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**KEYS TO THE INSECTS
OF THE FAR EAST OF THE USSR**

IN SIX VOLUMES

Volume II

HOMOPTERA AND HETEROPTERA

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INTRODUCTION TO THE ENGLISH TRANSLATION

This translation is purported for free distribution only, not for printing or purchase. It was ordered by the Systematic Entomology Laboratory, Research Service, U. S. Department of Agriculture, Washington, DC. The Cicadinea have been translated by Vera A. Richter, the Heteroptera by Lilyana I. Farka, and all other groups by A.V. Stekolshchikov. The layout is by Tatiana V. Dolnik. All the work was carried out under supervision of I.M. Kerzhner.

For convenience of users, the text is divided into the Title and Introduction, introductory text to Homoptera, and six separately paginated chapters corresponding to the major taxonomic subdivisions. Indices are separate to each chapter and attached at their ends. The original page numbers are given in brackets in bold face within the text of the translation; the indices refer to these original pages. The numeration of figures follows the Russian original work.

Information on the taxa occurring in the Russian Far East and their names is updated where possible. These updatings are given in { }. Footnotes, especially those containing holotype information, were usually inserted in the text.

Only the following abbreviations are used in the translation:

Amur. – Amur Province
C – Central (in distribution only)
Chuk. – Chukotka Autonomous District
E – Eastern
Kamch. – Kamchatka Peninsula
Khab. – Khabarovsk Territory
Koryak. – Koryak Autonomous District
Kur. – Kuril Islands
Mag. – Magadan Province
N – Northern
Prim. – Primorsk Territory
Prov. – Province
S – Southern
Sakh. – Sakhalin Island
W – Western

The names of veins are abbreviated as follows:

A – anal vein;
C – costal vein;
Cu – cubital vein;
CuA – anterior cubital vein;
CuP – posterior cubital vein;
M – medial vein;
pt – pterostigma;
R – radial vein;
RS – radial sector;
Sc – subcostal vein.

Roman numbers are used in the figures for segments, sternites, and tergites of abdomen.

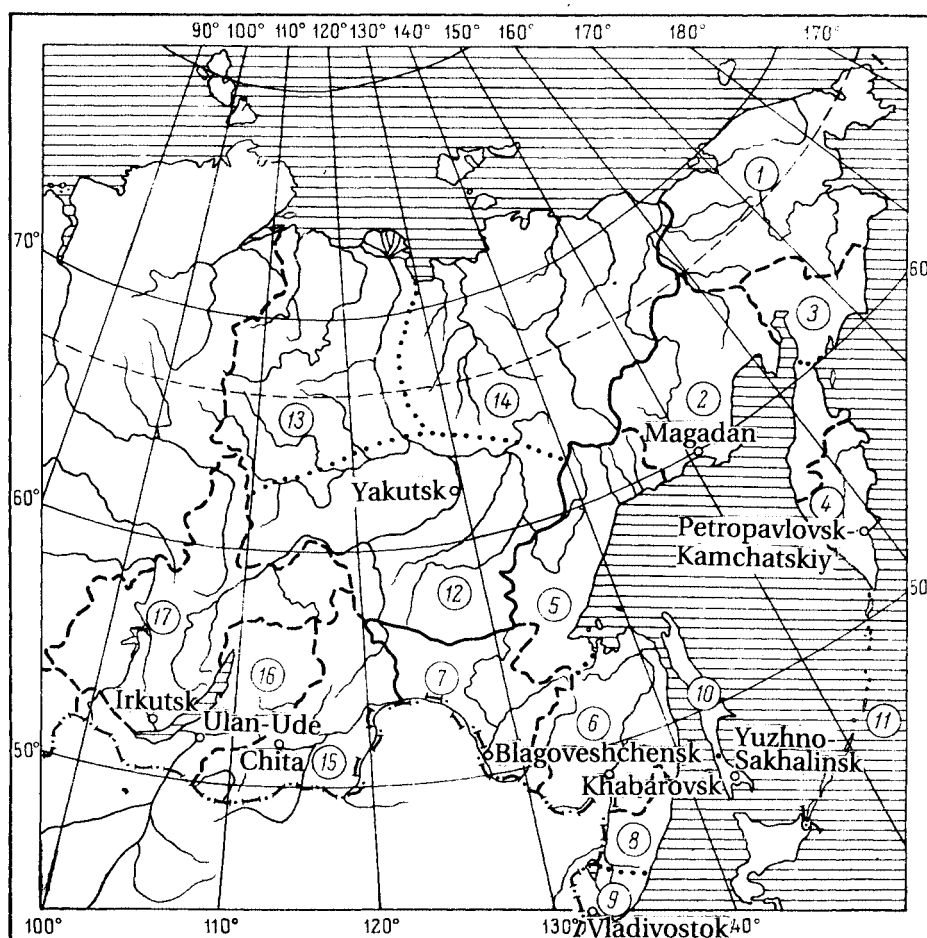
I.M. Kerzhner

INTRODUCTION

The 2nd volume of the "Keys to the insects of the Far East of the USSR" is the first attempt to summarize the information on two economically important orders of Hemimetabola: Homoptera and Heteroptera. All chapters of this book are original and written by specialists working on respective groups. The chapters on cicadellids and scale insects are based on recently published monographs (see References in these chapters), whereas the keys to cicadina other than cicadellids, to psyllids, white flies, aphids, and bugs are published for the first time and represent a result of many years of studies by the authors. The chapter on aphids is particularly worthy of note. Before the start of this work, only 120 species of aphids were recorded from the Far East of the USSR, but now more than 400 species are known. The information on the bug fauna has sufficiently changed in the last decade, 797 species are currently known. Most of insect species included in this volume develop on plants, many of them are important agricultural or forest pests and vectors of viral diseases of plants. Some bugs, especially of the families Nabidae and Anthocoridae, are useful predators.

The following specialists have taken part in preparation of this volume: G.A. Anufriev (Gor'ki State University) and A.F. Emeljanov (Zoological Institute, USSR Academy of Sciences, Leningrad) – suborder Cicadinea; Z.V. Konovalova (Institute of Biology and Soil Sciences, Far East Branch of the USSR Academy of Sciences, Vladivostok) – suborder Psyllinea; E.M. Danzig (Zoological Institute, USSR Academy of Sciences) – suborders Aleyrodinea and Coccinea; N.F. Pashtshenko (Institute of Biology and Soil Sciences, Far East Branch of the USSR Academy of Sciences) – suborder Aphidinea. The work on the families of Heteroptera was subdivided as follows: I.M. Kerzhner (Zoological Institute, USSR Academy of Sciences) – Dipsocoridae, Enicocephalidae, Microphysidae, Miridae, Nabidae, Anthocoridae, Cimicidae; E.V. Kanyukova (Institute of Biology and Soil Sciences, Far East Branch of the USSR Academy of Sciences) – Nepidae, Belostomatidae, Corixidae, Ochteridae, Naucoridae, Aphelocheiridae, Notonectidae, Pleidae, Mesoveliidae, Hebridae, Hydrometridae, Veliidae, Gerridae, Reduviidae, Aradidae, Piesmatidae, Berytidae, Pyrrhocoridae, Urostylidae, Plataspididae, Acanthosomatidae, Cydnidae, Scutelleridae, Pentatomidae; N.N. Vinokurov (Biological Institute, Yakutian Division of the Siberian Branch of the USSR Academy of Sciences, Yakutsk) – Saldidae, Lygaeidae; V.B. Golub (Voronezh State Pedagogical Institute) – Tingidae; G.P. Tshernova (Chuvash State Pedagogical Institute, Cheboksary) – Stenocephalidae, Coreidae, Rhopalidae.

The borders of the Far East and adjacent territories of the USSR, with their abbreviated names used in the text are shown in the map. Abbreviations (see respective lists) are used for some frequently occurring words and names of the authors of the genera and species. For most genera and families, the numbers of species in the World and the USSR faunas are given. The number of species in the Far East is given after description of each taxon. In the distributions, the Far East regions are listed first and followed (after semicolon) by adjacent and other territories of the USSR. The distribution in foreign countries is given at the end, after full stop and dash. The regions are listed in the following sequence: Chuk., Mag., Koryak., Kamch., Komandorskie Islands, Khab., Amur., Prim., Sakh., S Kur. (Kunashir); Yakutia, Chita Prov., Buryatia, Irkutsk Prov., Siberia, Kazakhstan, Middle Asia (Soviet Central Asia),



Map of the Far East and adjacent territories of the USSR.

1-11, Far East, i.e. territory of the USSR east of Yakutia and Chita Prov.: 1, 2, Magadan Prov.: 1, Chukotka Autonomous District (Chuk.), 2, remaining territory of the province (Mag.); 3, 4, Kamchatka Prov.: 3, Koryak Autonomous District (Koryak), 4, Kamchatka Peninsula (Kamch.); 5, 6, Khabarovsk Territory: 5, north of the Tugur River (N Khab.), 6, south of the Tugur River (S Khab.); 7, Amur Prov. (Amur.); 8, 9, Primorsk Territory (Prim.): 8, north of the line lake Malaya Khanka – Rudnaya Pristan' (N Prim.) and south of the above line (S Prim.); 10, Sakhalin Island (Sakh.): north of Poyasok Isthmus (N Sakh.) and south of Poyasok Isthmus (S Sakh.); 11, Kuril Islands (Kur.): Paramushir, Shumshu and neighboring small islands (N Kur.), from Onkotan to Urup (C Kur.), and south of Urup (S Kur.); 12-17, territories adjacent to the Far East: 12-14, Yakutian SSR: south of Aldan and Vilyuy Rivers (S Yakutia), west of Verkhoyansk Range and north of Vilyuy River (W Yakutia), east of the Lena valley and north of Aldan River (E Yakutia); 15, 16, Transbaikal: 15, Chita Prov., 16, Buryat ASSR; 17, Irkutsk Prov.

Caucasus, European USSR. – Japan (Hokkaido, Honshu), Korean Peninsula, China (including Taiwan), Mongolia, Afghanistan, Iran, Asia anterior, W Europe, N Africa, N America, Philippines, SE Asia, India, Australia. If the species occurs in all regions of the Far East, "everywhere" is given in the distribution without listing of regions. Body sizes (except if noted otherwise) are given in millimetres ("mm" is omitted). Harmful species are marked with an asterisk (*). The names of vascular plants follow S.K. Cherepanov (Vascular plants of the USSR, Leningrad, 1981, 510 pp.).

The editorial work was subdivided among the members of the editorial board as follows: E.V. Kanyukova – Heteroptera, Aleyrodinea and Coccinea; Z.A. Konovalova – Psyllinea; S.Yu. Storozhenko – Cicadinea; A.S. Lelej – Aphidinea and general editing of the volume.

The editorial board is thankful to all authors for their work. In addition to the authors, artists O.V. Zvyagintseva, S.I. Karpov, N.E. Zakharova and T.G. Kuchina participated in making figures. M.M. Kazantseva helped in the work with the manuscript. The editors are thankful to all those who contributed to publication of this book.

A.S. Lelej

ABBREVIATIONS OF THE AUTHORS' NAMES

Aiz.	– Aizenberg	J. Sahlb.	– J. Sahlberg
Am. et Serv.	– Amyot et Serville	Kalt.	– Kaltenbach
Anufr.	– Anufriev	Kbm.	– Kirschbaum
Bal.	– Balachowsky	Kby.	– Kirby
Bär.	– Bäremsprung	Kerzh.	– Kerzhner
B. d. F.	– Boyer de Fonscolombe	Kir.	– Kiritshenko
Bergr.	– Bergroth	Kirk.	– Kirkaldy
Boh.	– Boheman	Klimasz.	– Klimaszewski
Borchs.	– Borchsenius	Kol.	– Kolenati
Buckt.	– Buckton	Konov.	– Konovalova
Burm.	– Burmeister	Korm.	– Kormilev
Car.	– Carayon	Kusn.	– Kusnezov
C. B.	– C. Börner	Kuw.	– Kuwayama
Chol.	– Cholodkovsky	L.	– Linnaeus
Ckl.	– Cockerell	Lansb.	– Lansbury
C. Sahlb.	– C. Sahlberg	Lap.	– Laporte de Castelnau
Curt.	– Curtis	Latr.	– Latreille
Dahlb.	– Dahlbom	Lep. et Serv.	– Lepeletier et Serville
Dall.	– Dallas	Lest.	– Leston
DeL.	– DeLong	Leth.	– Lethierry
Dist.	– Distant	Lindb.	– Lindberg
Dlab.	– Dlabola	Lndgr.	– Lindinger
Duf.	– Dufour	Lnv.	– Linnavuori
Dwor.	– Dworakowska	Log.	– Loginova
Edw.	– Edwards	Lundbl.	– Lundblad
Em.	– Emeljanov	MacG.	– MacGillivray
E. Wagn.	– E. Wagner	Mam.	– Mamontova
F.	– Fabricius	Mats.	– Matsumura
Fall.	– Fallén	M.-D.	– Meyer-Dür
Fieb.	– Fieber	Mel.	– Melichar
Fl.	– Flor	Metc.	– Metcalf
Först.	– Förster	Miy.	– Miyamoto
Funkh.	– Funkhouser	Miyaz.	– Miyazaki
Geoffr.	– Geoffroy	Mont.	– Montandon
Germ.	– Germar	Mordv.	– Mordvilko
Gill.	– Gillette	M. R.	– Mulsant et Rey
Gmel.	– Gmelin	Motsch.	– Motschulsky
Goot	– van der Goot	Nevs.	– Nevsky
Guér.	– Guérin-Méneville	Newst.	– Newstead
Guerc.	– del Guercio	Ol.	– Olivier
Gz.	– Goeze(Goetze)	Osh.	– Oshanin
Hart.	– Hartig	Oss.	– Ossiannilsson
Heyd.	– Heyden	Panz.	– Panzer
Hob.	– Hoberlandt	Pass.	– Passerini
Hodk.	– Hodgkinson	Pér.	– Péricart
Horv.	– Horváth	Popp.	– Poppius
Hpt.	– Haupt	Put.	– Puton
H. R. L.	– Hille Ris Lambers	Rem.	– Remane
H.-S.	– Herrich-Schäffer	Reut.	– Reuter
Hung.	– Hungerford	Rib.	– Ribaut
Hutch.	– Hutchinson	R. Sahlb.	– R. Sahlberg
Ish.	– Ishihara	Schell.	– Schellenberg
Iv.	– Ivanovskaja	Schill.	– Schilling
Jacz.	– Jaczewski	Schumm.	– Schummel
Jak.	– Jakovlev	Scop.	– Scopoli
Jos.	– Josifov	Scudd.	– Scudder

Seid. – Seidenstücker
Shap. – Shaposhnikov
Sign. – Signoret
Sir. – Siraiwa
Southw. – Southwood
Spin. – Spinola
Steph. – Stephens
Stich. – Stichel
Szeleg. – Szelegiewicz
Tam. – Tamanini
Targ. – Targioni-Tozzeetti
Terezn. – Tereznikova
Theob. – Theobald
Tullgr. – Tullgren

Uhl. – Uhler
Us. – Usinger
V. D. – Van Duzee
Vilb. – Vilbaste
Vin. – Vinokurov
Walk. – Walker
Wall. – Wallengren
Walt. – Walton
Westw. – Westwood
Will. – Williams
Wróbl. – Wróblewski
W. Wagn. – W. Wagner
Wyg. – Wygodzinsky
Zachv. – Zachvatkin
Zett. – Zetterstedt

[p. 9] 20. Order Homoptera

A.F. Emeljanov

Phytophagous insects with scarcely movable hypognathous head, without gula and with piercing-sucking mouthparts: segmented rostrum containing mandibular and maxillary stylets as in Heteroptera, but arising from posterior margin of head. Maxillary and labial palpi absent. Clypeus strongly developed, divided by a transverse suture into postclypeus and anteclypeus; lateral parts of postclypeus separated, forming so called lora, or mandibular plates. Two pairs of wings, as a rule; in flight they are coupled; the fore wings may be more consolidated than hind wings, in this case, the whole wing is consolidated. Legs ambulatorial. Tarsi with not more than 3 segments. Hind legs often saltatorial, but not thickened.

Body mostly compact, usually small (2-5-10), but some cicadines (cicadas, lantern flies) are large (up to 70-80). Integument from thick (in cicadines, psyllids) to delicate and thin (in aphids and whiteflies), richly furnished with various wax glands. Head scarcely movable, with wide neck. Eyes mostly well developed but may be reduced up to complete loss. 3 or 2 ocelli or ocelli absent, usually in non-flying forms. In addition to compound eyes and ocelli, so called lateral ocelli, or stemmata, may be developed in aphids (triommatidia) and males of scale insects. A very large clypeus is typical; it is divided by a suture into distal part (anteclypeus) and proximal part (postclypeus); lateral parts of postclypeus (lora) also are usually separated by a suture from its main part. Mouthparts strongly specialized. Palpi absent. Jaws (mandibles and maxillae) transformed into thin piercing stylets enclosed into segmented gutter-like rostrum formed by strongly modified labium. Rostrum initially 3-segmented, sometimes the number of its segments is greater (up to 5) or less, up to a strong reduction and atrophy in aphagous species (males of scale insects, some forms of aphids). Rostrum arises from posterior part of head and not rarely is extended in the space between fore coxae. Mandibular stylets envelop as two-folding sheath the maxillary stylets bearing on their contiguous surfaces two grooves, which form together alimentary and salivary canals. Alimentary canal opens basally into preoral cavity (cibarium); the salivary canal is connected with the opening of salivary duct situated at the apex of a large hypopharynx. Hypopharynx is furnished with powerful salivary pump. Antennae mostly filiform, 6-9-segmented, but not infrequently the number of segments declines to 5-2 or increases to 11-16 and even to 30 (males of scale insects). In cicadines, flagellum becomes usually thin completely or starting with its 2nd segment (i.e. 4th antennal segment) and is finely secondarily segmented, so that the primary segmentation is indistinguishable.

Prothorax usually small, collar-shaped, but in the family of treehoppers with a strongly hypertrophied dorsal part prolonged into horns and projections. Mesothorax and metathorax well developed and often bearing full-developed wings. Legs of usual structure, with 3-, 2- or even 1-segmented tarsi; sometimes legs weakened and reduced or lost (in females of many scale insects, in some aphids). Usually 2 claws, but in most scale insects only one. Hind legs often saltatorial (cicadines, except cicadas; psyllids; whiteflies), [p. 10] longer, but with thin femora and tibiae, as saltatorial muscles are situated within coxae and thorax. Wings from well developed, used for flight, to diversely reduced, having only covering function (in many

cicadines), or completely lost (in females of scale insects, often in aphids). In flying Homoptera, both pairs of wings are developed nearly always; solely in males of scale insects only fore wings are present. Wings of Homoptera are characterized by a permanent fusion of subcostal vein to radial vein; these veins are secondarily separated in subbasal part of fore wings only in cicadas and froghoppers. In cicadines, the venation is rather complete, usually with peripheral vein at the wing apex and with transverse veins. In Sternorrhyncha, transverse veins and often also peripheral vein (which is present only in psyllids) are absent. Claval suture on fore wings, along which the posterior branch of Cubitus runs, is well developed in cicadines, visible in psyllids and in some whiteflies. Besides, in Sternorrhyncha, veins from subcostal to anterior cubital form a common stem at wing base. In Auchenorrhyncha, as in Heteroptera, the ano-jugal lobe of hind wings is well developed, while in Sternorrhyncha, the hind wings, if developed, have no such a lobe and are similar in shape to fore wings. Abdomen usually developed typically and modified slightly; in cicadines, all 11 segments are distinguishable; in other groups, the basal or last segments may disappear or fuse to adjacent ones. Abdominal spiracles in cicadines are developed completely on all visceral segments (I-VIII); in other groups, they disappear partly or completely, more often on basal and distal segments, especially on segments I and VIII; more rarely they are absent on abdomen (some scale insects) or present on segments II and VIII (whiteflies). Ovipositor of the type initial for all insects, with 3 pairs of valvulae, but often strongly modified or reduced. Male genitalia various, strongly different in certain groups; penis and a pair of harpagones (traditionally named differently in separate groups: forcipes, parameres, styli) are always developed. Terminal part of abdomen surrounding the anus consists of derivatives of the tergal area of segment XI above anus (opercula in whiteflies, cauda in aphids, etc.), and of paraprocts fused into an elongate structure under anus (anal style in cicadines, lingula in whiteflies, anal plate in aphids, etc.). This last area may be retracted into a cavity of the primary segment X. Metamorphosis incomplete, sometimes complicated by the appearance of provisory organs (*Cicadidae* a. o.) or of inactive stage (males of scale insects, whiteflies); development of apterous forms is simplified. Aphids are characterized by polymorphism with alternation of parthenogenetic and sexual generations, and often by viviparity. Highly mobile forms as well as scarcely movable or attached sedentary forms living on plants openly, in galls, and in soil on roots. Oligophagous and polyphagous, usually on flowering plants, also on gymnosperms, more rarely on ferns, horse-tails, mosses and fungi. They suck contents from the vascular system, phloem and xylem vessels (system bibitors) or directly from cells (local bibitors). The presence of a filter chamber of the alimentary canal and specific organs, mycetomes, containing symbiotic bacteria is associated with the mode of feeding. A filter chamber eliminates from the organism rapidly the redundant food components (water, sugars); the symbionts produce vitamins and nitrates missing in food (mainly in system bibitors).

Many species are pests of agricultural crops and trees. The damage is caused directly by feeding on plants, by transmitting of viral and mycoplasmatic diseases with saliva, by pollution of leaves and other plant organs with sweet feces (so called honeydew) populated by pathogenous fungi, and by sawing in the twigs by ovipositor at egg laying (the latter is typical of cicadas and some other cicadines).

With regard to systematics, Homoptera are close to Heteroptera, and are often considered together with them in united order Hemiptera, [p. 11] or Rhynchota. On the other hand, cicadines are in many respects more close to Heteroptera than to other Homoptera, i.e. Sternorrhyncha were the earliest branch of the common stem of Rhynchota, which makes it possible to divide Homoptera into two orders:

Auchenorrhyncha and Sternorrhyncha (Cicadida and Aphidida, using another nomenclature), along with the order Heteroptera (Cimicida). In the classification accepted here, the order Homoptera is divided into 5 suborders, but all Sternorrhyncha are often considered as one suborder with its main subdivisions considered as infraorders (Psyllomorpha, Aleyrodomorpha, Aphidomorpha, Cocco-morpha). There exists also a viewpoint that the rank of an infraorder should be attributed to psyllids together with whiteflies (Psyllomorpha) and aphids together with scale insects (Aphidomorpha), according to the degree of phylogenetic relationship. But the differences of these groups in each pair are so striking that it seems unlikely that this viewpoint deserves a positive appraisal. Coleorrhyncha (one family: Peloridiidae), a small group of Rhynchota from Southern Hemisphere placed alternately in Homoptera or Heteroptera, apparently represents the most primitive part (suborder) of Heteroptera.

KEY TO SUBORDERS

1. Tarsi 3-segmented. Apex of hind tibiae with 2 rows of teeth. Antennae usually with two large basal segments and fine setaceous flagellum, which is secondarily segmented completely or starting with its 2nd segment (4th antennal segment); sometimes antennae 7-9-segmented, with relatively thick, primarily segmented flagellum. Hind wings, if developed, with a well developed ano-jugal lobe 1. **Cicadinea** – cicadines (p. 12)
- Tarsi 1-2-segmented, or reduced, or lost. Apex of hind tibiae without teeth or with 1 row of teeth. Antennae with primarily segmented, relatively thick flagellum usually consisting of 5-8 segments. Hind wings, if developed, similar to fore wings, devoid of ano-jugal lobe 2
2. Tarsi with 1 claw, nearly always one-segmented (rarely with a small additional segment at base). If tarsi and legs absent, body without pubescence and abdomen without tubules and cauda, and also without cup-shaped depression posterodorsally. Females wingless, often sedentary; males with a pair of fore wings only and without rostrum 5. **Coccinea** – scale insects (p. 686)
- Tarsi with 2 claws, usually 2-segmented. If tarsi absent, body covered with a white waxy pulverulence or abdomen with a cauda or a pair of tubules, or with a cup-shaped depression posterodorsally. Two pairs of wings or wings absent. If winged, rostrum present 3
3. Wings always present, with a peripheral vein. Hind coxae fused to metathorax, bearing meracanthus (a projection of meron); apex of hind tibiae with spur-like teeth 2. **Psyllinea** – psyllids (p. 495)
- Wings present or absent; if present, then without peripheral vein. Hind coxae free, without meracanthus; apex of hind tibiae without teeth 4
4. Wings always present. Eyes reniform or completely divided into upper and lower part. Abdomen petiolate, with a narrow first segment. Sternites III-IV in female and sternites III-VI in male bearing waxy fields. When moving, use as a support the pretarsus only. Are capable to jump using hind legs 3. **Aleyrodinea** – whiteflies (p. 540)
- Wings present or absent. Eyes, if present, rounded (not reniform and not divided into two parts). Abdomen without waxy fields on sternites. When moving, use as a support the tarsus. If jumping (rarely), using fore legs 1. **Aphidinea** – aphids (p. 546)

[p. 12] Suborder Cicadinea (Auchenorrhyncha)**G.A. Anufriev & A.F. Emeljanov**

Medium-sized or small, more rarely large insects, mostly with moderately elongate body. Head (Figs. 1, 241) immovably attached to prothorax, with large compound eyes and 2 or 3 ocelli (ocelli sometimes lacking). The upper part of head visible from above is called vertex; its lower part visible from below is called face. Most of the face is rather often occupied by strongly developed clypeus; more rarely clypeus is diminished and occupies only the lower part of the face. Clypeus is divided by a transverse suture into lower, smaller part, anteclypeus, and upper, larger part, postclypeus, which is sometimes fused without suture with frons, forming frontoclypeus. The upper part of postclypeus may be extended to vertical surface of head, where it often forms a distinctly delimited vertical area (Figs. 1: 6, 7). The clypeus is flanked by lora; the marginal area of face outside of clypeus and lora is formed by maxillary plates turning higher into genae, which extend not higher than eyes; space before eyes (from eyes to margin of clypeus or frons) is occupied by temples. Antennae (Fig. 2) are situated on temples (before eyes) or on genae (under eyes). Antennae with two large basal segments and secondarily segmented flagellum; a small separate third segment may be present at base of flagellum; sometimes antennae 9-10-segmented, with thicker 1st and 2nd segments. When clypeus is small, ocelli are situated on face: the middle ocellus on frons near the margin of clypeus, lateral ones at the boundary between genae and temples; when clypeus is large, ocelli are mostly shifted to vertex or to its margin. Posteroventrally, the head is continued by segmented rostrum (3-4-, rarely 5-segmented) formed by labium and covered at base from above with labrum. Rostrum encloses piercing mandibular and maxillary stylets.

Prothorax is characterized in most cicadines by incomplete and indistinct boundary between tergal and pleural areas (Figs. 11: 1, 2); in Fulgoroidea, pleurites are separated but more or less covered by well developed paranotal lobes of pronotum (Fig. 11: 3). Pronotum usually bears lateral carinae (boundaries between upper part and sides of pronotum, or paranota); in Fulgoroidea, there are also numerous additional carinae (Fig. 242). In the family Membracidae and in some Ledridae, pronotum has large projections. Hind margin of pronotum nearly always forms an evagination covering part of mesonotum; evagination is weakly developed only in Fulgoroidea and Cicadidae. A separated triangular area of mesonotum (part of morphological scutum and scutellum) situated between folded anterior wings is called scutellum; in Fulgoroidea, it usually bears carinae (Figs. 336: 1, 2); in Machaerotidae, it is often stretched into a robust process.

Fore wings (Figs. 5: 1; 6: 1; 7: 1; 8: 1) membranous or consolidated (hemelytra), sometimes shortened, divided, as in Heteroptera, by a longitudinal oblique fold (claval suture) into anterior (corium) and posterior (clavus) parts; area of corium distal to apex of clavus (from R_1 apex to CuP apex) is called membrane. In Fulgoroidea, bases of fore wings are covered with so called humeral plates, or tegulae. Hind wings (Figs. 5: 2; 6: 2; 7: 2; 8: 2) membranous, sometimes shortened (mostly when anterior wings are shortened). In flight, wings are coupled by folds along posterior margin of clavus of fore wing and costal margin of hind wing covering each other. A special feature of venation is the fusion of Sc and R in both pairs of wings; Sc and R are secondarily separated at base of fore wings only in Cercopoidea and, to small extent, in Cicadoidea. In its distal part, Sc is not separate. At base of wing, M is also



1, general scheme of structure; 2, Membracidae, Microcentrus (Cicadelloidea), anterior view (facial side); 3, 4, Cicadellidae, Deltocephalinae: 3, dorsal view (vertical side), 4, anteroventral view (facial side); 5, Tettigometridae, *Hilda* sp. (Fulgoroidea), anteroventral view (facial side); 6, Cicadidae (Cicadoidea), dorsal view (vertical side); 7, 8, Aphrophoridae (Cercopoidea): 7, dorsal view (vertical side), 8, anteroventral view (facial side); 9, 10, Dictyopharidae (Fulgoroidea): 9, dorsal view (vertical side), 10, anteroventral view (facial side); 11, 12, Delphacidae, Cixiidae (Fulgoroidea): 11, dorsal view (vertical side), 12, anteroventral view (facial side). *ac*, anteclypeus; *amt*, acrometope; *lp*, lateral parts of metope ("frons"); *lc*, lateral carinae of metope ("frons"); *lbr*, labrum; *t*, temple; *sc*, sutura coronalis; *e*, eye; *oc*, ocellus (ocelli); *bvf*, boundary between surfaces of face and vertex; *omv*, occipital margin of vertex; *c*, coryphe ("vertex" in Fulgoroidea); *f*, frons (shaded); *mcp*, maxillary plates; *mc*, macrocoryphe; *m*, metope ("frons" in Fulgoroidea); *sa*, supraantennal carina; *pc*, postclypeus; *pf*, preocular field (in Fulgoroidea); *ic*, intermediate carinae of metope ("frons"); *mo*, reduced median ocellus (in Tettigometridae); *mp*, median parts of metope ("frons"); *mk*, median carina of metope ("frons"); *v*, vertex; *vf*, vertical field of postclypeus; *l*, lora; *af*, antennal foramen of head capsule (antenna removed); *a*, antenna; *fc*, frontoclypeus; *g*, gena; *em*, eumetope.

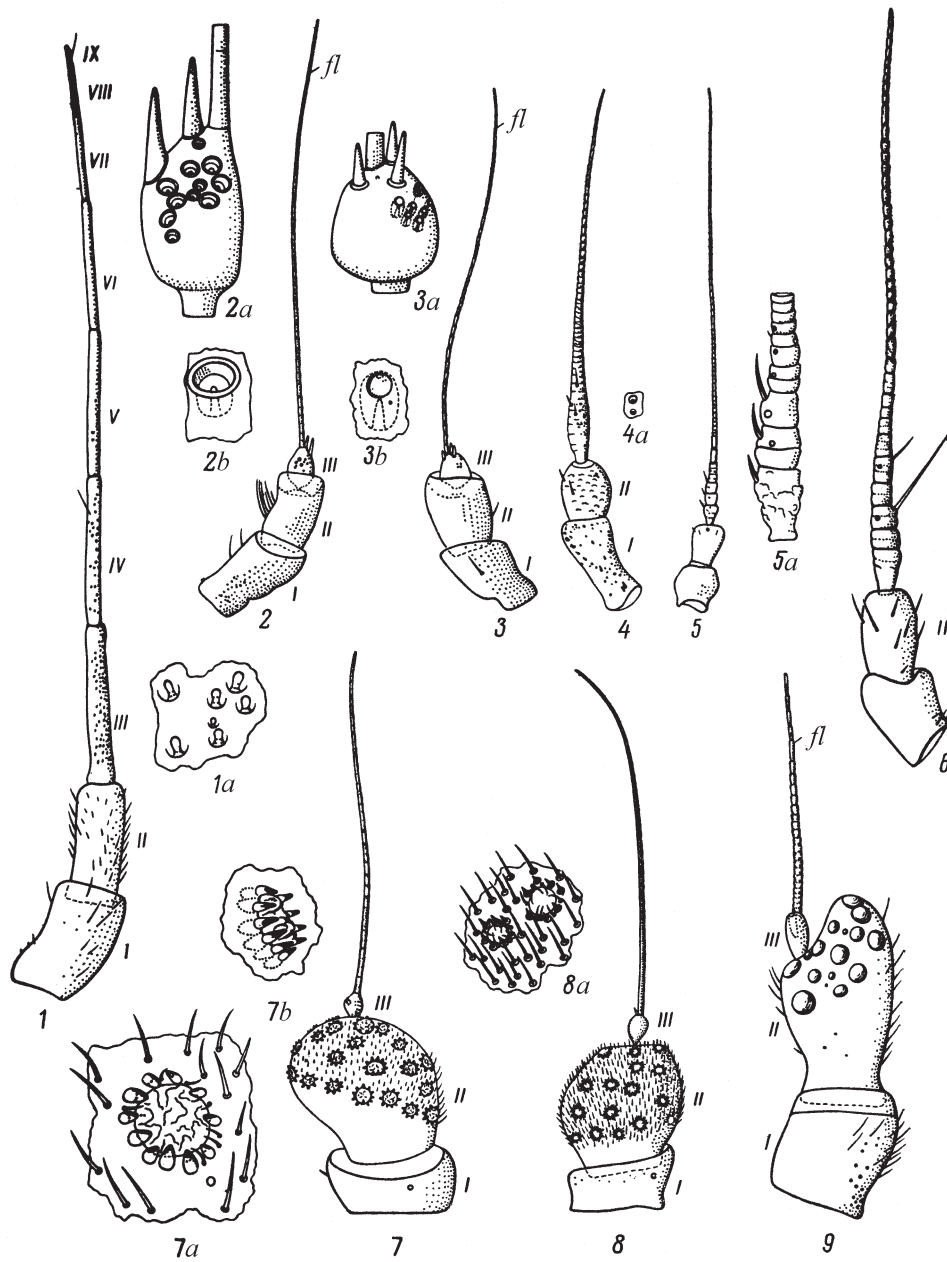


Fig. 2. Cicadines. Antennae (after Silvestri).

1, Cicadoidea, *Cicada orni* L. (1a, sensillum of 3rd segment); 2, 3, Cercopoidea: 2, *Cercopis arcuata* Fieb. (2a, 3rd segment; 2b, sensillum of 3rd segment); 3, *Lepyronia coleoptrata* (3a, 3rd segment; 3b, sensillum of 3rd segment); 4-6, Cicadelloidea: 4, *Centrotus cornutus* (4a, sensillum of flagellum); 5, *Cicadella viridis* (5a, base of flagellum); 6, *Rhytidodus decimusquartus* Schrank; 7-9, Fulgoroidea: 7, *Dictyophara europaea* L. (7a, sensillum of 2nd segment, dorsal view; 7b, the same, oblique lateral view); 8, *Reptalus panzeri* Löw (8a, part of 2nd segment with sensilla); 9, *Tettigometra impressifrons* M.R. fl, flagellum. Antennal segments are designated by Roman numerals.

fused with stem *ScR*. Cubital stem branches from its very base into *CuA* and *CuP*. Not far from the base, the stem *ScRM* anteriorly and *CuA* posteriorly are united by so called arcus delimiting the typical basal cell, which is rarely not expressed due to reduction or approximation and uniting of neighboring stems. On fore wings, a claval

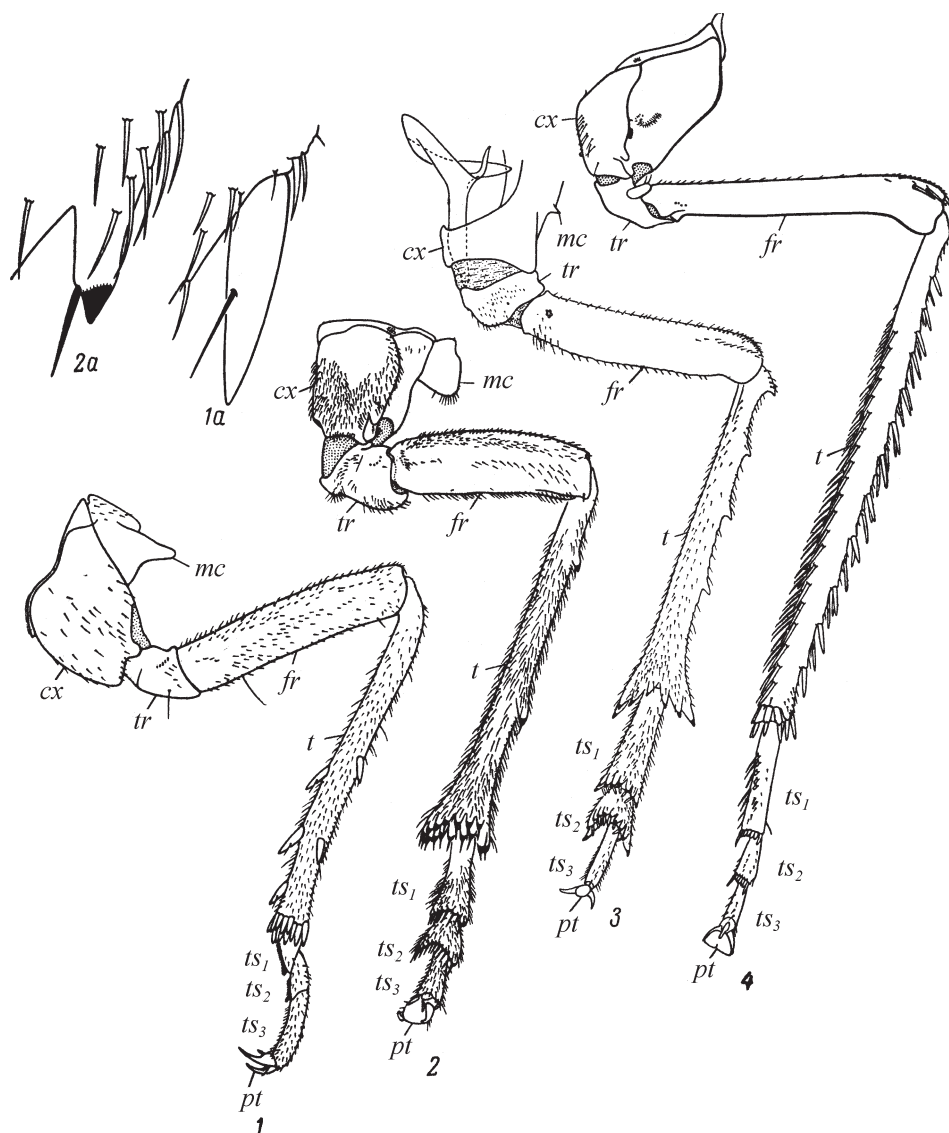


Fig. 3. Cicadines. Hind legs, ventral view (after Emeljanov).

1, Cicadoidea (*Melampsalta caspica* Kol.) (1a, spur on tibia); 2, Cercopoidea (*Aphrophora alni*) (2a, tooth on tibia); 3, Fulgoroidea (*Ototettix jaxartensis* Osh.); 4, Cicadelloidea (*Cicadella viridis*). fr, femur; tr, trochanter; t, tibia; ts, tarsus (ts₁-ts₃, tarsomeres); mc, meracanthus; pt, pretarsus; cx, coxa.

suture runs along *CuP* before it; it begins beyond base of *Cu* but crosses obliquely the branch *CuP* near its base. The usually triangular clavus [p. 15] is situated beyond suture, and corium and membrane before suture. Distal part of wing from line connecting apex of *ScR*₁ with apex of clavus is considered a membrane. This boundary is sometimes expressed by so called nodal line (in Cicadidae). Veins *PCu*, *A*₁ and *A*₂ run on clavus, *A*₂ running along posterior margin of fore wing. On fore wings, distal to end of vein *ScR*₁, the costal vein is continued by so called peripheral vein; outside the peripheral vein, so called peripheral membrane, or appendix, may be situated. Anterior margin of wing before costal vein may be widened into so

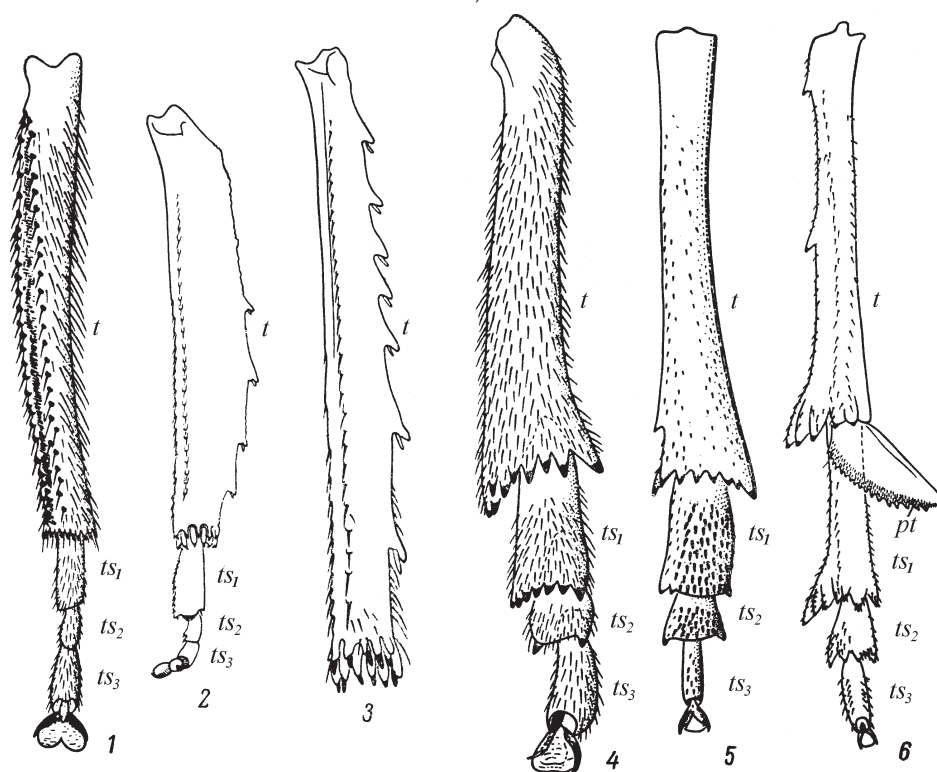


Fig. 4. Cicadines. Hind tibiae and tarsi, ventral view (after Silvestri and original).

1-3, Cicadelloidea: 1, Membracidae (*Centrotus cornutus*); 2, Ledridae (*Ledra aurita* L.); 3, Ledridae (*Petalocephala* sp.); 4-6, Fulgoroidea: 4, Tettigometridae (*Tettigometra impressifrons* M.R.); 5, Flatidae (*Phantia subquadrata* H.-S.); 6, Delphacidae (*Javesella pellucida*). *pt*, posttibial spur in Delphacidae.

See Fig. 3 for remaining designations.

called precostal field delimited anteriorly by a supplemental precostal vein and sometimes divided by transverse veins. The precostal field and vein may be easily recognized, if one begins the counting from the basal cell and arculus and keeps in mind that costal vein is the upper one. Sometimes [p. 16] so called hypocostal lobe is present instead of precostal field (some Issidae, etc.), but in that case a distinct anterior costal carina is visible above this lobe; the carina turns distally into peripheral carina or membrane. Branching of main longitudinal veins on fore wings varies little in Cicadelloidea, Cercopoidea, and especially in Cicadoidea, but is rather diverse in Fulgoroidea. Hind wings in cicadines, except Fulgoroidea, have a distinct peripheral membrane, which may be narrowed only in Cicadidae. The number and arrangement of longitudinal folds are invariable and characteristic of hind wings. The number of transverse veins on fore wing varies, but they are always developed on wings fit for flight (not shortened ones). The transverse veins *ir*, *rm*, *mcu* lie on nodal line and on membrane distal to nodal line. In consolidated fore wings, the number of transverse veins increases, only the thickest hemelytra may bear no traces of veins. Sometimes veins starting from the wing base separately fuse at some distance: for instance, *Pcu* and *A₁* on fore wing in Fulgoroidea and on hind wing in Cicadelloidea (also on fore wing in *Hecalus*); in Cicadidae, the first branching of *R₁* is shifted proximad on hind wing and *M* is partly fused with *RP*. Dimorphism in the wing structure is often present (Delphacidae, Issidae – Caliscelinae, Tropiduchidae, Cicadellidae); in these cases, hypertrophied membrane is characteristic of venation

of full-developed wings, while more or less reduced membrane and shortened corium and clavus are characteristic of shortened wings.

Fore and middle legs are usually ambulatorial; hind legs (Figs. 3, 4) are saltatorial, their femora and tibiae are longer, but thin, because saltatorial muscles are enclosed within thorax and coxae; sometimes all legs are ambulatorial. All tarsi 3-segmented. The [p. 17] base of abdomen (segments I and II) bears a sound-producing organ sometimes well visible externally. In male, segment IX (pygofer) bears genital appendages. In female, both segments VIII and IX bear genital appendages – ovipositor. Segments X and XI are diminished and called anal tube; the latter bears the anal opening.

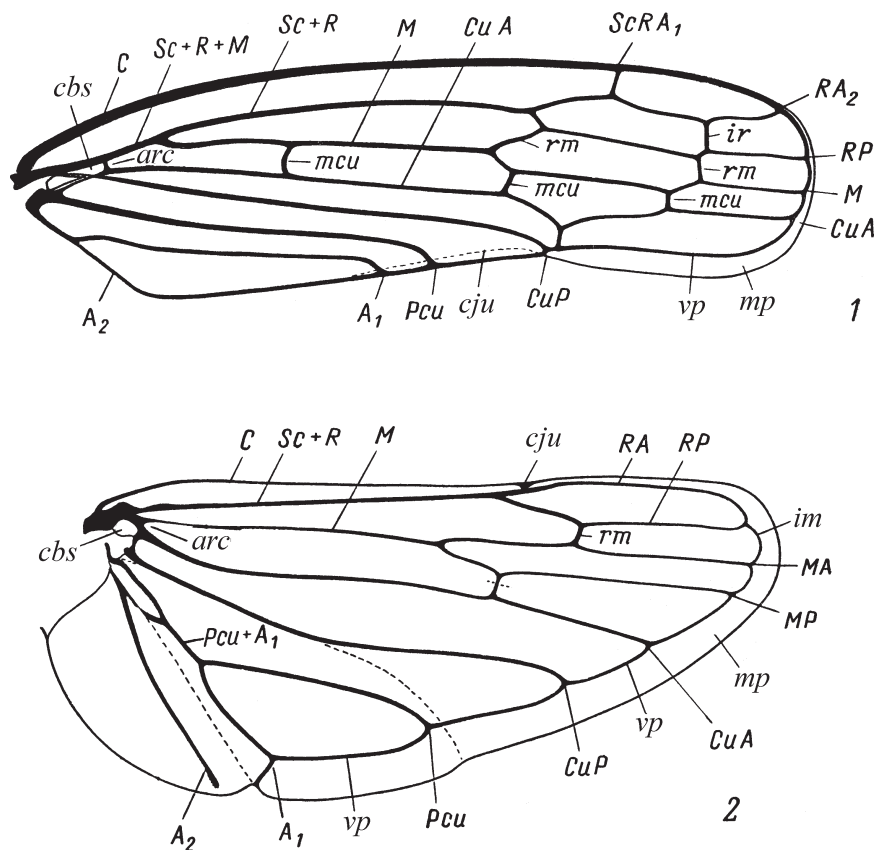


Fig. 5. Cicadines. Wings of Cicadelloidea (after Emeljanov).

1, 2, *Bothrogonia* sp.: 1, fore wing; 2, hind wing. *ast*, anastomosis; *cbs*, basal cell; *arc*, arcus; *cac*, supplementary coupling apparatus of fore wing; *lnd*, nodal line; *vp*, peripheral vein; *mp*, peripheral membrane; *cju*, coupling fold of wing margin; *scl*, suture of clavus; *cupcu*, transverse vein between *CuP* and *Pcu*; *im*, transverse vein between branches of *M*; *ir*, transverse vein between branches of *R*; *MA*, anterior branch of *M*; *mcu*, transverse vein between branches of *M* and *Cu*; *MP*, posterior branch of *M*; *Pcu*, postcubital stem; *RA*, anterior stem (branch) of vein *R*; *rm*, transverse vein between *R* and *M*; *RP*, posterior stem of vein *R* (= *RS*). See list of abbreviations for remaining designations.

Ovipositor (Fig. 9) in most cicadines is piercing-sawing, of initial type in insects, with narrow long valvulae, and is used for insertion of eggs into plant tissues or soil; in some Fulgoroidea, ovipositor is raking up-kneading one, with short, wide, strongly differentiated valvulae (Figs. 9: 2, 6, 7), and is used for raking up of soil particles, etc. into the cavity of ovipositor, where soil got mixed with the secretion of

ovipositor glands and is used for coating of eggs before oviposition; egg is dropped on soil or is glued to substratum and covered with wax. The raking up-kneading ovipositor may be rounded and convex, or compressed laterally (Tropiduchidae), or simplified secondarily up to small, rounded, weakly sclerotized lobes (Meenoplidae).

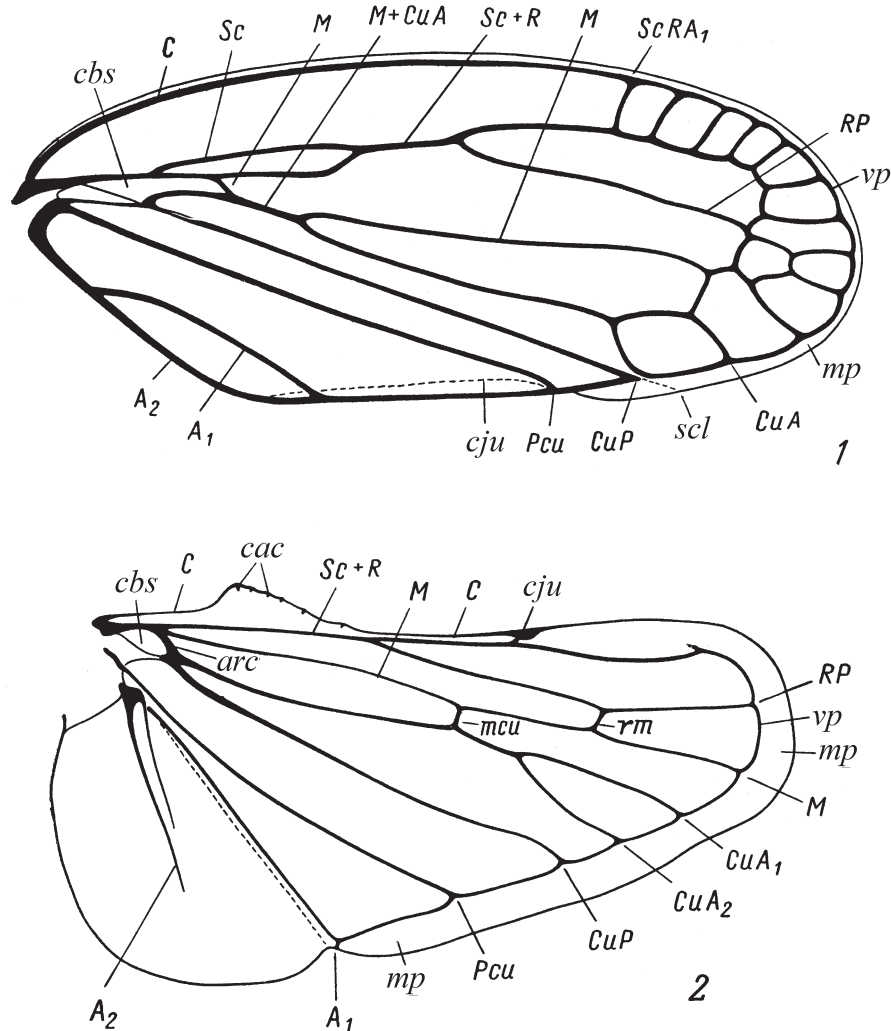


Fig. 6. Cicadines. Wings of Cercopoidea (after Emeljanov).

1, 2, *Cercopis intermedia* Kbm.: 1, fore wing; 2, hind wing. See Fig. 5 for designations.

