4: 294.

The specimens from Mongolia appear to fit the Japanese subspecies in all respects. I find slight differences in wing shading but nothing of any significance which will separate these.

This subspecies is differentiated from typical *pomonae* FABRICIUS by having the wings evenly shaded with pale yellow-brown and the posterior veins dark colored; rather than the wings being entirely hyaline except for a faint tinge of yellow in the costal cell, and the posterior veins concolorous with the membrane. The species is further characterized by its large size, wings 8.75—10.7 mm in length; by having the base of the radial sector about two times longer than the r—m crossvein; the femora rufous and the remainder of the legs black; and the inner spur of the front tibia about one-half as long as the outer.

This subspecies has been adequately described and figured by HARDY and TAKAHASHI (1960: 433, figs. 26 a—c). It is a moderately large, entirely shining black species except for the rufous femora. The body and legs are densely black pilose. The antennae have eight segments in the flagellum and the palpi are elongate and slender; the segments are similar in shape to those of *clavipes* (fig. 2c). The wings are rather evenly brownish grey fumose, just slightly darker in the costal cell. The posterior veins are yellow-brown, the anterior veins are dark brown and the venation is as in figure 3b. The length of the r—m crossvein varies slightly but is typically about half as long as the basal section of Rs. The hind basitarsus is about four times longer than wide and about one-third as long as the tibia. The cleft on the posterior margin of the ninth tergum extends two thirds the length of the segment (fig. 3d). The aedeagus is short and thick, blunt at apex (fig. 3c). The other details of the genitalia are as in figure 3d.

Length: body, 9.5—12.7 mm; wings, 8.0—11.0 mm.

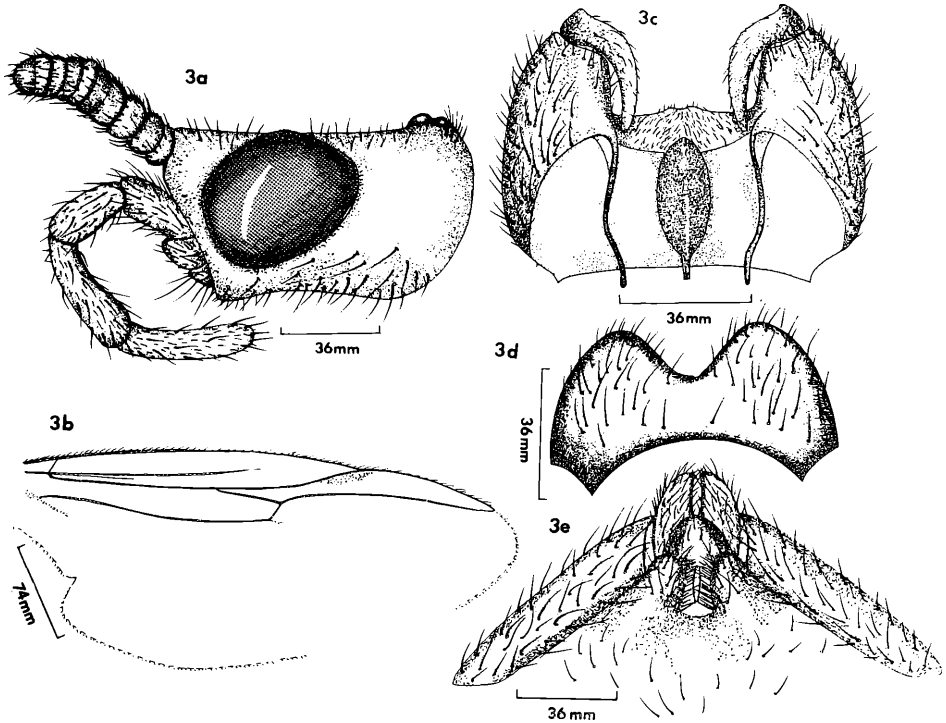
In the female the head, as seen in lateral view, is shaped as in figure 3a. The compound eyes are almost round and the portion of the head behind the compound eyes is approximately equal in length to the eye. The body and leg coloration is as in the male and the wings are the same. The cerci are short, scarcely longer than wide and the ventral aspects of the female terminalia are as in figure 3e.

Length: body and wings, 10.0—14.5 mm.

Type locality: Mount Iwasuga, Japan. Type in the Academia Sinica, Peking, China.

This subspecies is widely distributed over Japan and has also been recorded in the northern Kurile Islands.

