

**New and little known Leaf — Hoppers of the Subfamily
Typhlocybinae from the Soviet Maritime Territory
(Homopt., Auchenorrhyncha)**

G. A. ANUFRIEV

This work was based on the rich material of leaf-hoppers collected in the South of the Soviet Maritime (Primorye) Territory by the author during the expedition of 1963—1965. The work contains descriptions of one new genus and 8 new species of the subfamily Typhlocybinae. It contains also descriptions of some little known species previously recorded from Japan, Mongolia and the Sov. Marit. Territory;* in particular, descriptions of genitalia of these species are given.

I take this opportunity of expressing my sincere thanks to A. F. Emeljanov (Zoological Institute, Leningrad) for his kind advices as well as to Dr. J. Diabola (Museum of Natural History, Praha) and I. D. Mitjæev (Zoological Institute, Alma-Ata) who helped me in obtaining specimens for comparative purposes.

Types and paratypes are preserved in the collection of the Zoological Institute, Leningrad and in the author's collection.

Alebra Fieber, 1872

Alebra ulmi sp. n.

Figs. 1: 1—7. From yellowish- or light-brown to dark-brown. Vertex narrow with parallel sides, yellowish-brown. It is nearly half as long as width of posterior margin. Face yellow or brownish. There are two large black quadrangular spots, situated on a lighter field than the general background. Pronotum large, uniformly-brown, posteriorly lighter. It is only slightly wider than head with eyes. Scutellum uniformly-brown, sometimes with lighter apex. Forewings from yellow- to dark-brown. Thorax and abdomen of various coloration — yellow, brown or black. Legs yellow or orange with brown claws.

Male genitalia is very distinct and figured in illustrations (Figs. 1: 3, 6—7).

It lives on various elms (*Ulmus* spp.).

Average measurements. General length — 4,37—4,63; width of head — 0,95—1,00; length of vertex — 0,25—0,30; width of vertex — 0,45 to 0,50; length of pronotum — 0,52—0,58; width of pronotum — 1,00—1,25; length of forewings — 3,50—3,75; width of forewings — 0,90—1,00.

* Descriptions of a part of the species were published by Vilbaste, 1968, while this work being printed.

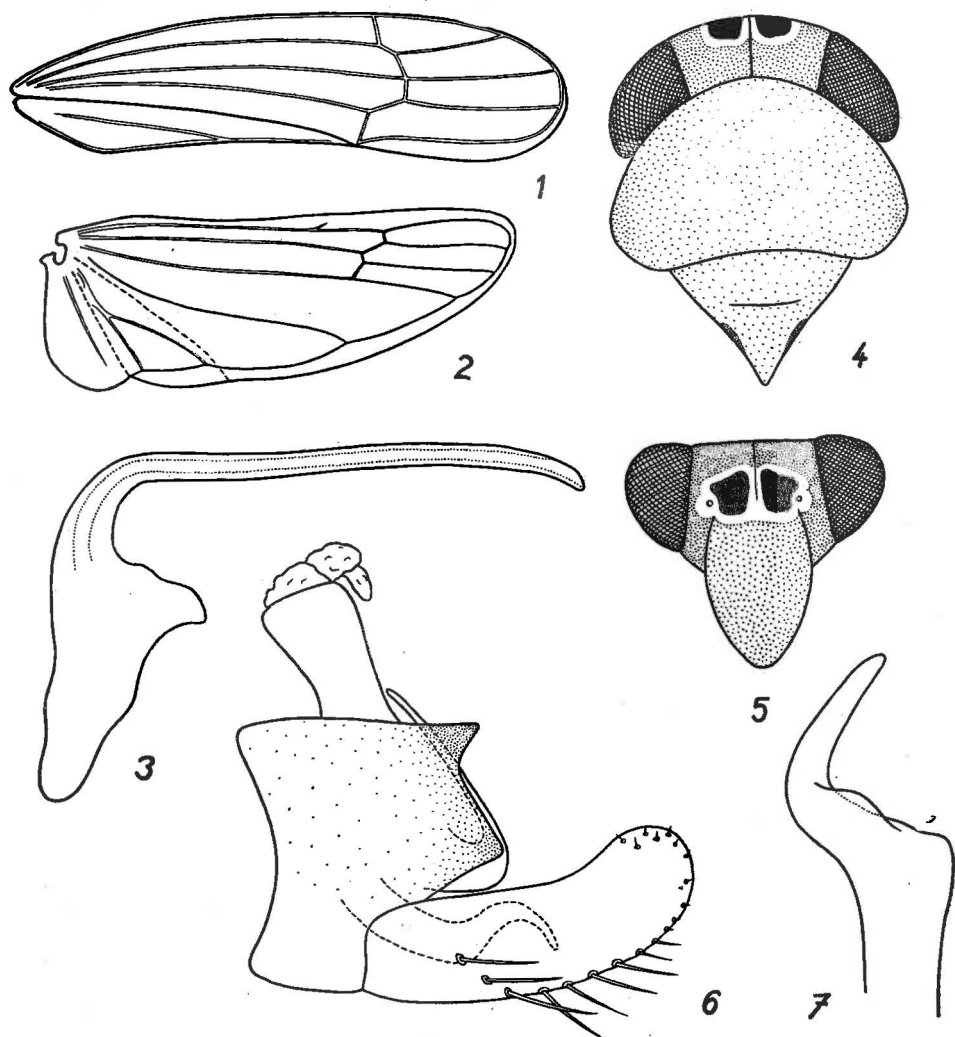


Fig. 1. 1—7 — *Alebra ulmi*, sp. n.: 1 — forewing, 2 — hindwing, 3 — penis, lateral view, 4 — head, pronotum and scutellum, dorsal view, 5 — head, frontal view, 6 — male genital segment, lateral view, 7 — style apex.

Holotype male. Maritime Territory, Chuguevka, 27. VII. 1966.

Paratypes. Maritime Territory, Chuguevka, 27. VII. 1966, 41 ♂♀.

Nikkotettix Matsumura, 1931

Nikkotettix ussurica (Vilbaste, 1968) comb. n.

Figs. 2: 1—5. Reddish. Vertex yellow, a little shorter medially than breadth between eyes. On cephalic margin there is large red patch, paling on face. Face yellow with red shading from cephalic patch to

clypeus. Clypeus is slightly darkened along middle line. Eyes black, nearocellar spaces darkened. Pronotum only slightly wider than width of head with eyes. It is red, anteriorly yellowish. Scutellum yellow with basal angles which are slightly darker. Forewings semitransparent, reddish with very noticeable red veins. Grayish band along costal suture. Apical cells brownish. The third apical cell is stalked. Hindwings with two apical cells. Thorax and legs, excluding claws, yellow. Claws brown. Abdomen dark-brown or black, segment ranges are lighter.

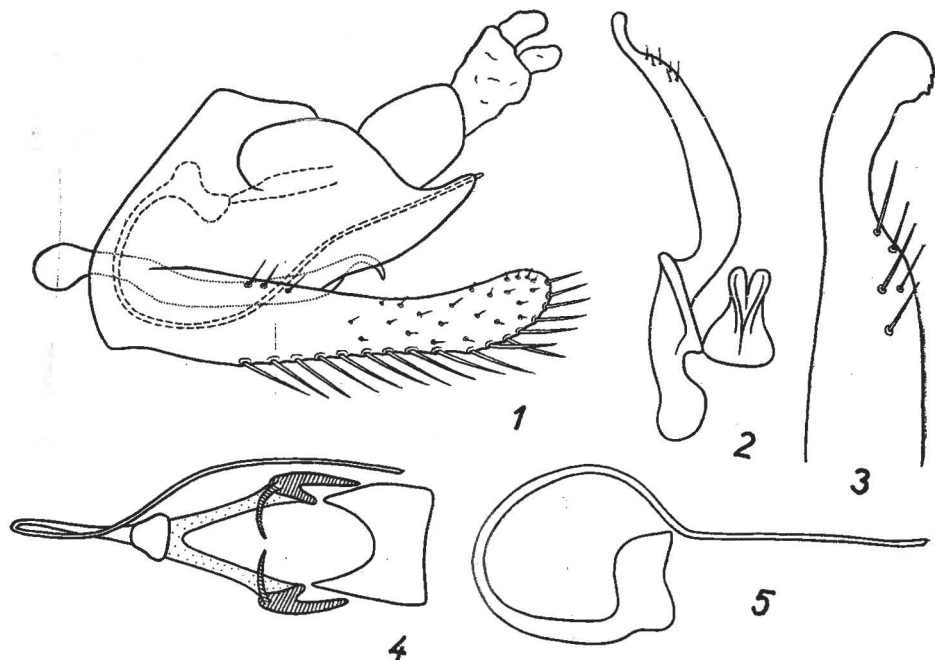


Fig. 2. 1—5 — *Nikkotettix ussurica* Vilbaste: 1 — male genital segment, lateral view, 2 — style and connective, dorsal view, 3 — style apex, 4 — anal tube with appendages, phragma and penis, ventral view, 5 — penis, lateral view.

Male genitalia are well distinguishable. Pygofer lobes posteriorly projected in form of tooth. Genital lames are densely covered with setae. Penis asymmetrical, with very long thread-like shaft. Gonopore apical. Anal tube with appendages bearing processes which are directed inward. Styles with subparallel sides in basal part and strongly narrowed at apex. Style apex, curved inside, has 3—4 not-distinct teeth.

On vine — *Schizandra chinensis* (Turcz.).

Average measurements. General length — 4,25—4,75; width of head — 0,85—0,95; length of vertex — 0,32—0,38; width of vertex — 0,37 to 0,45; length of pronotum — 0,47—0,55; width of pronotum — 0,80—0,98; length of forewings — 3,50—4,00; width of forewings — 0,87—0,95.

Material examined. Maritime Territory: Suputinsky Reservation, 25. to 26. VIII. 1966, 4 ♀♀; Terney, 8. IX. 1966, 11 ♀♀ and 2 ♂♂.

Forcipata DeLong et Caldwell, 1936—1942

***Forcipata glaucans* sp. n.**

Figs. 3:1—3. Yellowish-gray. Vertex light-yellow, approximately half as long as width on posterior margin. Face and antennae yellow. Pronotum grayish, anteriorly light-yellow, slightly narrower than width

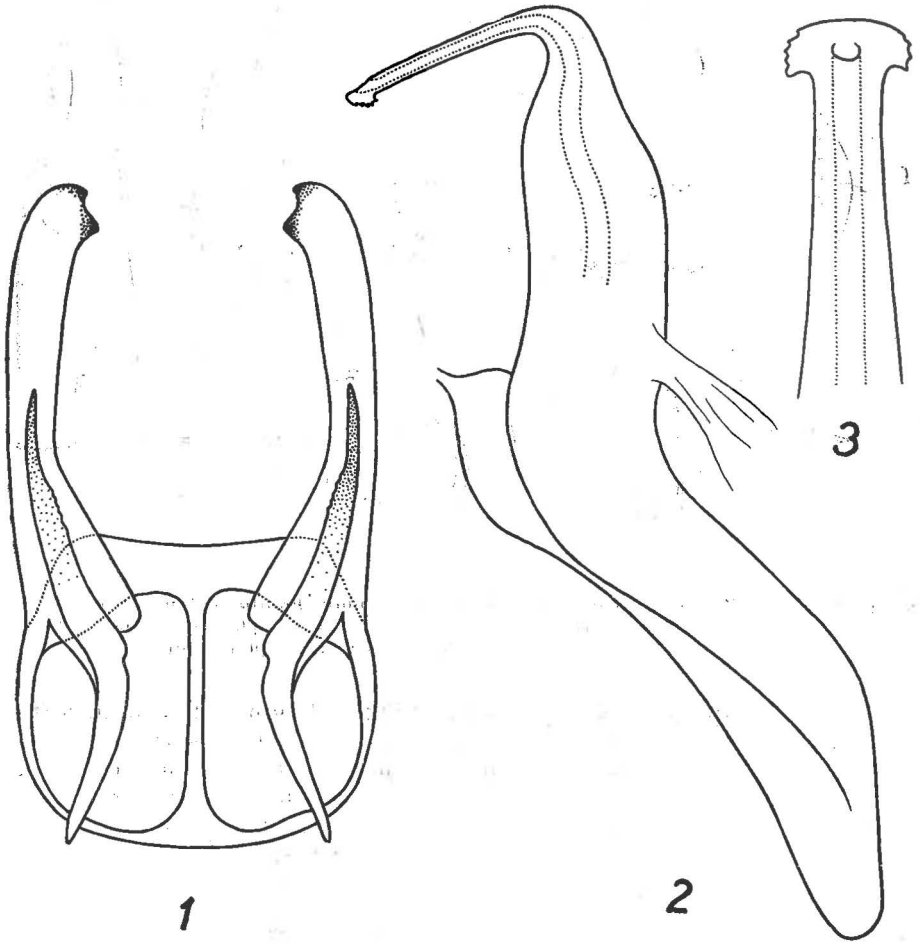


Fig. 3. 1—3 — *Forcipata glaucans*, sp. n.: 1 — genital sternite, genital lames and styles, dorsal view, 2 — penis, lateral view, 3 — top of the penis, caudal view.

of head with eyes. Scutellum yellow or grayish, medially lighter. Forewings gray or grayish-brown, semi-transparent. Thorax and legs yellow, abdomen black with yellow sternite rings and genital segment.