Male genitalia (Figs. 10, 28, 29). The tergal part of segment IX called pygofer and its sternal part called genital valve are often fused into [p. 18] a ring, which as a whole is called in such cases pygofer. Because of diminished segments forming the anal tube, the intersegmental membrane of segments IX-X is widened, forms the posterior wall of pygofer and bears genital appendages: penis and harpagones. The posterior margin of genital valve is often stretched into a pair of lobes (genital plates) covering penis and harpagones from below; genital plates are sometimes separated from genital valve. Penis is divided into distal part, aedeagus, and proximal one, phallobase, but in some cases phallobase and aedeagus are fused without a trace of boundary between them. Phallobase may bear lateral processes:

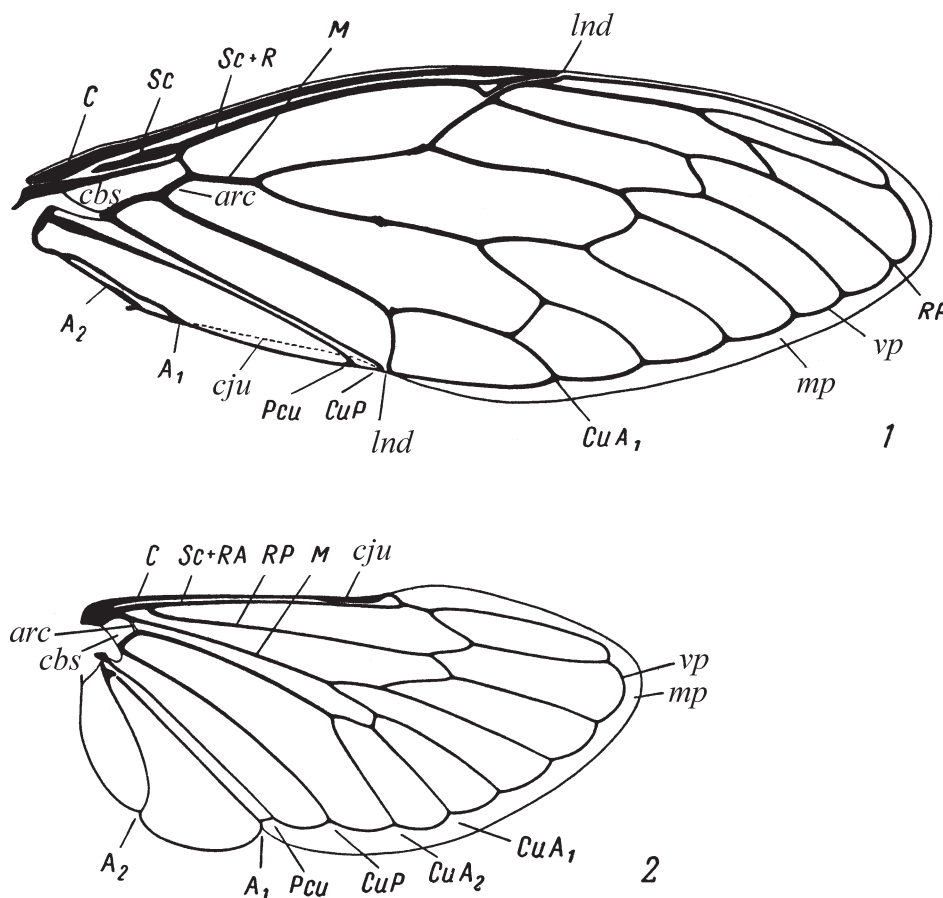


Fig. 7. Cicadines. Wings of Cicadoidea (after Emeljanov).

1, 2, *Tibicina intermedia* Fieb.: 1, fore wing; 2, hind wing. See Fig. 5 for designations.

parameres. Male genitalia differ considerably in composition and structure in four recent superfamilies. In the superfamily Cicadelloidea (Figs. 10: 2, 5, 6), lateral lobes of pygofer are present; lobes of pygofer and genital plates, together with anal tube envelop the genital chamber. Harpagones lie on genital plates from inside and are articulated with the lower (anterior) separated part of phallobase, so called connective; aedeagus is situated on the upper section of phallobase and often fused with it. Sometimes parameres become separated from phallobase and articulated or fused with connective; in that case they are named paraphyses; [p. 19] a separate sclerite called appendix of penis base, or phragma, may be developed between phallobase and anal tube. In the superfamily Cercopoidea (Figs. 10: 1, 7), the lobes of pygofer are weakly developed, genital plates and harpagones are arranged similar to those in Cicadelloidea, but phallobase is not segmented and aedeagus is usually separated. In the superfamily Cicadoidea (Figs. 10: 3, 8), genital plates are lacking, and in the family Cicadidae also harpagones are absent; the genital chamber is covered from below by the elongate subgenital valve (sternite VIII); aedeagus is reduced, and penis is represented mainly by phallobase; lobes of pygofer are present; penis is approximated from above to the base of anal tube, which envelops it laterally by special paired processes. In the superfamily Fulgoroidea (Figs. 10: 4, 9,

10), valve is fused with pygofer into a ring without sutures, lobes of pygofer are not developed and in most cases (with exception of the family Tettigometridae) the genital plates are lacking; because of that, harpagones are free and usually cover penis from below and from sides. Phallobase envelops as a muff the aedeagus immersed in it, and is called phallotheca, or, in abbreviated form, theca. The base of aedeagus is articulated with bases of harpagones by means of an inner ligament, which is called connective, as in Cicadelloidea, despite its different origin. But in the family Delphacidae (Fig. 10: 10), the intersegmental membrane is sclerotized in the shape of a bridge (bridge of pygofer, or phragma) which separates bases of styli from penis. Penis is immersed under anal tube in a special chamber with membranous walls: the genital chamber; harpagones protrude from lower opening in the sclerotization of posterior wall of pygofer and do not cover the genitalia. [p. 20]

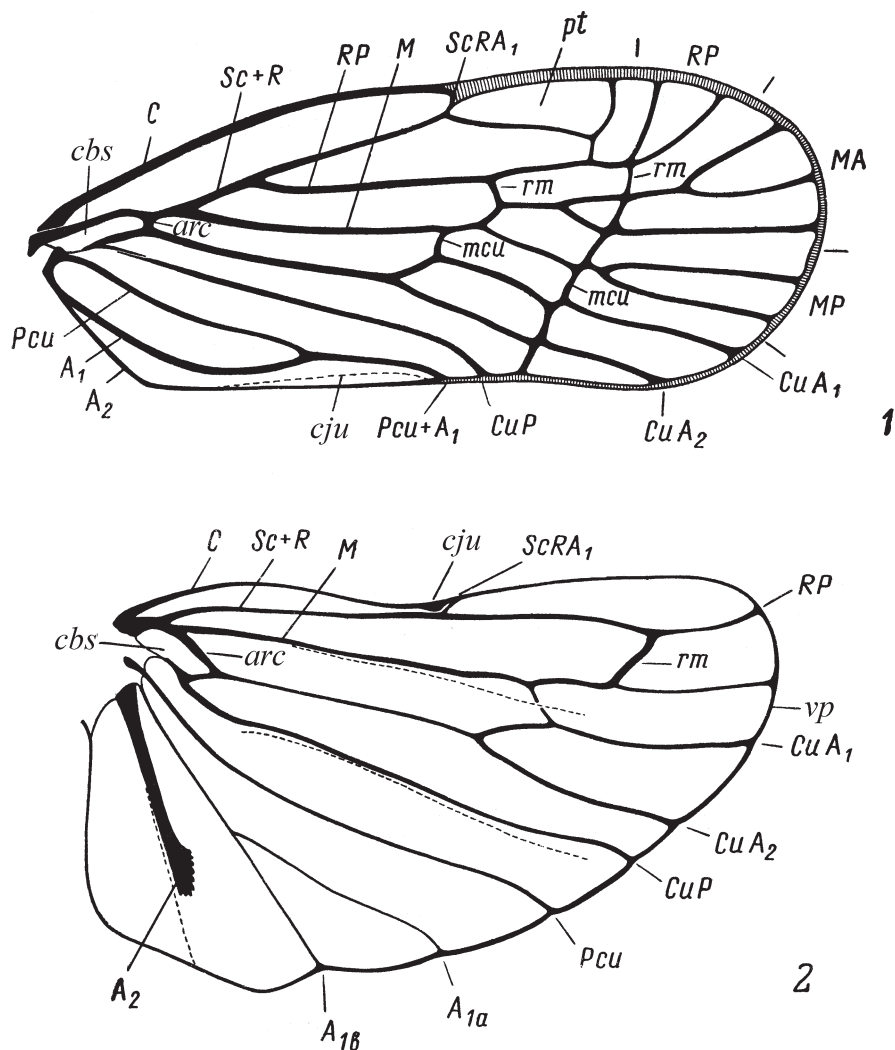


Fig. 8. Cicadines. Wings of Fulgoroidea (after Emeljanov).

1, 2, *Cedusa ussurica*: 1, fore wing; 2, hind wing. See Fig. 5 for designations.

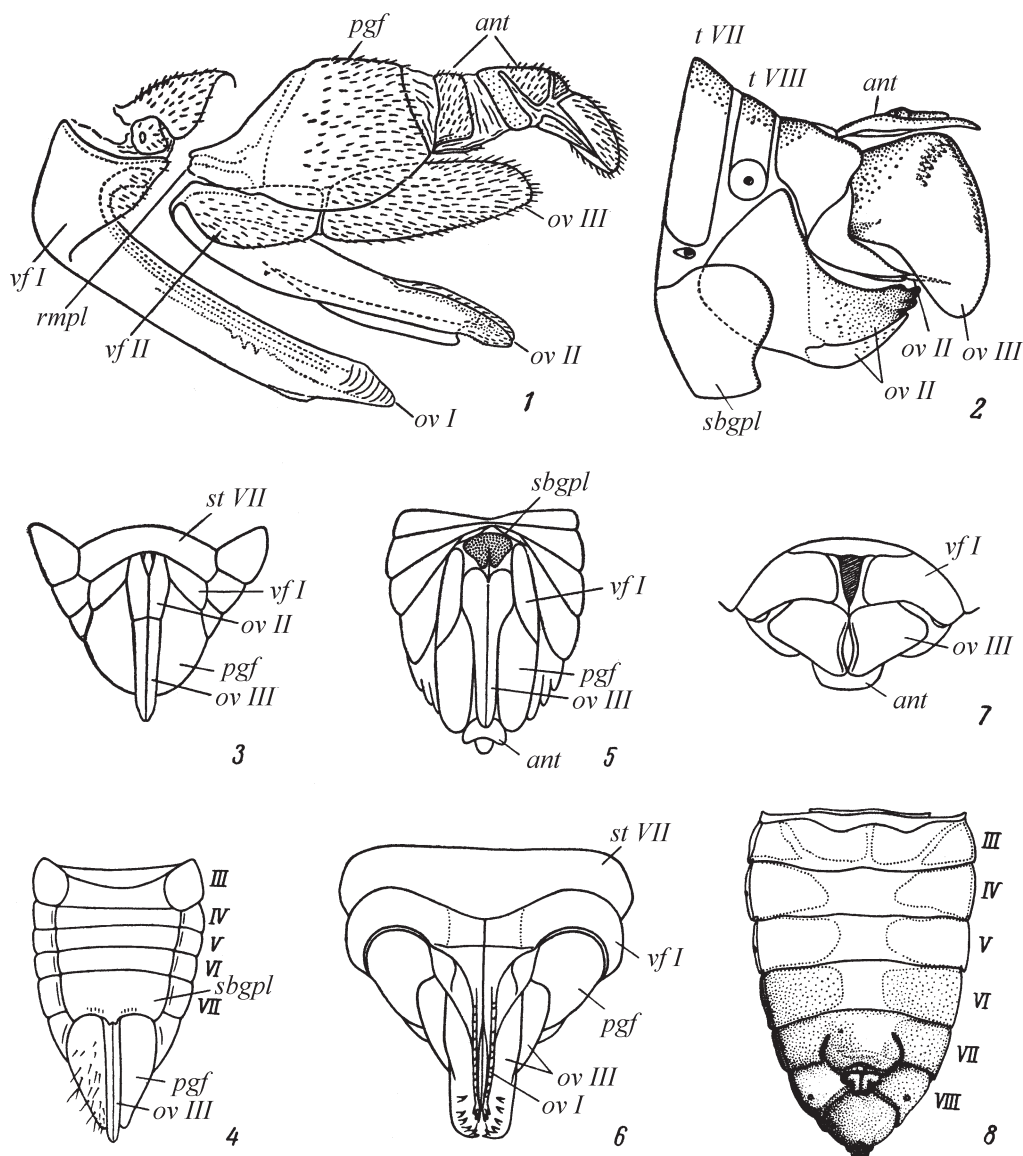


Fig. 9. Cicadines. Ovipositor (after Müller, Ossiannilsson, Ribaut, Silvestri, Vilbaste, and original).

1, ovipositor of piercing-sawing type, lateral view (*Philaenus spumarius*), segments VIII and IX disconnected; 2, ovipositor of raking up-kneading type, lateral view (*Phantia subquadrata*), third valvulae turned back upwards; 3-8, ovipositor ventrally: 3-5, piercing-sawing ovipositor (3, Cercopoidea, *Lepyrionia coleoprata*; 4, Cicadelloidea, *Diplocolenus abdominalis* F.; 5, Fulgoroidea, *Delphax crassicornis*); 6, raking up-kneading round ovipositor (*Issus muscaeformis* Schrank); 7, raking up-kneading flat ovipositor (*Cixiopsis punctata*); 8, reduced ovipositor (*Tettigometra obliqua*). *ant*, anal tube; *ov*, valvula of ovipositor; *vf*, valvifer; *pgf*, pygofer; *rmpl*, plate of rami; *sbgpl*, subgenital plate; *st*, sternite; *t*, tergite. Abdominal segments and valvulae of ovipositor are designated by Roman numerals.

Larvae of cicadines pass through 5 instars in most cases. Fore and middle tarsi in larvae are always 2-segmented; hind tarsi are usually also 2-segmented, but in jumping Fulgoroidea (larvae of all Fulgoroidea, except Tettigometridae, do jump), tarsi are 3-segmented in IV-V instars (most families) or only in V instar (Delphacidae). Wing pads are well distinct only in IV and V instars. Eggs of cicadines are

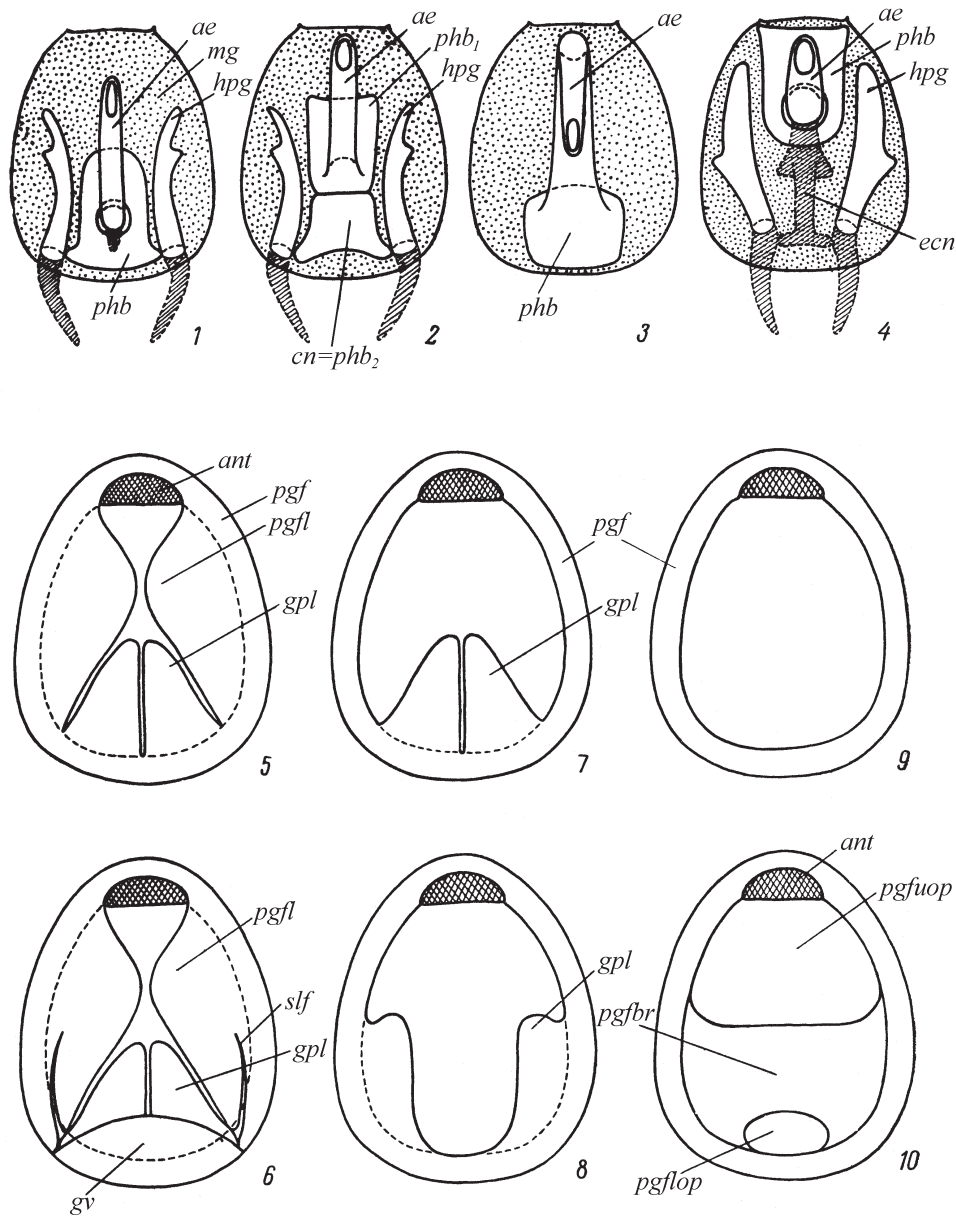


Fig. 10. Cicadines. Male genitalia (after Emeljanov).

1-4, penis and harpagones (styli), posterior view: 1, Cercopoidea; 2, Cicadelloidea; 3, Cicadoidea (Cicadidae); 4, Fulgoroidea; 5-10, structure of pygofer and its appendages, posterior view: 5, initial type, Cicadelloidea; 6, secondary type, Deltocephalinae and part of Cicadellinae (Cicadellidae); 7, Cercopoidea type; 8, Cicadoidea type; 9, basic type of Fulgoroidea (initial type see Figs. 245, 1-6); 10, secondary type of Delphacidae. *ant*, anal tube (abdominal segment X); *pgfuop*, upper opening of pygofer (Delphacidae); *gv*, genital valve (part of Cicadellidae); *mg*, genital membrane; *gpl*, genital plate; *hpg*, harpagones (styli); *pgfl*, lobes of pygofer; *cn*, connective, lower part of phallobase (*phb*₂) in Cicadelloidea; *pgflop*, lower opening of pygofer; *pgf*, pygofer (abdominal segment IX); *pgfbr*, bridge of pygofer (Delphacidae), sclerotization of the middle part of genital membrane; *phb*, phallobase (*phb*₁ and *phb*₂, subdivisions in Cicadelloidea); *sfl*, slit-like fold at the base of pygoferal lobes (part of Cicadelloidea); *ae*, aedeagus; *ecn*, endoconnective, inner apodeme of aedeagal base connected with base of harpagones (Fulgoroidea); *oblique shading*, endoskeletal structures (bases of harpagones, endoconnective); *cross shading*, base of anal tube (at its articulating to pygofer); *dotted*, genital membrane.

elongate, sausage-like, often somewhat sinuose, usually whitish. Adult cicadines lead an open, mobile life. The larvae have the same habits as imagines or are underground dwellers moving in soil crevices; they use passages made by themselves or live in ant nests; some cicadines develop on plants in a mass of especially produced froth freely or within lime tubular cases. They are active usually in the daytime. Phytophagous, feeding on plant fluids obtained by means of rostrum from plant vessels (of leaves, stems, trunks) or more rarely directly from parenchymal cells; polyphagous and oligophagous. Mycetophagy is recorded in few cases. Usually a single generation per year, but also one generation every several years as well as many generations per year (up to 6-7) may occur, the latter in warmer climate. Eggs overwinter most often; imagines [p. 21] or larvae of older instars overwinter more rarely. Eggs are mostly laid in stems and leaves of plants sawn in by ovipositor, in other cases they are laid on soil or glued to plants. Cicadines include a number of agricultural pests, especially in southern regions. The damage is caused in three ways: (1) by sucking; the damage is usually not severe and destroys only shoots, if insects occur in large numbers; (2) transmission of viral and mycoplasmatic diseases with saliva during sucking; [p. 23] (3) sawing in young shoots at laying eggs resulting in desiccation of branches above injured place. – 17 families (21 in USSR), 264 genera, 563 species. The families Ulopidae, Kinnaridae, and Ricaniidae are not found in the Far East.

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KEY TO FAMILIES

1. Epimere of prothorax not separated posteriorly by suture from pronotum;
pronotum without lateral evaginations (Figs. 11: 1, 2). Hind coxae free, separated
from thorax by distinct suture; trochanter nearly immobile relative to the femur,
separated from it only by closed suture. Hind tibiae without lateral teeth (Fig. 3: 4),
or teeth are present and bear a specialized subapical bristle (Figs. 3: 1, 2). Tegulae
absent. Sternal surface of metathorax completely or mostly sclerotized 2
- Epimere of prothorax (Fig. 11: 3) covered by an evagination of pronotal margin
(paranotal lobe). Hind coxae fused with metathorax without trace of boundaries;
articulation of trochanter with femur mobile, trochanter separated from femur by
membranous stripe (Fig. 3: 3). Hind tibiae usually with lateral teeth not bearing
a specialized subapical bristle (Fig. 3: 3). Tegulae present, with exception of ex-
treme cases of shortening of fore wings. Most of the sternal surface of metatho-
rax membranous. (Superfamily Fulgoroidea) 8
2. Hind legs saltatorial. Fore femora not thickened and without teeth on ventral
surface. Hind tibiae without lateral spurs, but inarticulate teeth may be present
(Figs. 3: 2, 4). 2 ocelli. Antennae with large 1st and 2nd segments and a thin fla-
gellum, which is secondarily segmented (with numerous small constrictions)
(Figs. 2: 4-6) 3
- Hind legs ambulatorial; hind tibiae with lateral spurs bearing a subapical special-

ized bristle (Fig. 3: 1). 3 ocelli. Antennae 7-10-segmented, not differentiated sharply into thick base and thin flagellum; the segmentation primary (Fig. 2: 1). (Superfamily Cicadoidea). Pronotum posteriorly not covering mesonotum; parapsidal furrows visible externally (Fig. 12: 5) 7. **Cicadidae** – Cicadas (p. 312)

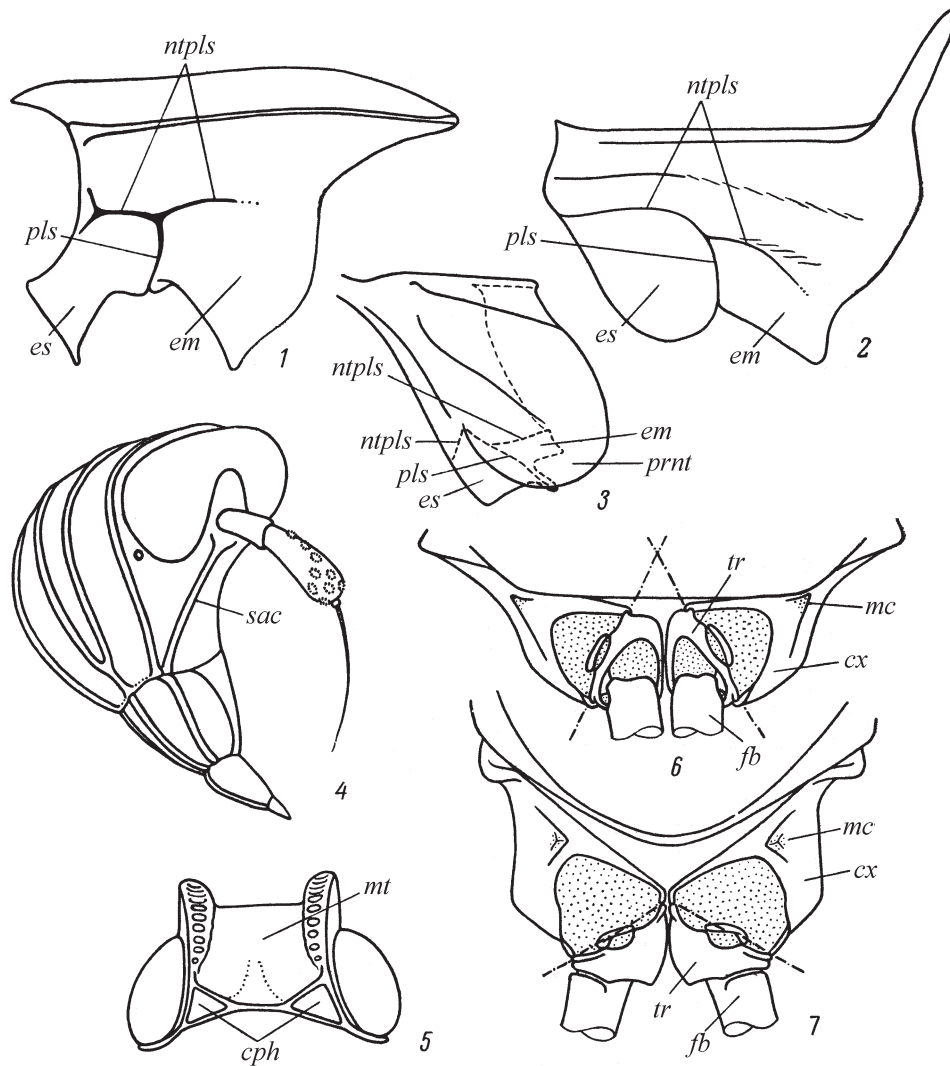


Fig. 11. Cicadines. Details of structure (original).

1-3, prothorax, oblique anterolateral view: 1, Cercopoidea; 2, Ledridae; 3, Fulgoroidea; 4, 5, head: 4, Delphacidae, anterolateral view; 5, Meenoplidae; 6, 7, position of axes (designated by *shade-dotted line*) in coxa-trochanter articulation of metathorax in Fulgoroidea (posterior view): 6, usual position (*Trypetimorpha* sp.); 7, Issidae type (*Mycterodus* sp.). *tr*, trochanter; *cph*, disconnected parts of coryphe ("vertex"); *mc*, meracanthus; *mt*, metope ("frons"); *ntpls*, notopleural suture; *fb*, base of femur; *pls*, pleural suture; *prnt*, paranotal lobe; *sac*, subantennal carina; *cx*, coxa; *em*, epimere; *es*, episternum.

3. Hind tibiae without lateral teeth or with small flattened teeth bearing a thick bristle (Figs. 3: 4; 4: 1-3). Meron of hind coxa weakly convex, separated from the main part of coxa only by an indistinct furrow (Fig. 3: 4). Meron of middle coxa also not sharply separated from the main part of coxa. Flagellum of antennae (Figs. 2: 4-6) formed by all segments distal to the 2nd (pedicel) and gradually tapering from the base. (Superfamily Cicadelloidea) 4

- Hind tibiae bearing robust conical lateral teeth with a thin subapical bristle (Fig. 3: 2). Meron of hind coxa rounded, projecting cone-like and separated from the main part of coxa by a deep furrow (Fig. 3: 2). Coxa of middle leg with foliaceous, triangular meron. Antennae (Figs. 2: 2, 3) with a small but distinctly separated 3rd segment bearing the flagellum, which is thin from the very base. (Superfamily Cercopoidea) 6

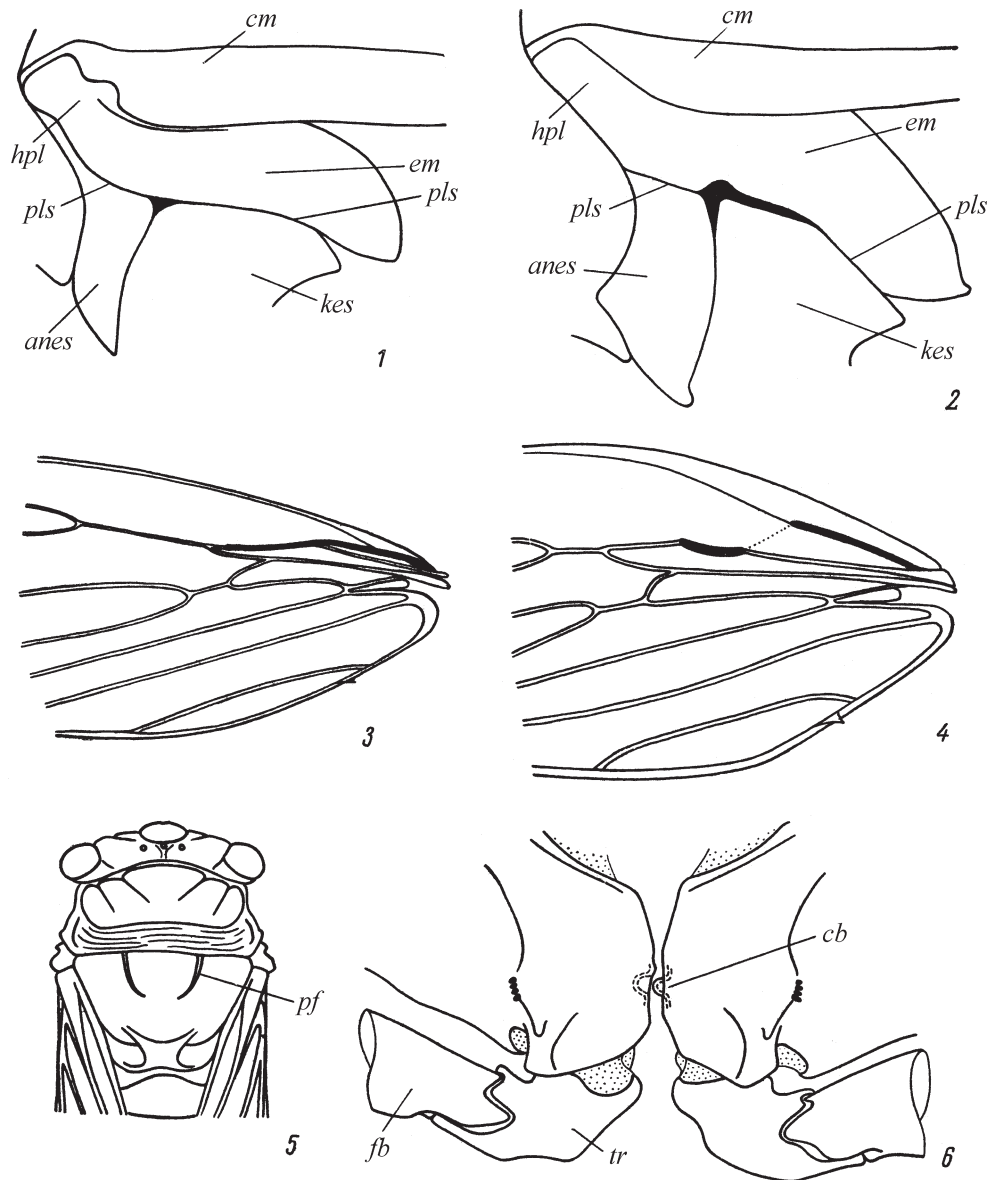


Fig. 12. Cicadines. Details of structure (after Emeljanov and original).

1, 2, epipteral lobe of epimere of mesothorax, lateral view: 1, Cercopidae (*Locris* sp.); 2, Aphrophoridae (*Sinophora* sp.); 3, 4, hypocostal carinae on fore wing (*blackened*), wing in ventral view: 3, Cercopidae (*Cercopis* sp.); 4, Aphrophoridae (*Aphrophora* sp.); 5, anterior part of body in Cicadidae, dorsal view; 6, hind coxae in Cicadellidae (*Aphrodes* sp.), ventral view, slightly drawn apart. *anes*, anepisternum; *tr*, trochanter; *cm*, costal margin of fore wing; *cb*, coupling button; *kes*, katepisternum; *fb*, base of femur; *hpl*, hypopteral lobe; *pls*, pleural suture; *pf*, parapsidal furrows of mesonotum; *em*, epimere.

4. Pronotum with a long process directed backwards and extending beyond the apex of scutellum (Figs. 13: 1-3). Vertex and the anterior part of pronotum vertical. The basal portion of *CuP* on fore wings ventrally expressed as a carina or a low lobe (Fig. 14: 1). The boundary between frons and postclypeus practically not noticeable; frontovertical suture distinct 1. **Membracidae** – Treehoppers (p. 27) [p. 24]
- Pronotum without processes on posterior margin, the latter never extends to the hind margin of scutellum. The anterior part of pronotum horizontal or only moderately inclined forward. Basal portion of *CuP* on fore wing ventrally not standing out sharper than neighboring veins. All sutures of frons usually indistinct 5
5. Episterna of prothorax completely or nearly completely visible externally. Head spade-shaped (Figs. 21: 1, 11; 22: 1, 6). Contiguous surfaces of hind coxae without any sculptural structures. Apices of hind tibiae with 2 rows of equal teeth (Fig. 4: 2) 2. **Ledridae** (p. 35)
- Episterna of prothorax completely or nearly completely covered by genae, sometimes only their distal parts remain visible (Figs. 23: 1, 2). Head of various shape. Contiguous surfaces of hind coxae [p. 25] fixed by a projection on one of them going into the corresponding pit on the another one (Fig. 12: 6). Apices of hind tibiae with an apical row of large teeth and a subapical row of smaller teeth (Fig. 3: 4) 3. **Cicadellidae** – Leafhoppers (p. 39)
6. Scutellum flat, triangular, shorter than pronotum. Claval veins *Pcu* and A_1 not approximated in the middle part and not connected by transverse veins 7
- Scutellum stretched, spine-like, flat or with sharp carinae and projections, [p. 26] longer than pronotum. Claval veins connected by transverse veins or anastomosing in the middle part, in that case the base of A_1 often disappears 6. **Machaerotidae** (p. 308)
7. Lobe of epimeron of mesothorax supporting costal margin of fore wing at rest with a knob on inner wall visible externally when wings are folded (Fig. 12: 1). Fore wings ventrally with 1 hypocostal carina (Fig. 12: 3). Hind wings with separate *Pcu* and A_1 (Figs. 6: 2; 207: 1, 2). Eyes hemispherical, with about equal vertical and horizontal diameters. Head usually narrower than pronotum. The anterior margin of pronotum approximately straight or gently convex. Lateral margins of pronotum long 4. **Cercopidae** – Froghoppers (p. 286)
- Lobe of epimeron of mesothorax internally without a knob, only with a weak oblique carina not visible externally when wings are folded (Fig. 12: 2). Fore wings ventrally with 2 hypocostal carinae sometimes connected by a smoothed bridge (Fig. 12: 4). Hind wings with anastomosis of *Pcu* and A_1 (Fig. 209: 2). Eyes semioval, their horizontal diameter greater than vertical one. Head usually about as wide as pronotum. The anterior margin of pronotum steeply arcuate or angular. Lateral margins of pronotum usually short 5. **Aphrophoridae** – Froghoppers (p. 287)
8. Lora situated in frontal plane of face, knob-like (Fig. 1: 5). Pygofer of male bears genital plates covering harpagones from below (Figs. 245: 1, 3, 5). Ovipositor lost, only slight prominences of vestigial valvulae are visible (Fig. 9: 8). Frons (metope) not separated from temples by a distinct carina 8. **Tettigometridae** (p. 319)
- Lora situated in longitudinal plane and hardly visible or not visible anteriorly (Figs. 1: 10, 12; 241: 2). Pygofer of male without genital plates; harpagones protruding backwards from the pygofer in its lower part. Ovipositor developed normally and complexly differentiated. Frons (metope) separated from temples by a distinct carina 9

9. 2nd segment of hind tarsi apically with a row of not less than 4 teeth (Figs. 3: 3; 4: 6). Claval vein $Pcu+A_1$ runs into posterior margin of clavus (A_2) or into CuP (Fig. 8: 1); if it runs into apex of clavus, the apex appears as truncate due to rounding of the vein CuP and sometimes also of A_2 before running into the marginal vein (Figs. 373: 1; 376: 1) 10
- 2nd segment of hind tarsi laterally with 2 teeth only or without teeth (Fig. 4: 5). Claval vein $Pcu+A_1$ runs into more or less pointed apex of clavus (Fig. 386: 1) 16
10. Apex of hind tibia with a large spur external to tarsus (Fig. 4: 6). Gena with an oblique carina running from the hind margin of the antennal foramen to anterior upper corner of lora (Fig. 11: 4). Pygofer of male with a sclerotized bridge between penis and bases of harpagones (Fig. 10: 10). The long, narrow, piercing-sawing ovipositor is enclosed in a gutter on the lower surface of pygofer 9. **Delphacidae** (p. 322)
- Apices of hind tibiae without spurs. Gena without oblique carina running to the anterior upper corner of lora. Pygofer of male without sclerotized areas between base of penis and harpagones. Ovipositor of raking up-kneading type, short and wide, consisting of several lobes, or narrow, elongate, of piercing-sawing type, but in the latter case freely protruding from pygofer and not enclosed in a gutter 11
11. Pterostigma of fore (!) wings is formed by an abrupt widening of peripheral vein distal to 1st branch of ScR . A considerable part of the 1st radial cell is occupied by this mat, consolidated structure (Figs. 339: 1; 340: 1). Ovipositor of piercing-sawing type, sometimes reduced up to small narrow wedge-shaped lobes (Figs. 338: 3-5). Vertex with additional oblique or transverse carinae (Figs. 1: 11; 241: 7-9) 10. **Cixiidae** (p. 441)
- Pterostigma lacking or formed by consolidation of the field of 1st radial cell; peripheral vein not widening by a sharp step beyond the running of ScR_2 into anterior margin of wing. Ovipositor short and wide, consists of several [p. 27] lobes. Vertex without additional oblique or transverse carinae (Fig. 241: 3) .. 12
12. Costal vein of fore wings weakened, crimped transversally, and similar to peripheral vein of membrane; at the base of wing, it is very close to stem ScR (Figs. 363: 4, 5). Vertex (coryphe) very short, often interrupted in the middle, so that metope extending on vertical surface of head is separated from occiput only by a transverse carina (Fig. 11: 5) 11. **Meenoplidae** (p. 465)
- Costal vein of fore wings strong, from its very base separated from stem ScR by costal field. Vertex (coryphe) well developed, in the middle not shorter than on sides 13
13. Costal vein runs only up to the apex of 1st branch of ScR ; a flat, weaker and often wider peripheral vein running past it 14
- Costal vein convex and carina-like, extending further on periphery of wing past running into it of the 1st branch of ScR 15
14. Claval vein runs into posterior margin of clavus (A_2) or a secondary vein is formed which continues the anterior branch of Pcu up to CuA and often further, parallel with marginal vein of membrane; in that case, the true apices of claval vein and CuP are either lost or weakened and looking as transverse veins (Figs. 366: 1-4; 367: 1, 4). Membranes not extending significantly beyond the line of posterior margin of clavus and at rest not overlapping 12. **Derbidae** (p. 467)
- Claval vein $Pcu+A_1$ runs into CuP at the apex of clavus (Figs. 373: 2; 376: 2). Membranes widening and extending backwards beyond the line of posterior margin of clavus, so that, when folded, membranes of both wings widely overlapping 13. **Achilidae** (p. 475)

15. Medial vein beginning to branch near nodal line, slightly before *ScP* and slightly beyond *CuA*. Clavus without transverse veins (Fig. 379: 1). Fore coxae not extending to apex of clypeus 14. **Dictyopharidae** – Longnosed planthoppers (p. 480)
- Medial vein beginning to branch near base of wing, much more proximal than veins *ScR* and *CuA* do. Clavus with transverse veins (Fig. 383: 1). Fore coxae reaching beyond apex of clypeus 15. **Fulgoridae** – Lantern flies (p. 483)
16. Axis of coxa-trochanter articulation of hind legs nearly vertical (Fig. 11: 6). Ovipositor with teeth on the margin of lower lobes of third valvulae (Fig. 9: 7). Postclypeus sometimes (*Cixiopsis*, etc.) with lateral longitudinal carinae (Figs. 241: 1, 2) 16. **Tropiduchidae** (p. 485)
- Axis of coxa-trochanter articulation of hind legs nearly horizontal (Fig. 11: 7). Ovipositor without teeth on the margin of lower lobes of third valvulae (Fig. 9: 6). Postclypeus always without lateral carinae 17. **Issidae** (p. 489)

1. Family MEMBRACIDAE – Treehoppers

Medium-sized, with vertical vertex having a frontal plate; face with frontoclypeus cone-like, projecting downwards. Pronotum with vertical anterior part, nearly always with a long process directed backwards and extending beyond the apex of scutellum, often with processes of various shapes and sizes above humeral calli, usually coarsely punctate. The suprahumeral processes in many species strongly varying in the degree of development. Fore and hind wings membranous, often granulate along veins (Figs. 14: 1, 2). Anal tube telescopic, at rest more or less drawn into pygofer. Lobes of pygofer (lateral valves) usually completely separated. Genital plates often not completely separated from genital valve, fused together at the base.

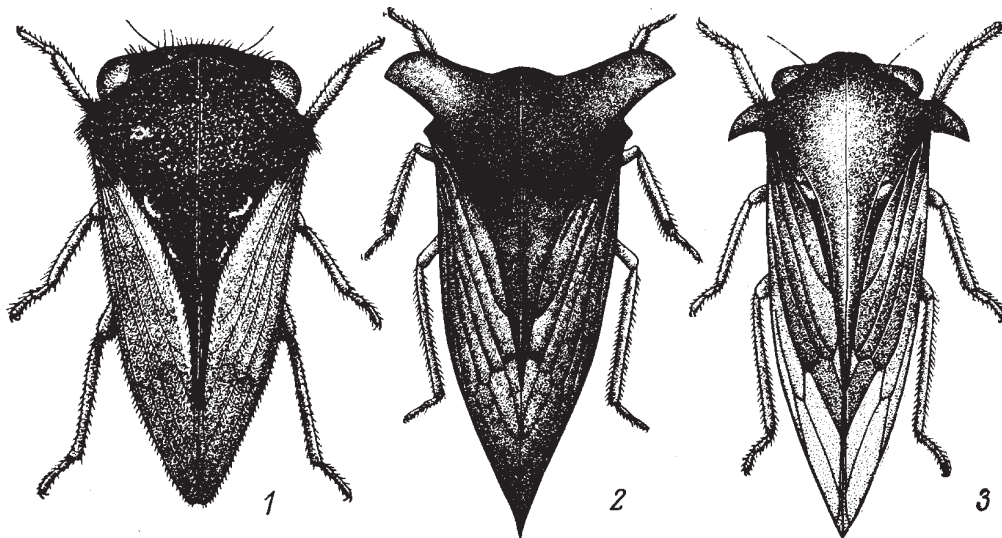


Fig. 13. Cicadines. Family Membracidae (after Esaki).

1, *Gargara genistae*; 2, *Tsunozemia paradoxa*; 3, *Butragulus flavipes*.

All species from the Far East belong to the subfamily Centrotinae with characteristic well developed scutellum of mesothorax. Larvae live openly on plants together with imagines. [p. 28] Polyphagous. A large, mainly tropical and subtropical family. 20 genera, in Palearctic about 70 species. – 6 genera, not more than 10 species.

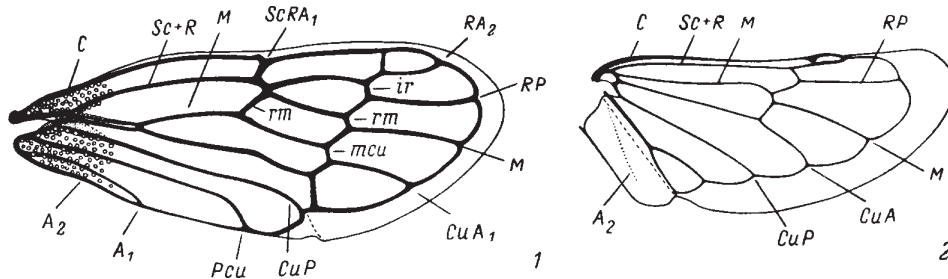


Fig. 14. Cicadines. Family Membracidae (original).

1, 2, *Gargara genistae*: 1, fore wing; 2, hind wing. See Fig. 5 for designations.

LITERATURE. Funkhouser, W.D. General catalogue of Hemiptera, Fasc. 1. Membracidae. Northampton, 1927. 581 pp. Funkhouser, W.D. New Membracidae (Hemiptera Homoptera) in the collection of the Zoological Museum of the Academy of Sciences of the USSR. *Ezhogodnik Zool. Muz. Akad. Nauk SSSR*. 1927. T. 28, No. 2. P. 145-157. Funkhouser, W.D. Homoptera, Fam. Membracidae. *Genera Insectorum*. 1950. Fasc. 208. 383 pp. – Lindberg, H. Zur Kenntnis der paläarktischen Cicadina. IV. *Not. Entomol.* 1927. Vol. 5. P. 23-30.

KEY TO GENERA

1. Posterior process of pronotum adjacent closely to scutellum. (Tribe Gargarini) 2
- Posterior process of pronotum from the base elevated above scutellum. (Tribe Centrotini) 5
2. Suprahumeral horns of pronotum well developed or weak, but distinctly delimited by carina 3
- Suprahumeral horns absent 3. **Gargara**
3. Posterior process of pronotum steeply roof-like at base and in the middle part. Apices of genital plates convex, more or less evenly rounded (Figs 15: 11, 12) 4 [p. 29]
- Posterior process of pronotum gently roof-like at base. Apices of genital plates form an indistinctly delimited area flattened dorsoventrally (Figs. 18: 6, 7) 4. **Butragulus** Anufr. et Em., gen. n. (Type species *Orthobelus flavipes* Uhl.)
4. Posterior process of pronotum finely punctate. Veins of fore wings smooth or finely granulate, granules not notable in color 1. **Machaerotypus**
- Posterior process of pronotum, besides fine punctation, bears large, coarsely pressed in punctures (pits). Fore wings with sparse, large, dark granules along more or less light veins (Figs. 16: 2, 3) 2. **Tsunozemia**
5. Pronotum highly elevated; its process nearly straight and situated nearly at a right angle to anterior part of body (Fig. 19: 2) 5. **Centrobelus**
- Pronotum not elevated; its process undulated and passing into anterior part of body by a gentle, wide arc (in lateral view) (Fig. 19: 3) 6. **Centrotus**

KEYS TO SPECIES

1. **Machaerotypus** Uhl. Suprahumeral horns of moderate length, protruding laterad not more or a little more than humeral angles. Hind process of pronotum with gentle punctation only, beyond base widened, plate-shaped. Fore wings on veins without granules notable in color. – 1 species (in Palearctic up to 5 species).

1. Suprahumeral horns from relatively long, protruding laterad (f. *sibiricus* Leth.) to relatively short, knob-like, not protruding laterad but marked by a carina (f. *subinermis* Lindb.). Brown; head and anterior part of pronotum often black. Fore wings semihyaline, with brownish base, veins, and some irregular spots. 5.5-6. – S Khab., Amur., Prim., S Kur. – Japan, Korea, China. – In open woodlands, glades, meadows. Early May to mid-September. (Figs. 15: 1-13)
..... **M. sibiricus** Leth. (*sellatus* Uhl., *vitulus* Lindb., *coreanus* Kato)

2. **Tsunozemis** Kato. Suprahumeral horns long, protruding laterad much more than humeral angles. Posterior process of pronotum with fine punctation and large, coarsely pressed in punctures. Fore wings with sparse, dark, small spots on veins. Monotypic genus.
 1. Brown, usually covered with white mealy pruinosity. Head and anterior margin of pronotum often black. Fore wings semihyaline; veins yellowish with brown granules. 5.7-7. – S Khab., Amur., Prim., S Kur. – Japan, Korea, China (NE, Taiwan). – In meadows and glades with *Artemisia*. Early May to early September. (Figs. 13: 2; 16: 1-7) **T. paradoxa** Leth. (*mojensis* Mats.)

3. **Gargara** Am. et Serv. Pronotum with slightly projecting humeral calli or they are completely smoothed. – 4 species (in Palearctic about 15).
 1. Femora entirely or nearly entirely black. Veins of fore wings light brown or yellowish, sometimes at places with black or dark brown spots. Pterostigma light 2
 - Legs entirely yellowish brown. Veins of fore wings dark brown or black. Pterostigma wide, black, shiny. Head and pronotum black, covered with erect golden hairs; the middle carina on posterior process of pronotum often brown. 3.7-4.2. – S Prim. – In forest edges and glades. Mid-July to late August. (Figs. 17: 12-14) **G. nigrostigmata** Anufr.
 2. Large: 5.5. Styli with large widening at apex (Fig. 17: 6). Dark brown or black, covered with recumbent golden or whitish hairs. Fore wings semihyaline, with brownish veins and indistinct brown [p. 30] bands. 5.7-7. – Prim. – In meadows and shrubberies. Early July to early October. (Figs. 17: 6-8) **G. orientalis** Funkh.
 - Smaller than 5.5. Styli at apex not widened or slightly widened, sometimes strongly widened at bend before apex (Figs. 17: 5, 11) 3
 3. Upper margin of posterior process of pronotum nearly straight in lateral view. Styli strongly widened on the bend before apex (Fig. 17: 11). Black, more rarely brown, covered with erect golden hairs; veins of fore wings without notable granules. 5-5.3. – S Khab., Amur., Prim. – Widely [p. 31] distributed species. – In forests, open woodlands, forest edges, and glades, on shrubs of Fabaceae: *Caragana*, *Lespedeza*, etc. Early August to early October. (Figs. 13: 1; 17: 9-11)
..... **G. genistae** F. (*mongolica* Dlab.)
 - Upper margin of posterior process of pronotum undulated in lateral view. Styli not widened before apex (Fig. 17: 5). Rusty brown, covered with recumbent golden-red hairs; pronotum often with 2 longitudinal black stripes in anterior part; veins of the fore wings bearing at places large granules. 3.2-3.7. – S. Prim. – Korea, China (NE, Fujian, ? Taiwan). – In meadows, shrubberies, oak forests. Late May to mid-September. (Figs. 17: 1-5)
..... **G. parvula** Lindb. (?*Sipylus minutus* Kato, ?*alini* Funkh.)

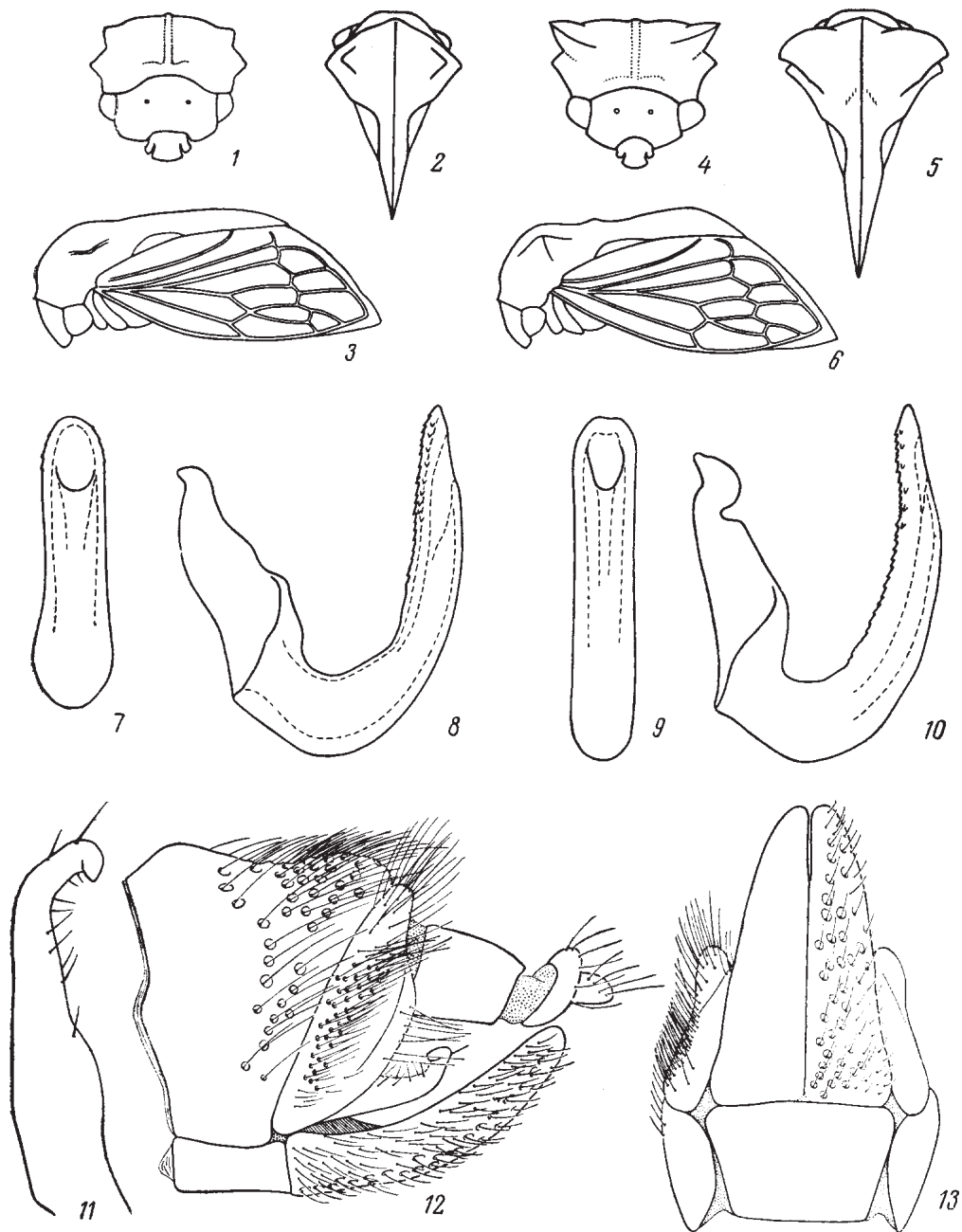


Fig. 15. Cicadines. Family Membracidae (after Lindberg and original).

