

On the genus *Dialineura* Rondani, 1856 (Diptera, Therevidae)

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1. Introduction	147
2. Historical review	148
3. The characters hitherto used for <i>Dialineura</i> Rondani	150
4. Taxonomy of five Palaearctic species of <i>Dialineura</i> Rondani	151
4.1. Key to the species	151
4.2. <i>Dialineura anilis</i> (Linné, 1761)	151
4.3. — <i>albata</i> (Coquillett, 1898)	156
4.4. — <i>affinis</i> n. sp.	157
4.5. — <i>intermedia</i> n. sp.	159
4.6. — <i>nigrofemorata</i> Kröber, 1937	162
4.7. Definition of the genus <i>Dialineura</i> Rondani, based on characters of the male terminalia	164
5. Notes on three Nearctic species of Therevidae which have been associated with <i>Dialineura</i> Rondani	165
5.1 <i>Thereva melanophleba</i> Loew, 1876	166
5.2. — <i>willistoni</i> (Cole, 1965)	167
5.3 <i>Tabuda fulvipes</i> Walker, 1852	168
6. Summary	170
7. References	171

I. Introduction

The present paper is intended as a small step towards a more sound classification of the family Therevidae. It presents firstly a historical review of the genus *Dialineura* Rond. Next is given a critical summary of the characters which have up to the present time been used as diagnostic for this genus. This is followed by the major taxonomic part containing descriptions and redescriptions of five Palaearctic species. Special attention has been given to the male terminalia, on which the present author (Lyneborg, 1968) has earlier published a basic study. It is the impression, also from investigations in other parts of the family, that the male terminalia of Therevidae show characters which can lead to a sounder classification on generic and supra-

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generic levels. In other words, the differences on a specific plane do not overshadow similarities of apparently apomorph origin which can be used for characterization of a group of species. By use of these facts a provisional definition of the genus *Dialineura* as a monophyletic unity based on apomorph characters in the male terminalia of the five Palaearctic species known is given on p. 164.

These five species are as follows: *anilis* L., *albata* Coq., *affinis* n.sp., *intermedia* n.sp. and *nigrofemorata* Kröb. The external morphology of the first of these species is described in detail for both sexes, while the following four species are compared with *anilis*, but for all five species the male terminalia are described in their entirety.

The two Nearctic species, *melanophleba* Lw. and *willistoni* Cole, which have been assigned to *Dialineura* (see p. 149), are not described in detail due to lack of sufficient material, but the male terminalia are described and figured in order to motivate that these two species must be removed from the genus *Dialineura* in its present strict sense. It is, however, evident, that *Dialineura* in this sense also must have representatives in the Nearctic fauna, but as the therevids of this region are under intensive study of Mr. M. Irwin, Riverside, California, the present author has not tried to investigate this problem further. I shall only call attention to the species listed as *Psilocephala variegata* Lw. in the North American catalog (Cole, 1965) and its two subspecies *flavipilosa* Cole and *occidentalis* Cole. I have also taken the opportunity to describe the male terminalia of *Tabuda fulvipes* Wlk. which so often has been associated with *Dialineura*.

The Australian and Neotropical species described as *Dialineura* (see p. 149) will not be discussed here due to lack of material. These species are most certainly also to be removed from *Dialineura* in its strict sense, but their generic assignments can be better solved in connection with revisions of the regional faunas.

In the following descriptions are given a number of measurements. These are all exact, 100 units being equal to 1 mm. The total length is measured from antennal base to abdominal tip. Most of the head measurements are taken from lateral view; only the width of the head cannot be measured from this view. The measurements of the thorax and abdomen are seen from dorsal view and indicate the maximal measurements available. The width of the mesonotum is the distance between the notopleural setae of both sides, and the length of the mesonotum does not include the scutellum. The length of the wing is measured from the humeral cross-vein to the apex, and the width is the maximal one. The index of cell R_4 is the length from the fork of r_4 and r_5 to the wing apex divided by the distance from the apex of r_4 to the apex of r_5 .

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2. Historical review

The genus *Dialineura* was founded by Rondani (1856: 155) with *Musca anilis* Linné (1761: 442) as type-species by original designation. Rondani's diagnosis of *Dialineura* reads as follows: "Venæ longitudinales octava et

nona sejunctim margini alarum productæ. — Antennæ articulo primo distincte incrassato", i.e., fourth posterior cell (M_3) open, and first antennal joint thickened. Many European authors up to about 1910 did not accept *Dialineura* and treated *anilis* L. as a *Thereva* Latr., while others used the combination *Dialineura anilis* L. or *Tabuda anilis* L.

Bigot (1860: 220) described a *Dialineura varicincta* from New Caledonia, and the same author (1889: 327) a *Dialineura? costalis* from Chile.

Kröber (1911: 488) was quite aware of the fact that an open cell M_3 is a completely useless character for a generic characterization, as it occurs in a great many Therevidae and definitely belongs to the plesiomorph characters. Instead, he tried to congregate in his *Dialineura* Rond. all those species "die der typischen Art *D. anilis* F. entsprechend gebaut sind, deren 1. Fühlrglied auffallend stark verdickt, aber vollkommen glanzlos ist". Consequently, he (l.c.: 489) treated *Pachyrrhiza pictipennis* Philippi (1865: 704) from Chile as a *Dialineura*, and thus sunk *Pachyrrhiza* Phil. as a synonym of *Dialineura*.

In his paper on the North American Therevidae Kröber (1912a: 215) further placed *Tabuda* Walker (1852: 197) among the synonyms of *Dialineura*, and thus treated *Tabuda fulvipes* Walker, 1852, as a *Dialineura*; he further placed in this genus *Thereva melanophleba* Loew (1876: 317) and *Thereva crassicornis* Williston (1886: 293). To finish with the Nearctic fauna, Cole (1923: 78—83) treated *Dialineura* and *Tabuda* as separate genera and kept *melanophleba* Lw. and *crassicornis* Will. as species of *Dialineura*, while his *Tabuda* contained *fulvipes* Wlk. and a new species: *borealis* Cole. In the catalog of Diptera of North America, Cole (1965: 352) retained this arrangement, but replaced *crassicornis* Will. with *willistoni* n.n. because of preoccupation.

Kröbers monograph (1912 b: 243) on the Indo-Australian Therevidae included also the genus *Dialineura* with the above mentioned *varicincta* Big. as the only species. In Kröbers paper (1912—13: 24) on the Palaearctic and Ethiopian fauna, *Dialineura* was listed with *anilis* L. as the only species. Finally, Kröber (1937: 272) recorded the following three species of *Dialineura* from the Palaearctic region: *albata* Coq., *anilis* L. and *nigrofemorata* n.sp. The first of these was described from Japan as *Psilocephala albata* by Coquillett (1898: 317), the last is from Transbaikalia.

Malloch's most valuable paper (1932) on the Patagonian fauna also contained a discussion of *Dialineura* Rond. and the "allied" genera *Tabuda* Wlk. and *Pachyrrhiza* Phil. He treated these three genera as distinct and thus retained *Pachyrrhiza pictipennis* Phil. in its original combination. Further he described as new: *Dialineura pallidiventris* from Chile.

Summarizing the above, the following species have originally been described in combination with *Dialineura*, or have by recent workers been assigned to this genus:

- Palaearctic. *Dialineura anilis* Linné, 1758 (*Musca*)
 - *albata* Coquillett, 1898 (*Psilocephala*)
 - *nigrofemorata* Kröber, 1937
- Nearctic. — *willistoni* Cole, 1965 (*Thereva crassicornis* Will.)
- *melanophleba* Loew, 1876 (*Thereva*)
- Australian. — *varicincta* Bigot, 1860
- Neotropical. — ? *costalis* Bigot, 1889
- *pallidiventris* Malloch, 1932

3. The characters hitherto used for *Dialineura Rondani*

The two characters mentioned in Rondani's short diagnosis of *Dialineura* cited above were in fact the only basis for the genus for many years, until Verrall (1909: 582) added a third. His diagnosis reads: "Face bare; frons hairy. Antennæ with the basal joint conspicuously incrassated. Wings with the fourth posterior cell wide open". As mentioned above, Kröber was not able to add further characters in his 1911 and 1912 papers. In "Genera Insectorum", Kröber (1913: 23) presented a somewhat more detailed diagnosis of his *Dialineura* Rond. (which then included also *Tabuda* Wlk. and *Pachyrhiza* Phil.). These additional characters are discussed below under d—i. Finally, Malloch (1932: 249) added a few characters (j—k).

a) Fourth posterior cell (M_3) open. — This cell is open or closed in Therevidae. The open cell is no doubt the plesiomorph condition and is found in a great many Therevidae, among which are the — apparently also in other respects generalized — genera *Anabarrhynchus* Macq., *Melanothereva* Mall., *Peralia* Mall. and others. Also, most of the numerous species described in combination with *Psilocephala* Zett. from all parts of the world have an open cell M_3 . In *Thereva* Latr. both conditions occur.

b) First antennal joint thickened. — The paper of Becker (1912) contains a serious criticism of Kröber's 1911 and 1912 papers. In his discussion of the genus *Dialineura*, Becker (op. c.: 302) emphasized the fact that tendencies towards enlargement of the first antennal joint seem to have arisen many times in the family. The same fact is also mentioned by Malloch (op. c.: 247). Although such enlargements are certainly always of apomorph origin, they cannot be used alone to characterize monophyletic unities because of this frequent occurrence of convergence.

c) Face bare. — Although Verrall added this character it was not used by later authors. It is not possible at the moment to decide which of the two conditions, face bare or face hairy, belong to the plesiomorph conditions, but it is absolutely sure that a bare face cannot be used as a character for *Dialineura*, as one species (*D. affinis* n.sp.) has a hairy face.

d) Antennal style with terminal position and indistinctly set off. — The structure of the antennal style of Therevidae needs more investigation before a definite conclusion can be drawn about its taxonomical value. The style of *Dialineura anilis* L. is not different from that of many other Therevidae and probably near the plesiomorph condition.

e) Eyes in male contiguous, in female separated. — Most Therevidae have this combination.

f) Frons of female mat, without shiny callus. — This belongs certainly to the plesiomorph conditions in Therevidae.

g) Proboscis only slightly protruding. — Most probably also a plesiomorph character. Elongation of proboscis occurs by convergence in different parts of the family.

h) Male genitalia not prominent. — I find the genitalia (by me termed terminalia) quite as conspicuous as in most other Therevidae.

i) Ovipositor with rows of terminal spines. — This character is found in most Therevidae and belongs certainly to the plesiomorph conditions in the family.

j) Infraspiracular region partly hairy and k) Proster-num hairy. — It is at the moment impossible to state the validity of these two characters, but they seem to occur in combination in a great many Therevidae.