Male genital segment is like that of *F. citrinella* Zetterstedt, 1828, but genital lamae with more approximate and shorter apical teeth and penis shaft apex is broadened and serrated as approximately in *F. forcipata* Flor, 1861.

It lives on sedges in the mountain coniferous and mixed coniferous-broad-leaved forests of Sichote-Alin Mountain Ridge.

Average measurements. General length — 3,75; width of head — 0,75—0,77; length of vertex — 0,35—0,40; width of vertex — 0,47—0,50; length of pronotum — 0,42—0,45; width of pronotum — 0,72—0,75; length of forewings — 3,00—3,15; width of forewings — 0,80—0,87.

Holotype male. Sichote-Alin State Reservation, 11. IX. 1966.

Paratypes. Sichote-Alin State Reservation, 11.—14. IX. 1966, 14 ♀♀.

Dicraneurula Vilbaste, 1968

Dicraneurula silvicola Vilbaste, 1968

Figs. 4: 1—4. Small yellow species resembling *D. minima* (J. Sahlberg, 1871) in appearance and size. Vertex long, strongly prolonged forward, more than twice as long as length near eyes, width of posterior margin is a little longer than length. White middle longitudinal stripe distinctly stands out against a light-yellow background. Face and antennae yellow. Pronotum and scutellum yellow, with white longitudinal stripe in the middle. Forewings yellow, semitransparent. Hindwings dull-white, not-transparent. Thorax and abdomen yellow.

It is well distinguished from known species by the structure of male genitalia. Pygofer lobes truncated at apices, covered with wart-like for-

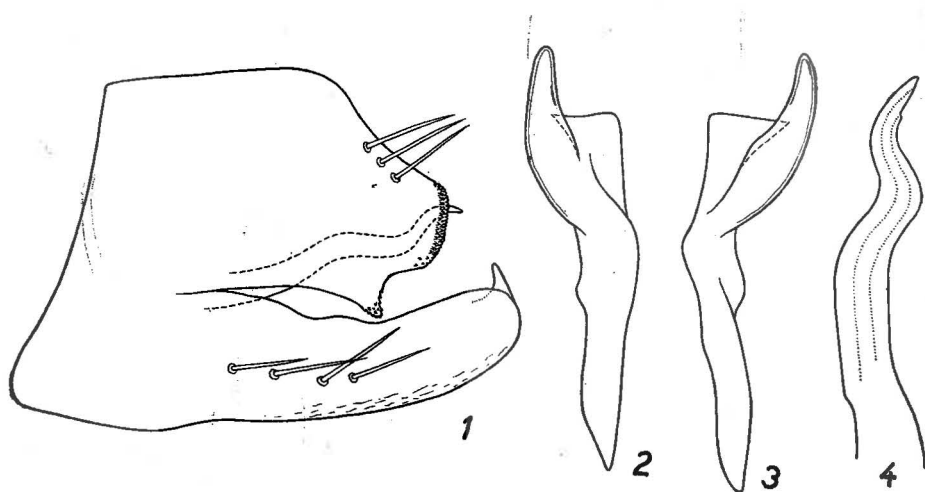
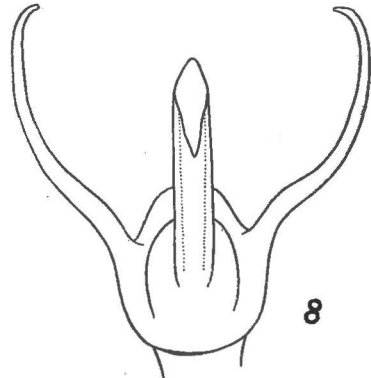
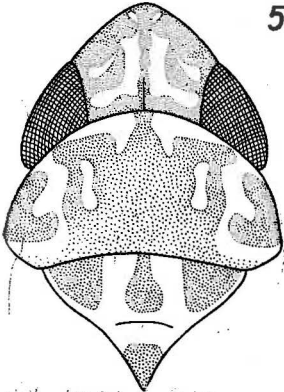
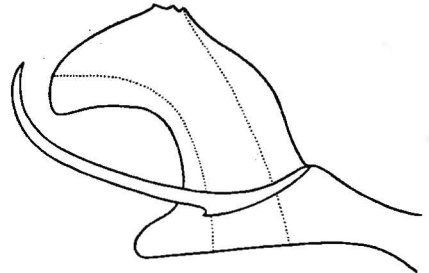
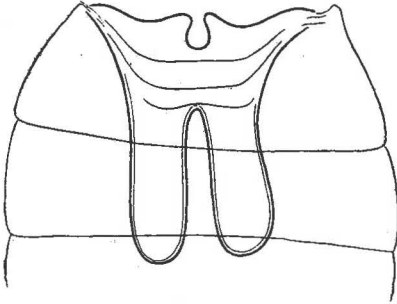
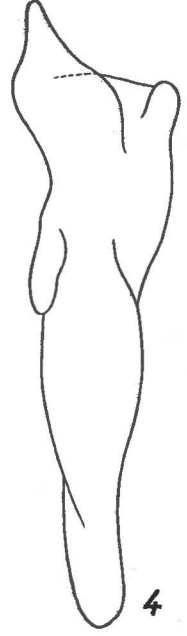
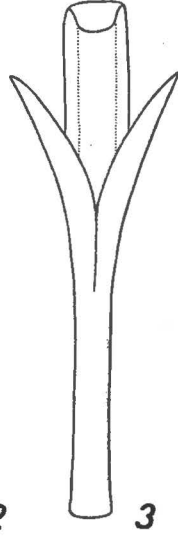
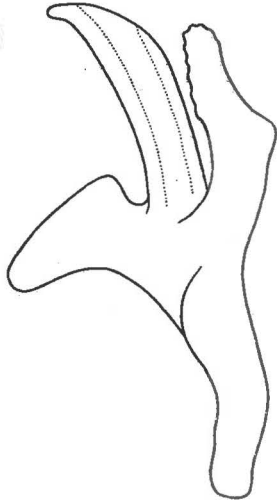
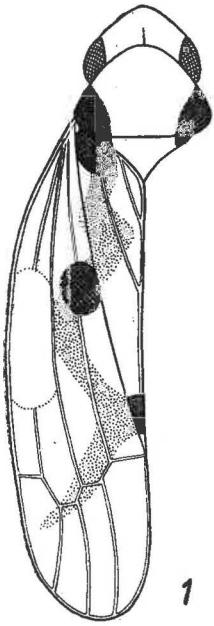


Fig. 4. 1—4 — *Dicraneurula silvicola* Vilbaste: 1 — genital segment, lateral view, 2—3 — styles, 4 — top of the penis, lateral view.



1. *Stomoxys calcitrans* (L.) 2. *Stomoxys calcitrans* (L.) 3. *Stomoxys calcitrans* (L.) 4. *Stomoxys calcitrans* (L.) 5. *Stomoxys calcitrans* (L.) 6. *Stomoxys calcitrans* (L.) 7. *Stomoxys calcitrans* (L.) 8. *Stomoxys calcitrans* (L.)

mations, ventrally there is a large warty tooth which is (Fig. 4:1). Genital plates with apical projections. Styles are like many representatives of the genus (Figs. 4:2—3). Penis wave-like curved, with sub-apical gonopore (Fig. 4:4).

It lives on sedges.

Average measurements. General length — 2,37—2,63; width of head — 0,60—0,63; length of vertex — 0,27—0,30; width of vertex — 0,35—0,38; length of pronotum — 0,27—0,30; width of pronotum — 0,57—0,60; length of forewings — 1,80—1,95; width of forewings — 0,50—0,55.

Material examined. Maritime Territory, Suputinsky Reservation, 8. IX. 1965, 3 specimens, 27. VIII. 1966, 15 specimens; Sichote-Alin State Reservation, 11. IX. 1966, 14 specimens.

Dikraneura Hardy, 1850

Dikraneura nigrohumeralis sp. n.

Figs. 5:1—5. This species belongs to the *micantula* group of which two species were formerly known. The first, *D. micantula* Zetterstedt, 1840, has been recorded from most of Europe and Siberia. The second, *D. pseudomicantula* Knight, 1965, was recently described from Sweden. Both species and the new one are closely related and well distinguished only by male genitalia.

Vertex and face yellowish-white. Pronotum white with black sides. Scutellum from yellowish-brown to black. There are three black spots on each forewing which are typical also of other species of the group. These spots may be connected with the zigzag-shaped smoky-brown or black band.

Male genitalia are well distinguishable. Penis in lateral view with narrow shaft as in *D. pseudomicantula* but with wide processes approximately as in *D. micantula* (Fig. 5:2). In dorsal view the bases of the penis processes are drawn together (Fig. 5:3).

Average measurements. General length — 3,12—3,38; width of head — 0,65—0,70; length of vertex — 0,25; width of vertex — 0,37—0,43; length of pronotum — 0,37—0,40; width of pronotum — 0,70—0,73; length of forewings — 2,50—2,75; width of forewings — 0,62.

Holotype male. Maritime Territory, Sichote-Alin State Reservation, 11. IX. 1966.

Paratypes. At the same place, 11.—14. IX. 1966, 5 specimens.

Dikraneura apicimaculata sp. n.

Figs. 5:6—8. Yellow. Vertex yellow with white pattern as figured in illustration (Fig. 5:6). Its length in the middle nearly twice as long as near eyes and approximately as long as width at posterior margin. Face yellow, without any pattern. Pronotum yellow, anteriorly with

Fig. 5. 1—4 *Dikraneura nigrohumeralis*, sp. n.: 1 — outward appearance, 2 — penis, lateral view, 3 — penis, dorsal view, 4 — style, 5 — apodemes of abdomen; 6—8 — *Dikraneura apicimaculata*, sp. n.: 6 — head, pronotum and scutellum, dorsal view, 7 — penis, lateral view, 8 — penis, dorsal view.

white spots connected with each other. Scutellum yellow, with two white subparallel longitudinal stripes and white cross line near apex. Forewings yellow, semitransparent. There is roundish brown spot in the middle of the first apical cell and poorly visible brown patch on the fourth cell.

Male genitalia are well distinguishable. Penis with shaft which is flattened from sides. It bears two long narrow processes coming from the penis base (Figs. 5: 7—8).