1-13, *Machaerotypus sibiricus* (1-3, form *subinermis*; 4-6, form *sibiricus*): 1, 4, head and pronotum, anterior view; 2, 5, head, pronotum and scutellum, dorsal view; 3, 6, body, lateral view; 7-10, penis of two specimens (7, 9, apex, posterior view; 8, 10, lateral view); 11, apex of stylus, ventral view; 12, 13, genital block of male (12, lateral view; 13, ventral view).

4. **Butragulus** Anufr. et Em., gen. n. Suprahumeral horns usually long, projecting laterad much more than humeral angles. Posterior process of pronotum with fine punctation only, without plate-like widening beyond its base, carinate dorsally. Fore wings on veins without granules notable in color. – 1 species.

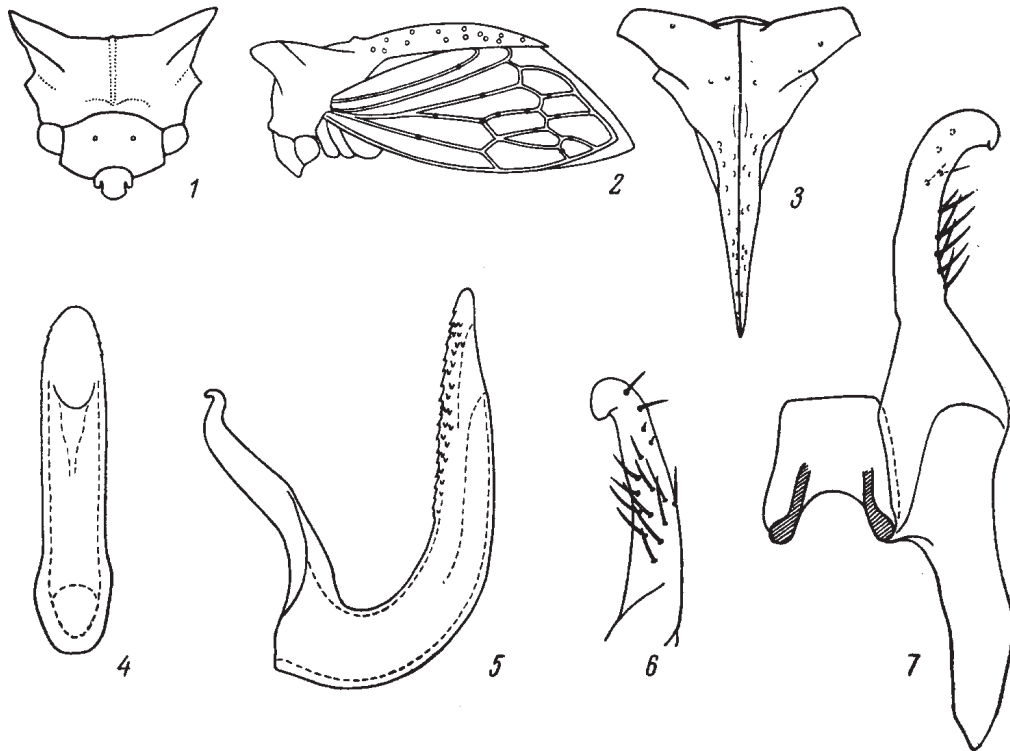


Fig. 16. Cicadines. Family Membracidae (after Lindberg with additions, and original).

1-7, *Tsunozemis paradoxa*: 1, head and pronotum, anterior view; 2, body, lateral view; 3, head, pronotum and scutellum, dorsal view; 4, 5, penis (4, apex, posterior view; 5, lateral view); 6, apex of stylus, dorsolateral view; 7, stylus and onnective, ventral view.

1. Dark brown or black, shiny, covered with dense golden or whitish hairs. Fore wings hyaline, with black or brown leathery base, black or brown veins and often with smoky darkening at apex. 5.2-8. – S Khab., Amur., Prim., S Sakh., S Kur. – Japan, Korea, N China. – In meadows, shrubberies, under canopy of broad-leaved and mixed forests, in open woodlands; usually on shrubs of Fabaceae. Late June to early October. (Figs. 13: 3; 18: 1-7) **B. flavipes** Uhl. (?*amurensis* Lindb., ?*bergeri* Funkh., ?*maacki* Funkh., ?*curvicornis* Lindb.) [p. 33]

5. **Centrobelus** Vilb. Humeral processes of pronotum short and thick, the distance between their apices somewhat greater than width of head. Fore wings with additional transverse veins; therefore, the number of subapical cells inconstant. Monotypic genus.

1. Light brown; fore wings semihyaline, with ochraceous yellow base and veins; veins bearing at places brownish punctures. 5.85. – S Prim. – In dry meadows. Mid-September. (Figs. 19: 1, 2) **C. curticornis** Vilb.

6. **Centrotus** F. Humeral processes of pronotum triangular pointed; their apices directed laterad and backwards. Posterior process of pronotum bent, undulated, carinate, nearly extending to apex of abdomen. Genital valve and genital plates [p. 35] fused completely; apices of genital plates forming a flattened, widened plate. – 1 species (in Palearctic up to 5).

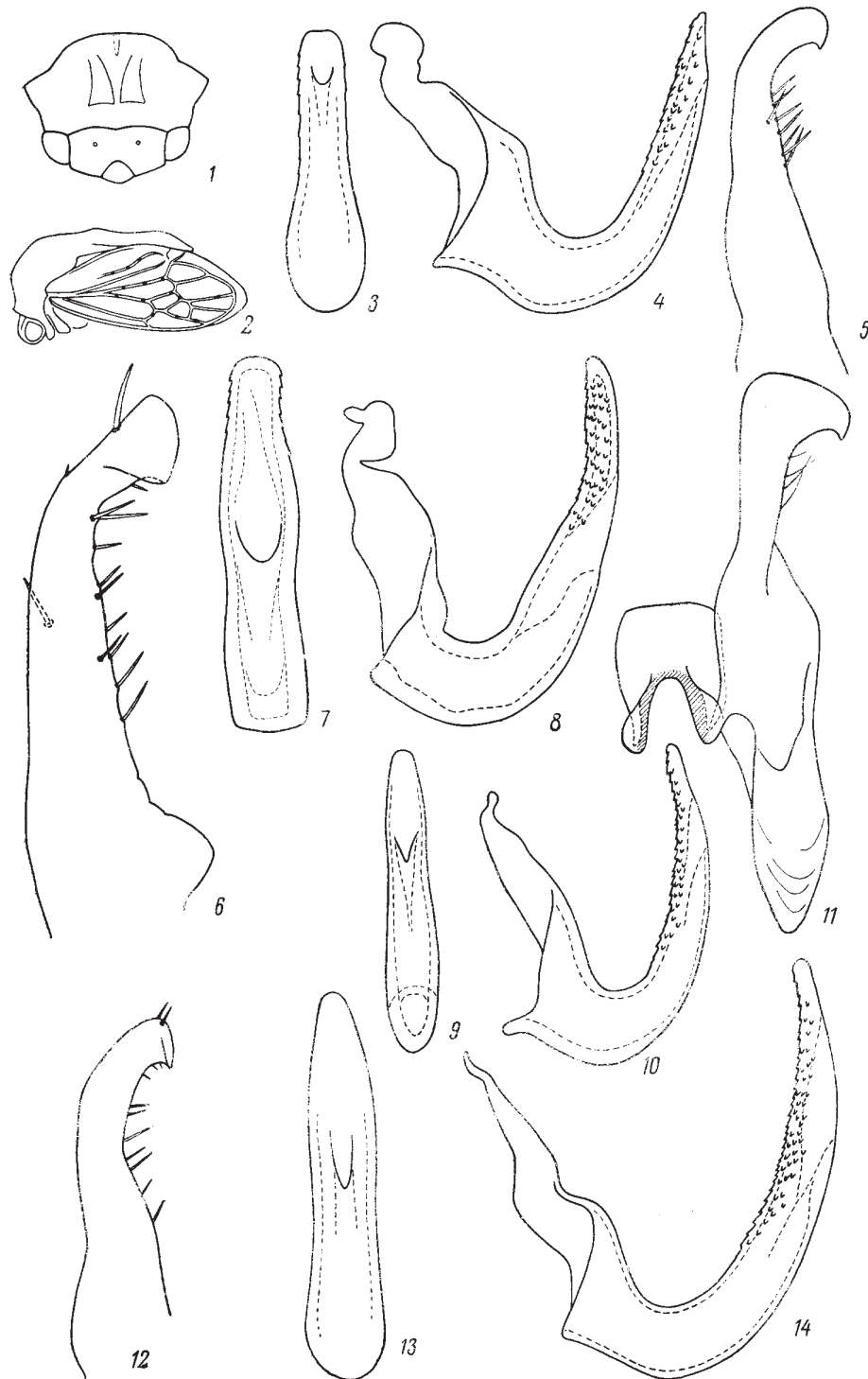


Fig. 17. Cicadines. Family Membracidae (after Lindberg with additions, and original).

1-5, *Gargara parvula*: 1, head and pronotum, anterior view; 2, body, lateral view; 3, 4, penis (3, ventral view; 4, lateral view); 5, apex of stylus, ventral view; 6-8, *G. orientalis*: 6, apex of stylus, ventral view; 7, 8, penis (7, posterior view; 8, lateral view); 9-11, *G. genistae*: 9, 10, penis (9, posterior view; 10, lateral view); 11, stylus and connective, ventral view; 12-14, *G. nigrostigmata*: 12, apex of stylus, ventral view; 13, 14, penis (13, posterior view; 14, lateral view).

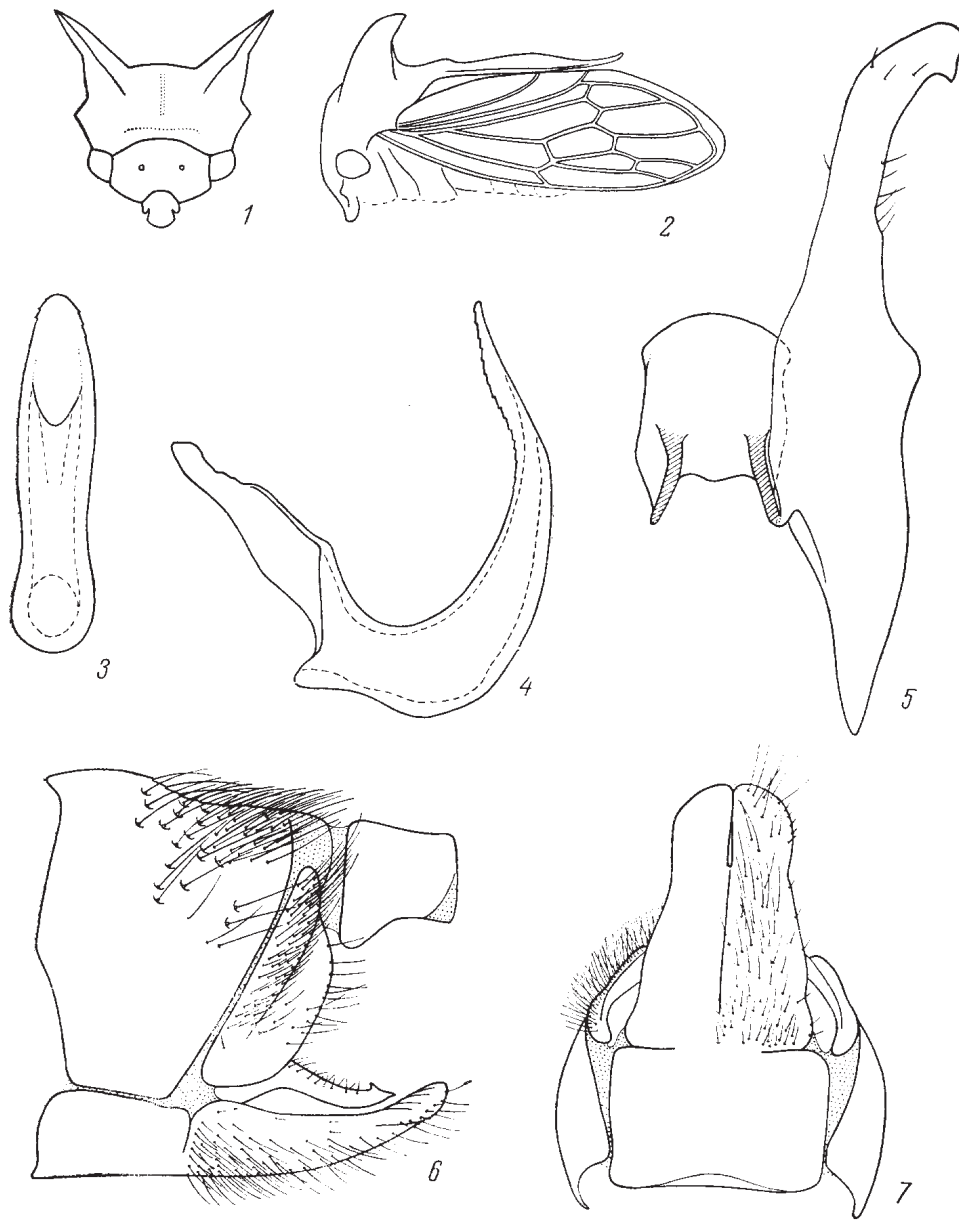


Fig. 18. Cicadines. Family Membracidae (after Lindberg and original).

1-7, *Butragulus flavipes*: 1, head and pronotum, anterior view; 2, body, lateral view; 3, 4, penis (3, apex, posterior view; 4, lateral view); 5, stylus and connective, ventral view; 6, 7, genital block of male: 6, lateral view; 7, ventral view.

1. Black, with adpressed yellowish hairs; in female, margins of lateral and posterior processes of pronotum may be brown. Hemelytra hyaline, with hyaline veins. 7-9.5. – S Khab., Prim.; Siberia, Kazakhstan, Middle Asia, Caucasus and Transcaucasia, European part of USSR. – W Europe from England and Scandinavian countries to extreme south, Turkey. – On mesophilous tall herbaceous vegetation under forest canopy and in glades. May to July; in Europe, May to October; larvae hibernating (Figs. 19: 3-10) *C. cornutus* L.

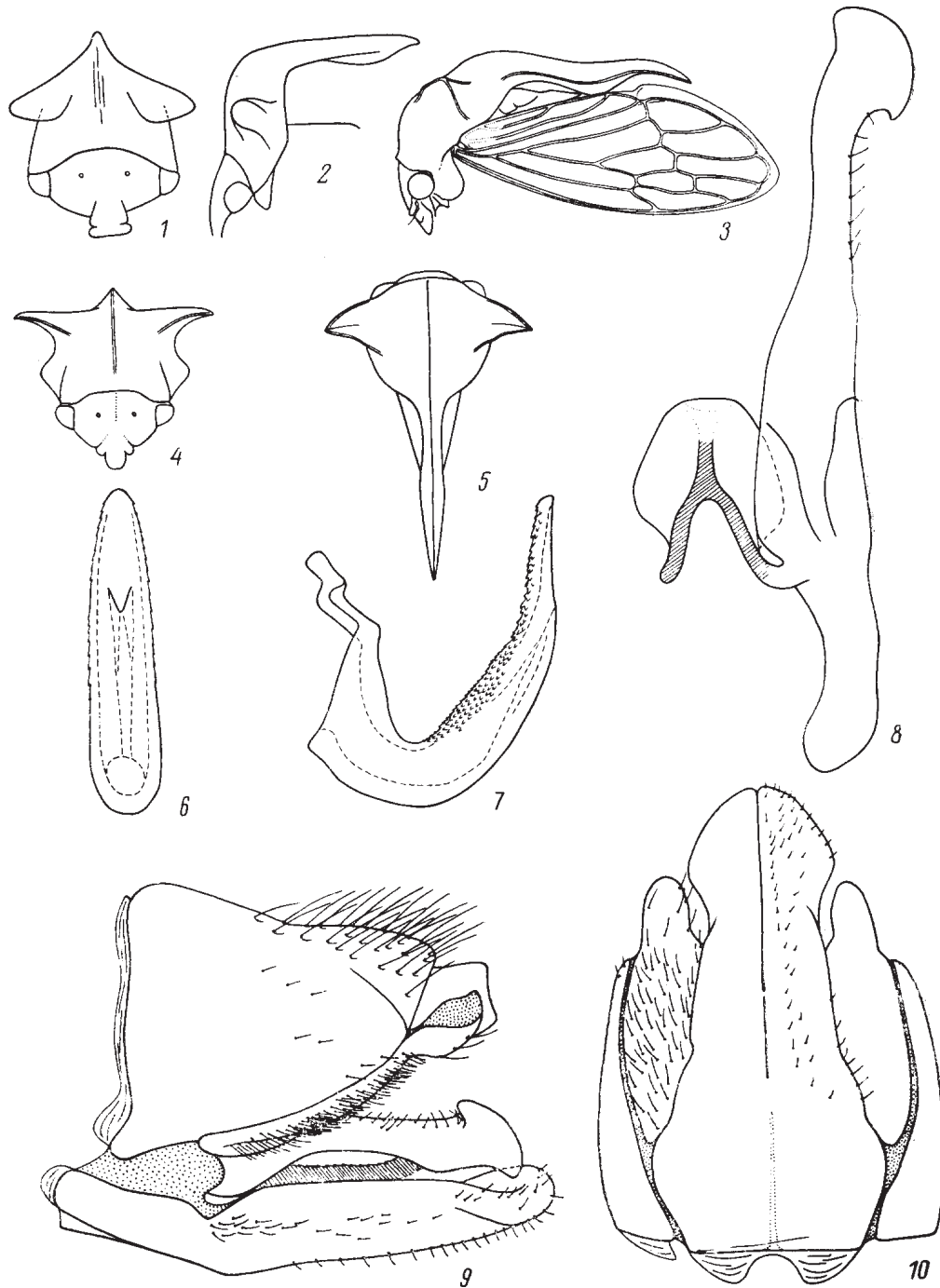


Fig. 19. Cicadines. Family Membracidae (after Vilbaste and original).

1, 2, *Centrobelus curticornis*: 1, head and pronotum, anterior view; 2, head, pronotum and scutellum, lateral view; 3-10, *Centrotus cornutus*: 3, body, lateral view; 4, head and pronotum, anterior view; 5, head, pronotum and scutellum, dorsal view; 6, 7, penis (6, apex, posterior view; 7, lateral view); 8, connective and stylus, ventral view; 9, 10, genital block of male (9, lateral view; 10, ventral view).

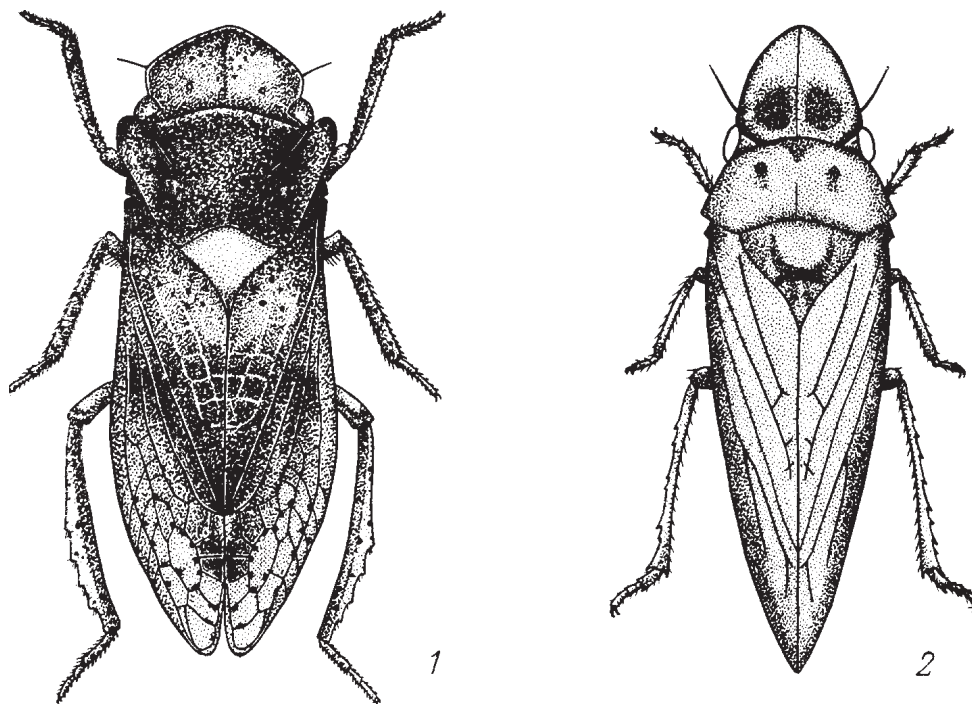


Fig. 20. Cicadines. Family Ledridae (after Lee & Kwon and Esaki).

1, *Ledra auditura*; 2, *Neotituria kongosana*.

2. Family LEDRIDAE

Medium-sized or rather large, with slightly flattened dorsoventrally body and spade-shaped head. Frontoclypeus narrow, situated completely on facial surface of head; ocelli situated on vertical surface between eyes, far from anterior margin of head. Antennae small. Hind coxae without a button fastening. Hind tibiae on external (anterior) margin with flattened teeth bearing a seta. Larvae more or less, sometimes strongly flattened dorsoventrally. Habits various, on bark of trees, in bunches of grasses. Often regarded as a subfamily in the family Cicadellidae. – 4 genera, 4 species (in USSR 4 genera, 5 species).

LITERATURE. Anufriev, G.A. Leafhoppers of Primorsk Territory (Homoptera, Auchenorrhyncha, Cicadellidae). Trudy Vsesoyuz. Entomol. Obshch., 1979. T. 60. P. 1-215. – Ishihara, T. A tentative check list of the superfamily Cicadelloidea of Japan (Homoptera). Sci. Rep. Matsuyama Agric. Coll. 1953. No. 11. P. 1-72.

KEY TO GENERA

1. Anterior margin of vertex (viewed from above) with obtuse-angulate projections before eyes (Figs. 21: 1, 11) 2 [p. 36]
- Anterior margin of vertex (viewed from above) parabolic, without sharp projections before eyes (Figs. 22: 1, 6) 3
2. Pronotum laterally with two strong ear-like projections (Fig. 21: 2) 1. **Ledra**
- Pronotum laterally without ear-like projections (Fig. 21: 11) 2. **Ledropsis**

3. Width of pronotum only somewhat greater than width of head; its posterior lateral angles obtuse-angulate rounded (Fig. 22: 1) 3. *Petalocephala*

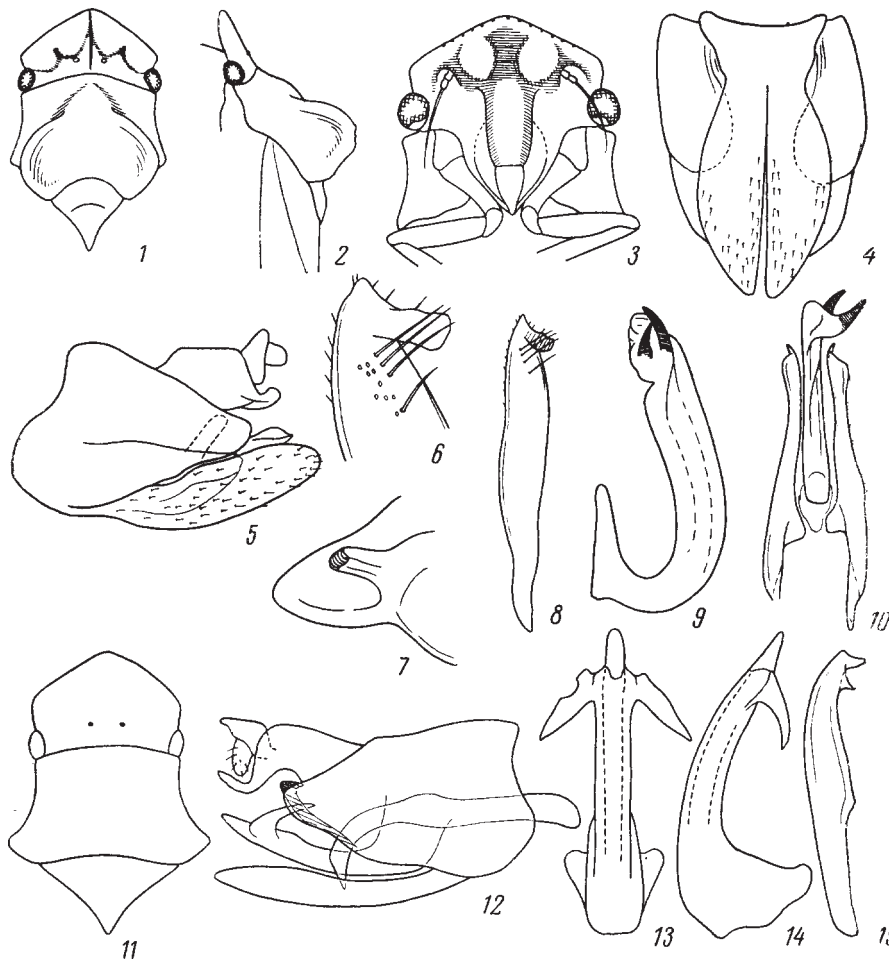


Fig. 21. Cicadines. Family Ledridae (after Anufriev and Vilbaste).

1-10, *Ledra auditura*: 1-3, anterior part of body (1, dorsal view; 2, lateral view; 3, ventral view); 4, 5, genital block of male (4, ventral view; 5, lateral view); 6, apex of stylus; 7, lobe of pygofer, internal view; 8, stylus; 9, penis, lateral view; 10, styli and penis, dorsal view; 11-15, *Ledropsis discolor*: 11, anterior part of body; 12, genital block of male, lateral view; 13, penis, dorsal view; 14, penis, lateral view; 15, stylus.

- Width of pronotum much greater than width of head across eyes, its posterior lateral angles stretched, foliaceous, rectangular (Fig. 22: 6) 4. *Neotituria*

KEYS TO SPECIES

1. *Ledra* F. Rather large (greater than 15), brown-colored, occurring mainly on bark of trees. Head flattened; vertex pentagonal, with obtuse-angulate projections and slightly widened before eyes. Male. Lobes of pygofer triangular, on inner surface with hook-like processes arising from ventral margin. Genital plates somewhat longer than lobes of pygofer, [p. 37] rounded at apex and fused with genital valve and pygofer. Styli with axe-shaped apices. Connective in the shape of a transverse plate. Penis asymmetrical, with a pair of subapical processes lateral to ventral subapical gonopore. – 1 species (in USSR 2).

1. Sallow-gray; vertex with a pair of translucent spots. 12.5-16. – Amur., Prim. – Japan, Korea, China. – In broad-leaved and mixed forests, on bark of oak. Well attracted to light. Early August to early September. (Figs. 20: 1; 21: 1-10) **L. auditura** Walk.

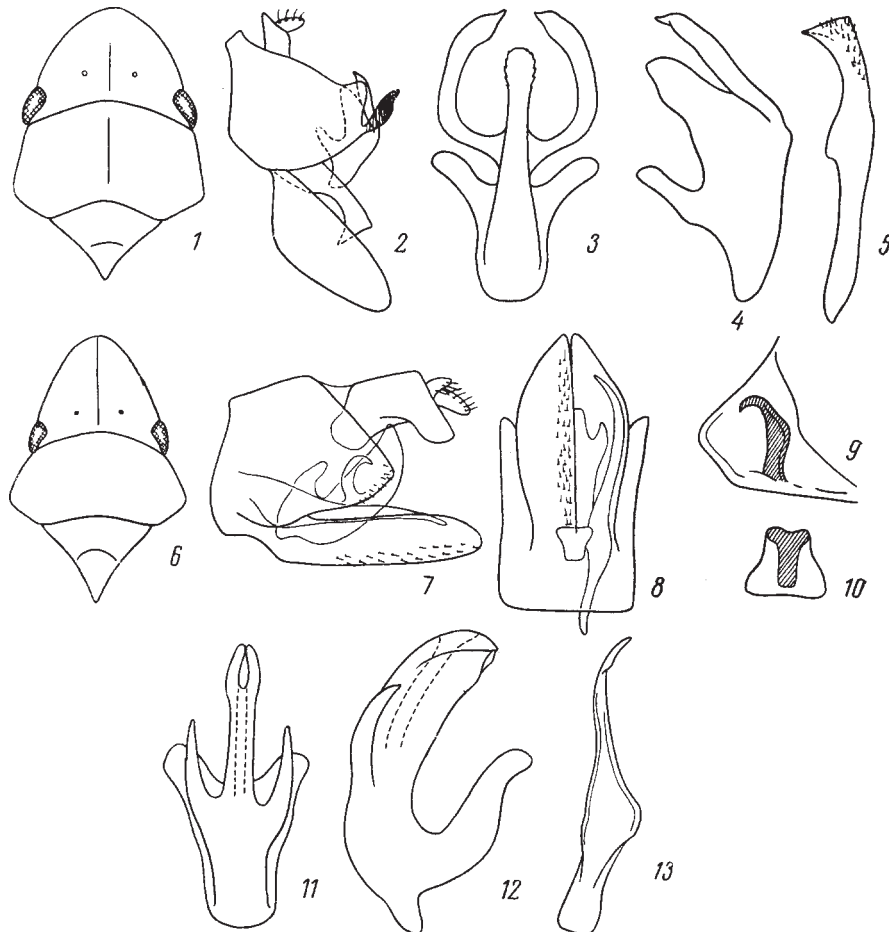


Fig. 22. Cicadines. Family Ledridae (after Anufriev and Vilbaste).

1-5, *Petaloccephala engelhardti*: 1, anterior part of body; 2, genital block of male, lateral view; 3, 4, penis (3, dorsal view; 4, lateral view); 5, stylus; 6-13, *Neotituria kongosana*: 6, anterior part of body; 7, 8, genital block of male (7, lateral view; 8, ventral view); 9, lobe of pygofer, internal view; 10, connective; 11, 12, penis (11, dorsal view; 12, lateral view); 13, stylus.

2. **Ledropsis** White. Large (greater than 10), brown-colored forms. Head flattened; vertex before eyes with obtuse-angulate projections and considerably widened. Male. Lobes of pygofer rounded triangular, with ribbon-like processes running along ventral margin on inner surface; apex of pygofer widened and truncate. Genital plates with fused bases. Styli with attenuate apex and acutangulate subapical projection. Connective in the shape of elongate plate, with wide and short apophyses. Penis symmetrical, lateral to gonopore with a pair of processes directed forward. – 1 species. [p. 38]

1. Gray; fore wings in basal third with hardly noticeable, triangular light spots on costal margin. 10-13. – S Prim. – Japan, NE China. – In mixed and broad-leaved forests on oak; attracted to light. Late September. (Figs. 21: 11-15) **L. discolor** Uhl.

3. **Petalocephala** Stål. Vertex parabolic. Pronotum smoothly widened backwards, its posterior lateral angles obtuse-angulate rounded; pronotum somewhat wider than head. Male. Lobes of pygofer with erect processes on posterior margin. Genital plates with fused bases. Styli with straight, truncate apex and attenuate inner angle. Connective lamellar. Penis symmetrical, compressed laterally, with a pair of processes arising from middle of dorsal surface of shaft and running backwards. – 1 species.

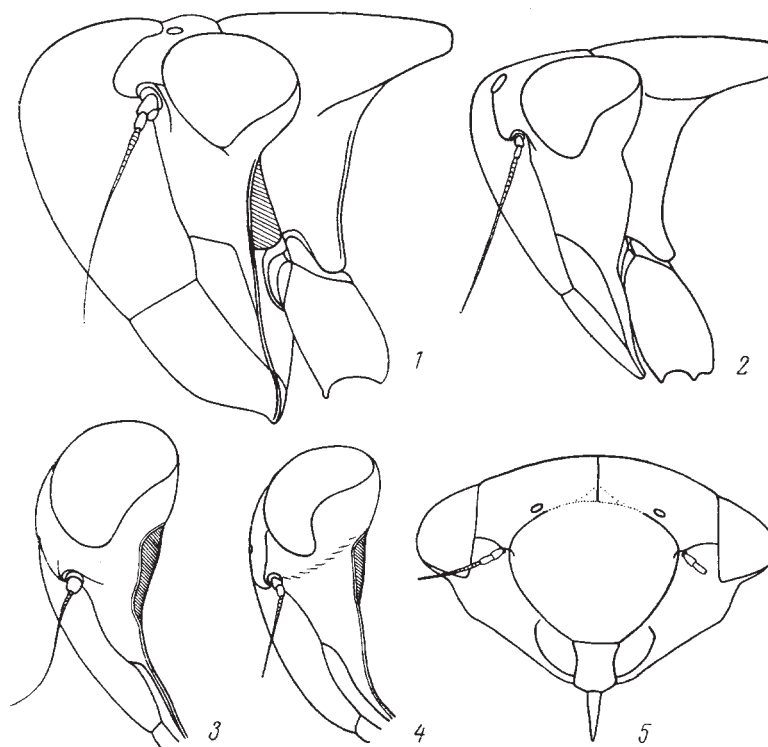


Fig. 23. Cicadines. Family Cicadellidae (original).

1, 2, head and prothorax: 1, *Cicadella viridis*, episternum of prothorax (shaded) not covered by head margin; 2, *Matsumurella praesul*, episternum covered by head margin; 3, 4, Idiocerinae, head, lateral view; medial surface of posterior wall of gena turned out and well visible, shaded: 3, *Parocerus laurifoliae*; 4, *Rhytidodus decimusquartus*; 5, *Rh. wagneri* Dlab., facial part of head.

1. Brown. 6.3-7.8. – Amur., Prim. – In mixed forests, developing apparently on oak. Late May to mid-July. (Figs. 22: 1-5) **P. engelhardti** Kusn.

4. **Neotituria** Kato. Vertex parabolic. Pronotum much wider than head, with foliaceous, stretched, rectangular posterior angles. Male. Lobes of pygofer inside with a hook-like process arising from ventral margin. Genital plates with fused bases. Styli with long, awl-shaped apices. Connective lamellar, pentagonal. Penis nearly symmetrical, with shaft compressed laterally and a pair of processes arising near the middle of shaft and directed apically; gonopore dorsal, subapical; lobe-like projections are situated on its sides. – 1 species. [p. 39]

1. Green; anterior margin of vertex carmine; fore wings in male often brownish. 10.5-16. – S Prim. – Korea, China. – On the grass *Miscanthus* in meadows and open woodlands formed by *Quercus dentata*. Early August to early September. (Figs. 20: 2; 22: 6-13) **N. kongosana** Mats.

3. Family CICADELLIDAE – Leafhoppers

Medium-sized or small, of various habitus, more or less elongate cylindrical, with wide head, which is slightly narrower or slightly wider than pronotum, and hind tibiae furnished with numerous strong bristles (Figs. 3, 4). Boundaries of frons, clypeus and vertex indistinct or barely marked (Figs. 1: 3, 4; 23: 5; 24: 25: 1-3, 5, 6). Turn of face into vertex smooth, more rarely sharp; besides, the boundary between frons and vertex may be formed differently: ocelli situated at the very boundary or on vertical surface. Head may be elongate; presence of processes and carinae on the head, disc of pronotum and scutellum not typical. Wing dimorphism and a strong brachyptery not rare. Fully developed fore wings moderately consolidated; the degree of development of peripheral membrane (so called appendage of membrane) varying widely (Figs. 26: 1, 3-5, 7). Hind wings mainly with completely developed peripheral vein (Figs. 26: 2, 6), but it is interrupted from apex up to clavus in most Typhlocybinae (Fig. 26: 8). Hind coxae with button fastening on contiguous medial surfaces (Fig. 12: 6). Genital segment of male (Figs. 10: 2; 28: 1-6) usually divided into upper part, the proper pygofer, and lower part, genital valve with genital plates; the genital valve often not completely separated from pygofer and genital plates. Lobes of pygofer may be separated ventrally from the main part by a mobile suture ending

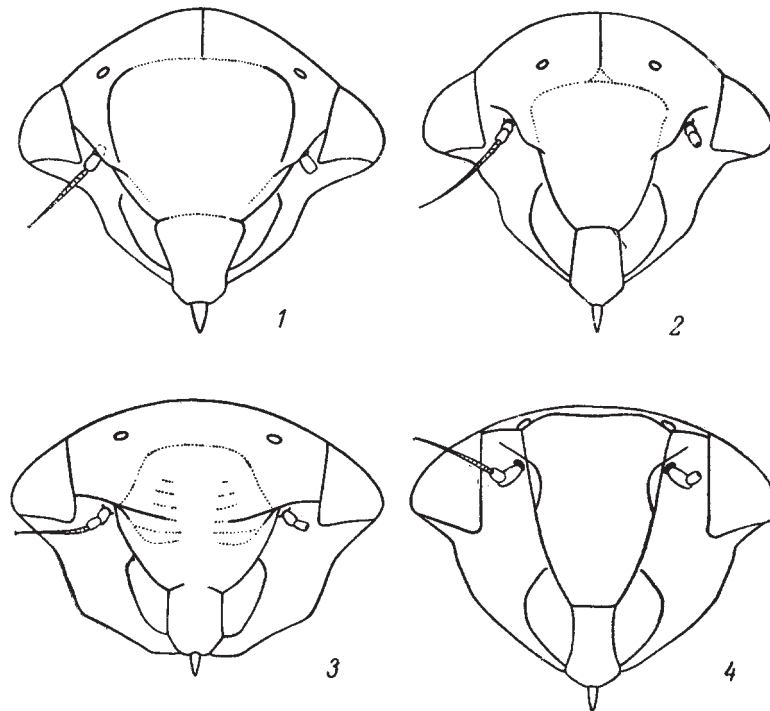


Fig. 24. Cicadines. Family Cicadellidae (original).

- 1-4, facial part of head: 1, Macropsinae (*Oncopsis caliginosus*); 2, Agalliinae (*Japanagallia pteridis*); 3, Iassinae (*Batracomorphus allionii*); 4, Deltocephalinae (*Drabescus striatus*).

blindly. Styli and connective of various shape (Fig. 29). Penis usually not segmented and without parameres, but sometimes segmented complexly, bears parameres or fused with connective (Figs. 28: 4-6; 121: 5, 6; 190: 5, 6). [p. 40] Larvae various, with habits similar to those of adults and more or less similar to adults in general appearance; many of them jumping well. On grass, woody and shrub vegetation; polyphagous and oligophagous, the latter predominate. Nearly all on flowering plants, sometimes associated with conifers or horse-tails. – 164 genera, up to 400 species (in USSR more than 270 genera and 1300 species).

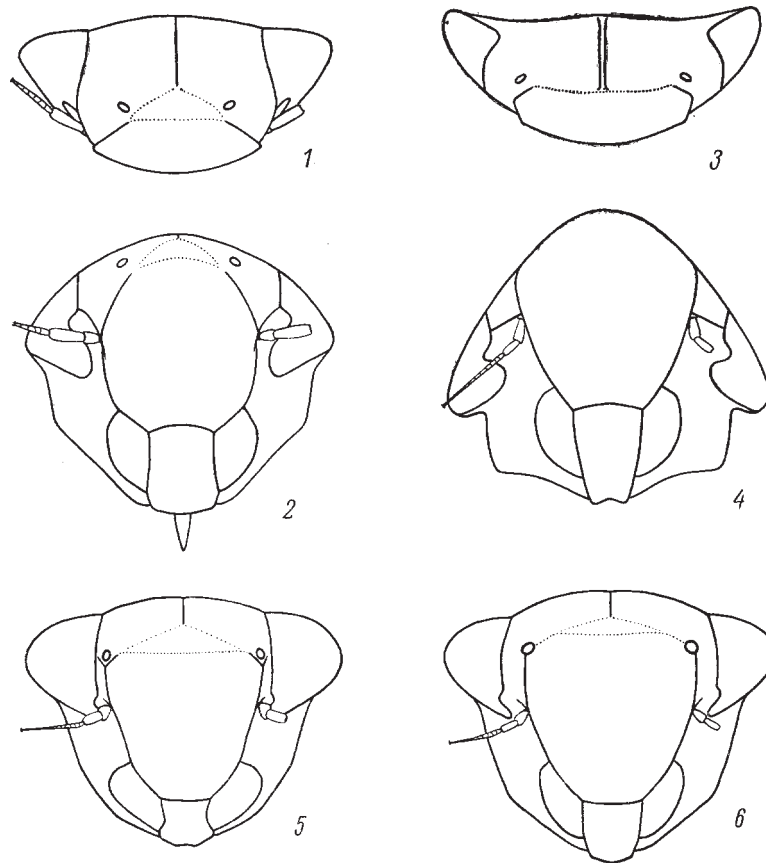


Fig. 25. Cicadines. Family Cicadellidae (original).

1, 2, Xestocephalinae (*Xestocephalus freyi* Lindb.), head: 1, dorsal view (vertical surface); 2, anteroventral view (facial surface); 3, 4, Aphrodinae (*Aphrodes fuscifasciatus* Gz.), head: 3, anterodorsal view; 4, anteroventral view; 5, 6, Deltocephalinae, head, anterodorsal view with lateral postclypeal carina: 5, with secondary branch (*Phlepsius ornatus* Perris); 6, ending in ocellus (*Matsumurella praesul*).

LITERATURE. Anufriev, G.A. Leafhoppers of Primorsk Territory (Homoptera, Auchenorrhyncha, Cicadellidae). Trudy Vsesoyuz. Entomol. Obshch., 1979. T. 60: 1-215. – Ishihara, T. A tentative check list of the superfamily Cicadelloidea of Japan (Homoptera). Sci. Rep. Matsuyama Agric. Coll. 1953. No. 11: 1-72.

KEY TO GENERA

1. Apex of 1st segment of hind tarsi ventrally truncate and with a dense comb of short bristles (Figs. 27: 1, 2) 2
- Apex of 1st segment of hind tarsi ventrally pointed and devoid of comb of setae (Fig. 27: 3). (Subfamily Typhlocybinae) 146

2. Episternum of prothorax partly or nearly completely covered by foliaceous margin of gena, but its part adjacent to coxal articulation always visible externally (Fig. 23: 1). The suture ending in ocellus absent 3
- Episternum of prothorax completely concealed under genal margin, not visible externally (Fig. 23: 2); if slightly projecting, clypeal suture ending in ocellus (Fig. 25: 6) 44 [p. 41]

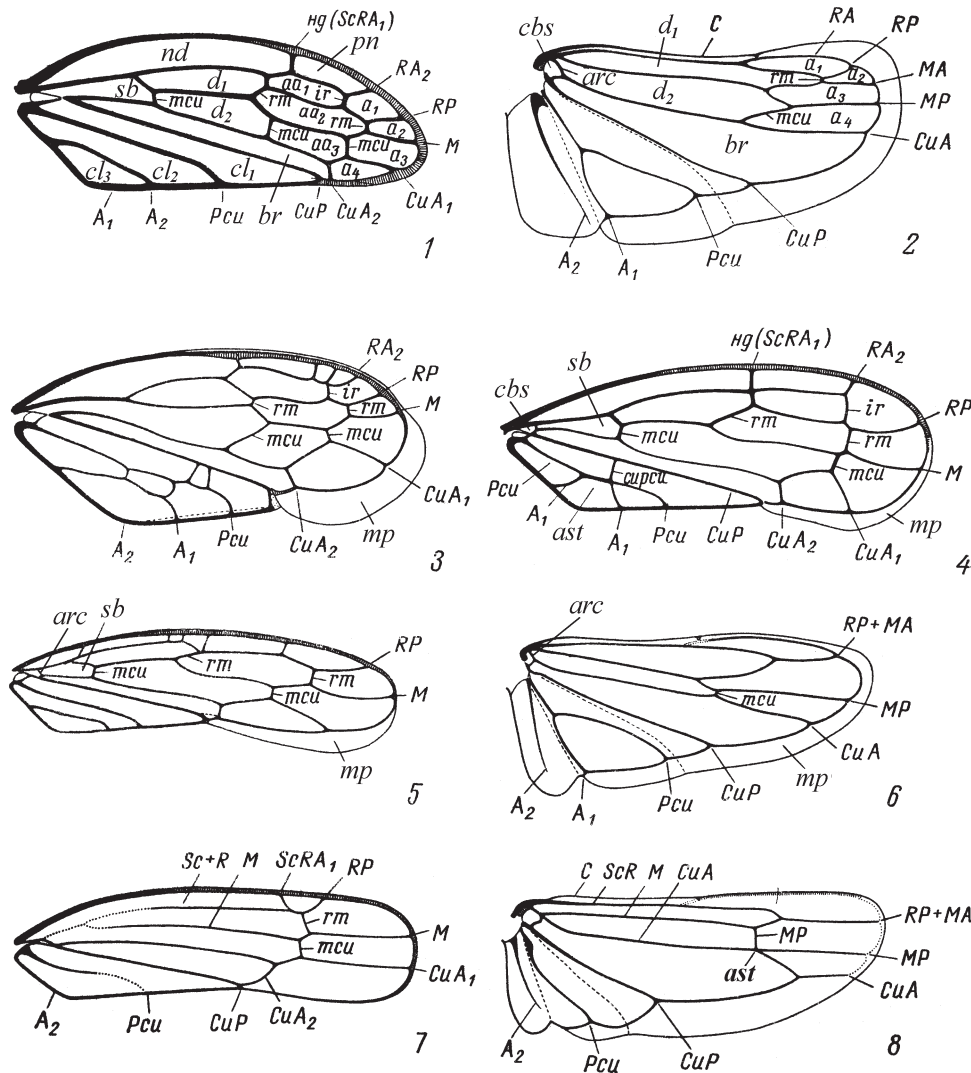


Fig. 26. Cicadines. Family Cicadellidae. Wings (original).

1, 2, *Anaceratagallia laevis* Rib. (1, fore wing; 2, hind wing); 3, *Penthimia scutellata*, fore wing; 4, *Japananus hyalinus*, fore wing; 5, 6, *Balclutha punctata* (5, fore wing; 6, hind wing); 7, 8, *Erythroneura* sp. (7, fore wing; 8, hind wing); a_1 - a_4 , apical cells; aa_1 - aa_3 , anteapical cells; br , brachial cell; d_1 - d_2 , discal cells; cl_1 - cl_3 , claval fields; nd , nodus; pn , postnodal cell; sb , subbasal cell. See Fig. 5 for remaining designations.

3. Margin of gena under eyes bent back outwards and more or less thickened (Figs. 23: 3, 4). Hind coxa slightly projecting laterad and its meron visible from below. (Subfamily Idiocerinae) 4
- Margin of gena pressed to the body all the way. Hind coxa under meron forming a rounded projection because of which the meron is not visible from below 24

4. Genital plates robust, flat, fused to genital valve. Apical part of stylus as long as its basal part or shorter. Pronotum and mesonotum convex, robust. (Tribe Megipocerini). Mesonotum longer than vertex and pronotum combined. Turn of face into vertex smooth. Lobes of pygofer of male on inner surface with projection bearing several teeth. [p. 42] Apical part of stylus smaller than its basal part, spade-like, somewhat bent spirally, bare 1. **Megipocerus**
- Genital plates thin, flattened laterally, sometimes with ventral margin more or less tucked in, but never plate-like and fused to genital valve. Apical part of stylus usually much longer than its basal part. Pronotum and mesonotum comparatively flat; mesonotum not longer than vertex and pronotum combined. Turn of face into vertex sharp. (Tribe Idiocerini) 5

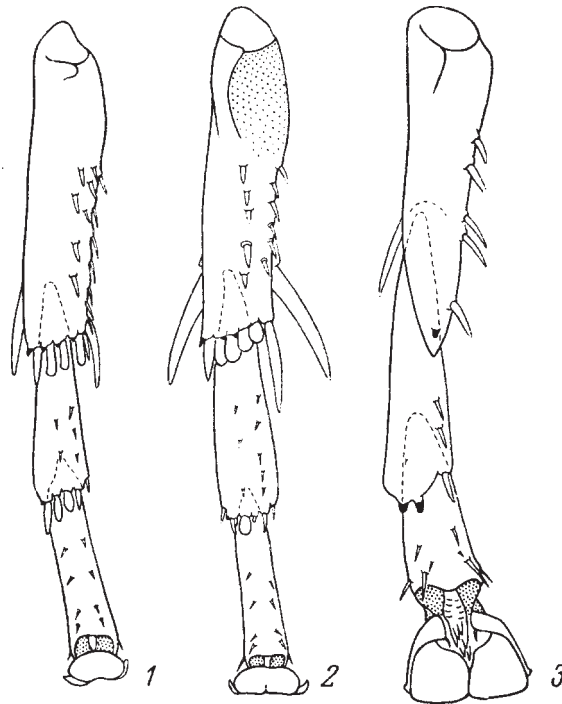


Fig. 27. Cicadines. Family Cicadellidae (original).

1-3, hind tarsi, ventral view: 1, *Macrosteles* sp.; 2, *Balclutha* sp.; 3, *Kybos* sp.

5. Apex of hind femur with 2 apical and 1 subapical bristle. Antennae in male without palette. Stylus with a thick subapical bristle on bent, beak-like apex 2. **Nabicerus**
- Apex of hind femur with 2 apical bristles, subapical bristle lacking. If antennae in male without palette, stylus without large subapical bristles at apex 6
6. Males 7
- Females (not known in *Tautocerus*) 16
7. Lobes of pygofer with projection on ventral margin. Antennae without palette. Hemelytra with 2 subapical cells; if with 3 cells, then outer subapical cell very short. Pronotum coarsely rugose 3. **Rhytidodus**
- Lobes of pygofer without projection on ventral margin; if projection present, antennae with palette and hemelytra with a very long outer subapical cell. Pronotum finely punctate 8

8. Genital plates very small, nearly completely covered by genital valve, much shorter than styli. Hemelytra with 2 subapical cells. Antennae with palette 4. **Sahlbergotettix**
- Genital plates well developed, longer than or as long as stylus. Hemelytra with 3 subapical cells 9 [p. 43]
9. Lobes of pygofer with a projection on ventral margin. Genital plates in the middle bent sharply. Apex of penis shaft without processes 8. **Tautocerus**

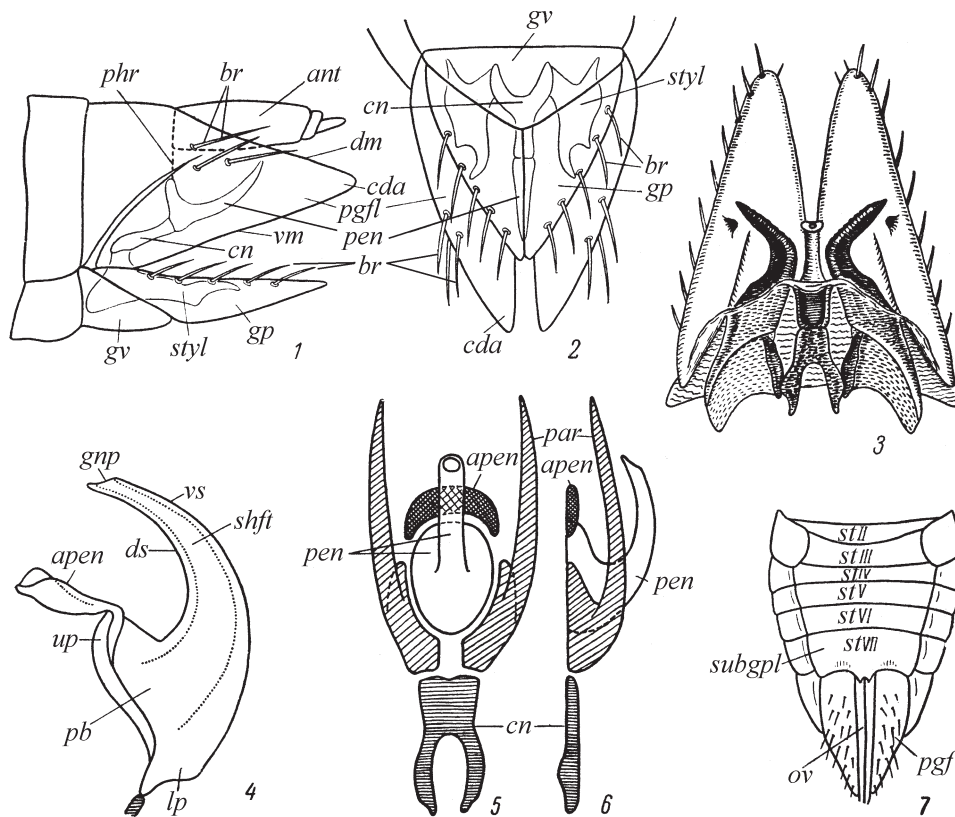


Fig. 28. Cicadines. Family Cicadellidae. Genitalia (after Linnauvori, Ribaut, Vilbaste, and original).