From the above remarks it will be seen that until now it has not been possible to fix a single apomorph character which can motivate the reason for acceptance of *Dialineura* Rond. with its up to the present established stock of species (listed on p. 149) as a monophyletic unity. All the characters hitherto used are either plesiomorphic or occur by convergence in other parts of the family.

4. Taxonomy of five Palearctic species of *Dialineura* Rondani

4.1. Key to the species

Males

1. Face provided with long, blackish hairs similar to the frontal hairs. Halteres with blackish knob *affinis* n. sp.
- Face bare 2.
2. Ventral appendages (paraprocts) at posterior margin of epandrium much longer than dorsal appendages (cerci) (Figs. 21—22 and 28—29) 3.
- Ventral and dorsal appendages at posterior margin of epandrium of nearly equal length (Figs. 1—2 and 8—9) 4.
3. Halteres with blackish knob. Anterior third of tergite 2 blackish-brown *nigrofemorata* Kröb.
- Halteres with whitish knob. Anterior third of tergite 2 whitish dusted as rest of abdomen *intermedia* n. sp.
4. Frontal hairs blackish. Stigma yellowish *anilis* L.
- Frontal hairs whitish. Stigma brownish *albata* Coq.

Females

The females of *affinis* and *intermedia* are unknown.

1. All femora blackish-grey except for extreme tips *nigrofemorata* Kröb.
- At least f_2 and f_3 predominantly yellowish 2.
2. Also f_1 yellowish. Abdominal tergites with a nearly uniform coloration, only an indistinct darker coloration in midline *anilis* L.
- f_1 more or less blackish-grey. Abdominal tergites with extensively blackish coloration on anterior parts *albata* Coq.

4.2. *Dialineura anilis* (Linné, 1761)

Musca anilis Linné, 1761, Fauna Sv.: 442, 1791. T.t.: Scania, Sweden.

Material

A single male specimen with an old label of “*anilis*” in the Linnean Collection in London must be taken as the type. It is not well preserved, as both third antennal joints, left hind leg, and right wing are lost. The specimen

is also moulded. It agrees well with the description and represents a male of the species so well-known as *Dialineura* (or *Tabuda*, or *Thereva*) *anilis* L.

The following redescription is based on a large material from Sweden and Denmark.

Male

Length. Total: 7.2—9.4 mm. Average: 8.5 mm.

Head. Length 110—120, height 125—145, width 180—210. Eye: length 75—85, height 105—125. Gena 20, frontal protuberance 10—15, occipital protuberance 25. Antennal insertion ca. 85:55. Antennae: first joint 37—41:23—26, second joint ca. 10:15, third joint 28—31:16. Style 8—10, two-jointed with short apical spine. Proboscis reaches well beyond level of antennal base. Palpi much shorter than proboscis. Eyes narrowly separated by as much as one-third of width of anterior ocellus. Frons, face and upper part of occiput yellowish-grey to brownish-grey dusted, other parts of head whitish-grey dusted, at level of antennal base a mat brownish band. Frons is slightly raised and with a rather long and mainly blackish pubescence. Face bare. Gena and occiput with long yellowish-white pubescence. 12—14 postocular setae (length ca. 25) and a similar number of occipital setae. The thickened first antennal joint is dusted like the frons and has a long pile of mainly blackish setulose hairs. Some of the basal hairs may be softer and paler. Also second and base of third joint are dusted, rest of third joint blackish.

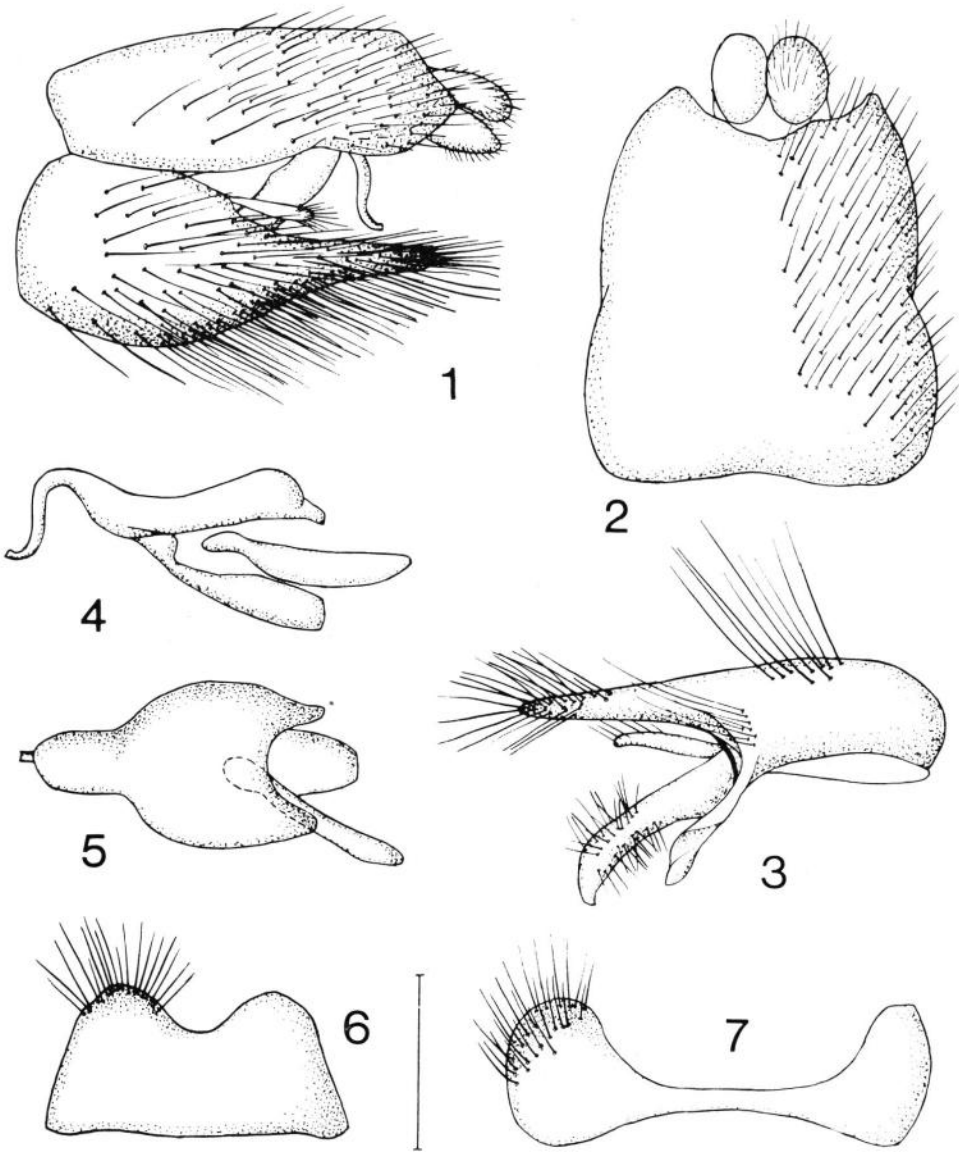
Thorax. Mesonotum: length 190—225, width 150—175. 3 (—4) n, 2 sa, 1 pa setae. Normally 2 pairs of dc setae, and sometimes an additional third seta on one or both sides. Mesonotum with three greyish to yellowish-grey bands separated by two narrow and indistinct paler stripes. Also lateral parts of mesonotum paler greyish. Pubescence of mesonotum rather long and whitish to yellowish with darker hairs intermixed. Scutellum greyish and with pale pubescence; 4 setae. Pleura greyish with pale pubescence.

Wing. Length 475—560, width 185—240. Basal vein of discal cell oblique. Cell M_3 always broadly open. Vein r_4 S-curved. Index of cell R_4 about 170:70. Vein r_1 not setulose on dorsal surface. Ground colour whitish hyaline; an indistinct yellowish stigma. Veins strong, yellowish to dark brownish, and partly seeded with brownish shadows. Halteres with a yellowish-white knob.

Legs. f_1 and f_2 without setae. f_3 with a row of av setae. t_1 with rows of ad, pd, and pv setae, the ad and av confined to the basal two-thirds and some of them longer than width of t_1 . Length of t_1 150—175, width 15. t_2 and t_3 with rows of ad, pd, av and pv setae. Coxae greyish. Femora blackish with yellowish tips and distinct greyish dust; their pubescence whitish. Tibiae and tarsi yellowish-brown with tips more or less distinctly darkened. Claws and pulvilli normal.

Abdomen. Length 425—500, width 175—200. All tergites and sternites silvery-grey dusted, and with soft pubescence of whitish hairs. Whitish-yellow hindmarginal hems are distinct on most segments.