Average measurements. General length — 3,75; width of head — 0,82—0,88; length of vertex — 0,35—0,38; width of vertex — 0,35—0,38; length of pronotum — 0,50—0,55; width of pronotum — 0,87—0,93; length of forewings — 3,00; width of forewings — 0,75—0,78.

Holotype male. Maritime Territory, Chuguevka district, Kamenka, 25. VII. 1966.

Paratypes. Maritime Territory: Mountain Forest Station near Ussuriysk, 29. VIII. 1966, 2 specimens; Suputinsky Reservation, 28. VIII. 1966, 1 specimen; Kavalerovo district, Tadushi, 26. VII. 1966, 1 specimen.

Kyboasca Zachvatkin, 1953

Kyboasca sexevidens Dlabola 1967

Figs. 6: 1—7. A widespread species in Primorye Territory, living on various elms together with closely allied species — *K. bipunctata ulmicola* Zachvatkin, 1953. It is similar to *K. bipunctata* in outward appearance, colouring and proportions of the body but is distinguished by the presence of additional black spot near the apex of forewing brachial cell. So, there are two spots on the forewings: the first, like in *K. bipunctata*, — on the first apical cell, and the second one, being absent in *K. bipunctata*, — near the apex of brachial cell.

It is well distinguished from *K. bipunctata* and other species of the genus by the structure of male genital segment. Pygofer lobes are bluntly triangular, with irregular setae in distal part. Pygofer appendage is massive, sharply broadened in apical part, with thin pointed apex (Figs. 6: 3—4). Penis approximately like that of *K. bipunctata*, with wave-like crest on ventral side. Style slightly S-shaped, broadened on top with nearly 8 teeth (Fig. 6: 5).

Average measurements. General length — 3,75—4,13; width of head — 0,85—0,88; length of vertex — 0,20—0,23; width of vertex — 0,35 to 0,40; length of pronotum — 0,47—0,50; width of pronotum — 0,88; length of forewings — 3,12—3,30; width of forewings — 0,70—0,75.

Material examined. Maritime Territory: Chuguevka, 24. VII. 1966, 29 specimens; Grodekovo, 4. VII. 1966, 12 specimens; Vladivostok, 28. VIII. 1965, 3 specimens.

Alebroides Matsumura, 1931

Alebroides salicis (Vilbaste, 1968), comb. n.

Figs. 7: 1—9. Lightly-yellow or whitish. Vertex approximately as long as half its width. Sometimes there is a white pattern on it — white as long as the vertex; its width not more than width of the head. Some-middle line and two Δ -like spots near anterior margin. Pronotum twice

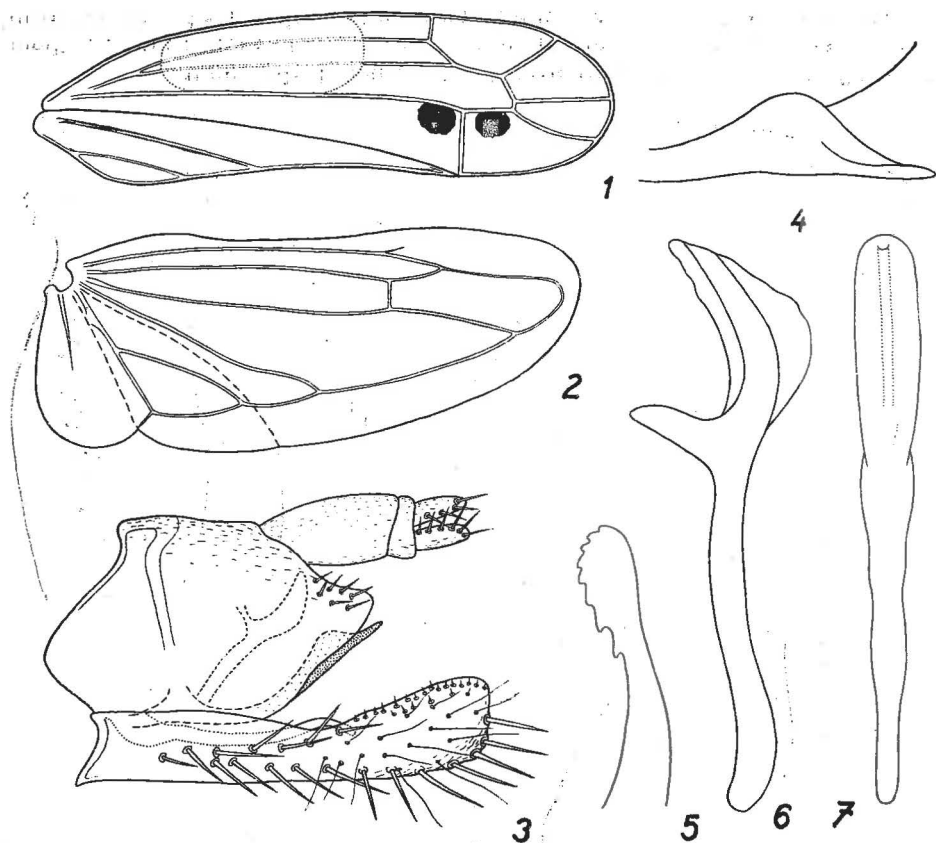


Fig. 6. 1—7 — *Kyboasca sexevidens* Dlabola: 1 — forewing, 2 — hindwing, 3 — genital segment, lateral view, 4 — apex of pygofer appendage, 5 — style apex, 6 — penis, lateral view, 7 — penis, dorsal view.

times a whitish patch may be seen near anterior margin. Scutellum with white middle stripe and dark-yellow lateral triangles. Forewings yellowish, transparent. The third apical cell with more or less developed stalk (Fig. 7:1). Hindwing with additional cell (Fig. 7:2). Thorax and abdomen yellow, legs whitish with brown claws.

Pygofer lobes with long pointed appendages (Fig. 7:9). Styles with S-shaped apices, furnished with 3—4 indistinct teeth (Figs. 7:3—4). Anal tube with semicircularly curved appendage in the middle part of which there is a poorly visible little tooth (Fig. 7:8). Penis with a wide base (Figs. 7:5—6).

It lives on wormwoods (*Artemisia* spp.).

Average measurements. General length — 3,75—4,38; width of head — 0,77—0,85; length of vertex — 0,27—0,30; width of vertex — 0,37 to 0,43; length of pronotum — 0,40—0,43; width of pronotum — 0,77—0,93; length of forewings — 3,12—3,63; width of forewings — 0,75—0,88.

Material examined. Maritime Territory, Suputinsky Reservation, 29. VI. 1966. 1 specimen. Island of Ricord, 13.—14. VIII. 1966, 12 specimens; Ugolnaja near Vladivostok, 22. VI. 1966, 4 specimens.

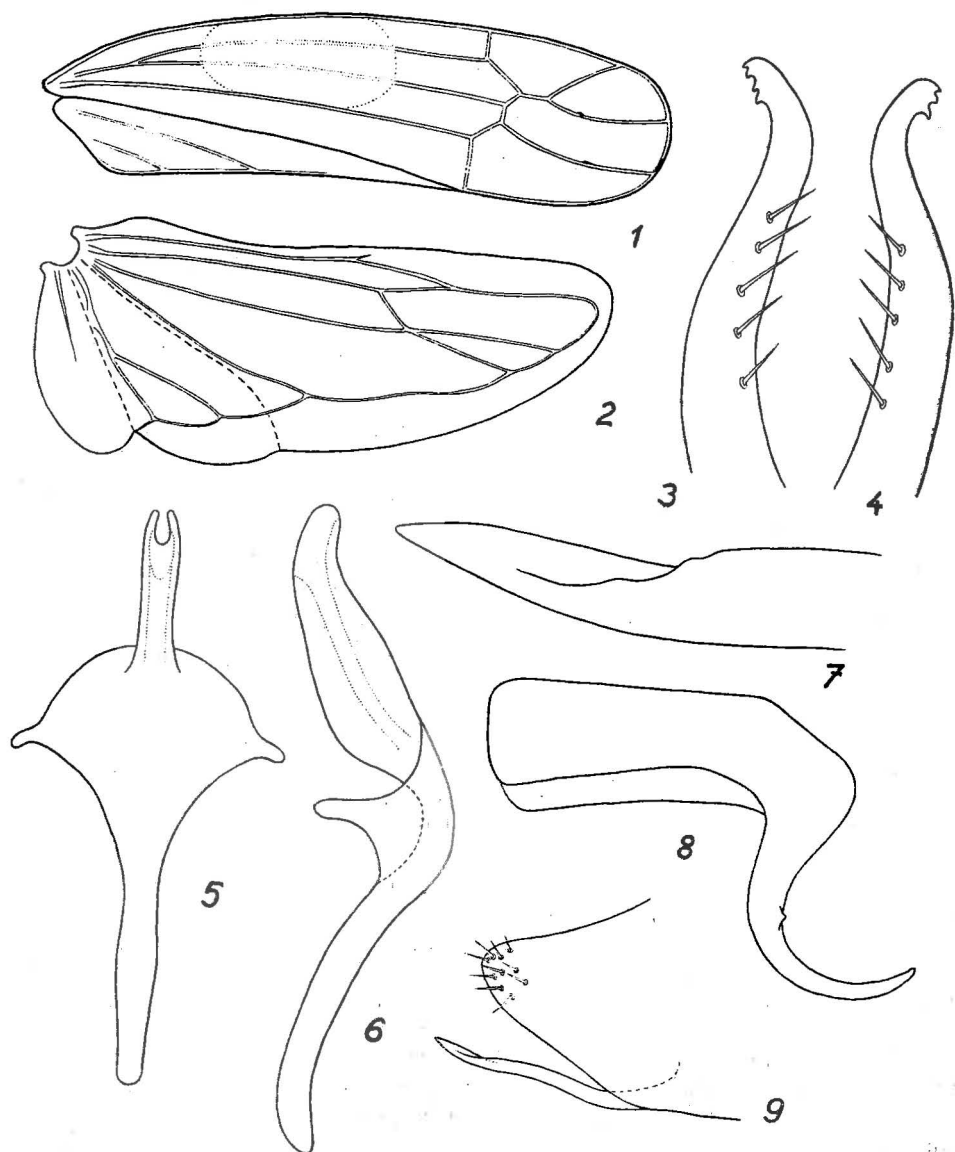


Fig. 7. 1—9 — *Alebroides salicis* Vilbaste: 1 — forewing, 2 — hindwing, 3—4 — style apices, 5 — penis, dorsal view, 6 — penis, lateral view, 6 — apex of pygofer appendage, 8 — anal tube, 9 — pygofer lobe with appendage.