1, 2, pygofer of male (1, lateral view, schematic; 2, ventral view); 3, genital valve, genital plates, connective, styli and penis, dorsal view, the membrane of genital chamber is shown; 4, penis, lateral view; 5, 6, penis with paraphyses and connective (5, posterior view; 6, lateral view); 7, female abdomen, ventral view. *ant*, anal tube; *vm*, ventral margin of pygofer lobe; *vs*, ventral side of penis shaft; *up*, upper part of penis base; *gv*, genital valve; *gnp*, gonopore; *gp*, genital plate; *dm*, dorsal margin of pygofer lobe; *pgfl*, pygofer lobes; *ds*, dorsal side of penis shaft; *cn*, connective; *cda*, caudal angle of pygofer lobe; *br*, bristle; *lp*, lower part of penis base; *pb*, penis base; *pgf*, pygofer; *pen*, penis; *apen*, appendage of penis base; *par*, paraphyses; *subgpl*, subgenital plate of female; *st*, sternite; *shft*, shaft of penis; *styl*, stylus; *ov*, valvulae of ovipositor; *phr*, genital phragma. Abdominal sternites are designated by Roman numerals.

- Lobes of pygofer without projection on ventral margin. Genital plates, if bent in middle, are bent smoothly. Apex of penis shaft with a pair of subapical processes 10
10. Antennae without palette. Stylus without large bristles at apex. Head more than 2.8 times as long as the distance between centres of ocelli. Stylus 1.5-1.7 times as long as penis 11
- Antennae with palette. Stylus with 1, 2 or several large bristles at apex. If stylus with 2 small bristles in subapical group of bristles, length of head less than 2.6 times the distance between centres of ocelli, and stylus 2-2.2 times as long as penis 13

11. Three long black subapical bristles in posterodorsal row on fore tibiae. 22-24 bristles in posterodorsal row on hind tibiae. Stylus with apical group of setae .
..... 6. **Parocerus**
- No long black bristles in posterodorsal row on fore tibiae. 10-16 bristles in posterodorsal row on hind tibiae. Stylus without apical setae 12
12. Ventral margin of gena forming at anteclypeus a pointed angle often projecting beyond its apex. [p. 44] Genital plates with widely tucked in ventral margin. Apex of penis shaft flattened dorsoventrally, spade-like..... 7. **Tremulicerus**
- Ventral margin of gena not forming at anteclypeus a receding acute angle, closely adjacent to it. Genital plates with narrowly tucked in ventral margin. Apex of penis shaft compressed laterally, awl-like 5. **Koreocerus**

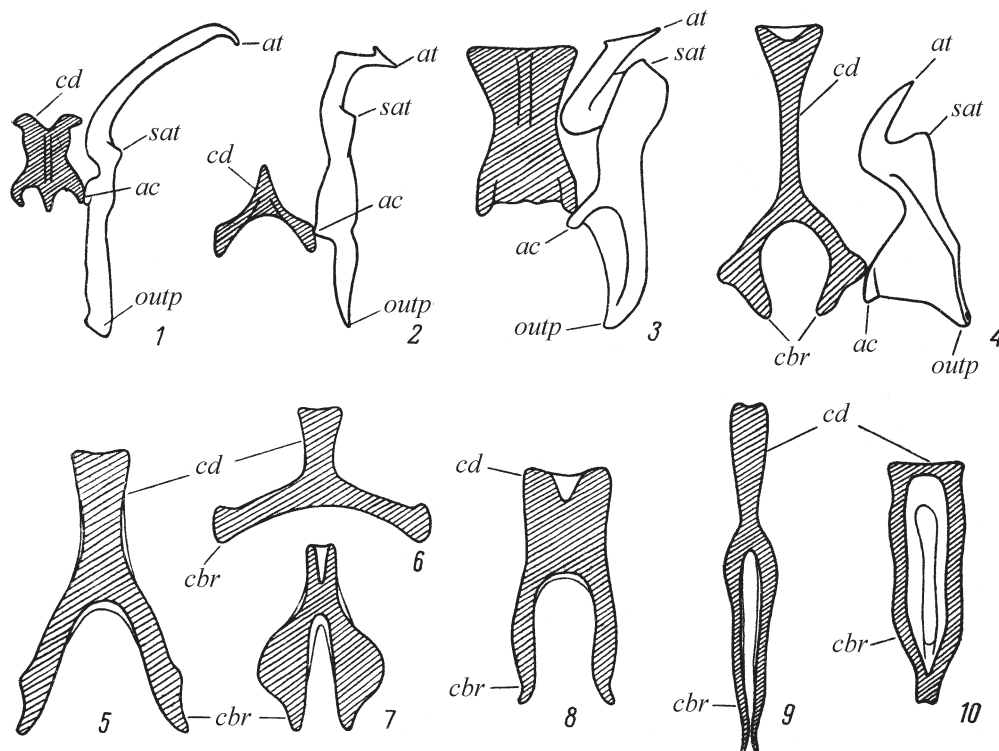


Fig. 29. Cicadines. Family Cicadellidae (original).

1-4, left stylus and connective, dorsal view; 1, Macropsinae (*Oncopsis* sp.); 2, Typhlocybinae (*Arboridia* sp.); 3, Agalliinae (*Japanagallia* sp.); 4, Deltocephalinae (*Balclutha* sp.); 5-10, main types of connective in subfamily Deltocephalinae: 5, bifurcate (Y-shaped); 6, bifurcate, with widely diverging branches (Acinopterini); 7, bifurcate, with dilated branches (*Laburris*); 8, bifurcate, with parallel branches (*Handianus*); 9, racket-shaped (*Doratara*); 10, loop-shaped. *at*, apical tooth of stylus; *cbr*, branches of connective; *outp*, outer process of stylus base; *ac*, articular condyle of stylus base (inner process of base); *cb*, base of connective; *sat*, subapical tooth of stylus. Connective shaded.

13. Length of head less than 2.75 times distance between centres of ocelli. Width of head more than 1.22 times its length 14
- Length of head more than 3.1 times the distance between centres of ocelli. Width of head less than 1.17 times its length 15
14. Ventral margin of genae forming at anteclypeus a pointed angle receding from it. Palette of antenna very narrow. Stylus with 1-4 small bristles in subapical or apical group 9. **Podulmorinus**

- Ventral margin of genae not forming at anteclypeus a receding angle, closely adjacent to it. Palette of antenna comparatively wide. Stylus with 1 large subapical or apical bristle 10. **Idiocerus**
- 15. Head more or less round; outer margin of genae convex. Third antennal segment with 3 basal setae. Genital valva with deep incision on posterior margin. Apex of penis shaft flattened dorsoventrally 11. **Metidiocerus**
- Head more or less triangular; outer margin of genae concave. Third antennal segment with 2 basal setae. Genital valve with small projection in shallow incision [p. 45] of posterior margin. Apex of penis shaft cylindrical 12. **Populicerus**
- 16. Three long black subapical bristles in posterodorsal row on fore tibiae. Length of protruding part of ovipositor in lateral view 1.9-2.1 times its width. 20-24 bristles in posterodorsal row on hind tibiae 6. **Parocerus**
- No long black bristles in posterodorsal row on fore tibiae, sometimes only one small, light, subapical bristle present. If the protruding part of ovipositor in lateral view is longer than wide, its length not more than 1.75 times its width 17
- 17. Apex of inner valvula of ovipositor spear-shaped; valvula 2.6-2.8 times as long as wide. Length of protruding part of ovipositor in lateral view 1.25-1.35 times its width 5. **Koreocerus**
- Apex of inner valvula of ovipositor lanceolate 18
- 18. Length of head 2.08-2.58 times the distance between centres of ocelli. Inner valvula of ovipositor with 25-50 denticles; if with 11-13 or 17-19, ventral field of outer valvula very wide, blunt at apex 19
- Length of head more than 2.96 times the distance between centres of ocelli. Inner valvula of ovipositor with 8-18 denticles. Ventral field of outer valvula usually pointed at apex 22
- 19. Hemelytra with 2 subapical cells; if with 3 cells, the outer subapical cell very short. Third antennal segment with 2 basal setae 20
- Hemelytra with 3 subapical cells, the outer subapical cell very long. Third antennal segment with 3 basal setae 21
- 20. Width of postclypeus 1.18-1.32 times its length (Fig. 23: 5). Pronotum coarsely rugose 3. **Rhytidodus**
- Length of postclypeus 1.14-1.19 times its width. Pronotum finely punctate 4. **Sahlbergotettix**
- 21. Inner valvula of ovipositor with 10-15 denticles. Ventral field of outer valvula very wide, blunt at apex. Ventral margins of genae forming at anteclypeus a small, receding from it, pointed angle 9. **Podulmorinus**
- Inner valvula of ovipositor with 25-30 denticles. Ventral field of outer valvula narrow, pointed at apex. Ventral margins of genae closely adjacent to anteclypeus, not forming at it a receding angle 10. **Idiocerus**
- 22. Postclypeus 1.28-1.51 times as long as wide. Length of body up to the end of hemelytra more than 6 12. **Populicerus**
- Postclypeus 0.97-1.26 times as long as wide. Length of body up to the end of hemelytra not more than 5.8 23
- 23. Postclypeus comparatively flat; its lateral margins curved smoothly. Ventral margins of genae forming at anteclypeus a small angle receding from it 7. **Tremulicerus**
- Postclypeus convex; its lateral margins at supraantennal carina sharply curved forming an angle. Ventral margins of genae closely adjacent to anteclypeus, not forming a receding angle 11. **Metidiocerus**

24. Antennal carinae extending on frontoclypeus, running across it or more or less obliquely along it, somewhat receding from its margin (Fig. 42: 1) 25
 - Antennal carinae expressed only on temples, not extending distinctly on frontoclypeus and not continuing on it as carinae. (Subfamily Cicadellinae) 36
25. Antennal carinae transverse, extending on frontoclypeus far from its lateral margins (Fig. 24: 3). (Subfamily Iassinae) 26
 - Antennal carinae oblique longitudinal, on frontoclypeus running more or less parallel with its lateral margin (Figs. 24: 1, 2) 28
26. Anal tube with an appendage (Figs. 56: 1, 4). Styli small, reduced 22. **Iassus**
 - Anal tube without appendage. Styli large, well developed (Figs. 57: 6-8) 27 [p. 46]
27. Genital segment of male very short and high; pygofer without processes. Styli with L-shaped apical part 23. **Trocnadella**
 - Genital segment of male rather long. Lobes of pygofer with long process on lower margin. Styli nearly straight (Figs. 57: 6-8) 24. **Batracomorphus**
28. Antennal carinae sharp; antennae situated in deep pits, their 1st segment more or less hidden (Fig. 24: 1). Hind wings with 3 apical cells. Pronotum often projecting forward angularly. (Subfamily Macropsinae) 29
 - Antennal carinae weak (Fig. 24: 2). Hind wings with 4 apical cells (Fig. 26: 2). Pronotum anteriorly always arcuate convex or straight. (Subfamily Agalliinae) 33
29. Pronotum slightly convex, with coarse wrinkles running more or less parallel to its posterior margin, at least in its hind half (Fig. 51: 1). – Anal tube with peculiar appendages (Figs. 51: 6; 53: 9, 10) 30
 - Pronotum convex; its wrinkles oblique, situated at an angle to its posterior margin (Fig. 52: 13) 31
30. Pygofer without processes on caudal margin. Penis without teeth. The appendage of anal tube with 1 or 2 developed branches (Fig. 51: 6) 17. **Oncopsis**
 - Pygofer with a process on caudal margin (Fig. 53: 13). Penis with unpaired teeth lateral to apex and 2 pairs of teeth ventrally (Figs. 53: 14-17). The appendage of anal tube with weakly developed branches (Figs. 53: 10, 12) .. 19. **Pediopsoides**
31. Pronotum projecting much forward in the middle and covering partly vertex from above (Fig. 52: 13). Anal tube with appendage 18. **Pediopsis**
 - Pronotum not projecting forward; vertex visible from above at full length. Anal tube without appendage 32
32. Wrinkles of pronotum strongly oblique, nearly transverse, coming up to its hind margin at an angle. Lobes of pygofer with long processes running up along their posterior margin (Figs. 54: 2, 8). Penis with smooth shaft (Figs. 54: 1, 7) 20. **Macropsis**
 - Wrinkles of pronotum weakly oblique, in the middle nearly parallel to its hind margin. Lobes of pygofer without processes or with very short processes (Fig. 54: 14). Penis on sides with spread carina often lacerately denticulate or with irregular denticles (Figs. 54: 15-18) 21. **Macropsidius**
33. Shaft of penis without processes at apex. Fore wings without additional transverse veins 34
 - Shaft of penis with simple and branched processes at apex. Fore wings with additional transverse veins 15. **Dryodurgades**
34. Shaft of penis with lateral processes near base 13. **Japanagallia**
 - Shaft of penis without processes, only an unpaired denticle may be present dorsally at apex 35
35. Lobes of pygofer rounded at apex, without teeth and processes. Anal tube with sclerotized denticles ventrolaterally 14. **Onukigallia**

- Lobes of pygofer pointed at apex and more strongly sclerotized. Anal tube without teeth and projections. Appendage of anal tube free or fused to upper margin of lobes of pygofer 16. **Anaceratagallia**
- 36. Ocelli nearer to apex of vertex and its anterior margin but not to its base 37
- Ocelli nearer to base of vertex than to its apex or situated in the middle 42
- 37. Ocelli near anterior margin of vertex; distance between ocelli considerably greater than their distance from eyes 38
- Ocelli considerably distant from anterior margin of vertex and strongly approximated: distance between ocelli subequal to their distance from eyes. (Tribe Errhomenini) 30. **Bathysmatophorus**
- 38. Fore wings without outer anteapical cell. Vertex separated from face by a carina. Frontoclypeus with noticeable longitudinal carina in the middle. (Tribe Evacanthini) 39 [p. 47]
- Fore wings with outer anteapical cell. Vertex not separated from face by a carina. Frontoclypeus sometimes with a carina in upper half. (Tribe Pagaroniini) 41
- 39. Ocelli medially separated from the main part of vertex by oblique carina 40
- Ocelli not separated by a carina from the main part of vertex; surface of vertex without carinae. Vertex about as long as pronotum or a little longer 26. **Oniella**
- 40. Vertex short, wider than long. Shaft of penis with lateral processes (Figs. 61: 1, 2, 14, 15) 27. **Evacanthus**
- Vertex rather long, longer than wide. Shaft of penis without lateral processes (Figs. 59: 5, 6) 25. **Onukia**
- 41. Lobes of pygofer on lower margin from inner side with peculiar denticulate process (Fig. 62: 3). Penis with S-shaped shaft and 3 pairs of processes (Figs. 62: 5, 6). A weak longitudinal carina often present in the upper half of frontoclypeus 28. **Epiacanthus**
- Lobes of pygofer without processes or with processes of other shape. Penis with a long, smoothly bent shaft bearing long processes at apex (Figs. 62: 12, 13). Frontoclypeus without carina 29. **Pagaronia**
- 42. Fore wings without outer anteapical cell, with a wide appendage (Fig. 64: 1). Clavus shortened, with apex situated about in the middle of wing. (Tribe Mileewini) 31. **Mileewa**
- Fore wings with an outer anteapical cell (Fig. 5: 1). Clavus not shortened, its apex situated beyond middle of wing. (Tribe Cicadellini) 43
- 43. Ocelli nearer to base of vertex than to its anterior margin. Lobes of pygofer without processes in their lower part. Inner margins of genital plates straight (Fig. 65: 1); therefore the plates are closed all the way. Two lobes (parameres) arising from the base of penis and running parallel to its shaft but not connected with it (Figs. 65: 2, 3) 33. **Cicadella**
- Ocelli situated in the middle of vertex (Fig. 65: 4). Lobes of pygofer in their lower part with a process bent inwards (Fig. 65: 6). Inner margins of genital plates concave; therefore the plates not closed in the middle (Fig. 65: 5). Penis without separate lobes arising from its base (Fig. 65: 7) 32. **Kolla**
- 44. Antennal carinae strongly developed, foliaceous, transverse, extending far on frontoclypeus (Fig. 114: 1). (Subfamily Pentthimiinae) 71. **Pentthimia**

- Antennal carinae moderately developed or absent; if present, then not extending on frontoclypeus distinctly (the boundary is visible) but often continued on frontoclypeus as a carina 45
- 45. Visible margins of frontoclypeus opposite antennae even and straight, forming anterior wall of antennal hollow, where the true, arcuate, not visible from outside margin of frontoclypeus runs in (Fig. 25: 2). (Subfamily Xestocephalinae) 68. **Xestocephalus**
- The true boundary of frontoclypeus opposite antennae more or less straight, not passing into any hollow and visible from outside. A carina continuing the temporal antennal carina may pass near margin of frontoclypeus 46
- 46. Antennal carina always distinct (Figs. 25: 3, 4). Frontoclypeal suture before ocelli runs receding from them obliquely to midline of body (Fig. 25: 3). (Subfamily Aphrodinae) 47
- Antennal carina absent or present, but in the last case the frontoclypeal suture (secondary one) distinctly ending at ocellus (Figs. 1: 4; 25: 5, 6). (Subfamily Dectocephalinae) 48
- 47. Vertex without median carina, with transverse, finely striate sculpture anteriorly (Fig. 112: 13). Penis with a pair of subapical processes situated lateral to gonopore (Figs. 112: 11, 12, 15, 16) 69. **Stroggylocephalus**
- Vertex with longitudinal median carina, not striate [p. 48] transversely. Penis with several pairs of processes or devoid of them completely (Figs. 113: 1, 2, 16, 17) 70. **Aphrodes**
- 48. The boundary between face and vertex is formed at least in the area of frontoclypeus by fine, parallel, approximated carinae (Fig. 24: 4). (Tribe Drabescini) 49
- The boundary between face and vertex sharp, in the shape of a simple carina, or not sharp, rounded 50
- 49. Lobes of pygofer at apex with a robust process arising from upper margin and directed downwards (Fig. 115: 1). Fine carinae at the boundary between face and vertex distinct only between ocelli 72. **Athysanopsis**
- Lobes of pygofer without processes or with processes arising from their lower margin and directed more or less upwards (Figs. 117: 4, 5) 73. **Drabescus**
- 50. Antennae situated before eyes (Fig. 119: 13). Vertex elongate, projecting forward, with sharp anterior margin 51
- Antennae situated nearer to lower margin of eyes than to their upper margin.. 53
- 51. Carina of anterior margin of vertex extending anteriorly on eyes. Frontoclypeus with longitudinal carina. (Tribe Eupelicini) 76. **Eupelix**
- Carina of anterior margin of vertex not extending on eyes. Frontoclypeus without carina. (Tribe Hecalini) 52
- 52. Ocelli in male closely approximated to eyes, in female apart from eyes at a distance not greater than 2 diameters of ocellus 74. **Hecalus**
- Ocelli in male apart from eyes at least at a distance equal to 2 diameters of ocellus, in female this distance is much greater, subequal to diameter of eye 75. **Glossocratus**
- 53. Genae very wide, their outer margins without incision under eyes; the prolongation of genae usually visible from above beyond eyes (Fig. 132: 1) (Tribe Athysanini, part) 54
- Genae always with a distinct incision under eyes, not prolonged upwards ... 55

54. Yellowish green or orange-brown, without bright longitudinal stripes. Lobes of pygofer without processes. Penis with 2 shafts and gonopores.... 94. **Japananus**
- Yellowish, with bright, orange-red, longitudinal stripes. Lobes of pygofer with long processes ventrally. Penis with 1 shaft and 1 gonopore..... 95. **Stymphalus**
55. Penis with shaft divided into 2 branches or with 2 shafts, has 2 gonopores. (Tribe Opsiini) 56
- Penis with 1 shaft and 1 gonopore 59
56. Inner margins of eyes without incision opposite to bases of antennae. Shafts of penis arising from the base independently 57
- Inner margins of eyes with an incision opposite to bases of antennae. One shaft arising from the base of penis and then branching T-shaped, the branches of shaft forming a semicircle 80. **Neoaliturus**
57. Base of penis without processes. Lobes of pygofer without processes on ventral margin. Connective with base and branches of about equal length..... 77. **Hishimonus**
- Base of penis with processes. Lobes of pygofer on ventral margin with more or less long process. Base of connective much longer than branches 58
58. Base of penis with 2 pairs of processes. The process of lobes of pygofer denticulate ventrally 78. **Hishimonoides**
- Base of penis with an unpaired long process. The process of lobes of pygofer smooth 79. **Norva**
59. Genital plates and genital valve fused into single structure (Fig. 121: 4). Connective simple, fused to base of penis (Figs. 121: 5, 6). (Tribe Goniagnathini) 81. **Goniagnathus**
- Genital plates free, separated from genital valve by a membranous elastic suture (split) 60 [p. 49]
60. Connective bifurcate; its branches diverging or parallel but with not approximated apices. No movable articulation of shaft of penis to its base 61
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- Basal projection of pygofer lobes with a group of thick bristles (Figs 81: 1; 82: 12) 177
- 177. Anal tube without processes. Penis symmetrical 178
- Anal tube from each side with more or less long process (Fig. 82: 24). Penis often asymmetrical 51. **Tautoneura**
- 178. Styli at apex bidentate (Fig. 81: 4). Shaft and base of penis not separated by weakly sclerotized membrane 49. **Punctigerella**
- Styli at apex three-dentate, with very thin, long inner apical tooth (Figs. 82: 6, 7). Penis with a pair of strong horn-like processes at base; shaft connected with base by weakly sclerotized membranous chord (Figs. 82: 4, 5) 50. **Ziczacella** [p. 59]

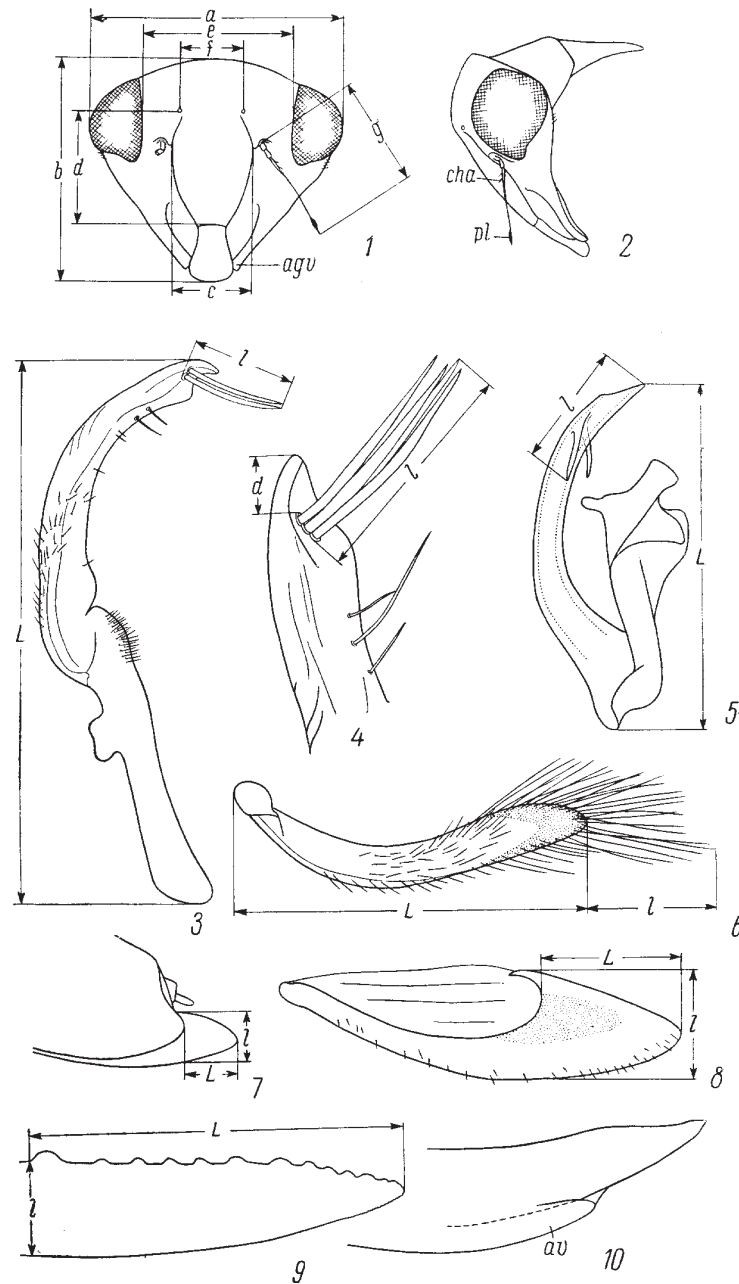


Fig. 30. Cicadines. Family Cicadellidae, subfamily Idiocerinae (original).

1, 2, *Populicerus confusus*, head: 1, anterior view; 2, lateral view (a , width of head; vag , ventral angle of gena; b , height of head; c , width of postclypeus; bbr , basal bristle of 3rd segment of antennae; d , height of postclypeus; e , distance between eyes at level of ocelli; f , distance between centers of ocelli; g , length of antennae; pl , palette of antenna); 3, *P. ambiguus* Dubovsky, stylus, lateral view (L , common length; l , length of bristles of subapical group); 4, *P. sudzuhensis*, apex of stylus, lateral view (l , length of bristles of subapical group; d , distance between apex of stylus and base of nearest bristle); 5, *P. nitidissimus* H.-S., penis, lateral view (L , total length; l , distance between apex and ends of subapical processes); 6, 7, *P. orientalis*: 6, genital plate, lateral view (L , total length; l , maximum length of projecting part of apical setae); 7, apex of female abdomen, lateral view (L , length of projecting part of ovipositor; l , width of projecting part of ovipositor); 8, *P. populi*, outer valvula of ovipositor, in a plane (L , distance between apex and basal excision; l , width at level of basal excision); 9, *P. orientalis*, apical part of second valvulae of ovipositor (L , length from apex to basal tooth; l , width at level of basal tooth); 10, *Podulmorinus equus*, 1st valvula of ovipositor, in a plane (av , ventral field).

Subfamily IDIOCERINAE*

Note. *Keys to the subfamily Idiocerinae by V. V. Isaev.

LITERATURE. Metcalf, Z. P. General catalogue of the Homoptera. Fasc. 6. Cicadelloidea. Pt. 16. Idioceridae. Washington, 1966. 237 p. Dlabola, J. Generische Gliederung der Unterfamilie Idiocerinae in der Paläarktis (Homoptera, Auchenorrhyncha). Acta Faunist. Entomol. Mus. Nat. Pragae. 1974. Bd. 15, no. 174. P. 59-68.

1. **Megipocerus** Zachv. The turn of face into vertex smooth. Mesonotum longer than pronotum and vertex combined. Fore wings relatively short and wide; A_2 closely pressed to scutellar margin of wing; 2 additional transverse veins between C and R_1 . Male. Lobes of pygofer with process arising from ventral margin and running along inner wall, the process bears several teeth. Genital plates widely triangular, comparatively flat, covered with moderately long setae. Stylus small; its apical part smaller than basal one, spade-shaped, bent somewhat spiral-like. Connective elongate, X-shaped. Penis sturdy; shaft with lanceolate apex; gonopore apical. Monotypic genus.

1. Face, vertex and pronotum light yellow with brown spots. Fore wings hyaline or semihyaline, light golden castaneous, their veins brown with white or yellow spots. Male 6.9-7.2, female 8. – S Prim. – In mixed and broad-leaved forests. Mid-July to late August. (Figs. 31: 1-8) **M. mordvilko**i Zachv. [p. 60]

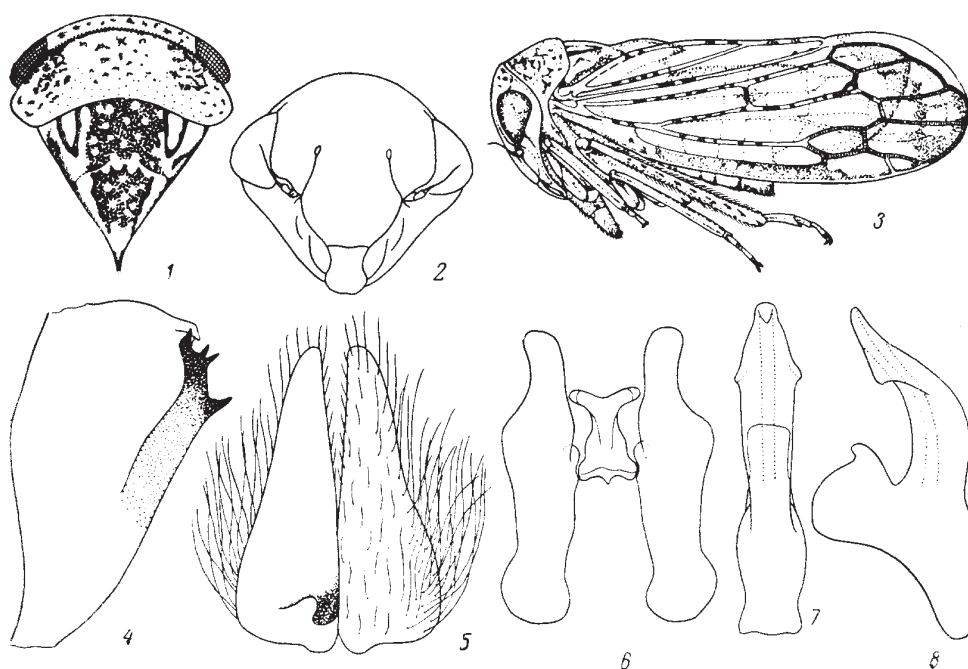


Fig. 31. Cicadines. Family Cicadellidae, subfamily Idiocerinae (after Anufriev and Emeljanov).

1-8, *Megipocerus mordvilko*: 1, anterior part of body; 2, face; 3, general appearance, lateral view; 4, lobe of pygofer; 5, genital plates; 6, connective and styli; 7, 8, penis (7, ventral view; 8, lateral view).

2. *Nabicerus* Kwon. Apex of hind femur with 2 dorsoapical and 1 subapical anterodorsal bristles. Fore wings with 3 subapical cells; the outer cell long. Antennae long, without palette. Male. Pygofer without processes. Genital plates with ventral margin widely tucked in. Stylus bent, beak-shaped at apex, with 1 thick short subapical bristle. Shaft of penis somewhat compressed laterally, in lateral view slightly widened in the middle; apex of shaft attenuate, subapical processes short. Female. The part of ovipositor projecting backwards long, narrow (in lateral view). Monotypic genus.

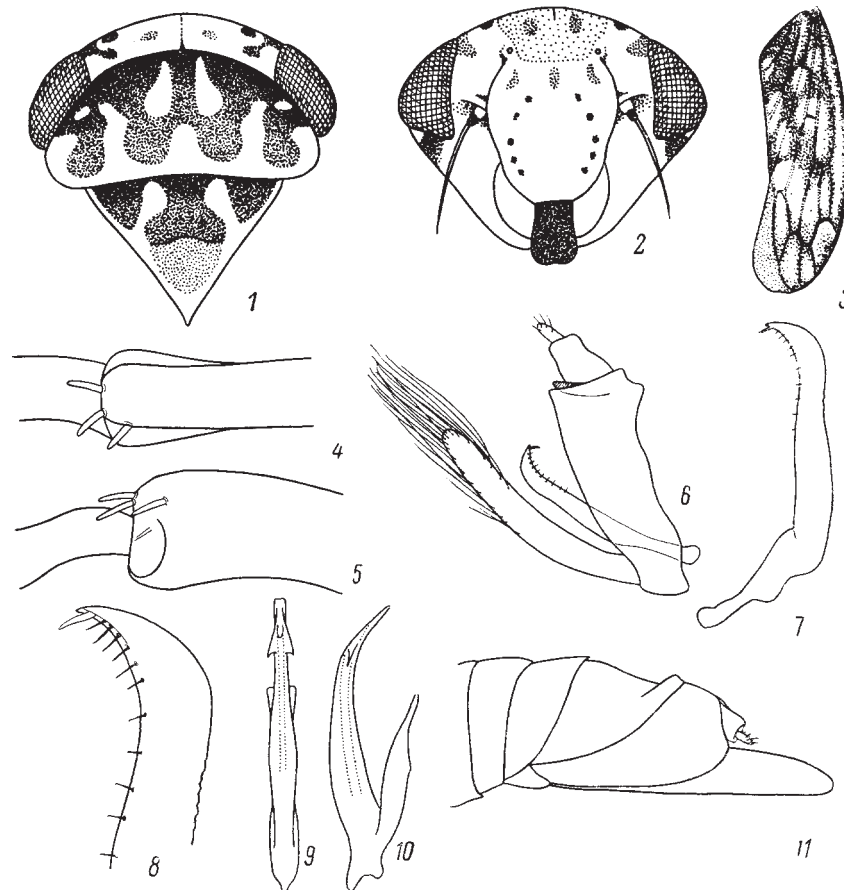


Fig. 32. Cicadines. Family Cicadellidae, subfamily Idiocerinae (after Anufriev and original).

1-11, *Nabicerus fuscescens*: 1, anterior part of body; 2, head, anterior view; 3, fore wing; 4, 5, apex of hind femur (4, dorsal view; 5, lateral view); 6, genital block of male, lateral view; 7, stylus; 8, apex of stylus; 9, 10, penis (9, ventral view; 10, lateral view; 11, apex of female abdomen, lateral view).

1. Yellowish white, with well developed dark brown or black pattern. Anteclypeus black, pronotum whitish, with pattern of large black or brown spots. Fore wings semihyaline, veins from light brown to dark brown; *M* and *Cu* with light spots opposite apex of clavus and at transverse vein *mcu*, *Cu* with light spots also at base. Male 5.8-6.1, female 5.8-6.2. – Prim. – Korea. – On willows in valley willow stands. Late July to early September. (Figs. 32: 1-11) *N. fuscescens* Anufr.

3. **Rhytidodus** Fieb. Head and postclypeus wide (Fig. 23: 5), face covered with silvery tomentum. Surface of vertex, pronotum and partly fore wings coarsely transversely rugose. Fore wings consolidate, with 2-3 subapical cells; the outer cell short. Male. Antennae without palette. Lobes of pygofer with projection on ventral margin; genital valve often with long projection on posterior margin. Stylus with several [p. 61] small approximate subapical or apical bristles. Shaft of penis with 2 subapical processes or without such processes. Female. Ovipositor small; 2nd valvula lanceolate, bearing about 30 small such processes. – 1 species (in USSR about 20).

LITERATURE. Anufriev, G. A. Study of the genus *Rhytidodus* Fieb. (Homoptera, Auchenorrhyncha) with descriptions of two new species from the Soviet Union. Entomol. Tidskr. 1968. Vol. 89. P. 177-187.

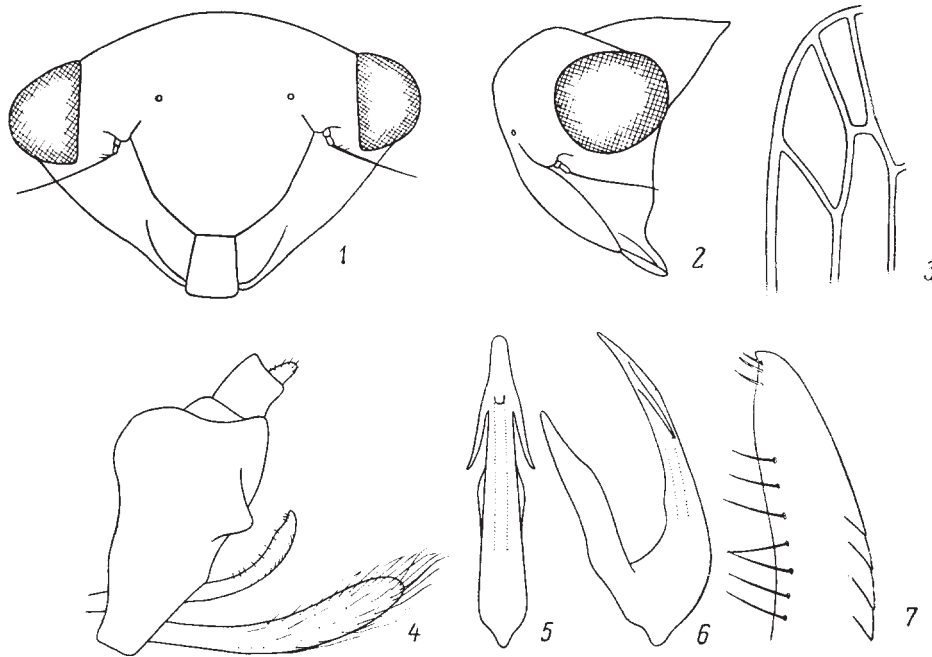


Fig. 33. Cicadines. Family Cicadellidae, subfamily Idiocerinae (after Anufriev and original).

1-7, *Rhytidodus melanthes*: 1, head, anterior view; 2, head, lateral view; 3, outer part of fore wing apex; 4, genital block of male, lateral view; 5, 6, penis (5, ventral view; 6, lateral view); 7, apex of stylus.

1. Pygofer of male with triangular projection on ventral margin. Stylus with 3 bristles in subapical group, which is distinctly separated from the rest dorsal bristles. Subapical processes of penis slanting ventrad. *L/l* of 2nd valvula of ovipositor about 3.9 (conventional signs of indices used hereafter see Fig. 30). Male castaneous black, female castaneous. Vertex yellowish brown, with black tiridii and black or with castaneous tint, disorderly, often anastomosing spots. Face nearly entirely black, glossy; a narrow band between bases of antennae, ocelli and small spots lateral to them, as well as margins of genae and a small spot on frontoclypeus (sometimes lacking) yellow. In part of females, face mainly yellow, with black band between eyes, yellow ocelli, and small spots lateral to them noticeable on the band; portions of genae at base of antennae and spots at boundary of frontoclypeus remain also black. Fore wings semihyaline, from castaneous to nearly black, with 2 lighter bands. Veins on dark areas of fore wings black or dark castaneous, usually much darker than general background;

on light bands, veins are bright yellow, standing out in color; veins of clavus with dark spots. Male 5.5-6, female 6-6.6. – S Khab. Prim. – In Korea, subspecies *peninsularius* Kwon. – In flood plain forests on *Populus*. Mid-June to late August. (Figs. 33: 1-7) **Rh. melanthes** Anufr. [p. 62]

4. **Sahlbergotettix** Zachv. Head anteriorly triangular, wide. Postclypeus convex, rounded or wide-oval. Fore wings with 2 subapical cells; a small additional outer subapical cell may be present rarely. Male. Genital segment small; genital plates very small, much shorter, than styli. Apex of stylus more or less parallel-sided, with short bristles on dorsal margin. Shaft of penis more or less cylindrical; subapical processes long. – 1 species (in USSR, apparently 4-5).

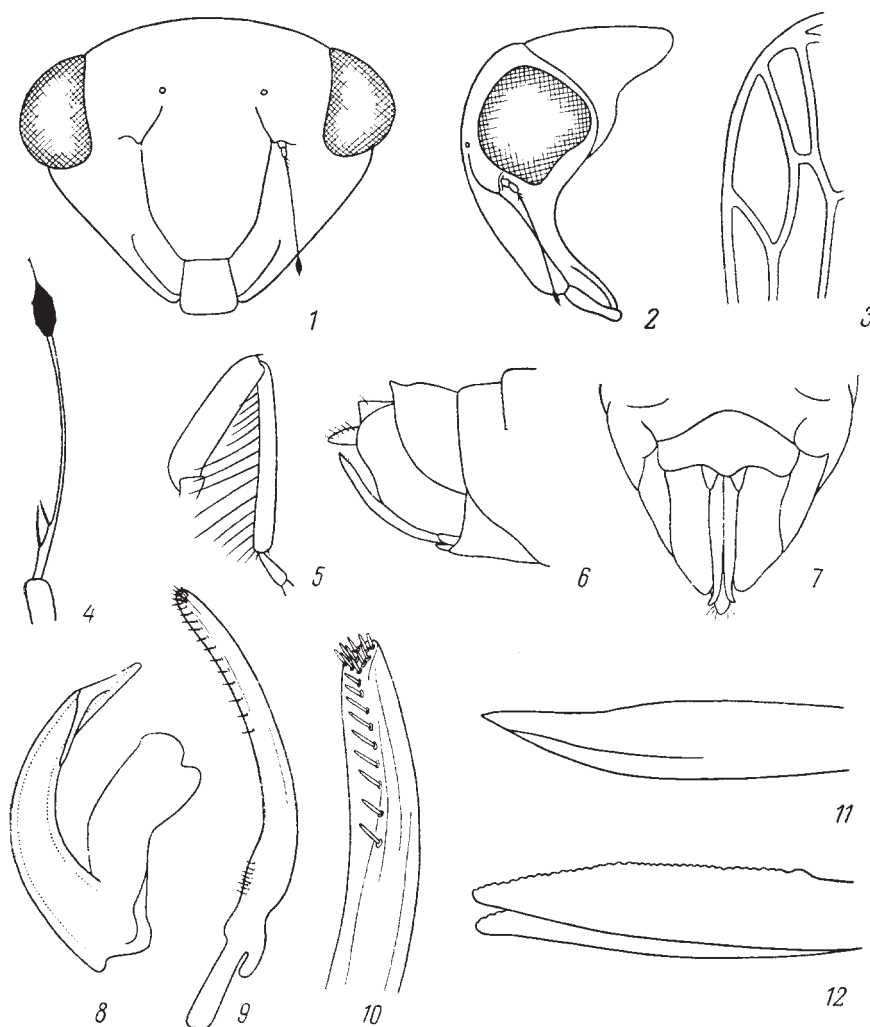


Fig. 34. Cicadines. Family Cicadellidae, subfamily Idiocerinae (original).

1-12, *Sahlbergotettix fulvius*: 1, head, anterior view; 2, head, lateral view; 3, outer part of fore wing apex; 4, antennae of male; 5, fore leg of male; 6, 7, apex of male abdomen (6, lateral view; 7, ventral view); 8, penis, lateral view; 9, stylus; 10, apex of stylus; 11, 1st valvula of ovipositor; 12, 2nd valvulae of ovipositor.

1. Yellowish. Fore wings with whitish yellow or greenish yellow veins. Male. Middle bristles of the anteroventral row on fore tibiae long, their length 3-4 times the width of tibia. Penis 1.43-1.53 times as long as genital plates. Female. Vertex and face with castaneous tint, with small light spots. *L/l* of projecting part of ovipositor 0.9-1, *L/l* of 3rd valvula of ovipositor 1.6-1.7. Male 4.35-4.65, female 4.5-4.85. – Amur., Prim. – Mongolia. – On undersized willows in meadows. Mid-July to late August. (Figs. 34, 1-12) ***S. fulvius*** Dlab. [p. 63]

5. ***Koreocerus*** Kwon. Head anteriorly more or less triangular, wide; frontoclypeus convex. Antennae without palette. Fore wings fine, semihyaline, with 3 subapical cells; veins indistinct. Male. Genital plates comparatively small, covered with long dense setae. Stylus robust, with subapical group of small bristles. Shaft of penis compressed laterally to apex; apex of shaft awl-shaped; subapical processes lanceolate. Female. 2nd valvulae of ovipositor lanceolate. Monotypic genus.

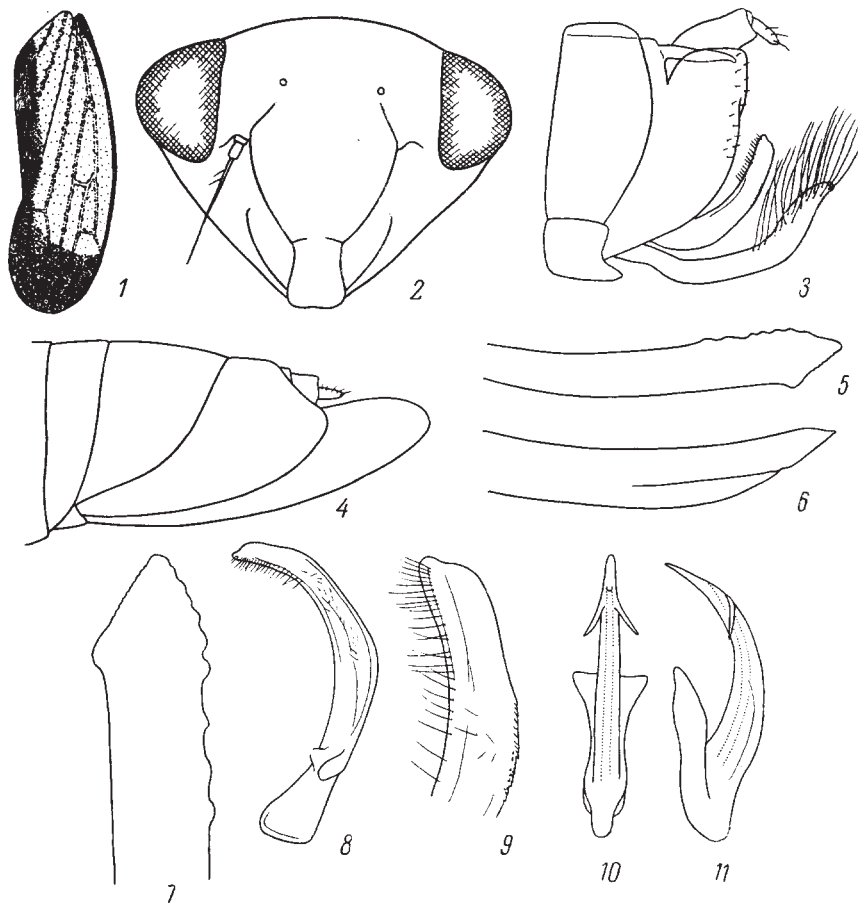


Fig. 35. Cicadines. Family Cicadellidae, subfamily Idiocerinae (after Anufriev, Vilbaste, and original).

1-11, *Koreocerus koreanus*: 1, fore wing; 2, head, anterior view; 3, genital block of male, lateral view; 4, apex of female abdomen, lateral view; 5, 2nd valvula of ovipositor; 6, 1st valvula of ovipositor; 7, apex of 2nd valvula of ovipositor; 8, stylus; 9, apex of stylus; 10, 11, penis (10, ventral view; 11, lateral view).

1. Light green or yellowish, with more or less black longitudinal stripe on sutural margin of fore wings; the stripe often extending on mesonotum and pronotum. Female. *L/l* of projecting part of ovipositor about 1.3, *L/l* of 2nd valvula of ovipositor about 2.7. Male 5.05-5.5, female 5.8-6.3. – S Khab., Prim. – Korea, E Mongolia. – In flood plain forests on willows; in Korea, on *Salix pierotii*. Early July to late August (Figs. 35: 1-11) **K. koreanus** Mats.

6. **Parocerus** Vilb. Head anteriorly more or less triangular; postclypeus elongate oval, narrowed downwards; lateral margin of face more or less concave. Antennae without palette. Fore wings with 3 subapical cells; the outer cell small. Fore tibiae with 3 long black subapical bristles in posterodorsal row. Male. Genital plates very large, covered with dense long setae. Stylus with apical group of dense setae. Apex of penis shaft flattened dorsoventrally, with a pair of subapical processes. Female. Ovipositor very long, black. Monotypic genus. [p.64]

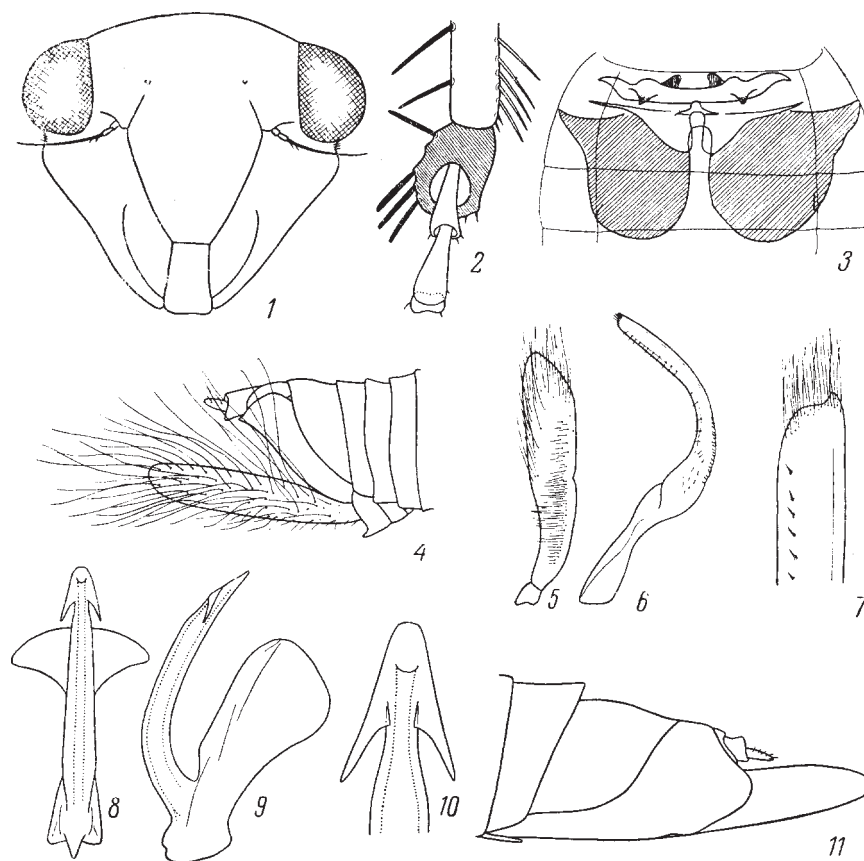
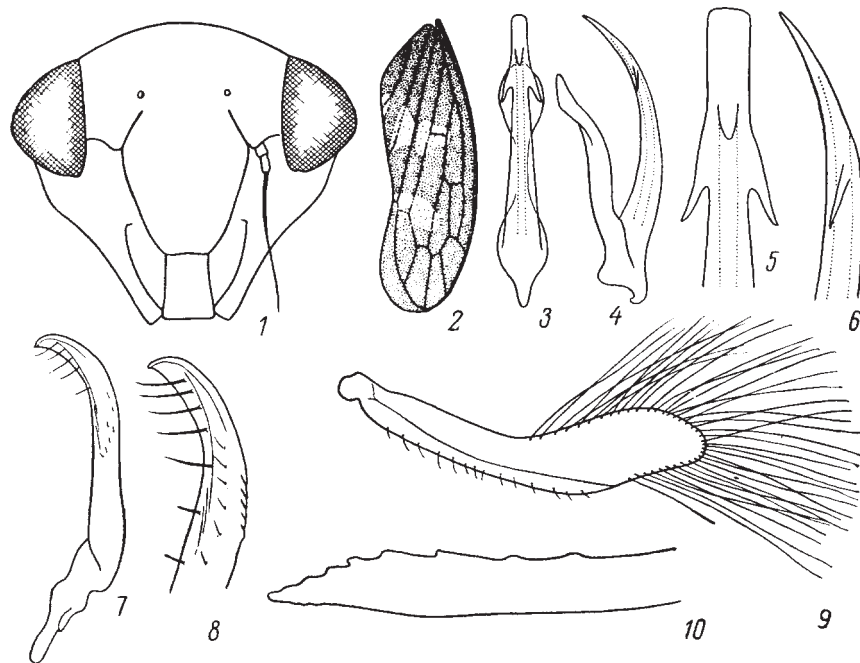


Fig. 36. Cicadines. Family Cicadellidae, subfamily Idiocerinae (after Vilbaste and original).