Terminalia. (Figs. 1—7). Both epandrium and gonocoxites greyish as rest of abdomen; epandrium sometimes more or less brownish apically. Epan-



Figs. 1—7. Male terminalia of *Dialineura anilis* (L.), Denmark, Løkken, 12.6.1919, Th. Mortensen leg. — 1. Terminalia in lateral view; 2. Epandrium, cerci and paraprocts in dorsal view; 3. Gonocoxite in ventral view; 4. Aedeagus in lateral view; 5. Aedeagus in dorsal view; 6. Sternite 8; 7. Tergite 8. Scale: 0.5 mm.

drium with short hairs, gonocoxites with longer hairs. Epandrium (Fig. 2) nearly square, with a moderately deep incision in hind margin. Gonocoxite slightly shorter than epandrium (Fig. 1), its hind part projecting as a long distal process. The free end of gonapophysis far from reaching level of end

of distal process, but clearly visible (though weakly sclerotized) in lateral view because of the wide space between dorsal margin of gonocoxite and latero-ventral margin of epandrium. Hypandrium completely reduced. Stylus clearly visible in lateral view (Fig. 1); seen ventrally (Fig. 3) it is nearly as long as the distal process of the gonocoxite. Ventral lobe is a long, narrow and lamellate structure; its distal margin free. Cerci and paraprocts of equal length, distinctly protruding beyond level of epandrium. Aedeagus free. Phallus short and proximally broad; in lateral view (Fig. 4) it curves for more than 90° , and terminates as a short, upcurved tip. Dorsal apodeme in lateral view (Fig. 4) is short and high; in dorsal view (Fig. 5) nearly thrice as broad as proximal end of phallus, its distal margin being incurved. Ventral apodeme large and broad. Ejaculatory apodeme distinctly projects beyond level of dorsal apodeme, seen laterally it is rather broad in the distal three-fourths.

Female

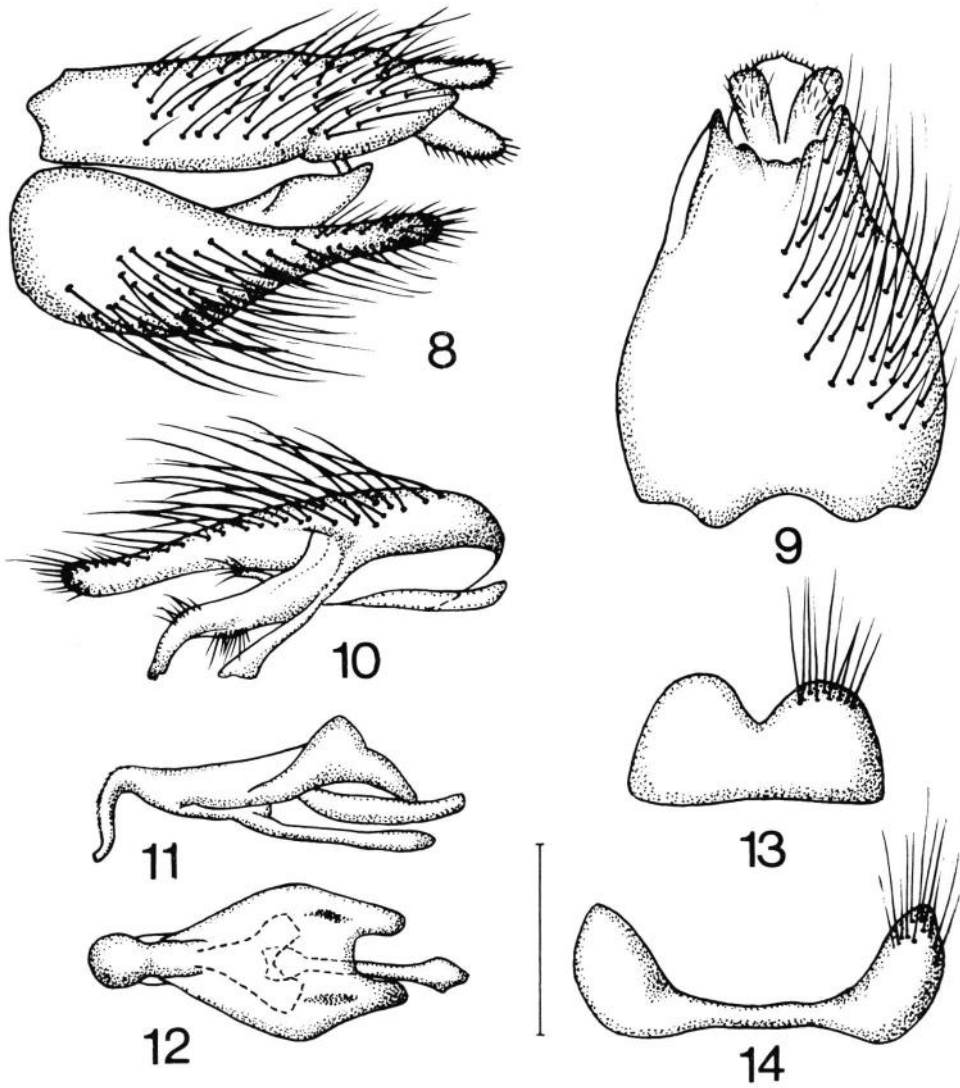
Length. Total: 9.0—10.6 mm. Average: 9.8 mm.

Head. Length 120—130, height 120—140, width 200—220. Eye: length 75—80, height 100—120. Gena 20—25, frontal protuberance 20—25, occipital protuberance 25—30. Antennal insertion ca. 75:55. Width of frons at level of upper ocelli 50—60, and at level of antennae 110—130. Antennae: first joint 43—50:25—30, second joint ca. 10:16, third joint 32—35:16—18. Style 10—12. Proboscis reaches well beyond level of antennal base. Palpi much shorter than proboscis. — Frons yellowish-grey to brownish-grey dusted, below middle with a more or less distinct transverse, mat brownish band; its pubescence short and blackish. Seen in profile a mat dark band is present at level of antennal bases. Face, gena and occiput whitish-grey dusted. Face without hairs, gena and occiput with yellowish to whitish pubescence. 8—10 postocular setae, 12—14 occipital setae. Antennae coloured as in male.

Thorax. Mesonotum: length 250—270, width 180—200. (2)—3 n, 2 sa, 1 pa setae. Normally 2 pairs of dc setae, in 5 % of the specimens an additional third seta on one side, in other 4 % only 1+2 setae. Mesonotum rather variable in colour. The three broad dark bands vary in colour from yellowish-grey to brownish, and are always separated by paler stripes, and also lateral and posterior parts of mesonotum are paler greyish. The posterior part shows often a brownish median line in front of scutellum. The pubescence is short and composed of blackish and yellowish hairs. Scutellum greyish with pale pubescence; 4 setae. Pleura greyish with pale pubescence.

Wing. Length 575—625, width 225—275. Basal vein of discal cell oblique. Cell M_3 always broadly open. Vein r_4 S-curved. Index of cell R_4 about 190:80. Vein r_1 not setulose on dorsal surface. Colour as in male, but wings of a more yellowish-brown coloration due to more distinct shadows along the veins. Halteres with a yellowish-white knob.

Legs. Chaetotaxy of both femora and tibiae as in male. Length of t_1 200—220:18—20. Coxae greyish. All femora, tibiae and tarsi yellowish, only tips of tibiae and tarsi more or less distinctly darkened. Claws and pulvilli normal.



Figs. 8—14. Male terminalia of *Dialineura albata* (Coq.), paratype, Japan, Mitsukuri. — 8. Terminalia in lateral view; 9. Epandrium, cerci and paraprocts in dorsal view; 10. Gonocoxite in ventral view; 11. Aedeagus in lateral view; 12. Aedeagus in dorsal view; 13. Sternite 8; 14. Tergite 8. Scale 0.5 mm.

Abdomen. Length 475—600, width 210—230. All tergites are greyish, on tergites 2—5 a more or less distinct brownish middle stripe. Tergite 2 shows a distinct yellowish-white hindmarginal hem, tergite 3 a narrower hem, while tergites 4—7 have the hind margins more or less yellowish-brown, being most distinct on tergite 7. Pubescence short and pale. The sternites are greyish with pale pubescence. Ovipositor with terminal spines as normal in the family.

4.3. *Dialineura albata* (Coquillett, 1898)

Psilocephala albata Coquillett, 1898, Proc. U.S. Nat. Mus., 21: 317. T.t.: Japan.

Material

Three male paratypes and two female paratypes in U.S. National Museum, Washington, all labelled "Japan, Mitsukuri". A male labelled "Tamba, Sa-sayama, 30.IV.1958, A. Nagatomi", and a male labelled "Kiushiu, Japan", and "Tabuda alba Coq., det. Kröber 1927" both in U.S. National Museum. Nine males and two females labelled "Japon, Kofou, L. Drouard de Lezey 1906" in Museum Paris.

Redescription (based on the paratypes)

Male

Length. Total: 8.2—9.0 mm.

Head. Length 120—125, height 145—160, width 215—225. Eye: length 90, height 120—130. Gena 25—30, frontal protuberance 10, occipital protuberance 20—25. Antennal insertion ca. 95: 55. Antennae: first joint 38: 21, second joint 8: 16, third joint 38—50: 16—17. Style 8—10, two-jointed with short apical spine. Other characters of the head as in *anilis*, but also frons and face whitish-grey dusted, and frons with exclusively whitish pubescence. Postocular setae fewer (about 10) and shorter than in *anilis*.

Thorax. Mesonotum: length 210—220, width 175. Chaetotaxy as in *anilis*, but only 1 pair of dc setae. Mesonotum with four brownish-grey bands, i.e., the dark median band of *anilis* is divided by a paler, median line. Pubescence of mesonotum only half as long as in *anilis*, composed of both blackish and yellowish hairs as in this species. Other characters as in *anilis*.