Empoasca Walsh, 1864
***Empoasca olivacea* sp. n.**

Figs. 8:1—6. Brown-yellow with greenish tint. Vertex a little shorter than breadth of its posterior margin, brownish, peripherally and medially yellow, with two large bright-yellow roundish spots. Face

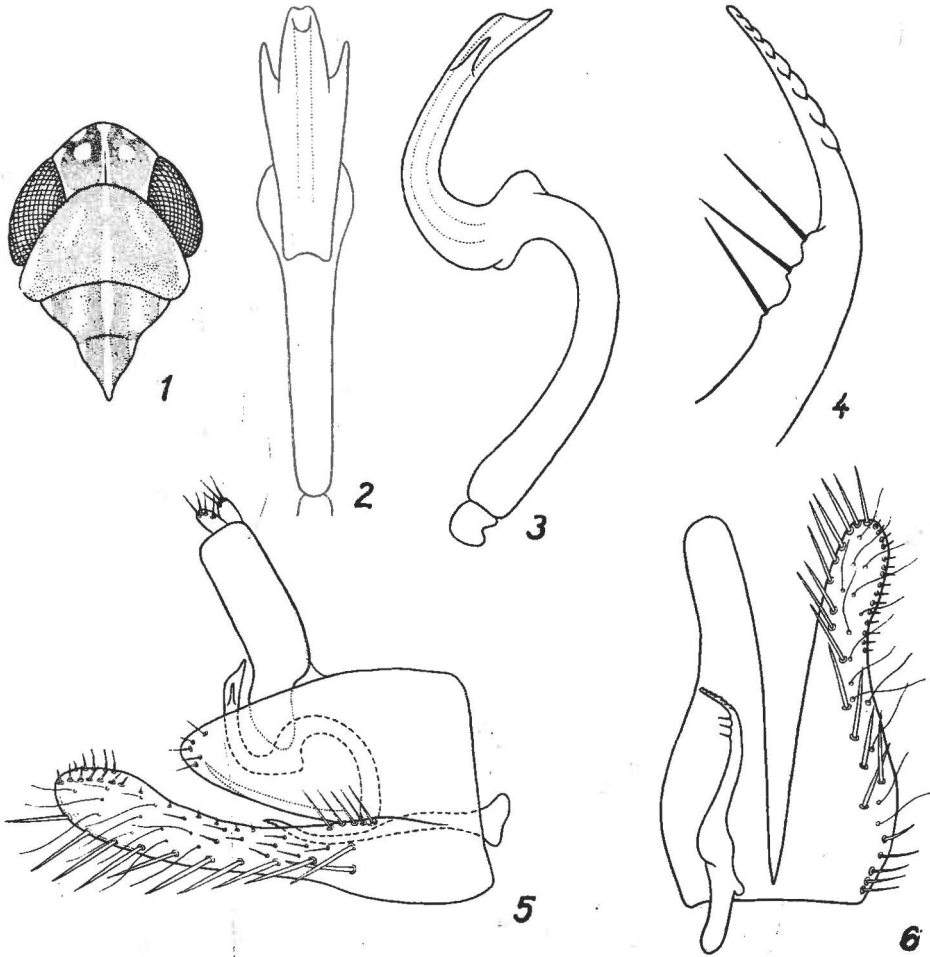


Fig. 8. 1—6 — *Empoasca olivacea*, sp. n.: 1 — head, pronotum and scutellum, dorsal view, 2 — penis, dorsal view, 3 — penis, lateral view, 4 — style apex, 5 — genital segment, lateral view, 6 — genital plates and style, dorsal and ventral views.

yellow, lightest at anterior part. Pronotum brown, with some yellow patches, slightly distinguishable on the general background. Scutellum brown, with three indistinct longitudinal stripes and with yellow spots on basal angles. Forewings brownish-yellow, with brownish apical cells. Thorax and abdomen lightish-yellow. Legs yellowish with dark claws.

Male genitalia are very distinguishable. Pygofer and genital plates as in majority of species. Anal tube very long, with short and broad appendages. Style with gradually narrowed apical part, supplied with approximately 8 teeth (Fig. 8:4). Penis curiously S-shaped curved, on sides near the apex with two projections (Figs. 8:2-3).

Average measurements. General length — 4,15—4,35; width of head — 0,87—0,95; length of vertex — 0,30; width of vertex — 0,40; length of pronotum 0,50; width of pronotum — 0,75—0,80; length of forewings — 3,30—3,43; width of forewings — 0,70—0,75.

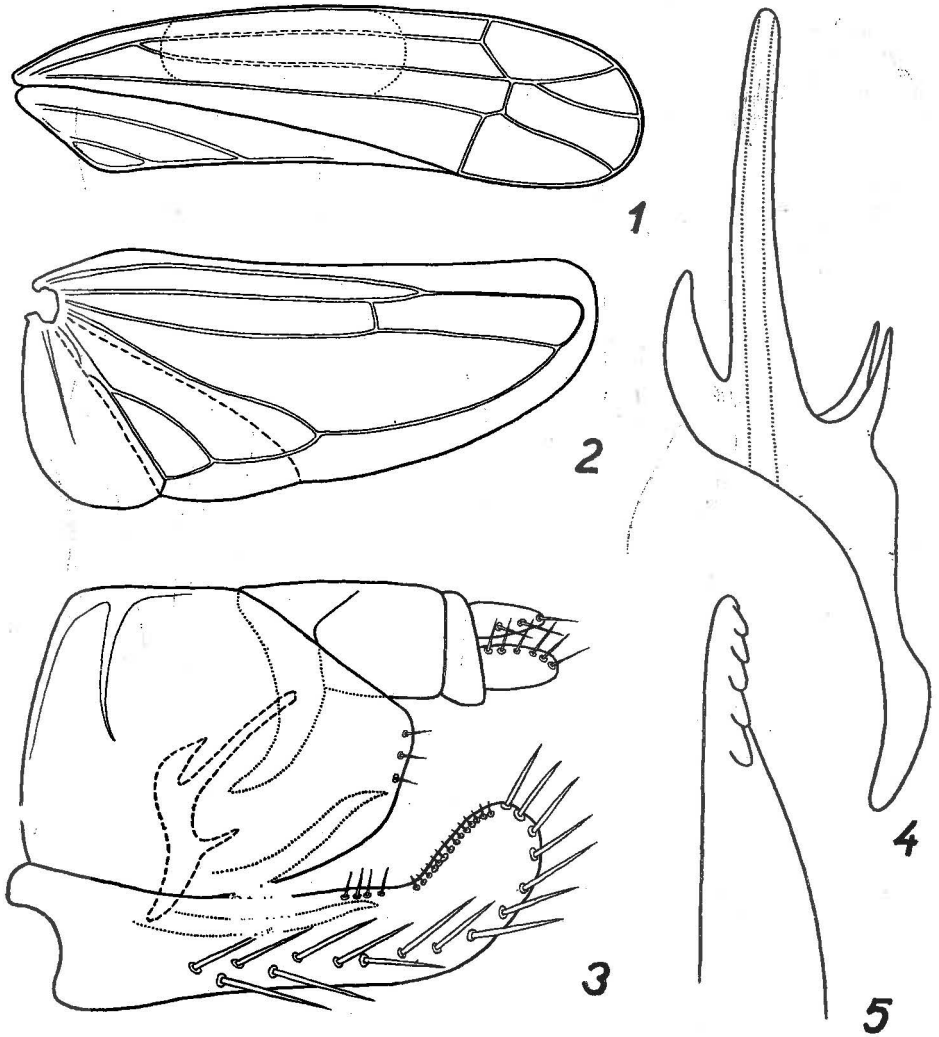


Fig. 9. 1-5 — *Empoasca diversa* Vilbaste, 1968: 1 — forewing, 2 — hindwing, 3 — genital segment, lateral view, 4 — penis, lateral view, 5 — style apex.

Holotype male. Maritime Territory, Barabach-Levada, 5. VII. 1966.
Paratypes. Maritime Territory, Suputinsky Reservation, 22.—26. VIII.
1966, 1 ♀.

***Empoasca diversa* Vilbaste, 1968**

Figs. 9 : 1—5. Comparatively large species of yellowish-green coloration. Vertex short, approximately half as long as its breadth on posterior margin, yellowish-green. Often with whitish middle line and four whitish spots. Face greenish-yellow with whitish stripe in the middle and with two white patches at sides. Pronotum large, twice as long as vertex, green. Very often there are three whitish spots on its anterior side; one in the middle and two near eyes. Scutellum nearly as long as pronotum. Its central part white, lateral angles and apex yellow. Forewings transparent, greenish. Body ventrally yellowish or greenish, often with blue tint. Legs bluish-green or yellowish.

Pygofer lobes wide with truncated apex. Pygofer appendage S-likely curved, pointed, not projected outside the pygofer lobe. Anal tube with processes directed forward. Style with approximately 6 teeth at apex (Fig. 9 : 5). Penis is very distinguishable — its base bears two processes (Fig. 9 : 4).

It lives on cork-tree (*Phellodendron amurense* Rupr.).

Average measurement. General length — 4,37—4,75; width of head — 0,87—1,00; length of vertex — 0,27—0,33; width of vertex — 0,40—0,45; length of pronotum — 0,55—0,60; width of pronotum — 1,00—1,05; length of forewings — 3,75—3,88; width of forewings — 0,87—1,00.

Material examined. Maritime Territory: Sichote-Alin State Reservation, 17.—19. IX. 1966, 16 specimens; Mountain Forest Station near Ussuriysk, 4. VI. 1966, 2 specimens; Vladivostok, 16. V. 1966, 2 specimens; Ugolnaya near Vladivostok, 22. VI. 1966, 2 specimens; Suputinsky Reservation, 28. VIII. 1966, 2 specimens; Kavalerovo district, Tadushi, 26. VII. 1966, 3 specimens.

***Eupteroidea* Young, 1952**

***Eupteroidea niishimae* (Matsumura, 1932)**

Figs. 10 : 1—3. Yellow, rarely yellowish-white. Head, pronotum, scutellum and thorax poorly yellowish. Legs yellow with brown claws. Forewings yellow, semitransparent, with apical cells which are slightly darkened. Two large dark-brown spots (one on the first and one on the third apical cells) and three wedge-shaped stripes running from the costal margin to inside are distinguishable on forewings.

Male genital segment is typical for the genus. Pygofer lobes posteriorly with sclerotised teeth. Penis with two long processes which stem from the central part of the shaft, crossing on ventral side and broadening a little at apices (Figs. 10 : 2—3).

Collected from *Acer pseudosieboldianum* Kom.

Average measurements. General length — 3,57—3,95; width of head — 0,67—0,70; length of vertex — 0,30—0,33; width of vertex — 0,32—0,38; length of pronotum — 0,35—0,43; width of pronotum — 0,80—0,88; length of forewings — 2,92—3,00; width of forewings — 0,75 to 0,88.

Material examined. 61 specimens. Maritime Territory, Island of Ricord, 14. VIII. 1966.

Eurhadina Haupt, 1929

***Eurhadina betularia* sp. n.**

Figs. 10 : 4—6. Snow-white. Head, pronotum, scutellum, thorax and legs white. Forewings white, semitransparent, with dark-brown spots and brownish darkening at apical cells. Dark-brown spots are situated as in *E. pulchella* (Fallen, 1806).

Male genitalia is well distinguishable. Penis flattened from sides, ventrally carinated. It bears two pairs of processes. The processes of apical pair are forked near bases. The processes of subapical pair are simple, not forked, but each has a little tooth inside.

On birches (*Betula* spp.).

Average measurements. General length — 3,75—4,00; width of head — 0,90—0,95; length of vertex — 0,25—0,30; width of vertex — 0,45—0,50; length of pronotum — 0,50—0,60; width of pronotum — 1,00 to 1,08; length of forewings — 2,92—3,13; width of forewings — 0,80 to 1,00.

Holotype male. Maritime Territory: Lesozavodsk district, Kievka, 18. VIII. 1967.

Paratypes. Maritime Territory: Lesozavodsk district, Lesnoye, 16. VII. 1966, 6 specimens; Mountain Forest Station near Ussuriysk, 29. VIII. 1966, 4 specimens.

Alnetoidia Dlabola, 1958

***Alnetoidia sapporoensis* (Matsumura, 1932)**

Figs. 10 : 7—8. It resembles *A. alneti* Dahlbom, 1851 but of brighter yellow coloration.

Male genital segment is like that of *A. alneti*, with pygofer lobes bearing two pairs of processes — dorsal and ventral, but penis is well distinguishable. Penis base and shaft are curved at an acute angle to each other. There are two pointed processes at apex (Figs. 10 : 7—8).

Average measurements. General length — 3,45—3,63; width of head — 0,67—0,70; length of vertex — 0,22—0,25; width of vertex — 0,32 to 0,38; length of pronotum — 0,35—0,43; width of pronotum — 0,75—0,83; length of forewings — 2,75—3,00; width of forewings — 0,62—0,75.

Material examined. Maritime Territory: Suputinsky Reservation, 17. VI. 1966, 371 specimens; Ugolnaya near Vladivostok, 22. VI. 1966, 7 specimens.