1-11, *Parocerus laurifoliae*: 1, head, anterior view; 2, apex of fore leg of male; 3, apodemes of male abdomen; 4, apex of male abdomen, lateral view; 5, genital plate; 6, stylus; 7, apex of stylus; 8, 9, penis (8, ventral view; 9, lateral view); 10, apex of penis, ventral view; 11, apex of female abdomen, lateral view.

1. Variegate. Fore wings whitish or brown to black, with 2 light bands running from base and apex of costal margin to apex of clavus. Male. Basal segment of fore tarsi disc-shaped, black, with 4 long black bristles on hind margin. Female. *L/l* of projecting part of ovipositor 1.9-2.1; 2nd valvula of ovipositor with 9-13 teeth. Male 6.5-7.3, female 6.9-7.8. – Prim.; Transbaikal, Sayan Mts., Altai, E Kazakhstan. – Korea, Mongolia. – On poplars (*Populus suaveolens* and *P. maximowiczii*). Mid-July to early September. (Figs. 36: 1-11; 55: 1) ***P. laurifoliae*** Vilb.

7. ***Tremulicerus*** Dlab. Head anteriorly comparatively long; postclypeus oval, narrowed downwards. Lateral margin of genae more or less concave. Ventral angle of gena projecting, usually pointed. Antennae without palette. Fore wings with 3 subapical cells; the outer cell comparatively long. Male. Genital plates small, with ventral margin widely tucked in. Stylus crescent-shaped at apex, with thin short bristles on dorsal margin. Penis slender; apex of shaft flattened dorsoventrally, attenuate; subapical processes short. – 1 species (in USSR about 5).



37. Cicadines. Family Cicadellidae, subfamily Idiocerinae (after Anufriev and original).

1-10, *Tremulicerus sandagouensis*: 1, face; 2, fore wing; 3, 4, penis (3, ventral view; 4, lateral view); 5, 6, apex of penis (5, ventral view; 6, lateral view); 7, stylus; 8, apex of stylus; 9, genital plate; 10, apex of 2nd valvula of ovipositor.

1. Ochraceous brown, shiny, with 2 more or less distinct light bands on fore wings at level of apex of A_1 and apex of clavus. Male. Frontoclypeus ochraceous; genae usually black; postclypeus on margins with pattern of black spots; vertex with large brown central spot. Pronotum dark brown, [p. 65] with small black lateral spots on anterior margin. Female. *L/l* of projecting part of ovipositor about 1.1. Male 4.6-4.75, female 4.8-5. – Prim. – In mixed and broad-leaved forests. Late May to early September. (Figs. 37: 1-10) ***T. sandagouensis*** Vilb.

8. **Tautocerus** Anufr. Head anteriorly and postclypeus wide. Ventral angles of genae rounded, projecting. Fore wings with 3 subapical cells; the outer cell long. Male. Antennae with very narrow palette. Pygofer with projection on ventral margin. Posterior margin of genital valve acutangulate, projecting backwards. Genital plates in the middle sharply bent upwards, with ventral margin widely tucked in. Stylus robust, at apex sharply bent, with angular projection on ventral margin, with 2-3 small bristles in subapical group. Shaft of penis without processes. The genus comprises 2 species.

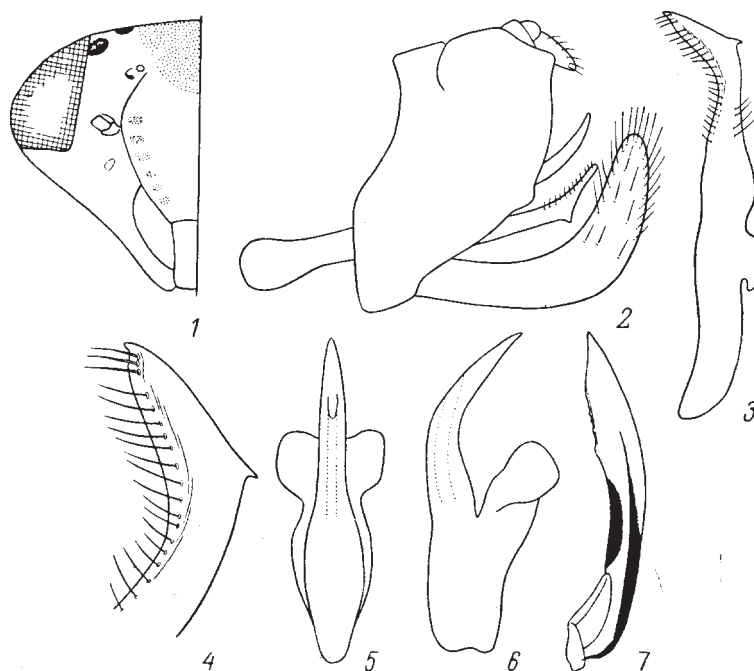


Fig. 38. Cicadines. Family Cicadellidae, subfamily Idiocerinae (after Anufriev and Kwon).

1-7, *Tautocerus dworakowskiae*: 1, face; 2, genital block of male, lateral view; 3, stylus; 4, apex of stylus; 5, 6, penis (5, ventral view; 6, lateral view); 7, 2nd valvula of ovipositor.

1. Variegate. Vertex yellow, with 2 round black spots at the turn into face. Fore wings semihyaline, grayish, with brown veins. Male 5.8-5.9 – Korea. – On weeping willows (*Salix babylonica*, *S. pseudolasiogyne*) along roads, streets, rivers. Late August. (Figs. 38: 1-7) **T. dworakowskiae** Anufr.

9. **Podulmorinus** Kwon (*Pugnostilus* Kwon). Head anteriorly triangular, wide. Lateral margin of face more or less concave; ventral angle of gena acutangulate, projecting. Postclypeus comparatively wide. Fore wings with 3 subapical cells; the outer cell long. Face whitish or yellowish, with more or less developed pattern of brown or black spots, rather often fusing together. Male. Antennae with very narrow palette, 3rd segment with 3 basal bristles. Genital segment flattened dorsoventrally, completely black. Genital plates with ventral margin widely tucked in. Stylus with apical or subapical group of several (2-4) small bristles, rarely with 1 bristle at apex. Penis small; [p. 66] apex of shaft flattened dorsoventrally and attenuate; subapical processes short. On *Salix*. – 5 species (in USSR not less than 7).

1. *L/l* of 2nd valvula of ovipositor about 5; valvula bearing 17-19 teeth, of which two basal teeth larger than the rest. *L/l* of projecting part of ovipositor 1.8. Female 7.1. – Prim. – Late August. (Figs. 30: 10; 39: 1, 2). Holotype – female, N Prim., Sikhote-Alinski Nature Reserve, Terney – Ust'-Serebryany, 29.VIII.1967 (O. Kopylova), kept in Zoological Institute, Academy of Sciences of the USSR (Leningrad) ***P. equus*** Isaev, sp. n.

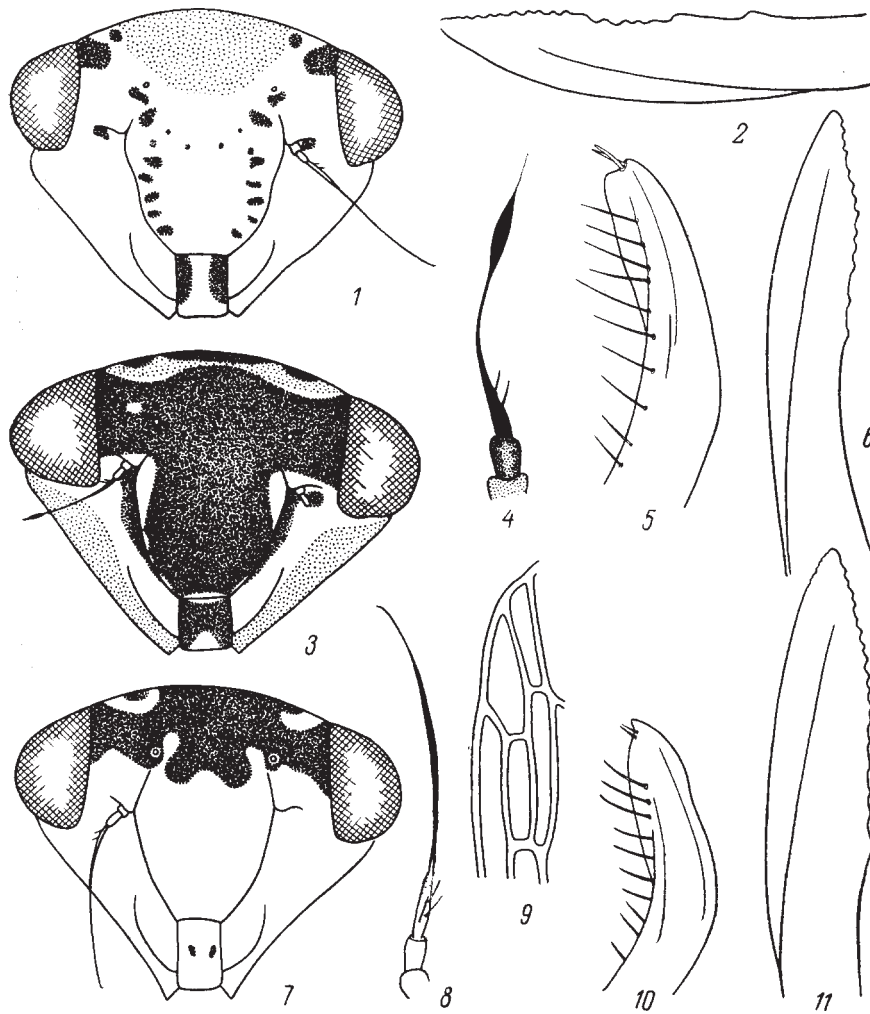


Fig. 39. Cicadines. Family Cicadellidae, subfamily Idiocerinae (after Anufriev and original).

1, 2, *Podulmorinus equus*: 1, head, anterior view; 2, apex of 2nd valvula of ovipositor; 3-6, *P. chanuicus*: 3, head, anterior view; 4, antenna of male; 5, apex of stylus; 6, apex of 2nd valvula of ovipositor; 7-11, *P. opacus*: 7, head, anterior view; 8, antenna of male; 9, outer part of fore wing apex; 10, apex of stylus; 11, apex of 2nd valvula of ovipositor.

- *L/l* of 2nd valvula of ovipositor not more than 4.2, its basal teeth not differing from the rest ones, or only 1 tooth large. *L/l* of projecting part of ovipositor not more than 1, *L/l* of 3rd valvula of ovipositor less than 1.6 2
- 2. Male. Postclypeus black, only its lower and lateral margins yellow. Stylus 1.95-2.05 times as long as penis, with 2-4 bristles in apical group. Female: the turn of vertex into face more or less yellow; 2nd valvula of ovipositor with 11-13 teeth.

- Male 5.75-5.9, female 5.95-6.35. – Prim.; Transbaikal. – Mongolia. – August. (Figs. 39: 3-6) **P. chanuicus** Dlab.
- Male. Postclypeus more or less yellow, with pattern of small black spots. Stylus more than 2.15 times as long as penis, with 1-2 bristles in apical group 3
3. The turn of vertex into face with complete black band. Male. Stylus 1.11 times as long as genital plates; genital plates 1.96 times as long as penis. Two bristles at apex of stylus situated subapically. Female. *L/l* of 2nd valvula of ovipositor 3.86; valvula bearing 18 teeth. Male. 6, female 7. – Prim. – On willows in flood plain forests. Late August. (Figs. 39: 7-11) **P. opacus** Anufr.

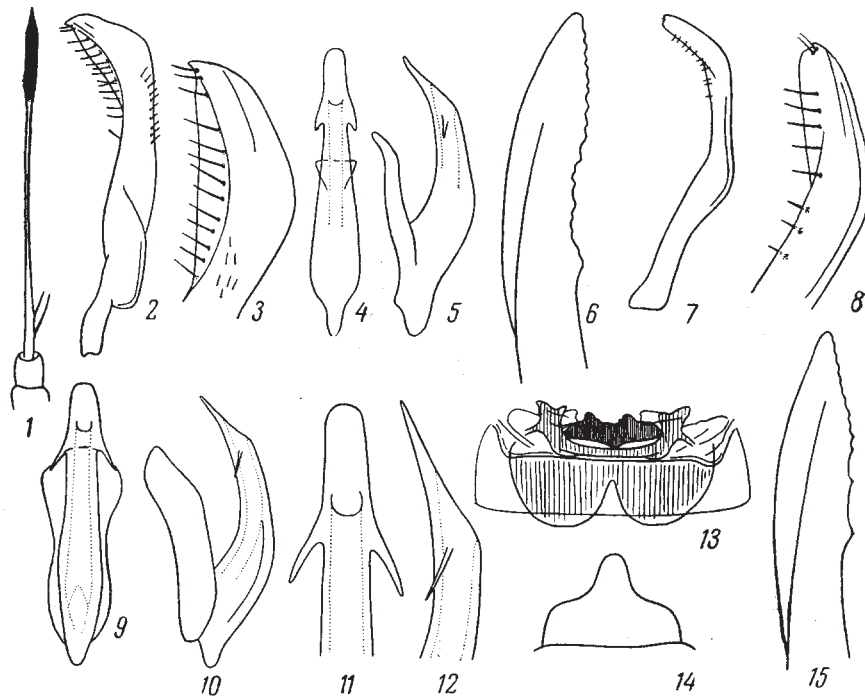


Fig. 40. Cicadines. Family Cicadellidae, subfamily Idiocerinae (after Vilbaste and original).

1-6, *Podulmorus latistylus*: 1, antenna of male; 2, stylus; 3, apex of stylus; 4, 5, penis (4, ventral view; 5, lateral view); 6, apex of 2nd valvula of ovipositor; 7-15, *P. consimilis*: 7, stylus; 8, apex of stylus; 9, 10, penis (9, ventral view; 10, lateral view); 11, 12, apex of penis (11, ventral view; 12, lateral view); 13, apodemes of abdomen; 14, subgenital sternite of male; 15, apex of 2nd valvula of ovipositor.

- The turn of vertex into face without black band. Male. Stylus [p. 67] more than 1.95 times as long as genital plates; genital plates more than 2.15 times as long as penis 4
4. Male. Stylus strongly dilated at apex, with 2 small bristles in subapical group. Female. 2nd valvula of ovipositor with 16-18 teeth. Male 5.8-6.1, female 6.3-6.7. – Prim. – N Korea. – On willows in flood plain forests. Late May to late August. (Figs. 40: 1-6) **P. latistylus** Vilb.
- Male. Apex of stylus not dilated, with 1-2 apical bristles. Female. 2nd valvula of ovipositor with 11-13 teeth. Male 5.55-5.95, female 5.9-6.3. – Prim. – On willows in flood plain forests. Mid-May to mid-September. (Figs. 40: 7-15) **P. consimilis** Vilb.

10. **Idiocerus** Lewis. Head anteriorly triangular, wide; postclypeus nearly round, wide. Lateral margin of face more or less straight. Fore wings consolidate, with 3 subapical cells; the outer cell very long. Male. Antennae with palette; 3rd segment with 3 basal [p. 68] bristles. Genital plates comparatively small, black. Stylus with 1 large bristle at apex. Apex of penis shaft flattened dorsoventrally, spade-shaped; subapical processes short. On willows. – 1 species (in USSR not less than 6).

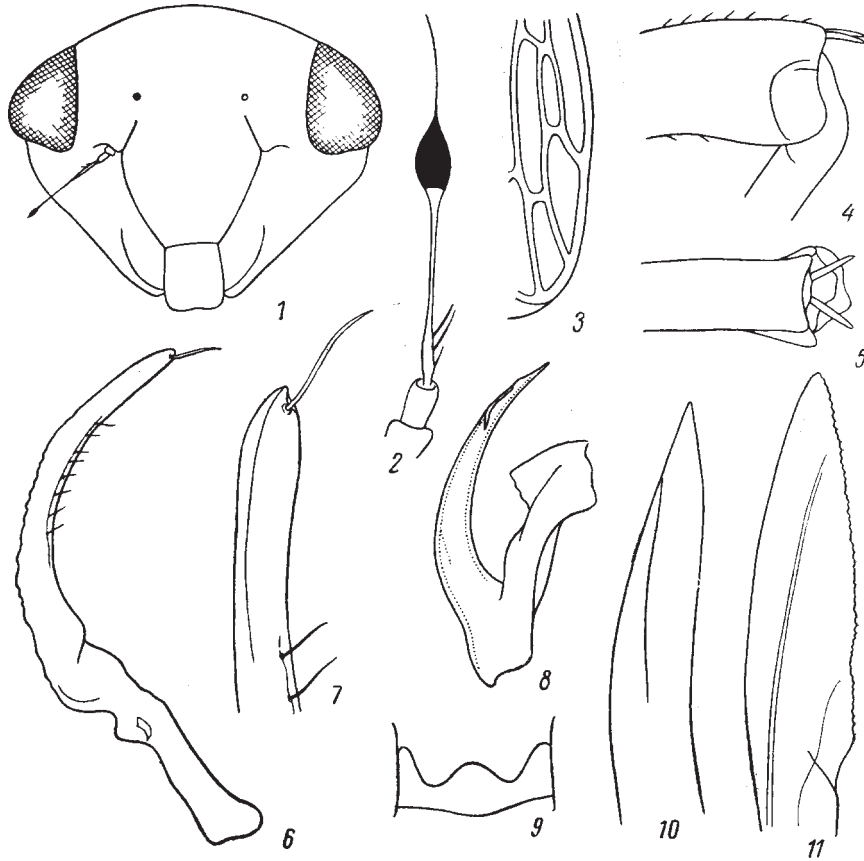


Fig. 41. Cicadines. Family Cicadellidae, subfamily Idiocerinae (original).

1-11, *Idiocerus unispinosus*: 1, head, anterior view; 2, antenna of male; 3, outer part of fore wing apex; 4, 5, apex of hind femur (4, lateral view; 5, dorsal view); 6, stylus; 7, apex of stylus; 8, penis, lateral view; 9, subgenital sternite of male; 10, apex of 1st valvula of ovipositor; 11, apex of 2nd valvula of ovipositor.

1. Male. The large bristle on stylus situated apically. *L/l* of genital plates 1.92-2.12; genital plates 1.32-1.48 times as long as stylus; stylus 1.58-1.69 times as long as penis. Female. 2nd valvula of ovipositor bearing about 50 small teeth. *L/l* of projecting part of ovipositor 1.14-1.2. Male 6-6.25, female 6-6.35. – Khab., Prim.; Transbaikal. – Korea, Mongolia. – In valley willow stands on *Salix caprea*. Mid-August to early September. (Figs. 41: 1-11) **I. unispinosus** Kwon

11. **Metidiocerus** Oss. (*Stenidiocerus* Oss.). Head anteriorly rounded; lateral margin of genae convex, sometimes at anteclypeus sharply concave or more or less straight; vertex usually convex. Fore wings with 3 subapical cells; the outer cell long. Male.

Antennae with palette, their 3rd segment with 3 short basal setae. Middle femora comparatively wide, sometimes strongly swollen. Posterodorsal angle of pygofer strongly stretched. Genital valve with deep excision on posterior margin. Stylus with 2 (less often with 1) large long bristles in subapical group. Apex of penis shaft flattened dorsoventrally, attenuate, with a pair of subapical processes. – 5 species (in USSR 7-8).

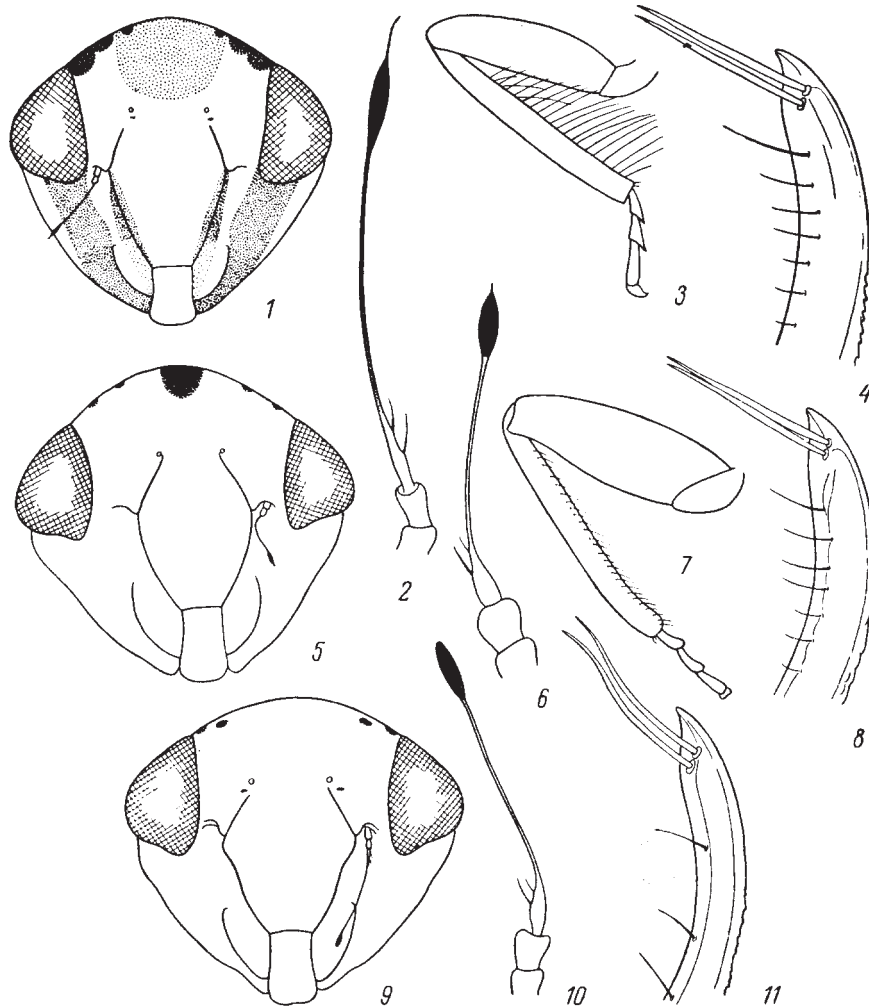


Fig. 42. Cicadines. Family Cicadellidae, subfamily Idiocerinae (original).

1-4, *Metidiocerus rutilans*: 1, head, anterior view; 2, antenna of male; 3, fore leg of male; 4, apex of stylus; 5-8, *M. elegans*: 5, head, anterior view; 6, antenna of male; 7, fore leg of male; 8, apex of stylus; 9-11, *M. ampullipes*: 9, head, anterior view; 10, antenna of male; 11, apex of stylus.

1. Male. Palette of antennae very narrow and long. Bristles in anteroventral row on fore tibia long, 2-3 times as long as width of tibia. Postclypeus 1.36-1.46 times as high as wide. Female. Postclypeus 1.16-1.26 times as high as wide. Ovipositor black. *L/l* of its projecting part 1.15-1.3. Fore wings more or less castaneous, with whitish band at level of clavus apex. Male 4.7-5.15, female 4.7-5.3. – Prim., Sakh., S Kur. (Kunashir); Siberia, European part of USSR. – Japan, Korea, Mongolia, [p. 69] W Europe. – In valley willow stands on *Salix*. Late May to late August. (Figs. 42: 1-4) ***M. rutilans* Kbm.**

- Male. Palette of antennae round or oval. Bristles in anteroventral row of fore tibiae short, not longer than width of tibia. Postclypeus not more than 1.29 times as long as wide 2

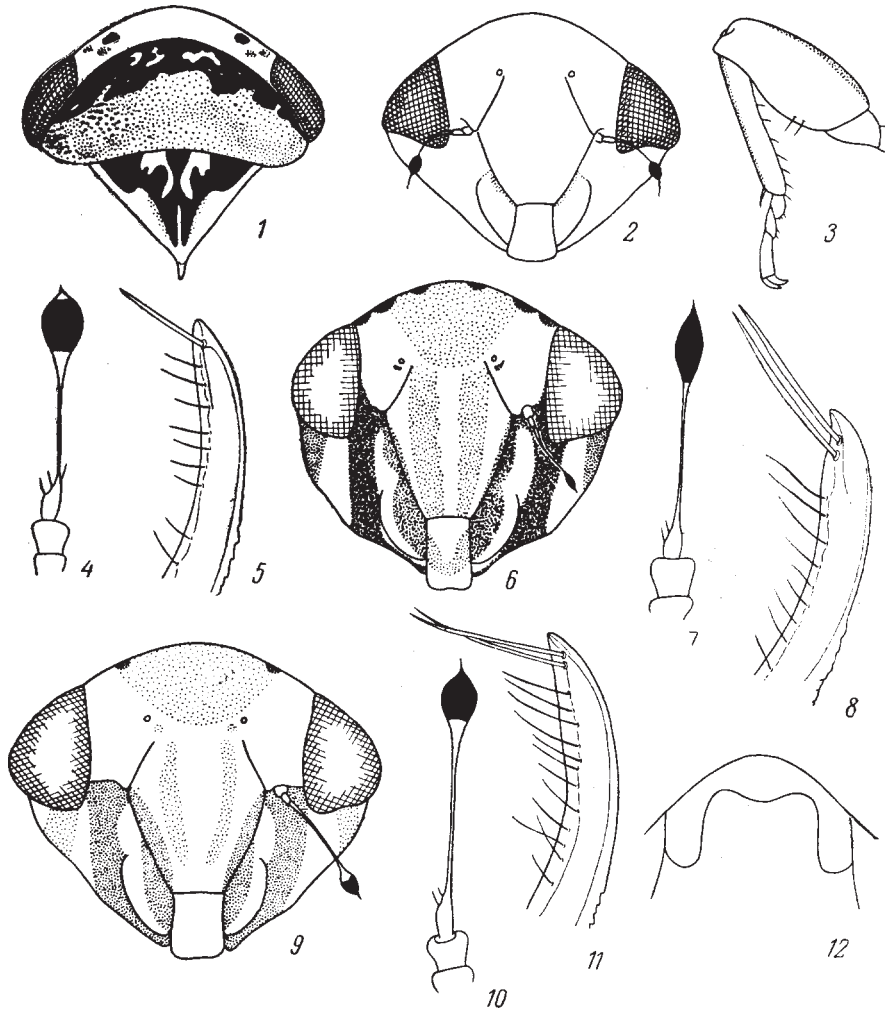


Fig. 43. Cicadines. Family Cicadellidae, subfamily Idiocerinae (after Ossiannilsson and original).

1-5, *Metidiocerus crassipes*: 1, anterior part of male body; 2, face of male; 3, right middle leg of male, ventral view; 4, antenna of male; 5, stylus; 6-8, *M. nigrolineatus*: 6, face of male; 7, antenna of male; 8, stylus; 9-12, *M. impressifrons*: 9, face of male; 10, antenna of male; 11, stylus; 12, subgenital sternite of male.

2. Male. Vertex with elongate black spot in center. Length of head 4.2-4.6 times the distance between centers of ocelli. Palette of antennae small, oval. Female. Postclypeus 1.12-1.2 times as long as wide. Length of head 3.8-4 times the distance between centers of ocelli. Ovipositor more or less castaneous; *L/l* of its projecting part 0.95-1.05. Fore wings more or less castaneous, with whitish band at level of clavus apex. Male 5-5.5, female 5.45-5.8. – Mag.; Transbaikal, Kazakhstan, European part of USSR. – Mongolia, W Europe. – In valley willow stands on *Salix*. Late July to mid-August. (Figs. 42: 5-8) *M. elegans* Fl.

- Male. Vertex without elongate black spot in center. Length of head not greater than 4 times the distance between centers of ocelli 3
- 3. Male. Palette of antennae very small, oval. Postclypeus only 1.05 times as long as wide. Middle femora swollen, 1.75 times as wide as fore femora. Female. Postclypeus 1.02-1.05 times as long as wide. Ovipositor black; *L/l* of its projecting part 1.5-1.75. Male 5.2, female 5.35-5.7. [p. 70] – Prim.; Transbaik. – On *Populus* in flood plain forests. Late June to late July. (Figs. 42: 9-11). Holotype – male, N Prim., Sikhote-Alinski Nature Reserve, 22.VII.1967 (Anufriev); paratypes – 2 females, with the same label. Kept in Zoological Institute, Academy of Sciences of USSR (Leningrad), 1 paratype in Gorky State University
..... **M. ampullipes** Isaev, sp. n.
- Male. Palette of antennae large, more or less round or elongate oval. Postclypeus more than 1.15 times as long as wide 4
- 4. Male. Middle femora swollen, 1.75-1.95 times as wide as fore femora. Face without longitudinal stripes. Stylus with 1 large subapical bristle. Female. Head 1.17-1.19 times as wide as high. *L/l* of projecting part of ovipositor 1.25-1.35. Male 4.95-5.2, female 4.95-5.1. – Transbaik. – N Europe. – On *Salix* in valley willow stands. Mid-July to mid-August. (Figs. 43, 1-5) **M. crassipes** J. Sahlb.
- Male. Middle femora not more than 1.55 times as wide as fore femora. [p. 71] Face with brown or black longitudinal stripes. Stylus with 2 bristles in subapical group 5
- 5. Male. Palette of antennae elongate oval. Head 1.03-1.09 times as wide as high. Face wide; margin of gena at anteclypeus strongly concave. Longitudinal stripes on face black. Female. Head 1.1-1.12 times as wide as high. *L/l* of projecting part of ovipositor 1.25-1.35. Male 4.85-5, female 4.85-5.1. – Khab., Prim.; Transbaik. – Korea. – In flood plain forests on *Populus*. Mid-July to late August. (Figs. 43: 6-8) **M. nigrolineatus** Kwon
- Male. Palette of antennae more or less round. Head 1.1-1.16 times as wide as high. Lateral margin of genae evenly convex. Longitudinal stripes on face castaneous. Female. Head 1.18-1.21 times as wide as high. *L/l* of projecting part of ovipositor 1.3-1.55. Male 4.45-4.75, female 4.6-4.9. – Khab.; Siberia, Kazakhstan, European part of USSR. – W Europe. – In valley willow stands on *Salix*. Early to late August. (Figs. 43: 9-12) **M. impressifrons** Kbm. [p. 72]

12. **Populicerus** Dlab. Head anteriorly more or less triangular, comparatively long; postclypeus elongate, oval; lateral margin of face more or less concave. Fore wings more or less consolidate, with 2-3 subapical cells; the outer cell usually short. Male. Antennae with palette, rarely bristle-shaped. Genital plates large, covered with long setae. Styli with 1-7 large bristles in subapical group. Apex of penis shaft cylindrical; subapical processes long. Female. 2nd valvula of ovipositor with 8-18 teeth. On poplars and willows. – 6 species (in USSR 10).

- 1. Male. *L/l* of stylus greater than 7.15. Female. *L/l* of projecting part of ovipositor greater than 1.12; *L/l* of 2nd valvula greater than 3.73; *L/l* of 3rd valvula greater than 1.76. Pronotum and fore wings usually yellow, whitish, green. On willows 2
- Male. *L/l* of stylus less than 6.75. Female. *L/l* of projecting part of ovipositor less than 1.14; *L/l* of 2nd valvula less than 3.48; *L/l* of 3rd valvula less than 1.77. Pronotum and fore wings usually more or less castaneous. On poplars 4
- 2. Male. Stylus with 4 bristles in subapical group. *L/l* of stylus 7.15-8.05. Female. *L/l* of projecting part of ovipositor 1.41-1.63; *L/l* of 2nd valvula 4.47-4.91; *L/l* of 3rd valvula 2.03-2.47. Male 5.3-5.8, female 6.15-6.75. – Khab., Prim., Sakh.; Siberia,

Kazakhstan, Transcaucasia, European part of USSR. – Mongolia, W Europe. – In valley willow stands on *Salix caprea*, *S. schwerinii* and *S. udensis*. Early July to late August. (Figs. 30: 1, 2; 44: 1-7) **P. confusus** Fl.

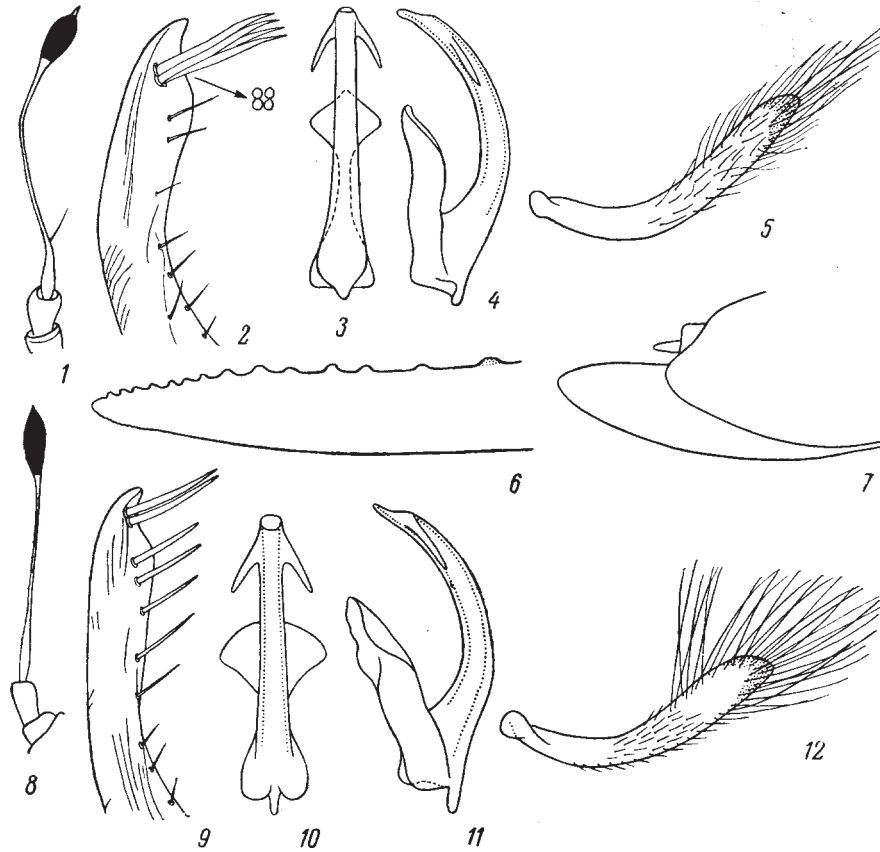


Fig. 44. Cicadines. Family Cicadellidae, subfamily Idiocerinae (original).

1-7, *Populicerus confusus*: 1, antenna of male; 2, stylus; 3, 4, penis (3, ventral view; 4, lateral view); 5, genital plate; 6, apex of 2nd valvula of ovipositor; 7, apex of female abdomen, lateral view; 8-12, *P. ikumae*: 8, antenna of male; 9, stylus; 10, 11, penis (10, ventral view; 11, lateral view); 12, genital plate.

- Male. Stylus with 1 or 2 bristles in subapical group. L/l of stylus greater than 8.35. Female. L/l of the projecting part of ovipositor less than 1.32 3 [p. 73]
- 3. Male. Stylus with 2 bristles in subapical group (rarely one of styli with 1 or 3 bristles). L/l of stylus 8.35-9.55. Female. L/l of projecting part of ovipositor 1.2-1.32; L/l of 2nd valvula 4.5-4.75; L/l of the 3rd valvula 1.9-2.1. Male 5.65-6.15, female 6.4-7.1. – S Prim., S Sakh., S Kur. (Kunashir). – In valley willow stands on *Salix udensis*. Mid-July to early September. (Figs. 44: 8-12) **P. ikumae** Mats.
- Male. Stylus with 1 subapical bristle. L/l of stylus 10.2-13.3. Female. L/l of projecting part of ovipositor 1.12-1.28; L/l of 2nd valvula 3.73-4.15; L/l of 3rd valvula 1.76-1.94. Male 6-6.5, female 6.75-7.45. – S Khab., Prim.; Transbaik. – Mongolia. – In valley willow stands [p. 75] on *Salix schwerinii*. Early July to mid-September. (Figs. 30: 6, 7; 45: 1-4). Holotype – male, Chita Prov., Kyra, from *Salix schwerinii* E. Wolf, 29.VII.1978 (V. Isaev); paratypes – 7 males and 6 females with the same label. Kept in Zoological Institute, Academy of Sciences of USSR (Leningrad), part of paratypes in Gorky State University **P. orientalis** Isaev, sp. n.

4. Male. Stylus with 5-7 bristles in subapical group. *L/l* of genital plate 2.01-2.29; *l/d* of stylus 3.16-3.76. Female. *L/l* of projecting part of ovipositor 0.66-0.74; *L/l* of 2nd valvula 2.57-2.85; *L/l* of 3rd valvula 1.2-1.34. Male 5.1-5.7, female 6-6.4. – Prim.; Siberia, Kazakhstan, European part of USSR. – Mongolia, W Europe. – On aspen in broad-leaved and mixed forests and small insular groves of aspen or birch in forest steppe. Early July to early September. (Figs. 30: 8; 45: 5-17) ***P. populi* L.**

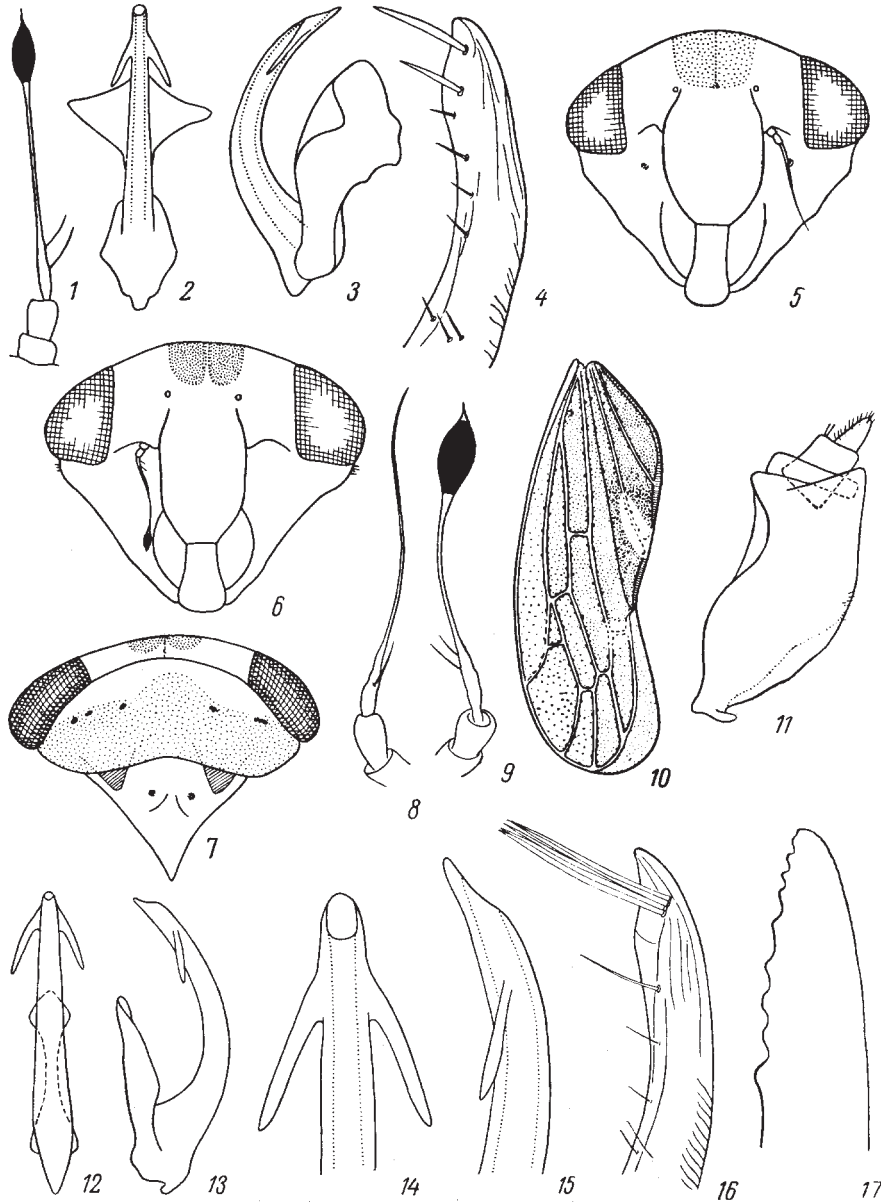


Fig. 45. Cicadines. Family Cicadellidae, subfamily Idiocerinae (original).

1-4, *Populicerus orientalis*: 1, antenna of male; 2, 3, penis (2, ventral view; 3, lateral view); 4, apex of stylus; 5-17, *P. populi*: 5, face of female; 6, face of male; 7, anterior part of male body; 8, antenna of female; 9, antenna of male; 10, fore wing; 11, genital block of male, lateral view (genital plates removed); 12, 13, penis (12, ventral view; 13, lateral view); 14, 15, apex of penis (14, ventral view; 15, lateral view); 16, apex of stylus; 17, apex of 2nd valvula of ovipositor.

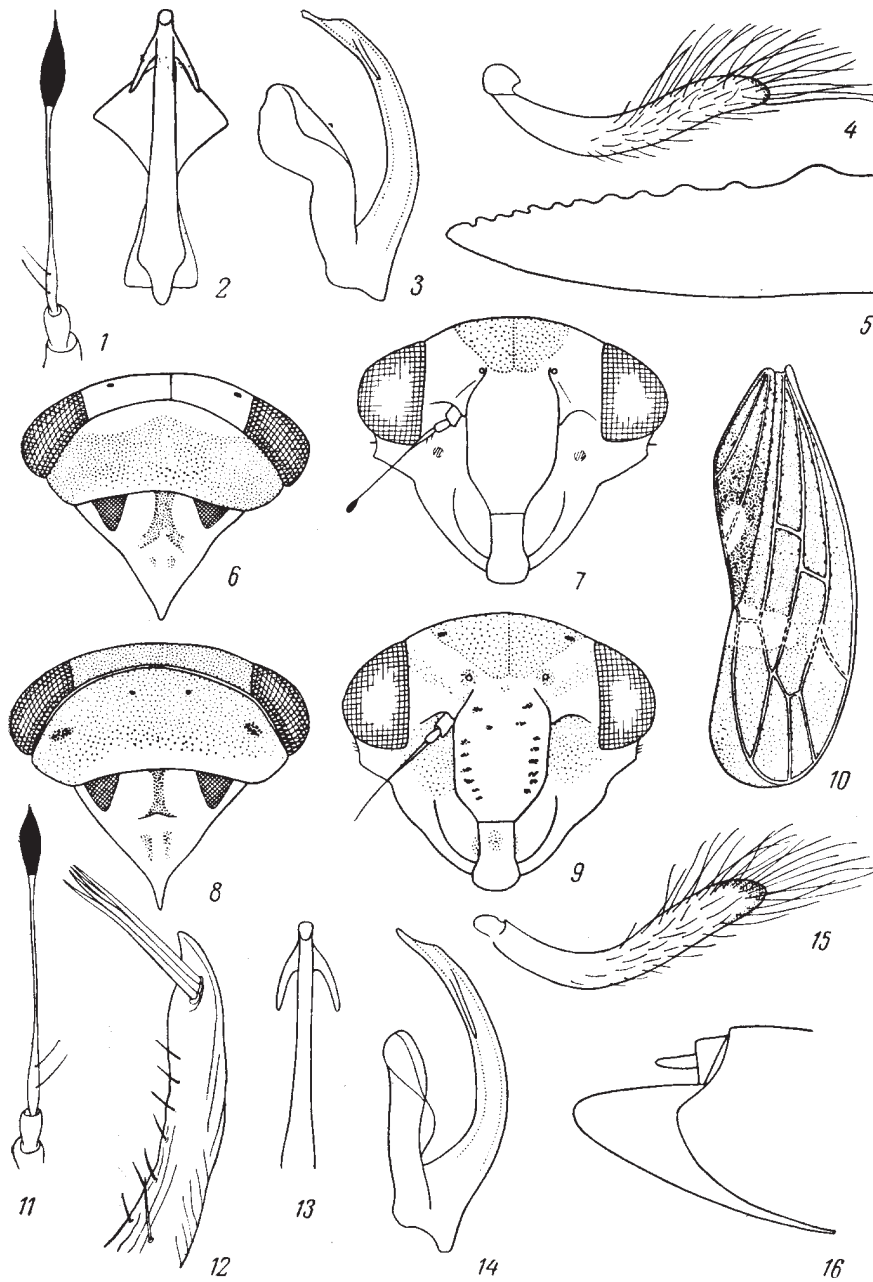


Fig. 46. Cicadines. Family Cicadellidae, subfamily Idiocerinae (original).

1-5, *Populicerus sudzuhensis* : 1, antenna of male; 2, 3, penis (2, ventral view; 3, lateral view); 4, genital plate; 5, apex of 2nd valvula of ovipositor; 6-16, *P. marginalis*: 6, anterior part of male body; 7, face of male; 8, anterior part of female body; 9, face of female; 10, fore wing; 11, antenna of male; 12, apex of stylus; 13, apex of penis, ventral view; 14, penis, lateral view; 15, genital plate; 16, apex of female abdomen (lateral view).

- Male. Stylus with 3-5 bristles in subapical group. L/l of genital plate greater than 2.25; l/d of stylus greater than 3.6. Female. L/l of projecting part of ovipositor greater than 0.95; L/l of 2nd valvula greater than 2.92; L/l of 3rd valvula greater than 1.48 5

5. Male. *L/l* of stylus 6.15-6.75. Processes of penis shaft slanting ventrad or parallel to shaft. Female. Head 1.08-1.12 times as wide as long. Male 5.5-5.9, female 6.05-6.75. – Khab., Amur., Prim., Sakh.; Transbaikal, W Sayan Mts. – Mongolia. – In flood plain forests on *Populus suaveolens* and *P. maximowiczii*. Mid-July to late August. (Figs. 30: 4; 46: 1-5) ***P. sudzuensis*** Vilb.
- Male. *L/l* of stylus 5.3-6. Processes of penis shaft slanting dorsad. Female. Head 1.13-1.17 times as wide as long. Male 5.05-5.85, female 5.75-6.55. – S Khab., Prim., S Kur. (Kunashir, Iturup); Transbaikal, W Sayan Mts. – Mongolia. – On aspen in broad-leaved and mixed forests and in small insular groves of aspen or birch in forest steppe. Late June to late August. (Figs. 46: 6-16) ***P. marginalis*** Vilb.

Subfamily AGALLIINAE

13. ***Japanagallia*** Ish. Slender, with narrow vertex widening to eyes. Male. Lobes of pygofer angular, projecting backwards, at dorsal margin with pointed lobe-shaped processes. Genital plates without bristles, triangular, closed, very short, not projecting or slightly projecting beyond hind margin of pygofer. Styli with small subapical angle and large, bent, U-shaped apical part, with small tooth before pointed apex. Connective in the shape of elongate plate, with wide articulatory apophyses. Penis symmetrical, with wide short base and arcuate shaft, a pair of processes arising near base of shaft. Anal tube without appendages. Monotypic genus.

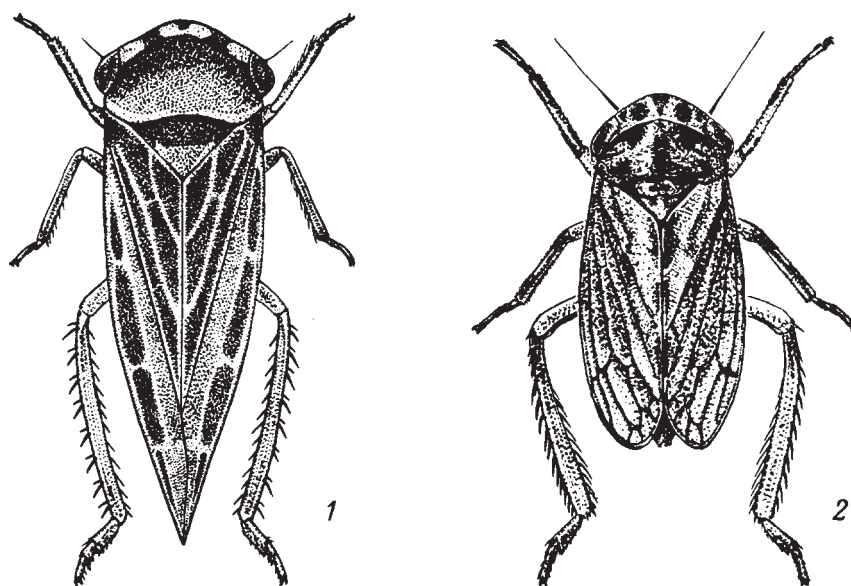


Fig. 47. Cicadines. Family Cicadellidae, subfamily Agalliinae (after Esaki and original).

1, *Japanagallia pteridis*; 2, *Anaceratagallia venosa*.

1. Brown. Vertex yellow, with 2 large black spots. Frontoclypeus in male black, with yellow spots on antennae, in female yellow, with narrow black band under ocelli and a stripe running from it upwards. Pronotum in male black, with yellow hind margin, in female brown or yellowish, often with 2 small black spots at anterior margin. Scutellum in male black, with yellow hind margin, in female brown. Fore wings with light veins; cells brown in female and nearly black in male. 4.2-4.8. –

Prim. – Japan, Korea. – In broad-leaved and mixed forests on ferns. Mid-May to early July. (Figs. 47: 1; 48: 1-4) *J. pteridis* Mats.

14. *Onukigallia* Ish. Slender; vertex narrow, parallel-sided or slightly widening at eyes. Male. Lobes of pygofer angular, projecting backwards. Genital plates elongate triangular, closed, narrowly rounded at apex, with rows of bristles along inner margin. Styli with strongly projecting subapical angles and long apex rounded at end and bearing a small tooth near middle of outer margin. Connective in the shape of very wide [p. 76] elongate rectangular plate. Penis arcuate, flattened dorsoventrally in apical half; base with appendage fused to it; gonopore subapical, dorsal. Anal tube with collar-shaped appendage (sclerite) at base. Monotypic genus.

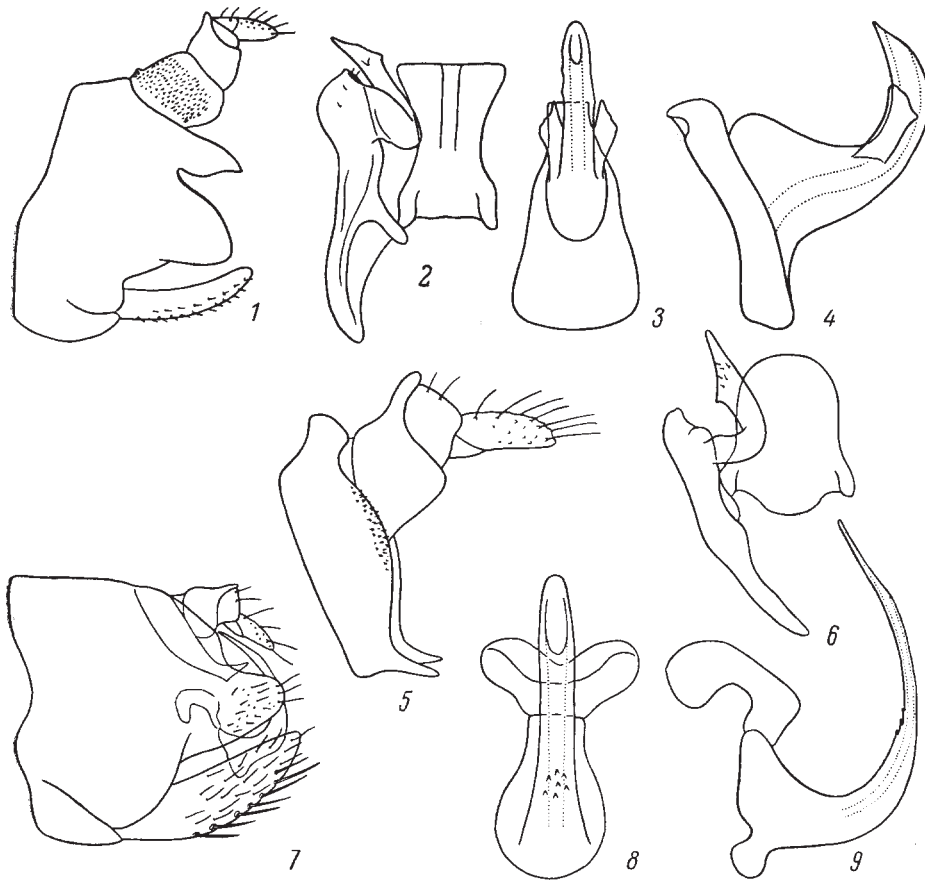


Fig. 48. Cicadines. Family Cicadellidae, subfamily Agalliinae (after Anufriev).