Wing. Length 500, width 225—230. Index of cell R_4 about 170: 80. Other structures as in *anilis*. Ground-colour and veins darker than in *anilis*, and stigma distinctly dark brownish. Halteres with a blackish knob.

Legs. As described for *anilis*.

Abdomen. Length 480—490, width 200—215. Coloration as in *anilis*.

Terminalia. (Figs. 8—14). Epandrium and gonocoxites greyish, epandrium sometimes more or less brownish. Both structures with long, pale pubescence. Epandrium (Fig. 9) as long in midline as maximal width, with a sinuate fore margin and a moderately deep incision in hind margin. Distal part of epandrium clearly set off from the proximal part. Gonocoxite slightly shorter than epandrium (Fig. 8), its hind part projecting as a long distal process. Free end of gonapophysis not visible in lateral view. It is relatively more reduced than in *anilis*, but clearly visible in ventral view (Fig. 10). Hypandrium completely reduced. Stylus clearly visible in lateral view (Fig. 8), and seen ventrally (Fig. 10) is distinctly shorter than the distal process of gonocoxite. Ventral lobe is a long, narrow and lamellate structure. Cerci formed as two small, oval sclerites. Paraprocts fused, do not overhang the cerci. Aedeagus free. Phallus (Fig. 11) short, abruptly downcurved and with

the tip slightly upcurved. Seen dorsally (Fig. 12) the proximal part is provided with two lamellate ridges which are dentate. Dorsal apodeme in lateral view (Fig. 11) has two strong dentate processes; in dorsal view (Fig. 12) the hind margin has a deep narrow incision. Ventral apodeme much narrower than in *anilis*. Ejaculatory apodeme is as shown in the figures.

Female

Length. Total: 10.3—10.6 mm.

Head. Length 125—130, height 140, width 230. Eye: length 90, height 110. Gena 30, frontal protuberance 15, occipital protuberance 20. Antennal insertion 100:40. Width of frons at level of upper ocelli 60, and at level of antennae 140. Antennae: first joint 48:24, second joint 10:17, third joint 40—42:19. Style 10. — Coloration and pubescence nearly as in *anilis*, but lower part of frons whitish dusted and with whitish hairs, blackish pubescence of rest of frons longer than in *anilis*. Pubescence of gena and occiput also longer and pure whitish. Antennae colored as in male.

Thorax. Mesonotum: length 250, width 200. Chaetotaxy as in *anilis*, but only 1 pair of dc setae. Colour of mesonotal bands dark brownish, and middle band divided by a more or less distinct, pale, median line. Pubescence as in male, and shorter than in the female of *anilis*. Pubescence and dusting of pleura more whitish-grey.

Wing. Length 630, width 280. Index of cell R_4 210:90. Other characters as described for male.

Legs. Chaetotaxy as described for male of *anilis*. Length of t_1 215, width 20. Coxae whitish-grey. f_1 greyish with tip and ventral surface more or less yellowish. f_2 and f_3 yellowish with dorsal surface of tip of f_3 greyish. Also tibiae and tarsi are yellowish with darkened tips. Claws and pulvilli normal.

Abdomen. Very different in coloration from the female of *anilis*. Tergite 1 pale greyish, semi-shining, not thickly dusted. Tergites 2 and 3 predominantly blackish to blackish-brown and shiny. Tergite 2 with two small, semi-circular, lateral areas at posterior margin whitish-grey dusted; tergite 3 with larger similar areas of same coloration. The whitish-grey areas do not reach the lateral margins (as seen in dorsal view) and are thus separated from the actual lateral parts of the tergites (only visible in lateral and ventral view) which are also whitish-grey. Also the pattern of tergites 4—6 shows this principal nature, but the whitish-grey areas on dorsal side become more and more dominant towards the caudal segments, which are shiny blackish. Hindmarginal hems yellowish-brown and distinct on most segments. Pubescence short, pale and adpressed. Sternites greyish with pale pubescence.

4.4. *Dialineura affinis* n. sp.

Material

Holotype. Male labelled "Chengt'u 1933", and "Szechwan, China, D.C. Graham, IV-11-14, alt. 1700 ft." It is deposited in U.S. National Museum, Washington. The holotype is in good condition, though only right p_1 and p_2 are intact. The specimen is also a little deformed by pressure.

Description.

Male

Length. Total: 9.8 mm.

Head. Length 140, height 180, width 240. Eye: length 100, height 155. Gena 25, frontal protuberance 15, occipital protuberance 25. Antennal insertion 90:70. Antennae: first joint 50:25, second joint 11:15, third joint 44:16. Style 8, two-jointed with short apical spine. Other characters of the head as described for *anilis*, with the following exceptions: The face bears long blackish hairs similar to those on the frons, and the frontal pile is longer than in *anilis*. The pile of first antennal joint is dominated by pale hairs; only a few of these around the apex of the joint are setulose and blackish. The occiput is, mainly ventrally, subshining with a broad dusted band along eye-margin.

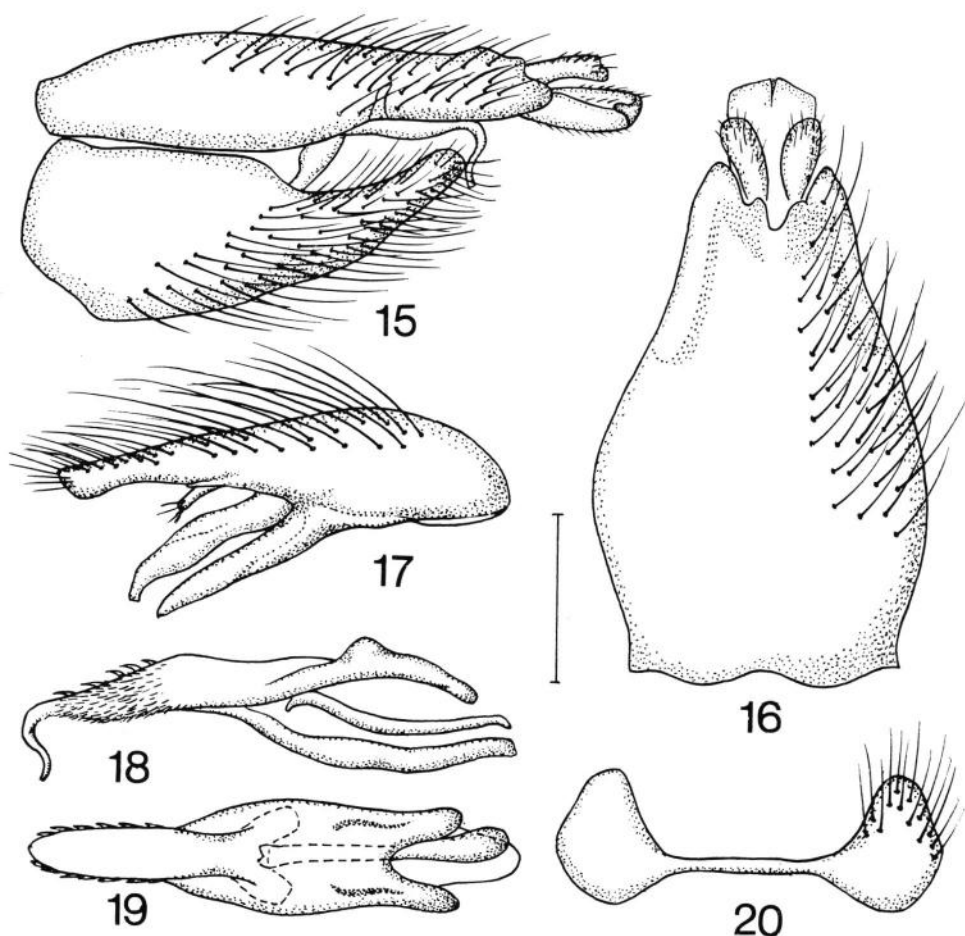
Thorax. Mesonotum: length 270, width 200. Chaetotaxy as in *anilis*, but only 1 pair of dc setae. Mesonotum greyish with pattern of four brownish bands, i.e., the dark median band of *anilis* is divided into two bands by a narrow, paler, median line, and the lateral bands are broader than in *anilis*. The lateral bands are also distinct in front of the suture. Other characters of thorax as in *anilis*, but scutellum brownish on most of dorsal surface.

Wing. Length 600, width 270. Index of cell R_4 170:70. Other wing-characters as in *anilis*, but stigma distinct and dark brownish. Knob of halteres dark.

Legs. As described for *anilis*.

Abdomen. Length 500, width 200. Colour and pubescence as in *anilis*, but entire tergite 1 and anterior margin of tergites 2 and 3 is undusted and blackish-grey. Also tergite 3 has a small blackish spot in midline.

Terminalia. (Figs. 15—20). Epandrium yellowish-brown medially in distal half, the rest and also the gonocoxites are greyish. Pubescence long and blackish. Epandrium (Fig. 16) longer than broad; its fore margin with a moderate incision, and hind margin with a deeper incision. Distal part of epandrium clearly set off from the proximal part; in lateral view (Fig. 15) a distinct incision is visible. Gonocoxite distinctly shorter than epandrium (Fig. 15); its hind part projecting as a long distal process. Free end of gonapophysis not visible in lateral view. It is relatively more reduced than in *anilis*, but clearly visible in ventral view of the gonocoxite (Fig. 17). Hypandrium completely reduced. Stylus clearly visible in lateral view (Fig. 15), and seen ventrally (Fig. 17) is distinctly shorter than distal process of gonocoxite. Ventral lobe is a long, narrow and lamellate structure. Cerci formed by two small, oval sclerites. Paraprocts slightly enlarged, about one and a half times as long as the cerci, and less than one-fourth of the length of the epandrium. Aedeagus free. Phallus long, its proximal part nearly straight (Fig. 18) and when seen dorsally (Fig. 19) of equal width throughout its length. Dorsal margin of proximal part of phallus formed as sharp edges which bear some spiny protuberances; the rest is covered by small microtrichia. Its distal part forms a short, narrow S. Dorsal apodeme in lateral view (Fig. 18) is rather flat and with a pair of rounded, dentate



Figs. 15—20. Male terminalia of *Dialineura affinis* n. sp., holotype, China, Szechwan, IV-11-14, alt. 1700 ft., D. C. Graham. — 15. Terminalia in lateral view; 16. Epandrium, cerci and paraprocts in dorsal view; 17. Gonocoxite in ventral view; 18. Aedeagus in lateral view; 19. Aedeagus in dorsal view; 20. Tergite 8. Scale: 0.5 mm.

processes. Seen dorsally (Fig. 19) it is of nearly equal width; its distal margin with a deep, roundish incurvation. Both ventral and ejaculatory apodemes slightly longer than dorsal apodeme. Ejaculatory apodeme narrow in lateral view, and spoon-shaped in dorsal view.