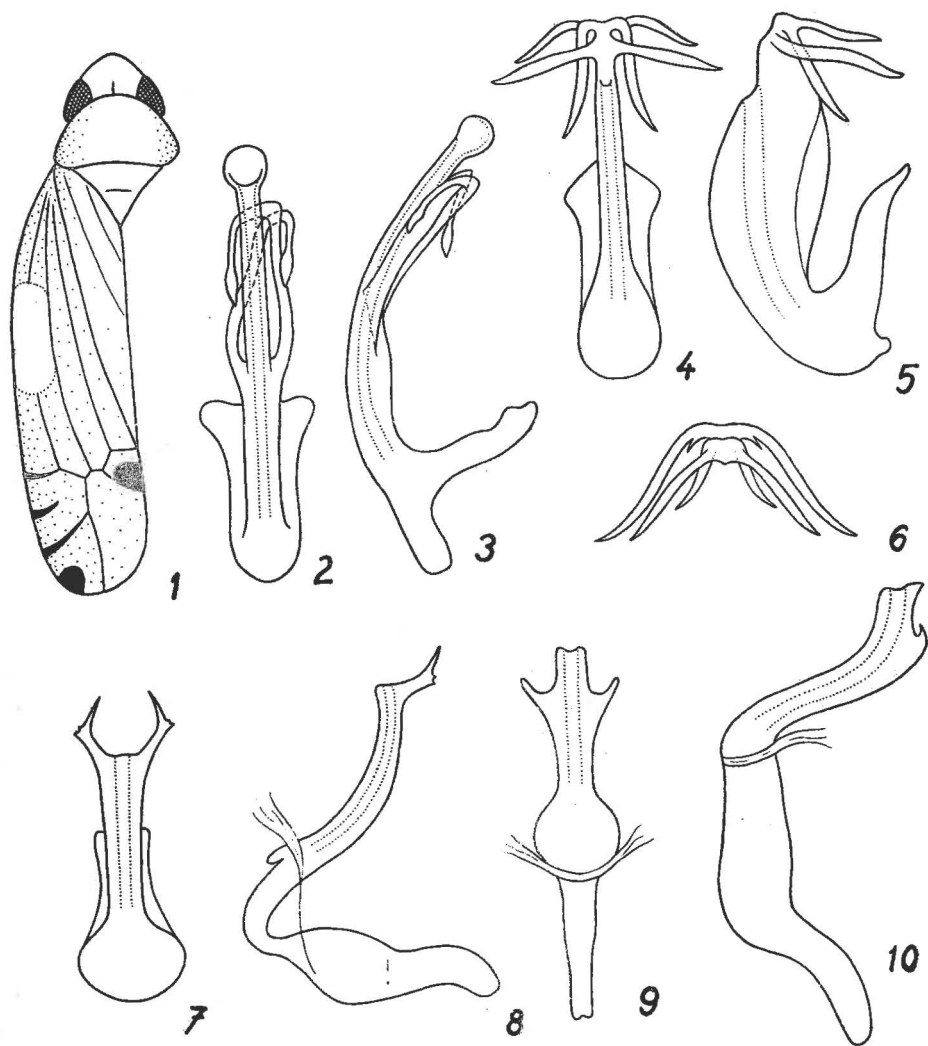


Fig. 10. 1—3 — *Eupteroidea niishimae* M.: 1 — outward appearance, 2 — penis, dorsal view, 3 — penis, lateral view; 4—6 *Eurhadima betularia*, sp. n., penis: 4 — dorsal view, 5 — lateral view, 6 — caudal view; 7—8 — *Alnetoidia sapporoensis* M., penis: 7 — dorsal view, 8 — lateral view; 9—10 — *Alnetoidia satsumana* M., penis: 9 — dorsal view, 10 — lateral view.

***Alnetoidia satsumana* [Matsumura, 1932]**

Figs. 10: 9—10. Closely allied to previous species and *A. alneti* and differs only in male genitalia. Penis with two ventro-lateral processes in the middle part of the shaft. Shaft and base form approximately right angle (Figs. 10: 9—10).

Average measurements. General length — 3,32—3,45; width of head — 0,60—0,65; length of vertex — 0,20—0,23; width of vertex — 0,32 to 0,38; length of pronotum — 0,37—0,40; width of pronotum — 0,70—0,75; length of forewings — 2,75—2,88; width of forewings — 0,60—0,68.

Material examined. Maritime Territory, Ussuriysk, 26. VI. 1966, 10 specimens; Kurile Islands, Kunashir, 14. VIII. 1965, 4 specimens.

Maritime specimens differ slightly from the Kurile ones in more developed processes and penis shaft which is broader (penis of Kurile specimen is figured in illustration).

The following key may serve for differentiation of all known species of the genus:

- 1 (2). Penis shaft with one process near the base. *A. alneti* Dahlbom, 1851
- 2 (1). Penis shaft with pair of processes in the middle or at apex. *A. sapporoensis* Matsumura, 1932
- 3 (4). Penis shaft with processes at apex. Light-yellow. *A. satsumana* Matsumura, 1932
- 4 (3). Penis shaft with processes approximately in the middle. Pale-yellow.

Erythroneura Fitch, 1851

Erythroneura hirayamella (Matsumura, 1932)

Figs. 11:1—7. Specimens from the Maritime Territory according to their appearance may be assigned with equal trustworthiness to three previously described species — *E. hirayamella* (Matsumura, 1932), *E. heptapotamica* Kusnezov, 1928 and *E. ardeians* Ross, 1965. The first is known from Japan, the second is widespread in Middle Asia and the third is recently described from China. The investigation of Kusnezov's types and the presence of characteristic and figures of *E. heptapotamica* male genitalia in literature (Mitjaev, 1963) on one hand and high quality of descriptions of *E. ardeians*, published by Ross (1965) on the other hand allow us to consider these species synonyms.

Far Eastern specimens are easily distinguished from *E. heptapotamica* by the structure of male genital segment. The discovery of the species in the Maritime Territory, well distinguished by the structure of male genitalia from Middle Asian one, and availability of good pictures of the appearance of Japan species *E. hirayamella* in literature (Ishihara, 1958) allow to identify our specimens as *E. hirayamella*.

However, the incompleteness of description published by Matsumura and the lack of male genitalia characteristic compel us to give new and fuller description from our specimens.

Coloration dirty-black with whitish pattern. Vertex in the middle approximately half as long as at the posterior margin broad, dirty-white or yellowish, with two roundish black spots. Face from dirty-white to brown. Spot on the cephalic margin, two stripes along eyes and band between the antennal pits are orange, darker than general background. Antennae dirty-orange. Pronotum large, roughly one and a quarter as long as vertex, brownish-black. There are two elliptical white patches, running from the anterior margin, which very often become darker in front part. In front of them, between, there is a small roundish spot.

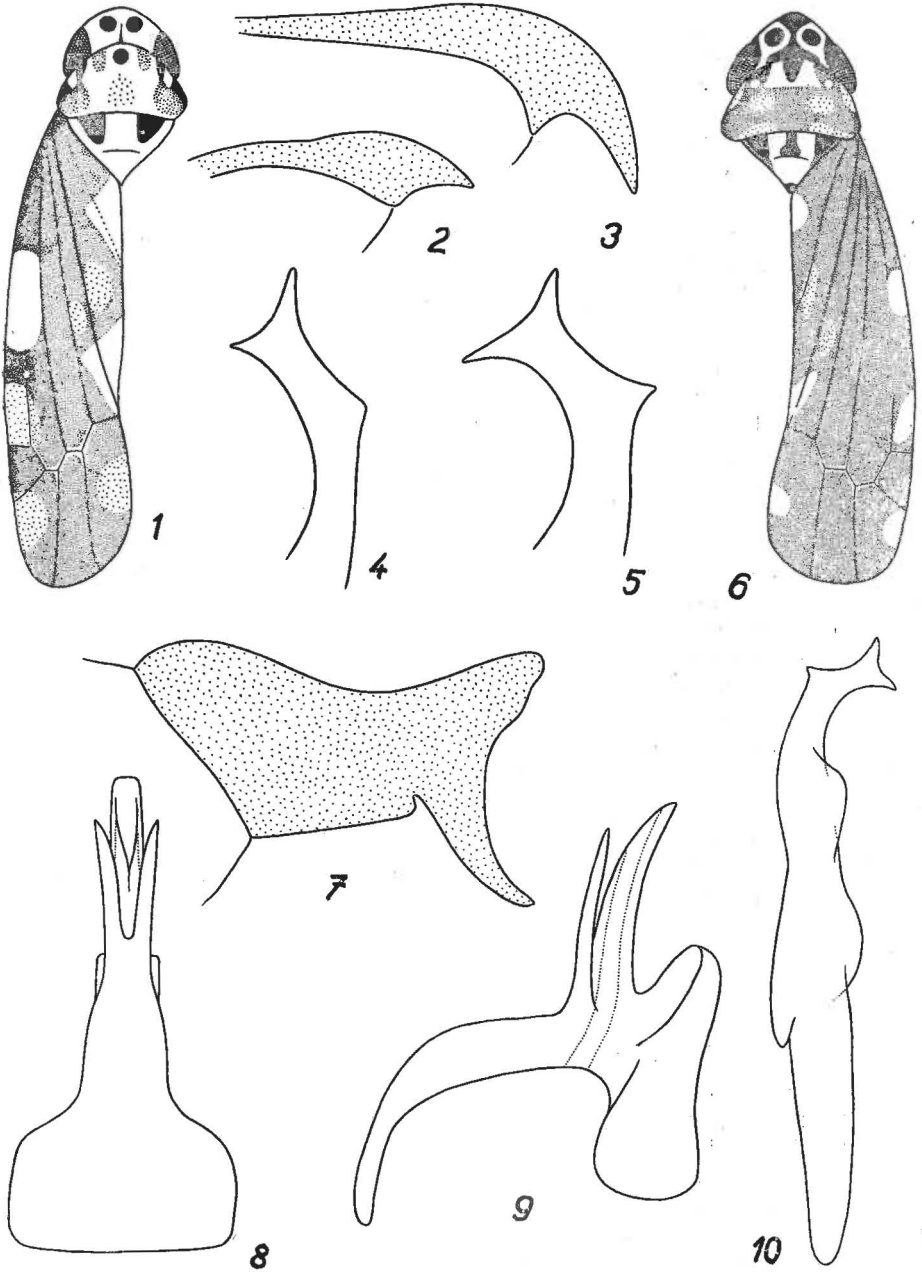


Fig. 11. 1—7 — *Erythroneura hirayamella* Matsumura: 1 — outward appearance, 2 — head and pronotum, lateral view, 3 — head, frontal view, 4 — penis, lateral view, 5 — penis, dorsal view, 6 — pygofer appendage, 7 — style; 8—9 — *Erythroneura heptapotamica* Kusnezov: 8 — penis, lateral view, 9 — penis, dorsal view, 10 — pygofer appendage.

Besides these three spots, posterior margin of pronotum has a white coloration. Scutellum large, nearly as long as pronotum, black with three white spots — one in the middle of the anterior part and two posteriorly, on their sides. Forewings dark-brown or black with two large triangular light-yellow patches along costal range; owing to them the dark pattern of forewings forms a zigzag along costal range. Besides two large patches on costal range, two light spots in the middle of clavus and near its apex, a spot between them in the middle brachial cell and a light spot on the first apical cell are distinguished on black background of forewings. The cross-veins are also light. Pronotum black, meso- and metanotum yellowish. Legs yellow with dark claws. Abdomen from dark-brown to black with yellow sides and light margins of segments. Pregenital segment of female has a roundish projection in the middle with a slight cutting at apex. Ovipositor brown or yellow with brownish sides; there are two rows of bristles along the middle line. Subgenital segment of male brown, sometimes with yellow middle part. Genital plates bright-yellow, on outward sides with angular basal elongations.