1-4, *Japanagallia pteridis* : 1, genital block of male, lateral view; 2, connective and stylus; 3, 4, penis (3, posterior view; 4, lateral view); 5-9, *Onukigallia onukii*: 5, anal tube, lateral view; 6, connective and stylus; 7, genital block of male, lateral view; 8, 9, penis (8, posterior view; 9, lateral view).

1. Grayish-brown. Vertex yellow, with 2 brown spots lateral to midline. Frontoclypeus yellow, with small black spots under ocelli and with more or less noticeable narrow dark band between bases of antennae; sometimes in male, frontoclypeus under the band between antennae dark. Pronotum yellowish, with a pair of black transverse spots beyond eyes, a pair of triangular spots be-

yond them (sometimes lacking), a pair of round spots at the middle of anterior margin, and black longitudinal stripe in the middle. Fore wings grayish or brown; veins at base light, in apical half brown. 4-4.8. – Prim. – Japan, Korea. In herbage of broad-leaved and mixed forests, in forest edges, glades, meadows, along roads, probably on *Artemisia*. Mid-July to late September. (Figs. 48: 5-9).....

..... **O. onukii** Mats.

15. **Dryodurgades** Zachv. Slender; vertex narrow, nearly parallel-sided or slightly widened at eyes; fore wings with dense net of secondary veins. Male. Pygofer rounded truncate posteriorly, without additional processes. Genital plates closed, elongate triangular, without bristles. Styli with very high subapical angle nearly as high as apical part which is stretched laterad and pointed. Penis compressed laterally, with more or less straight shaft bearing at apex simple or branched processes. Anal tube with robust basal segment (segment X) bearing small ventrolateral teeth. – 2 species (in USSR 4).

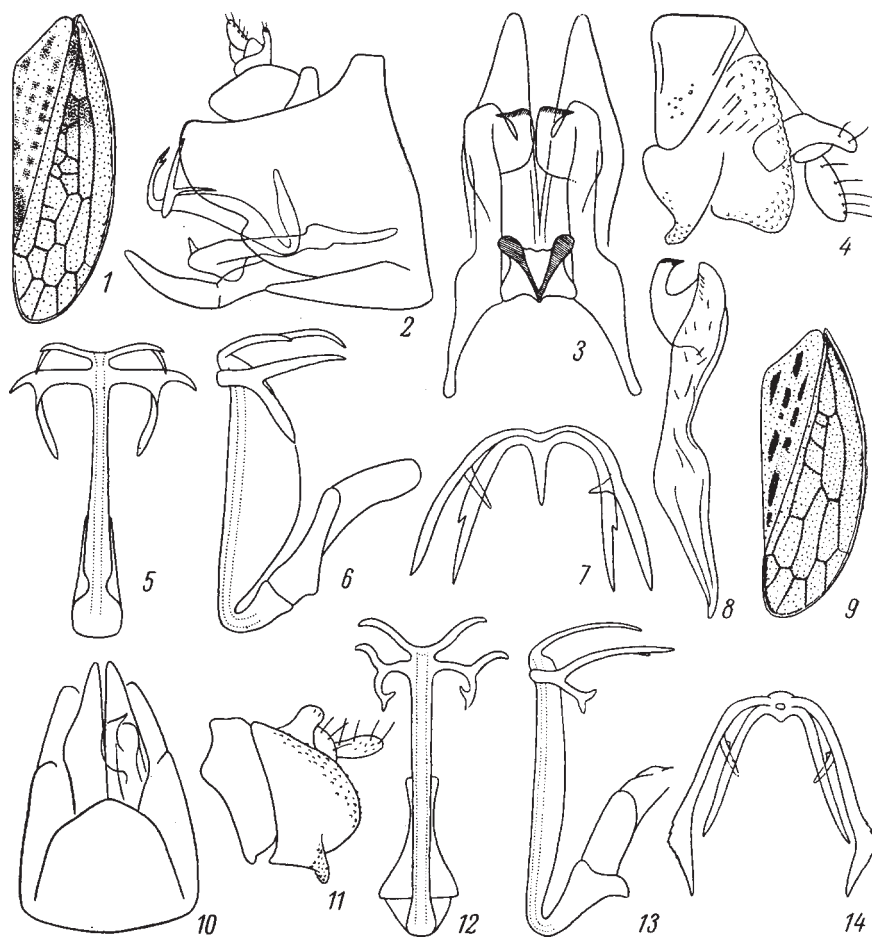


Fig. 49. Cicadines. Family Cicadellidae, subfamily Agalliinae (after Anufriev and Vilbaste).

1-8, *Dryodurgades lamellaris*: 1, fore wing; 2, genital block of male, lateral view; 3, genital plates, connective and styli, dorsal view; 4, anal tube, lateral view; 5-7, penis (5, posterior view; 6, lateral view; 7, view from the apex); 8, stylus; 9-14, *D. hassanicus*: 9, fore wing; 10, genital block of male, ventral view; 11, anal tube, lateral view; 12-14, penis (12, posterior view; 13, lateral view; 14, view from the apex).

1. Claval cells black or dark castaneous. Penis at apex with 2 pairs of processes. Processes of apical pair simple, awl-shaped. Processes of subapical pair flattened and denticulate at end; a short branch widening to apex arises in basal third of these processes. Shaft of penis [p. 77] not swollen in the middle. Light gray; vertex with 2 pairs of black spots and longitudinal median stripe. Face yellow; areas around eyes and antennae, a narrow band between antennae, sutures of face and also lateral spots on frontoclypeus, sometimes fusing and forming stripes, black. Pronotum yellow or light brown, with black longitudinal median stripe and 2 pairs of small spots lateral to it. General background of fore wings yellowish or light brown. 3.5-4.1. – Prim. – On *Artemisia*, in meadows and edges of broad-leaved and mixed forests. Late May to early October. (Figs. 49: 9-14) ..
..... **D. hassanicus** Vilb.
- Claval cells light brown. Penis at apex with 2 pairs of bifurcate processes. Shaft of penis in lateral view strongly swollen in the middle. 4.1-4.6. – Prim. – Korea. – On *Artemisia* in edges of broad-leaved and mixed forests, meadows. Early May to late September. (Figs 49: 1-8) **D. lamellaris** Vilb.

16. **Anaceratagallia** Zachv. Sturdy; vertex rather wide, parallel-sided or somewhat widened (lengthened) in the middle. Male. Pygofer widely rounded on posterior margin; posterior upper angles of lobes stretched into well sclerotized processes. Genital plates longer than lobes of pygofer, rather wide, with ends rounded separately and a row of small bristles [p.78] at inner margin. Stylus with high subapical angle and long pointed apex bearing small tooth near middle of outer margin. Connective trapezoid, with well developed articulatory apophyses. Penis symmetrical, with shaft rounded in cross-section or compressed laterally; gonopore subapical, ventral. Anal tube at base often with collar-shaped sclerite, its lower free ends pointed or bifurcate. – 2 species.

1. Anal tube at base with well developed free appendage. Apices of pygofer lobes pointed but not bent. Shaft of penis compressed laterally. (Subgenus *Anaceratagallia* Zachv.). Brownish grayish, with dark brown and black pattern. Two black rounded spots on vertex; a longitudinal dark stripe widened to clypeus between them. Dark triangular spots on the turn of face into vertex, medial to eyes. Upper boundary of postclypeus darkened. Postclypeus under antennae with dark spots or nearly completely darkened, as well as other parts of face. On pronotum, a pair of black spots at anterior margin, medial to eyes; a black stripe along midline [p. 79] extending on scutellum; a pair of large, usually brown spots in posterior 2/3 of pronotum, lateral to midline stripe. On fore wings, veins dark brown and cells light brown on corium and membrane, veins white and cells dark brown in anterior 2/3 of clavus, veins dark brown and cells light brown in posterior third of clavus. 2.5-3.5. – C Yakutia, Tuva, Altai, Kazakhstan, Middle Asia (mountains), European part of USSR, Transcaucasia. – Mongolia, Europe, N Africa. – Dry meadows. Late June to early August. (Figs. 47: 2; 50: 1)
..... **A. venosa** Fall.
- Anal tube ventrally without tooth and appendage; the latter fused with upper margin of pygofer and its apex looks like a tooth above apex of pygofer, apex of pygofer itself slanting downwards. Shaft of penis rounded in cross-section. (Subgenus *Oedicora* Em., type species *A. kerzhneri* Em.). Brown, with dark brown pattern on brownish-grayish background. On the vertex, a pair of rounded dark spots beyond ocelli and longitudinal stripes medial to eyes and along midline.

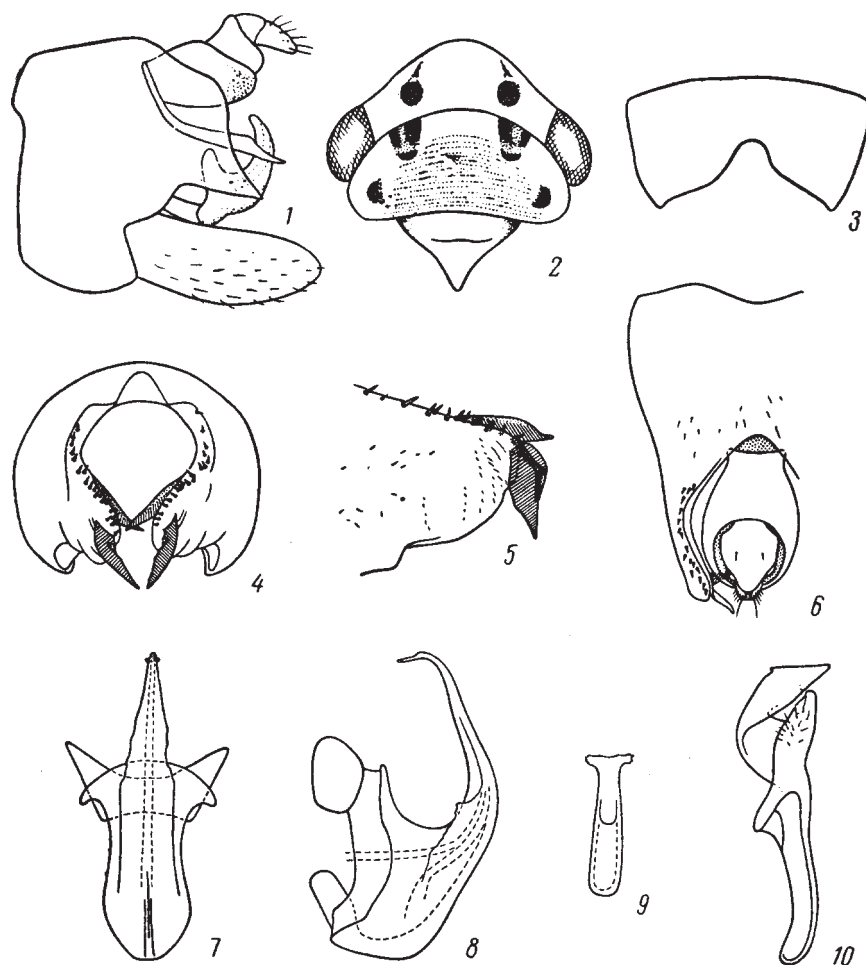


Fig. 50. Cicadines. Family Cicadellidae, subfamily Agalliinae (after Anufriev and original).

1, *Anaceratagallia venosa*, genital block of male, left lateral view; 2-10, *A. kerzhneri*: 2, anterior part of female body; 3, subgenital sternite of female, ventral view; 4, pygofer of male, posterior view; 5, apex of pygofer lobe, lateral view; 6, pygofer and anal tube, dorsal view; 7, 8, penis (7, posterior view; 8, lateral view); 9, apex of penis shaft, dorsal view; 10, stylus.

On face, upper margin of postclypeus blackened linear, arcuate. On postclypeus, a longitudinal black stripe and transverse small spots lateral to it. Sutures of face and area around bases of antennae blackened. On pronotum, a pair of rounded spots medial [p. 80] to eyes in anterior half, and a dark stripe along midline fused with darkening of posterior half of pronotum where only margins remain light. A transverse stroke beyond eyes on light part of pronotum. Scutellum with indistinct dark spots. Fore wings on corium with blackened veins and light cells on corium and membrane. On clavus, cells dark and veins light in its anterior part, and vice versa in posterior third. Venter more or less darkened. Male. Lobes of pygofer elongate, wedge-shaped; their apices slanting downwards; dorsal margin before apex with process corresponding to apex of fused appendage of anal tube. Penis simple; shaft arcuate. Anal tube flattened dorsoventrally, oval (in dorsal view). 2.9-4. – Amur. – May. (Figs. 50: 2-10) *A. (O.) kerzhneri* Em.

17. **Oncopsis** Burm. Vertex narrow, parallel-sided; pronotum slightly convex, transversely rugose. Male. Lobes of pygofer acutangulate or rounded, stretched backwards. Genital plates long, narrow, parallel-sided, with numerous setae. Styli rather long, often with attenuate apex slanting outwards. Connective elongate, somewhat widened at articulatory apophyses and bears a basal projection. Penis without processes; gonopore subapical, ventral. Appendages of anal tube of complex configuration, articulated to base of penis. On Betulaceae. – Not less than 12 species (in USSR 17).

1. Ventral side of penis concave, saddle-shaped. (Group *O. flavicollis* L.). Branches of appendage of anal tube long; base of fork short, shorter than or equal to length of branches. Gray, brownish or nearly black, fore wings semihyaline, with black veins. 4.4-5.4. – Kamch., Prim., Sakh.; Siberia, Kazakhstan, Middle Asia. – Japan, Mongolia, Europe, N Africa. – In white birch forests, on *Betula mandshurica*. Late May to late June. (Figs. 51: 1-7) **O. flavicollis** L.
- Ventral margin of penis along the whole length convex or only slightly concave. (Group *O. alni* Schrank) 2
2. Stylus narrow, gradually narrowing from the middle to apex. Apex slanting outwards and pointed. Fore wings semihyaline, with brown veins; a more or less rounded spot on transverse vein *mcu*, apical cells and spots on ends of claval veins darkened. 3.7-4.6. – Sakh., S Kur.; Transbaikal, Siberia, Kazakhstan. – Japan, C China (Sichuan), Mongolia, Europe. On *Betula*. June to September. (Figs. 51: 8, 9) **O. tristis** Zett.
- Stylus not as above, not narrowing in distal half 3
3. Appendage of anal tube only with 1 strong branch bent ventrad, which sometimes bears small projection on hind margin. Fore wings with black pattern. Costal margin and a stripe along claval suture light, semihyaline. 4.5-5.1. – S Kur. Mid-July to early August. (Figs. 51: 10-12) **O. adusta** Anufr.
- Appendages of anal tube with 2 branches, ventral and dorsal one, or only with 1 dorsal, bent branch 4
4. Appendages of anal tube with 2 branches; ventral branch arcuate, bent dorsad, longer than the dorsal branch and sometimes bifurcate at apex. Stylus almost parallel-sided. Fore wings black, with pale semihyaline base of clavus and hyaline costal field. 5-6. – S Kur. – Mid-July to late August. (Figs. 51: 13-15) **O. caliginosa** Anufr.
- Appendage of anal tube with 1 or 2 branches, in the last case ventral branch not longer than dorsal one 5
5. Appendage of anal tube with 2 branches. Dorsal branch slanting ventrad 6
- Appendage of anal tube with 1 or 2 branches, dorsal branch slanting dorsad 9
6. Dorsal branch of appendage of anal tube longer than ventral branch .. 7 [p. 81]
- Dorsal and ventral appendages of anal tube of equal length. Base of fork of anal tube appendage narrow. Similar to *O. flavicollis*. 4-5. – Mag., Khab., Prim., Kur.; N European part of USSR. – Scandinavia. – In high altitude mountain spruce forests on *Alnus*. July. (Figs. 52: 1-4) **O. planiscuta** Thomson (*sardescens* Anufr.)
7. Dorsal branch considerably more robust than ventral one, steeply arcuate 8
- Dorsal branch of appendage of anal tube slightly more robust than ventral one, gently arcuate. Dark colored, nearly black. Vertex completely black, with very narrow yellow edging of its posterior margin. Face yellow, with black pattern.

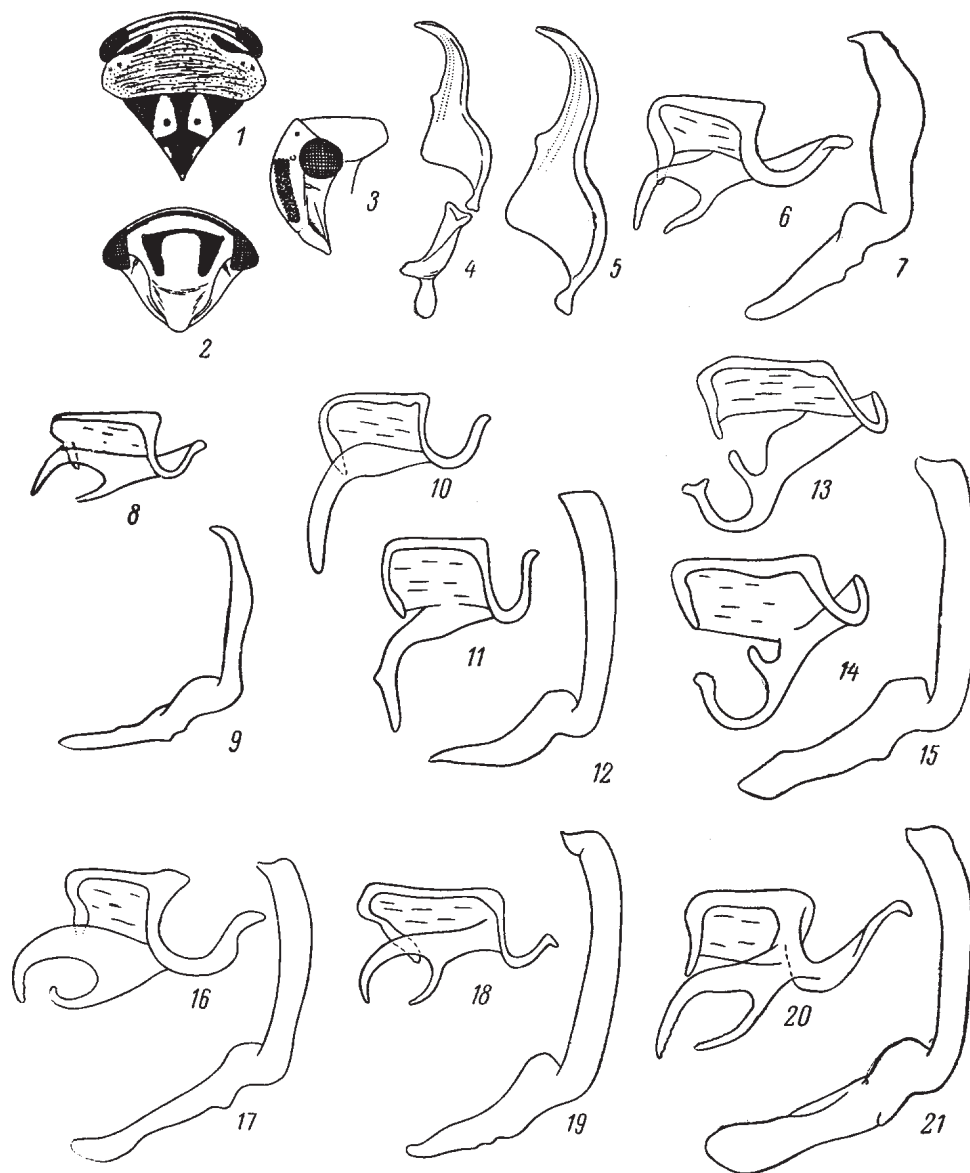


Fig. 51. Cicadines. Family Cicadellidae, subfamily Macropsinae (after Anufriev and Ribaut).

1-7, *Oncopsis flavicollis* : 1, 3, anterior part of body (1, dorsal view; 3, lateral view); 2, face; 4, penis and connective, lateral view; 5, penis, lateral view; 6, appendage of anal tube, lateral view; 7, stylus; 8, 9, *O. tristis*: 8, appendage of anal tube, lateral view; 9, stylus; 10-12, *O. adusta*: 10, 11, appendage of anal tube, lateral view; 12, stylus; 13-15, *O. caliginosa*: 13, 14, appendage of anal tube, lateral view; 15, stylus; 16, 17, *O. discrepans*: 16, appendage of anal tube, lateral view; 17, stylus; 18, 19, *O. sulphurea*: 18, appendage of anal tube, lateral view; 19, stylus; 20, 21, *O. furva*: 20, appendage of anal tube, lateral view; 21, stylus.

- [p. 82] Pronotum and scutellum completely black. Fore wings black, with lightened areas at apex of outer claval vein (*Pcu*) and in apical half at costal margin. 4.2-4.7. – S Kur. – July. (Figs. 51: 20, 21) ***O. furva*** Anufr.
8. Apex of ventral branch of appendage of anal tube directed towards the middle part of dorsal branch. Similar to *O. flavicollis*. 4.5-4.9. – Prim. – On *Alnus japonica*. Late June to early July. (Figs. 51: 16, 17) ***O. discrepans*** Anufr.

- Apex of ventral branch of appendage of anal tube directed towards the end of dorsal branch. Body and fore wings yellowish green or brown, as in *O. flavicollis*. 5.4-6. - S Kur. - On *Betula*. July to August. (Figs. 51: 18, 19) *O. sulphurea* Anufr.
- 9. Appendage of anal tube with 2 branches 10

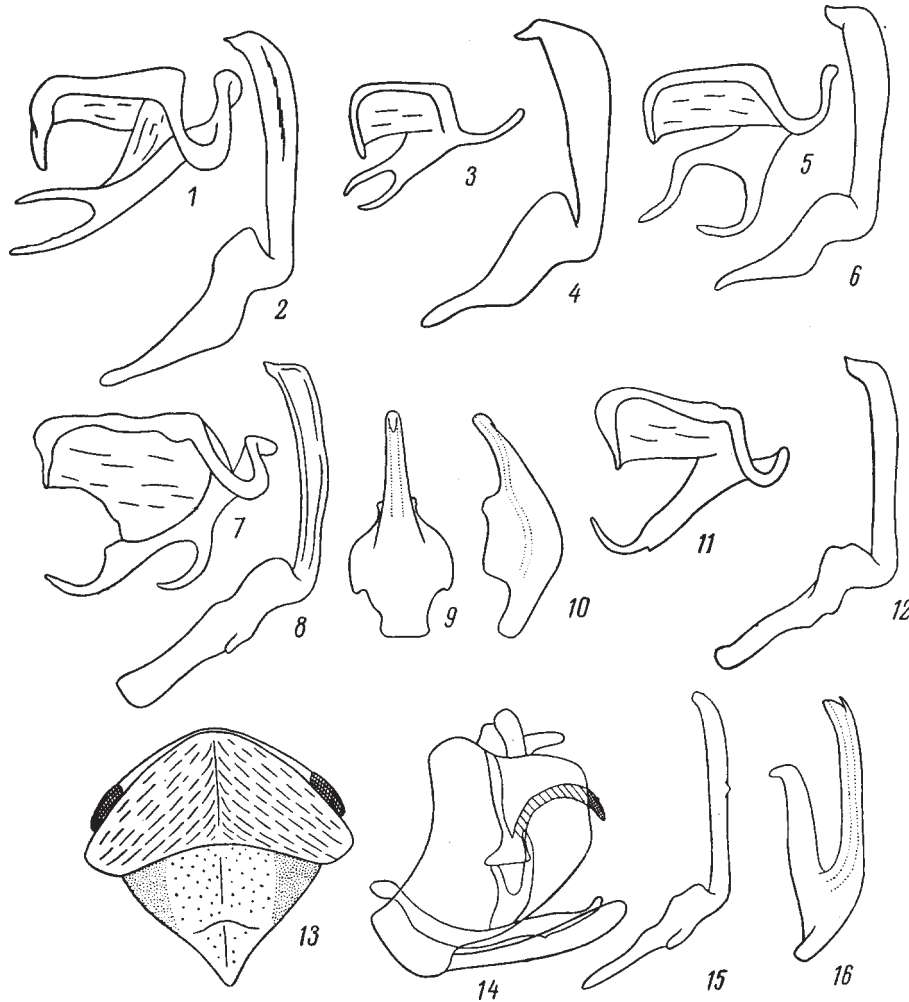


Fig. 52. Cicadines. Family Cicadellidae, subfamily Macropsinae (after Anufriev).

1-4, *Oncopsis planiscuta*: 1, appendage of anal tube; 2, stylus; 3, 4, another specimen: 3, appendage of anal tube; 4, stylus; 5, 6, *O. sepulcralis*: 5, appendage of anal tube; 6, stylus; 7-10, *O. wagneri*: 7, appendage of anal tube; 8, stylus; 9, 10, penis (9, posterior view; 10, lateral view); 11, 12, *O. ochotensis*: 11, appendage of anal tube; 12, stylus; 13-16, *Pediopsis kurentsovi*: 13, anterior part of body; 14, genital block of male, lateral view; 15, stylus; 16, penis, lateral view.

- Appendage of anal tube with 1 branch; a small tooth corresponding to ventral branch is often present on its ventral margin. Brown; vertex yellow, on posterior margin with castaneous black band somewhat widened laterally at eyes and in the middle. Frontoclypeus yellow, with wide band widened [p. 83] laterally, sometimes entirely dark, except margin of vertex. Pronotum castaneous gray, with black spots on anterior margin. Scutellum from castaneous with black lateral triangles to entirely black. Fore wings hyaline, with brownish veins. 4.2-4.8. - Mag., Khab., N Prim. - In spruce forests on *Betula*. Mid-July to mid-September. (Figs. 52: 11, 12) *O. ochotensis* Anufr.

10. Branches of appendage of anal tube lie in about the same plane, widely spaced. Basic color black. Frontoclypeus black, sometimes with 2 transverse yellow spots at margin of vertex and 1 rounded spot in the middle. Fore wings sometimes with light, hyaline costal field. 4.5-4.8. – N Prim., S Kur. – In high altitude mountain spruce forests with birches and alder. Late June to late July. (Figs. 52: 5, 6) **O. sepulcralis** Anufr.
- Branches of appendage of anal tube not spaced widely and not situated in the same plane, since ventral branch is strongly slanting inwards. Basic color brown or yellowish brown; face and vertex yellowish. Frontoclypeus with 2 black large spots often connected by light brown band; ocelli encircled by black color. 4.2-4.9. – S Prim. – On slopes of hills with undersized willows covered with steppe vegetation. June. (Figs. 52: 7-10) **O. wagneri** Anufr.

18. **Pediopsis** Burm. Vertex very short, in the middle shorter than at eyes. Pronotum convex, hanging over vertex, with oblique furrows forming an angle with hind margin. Male. Lobes of pygofer posteriorly rounded truncate. Genital plates long, narrow, parallel-sided, with numerous setae. Styli rather long, with apex attenuate and slanting outwards and a tooth near middle of inner margin. Connective cruciate, with well developed articulatory apophyses. Penis with subapical ventral gonopore and under it with a pair of small processes directed backwards. Penis connected with pygofer by special appendage. – 1 species (in USSR 2).

1. Face yellow, with coarse punctation. Pronotum greenish yellow or grayish, with coarse oblique furrows. Scutellum light brown, with coarse punctation and dark brown small specks; comparatively large brown spots sometimes present under furrow at margins. Fore wings semihyaline, with numerous dark brown specks. 4.3-5.1. – S Prim. – Japan, Korea, NE China. – In broad-leaved and mixed forests on *Tilia*. Mid-June to early September. (Figs. 52: 13-16) **P. kurentsovi** Anufr.

19. **Pediopsoides** Mats. Face as in the genus *Macropsis*, but lora smaller. Pronotum slightly inclined, indistinctly striate in transverse to oblique direction. Fore wings usually with 2 anteapical cells. Hind tibiae with 6-11 lateral bristles. In USSR 1 subgenus *Sispocnis* Anufr. Face wider than long. Pronotum nearly transversely striate. Male. Pygofer with short process slanting inwards, which is branched, with two apices or with widened base. Appendage of anal tube bent, with widened apex on dorsal end or under-developed. Penis with unpaired teeth lateral to apex and with pairs of teeth ventrally. – 1 species.

1. Light yellow; vertex with 2 black spots on anterior margin. 2 oblique black spots on frons. Fore wings semihyaline, with black spots. 5-6. – S Prim. – Korea. – In broad-leaved and mixed forests on *Juglans mandshurica*. Late July to early September. (Figs. 53: 1-18) **P. (S.) juglans** Mats.

20. **Macropsis** Lewis (Fig. 55: 3). Vertex narrow (short), more or less parallel-sided or slightly widened (lengthened) to eyes. Pronotum convex, with well developed inclined furrows forming an angle [p. 85] with posterior margin. Male. Pygofer with truncate or widely rounded lobes having a long process directed upwards and arising from ventral margin. Styli narrow, usually parallel-sided, with stretched apex pointed or truncate at end. Connective cruciate. Penis symmetrical, gradually narrowing to apex; its shaft usually more steeply bent near middle; gonopore subapical, ventral. Penis connected with pygofer and anal tube by small,

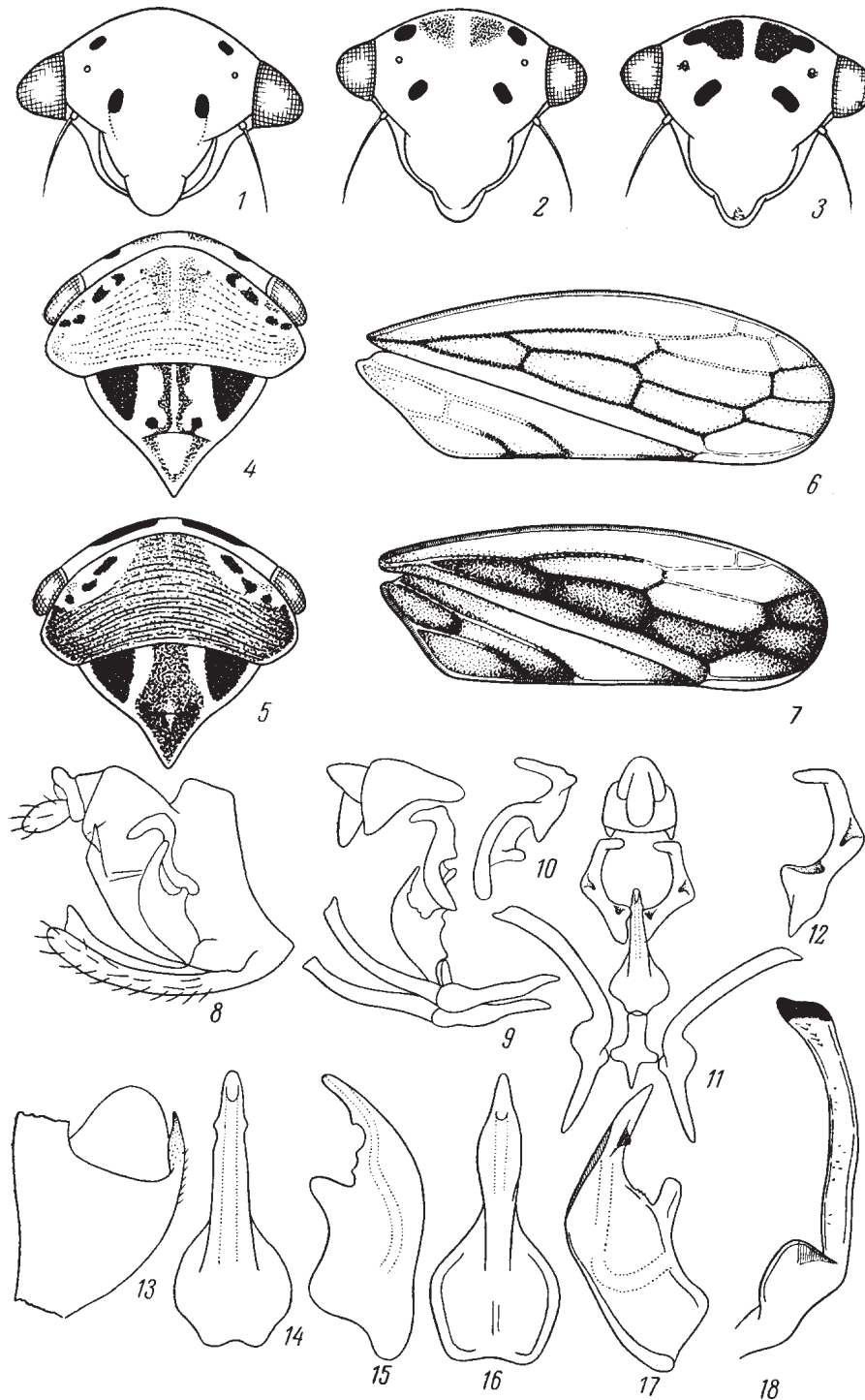


Fig. 53. Cicadines. Family Cicadellidae, subfamily Macropsinae (after Anufriev, Ribaut, and Vilbaste).

1-18, *Pediopsoides juglans*: 1-3, face, variants of pigmentation; 4, 5, anterior part of body, variants of pigmentation; 6, 7, fore wing, variants of pigmentation; 8, genital block of male, lateral view; 9, 11, anal tube with appendages, penis, connective and styli (9, lateral view; 11, posterior view); 10, 12, appendage of anal tube (10, lateral view; 12, posterior view); 13, lobe of pygofer; 14-17, penis (14, 16, posterior view; 15, 17, lateral view); 18, stylus.

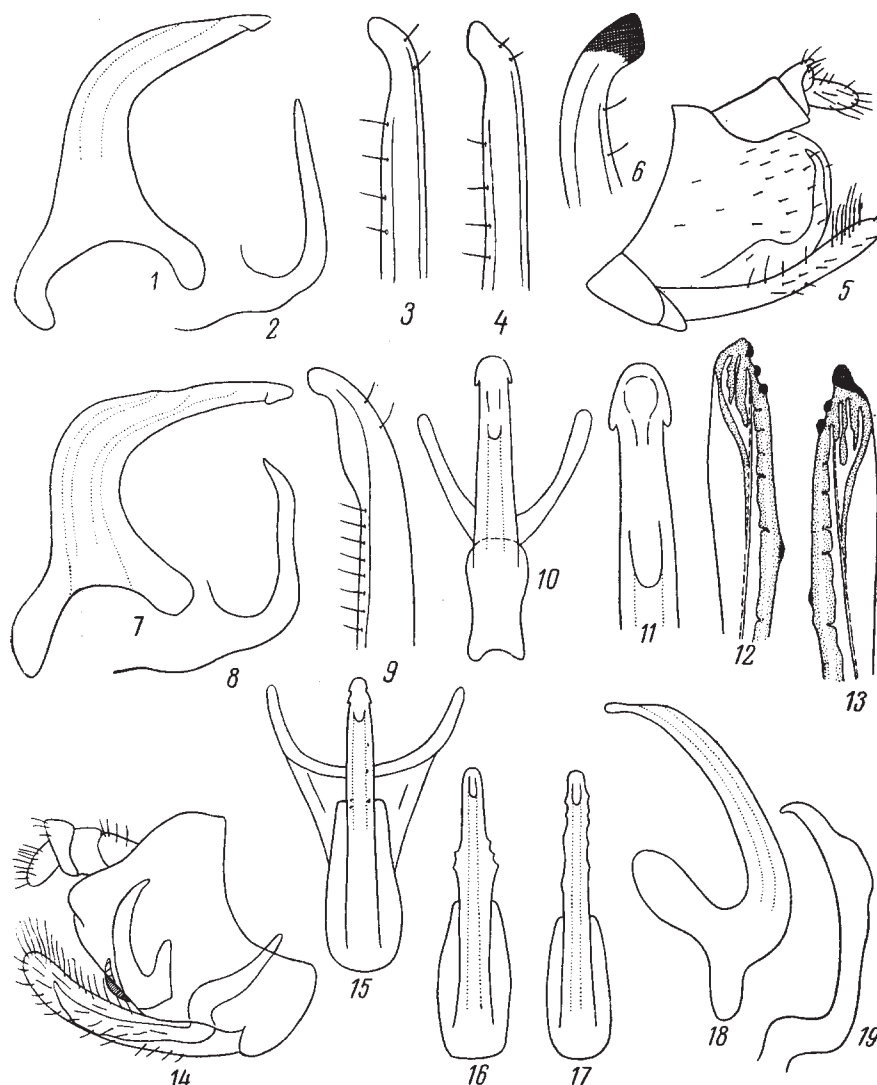


Fig. 54. Cicadines. Family Cicadellidae, subfamily Macropsinae (after Anufriev, Emeljanov, and Vilbaste).

1-4, *Macropsis ulmaria*: 1, penis, lateral view; 2, process of pygofer lobe; 3, 4, apex of stylus, variants; 5-13, *M. brunnescens*: 5, genital block of male, lateral view; 6, apex of stylus; 7, penis, lateral view; 8, process of pygofer lobe; 9, apex of stylus; 10, penis, posterior view; 11, apex of penis, posterior view; 12, 13, gonapophyses of female; 14-19, *Macropsidius niger*: 14, genital block of male, lateral view; 15-18, penis (15-17, posterior view; 18, lateral view); 19, stylus.

weakly sclerotized plate. On various trees and shrubs, especially abundant polymorphic species difficult for recognition occur on willows. – About 10 species (in USSR 50-60).

1. On willows **M. infuscata** J. Sahlb. and other species.
- On other trees and shrubs 2 [p. 86]
2. On oak. Greenish or brownish, often with marked specks on fore wings 3
- On *Ulmus* or *Spiraea*. Unicolorous brown, without contrasting specks 4

3. Yellowish brown; fore wings with brown, sometimes weakly noticeable bands at level of the middle and apex of clavus. 3.5-4.8. – Prim., S Kur. – Japan, China. – On *Quercus mongolica* in broad-leaved and mixed forests. July
 **M. matsumurana** China
- Green; fore wings with weakly expressed specks or without specks; transverse bands on fore wings absent. 4.8-5.2. Prim., S Kur. – Japan. – In broad-leaved and mixed forests on *Quercus mongolica*. Mid-July to early September
 **M. jozankeana** Mats.

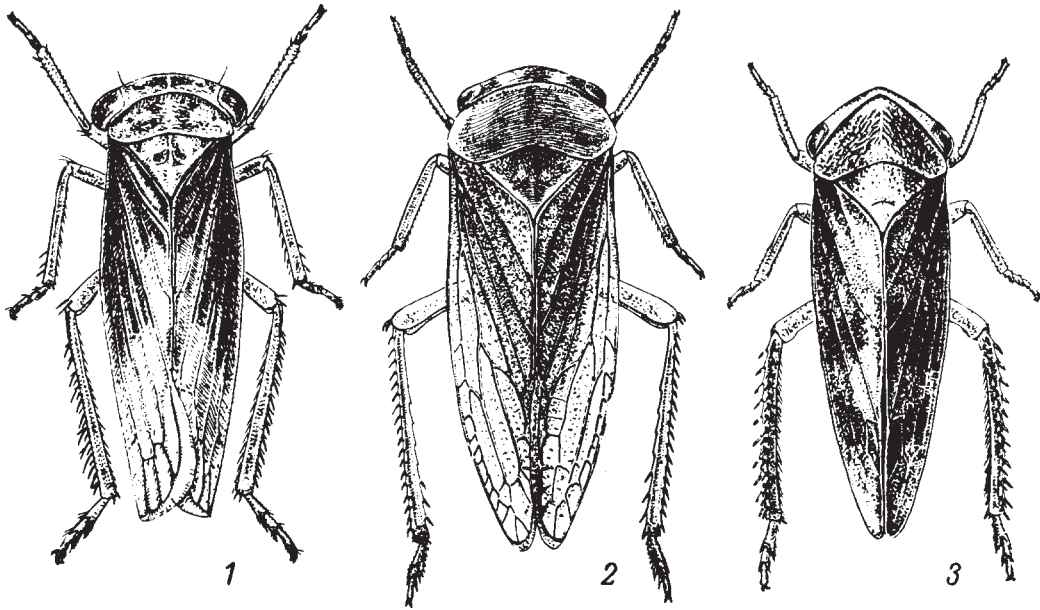


Fig. 55. Cicadines. Family Cicadellidae (original).

1, *Parocerus laurifoliae* (subfamily Idiocerinae); 2, *Iassus ulmi* (subfamily Iassinae); 3, *Macropsis* sp. (subfamily Macropsinae).

4. On *Ulmus*. Penis with subapical gonopore neared to apex. Processes of pygofer straight. 3.6-4.3. – Prim. – In mixed and broad-leaved forests. Late June to mid-July. (Figs. 54: 1-4) **M. ulmaria** Anufr.
- On *Spiraea*. Penis with subapical gonopore at a considerable distance from apex. Processes of pygofer bent, undulated. 3.8-4.3. – S Prim. – In meadows, mostly steppe meadows. July. (Figs. 54: 5-13) **M. brunnescens** Vilb.

21. **Macropsidius** Rib. Vertex narrow (short), parallel-sided. Pronotum convex, with inclined furrows forming an angle with posterior margin, but in hind part of pronotum they may be nearly parallel to its concave posterior margin. Male. Pygofer short, with lobes straightly truncate on posterior margin and bearing well sclerotized processes arising posteriorly from ventral margin and often fused to pygofer. Genital plates parallel-sided, more or less arcuate, bearing numerous setae. Styli long, with apex attenuate and often truncate at end, at the middle often with plate-shaped widenings. Connective cruciate. Penis more or less symmetrical, with subapical ventral gonopore, often with lateral carinae, which may be irregularly denticulate; penis connected with pygofer and anal tube only [p. 87] by small, weakly sclerotized plate. On Asteraceae, mainly on *Artemisia*. – 1 species (in USSR up to 20).

1. Black or dark brown, often with yellowish pattern on face and scutellum; fore wings with wide lightened band at level of subapical transverse veins. 2.8-3.4. – S Prim.; Transbaikal. – Korea, Mongolia. In moderately moist and steppe meadows, on *Artemisia*. Mid-July to early August. (Figs. 54: 14-19) **M. niger** Mats.

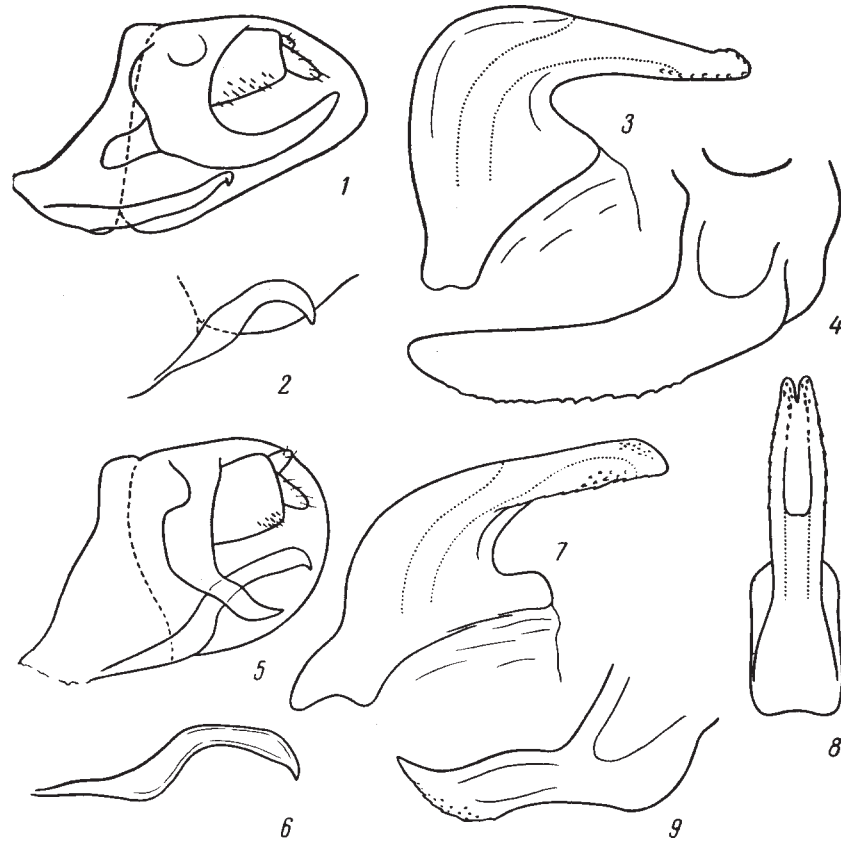


Fig. 56. Cicadines. Family Cicadellidae, subfamily Iassinae (after Anufriev).

1-4, *Iassus ulmi nesaeus*: 1, lobe of pygofer and anal tube, view from inner side; 2, process of pygofer lobe; 3, penis, lateral view; 4, process of anal tube; 5-9, *I. iziaslavi*: 5, lobe of pygofer and anal tube, view from inner side; 6, process of pygofer lobe; 7, 8, penis (7, lateral view; 8, posterior view); 9, process of anal tube.

Subfamily IASSINAE

22. **Iassus** F. Large, somewhat angular, with relatively wide pronotum. Vertex, pronotum and apex of scutellum finely transversely striate; fore wings coarsely punctate. Male. Pygofer posteriorly widely rounded, with small bristles at posterior margin. Lobes of pygofer with process following their inner surface, arising from ventral margin and bearing a tooth at base. Genital plates short, with an apex stretched, finger-shaped, devoid of bristles and setae. Styli with transverse base and wide reduced apical part. Connective T-shaped, with wide articulatory apophyses and small widening at articulation with penis. Penis symmetrical, with a pair of lateral lobes at apex; gonopore in a slit between these lobes; shaft more or less parallel to base. Anal tube at base with a pair of processes directed backwards. Dendrophilous forms. – 4 species (in USSR 6). [p. 88]

1. Appendages of anal tube very small, short, their apices not reaching to middle of anal tube. Vertex, pronotum and scutellum reddish brown; fore wings green, semihyaline. 7-10.5. – Prim., S Kur. – Japan, Mongolia. – In mixed and broad-leaved forests on *Ulmus*. Late June to early September. (Fig. 57: 1) **I. lateralis** Mats.
- Appendages of anal tube long, their apices reaching to apex of anal tube or extending beyond it 2
2. Appendages of anal tube robust, wide, reaching to its hind margin, not crossing with processes of pygofer lobes; processes of pygofer lobes short, with tooth neared to apex. The ordinary form with a green or brownish vertex, brown pronotum and scutellum, and greenish semihyaline fore wings. Completely brown and dark red specimens occur. 6.7-7.5. – Prim., S Kur. (ssp. *nesaeus* Anufr.); Transbaikal. – Mongolia. – In broad-leaved and mixed forests on *Ulmus*. Mid-June to early September. (Figs. 55: 2; 56: 1-4; 57: 2) **I. ulmi** Kusn.
- Appendages of anal tube very long, crossing with processes of pygofer lobes, which are also long 3
3. Processes of pygofer lobes at base with strong tooth, and with sharply bent, L-shaped apex. Processes of anal tube evenly arcuate, slightly narrowed in the middle part. Light green, fore wings semihyaline. 7. – S Prim. – On *Ulmus*, rare. Late June. (Fig. 57: 3) **I. sujfunus** Anufr.
- Processes of pygofer lobes at base without distinct tooth, with very short apex slanting ventrad, beak-shaped. Processes of anal tube in the middle part more sharply bent and sharply narrowed from bend to apex. Yellowish green, olive or brownish; scutellum in male yellowish green or brown. Fore wings semihyaline, with brown spot at apex of clavus. 6.6-8.6. – Sakh., S Kur. – Late July to early August. (Figs 56: 5-9) **I. iziaslavi** Anufr.

23. **Trocnadella** Pruthi (*Straganiassus* Anufr.). In general appearance similar to the genus *Iassus* F. Male. Genital segment very short and high, with numerous small bristles along posterior margin. Anal tube without appendages. Lobes of pygofer without processes. Genital plates short, gradually narrowed to apex, which is slanting downwards. Styli with apical part bent, L-shaped and small tooth at base of apical part. Penis at apex split into 2 slightly widened lobes; gonopore situated between these lobes. Monotypic genus.

1. Olive or yellowish green; scutellum, and partly also pronotum brownish. 6.7-8.5. – Prim.; S of Central Siberia. – Japan, China. – In broad-leaved and mixed forests on *Quercus*. Mid-July to early September. (Fig. 57: 4)
..... **T. suturalis** Mel., comb. n. (*melichari* Osh.)

24. **Batracomorphus** Lewis. Relatively less angular, with less widened pronotum. Vertex, pronotum and apex of scutellum finely transversely striate; fore wings punctate. Male. Pygofer posteriorly widely rounded, with small bristles at posterior margin; lobes of pygofer with processes following their inner surface and arising from ventral margin. Genital plates comparatively long and with numerous setae. Styli with distinctly developed bases and long apical parts with a bent claw-shaped apex. Connective Y-shaped. Penis symmetrical; its shaft more or less parallel to base; gonopore dorsal, often subapical. Anal tube without processes. Green-colored hortophilous forms, mainly associated with *Artemisia*. – 5-6 species.

1. Processes of pygofer with one single apex 2
- Processes of pygofer with bifurcate apex 3 [p. 89]

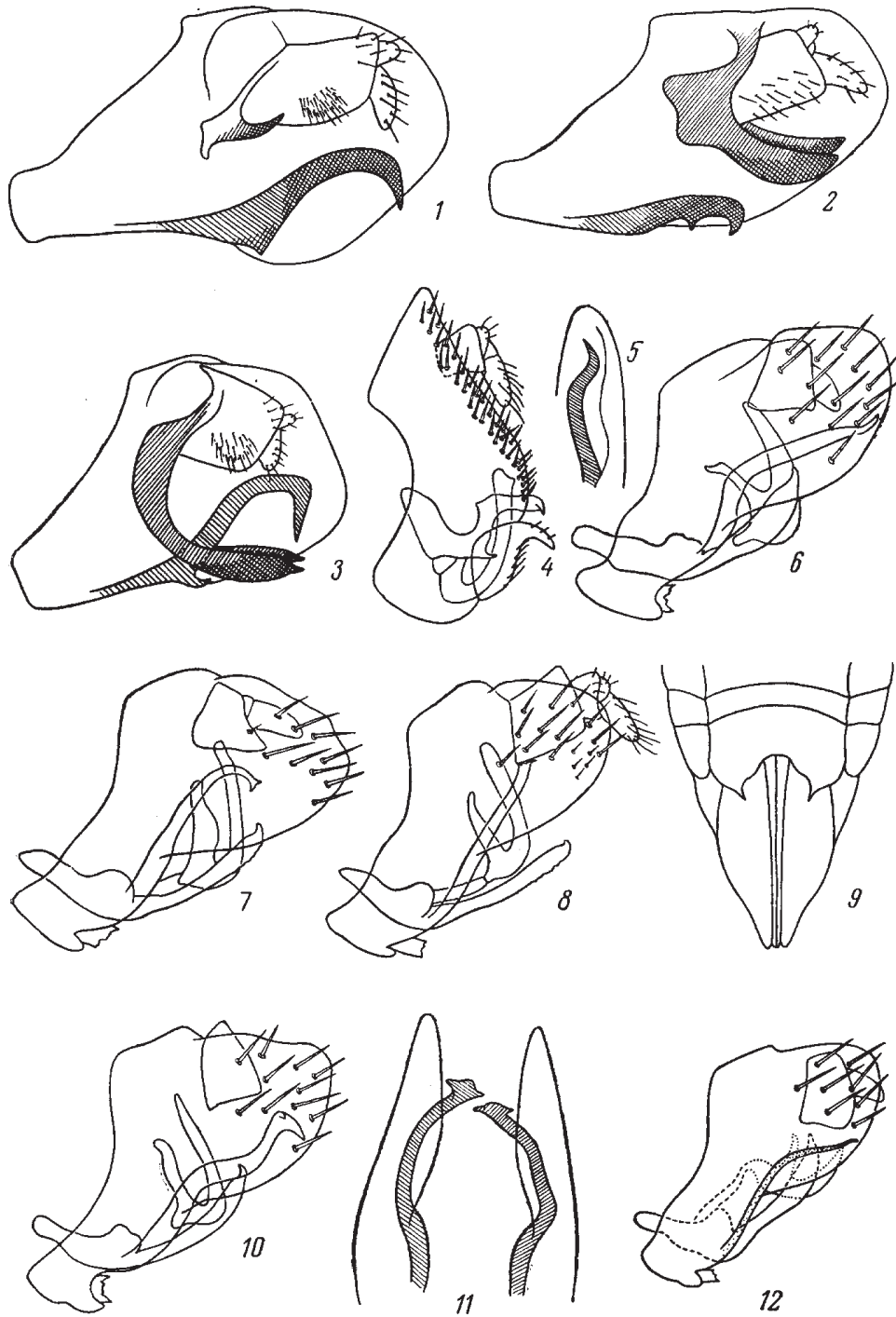


Fig. 57. Cicadines. Family Cicadellidae, subfamily Iassinae (after Anufriev).