46 males and 12 females are on hand from the following localities in Mongolia:

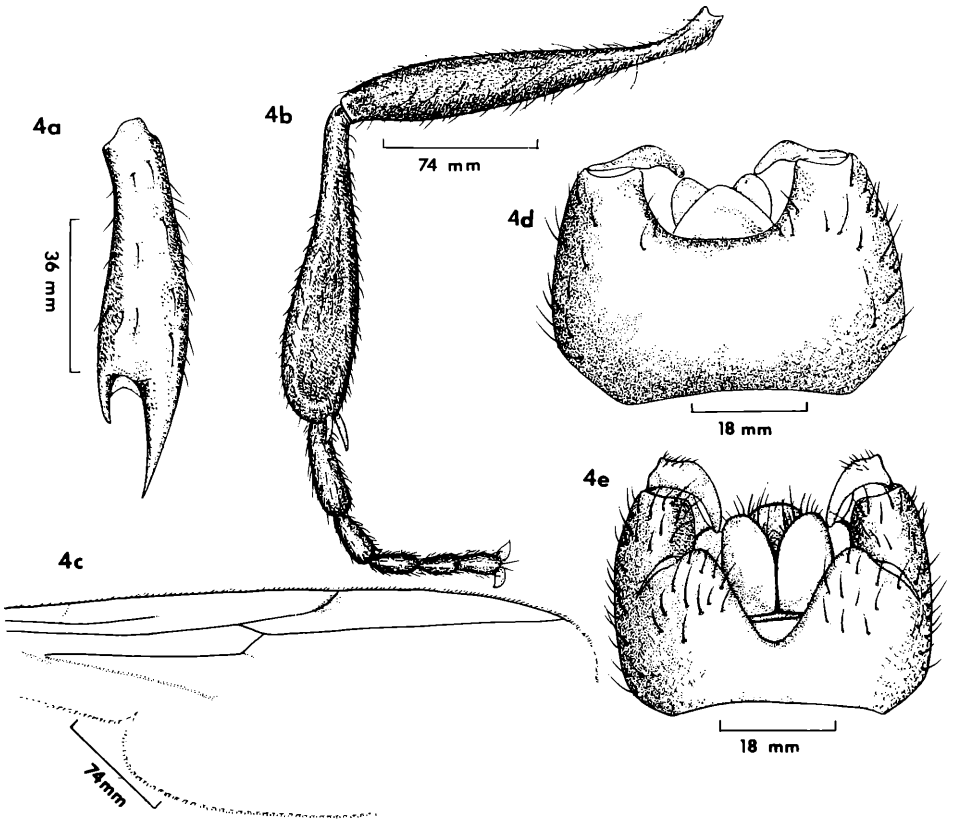


3. *Bibio pomonae iwasugensis* Ouchi: a. head of female, lateral; b. wing; c. male genitalia, dorsal with tergum dissected off; d. ninth tergum; e. female terminalia, ventral.

Central aimak Kerulen, 45 km O von Somon Bajandelger, 1340—1400 m, Nr. 304 and 478, 26. VII.—24. VIII. 1965; Uubulan am Fluß Tola, 60 km O von Ulan-Baator, 1370 m, Nr. 482, 25. VIII. 1965; Ulan-Baator, Nucht im Bogdo ul, 1500—1700 m, Nr. 486, 489 and 297b, 22. VII.—29. VIII. 1965. — Čojbalsan aimak 20 km SW von Somon Bajan-uul, 820 m, Nr. 444, 18. VIII. 1965. — Chentej aimak SW von Somon Zenchermandal u. Somon Žargaltchaan, 1400 m, Nr. 312, 27. VII. 1965.

Bibio varipes MEIGEN? (figs. 4a—e)

Bibio varipes MEIGEN, 1818, Syst. Beschr. der Europäischen Zweifl. Insekten 1: 317. Three male specimens on hand, in rather poor condition, appear to fit *varipes*. I see no way to differentiate these from European specimens of this species, except possibly for the slightly smaller size and I doubt that this is of any significance. DUDA (1930: 71) indicated that the body of *varipes* measures 6.0—8.0 mm; the specimens on hand measure 4.3—4.75 mm. DUDA also indicated that the flagellum of the antenna has 7 segments in *varipes;* I find only 6 distinct segments in the flagel-



4. *Bibio varipes* Meigen: a. front tibia; b. hind leg of male; c. wing; d. male genitalia, ventral; e. male genitalia, dorsal.

lum of the specimens from Mongolia, also in the specimens of *varipes* on hand from England. I am identifying the Mongolian specimens with a query until a larger series, and both sexes can be studied.