This species is well distinguished by the structure of male genitalia, from the other species of genus. Appendage of pygofer is bifurcated (Fig. 11 : 6). Penis with arched shaft, splitting at apex into two narrow portions: gonopore is situated between them. Basal part of penis with two strong hook-like processes (Figs. 11 : 4—5). Style long, with pair of narrow distal projections diverging under obtuse angle. In front of them on the inner side there is a broad tooth (Fig. 11 : 7).

Specimens examined. Maritime Territory: Sichote-Alin State Reservation, 10.—18. IX. 1966; Terney, 8. IX. 1966; Suputinsky Reservation, 6. IX. 1965.

This species is closely allied to *E. heptapotamica* Kusnezov, 1928 (= *E. ardeians* Ross, 1965, syn. n.) which is known from Middle Asia and China and distinguished by pure yellow and white tints of light parts and by the structure of male genitalia — appendage of pygofer with simple pointed top (Fig. 11 : 10); penis with two pairs of processes, apical and subapical (Figs. 11 : 8—9).

***Erythroneura perspicillata* Vilbaste, 1968**

Figs. 12 : 5—10. Blackish-brown. Vertex along the median line shorter than the width between eyes. It is yellow, with two large round spots in the middle, a large brown spot on cephalic margin, black line in the middle and posteriorly. Face yellow, with a blackish band between eyes. Pronotum brownish-black with some whitish spots which may be poorly visible. Scutellum stramineus with black basal angles and spot between them. Forewings black with six whitish markings on each. Three spots are situated on costal range, one near the base of clavus, one near claval apex and one on the first apical cell. There are also two other markings (one about the middle of clavus and one on brachial cell) which may be not distinct. Thorax yellow with black, legs stramineus. Abdomen brown with light segment margins. In coloration

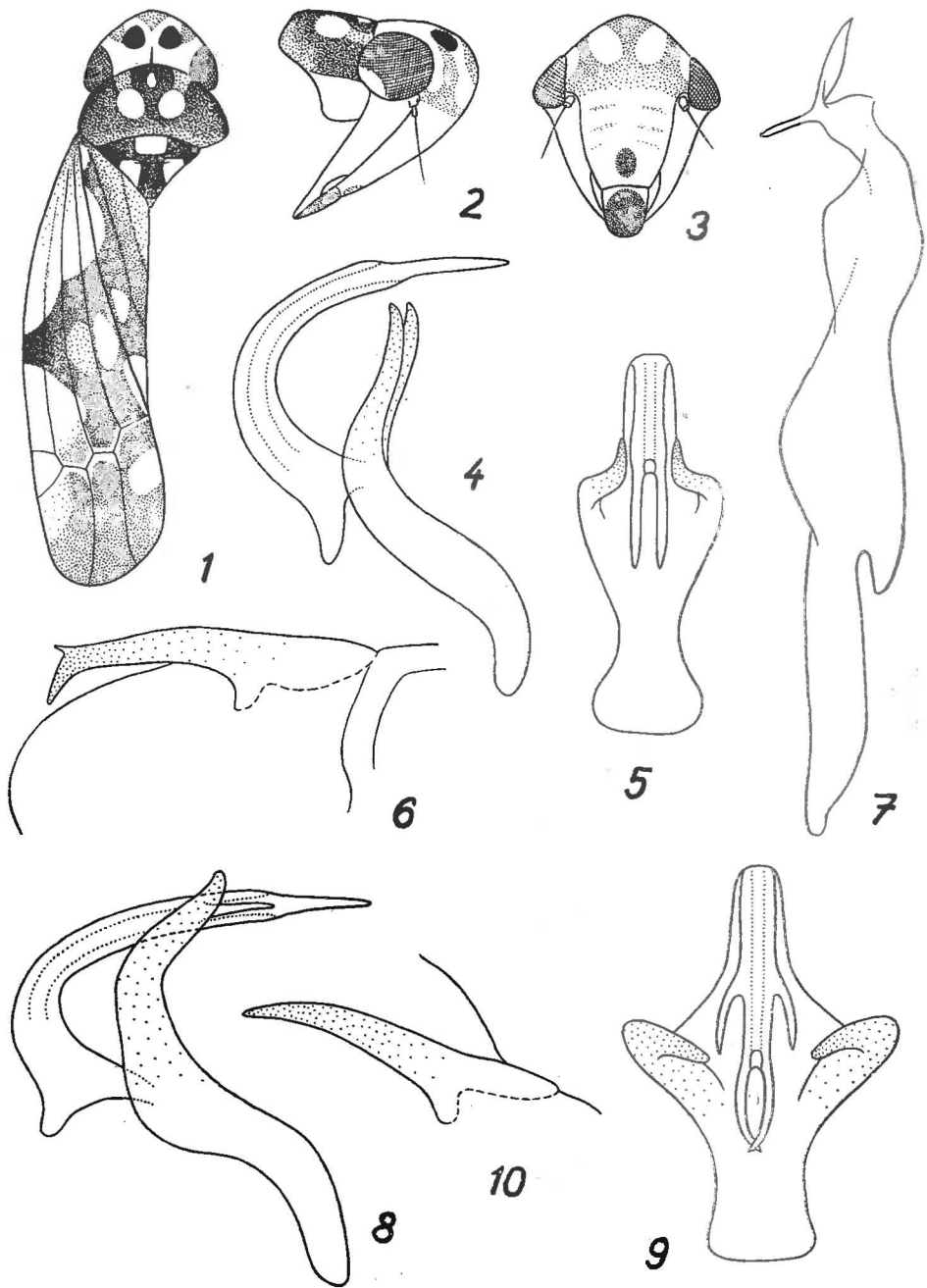


Fig. 12. 1-4 — *Erythroneura maculifrons* Vilb.: 1 — outward appearance, 2-3 — pygofer appendages, 4 — style apex; 5-10 — *Erythroneura perspicillata* Vilb.: 5 — style apex, 6 — outward appearance, 7 — pygofer appendage, 8 — penis, dorsal view, — 9 penis, lateral view, 10 — style.

it resembles *E. echigonis* Ishihara, 1958 but differs in having only three spots on vertex, whereas *E. echigonis* has four spots — two “a little posterior to the middle and two smaller ones on the cephalic margin” (Ishihara, 1958).

Male genitalia are figured in illustration (Figs. 12 : 5, 7—10). Penis with two processes drawing near the shaft. Pygofer appendage with bifurcated apex.

On vine — *Vitis amurensis* Rupr.

Average measurements. General length — 2,92—3,00; width of head — 0,62—0,65; length of vertex — 0,20—0,23; width of vertex — 0,30 to 0,35; length of pronotum — 0,32—0,38; width of pronotum — 0,62—0,68; length of forewings — 2,25—2,38; width of forewings — 0,70.

Material examined. Maritime Territory, Suputinsky Reservation, 23. VIII. 1966, 2 specimens; 18. V. 1966, 2 specimens.

***Erythroneura maculifrons* Vilbaste, 1968**

Figs. 12 : 1—4. It resembles previous species in outward appearance and the structure of male genitalia but differs in the following:

Vertex with only two round spots. There is no spot on cephalic margin. Pronotum lighter, scutellum without spot in the middle between lateral triangulars. All markings on forewings larger, especially the spot near the base of clavus and the spot near claval apex. Middle tooth of style is the largest, whereas in *E. perspicillata* the apical tooth is the largest. Penis is approximately as in *E. perspicillata*.

It lives on vine *Vitis amurensis* Rupr. together with above species.

Average measurements. General length — 3,00—3,25; width of head — 0,62—0,68; length of vertex — 0,22; width of vertex — 0,30—0,35; length of pronotum — 0,32—0,40; width of pronotum — 0,62—0,68; length of forewings — 2,25—2,63; width of forewings — 0,55—0,63.

Material examined. Maritime Territory, Suputinsky Reservation, 23. VIII. 1966, 10 specimens.

***Erythroneura agrillacea* sp. n.**

Figs. 13 : 1—6. It is not distinguishable from other species of *E. parvula* group in outward appearance. Vertex testaceous with two large round spots near cephalic margin. Face dirty-yellow or brownish — with yellowish nearocellar spaces. Pronotum testaceous, sometimes with four brown spots which may be indistinct. Scutellum yellow with black lateral triangulars. Forewings semitransparent, yellowish or brownish-yellow, without any markings.

Male genitalia are distinguishable and figured in illustration (Figs. 13 : 1—6). Penis without processes, with uniformly curved shaft, which is broadened at apex.

Average measurements. General length — 3,12—3,50; width of head — 0,70—0,73; length of vertex — 0,20—0,23; width of vertex — 0,42 to

0,45; length of pronotum — 0,37—0,45; width of pronotum — 0,72—0,80; length of forewings — 2,37—2,50; width of forewings — 0,62—0,70.

Holotype male. Maritime Territory, Mountain Forest Station near Ussuriysk, 29. VIII. 1966.

Paratypes. Maritime Territory: Mountain Forest Station near Ussuriysk, 29. VIII. 1966, 2 specimens; Sichote-Alin State Reservation, 11. IX. 1966, 2 specimens; Suputinsky Reservation, 28. VIII. 1966, 1 specimen, 18. V. 1966, 1 specimen, 5. IX. 1965, 1 specimen.

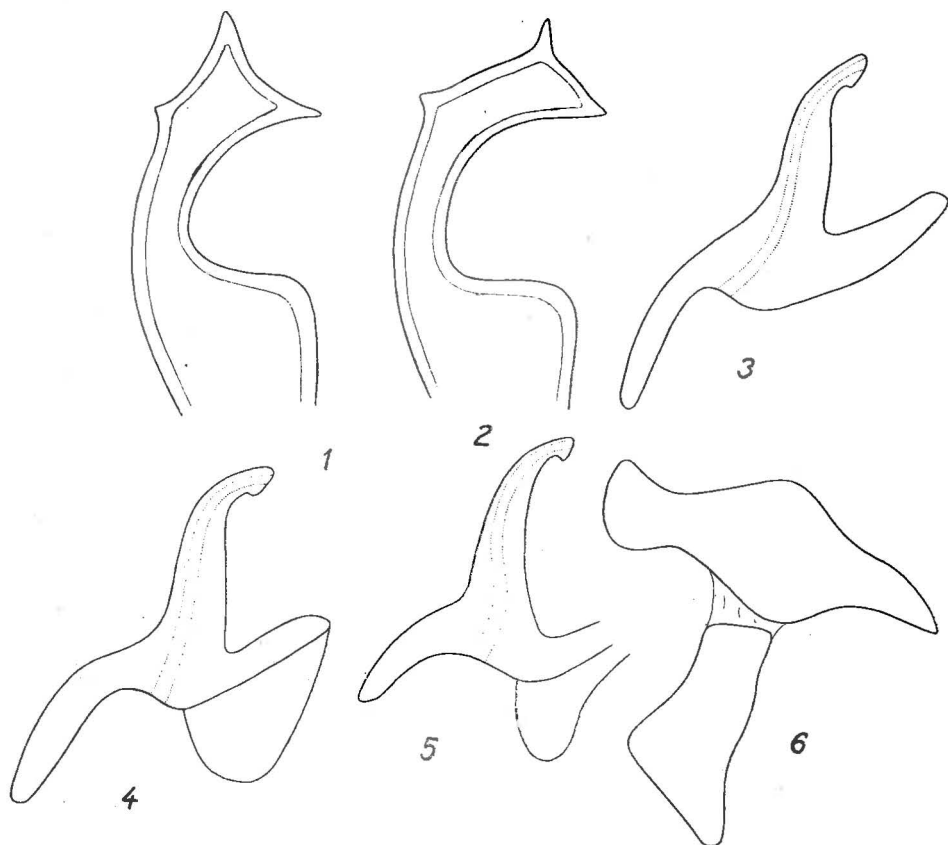


Fig. 13. 1—6 — *Erythroneura agrillacea*, sp. n.: 1—2 — style apices, 3—5 — penis, lateral view, 6 — pygofer appendage.