Female

Unknown.

4.5. *Dialineura intermedia* n. sp.

Material

Holotype. Male labelled "Dauria, F. Sahlb., 571". Paratypes. Two males labelled "Dauria, F. Sahlb.". All three specimens with an additional minute,

square, whitish label. Holotype and one paratype in the Zoological Museum, Helsinki, Finland. The second paratype in the Zoological Museum, Copenhagen, Denmark. *Dauria* is an old name for the district SE of lake Baikal, USSR.

Description

Male

Length. Total 8.6—9.3 mm.

Head. Length 120, height 135—145, width 210—225. Eye: length 90, height 130—135. Gena 10, frontal protuberance 5—10, occipital protuberance 20—25. Antennal insertion 105: 30—40. Antennae: first joint 40—45: 25, second joint ca. 9: 17, third joint 38: 19. Style 12, two-jointed with short apical spine. Other characters of the head as described for *anilis*.

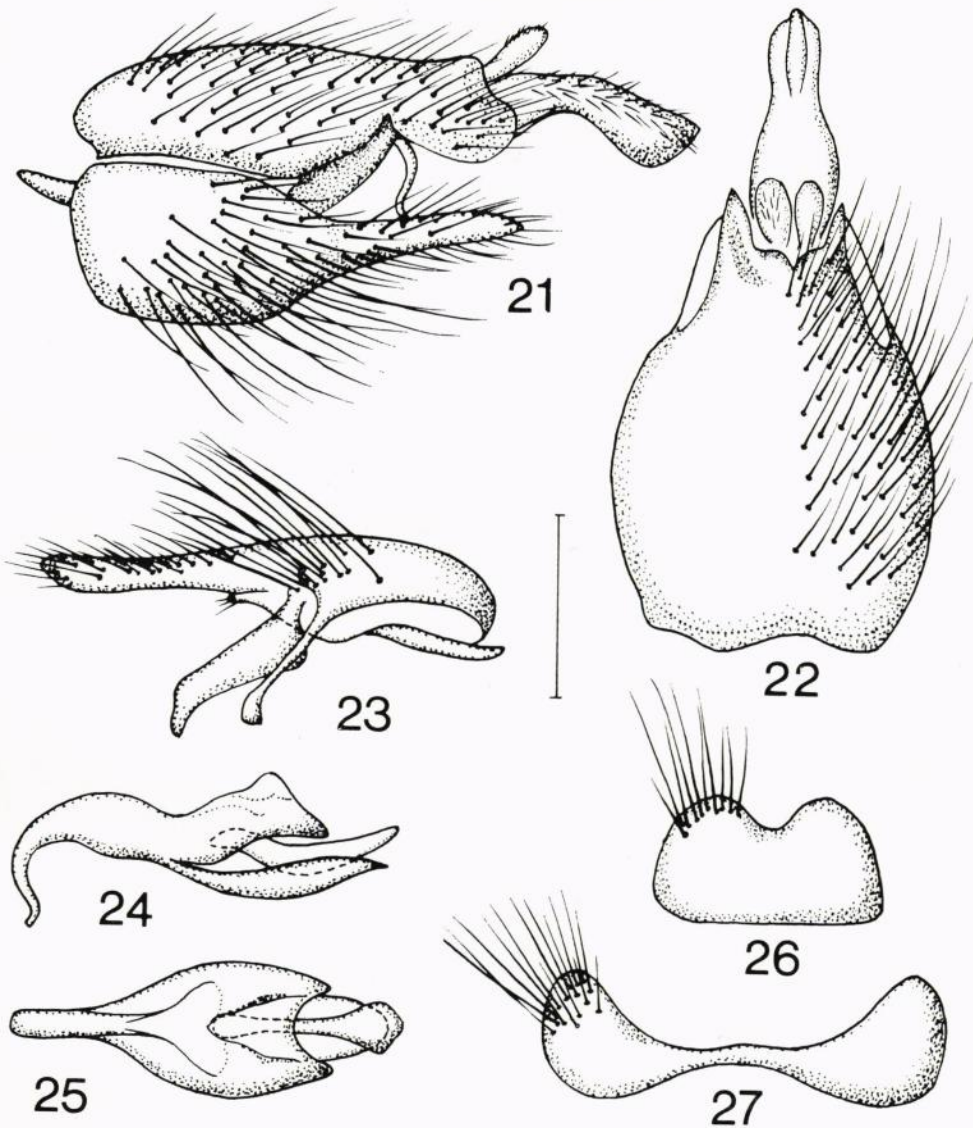
Thorax. Mesonotum: length 200—225, width 190—200. Chaetotaxy as in *anilis*; all three specimens with 2 pairs of dc setae. Ground colour of mesonotum greyish with pattern of 4 brownish longitudinal bands. Median pair of bands is separated by a narrow greyish median line and corresponds to the median band of *anilis*. Lateral pair of bands less distinct, especially in front of suture. Pubescence long and yellowish, only very few blackish hairs are intermixed. Scutellum greyish with central area brownish; pubescence pale; 4 setae. Pleura greyish with pale pubescence.

Wing. Length 560, width 230—260. Index of cell R_4 175: 75. Other structures as described for *anilis*, but cell M_3 less broadly open. Colour as in *anilis*, but a distinct, brownish stigma is present. Knob of halteres pale.

Legs. Exactly as described for *anilis*.

Abdomen. Length 520—550, width 200—220. Colour and pubescence as in *anilis*.

Terminalia. (Figs. 21—27). Epandrium greyish basally, yellowish-brown apically; gonocoxites greyish. Both structures with pubescence composed of both pale and blackish hairs. Epandrium (Fig. 22) longer than broad; its fore margin with a moderate incision, and hind margin with a deeper and more square incision. Distal third of epandrium is very clearly set off from the rest, thus indicating the two-segmented nature of the epandrium (Tergites 9+10). In lateral view (Fig. 21) a very distinct incision is visible and the margin of the distal part (=tergite 10?) seems doubled. Gonocoxite slightly longer than epandrium (Fig. 21), its hind part projecting as a long distal process. Free end of gonapophysis not visible in lateral view. It is relatively much more reduced than in *anilis*, but clearly visible as a short process in ventral view of the gonocoxite (Fig. 23). Hypandrium completely reduced. Stylus clearly visible in lateral view (Fig. 21), and seen ventrally (Fig. 23) distinctly shorter than the distal process of gonocoxite. Ventral lobe is a long, narrow and lamellate structure. Cerci formed by two small, oval sclerites. The most peculiar character of the terminalia is the enlarged para-procts, which form a united sclerite of about half the length of the epan-



Figs. 21—27. Male terminalia of *Dialineura intermedia* n. sp., holotype, Dauria, F. Sahlb., 571. — 21. Terminalia in lateral view; 22. Epandrium, cerci and paraprocts in dorsal view; 23. Gonocoxite in ventral view; 24. Aedeagus in lateral view; 25. Aedeagus in dorsal view; 26. Sternite 8; 27. Tergite 8. Scale: 0.5 mm.

drium. Aedeagus free. Phallus is short and forms a narrow S; its proximal part is in dorsal view (Fig. 25) narrow and of equal width throughout its length. In lateral view (Fig. 24) the dorsal apodeme is rather short and high, dorsally with two dentate processes. Seen dorsally (Fig. 25) this apodeme

is oval with a semicircular incision distally. Ventral apodeme trough-shaped and longer than the dorsal apodeme. Ejaculatory apodeme about as long as ventral apodeme; seen laterally it is shaped as a bow; when viewed dorsally the distal end is enlarged.

Female

Unknown.

4.6. *Dialineura nigrofemorata* Kröber, 1937

Dialineura nigrofemorata Kröber, 1937, Act. Inst. Mus. Zool. Univ. Athen., 1: 272, 290. T.t.: Transbaikalia.

Material

The species was described on the basis of a single female specimen from "Transbaikalia, Pjestschanka bei Tschita. VI—VII. leg. H. Trieb.". The holotype was stated to be in the Vienna Museum. In material received from U.S. National Museum, Washington, D.C., were a male and a female specimen of a *Dialineura* species. Both are labelled "Kudia River, Amagu, Siberia, Cockerell, July 1923". These two specimens are obviously conspecific, and the female agrees in every respect with the description given by Kröber of *nigrofemorata*. The hitherto unknown male is described in the following:

Length. Total: 9.8 mm.

Head. Length 130, height 150, width 235. Eye: length 90, height 125. Gena 25, frontal protuberance 15, occipital protuberance 25. Antennal insertion 100:50. Antennae: first joint 50:32, second joint 9:19, third joint 38:16. Style 15, two-jointed with rather long apical spine. Other characters of the head as described for *anilis*.