B. varipes is characterized by having the r–m crossvein about equal to the base of Rs, the hind tarsi slender, the body and legs black, the inner spur of the front tibia short, about half as long as the outer (fig. 4a), last segment of palpus about four times longer than wide, pile of mesonotum black, and by having the costa extended distinctly beyond the apex of the radial sector. In the specimens from Mongolia the legs are entirely black except for the rufous tibial spurs and except for a faint tinge

of red in the ground color of the tibiae. The specimens on hand from Europe have the tibiae, especially the hind pair, more distinctly tinged with rufous. DUDA in his description (1930: 70) indicated that the middle and hind tibiae are dark brown, sometimes black. The specimens on hand from Mongolia have the wings hyaline or nearly so and the posterior veins almost colorless. The specimens I have examined from Europe have a faint tinge of yellow-grey over the wing membrane, especially on the anterior portion and the posterior veins are faintly yellow. DUDA described the wings as being pale grey with the costa and anterior basal cells brownish and the posterior veins grey-brown. In the Mongolian specimens the wing venation is as in figure 4c. The hind legs are shaped as in figure 4b. The concavity on the hind margin of the ninth tergum is rather deep, extending approximately two-thirds the length of the segment. The claspers are slender, the other aspects of the genitalia are as in figures 4d and 4e.

Length of specimens from Mongolia: body, 4.3—4.75 mm; wings, 3.5—4.0 mm.

This species is widely distributed over Europe.

Two of the specimens are from the following localities in Mongolia:

A r c h a n g a j a i m a k 24 km N von Somon Lun, 1520 m, Nr. 238, 1. VII. 1964. — U b u r c h a n g a j a i m a k Changaj Gebirge, 2 km S von Somon Schanch, 1690 m, Nr. 230, 30. VI. 1964. Also one specimen which had come loose from the paper point and the locality is unknown.

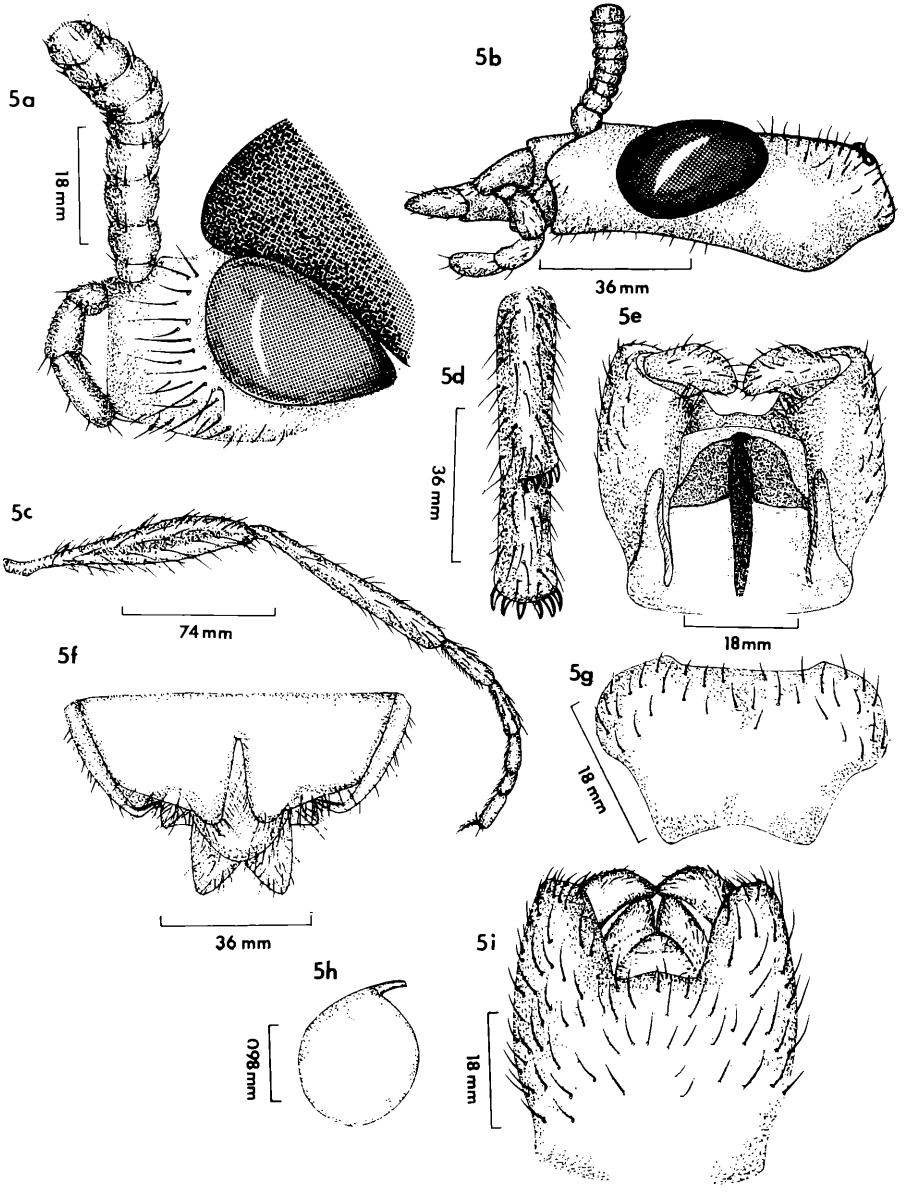
Dilophus femoratus MEIGEN (figs. 5a—i)

Dilophus femoratus MEIGEN, 1804, Klass. und Beschreib. der Europäischen Zweifl. Insekten 1: 116.