1-4, lobe of pygofer and anal tube, view from inner side: 1, *Iassus lateralis*; 2, *I. ulmi ulmi*; 3, *I. suffusus*; 4, *Trocnadella suturalis*; 5, *Batracomorphus punctilligerus*, lobe of pygofer with a process, ventral view; 6-8, 10, 12, genital block of male without genital plates: 6, *B. punctilligerus*, lateral view; 7, *B. allionii*, lateral view; 8, *B. ussuriensis*, lateral view; 10, *B. puncturatus*, ventral view; 12, *B. diminutus*, lateral view; 9, *B. ussuriensis*, apex of female abdomen, ventral view; 11, *B. puncturatus*, lobes of pygofer with processes, ventral view.

2. Processes of pygofer very thin, with apices slanting downwards. Subgenital sternite in female on posterior margin nearly straight or widely excised, in the middle with small rounded projection. Pale green; fore wings with small dark specks situated mainly along veins. 4.3-5.5. – S Kur. – Japan, China (Taiwan). – August. (Fig. 57: 12) **B. diminutus** Mats. [p. 90]
- Processes of pygofer comparatively thick, with apices slanting upwards. Brownish green, fore wings with small brownish specks. 6. – Prim. – Late August. (Figs. 57: 5, 6) **B. punctilligerus** Anufr. (*punctatissimus* Anufr.)
3. Fore wings and pronotum without dark specks 4
- Fore wings and pronotum at posterior margin with small black specks. Processes of pygofer undulated, with apices slanting downwards and laterad; a tooth directed inwards situated on dorsal side of subapical bend. Subgenital sternite in female with nearly straight posterior margin, in the middle with small rounded projection. Greenish. 5.6-6.3. – Prim. – In meadows and glades. Early August to early September. (Figs. 57: 10, 11) **B. puncturatus** Anufr.
4. Processes of pygofer in apical half arcuate, bent downwards. Teeth on lower margins of styli small, equal. Styli nearly not widened to apex. Subgenital sternite in female with posterior margin nearly straight or with shallow wide excision, in the middle without projection. Light green; fore wings coarsely punctate. 6-8. – Khab., Amur., Prim.; S Siberia, Kazakhstan. – Mongolia, C and S Europe. – In meadows and glades in herbage; prefers *Artemisia*. Mid-July to mid-September. (Fig. 57: 7) **B. allionii** Turton
- Processes of pygofer directed obliquely upwards, slanting laterad at apex. Subgenital sternite in female with very deeply excised posterior margin and long tooth-shaped projections lateral to excision. 7-7.4. – Prim. – Under canopy of mixed and broad-leaved forests, attracted well at light traps. Late August. (Figs. 57: 8, 9) **B. ussuriensis** Anufr.

Subfamily CICADELLINAE

25. **Onukia** Mats. Slender, with elongate acutangulate vertex projecting forward and having sharp middle and lateral carinae. Male. Genital valve wide, with parabolic posterior margin. Genital plates long, comparatively wide, widely rounded at apices, with a row of bristles along their ventral surface. Pygofer elongate, with lobes obliquely truncate and irregularly denticulate at apex, without large bristles. Anal tube very long. Connective cruciate, with wide, short articulatory apophyses. Styli with long base, smoothed subapical angle and arcuate apical part, which is somewhat widened and obliquely truncate at apex. Penis symmetrical, with wide base bearing ventrally a pair of wide lobes with pointed posterior margin; shaft of penis arcuate, without processes. In USSR 1 species.

1. Basic color of body black dorsally and yellow ventrally. Vertex black, with small yellow spots at eyes. Frontoclypeus, base of anteclypeus, lora and upper halves of genae black; apex of anteclypeus, lower part of genae, antennae, thorax, legs and lower surface of abdomen yellow. Fore wings black, with 3 yellowish spots at apex of clavus and on apical cells. 4.7-5.8. – S Prim. – Japan, Korea, China. – In forest herbage in mixed and broad-leaved forests. Early August to mid-September. (Figs. 58: 2; 59: 1-7) **O. onukii** Mats.

26. **Oniella** Mats. Slender, vertex pentagonal, its lateral and anterior margins limited by carina. Vertex about as long as pronotum or vertex somewhat longer. Male. Pygofer elongate, with posterior angle stretched into a tooth, and with tooth on ventral margin. Genital plates elongate, with row of bristles along midline and long

fine setae at dorsal margin. Connective Y-shaped. Styli with rounded subapical lobe externally and bifurcate apical part, the outer angle of which strongly attenuate, acutangulate. Penis with wide base having paired projections and long shaft bearing laterally few small teeth; gonopore subapical. In USSR 2 species. [p. 91]

1. Lobes of pygofer with straight, comparatively short process at apex and a tooth on lower margin. Processes of penis base (parameres) short and slightly slanting outwards. Yellow or pale yellow; dorsum with black pattern. In male, pronotum, except lateral margins, scutellum, except apex, and fore wings blackened. On folded fore wings taken together, 2 large yellow spots beyond scutellum and in apical third of clavi extending on corium; besides, light are: basal half of costal field and 3 semicircular spots near costal margin in distal half. In female, pronotum light, spots in distal half of wings widened and fused together, dark pattern on membrane nearly disappears, and a small black spot occurs in its middle part. 4.5-5.6. – S Kur. – Japan. – Early August to early September. (Figs. 58: 1; 60: 1-8) *O. leucocephala* Mats.

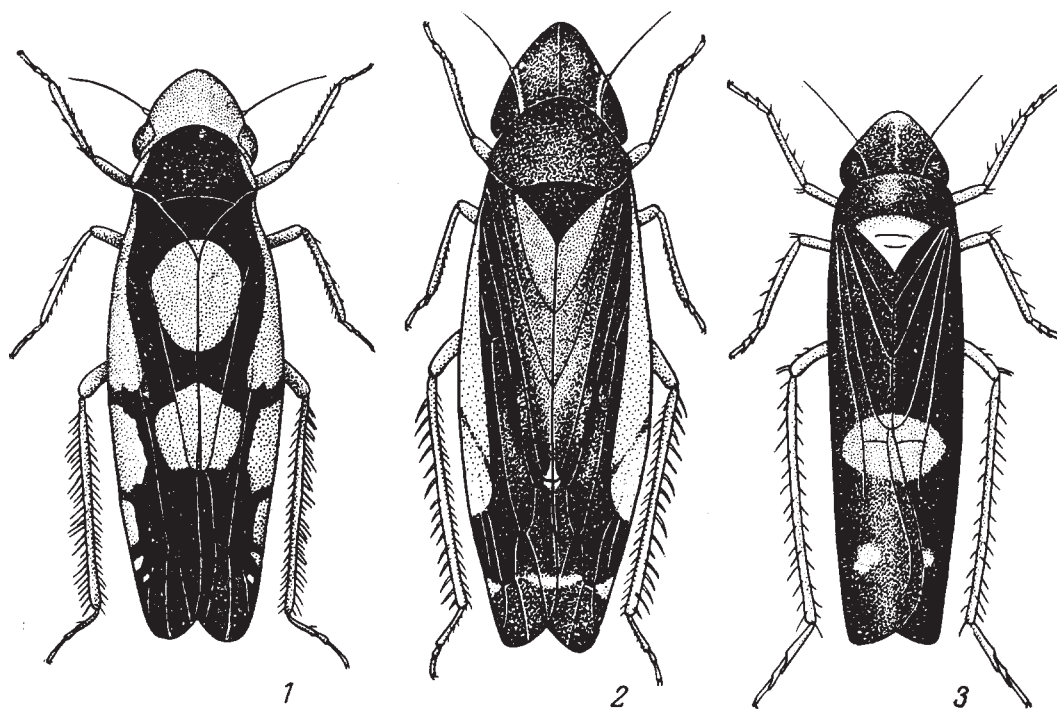


Fig. 58. Cicadines. Family Cicadellidae, subfamily Cicadellinae (after Esaki).

1, *Oniella leucocephala*; 2, *Onukia onukii*; 3, *Mileewa dorsimaculata*.

- Lobes of pygofer with rather long crescent-shaped processes at apex and with a tooth ventrally. Processes of penis base long, slanting to each other, with crossing apices. Whitish-yellowish; pattern noticeable only on fore wings. Membrane with black spot in the middle and slightly darkened margin; costal field in distal part with 3 dark oblique strokes; traces of black pattern are noticeable at places on the wing. 4.7-5. – S Prim. – Korea. – Early August. (Figs. 59: 8-10)
..... *O. koreana* Mats., comb. n.
(described as *Nirvana koreana*, but does not fit to description of the genus in proportions of vertex).

27. *Evacanthus* Lep. et Serv. Slender or moderately sturdy, with widely rounded vertex. Vertex limited by carinae anteriorly and laterally; median longitudinal carina and transverse carina between eyes also present. Male. Genital [p. 92] valve wide, with weakly projecting parabolic posterior margin. Genital plates long, nearly parallel-sided or gradually narrowed to apex, without large bristles. Pygofer of moderate length; lobes of pygofer widely rounded posteriorly, their posterior margin often with a process running upwards. Connective Y-shaped. Styli with clearly expressed subapical angle and arcuate apical part; apex of apical part T-shaped, widened, and its angles, especially the outer one, strongly attenuate. Penis symmetrical, with wide base having a pair of lateral lobes; shaft of penis arcuate, with well sclerotized processes. – 4 species (in USSR 5). [p. 93]

1. Lobes of pygofer with long processes running on inner surface along posterior margins of lobes. Shaft of penis laterally with strongly sclerotized stripes. (Subgenus *Evacanthus* Lep. et Serv.) 2

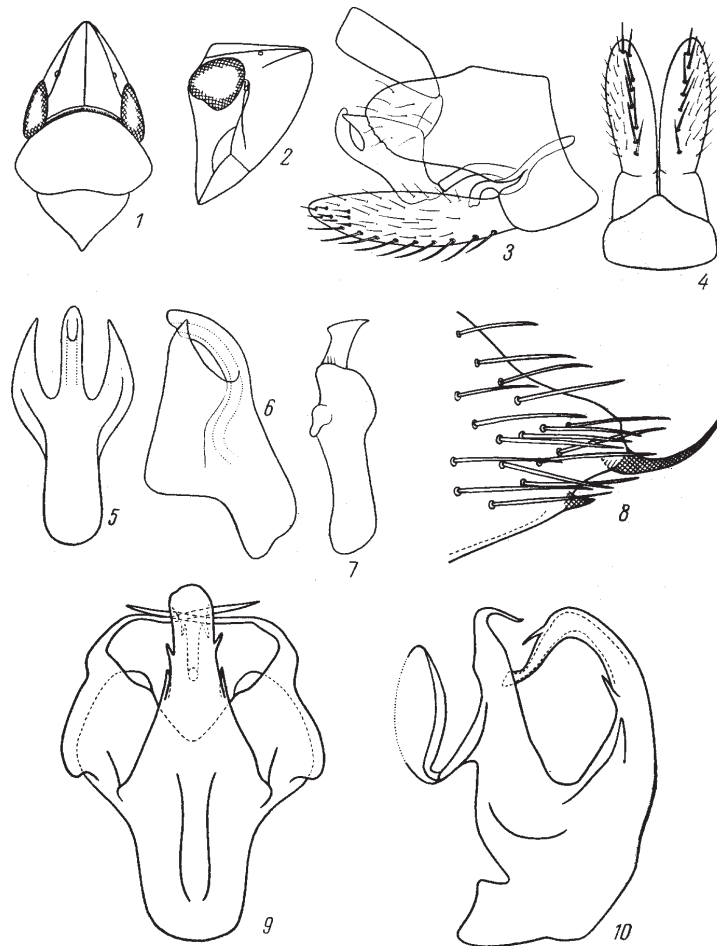


Fig. 59. Cicadines. Family Cicadellidae, subfamily Cicadellinae (after Anufriev and original).

1-7, *Onukia onukii*: 1, anterior part of body; 2, head, lateral view; 3, genital block of male, lateral view; 4, genital valve and genital plates, ventral view; 5, 6, penis (5, posterior view; 6, lateral view); 7, stylus; 8-10, *Oniella koreana*: 8, apex of pygofer lobe, lateral view; 9, 10, penis (9, posterior view; 10, lateral view).

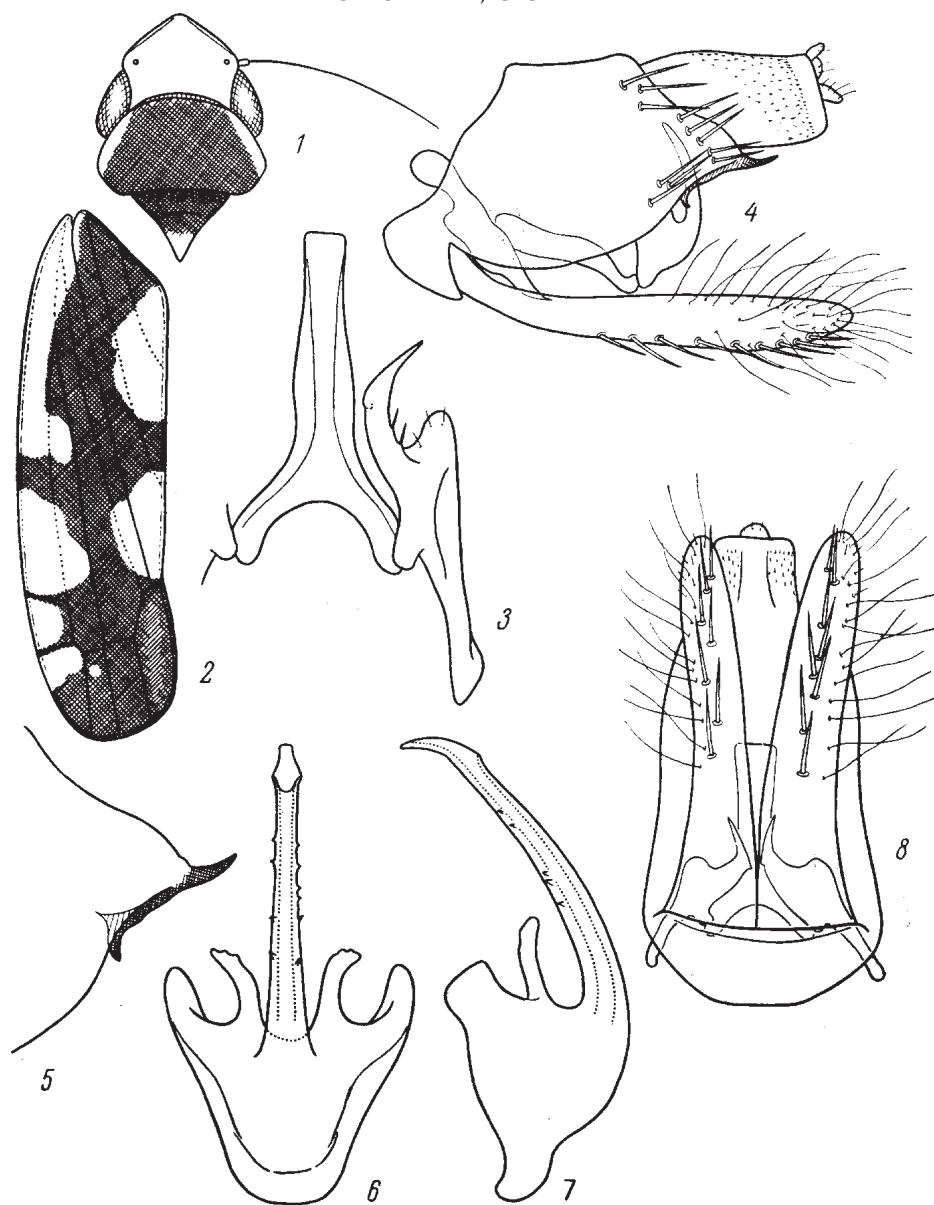


Fig. 60. Cicadines. Family Cicadellidae, subfamily Cicadellinae (after Anufriev).

1-8, *Oniella leucocephala*: 1, anterior part of body; 2, fore wing; 3, connective and stylus; 4, genital block of male, lateral view; 5, apex of pygofer lobe, lateral view; 6, 7, penis (6, posterior view; 7, lateral view); 8, genital block of male, ventral view.

- Pygofer without long processes. Shaft of penis evenly sclerotized. (Subgenus *Paracanthus* Anufr.). Penis with wide lateral lobes rounded at end. Shaft of penis with a pair of processes lateral to gonopore. Vertex yellow, with large black spot in the middle. Face yellow, with 3 large black spots at apex of frontoclypeus and brown longitudinal, sometimes fused spots at its lateral margins. Pronotum anteriorly black, posteriorly yellowish or greenish. Fore wings yellowish, light green or orange with brown cells, costal margin light. 5.5-6.6. - Prim., S Sakh. - Korea. - Under [p. 94] canopy of broad-leaved and mixed forests in herbage. Mid-July to early September. (Figs. 61: 12-15; 62: 1) E. (P) **ogumae** Mats.



Fig. 61. Cicadines. Family Cicadellidae, subfamily Cicadellinae (after Anufriev).

1-3, *Evacanthus fatuus*: 1, 2, penis (1, posterior view; 2, lateral view); 3, process of pygofer lobe; 4-8, *E. acuminatus*: 4, genital block of male, lateral view; 5, process of pygofer lobe; 6, 7, penis (6, posterior view; 7, lateral view); 8, stylus; 9-11, *E. interruptus*: 9, 10, penis (9, posterior view; 10, lateral view); 11, stylus; 12-15, *E. ogumae*: 12, anterior part of body; 13, genital block of male, lateral view; 14, 15, penis (14, posterior view; 15, lateral view).

2. Penis with lateral lobes widely rounded at apex; sclerotized stripes of shaft with lateral teeth at the middle. Yellow or reddish; fore wings with distinct black stripe along outer margin of clavus, which may be lacking in light-colored specimens; inner margin of fore wing with more or less wide light stripe. 5-7. – Everywhere. – Non-tropical Eurasia, N Africa, non-tropical N America. – In forest and meadow tall herbaceous vegetation. Late June to mid-August. (Figs. 61: 9-11; 66: 1) ***E. interruptus* L.**
- Penis with narrow lateral lobes pointed at apex; sclerotized stripes of shaft without teeth at the middle 3
3. Teeth at end of lateral sclerotized stripes of shaft not reaching to its apex and their ends distinctly slanting laterad. Dirty gray, without distinct black pattern. Inner margin of fore wings, except a narrow stripe, usually dark. 5.1-6.8. – Everywhere. – Europe, [p. 95] non-tropical Asia. – In forest herbage and well moistened meadows. Late June to early September. (Figs. 61: 4-8) ... ***E. acuminatus* F.**

- Teeth at end of lateral sclerotized stripes of shaft reaching to its apex and their ends not slanting laterad. Frons black. Vertex yellow, with a pair of black round spots at posterior margin and cruciate spot at anterior margin; these spots often fused, occupying whole vertex. Pronotum usually yellow, with black sides. Fore wings whitish, with black clavus and stripe in cubital field veins of clavus light. Legs orange red; apices of tibiae and tarsi yellowish. 6-6.5. – S Kur. – August. (Figs. 61: 1-3) **E. fatuus** Anufr.

28. **Epiacanthus** Mats. Slender, green (straw yellow in collections), with more or less distinct black spots at anterior margin of vertex; vertex triangular, projecting forwards. Male. Genital valve of moderate width, with parabolic, projecting posterior margin. Genital plates long, parallel-sided or gradually narrowed to apex, along ventral margin with row of small bristles. Lobes of pygofer triangular, rounded at apex, with ventral margin bearing inside processes of various shape, most often denticulate from below. Connective rather short, plate-shaped, widest at articulatory apophyses. Styli with very long base, smoothed subapical angle and small, hook-shaped apical part bent downwards. Penis symmetrical, with short wide base, bearing laterally a pair of long processes and a pair of small lobes; shaft of penis S-shaped, with a pair of tooth-shaped processes at base and a pair of small processes at apex near gonopore. In USSR 1 species.

1. In collections, bright yellow; the turn of face into vertex with 3 black spots, which may be more or less fused. 7.2-8.7. – Prim., Sakh., S Kur. – Japan, Korea. – In herbage under canopy and in edges of broad-leaved and mixed forests. Early July to mid-August. (Figs. 62: 2-7) **E. stramineus** Motsch.

29. **Pagaronia** Ball. Slender, greenish (in collections turning yellow) or brownish, with black spots on vertex; vertex widely rounded at anterior margin. Male. Genital valve with parabolic, slightly projecting posterior margin. Genital plates rather long, nearly parallel-sided or gradually narrowed to apices. Lobes of pygofer widely, less often narrowly rounded at apex, often with incision on ventral margin; a process may be present on their inner side opposite incision. Connective of moderate length, widened in area of articulatory apophyses. Styli with long base, smoothed subapical angle and small hook-shaped apical part bent downwards. Penis symmetrical, with tubular or compressed laterally shaft bearing at apex 1 or 2 pairs of processes; gonopore apical or subapical, dorsal. In USSR 2 species.

1. Penis with 2 pairs of processes at apex. Lobes of pygofer ventrally with a narrow, step-like incision distinctly limited posteriorly. Head with 4 black spots: 1 at apex of vertex, 2 under eyes on frontoclypeus and 1 between them in the middle and a bit lower. Anterior margin and posterior half of pronotum brown; fore wings brown, except costal fields. 7.3-8.2. – S Kur. – Japan. – Early July to late August. (Figs. 62: 14-16) **P. aurantia** Metc.
- Penis with 1 pair of processes bifurcate in middle part. Lobes of pygofer ventrally weakly and indistinctly concave. Pale; spots on head as in previous species but smaller; posterior margin of pronotum and suture of fore wings brown, darkened. 7.9-9.4. – S Prim. – Korea. In herbage under canopy and in edges of broad-leaved and mixed forests. Late June to mid-July. (Figs. 62: 8-13) **P. continentalis** Anufr. [p. 96]

30. *Bathysmatophorus* J. Sahlb. Large, with wide head weakly projecting forward. Mostly with dimorphism in wing structure: females brachypterous, larger; males macropterous, smaller. Dirty brown tones predominating in coloration. Male. Genital valve slightly widened in the middle. Genital plates of moderate length, up to the middle nearly parallel-sided, beyond middle narrowed to narrowly rounded apex. Pygofer with lobes widely rounded posteriorly, [p. 97] on inner side with robust hook-shaped processes arising near base of anal tube and directed downwards.



Fig. 62. Cicadines. Family Cicadellidae, subfamily Cicadellinae (after Anufriev).

1, *Evacanthus ogumae*, connective and stylus; 2-7, *Epiacanthus stramineus*: 2, anterior part of body; 3, genital block of male, lateral view; 4, genital valve and genital plates, ventral view; 5, 6, penis (5, posterior view; 6, lateral view); 7, stylus; 8-13, *Pagaronia continentalis*: 8, anterior part of body; 9, fore wing; 10, genital block of male, lateral view; 11, genital valve; genital plates, connective and styli, dorsal view; 12, 13, penis (12, posterior view; 13, lateral view); 14-16, *P. aurantia*: 14, genital block of male, lateral view; 15, 16, penis (15, lateral view; 16, posterior view).

Connective plate-shaped, slightly widened at articulatory apophyses and with narrow process anteriorly. Styli long, with very long apical part; subapical angle not expressed. Penis with wide, often bifurcate base rather often separated from shaft by weak constriction; shaft arcuate, at base widened and usually bearing a tooth, gradually narrowed to apex, which bears a pair of small processes. Gonopore apical or subapical, dorsal. 5-6 species (*Tettigonia fusca* Mats., 1911 described from Sakhalin and renamed into *Tettigoniella sachalinensis* Osh., 1912, evidently belongs to the genus *Bathysmatophorus*). (In USSR 6-7 species).

1. Penis without tooth at base; its shaft smoothly widened in the middle part. Male subbrachypterous, fore wings not covering 2-3 hind tergites of abdomen. Face black, shiny, at the turn into vertex with narrow yellow band. Vertex from yellow brown with black spots to nearly black with indistinct light spots. Pronotum brown, with black hind half, or completely black; its sides and posterior margin with yellow edging. Scutellum dark, with lightened apex. Fore wings brown or slightly whitish. Abdomen completely black. Females brachypterous, as a whole, lighter. Fore wings brown, usually darker than in male, rather often their costal margin lightened, yellowish. Abdomen often brown, with darker posterior margins of tergites, narrow median stripe and wide longitudinal stripes lateral to it. Male 5.7-6.4, female 5.2-8.5. – S Kur. – In tall herbaceous vegetation, mainly on *Filipendula camtschatica*. Mid-June to early August. (Figs. 63: 21-25) **B. kurilensis** Anufr.
- Penis with a tooth at base; its shaft continuously narrowing from base to apex 2
2. Base of penis comparatively narrow; its basal branches nearly parallel, not diverging. Apical processes of penis nearly parallel, with converging apices. Styli robust, wide. Males macropterous, females brachypterous. Basic color dark brown. Face in male black, with yellow median stripe on anteclypeus and narrow yellow stripe at apex; sometimes genae and lora brown, with weakly noticeable yellowish spots. In female, face yellowish, with numerous transverse black stripes. Vertex and pronotum brown, with black spots. Scutellum black, with yellow or brown median stripe. Fore wings in female sometimes posteriorly with light edging. Male 6.2-7, female 7.9-10. – Prim., Sakh.; Transbaikal. – Japan, NE China. – Under canopy of mixed and coniferous (with *Pinus sibirica*, *P. koraiensis*) forests and in their edges. Late May to early July. (Figs. 63: 1-6) **B. shabliovskii** Kusn.
- Base of penis rather wide; basal branches diverge forming an acute or right angle; apical processes of penis diverging. Styli comparatively narrow 3
3. Styli in apical half widened. Both sexes brachypterous. Face in male black, shiny, with narrow yellow band at apex and yellow spots under antennae. Vertex yellow, with a pair of triangular black spots at anterior margin, a pair of rounded spots at posterior margin and darkenings at eyes. Pronotum yellow or brownish, with numerous black spots fusing together. Scutellum black, with yellow lateral margins and a yellow median stripe. Fore wings light brown, often with yellowish outlines of veins. Abdomen ventrally black, dorsally yellow, with 2 wide, parallel, black stripes. Female colored similarly but lighter. Face yellow, with numerous black transverse stripes. Costal margin of fore wings yellowish. Abdomen ventrally light. Male 5.1-5.7, female 6.6-7.1. – N Prim. – On ferns in mixed and spruce forests. Late June to early July. (Figs. 63: 15-20) **B. lineatulus** Anufr.
- Stylus parallel-sided, without widening in apical half 4 [p. 99]
4. Comparatively small. Penis in lateral view sharply and strongly widened at base. Males macropterous, females brachypterous. Males dark brown, with black shiny face and narrow yellow band on its turn into vertex. Vertex light brown or yellowish,

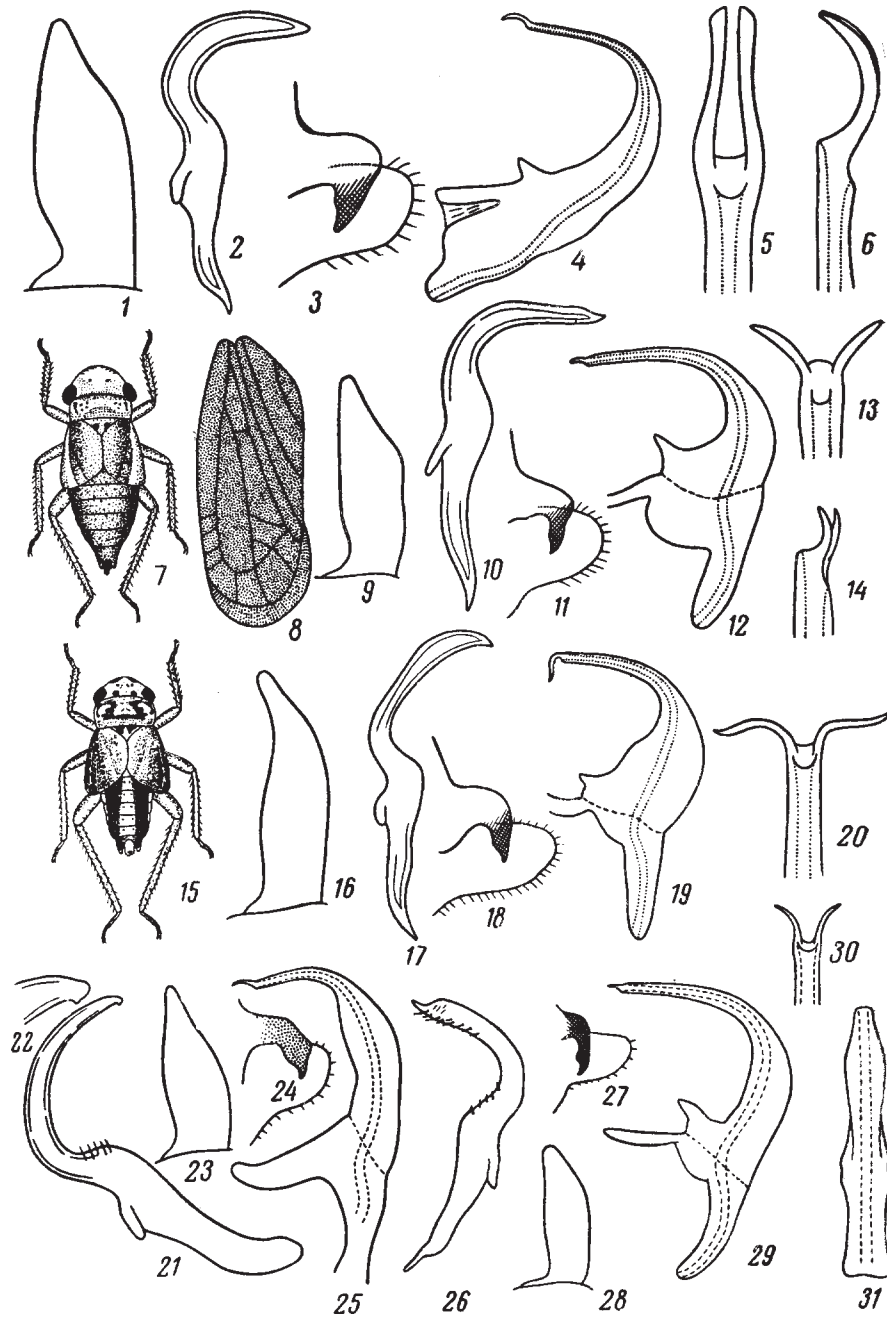


Fig. 63. Cicadines. Family Cicadellidae, subfamily Cicadellinae (after Anufriev and original).

1-6, *Bathysmatophorus shabliovskii*: 1, genital plate; 2, stylus; 3, process of pygofer lobe, view from inner side; 4, penis, lateral view; 5, 6, apex of penis (5, dorsal view; 6, lateral view); 7-14, *B. ledi*; 7, female; 8, fore wing; 9, genital plate; 10, stylus; 11, process of pygofer lobe, view from inner side; 12, penis, lateral view; 13, 14, apex of penis (13, dorsal view; 14, lateral view); 15-20, *B. lineatulus*: 15, male; 16, genital plate; 17, stylus; 18, process of pygofer lobe, view from inner side; 19, penis, lateral view; 20, apex of penis, dorsal view; 21-25, *B. kurilensis*: 21, penis, lateral view; 22, process of pygofer lobe, view from inner side; 23, genital plate; 24, stylus; 25, apex of stylus; 26-31, *B. golubevi*: 26, stylus; 27, process of pygofer lobe, view from inner side; 28, genital plate; 29, 31, penis (29, lateral view; 31, posterior view); 30, apex of penis, dorsal view.

- anteriorly with black spots sometimes fused into band; in the middle between ocelli, a large triangular spot; at hind margin, a pair of small round spots. Pronotum brown, with darker spots. Scutellum black, with yellowish margins and yellow longitudinal median stripe. Fore wings dark brown, with darker, nearly black veins. Abdomen from brown to black. Females lighter, with shiny yellowish face bearing transverse brown stripes. Vertex and pronotum light brown; scutellum brown, with yellow median stripe. Fore wings brown, with yellow stripe along costal margin widening backwards. Abdomen brown, with more or less noticeable dark specks. Male 5.2-5.9, female 5.9-6.7. – N Prim. – On *Ledum* in larch peatmoss bog forests. Late June to early July. (Figs. 63: 7-14) **B. ledi** Anufr.
- Comparatively large. Penis in lateral view gradually and weakly widened to base. In general appearance similar to *B. shabliovskii*. 7.2-8.1. – S Khab. – In mixed and small-leaved forests. June. (Figs. 63: 26-31). Holotype – male, S Khab., Komsomolskiy Nature Reserve near settlement Pivan', 6.VI.1974 (V. Golubev); paratypes – 16 males, 2 females and 1 larva, with the same label. Kept in Zoological Institute, Academy of Sciences of USSR (Leningrad), part of paratypes in Gorki State University **B. golubevi** Anufr. et Em., sp. n.

31. **Mileewa** Dist. Slender, dark-colored, with more or less smooth turn of face into vertex. Male. Genital segment elongate. Genital plates arcuate, with row of bristles on ventral surface and numerous setae in distal half. Lobes of pygofer with long process arising from ventral margin and running obliquely upwards along their inner surface. Styli with long apical part, the apex of which is L-shaped cut and bifurcate. Connective short, Y-shaped or T-shaped, widest at articulatory apophyses. Penis symmetrical. – 2 species.

1. Basic color of body black. Apices of pygofer processes hook-shaped. Lobes of pygofer without shortened bristles. Genital plates with large shortened bristle at apex. Penis bent at right angle in the middle; gonopore dorsal, situated on projection arising apical to bend. (Subgenus *Mileewa* Dist.). Black with yellowish scutellum. Fore wings with large light spot at apex of clavus and a pair of small spots at base of apical cells. 5.2-6.2. – Prim. – Korea, China, India, Java. – In glades, forest edges, under canopy of mixed and broad-leaved forests. Late June to mid-September. (Figs. 58: 3; 64: 1-9) **M. dorsimaculata** Mel.
- Basic color of body reddish brown dorsally. Genital plates without shortened bristles at apex. Lobes of pygofer with 4 shortened bristles. Penis nearly straight, compressed laterally, with 2 pairs of processes near apex; gonopore subapical. (Subgenus *Elemia* Anufr. et Em., subgen. n. Type species *M. ussurica* Anufr.). Reddish brown, with barely noticeable yellowish specks. Vertex with yellow longitudinal stripe, 2 pairs of yellow stripes at anterior margin and a pair of whitish small spots at boundary with pronotum. Fore wings with carmine red and lightened areas at apex of clavus and at base of apical cells. 5.6-6. – Prim. – Under canopy of broad-leaved forests. Early September. (Figs. 64: 10-14) **M. (E.) ussurica** Anufr.

32. **Kolla** Dist. Slender, with ocelli situated at about equal distance from base and anterior margin of vertex. Male. Genital valve short, trapezoid, [p. 100] with posterior margin somewhat concave at the middle. Genital plates triangular, with apices somewhat slanting upwards and submarginal row of bristles; their inner margins concave, not closed in the middle part. Lobes of pygofer elongate, widely rounded at apex, with numerous bristles on dorsal margin, and, in apical third of lobes, with a small process arising from their ventral margin; the process slanting upwards and

running along inner surface of lobes. Styli very short, with wide base and hook-shaped, pointed apex. Connective Y-shaped, with long narrow base and long narrow articulatory apophyses. Penis symmetrical, with short base and short shaft flattened dorsoventrally; base of penis articulated with anal tube by band-shaped, well sclerotized appendage (so called phragma). In USSR 1 species.

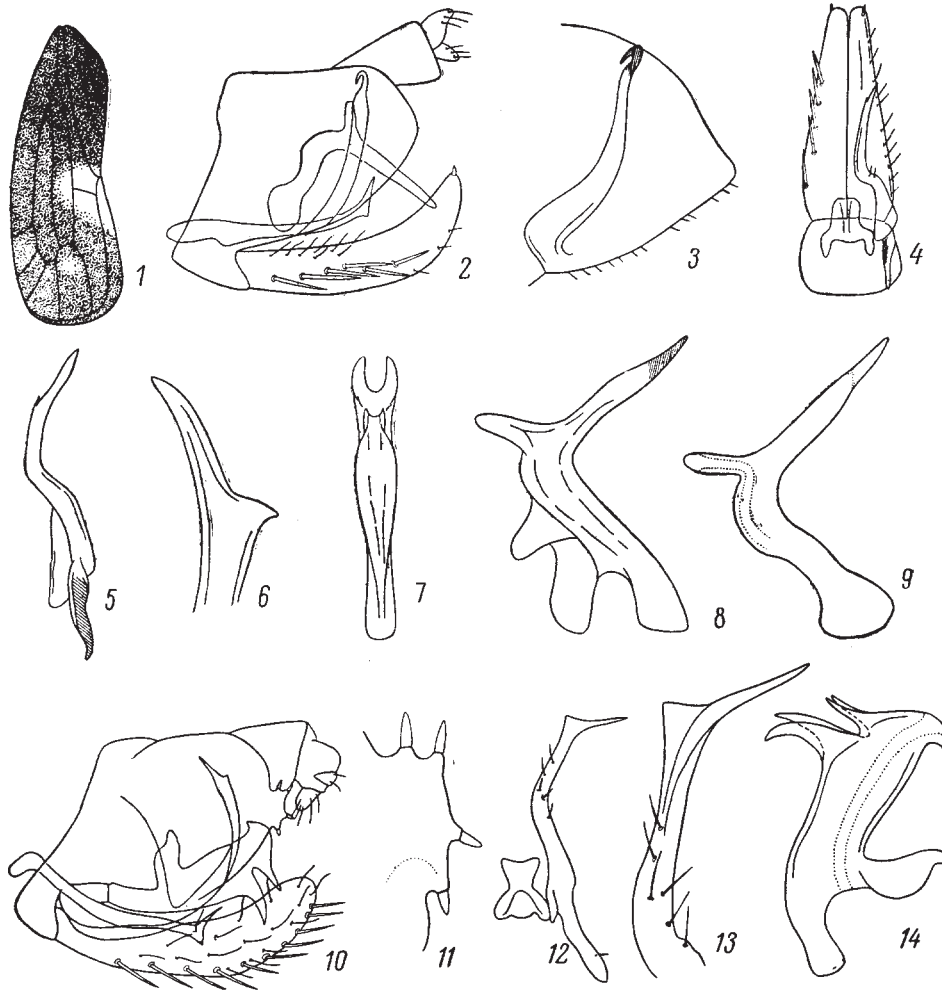


Fig. 64. Cicadines. Family Cicadellidae, subfamily Cicadellinae (after Anufriev and Vilbaste).

1-9, *Mileewa dorsimaculata*: 1, fore wing; 2, genital block of male, lateral view; 3, lobe of pygofer, view from inner side; 4, genital valve, genital plates, connective and stylus, dorsal view; 5, stylus; 6, apex of stylus; 7-9, penis (7, dorsal view; 8, 9, lateral view); 10-14, *M. ussurica*: 10, genital block of male, lateral view; 11, apex of pygofer lobe; 12, connective; 13, apex of stylus; 14, penis, lateral view.

1. Black, covered with blue grayish pruinosity. Male with face nearly entirely black, frontoclypeus, middle part of anteclypeus and lora black; genae and lateral margins of anteclypeus yellow or orange like. In female, face yellow or yellow orange; [p. 101] frontoclypeus with black spot at apex and often with black longitudinal darkening at lower margin. Vertex in male black, sometimes with light areas lateral to ocelli and in the middle at anterior margin; in female, light areas usually more expressed, greenish yellow; females having only 2 or 3 black spots

at anterior margin occur sometimes. Pronotum and scutellum from entirely black in male and strongly pigmented females to greenish in weakly pigmented females. Fore wings in male entirely black, with blue grayish pruinosity, in female, from black with greenish stripe along costal margin to entirely greenish. 5.5-7.2. – ?Khab., Amur., Prim.; Transbaikal. – Korea, NE and E China, probably Japan, Mongolia, SE Asia, India, Australia. – In forest herbage and meadows. Late May to late August. (Figs. 65: 4-7; 66: 2) **K. atramentaria** Motsch.

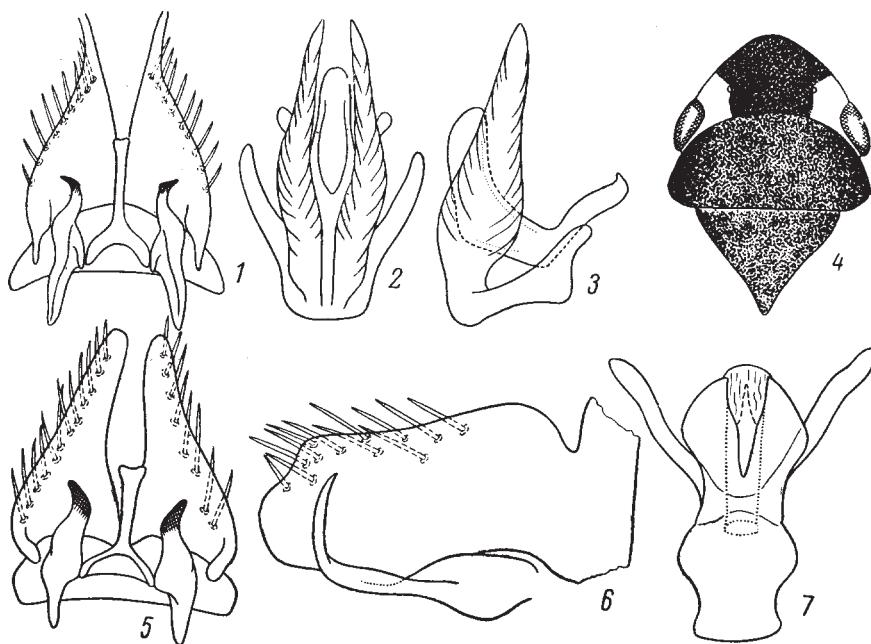


Fig. 65. Cicadines. Family Cicadellidae, subfamily Cicadellinae (after Anufriev).

1-3, *Cicadella viridis*: 1, genital valve, genital plates, connective and styli, dorsal view; 2, 3, penis (2, posterior view; 3, lateral view); 4-7, *Kolla atramentaria*: 4, anterior part of body; 5, genital valve, genital plates, connective and styli, dorsal view; 6, lobe of pygofer, view from inner side; 7, penis, dorsal view.

33. **Cicadella** Latr. Slender, with large head; ocelli situated nearer to base of vertex than to its anterior margin. Male. Genital valve very short, trapezoid. Genital plates elongate triangular, closed, with marginal row of bristles and thin apices. Pygofer elongate, with lobes narrowly rounded at end and short bristles irregularly spread in apical part. Connective Y-shaped, with long narrow base and long, widely diverging, narrow articulatory apophyses. Styli comparatively short, with hook-shaped pointed apical part. Penis symmetrical; its base wide, with a pair of long, wide, knife-shaped processes; shaft arcuate, slightly widened at the middle. The genus comprises 2 species. – 1 species.

1. Light green. Face yellow, with light brown transverse bands on frontoclypeus and small black spots on antennae. Vertex yellow, with a pair of black spots between ocelli. Pronotum anteriorly yellowish, posteriorly pale green. Scutellum

yellow or yellow green. Fore wings green, [p. 102] with light or grayish costal margin and apical cells. 6-8.4. – Everywhere. – Whole non-tropical Eurasia and N Africa. – In meadow and forest tall herbaceous vegetation, in damp meadows, glades, light forests. Widely polyphagous, preferring grasses and other monocotyledonous plants. In USSR from 1 to 3 generations, eggs laid under bark of tree twigs and trunks overwintering. Injurious at egg laying. Late May to early October. (Figs. 65: 1-3) **C. viridis* L.

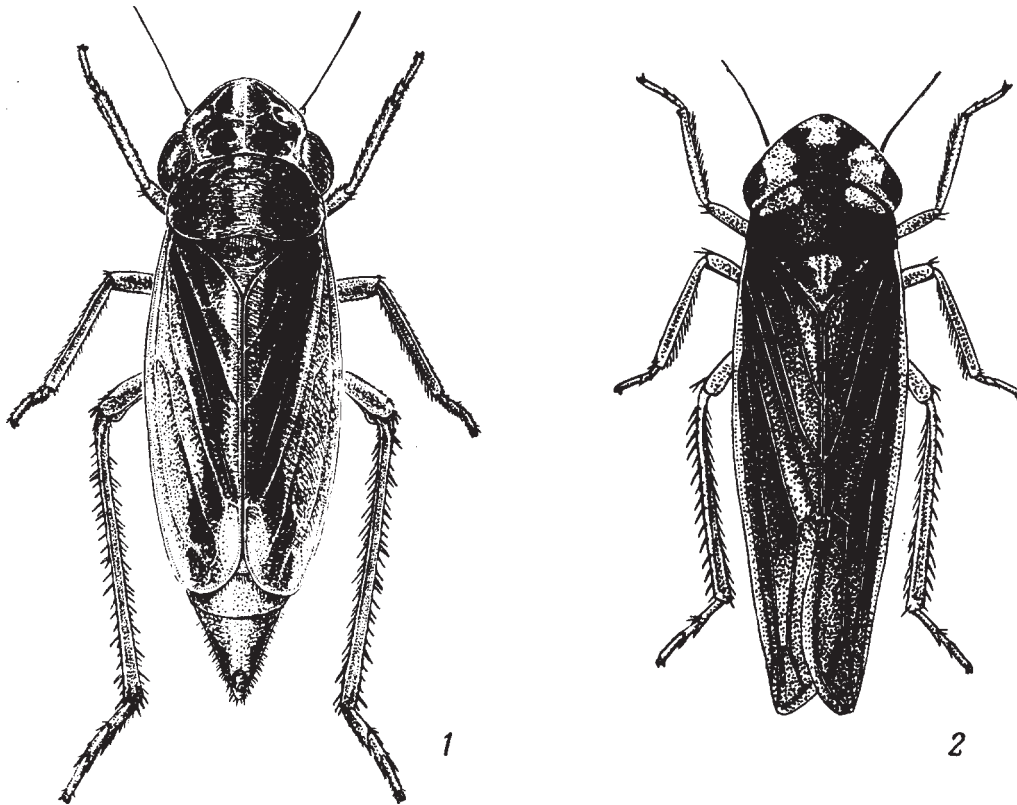


Fig. 66. Cicadines. Family Cicadellidae, subfamily Cicadellinae (original).

1, *Evacanthus interruptus* ; 2, *Kolla atramentaria*.

Subfamily TYPHLOCYBINAE

Tribe *ALEBRINI*

34. *Alebra* Fieb. Slender, dark-colored; dendrophilous. Male. Genital segment, as a rule, weakly sclerotized. Lobes of pygofer divided by deep excision on posterior margin into two parts; lower part much longer than upper one; posterior margins of upper parts well sclerotized. Genital plates with sharp constriction beyond middle; their apices slanting upwards and bearing a bunch of long fine setae; all bristles situated near ventromedial margin. Styli with subapical widening and apex claw-shaped, bent downwards and laterad. Connective elongate, with long articulatory apophyses directed forwards. Penis with long tubular shaft gradually narrowing to pointed apex; gonopore subapical, dorsal. Female. Subgenital sternite widely parabolic and projected backwards, sometimes with weakly noticeable incision in the middle. – 2 species (in USSR 4). [p. 103]

1. Upper parts of pygofer lobes gradually narrowing to dorsal angle, which is slightly slanting upwards and inwards. Unicolorous yellow. 3.6-3.8. – Prim.; Tuva, Kazakhstan, European part of USSR. – W Europe (W Germany, Poland). – On trees and shrubs of Rosaceae in mixed and broad-leaved forests. July. (Figs. 67: 8-10) **A. neglecta** W. Wagn.

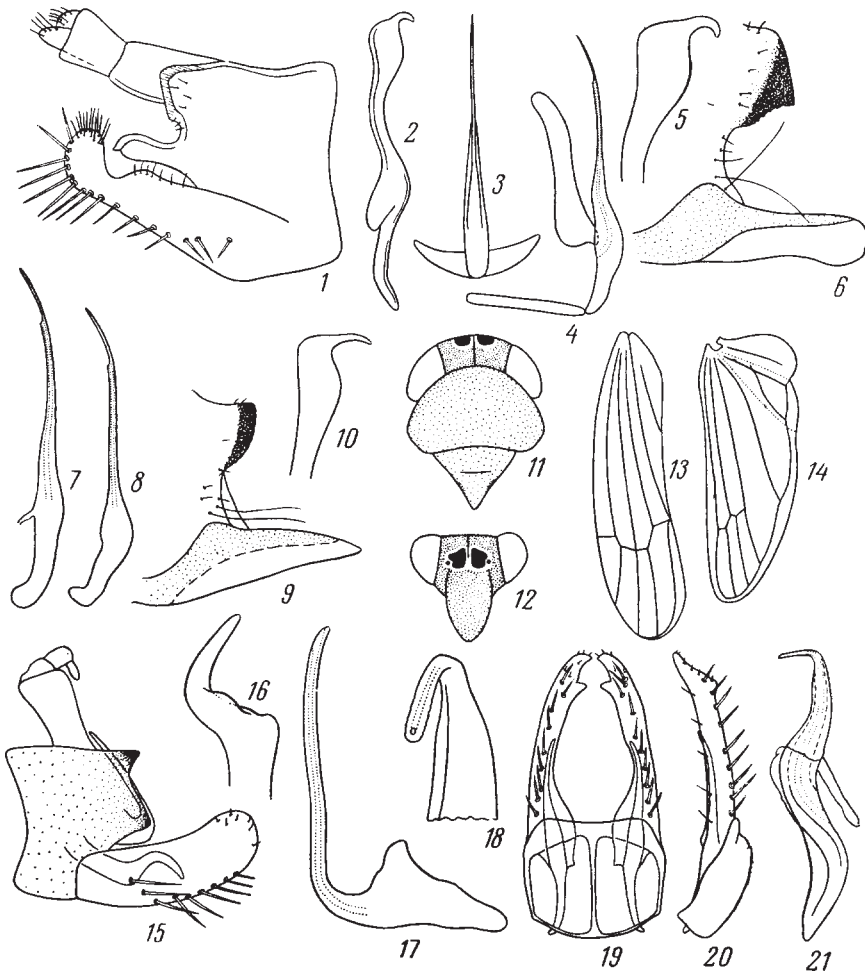


Fig. 67. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev, Dworakowska, Vilbaste, and Vidano).

1-7, *Alebra pallida*: 1, genital block of male, lateral view; 2, stylus; 3, 4, penis (3, ventral view; 4, lateral view); 5, apex of stylus; 6, apex of pygofer lobe; 7, penis, lateral view; 8-10, *A. neglecta*: 8, penis, lateral view; 9, apex of pygofer lobe; 10, apex of stylus; 11-17, *Arbelana ulmi*: 11, anterior part of body; 12, head, anterior view; 13, fore wing; 14, hind wing; 15, genital block of male, lateral view; 16, apex of stylus; 17, penis, lateral view; 18-21, *Forcipata citrinella*: 18, apex of penis; 19, genital block of male, ventral view; 20, genital valve, genital plate and stylus, lateral view; 21, penis, lateral view.

- Upper parts of pygofer lobes wider, with truncate posterior margin, with large projection slanting inwards from below; their upper angles not slanting upwards and inwards. 3.8-3.9. – Prim. – Korea, China (Shanxi). – On *Quercus mongolica* in mixed and broad-leaved forests. Late June to mid-August. (Figs. 67: 1-7)
..... **A. pallida** Dwor.

35. **Arbelana** Anufr. (*Arbela* Anufr.). Slender, brown-colored. Male. Genital segment evenly well sclerotized. Lobes of pygofer with shallow incision on posterior margin dividing each lobe into 2 parts of equal length. Genital plates in lateral view more or less parallel-sided, with widely rounded apex; [p. 104] bristles in irregular row sharply turning in basal part to dorsal margin. Styli with sharp subapical angle and crescent-shaped apex bent downwards. Connective transverse; its articulatory apophyses directed laterad. Penis with long tubular shaft evenly thick along the whole length, blunt at apex. Gonopore subapical, ventral. Female. Subgenital sternite widely parabolic or semicircular on posterior margin, with weak incision in the middle. Monotypic genus.