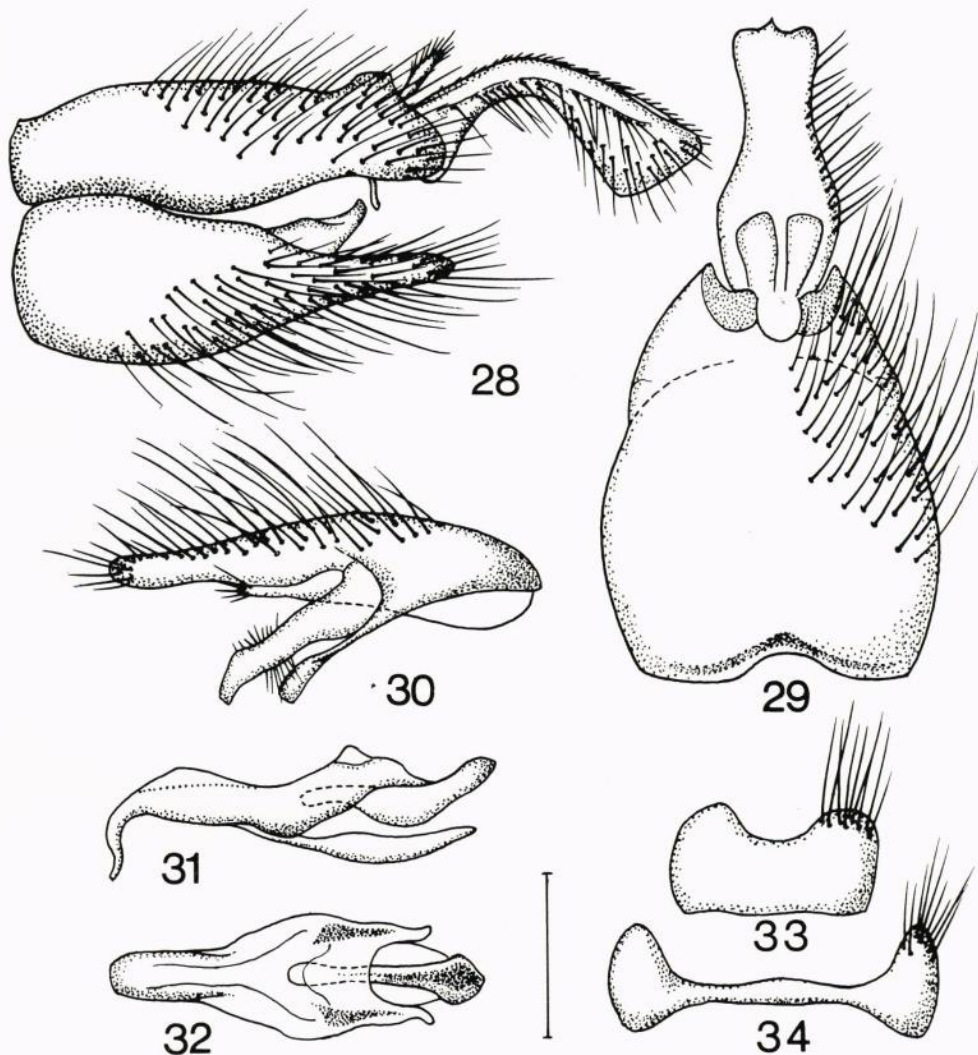
Thorax. Mesonotum: length 250, width 225. Chaetotaxy as in *anilis*. Mesonotum as in *anilis* but with three dark bands. These are dark brownish and separated by paler greyish-brown stripes. There is a very faint indication of a paler median line (but not the distinct separation of the median dark band into two well-separated brownish stripes as described for *albata*, *affinis* and *intermedia*). Other characters of thorax as in *anilis*.

Wing. Length 610, width 285. Index of cell R_4 210:80. Other wingstructures as in *anilis*. Stigma darker than in *anilis*, but not as dark as in *intermedia*. Its colour may be termed pale yellowish-brown. Knob of halteres dark.

Legs. As described for *anilis*, but length of t_1 200, width 18.

Abdomen. Length 580, width 225. Colour and pubescence as in *anilis*, but tergites 2 and 3 undusted along anterior margin.

Terminalia. (Figs. 28—34). Epandrium greyish with hind margin narrowly yellowish-brown; gonocoxites greyish. Pubescence long and mainly blackish. Epandrium (Fig. 29) broader than long in midline; its fore margin with a



Figs. 28—34. Male terminalia of *Dialineura nigrofemorata* Kröb., Siberia, Kudia River, Amagu, July 1923, Cockerell. — 28. Terminalia in lateral view; 29. Epandrium, cerci and paraprocts in dorsal view; 30. Gonocoxite in ventral view; 31. Aedeagus in lateral view; 32. Aedeagus in dorsal view; 33. Sternite 8; 34. Tergite 8. Scale: 0.5 mm.

moderate incision, and hind margin also with a moderately deep incision, the bottom of which has a semicircular incurvation. Distal part of epandrium clearly set off from basal shield. Gonocoxite slightly longer than epandrium (Fig. 28); its hind part projects as a long distal process. Free end of gonapophysis not visible in lateral view. It is relatively more reduced than in *anilis*, but clearly visible in ventral view of the gonocoxite (Fig. 30). Hypandrium completely reduced. Stylus clearly visible in lateral view (Fig. 28), and seen

ventrally (Fig. 30) is distinctly shorter than the distal process of gonocoxite. Ventral lobe is a long, narrow and lamellate structure. Cerci formed by two small, oval sclerites. Paraprocts strongly enlarged, about two-thirds the length of the epandrium. Aedeagus free. Phallus is short and forms a narrow S; its proximal part is considerably broader than in *intermedia* and the lateral margins are formed as two raised ridges. Dorsal apodeme is of nearly the same shape as in *intermedia*, but its distal part has longer processes. Shape of the ventral and ejaculatory apodemes nearly as described for *intermedia*.

Female

Length. Total: 10.8 mm.

Head. Length 125, height 145, width 225. Eye: length 85, height 115. Gena 20, frontal protuberance 15, occipital protuberance 25. Antennal insertion 85:60. Width of frons at level of upper ocelli 60, and at level of antennae 120. Antennae: first joint 50:23, second joint 10:17, third joint 44:17. Style 10. Lower part of frons whitish-grey dusted, and frontal hairs rather long. Otherwise the head is as described for *anilis*.

Thorax. Mesonotum: length 250, width 200. Chaetotaxy as in *anilis*. Mesonotum paler than in the male. The three bands are greyish-brown and separated by distinct pale greyish stripes. A faint indication of a pale median line. Other characters as in *anilis*.

Wing. Length 660, width 275. Index of cell R_4 225:85. Other structures as in *anilis*. Stigma pale yellowish-brown. Halteres with dark knob.

Abdomen. Length 675, width 200. Tergites 2—6 predominantly silvery-grey dusted, but with very well marked, triangular, brownish-black basal bands. In midline the blackish-brown areas occupy more than half the total length of the tergites, and they narrow gradually towards the lateral margin. Tergite 7 is also darkened basally around midline. Tergite 8 shiny blackish. Hind marginal hems whitish-yellow and especially distinct on tergites 2 and 3. Pubescence short and pale. Sternites greyish with broader, yellowish, hind marginal hems and pale pubescence. Ovipositor with terminal spines as in *anilis*.

4.7. Definition of the genus *Dialineura* Rond., based on characters of the male terminalia

As shown earlier in this paper, a critical analysis of the morphological characters which have previously been used to characterize the genus *Dialineura* gives no possibility for acceptance of the genus with its present species as a monophyletic unit. Examination of the male terminalia of the five Palaearctic species described above has given the impression that it is possible to establish a number of characters which may be termed apomorphic. It must be mentioned that these conclusions are to a great extent based on hitherto unpublished results obtained from dissections of the male terminalia of a variety of Therevidae from all parts of the world. These synapomorphic characters of the terminalia are listed and commented in the following.

a) Hypandrium (sternite 9) completely reduced. This seems to be a most important character, as I have not found it to occur in

other Therevidae. In most of the dissected species there is a narrow sclerite at the ventral bases of the gonocoxites (as shown in Figs. 38, 45, 52). In other therevids the hypandrium and the gonocoxites are fused.

b) Free terminal end of gonapophysis more or less reduced. I regard the presence of a gonapophysis with a long, free terminal end overhanging the posterior margin of gonocoxite as found in many *Therevidae* (cf. Figs. 35, 43) as a plesiomorph condition. The reduction as found in *Dialineura* is most distinct in the four East Palaearctic species and least distinct in the West Palaearctic species *D. anilis* L.

c) Gonocoxite with a long distal process. The gonocoxites are normally more or less hemispherical in shape and all tendencies toward formation of processes and other peculiar structures may be termed apomorphic. The long distal process as found in all five species described above is no doubt a compensation for the reduction of the free end of gonapophysis as just described.

d) Epandrium more or less distinctly two-segmented. It seems natural to accept the epandrium of Brachycera as being a fusion of at least two tergites (9+10). In all other Therevidae hitherto seen there is no indication of this apparently bisegmental nature, the epandrium forming a uniform sclerite. When examining the terminalia of *D. anilis* for my basic study (Lyneborg, 1968), I was struck by the distinct incision on the lateral margin of the epandrium, this indicating a bisegmental nature. The examination of an additional four species has strengthened this opinion, as all these also show the same incision under formation of a distal part of the epandrium which is clearly different in its structure from the proximal part of the epandrium. This could seem a most plesiomorph condition, but is obviously of secondary nature and I therefore regard it as an apomorph condition.

e) Ventral lobe long and narrow. The ventral lobe is normally much shorter than the stylus (see Figs. 37, 46), often rounded, but may also be narrow.

f) Dorsal apodeme with dentate processes. Compared with species of other genera (*Thereva* Latr., *Psilocephala* Zett.), the two distinct dentate processes on the dorsal surface of the so-called dorsal apodeme (Lyneborg, 1968) may be regarded as an apomorph character. They are less distinct in *anilis* than in the four eastern species.

g) Paraprocts more or less enlarged. The peculiar enlargement of the paraprocts of *intermedia* and *nigrofemorata* is absolutely an apomorph condition. A tendency to the same is also found in *affinis*. The same character occurs by convergence also in other parts of the family.