This species belongs in the complex which has the body all black and four spines arranged in a row just below the middle of the front tibia (fig. 5d). It is differentiated by the hyaline wings, with colorless posterior vein, and by having the rostrum well developed, in the female equal to at least half the eye length (fig. 5b).

M a l e. Entirely shining black, pale pilose over the body and legs. The rostrum, the sclerotized portion of the head in front of the eyes, is well developed, about equal in length to the first three segments of the antennae. The antennae are 10 segmented, the last two segments of the flagellum are closely joined. The last segment of the palpus is three to four times longer than wide and approximately one-third longer than the penultimate segment (fig. 5a). The mesonotum is polished black, rather sparsely haired. The anterior comb of spines on the mesonotum contains from 10 to 12 teeth (average of 10); these are moderately sharp pointed. The posterior comb is usually made up of 12 short blunt teeth. Four spines are present in a row at about the apical three fifths of the front tibia (fig. 5d). The apical spur on the front tibia is equal in size to the apical spines. The hind legs are slender, the tibiae are straight sided and the tarsi are not swollen; the basitarsus is approximately one-third as long as the tibia.

The hind femora are rather densely covered with long hairs on the ventral and posterior surfaces. The hind tibiae have long pale hairs on the postero-ventral and the ventral surfaces (fig. 5c), the length of these hairs is equal to three or four times the width of the tibia. The wings are entirely hyaline, faintly milky. The stigma has



5. *Dilophus femoratus* Meigen: a. male head, anterior portion; b. female head, lateral; c. hind leg of male; d. front tibia; e. male genitalia, dorsal with tergum dissected off; f. terminalia of female, ventral; g. ninth tergum of male; h. spermatheca of female; i. male genitalia, ventral.

just a faint tinge of yellow in the ground color. The costa is yellow to a point opposite the end of the subcostal vein and is brown beyond this point. The costa ends about two-fifths the distance between the apices of Rs and vein M1. The subcostal vein is very faintly tinged with yellow except for the brownish yellow base. The radial veins and the upper portion of the r—m crossvein are brownish yellow. The remainder of the r—m and the basal section of vein M1+2 are yellow, faintly tinged with brown. The posterior veins are colorless. The concavity on the hind margin of the ninth sternum extends about one-third the length of the segment, as in figure 5i. The claspers are broad and blunt. The aedeagus and supporting structures are as in figure 5e. The ninth tergum is just slightly concave on the hind margin (fig. 5g).

Length: body, 3.7—4.0 mm; wings, 3.5—3.75 mm.

Female. The head is polished black, the rostrum is well developed, at least one-half as long as the compound eye (fig. 5b). The portion of the head behind the eye is about equal in length to the eye. 12 to 14 blunt teeth are present in the anterior comb on the thorax. The humeri and propleura are yellow, tinged with brown. The front coxae and femora are yellow to rufous. The mid and hind femora are brown to black at their bases and apices, usually reddish yellow in the median portions. The tibiae and tarsi are shining black. The spurs of the front tibiae are stronger, more prominent than in the male. The stigma is distinctly tinged with brown. The cerci are slightly longer than wide. The ventral aspects of the terminalia are as in figure 5f. Each spermatheca has a short sclerotized duct (fig. 5h).

Length: body and wings, 3.7—4.5 mm.

This species is widespread over Europe, northern Africa, and northern Asia. The collection contained 41 males and 51 females plus over a dozen specimens which had been broken off the paper points, from the following localities in Mongolia:

Chentej aimak 20 km SW von Somon Norovlin, 900 m, Nr. 449, 19. VIII. 1965; 15 km O von Öndörchaan, 1 km S von Kerulen, 1000 m, Nr. 327, 30. VII. 1965; 32 km SO von Somon Bajan-uul, 750 m, Nr. 439, 18. VIII. 1965; SW Somon Zenchermandal, SW von Žargaltchaan, 1400 m, Nr. 312, 27. VII. 1965. — Čojbalsan aimak 15 km N von Somon Galuut, 850 m, Nr. 433, 17. VIII. 1965; 20 km SW von Somon Bajan-uul, 820 m, Nr. 444, 18. VIII. 1965. — Suchebaator aimak Fluß Bajan gol, 85 km NO von Somon Dariganga, 1100 m, Nr. 377, 8. VIII. 1965.

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