***Erythroneura remmi* Vilbaste, 1968**

Figs. 15: 1—7. It belongs to group of *E. parvula* Boh. and its coloration is like many species of this group. From the previous species and others it may be well distinguished only by male genitalia. Penis with one more or less developed process. Penis shaft bears two strong tooth-like projections near the base.

Average measurements. General length — 3,12—3,25; width of head — 0,60—0,65; length of vertex — 0,17—0,20; width of vertex — 0,35 to 0,40; length of pronotum — 0,37—0,40; width of pronotum — 0,70—0,75; length of forewings — 2,75—2,88; width of forewings — 0,57—0,63.

Material examined. Maritime Territory, Suputinsky Reservation, 22. to 27. VIII. 1966, 5 specimens.

***Erythroneura arboricola* Vilbaste, 1968**

E. silvarum Vilbaste, 1968 syn. nov.

Figs. 14: 1—6. It also belongs to *E. parvula* group and may be distinguished from other species only by male genitalia. Penis with one process (which may be absent). Apex of penis shaft with little prolongations and therefore seems bifurcate.

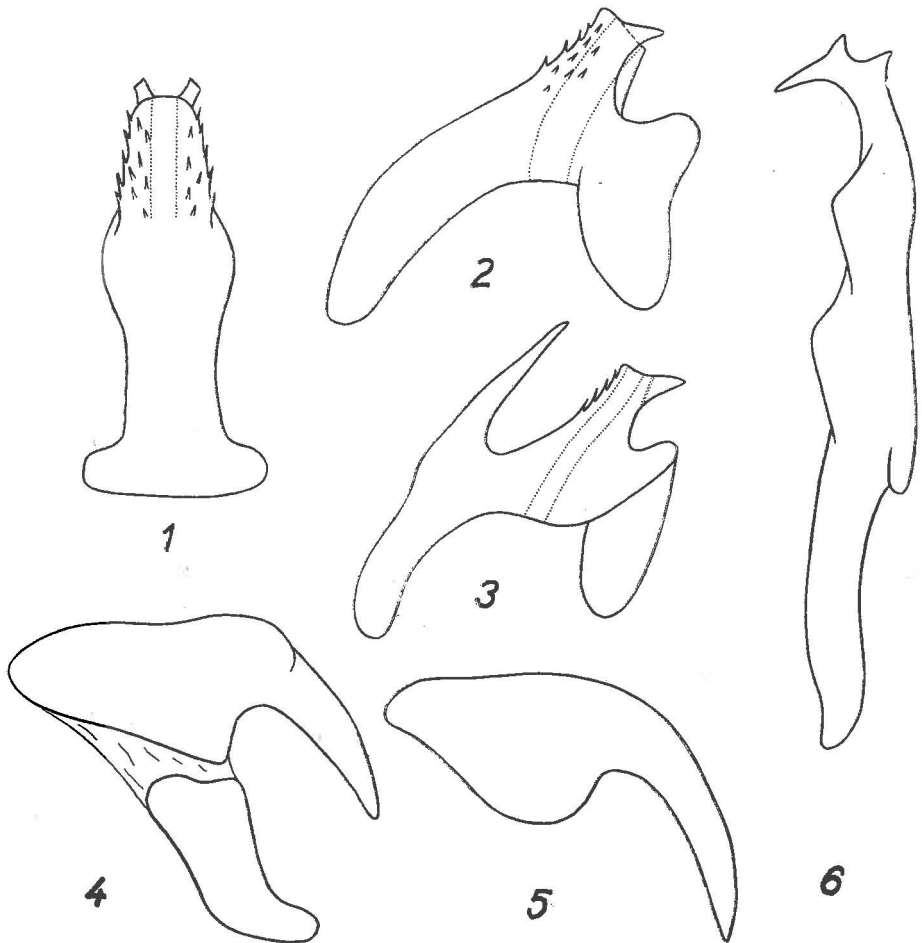


Fig. 14. 1—6 — *Erythroneura arboricola* Vilbaste, 1968: 1 — penis, dorsal view, 2—3 — penis, lateral view, 4—5 — pygofer appendages, 6 — style.

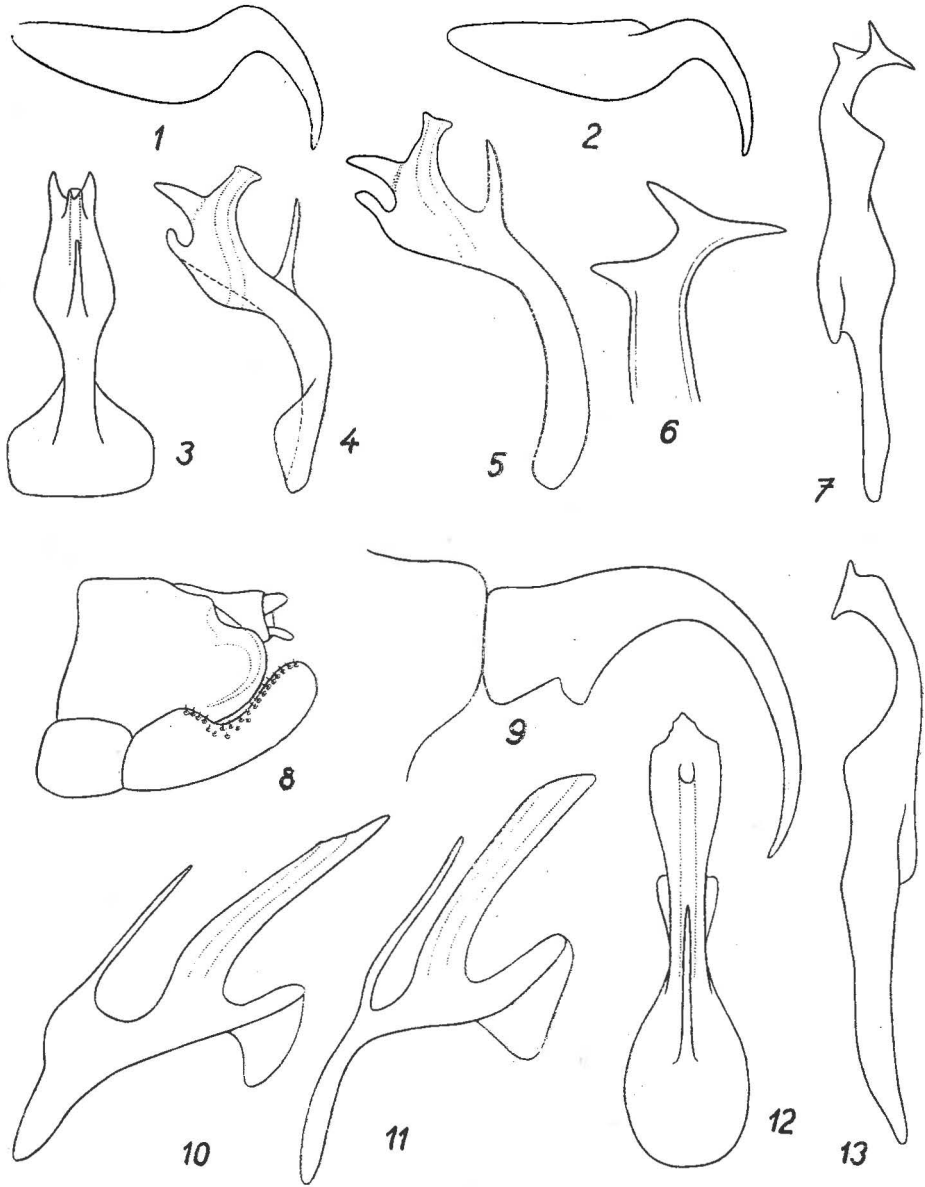


Fig. 15. 1-7 — *Erythroneura remmi* Vilb: 1-2 — pygofer appendages, 3 — penis, dorsal view, 4-5 — penis, lateral view, 6 — style apex, 7 — style; 8-13 — *Erythroneura apicalis* Nawa: 8 — male genital segment from side, 9 — pygofer appendage, 10-11 — penis, lateral view, 12 — penis, dorsal view, 13 — style.

Average measurements. General length — 2,87—3,13; width of head — 0,62—0,70; length of vertex — 0,20—0,23; width of vertex — 0,35 to 0,40; length of pronotum — 0,32—0,40; width of pronotum — 0,70—0,75; length of forewings — 2,50—2,63; width of forewings — 0,57—0,63.

Holotype male. Maritime Territory, Iman district, Pozchiga, 22. VII. 1966.

Paratypes. Maritime Territory: Suchan district, Nesvoevka, 23. V. 1966, 2 specimens; Suputinsky Reservation, 18. V. 1966, 5 specimens; Sichote-Alin State Reservation, 9.—15. IX. 1966, 3 specimens.

***Erythroneura apicalis* (Nawa, 1913)**

E. sandagouensis Vilbaste, 1968, syn. nov.

Figs. 15 : 8—13. Is widespread in the Maritime Territory and lives on vine *Vitis amurensis* Rupr. in the complex with *E. castor* and *E. pollux*.

There is no description and figures of male genitalia of this species in original sources, therefore they are given below.

Pygofer with long hook-like process which is semicircularly curved along its posterior margin. Penis with one process coming from the base and running subparallel to the shaft. Style apex with two usual projections and with one poorly developed, not pointed, projection.

Material examined (many specimens). Maritime Territory: Mountain Forest Station near Ussuriysk, 29. VIII. 1966; Suputinsky Reservation, 18.—28. VIII. 1966.

***Tautoneura* gen. nov.**

It is allied to genus *Erythroneura* Fitch but differs in the following:

Anal tube is supplied with a long right-angularly curved appendage. Penis asymmetrical, with a long wide process on dorsal side and with pair of short processes on ventral one; all processes begin from the penis shaft near its apex, unpaired dorsal process begins more apically than paired one, ventral. Style with arc-shaped curved apex as figures on illustration (Fig. 16 : 4).

Type species — *Tautoneura tricolor* sp. n.

***Tautoneura tricolor* sp. n.**

Figs. 16 : 1—5. Yellow-white. Vertex white, with two grayish-yellow spots to sides of middle line and yellowish bands slightly visible on the general background and running from the spots to eyes. Length of vertex is slightly shorter than its width. Face white, with yellowish inter-antennal band. Pronotum white, with two light-yellow patches near anterior part and yellowish shadings to sides of them. Scutellum white, with two yellow basal triangles. Forewings yellowish-white, transparent. Spot near base and spot in the middle part of clavus as well as spot in the middle of brachial cell are yellow or red. There are also four black-brown spots on the forewing: two near the base of the second and third cells and two on costal area. Thorax, abdomen and legs yellowish-white.

Description of male genitalia is given in diagnoses of the genus.

Average measurements. General length — 2,75; width of head — 0,55—0,58; length of vertex — 0,22; width of vertex — 0,27—0,30; length of pronotum — 0,35—0,38; width of pronotum 0,57—0,60; length of forewings — 2,00; width of forewings — 0,52.

Holotype (♂) and paratype. Maritime Territory, Jakovlevka, 23. VII. 1966, 2 specimens.

***Erythroneura (Punctigerella) lamellaris* Vilbaste, 1968**

Figs. 17: 1—4. Yellow with brown pattern. Vertex yellow, medially brown, two large roundish black spots near anterior margin. Frons brown, with yellow central part and near-ocellar spaces. Clypeus brown, lorum and genae yellow. Pronotum brown with some yellow spots: there are two large spots on disc, one ellipsoidal spot in the middle near anterior margin; in addition pronotum is yellowish posteriorly and anteriorly. Scutellum yellow with black lateral triangulars. Forewings with yellow costal margin, brown zigzag-shaped longitudinal band and black spot in the middle of brachial cell, lying on the background of the band. Claval apex and veins yellow. Thorax mainly yellow, partly black. Abdomen black with yellow sternite margins.