The above listed seven apomorph characters of the male terminalia seem enough to secure that *Dialineura*, with the here proposed preliminary inclusion of five Palaearctic species, is a monophyletic unit. The enlargement of the first antennal joint (see p. 150) can be listed as an eighth synapomorphy.

5. Notes on three Nearctic species of Therevidae which have been associated with *Dialineura* Rondani

As mentioned earlier in this paper I had not planned to investigate the Nearctic members of *Dialineura* Rond. However, the access to a single spe-

cimen of *Thereva melanophleba* Loew and to some specimens of *Thereva willistoni* Cole and *Tabuda fulvipes* Walker kindly sent me by Dr. L. V. Knutson, Washington, D.C., made it possible to describe and figure the male terminalia and compare these with the terminalia of *Dialineura*. Unfortunately, the mentioned specimens from the National Museum were partly or completely destroyed during the dispatch. The conclusions to be drawn are that *melanophleba* Lw. and *crassicornis* Will., both of which were treated as species of *Dialineura* by Cole (1923, 1965), by no means can be retained in this genus in its now established definition based on the male terminalia and listed on p. 164. Also the dissection of the male terminalia of *Tabuda fulvipes* Wlk. makes it evident that *Tabuda* Wlk. is a genus characterized by some highly apomorph characters in the male terminalia. More details are given under the various species.

5.1. *Thereva melanophleba* Loew, 1876

Thereva melanophleba Loew, 1876, Ztschr. f. d. ges. Naturw. N.F., 14: 317. T.t.: San Francisco.

Material dissected

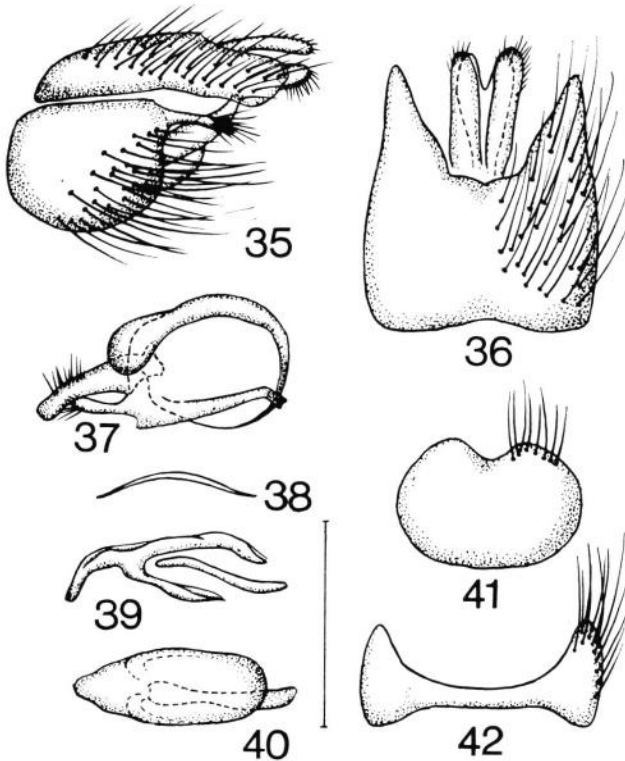
A male specimen labelled "Pacific Grove, Cal., May 8.06, J. M. Aldrich coll.", in U.S. National Museum, Washington, D.C.

Description of male terminalia (Figs. 35—42)

Both epandrium and gonocoxites greyish with whitish pubescence. Epandrium (Fig. 36) broader than long in midline, its fore margin nearly straight, its hind margin with a deep incision which is strengthened by the elongated hind-corners. Gonocoxite reaches only to middle of epandrium (Fig. 35), its shape nearly circular. Dorsally is a gonapophysis with a long, free, terminal end. Hypandrium present as a very narrow sclerite (Fig. 38). Stylus and ventral lobe clearly visible in lateral view (Fig. 35). Seen ventrally (Fig. 37) stylus is longer than free end of gonapophysis. Ventral lobe broad and rather membranous. Cerci and paraprocts of equal length; both slightly overhang hind margin of epandrium. Aedeagus free. Phallus (Fig. 39) short, not curving for more than 75° and with a ridge laterally; seen dorsally (Fig. 40), broad proximally and rapidly narrowing. Dorsal apodeme narrow when seen laterally (Fig. 39) and with distal end downcurved. Seen dorsally (Fig. 40), together with the phallus it forms an oval sclerite. Ventral apodeme short and shaped as a flat trough. Ejaculatory apodeme longer than ventral apodeme, slightly S-curved in lateral view, and with slightly thickened ends when seen dorsally.

Remarks

When comparing the above description and the figures with the seven synapomorph characters of the male terminalia of *Dialineura* just listed, it will be seen that none of these apomorphies occur in *melanophleba* Lw. Despite the fact that *melanophleba* has the first antennal joint thickened, the fourth posterior cell open and other trivial characters as in *Dialineura*,



Figs. 35—42. Male terminalia of *Thereva melanophleba* Lw., California, Pacific Grove, May 8. 06, J. M. Aldrich coll. — 35. Terminalia in lateral view; 36. Epandrium, cerci and paraprocts in dorsal view; 37. Gonocoxite in ventral view; 38. Hypandrium; 39. Aedeagus in lateral view; 40. Aedeagus in dorsal view; 41. Sternite 8; 42. Tergite 8. Scale 0.5 mm.

there is no basis for treating the species as a *Dialineura*. The species seems to have a close affinity to *Thereva* Latr., but no definitive conclusion can be drawn at the moment.

5.2. *Thereva willistoni* (Cole, 1965)

New name for *Thereva crassicornis* Williston, 1886, Trans. Am. Ent. Soc. Philad., 13: 293. T.t.: California; preoccupied by *Thereva crassicornis* Bellardi, 1861, Saggio di Ditterol. Mess., 2: 88.

Material dissected

A male specimen labelled "West. Wash. Ty. /H. K. Morrison", in U.S. National Museum, Washington, D.C.

Description of male terminalia (Figs. 43—50)

Epandrium and gonocoxites mainly yellowish-brown; gonocoxites and dorsal projections of epandrium with blackish hairs, the rest of epandrium

with whitish hairs. Epandrium in lateral view (Fig. 43) very high (i.e., strongly arched), its hind part projecting dorsally. Seen dorsally (Fig. 44) the fore margin has a moderate incision, while the hind margin has a very deep incision which is strengthened by the lateral projections. Gonocoxite rather long and narrow in lateral view (Fig. 43), its hind margin with a finger-shaped projection, the apex of which does not reach to level of hind margin of epandrium. The gonocoxite bears a gonapophysis with a long, free end. Hypandrium present as a narrow sclerite (Fig. 45). Stylus or ventral lobe not visible in lateral view. In ventral view of the gonocoxite (Fig. 46) a long, narrow stylus appears, while the ventral lobe is short and narrow. Cerci and paraprocts are of nearly same length, but do not overhang hind margin of epandrium. Paraprocts form a heart-shaped sclerite. Aedeagus free. Proximal part of the phallus (Fig. 49) first upcurved, then suddenly downcurved, the distal end being slightly upcurved. Seen dorsally (Fig. 50) it is rather narrow proximally. Dorsal apodeme with upcurved distal end; seen dorsally (Fig. 50) it is practically oval with broadly rounded distal end. Ventral apodeme formed as a deep trough. Ejaculatory apodeme small.

Remarks

Although *Thereva willistoni* has a strong superficial similarity to the Palaearctic species of *Dialineura* described above, the characters of the male terminalia show that there is no close affinity between *willistoni* and the Palaearctic *Dialineura* species. As is the case with *melanophleba*, not a single one of the seven synapomorph characters of the *Dialineura* terminalia occurs in *willistoni*. Its affinity may be solved in the future. Meanwhile it is most correct to use the name in combination with *Thereva*.

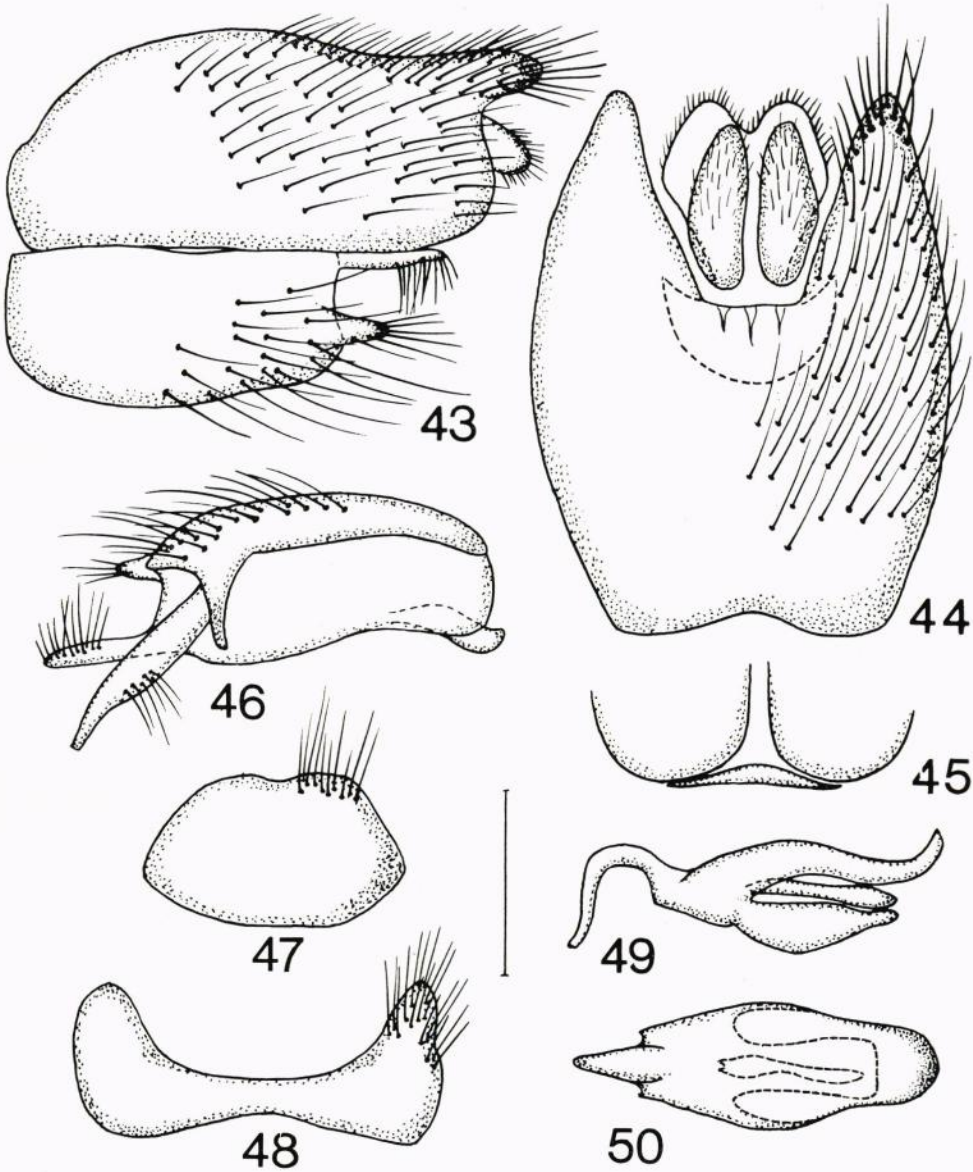
5.3. *Tabuda fulvipes* Walker, 1852

Thereva nervosa Walker, 1848, List Dipt. Ins. Brit. Mus., 1: 223. T.t.: Georgia.

Tabuda fulvipes Walker, 1852, Ins. Saunders., Dipt. 1: 197 (new name for *Thereva nervosa* Wlk., 1848, nec *Thereva nervosa* Loew, 1847, Dipt. Beitr. 2: 28).

Material

Though Walker did not make any comments on it, there can be little doubt that he created *Tabuda fulvipes* as a new name after discovering that his *Thereva nervosa* was preoccupied by Loew (1847). Walker's two descriptions are practically identical and have surely been made from the same specimen. This is in the British Museum and was received for examination through the kind help of Mr. Adrian C. Pont. The specimen is a male and in bad condition. It is strongly discoloured all over; both wings (except base of left wing) are lost; and right p_1 and p_2 , left p_2 and also parts of the tarsi of the remaining legs are lost. It bears three labels, the first circular with green border and "Type", the second "Georgia", and the third "One of Walkers series so named, EAW." and "Thereva nervosa Walk." *Thereva nervosa* was described on the basis of a male specimen from Georgia originating from Mr. Abbot's collection. *Fulvipes* was the monotypic basis for the genus



Figs. 43—50. Male terminalia of *Thereva willistoni* (Cole), West. Wash. Ty., H. K. Morrison. — 43. Terminalia in lateral view; 44. Epandrium, cerci and paraprocts in dorsal view; 45. Hypandrium and bases of gonocoxites in ventral view; 46. Gonocoxite in ventral view; 47. Sternite 8; 48. Tergite 8; 49. Aedeagus in lateral view; 50. Aedeagus in dorsal view. Scale: 0.5 mm.

Tabuda erected by Walker in 1852. The holotype in the British Museum was found to be identical with a small series received from the National Museum as *Tabuda fulvipes* Wlk.

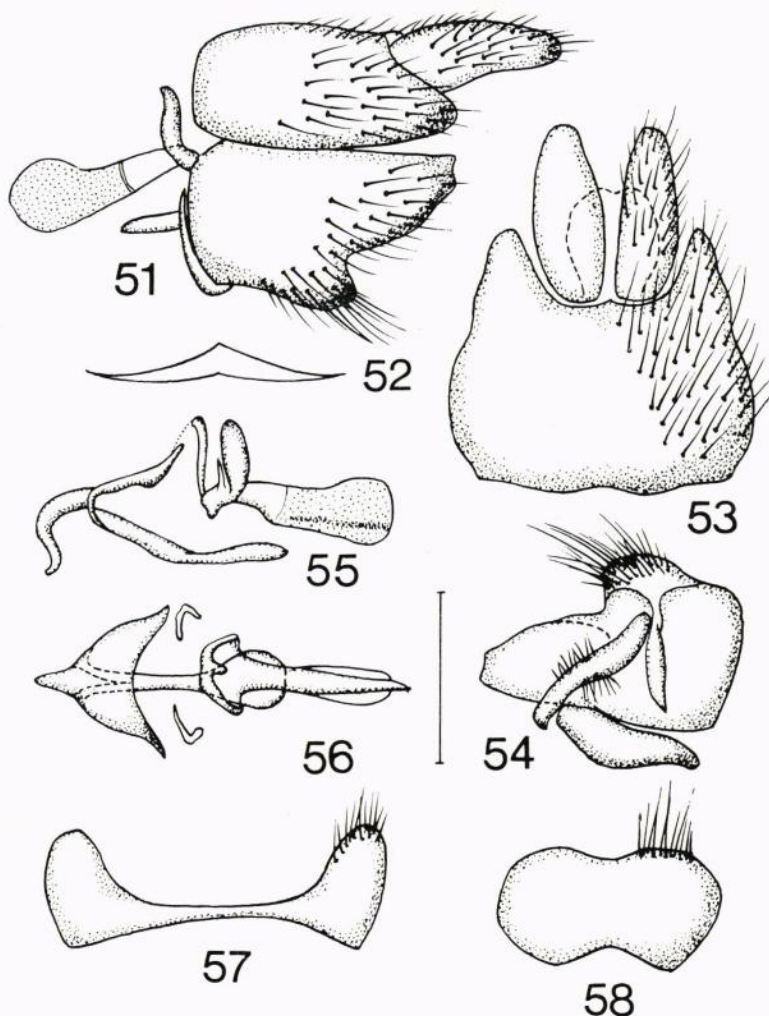
Terminalia. (Figs. 51—58) Epandrium and gonocoxites brownish, both with pale pubescence. Epandrium (Fig. 53) broader than long in midline, with a deep, roundish incision in hind margin. Epandrium and gonocoxite of equal length (Fig. 51), hind margin of the latter with a roundish knob-like process ventrally. Gonapophysis without free terminal end, developed by a strongly sclerotized area dorsally on the gonocoxite. No connection between gonapophysis and aedeagus. Hypandrium (Fig. 52) comparatively very large, forming a narrow, long sclerite which is also distinctly seen in lateral view (Fig. 51) of the terminalia. Stylus comparatively short and forms a narrow stick. Ventral lobe is formed by a narrow but rather long structure. Cerci are long and strongly sclerotized; they greatly overhang the hind margin of the epandrium. Paraprocts much shorter than cerci and only weakly sclerotized. Aedeagus free. Phallus (Fig. 55) formed as a short, curved tube which in dorsal view (Fig. 56) suddenly widens into the short and wide dorsal apodeme. This dorsal apodeme continues as a very weakly sclerotized membrane bearing two narrow lateral sclerites. Ventral apodeme much longer than dorsal apodeme, seen dorsally spoon-shaped. Ejaculatory apodeme of a very stout structure. Its proximal end is formed by two flaps and the distal end is large and darkly and strongly sclerotized.

Remarks

Tabuda and *Dialineura* have by earlier workers been treated as synonyms (see p. 149), but the structures of the male terminalia clearly show that they are very distinct genera apart from the superficial similarity in certain characters of the external morphology. *Tabuda fulvipes* does not possess any of the seven apomorphies listed for *Dialineura* on p. 164. On the other hand, the terminalia of this species show other apomorphies which shall shortly be summarized: a) gonapophysis without a free terminal end; b) gonocoxite of a rather complex shape; c) cerci elongated and strongly sclerotized; d) paraprocts small and weakly sclerotized; e) dorsal apodeme shortened; f) two additional small sclerites attached to distal margin of dorsal apodeme; g) ejaculatory apodeme very large and of complicated structure proximally.

6. Summary

The paper first presents a historical review of the genus *Dialineura* Rondani, 1856, and then gives a discussion of the value of the characters which have hitherto been used as basis for the genus. Five Palaearctic species are described, and the male terminalia are figured. New taxa are: *Dialineura affinis* n. sp. and *Dialineura intermedia* n. sp. A definition is given of the genus *Dialineura* on the basis of seven synapomorph characters of the male terminalia. In addition are described and figured the male terminalia of two Nearctic species which have wrongly been associated with *Dialineura*. The male terminalia of *Tabuda fulvipes* Wlk. from North America is also described, and by using the above-mentioned definition of *Dialineura* it is shown that none of these three Nearctic species under discussion show close affinity to *Dialineura*.



Figs. 51—58. Male terminalia of *Tabuda fulvipes* Wlk., holotype, Georgia. — 51. Terminalia in lateral view; 52. Hypandrium; 53. Epandrium, cerci and paraprocts in dorsal view; 54. Gonocoxite in ventral view; 55. Aedeagus in lateral view; 56. Aedeagus in dorsal view; 57. Tergite 8; 58. Sternite 8. Scale: 0.5 mm.

7. References

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