It is well distinguishable from other species of the genus in the structure of male genitalia. Penis comparatively short, with four processes at apex. Two ventral processes are short, dorsal processes are long and issue from the shaft at an acute angle. Apex of pygofer appendage is bifurcated.

Average measurements. General length — 3,20—3,38; width of head — 0,77—0,83; length of vertex — 0,30; width of vertex — 0,45—0,55; length of pronotum — 0,37—0,43; width of pronotum — 0,72—0,80; length of forewings — 2,62—2,75; width of forewings — 0,67—0,75.

Material exam. Maritime Territory, Iman district, Vvedenka, 20. VII. 1966, 1 specimen; Khasan, 14. IX. 1964, 3 specimens.

***Erythroneura (Punctigerella) betulae* Vilbaste, 1968**

Figs. 17: 5—9. Closely related to previous species in outward appearance but differs from them in the substitution of yellow tints of coloration by the whitish ones and by its smaller size.

It may also be well distinguished by the structure of male genitalia. Penis is comparatively long, with two pairs of processes. Ventral processes are short; they are crossed. Dorsal processes are long and issue from the shaft at a right angle; then they are semicircularly curved to shaft. Pygofer appendage with simple, not-bifurcated apex.

Average measurements. General length — 3,00—3,05; width of head — 0,67—0,73; length of vertex — 0,30—0,33; width of vertex — 0,42 to 0,45; length of pronotum — 0,37—0,43; width of pronotum — 0,70—0,75; length of forewings — 2,25—2,38; width of forewings — 0,62—0,65.

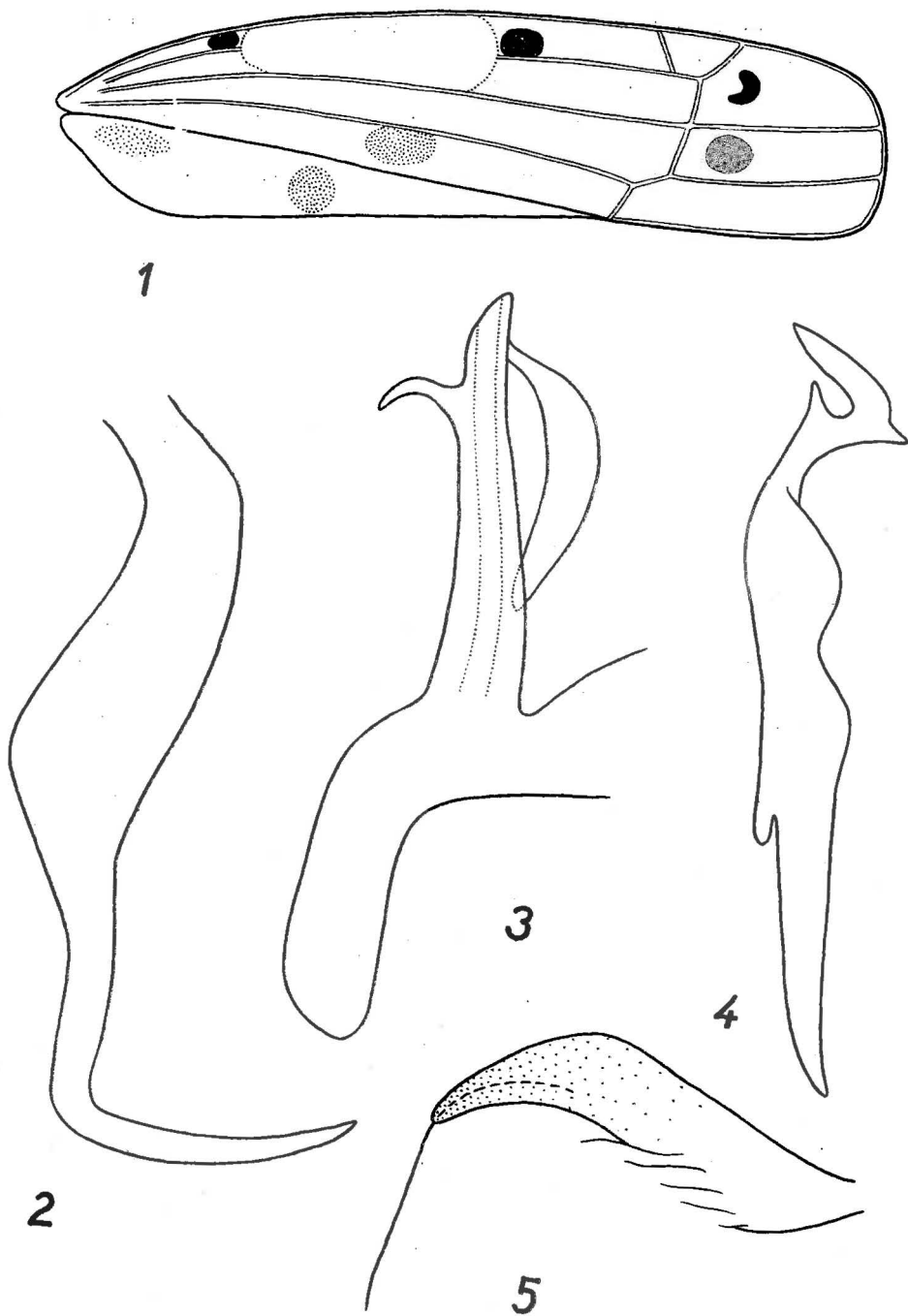


Fig. 16. 1-5 — *Tautoneura tricolor*, gen. et sp. n.: 1 — forewing, 2 — anal tube appendage, 3 — penis, lateral view, 4 — style, 5 — pygofer appendage.

Material examined. Maritime Territory, Sichote-Alin State Reservation, 15.—18. IX. 1966, 4 specimens.

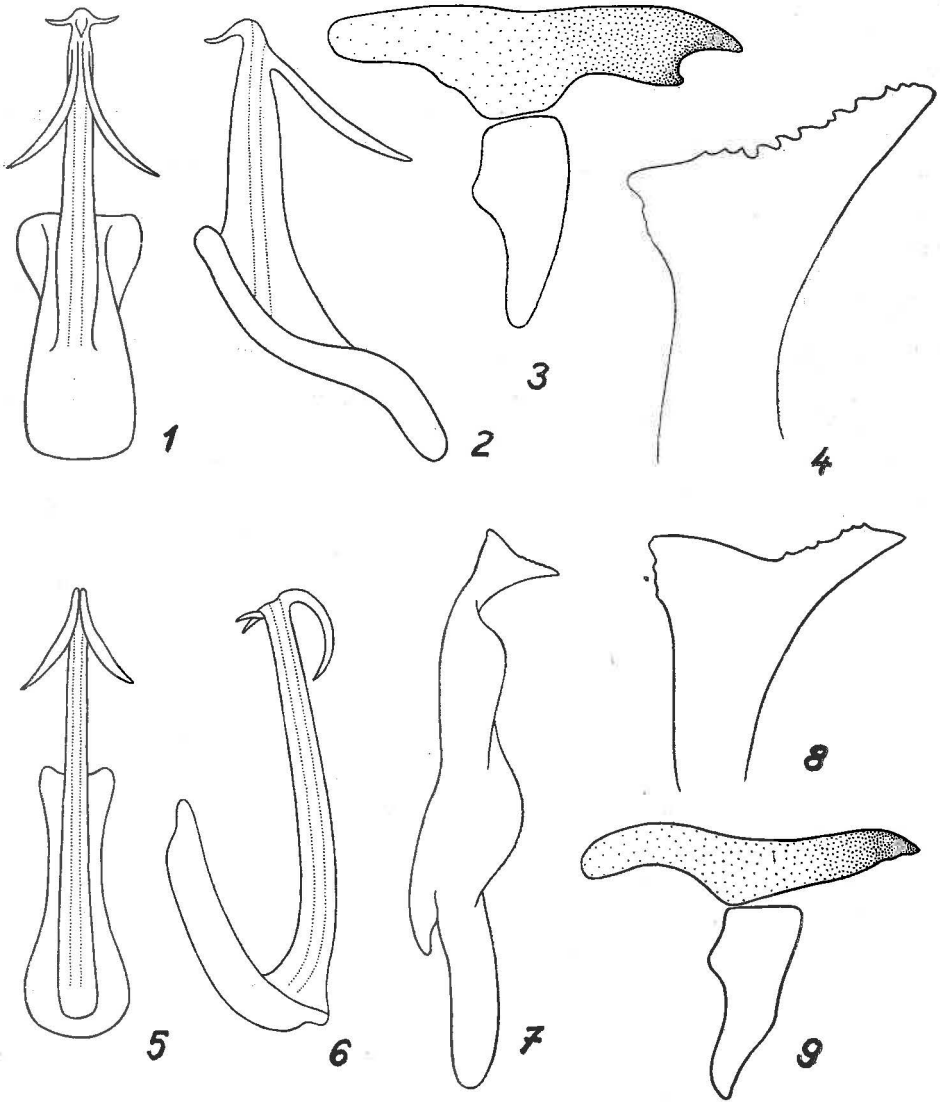


Fig. 17. 1—4 — *E. lamellaris* Vilb.: 1 — penis, dorsal view, 2 — penis, lateral view, 3 — pygofer appendage, 4 — style apex; 5—9 — *E. betulae* Vilb.: 5 — penis, dorsal view, 6 — penis, lateral view, 7 — style, 8 — style apex, 9 — pygofer appendage.

Literature

- Esaki T. and Ito S., 1954: A Tentative Catalogue of Jassoidea of Japan and Adjacent Territories. Tokyo, 1954: 1—315.
- Knight W. J., 1965: A re-description of *Dikraneura micantula* (Zett.) (Homoptera: Cicadellidae) and a closely related new species from Southern Finland. *Ann. Mag. Nat. Hist.*, **6** (13), 89—90; 345—350.
- Ishihara T., 1953: A tentative check-list of the superfamily Cicadelloidea of Japan (Homoptera). *Sci. Rep. Matsuyama Agric. Coll.*, **2**: 1—72.
- Ishihara T., 1958: The superfamily Cicadelloidea of Niigata Prefecture, North Honshu, Japan (Homoptera). *Kontyu*, **26**: 225—232
- Matsumura S., 1931—1932: A Revision of Palaearctic and Oriental Typhlocybid-Genera with Descriptions of new Species and new Genera. *Insecta Matsumurana*, **6**, 1—3; 55—120.
- Mitjaev I. D., 1963: Novye i maloizvestnye vidy cikadok (Auchenorrhyncha, Typhlocybiniae) iz Kazachstana. *Entom. Obozr.*, **42**: 399—408.
- Ross H., 1965: The Phylogeny of the Leafhopper Genus *Erythroneura* (Homoptera, Cicadellidae). *Zool. Beitr.*, N. F., **2**: 247—270.
- Vilbaste J., 1968: K faune cikadovych Primorskogo kraja. AN Est. SSR, Inst. Zool. i Botaniki, Tartu, 1965: 1—180.
- Zachvatkin A. A., 1953: K faune Eupterygidae (Homoptera, Cicadina) Srednej Azii. *Sbornik naučnych robot, izdat. Mosk. Universiteta*, **1953**: 237—245.

Acta faunistica entomologica Musei Nationalis Pragae, 13, No 153.

Redaktor RNDr. Jiří Dlabola, CSc. — Vydává Národní muzeum, Praha. Vyšlo 30. VII. 1969. Náklad 1100. — Vytiskla Státní tiskárna, n. p., Praha 1-Malá Strana, Karmelitská 6, písmem Public.