1. Yellowish or light castaneous to dark brown. Face yellow or brownish; vertex yellow castaneous, at the turn into face with 2 large quadrangular black spots situated on a lighter field, compared with general background. Pronotum and mesonotum unicolorous brown, often lighter to hind margin. Hemelytra from yellowish castaneous to dark brown. 4.3-4.7. – Prim. – On *Ulmus* in broad-leaved and mixed forests. Mid-July to late August. (Figs. 67: 11-17) **A. ulmi** Anufr.

Tribe *DIKRANEURINI*

36. **Forcipata** DeL. et Caldwell. Slender, yellow or grayish, on sedges and grasses. Head in the middle slightly longer than at eyes, rounded at apex, as wide as pronotum or somewhat wider. Hemelytra long and narrow; apical cells long. Male. Genital valve nearly square, inside with median longitudinal carina. Pygofer short, with truncate posterior margin, without processes. Genital plates narrow, long, widely spaced, combined look pincers-like, with longitudinal row of bristles. Styli with long needle-shaped apices. Connective in the shape of narrow transverse plate. Penis symmetrical, with long base and shaft bent and forming an angle; apical part of shaft usually flattened and denticulate, rather often widened; gonopore subapical, ventral. Female. Subgenital sternite on posterior margin with 2 deep excisions dividing it into 3 lobes, the middle of them the greatest, U-shaped. In USSR 4 species (in Palearctic 6).

LITERATURE. Vidano, C. Sulle *Forcipata* transalpine e cisalpine con descrizione di specie nuove (Homoptera, Typhlocybidae). Boll. Zool. Agr. Bachic. 1965. Ser. 2, vol. 6. P. 37-60.

1. Genital plates comparatively short; length of their part projecting outside limits of genital valve not more than 4 times the least width near the middle. Subapical tooth of genital plate situated on its dorsal surface, near lateral margin, and therefore barely visible from below. Penis at apex with lacerated denticulate widening. Grayish yellow. 3.2-4. – Transbaikal, Siberia, Kazakhstan, N and C European part of USSR. – Mongolia, N and C Europe. – On forest sedges under canopy of forests and in their edges. (Figs. 68: 1-4) **F. forcipata** Fl.
- Genital plates long; length of their part projecting outside limits of genital valve more than 6 times the least width near the middle. Subapical tooth of genital plate situated on ventromedial or medial surface and therefore well visible from below 2
2. Subapical tooth of genital plate situated on ventromedial surface and therefore well visible from below and in lateral view 3
- Subapical tooth of genital plate situated on medial surface and therefore well visible only from below. Penis without widening at apex in area of gonopore. Unicolorous yellow. 3.3-4. – Kamch.; Altai. – Korea, Australia, N Italy. – Late July to late August. (Figs 68: 5-8) **F. major** W. Wagn.

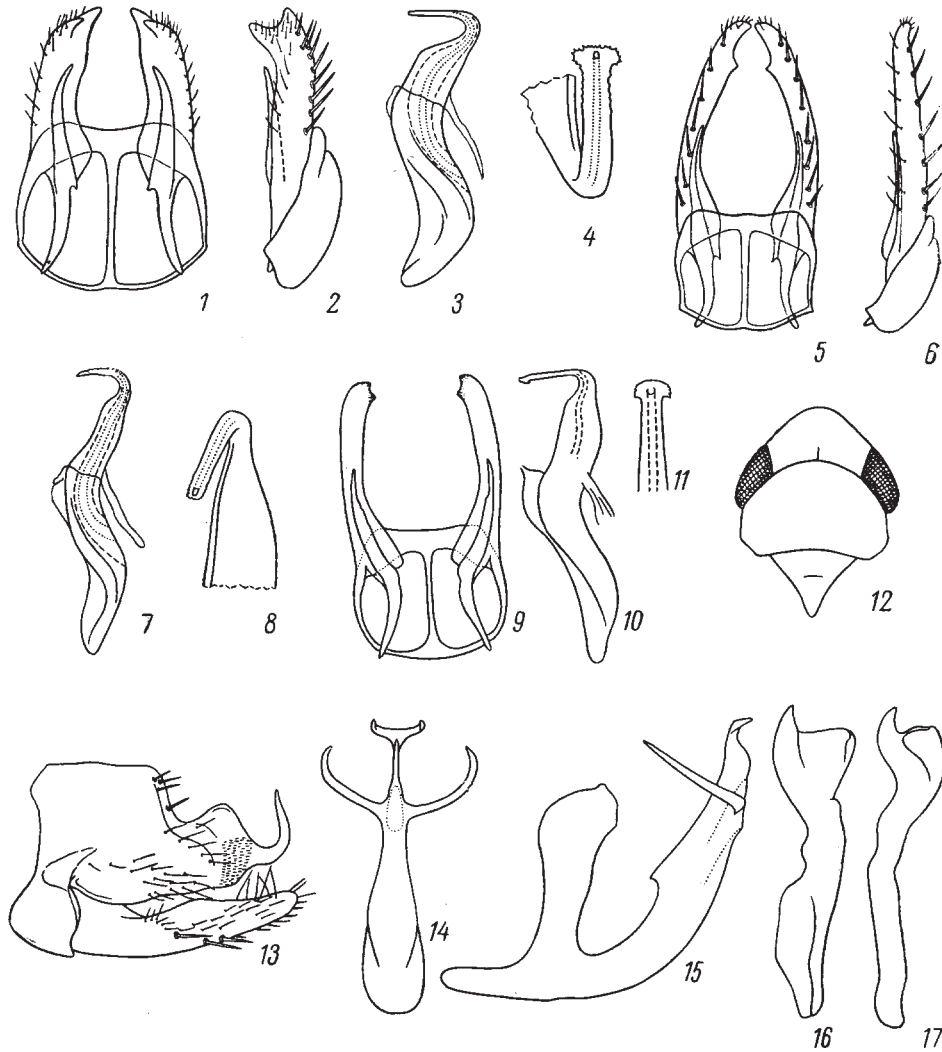


Fig. 68. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev, Knight, and Vidano).

1-4, *Forcipata forcipata*: 1, 2, genital valve, genital plates and stylus (1, dorsal view; 2, lateral view); 3, penis, lateral view; 4, apex of penis; 5-8, *F. major*: 5, genital block of male, lateral view; 6, genital valve, genital plate and stylus, lateral view; 7, penis, lateral view; 8, apex of penis; 9-11, *F. glaucans*: 9, genital valve, genital plates and styli, dorsal view; 10, penis, lateral view; 11, apex of penis; 12-17, *Dikraneura aridella*: 12, anterior part of body; 13, genital block of male, lateral view; 14, 15, penis (14, ventral view; 15, lateral view); 16, 17, stylus.

3. Shaft of penis without widening at apex, lacerated denticulate. 3.2-3.7. – Mag., Kamch., Khab., Amur., Prim., Sakh., Kur.; Siberia, Kazakhstan, Middle Asia, European part of USSR. – Korea, N China (Shaanxi), Mongolia, N and C Europe, [p. 105] N America. – On forest and river bank sedges. Mid-June to late September. (Figs. 67: 18-21) **F. citrinella** Zett.
- Apex of penis shaft with denticulate widening. Yellowish gray. 3.7-3.8. – Khab., N Prim. – On forest sedges in mountain coniferous and coniferous-broadleaved forests. Mid-July to mid-September. (Figs. 68: 9-11) **F. glaucans** Anufr.

37. **Dikraneura** Hardy. Moderately slender, yellowish green, sometimes with reddish longitudinal stripes. Head in the middle angular, projecting. Male. Genital plates triangular, closed, with marginal row of bristles gradually decreasing to apex.

Lobes of pygofer with posteroventral angle stretched into long process slanting upwards. Connective W-shaped. [p. 106] Styli with widened and truncate at end apical part bearing lateral angular projections. Penis symmetrical; its shaft often compressed laterally, with a pair of subapical processes lateral to gonopore, a pair of apical processes and dorsal projection at the middle; gonopore subapical, ventral. Female. Subgenital sternite rounded trapezoid, with slight incision in the middle of posterior margin. – 2 species (in USSR and Palearctic 3).

LITERATURE. Knight, W. J. A revision of the Holarctic genus *Dikraneura* (Homoptera: Cicadellidae). Bull. Brit. Mus. (Nat. Hist.). Entomol. 1968. Vol. 21, no. 3. P. 6-201.

1. Processes of pygofer slanting upwards. Apical processes of penis diverging, situated on plate-shaped postgonoporal part, which is comparatively short, and wide in lateral view. Whitish yellow, with grayish green or orange tint. 2.9-3.5. – Khab., Amur., Prim.; Tuva, Kazakhstan, N European part of USSR. – Mongolia, W Europe from Scandinavian countries to Austria and N Italy. – Late June to mid-September. (Figs. 68: 12-17) **D. aridella** J. Sahlb.
- Processes of pygofer slanting backwards and upwards. Apical processes of penis parallel, situated on long and comparatively narrow (in lateral view) postgonoporal part. 2.8-3. – S Mag., N Khab. – In grass associations. August. (Figs. 69: 1-3) **D. ossioides** Anufr.

38. **Aruena** Anufr. Moderately slender, somewhat flattened dorsoventrally. Male. Genital segment strongly flattened dorsoventrally. Lobes of pygofer at apex with long processes slanting inwards to each other and crossing. Genital valve very short. Genital plate long, gradually narrowing to apex, with several marginal bristles at base and a projection on inner side at outer margin. Connective plate-shaped, strongly transverse, not less than 5 times as wide as long. Styli at apex with long, slightly S-shaped inner tooth and a short outer tooth. Penis with arcuate shaft compressed laterally and a pair of long processes arising from base; gonopore subapical, ventral. Female. Posterior margin of subgenital sternite widely arcuate. Monotypic genus.

1. Yellow; vertex with white hypodermal pattern. Pronotum anteriorly with white spots fusing together. Mesonotum with 2 white, almost parallel longitudinal stripes and white transverse stripe before apex. Hemelytra yellowish, semi-hyaline, with round castaneous spot in the middle of inner apical cell and weakly visible shading in outer apical cell. 3.7-3.8. – Prim. – In herbage with grasses and sedges under canopy of broad-leaved and mixed forests. Late July, late August. (Figs. 69: 4-9) **A. apicimaculata** Anufr.

39. **Vilbasteana** Anufr. Slender, with weakly projecting forward, rounded vertex. Hemelytra with stalked 2nd apical cell. Male. Lobes of pygofer without bristles, widely rounded at apex, on dorsal margin under anal tube with rectangular excision. Genital plates of moderate length, about twice as long as genital valve, their outer margin concave (see from below); small bristles in one oblique row running from the base of the dorsal margin to the middle of ventral margin. Styli with widened and truncate at end apical part bearing lateral angular projections, the inner of which much stronger developed than outer one. Connective T-shaped; its base and branches of about equal length; base somewhat widened backwards. Shaft of penis tubular, bent semicircularly, somewhat widened at base; gonopore apical. Female. Posterior margin of subgenital sternite widely arcuate. Monotypic genus. [p. 107]

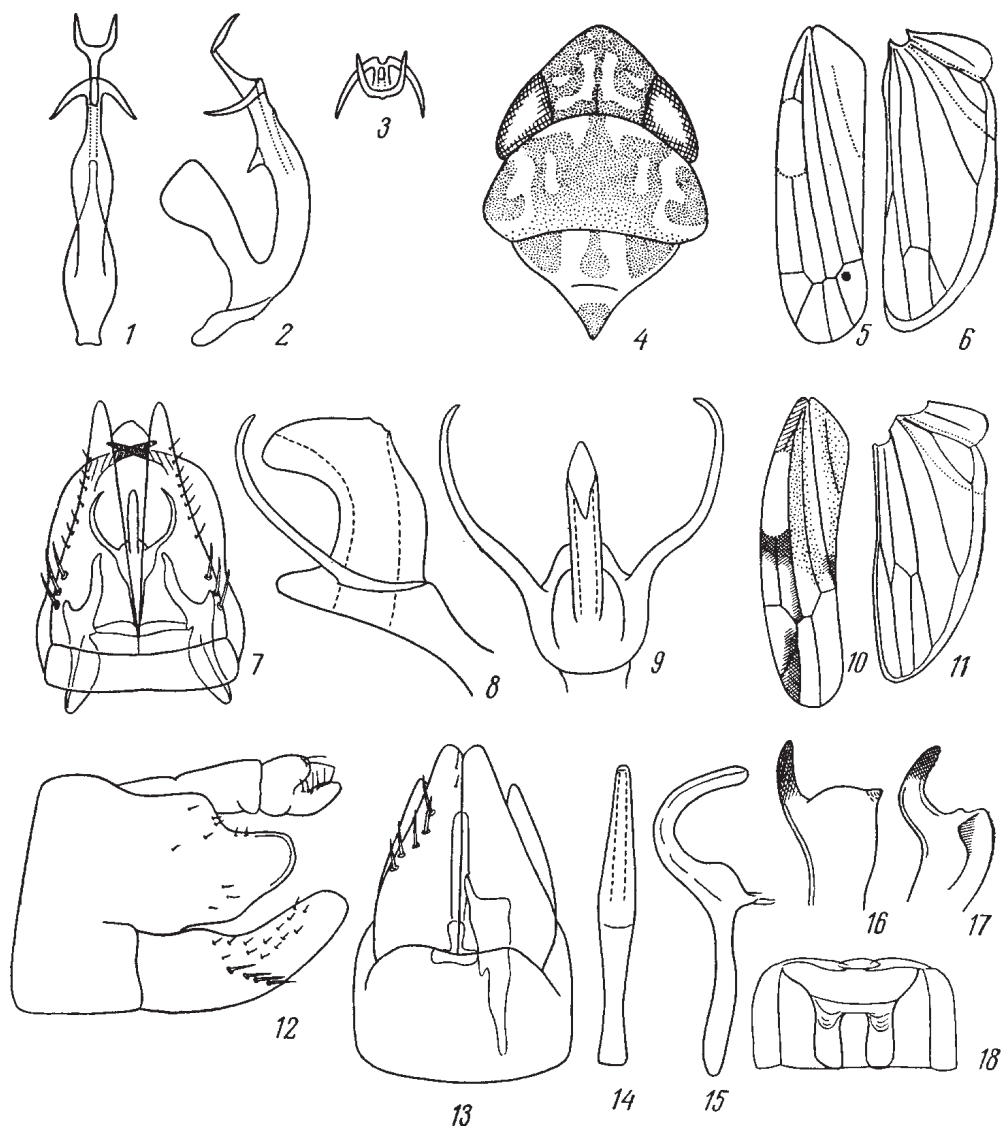


Fig. 69. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev, Vilbaste, and original).

1-3, *Dikraneura ossioides*: 1, 2, penis (1, ventral view; 2, lateral view); 3, apex of penis, posterior view; 4-9, *Aruena apicimaculata*: 4, anterior part of body; 5, fore wing; 6, hind wing; 7, genital block of male, ventral view; 8, 9, penis (8, lateral view; 9, ventral view); 10-18, *Vilbasteana oculata*: 10, fore wing; 11, hind wing; 12, 13, genital block of male (12, lateral view; 13, ventral view); 14, 15, penis (14, ventral view; 15, lateral view); 16, 17, apex of stylus; 18, apodemes of abdomen.

1. Yellow orange. Vertex yellow, with a pair of round brown spots. Hemelytra with brownish darkening along costal margin and at apex of clavus; claval suture lightened. 4.4-4.9. – S Khab., Prim. – On *Syringa amurensis* in valley broad-leaved and mixed forests. Late June, early August to mid-September. (Figs. 69: 10-18) .

..... V. *oculata* Lindb.

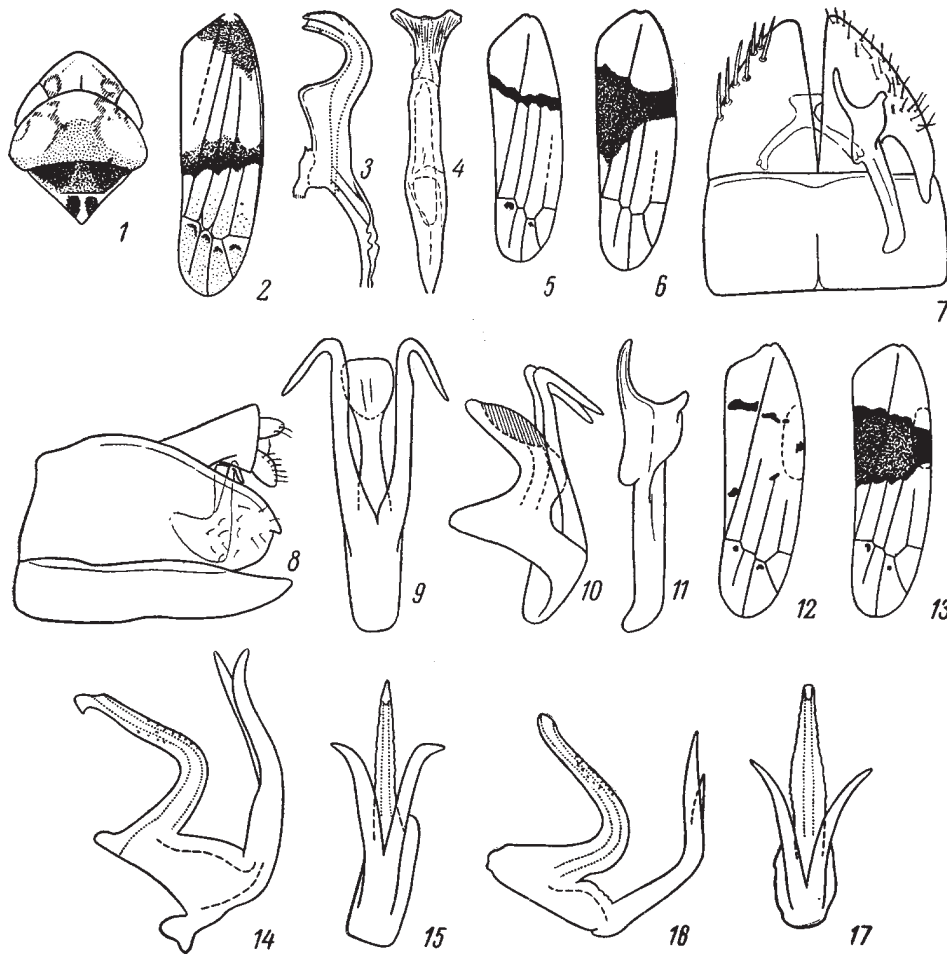


Fig. 70. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Dworakowska and Vilbaste).

1-4, *Naratettix zini*: 1, anterior part of body; 2, fore wing; 3, 4, penis (3, lateral view; 4, ventral view); 5-11, *N. koreanus*: 5, 6, fore wing, variation of pattern; 7, genital block of male (left side: dorsal; right side: ventral); 8, the same, lateral view; 9, 10, penis (9, ventral view; 10, lateral view); 11, stylus; 12-17, *N. imornatus*: 12, 13, fore wing, variation of pattern; 14-17, penis (14, 16, lateral view; 15, 17, ventral view).

40. *Naratettix* Mats. Yellow, somewhat flattened dorsoventrally, often with orange pattern on vertex, pronotum and mesonotum, brown band before the middle of hemelytra and brown spots in their apical cells; one or another part of pattern may be not expressed. On hemelytra, *Cu* in apical area not reaching to wing margin, therefore, two inner apical cells separated only in basal half. Male. Genital valve rather long, about half as long as wide. Genital plates triangular, closed, with marginal row of bristles, rather short, [p. 108] about 1.5 times as long as genital valve. Pygofer elongate; its lobes gradually narrowing to pointed and slanting downwards posterior angle. Connective Y-shaped, with short base and long narrow branches; diverging on a wide arc. Styli with widened and truncate at end apical part, bearing on inner margin a tooth strongly projecting backwards. Penis symmetrical, with wide base and arcuate shaft, often also a pair of long processes arising from base; gonopore subapical, ventral. Female. Subgenital sternite rounded trapezoid, transverse, its posterior margin in the middle rather often slightly projecting backwards, bearing weak incision opposite valvulae of ovipositor. – 3 species (in Palearctic 12).

LITERATURE. Dworakowska, I. Review of the genus *Naratettix* Mats. (Auchenorrhyncha, Cicadellidae, Typhlocybinae). Bull. Acad. Pol. Sci. Ser. Sci. biol. 1979. Vol. 27, no. 8. P. 645-652.

1. Scutellum, base of hemelytra and often posterior margin of pronotum castaneous brown. Penis without processes arising from base. 3.4-3.7. – S Prim. – Korea, China (Beijing). – On shrubs in mixed and broad-leaved forests. June, August. (Figs. 70: 1-4) **N. zini** Dwor. [p. 109]
- Scutellum and base of hemelytra yellow. Penis with processes arising from base 2
2. Castaneous band before the middle of hemelytra (if developed) with concave anterior margin. Processes of penis bent recurrently; shaft around gonopore widened spoon-like. 3.3-3.7. – S Khab., Prim. – Korea. – Under canopy of mixed and broad-leaved forests on trees and shrubs. May to October. (Figs. 70: 5-11) **N. koreanus** Mats.
- Castaneous band on hemelytra (if developed) with more or less convex anterior margin. Processes of penis not bent recurrently; shaft without widening at apex. 3.5-3.8. – S Kur. – Japan. – On shrubs, in mixed and broad-leaved forests. June to August. (Figs. 70: 12-17) **N. inornatus** Mats.

41. **Micantulina** Anufr. Slender, white or yellowish, with 3 black spots along claval suture of hemelytra. Male. Lobes of pygofer without processes and bristles, more or less obliquely truncate posteriorly. Genital plates of moderate length, with submarginal row of bristles. Connective Y-shaped; its base and branches of about equal length. Penis with a pair of processes arising from base; gonopore subapical, ventral. Female. Posterior margin of subgenital sternite widely arcuate, often with wide excision in the middle. The genus comprises 3 species.

LITERATURE. Knight, W. J. A re-description of *Dikraneura micantula* (Zett.) (Homoptera: Cicadellidae) and closely related new species from Southern Finland. Ann. Mag. Natur. Hist. 1965. Ser. 13, vol. 8. P. 345-350.

1. Pronotum darkened laterally, at least at posterior margin; a zigzag-shaped smoky castaneous or black stripe present rather often between black spots on hemelytra. Penis with shaft narrow in lateral view and weakly diverging, wide; processes arising from base. 3.1-3.4. – Amur., Prim.; W Sayan Mts. – Mongolia. – On forest sedges in coniferous and mixed forests. (Figs. 71: 19-22) **M. nigrohumeralis** Anufr.
- Pronotum laterally light; hemelytra between black spots without dark stripe. Penis either with shaft narrow in lateral view and more or less parallel narrow processes or with wide shaft and strongly diverging laterally, wide processes 2
2. Shaft of penis in lateral view wide and short, only somewhat longer than wide, processes of penis strongly diverging laterad, straight, widened and straightly truncate at apex. Apex of stylus straightly truncate between apical teeth. Sternites of female abdomen more or less black; base of subgenital sternite usually also blackened. 3.1-3.5. – S Khab.; Siberia, Altai, Kazakhstan, Kirghizia, Georgia, N European part of USSR. – Mongolia, N and C Europe, Algeria. – On forest and river bank sedges. Late July to early September. (Figs. 71: 1-11) **M. micantula** Zett.
- Shaft of penis in lateral view narrow and long, several times as long as wide; processes of penis more or less parallel, gradually narrowing to pointed apices. Apex of stylus lobe-like projecting backwards between apical teeth. Sternites of female abdomen yellow, subgenital sternite entirely yellow. 2.9-3.3. – N Khab. – Mongolia, Finland. – August. (Figs. 71: 12-18) **M. pseudomicantula** Knight

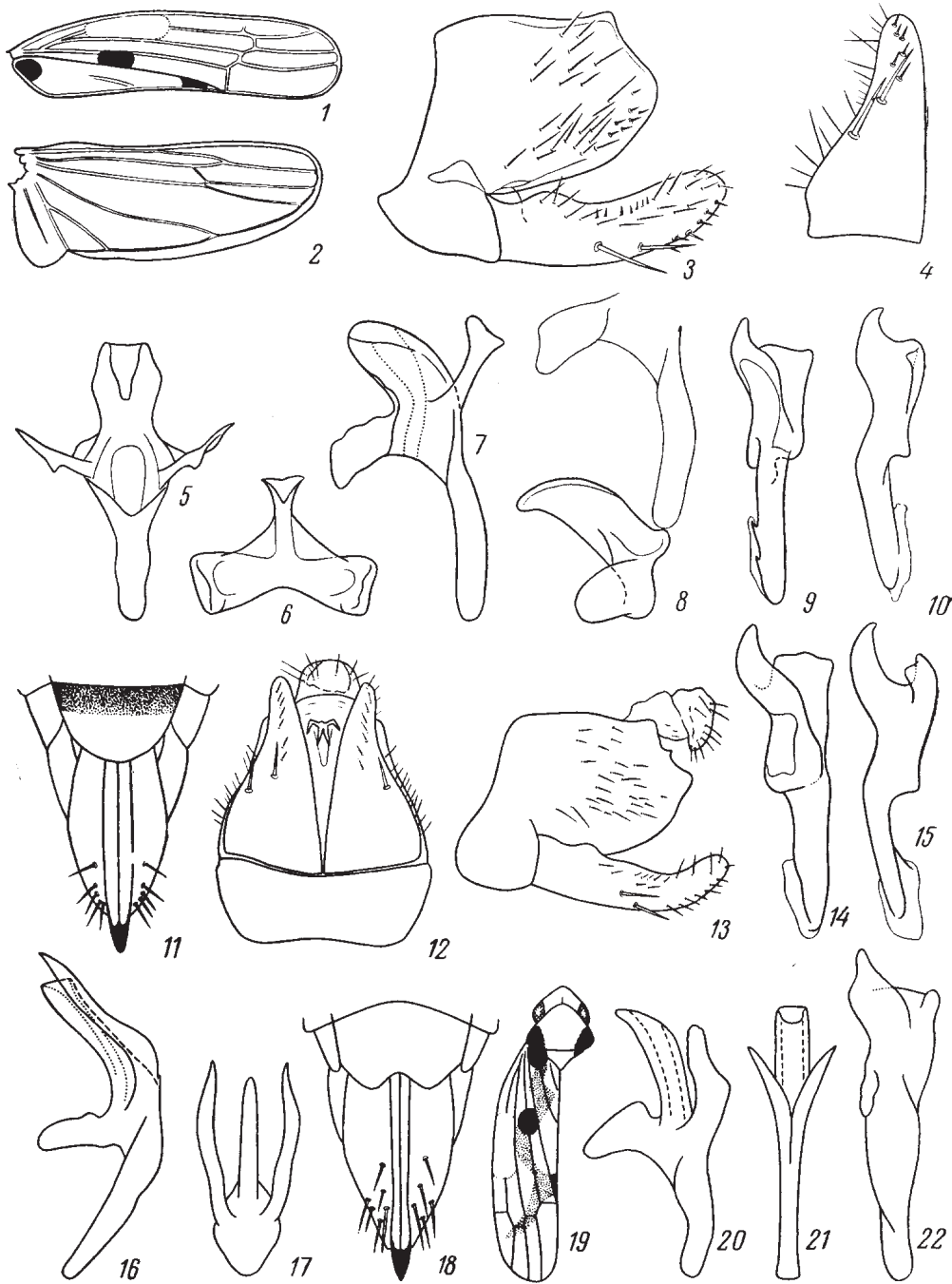


Fig. 71. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev, Knight, and Ossiannilsson).

1-11, *Micantulina micantula*: 1, fore wing; 2, hind wing; 3, genital block of male, lateral view; 4, genital plate, ventral view; 5, penis, ventral view; 6, connective; 7, penis, lateral view; 8, connective and base of penis, lateral view; 9, 10, stylus; 11, apex of female abdomen, ventral view; 12-18, *M. pseudomicantula*: 12, 13, genital block of male (12, ventral view; 13, lateral view); 14, 15, stylus; 16, 17, penis (16, lateral view; 17, ventral view); 18, apex of female abdomen, ventral view; 19-22, *M. nigrohumeralis*: 19, general appearance; 20, 21, penis (20, lateral view; 21, ventral view); 22, stylus.

42. **Dicraneurula** Vilb. Small, yellow-colored, with vertex strongly stretched forward and in the middle about as long as pronotum. On hemelytra, *Cu* in apical area not reaching wing margin, therefore two inner apical cells separated only in basal half. Male. Genital valve very narrow, strongly transverse, somewhat narrowed in the middle. Genital plates rather long, with several bristles at base in submarginal row; apices of genital plates sharply stretched inwards and upwards, therefore, their posterior margin looks truncate from below. Pygofer with lobes widely rounded on posterior margin and having [p. 111] small subapical projection on ventral margin; apical part of lobes with spinulate sculpture, at dorsal margin with several large bristles. Connective in the shape of narrow transverse plate. Styli with apical part widened and truncate at end bearing laterally well expressed projections directed backwards; inner projection very wide, half as wide as the greatest width of stylus. Penis with small base and undulated tubular shaft; gonopore subapical, ventral. Female. Posterior margin of subgenital sternite widely parabolic, rather often with narrow lateral excisions and an excision in the middle. Monotypic genus.

1. Unicolorous yellow, with whitish longitudinal stripe on vertex, pronotum and mesonotum. 2.3-2.7. – Prim. – Korea, ?China (Shaanxi). – On forest sedges. Late June to late September. (Figs. 72: 1-9)
..... **D. exigua** Vilb. (?*Togaricrania huanglongensis* Chou et Ma)

43. **Wagneriala** Anufr. Small, yellow-colored, with vertex stretched forward. Inner apical cells of hemelytra completely separated, since *Cu* in apical area reaches wing margin. Male. Lobes of pygofer without processes and bristles. Genital plates below with concave lateral margins, with few marginal bristles at the middle; the plates slightly slanting upwards approximately from the middle. Styli with narrow inner tooth at apex. Connective plate-shaped, trapezoid, very short and wide. Penis without processes, more or less arcuate; gonopore subapical, ventral. Female. Subgenital sternite on posterior margin parabolic, often with more or less wide and deep unpaired or paired excision in the middle. – 1 species (in USSR 3, in Palearctic 5).

1. Shaft of penis nearly straight. Inner apical tooth of stylus more or less directed backwards. Subgenital sternite in female without deep excision on posterior margin. 2.5-2.9. – Khab., Prim. – W Europe (Austria). – Under forest canopy on sedges. Mid-July to late September. (Figs. 72: 10-16) **W. franzi** W. Wagn.
- Shaft of penis arcuate. Inner apical tooth of stylus slanting outwards. Subgenital sternite of female with deep, rounded rectangular excision in the middle of posterior margin. 2-2.5. – Transbaikal, Altai, European part of USSR (Baltia, Centre). – Mongolia, N and C Europe. – On forest sedges. July. (Figs. 72: 17-22) **W. minima** J. Sahlb.

44. **Notus** Fieb. Slender, golden yellow; on marsh and river bank sedges. Vertex projecting forward, at apex angular or rounded blunt. Male. Genital valve very long, nearly 1.5 times as long as wide. Genital plates very short, triangular, with convex outer margin and few bristles in marginal row. Pygofer of moderate length; its lobes gradually narrowing to pointed posterior angle. Connective in the shape of turned over and strongly stretched letter W, with long spine arising backwards from its middle. Styli with apex divided into two teeth; the longer inner tooth bent upwards and slightly forward; the short outer tooth bent backwards and laterad. Penis with large base bearing two articulatory processes, the first of these connected with anal tube, and the second one with connective; two arcuate shafts arise between these processes, each of both shafts bearing subapical gonopore. Female. Subgenital sternite (VII) divided into two lateral plates. – 3 species (in USSR 4, in Palearctic 5 species).

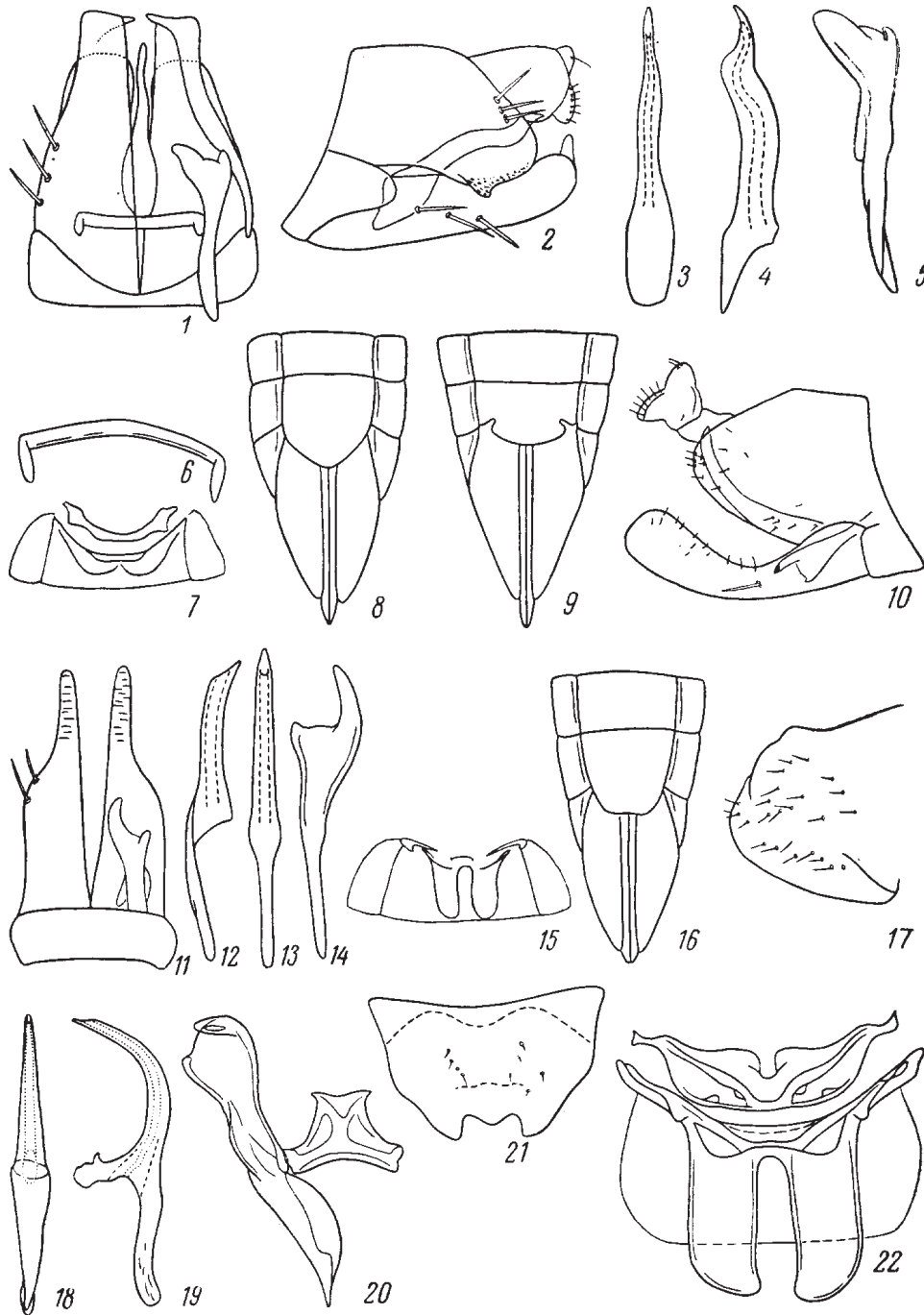


Fig. 72. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Ossiannilsson and Vilbaste).

1-9, *Dicraneurula exigua*: 1, genital block of male (right side: dorsal; left side: ventral); 2, the same, lateral view; 3, 4, penis (3, ventral view; 4, lateral view); 5, stylus; 6, connective; 7, apodemes of abdomen; 8, 9, apex of female abdomen, ventral view; 10-16, *Wagneriala franzi*: 10, 11, genital block of male (10, lateral view; 11, right side: ventral; left side: dorsal); 12, 13, penis (12, lateral view; 13, ventral view); 14, stylus; 15, apodemes of abdomen; 16, apex of female abdomen, ventral view; 17-22, *W. minima*: 17, lobe of pygofer; 18, 19, penis (18, ventral view; 19, lateral view); 20, connective and stylus; 21, subgenital sternite of female; 22, sternites I-III of male abdomen, dorsal view.

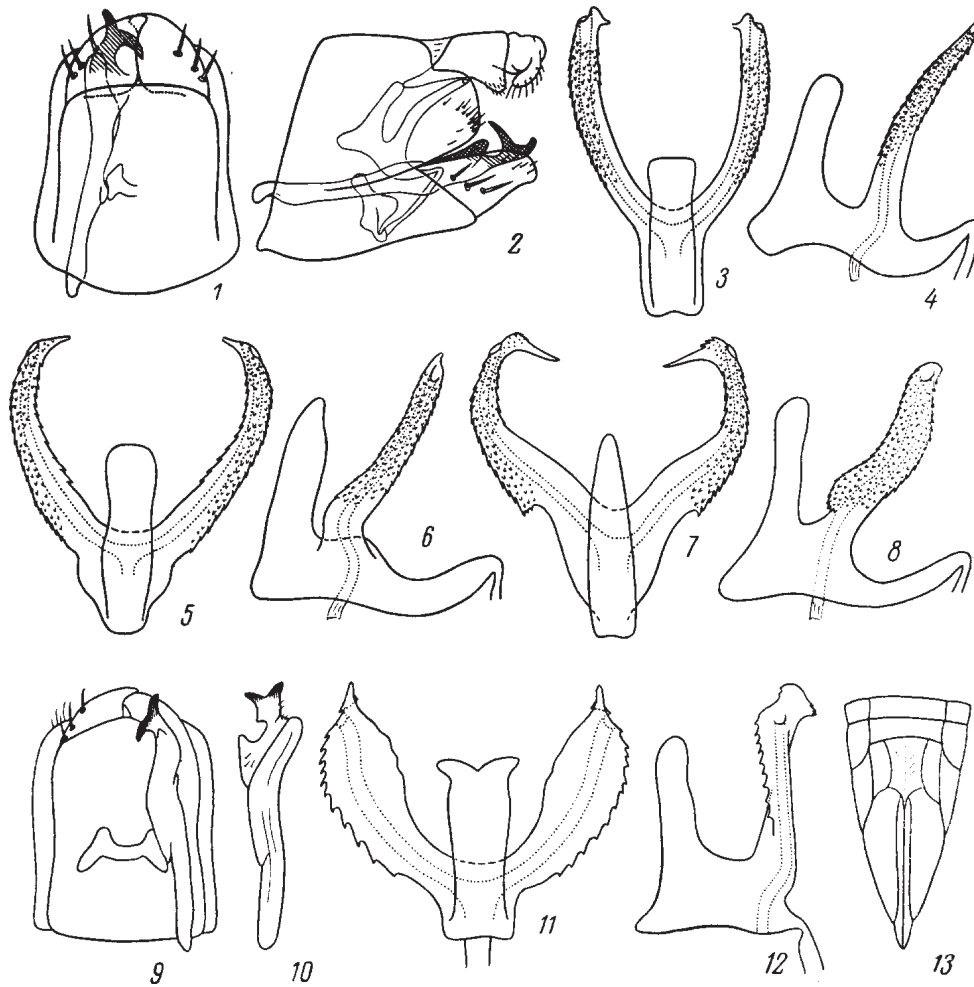


Fig. 73. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev and Vilbaste).

1-4, *Notus insularis*: 1, 2, genital block of male (1, ventral view; 2, lateral view); 3, 4, penis (3, dorsal view; 4, lateral view); 5, 6, *N. flavipennis*, penis (5, dorsal view; 6, lateral view); 7, 8, *N. sitka*, penis (7, dorsal view; 8, lateral view); 9-13, *N. minutus*: 9, genital block of male (right side: dorsal; left side: ventral); 10, stylus; 11, 12, penis (11, dorsal view; 12, lateral view); 13, apex of female abdomen, ventral view.

LITERATURE. Anufriev, G. A. Notes on the genus *Notus* Fieb., with description of a new species from Kurile Islands (Homoptera, Auchenorrhyncha, Cicadellidae). Nauch. Dokl. Vyssh. Shk. Biol. Nauki. 1979. N 12. P. 52-56.

1. Shafts of penis strongly spread dorsoventrally, not rounded in cross-section, with more or less parallel apices. Lobe of penis base adjacent to connective [p. 113] very short. 3.1-3.5. – Prim.; Chita Prov. – Late June to mid-September. (Figs. 73: 9-13) *N. minutus* Vilb.
- Shafts of penis rounded in cross-section, with apices distinctly slanting inwards. Lobe of penis base adjacent to connective long 2
2. Apices of penis shafts bent to each other on an arc following the axis of shaft. 3.8-4.1. – Siberia to East up to Enisey River and Altai. – Mongolia, whole Europe, N Africa. – June to October. (Figs. 73: 5, 6) *N. flavipennis* Zett.
- Apices of penis shafts bent to each other nearly at right angle to the axis of shafts 3

3. Shafts of penis strongly diverging relative to each other, somewhat spread at bases externally, gradually narrowing to apices. Apices of shafts strongly attenuate, beyond gonopores comparatively long. 4-4.5. – Mag., Kamch., Khab., Amur., N Kur.; Asiatic part of USSR to East of Taimyr and Altai. – Mongolia, NW N America. – Late June to late August. (Figs. 73: 7. 8) **N. sitka** DeL. et Caldwell [p. 114]
- Shafts of penis beyond the middle more or less parallel, of uniform thickness along the whole length up to gonopores. Apices of shafts beyond gonopores comparatively short. 3.7-4.1. – S Kur. – Late June to early September. (Figs. 73: 1-4) **N. insularis** Anufr.

Tribe *ERYTHRONEURINI*

45. **Alnella** Anufr. Slender, of pale yellow color. Head with eyes somewhat narrower than pronotum. Vertex in the middle longer than at eyes. Male. Genital plates long, nearly parallel-sided, rounded at apex, with several bristles at the middle. Lobes of pygofer widely rounded. Stylus without subapical lobe and with long undulated apical part. Penis symmetrical, S-shaped in lateral view, with large base. Female. Posterior margin of subgenital sternite parabolic or rounded acut-angulate. – 1 species.

1. Unicolorous yellow. 3-3.5. – Prim., S Kur. – Korea. – On *Alnus* spp. Mid-August to early September. (Figs. 74: 1-6) **A. sudzuchena** Anufr.

46. **Alnetoidia** Dlab. Slender, yellow-colored. Head with eyes narrower than pronotum. Vertex in the middle longer than at eyes. Male. Genital valve transverse. Genital plates long, nearly parallel-sided, with rounded apex and several bristles at the middle. Lobes of pygofer widely rounded on posterior margin, with dorsal and ventral process. Stylus with subapical lobe and more or less long apical part truncate at end. Penis symmetrical, of various shape, usually with well developed base; gonopore apical or subapical, ventral. Female. Subgenital sternite parabolic, projecting backwards. – Not less than 5 species. *A. sachalina* Mats. described incompletely from female, known from Sakhalin and characterized by presence of castaneous red longitudinal stripe on dorsal surface of head and thorax is not included here. – 5 species.

LITERATURE. Anufriev, G. A. Notes on the genus *Alnetoidia* Dlabola, 1958 (Homoptera, Cicadellidae, Typhlocybinae) with description of two new species from the Far East. Bull. Acad. Pol. Sci. Ser. Biol. 1972. Vol. 20, no. 10. P. 721-726.

1. Penis with unpaired process at base. Lemon yellow. 3.9-4.3. – Prim., S Kur.; Siberia, European part of USSR. – Japan, China (Taiwan), nearly whole Europe. – In broad-leaved, mixed and small-leaved forests, on various hardwood trees. July to August. (Figs. 74: 7-12) **A. alneti** Dahlb.
- Penis with a pair of subapical or apical processes 2
2. Penis with a pair of denticulate apical processes. Yellow. 3.4-3.7. – Prim. – On *Acer mono* in broad-leaved and mixed forests. Late June to July. (Figs. 74: 13-19) **A. xantha** Anufr.
- Penis with a pair of subapical processes 3
3. Penis with short base; shaft of penis not swollen on the turn to base. Yellow. 3-3.4. – Prim. – Japan (Kyushu). – In broad-leaved and mixed forests. Late July to August. (Figs. 74: 20-24) **A. lutescens** Anufr.

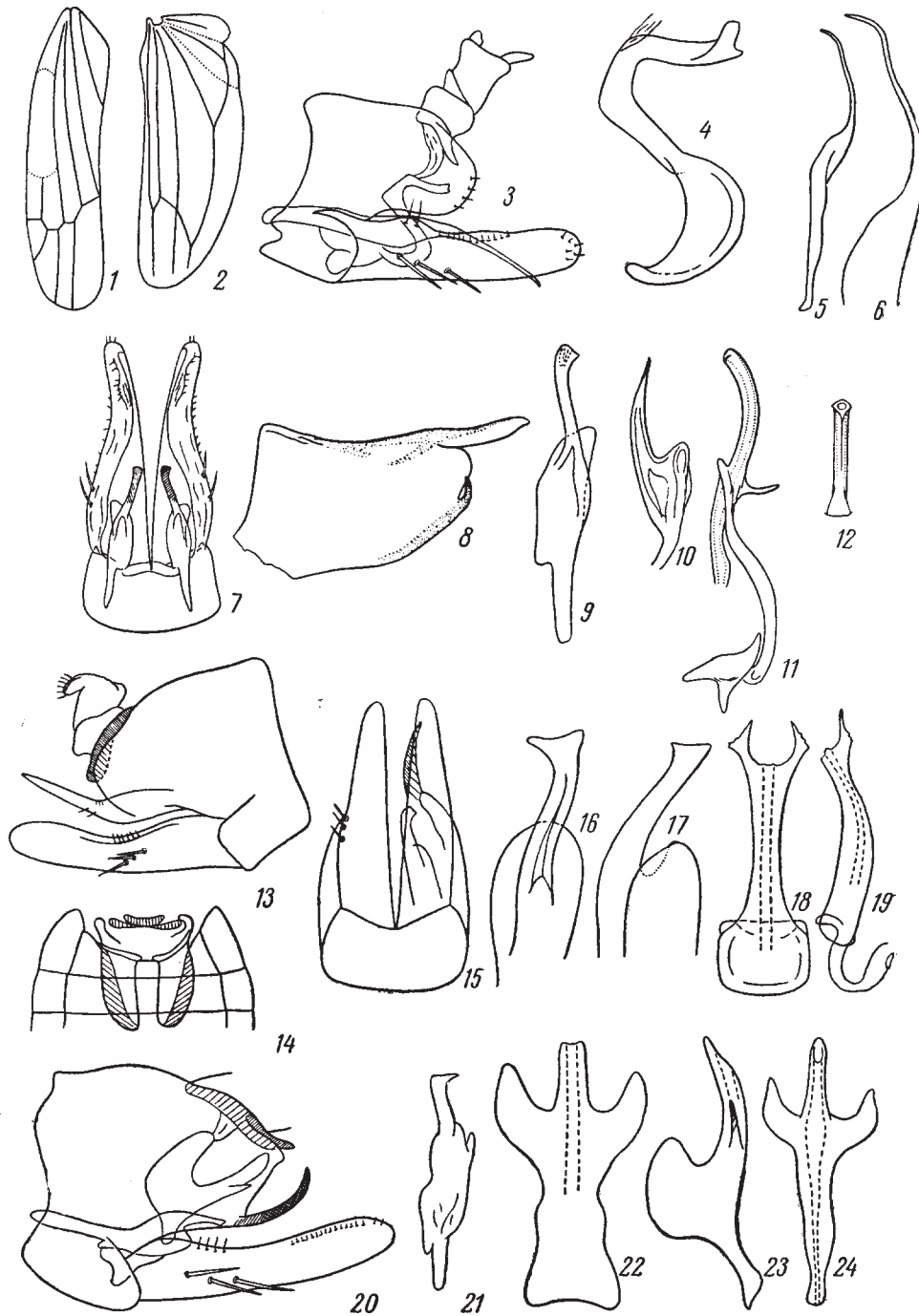


Fig. 74. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev, Ribaut, and Vilbaste).

1-6, *Alnella sudzuchenica*: 1, fore wing; 2, hind wing; 3, genital block of male, lateral view; 4, penis, lateral view; 5, stylus; 6, apex of stylus; 7-12, *Alnetoidia alneti*: 7, genital valve, genital plates, connective and stylus, dorsal view; 8, lobe of pygofer; 9, stylus; 10, apex of stylus; 11, connective and penis, lateral view; 12, apex of penis; 13-19, *A. xantha*: 13, genital block of male, lateral view; 14, apodemes of abdomen; 15, genital block of male, ventral view; 16, 17, apex of stylus; 18, 19, penis (18, ventral view; 19, lateral view); 20-24, *A. lutescens*: 20, genital block of male, lateral view; 21, stylus; 22-24, penis (22, 24, ventral view; 23, lateral view).

- Penis with rather long base, swollen at connection with shaft 4
- 4. Comparatively short ventral processes of pygofer slanting laterad. Penis with crescent-shaped processes. Yellow, with whitish hypodermal pattern on head and pronotum. 3.3-3.5. – Prim., S Kur. – Japan (Hokkaido, Honshu). – In broad-leaved and mixed forests on *Ulmus*. Late June to early September. (Figs. 75: 1-6) **A. sapporensis** Mats.
- Rather long ventral processes of pygofer directed backwards, more or less parallel. Processes of penis with 2 apices. Orange yellow, [p. 116] with light yellow hypodermal pattern. 3-3.5. – Prim., Sakh., S Kur. – In broad-leaved and mixed forests. July to August. (Figs. 75: 7-10) **A. straminea** Anufr.

47. **Zygina** Fieb. Slender, yellow-colored, often with more or less developed orange or red pattern on dorsal surface of body. Head with eyes slightly narrower than pronotum; vertex parabolic, projecting forward. Male. Genital plates long, nearly parallel-sided, with widely rounded apices, a pair of bristles at the middle and a pair of bristles at apex. Lobes of pygofer widely rounded on posterior margin, with process at dorsal margin opposite the base of anal tube. Connective cruciate, with inclined articulatory branches. Stylus with small subapical lobe and truncate, often somewhat widened at end, apical part. Penis with well developed base and arcuate, somewhat compressed laterally shaft; a pair of processes arising sometimes from base. Gonopore subapical, ventral. Female. Posterior margin of subgenital sternite parabolic, projecting backwards. Not well investigated in the Far East. Species from E Siberia are included in the key; [p. 117] *Z. yamashiroensis* Mats. (Figs. 75: 11-14) (Japan, Korea), which may be found in the Far East, is not included here. – 3 species.

LITERATURE. Dworakowska, I. On the genus *Zygina* Fieb. and *Hypericiella* sgen. n. (Auchenorrhyncha, Cicadellidae, Typhlocybinae). Bull. Acad. Pol. Sci. Ser. Sci. Biol. 1970. Vol. 18, no. 9. P. 559-567. Ossiannilsson, F. The Auchenorrhyncha (Homoptera) of the Fennoscandia and Denmark. Pt. 2. Fauna entomol. Scand. 1981. Vol. 7. P. 2.

1. Penis with a pair of long awl-shaped processes arising from base and directed to apex. Unicolorous yellow; last segments of hind tarsi dark. 3.6-3.9. – Prim. – Korea. – In broad-leaved and mixed forests. Late August. (Figs. 75: 15, 16) **Z. spinosa** Dwor.
- Penis without processes. Light yellow; vertex, pronotum and elytra with more or less developed red or orange pattern 2
2. Vertex comparatively long, the ratio of its length in the middle to width between eyes is 0.6-0.68. – Scutellum, clavus, except basal angle, and 4th apical cell darkened. A dark stripe branching backwards is often present on pronotum, and sometimes also on vertex. Red longitudinal stripe on clavus limited indistinctly, not adjacent closely to claval suture. 2.75-3.15. – E Siberia, Azerbaijan, Georgia, S European part of USSR. – N and C Europe. – On various hardwood trees, especially on *Crataegus*. In N Europe, May to June. (Figs. 76: 1-9) **Z. angusta** Leth.
- Vertex comparatively short, the ratio of its length in the middle to width between eyes less than 0.6 3
3. Scutellum chocolate castaneous or at least smoky even in weakly pigmented specimens. – Whitish yellow, shiny. Anterior part of body and hemelytra with carmine red stripes varying in configuration and intensity; vertex without stripes or with 2 red zigzag-shaped, longitudinal, approximate stripes; pronotum with red stripe widened backwards and often divided by light midline; elytra with wide, red, zigzagged longitudinal stripe, the basal half of which is situated on clavus

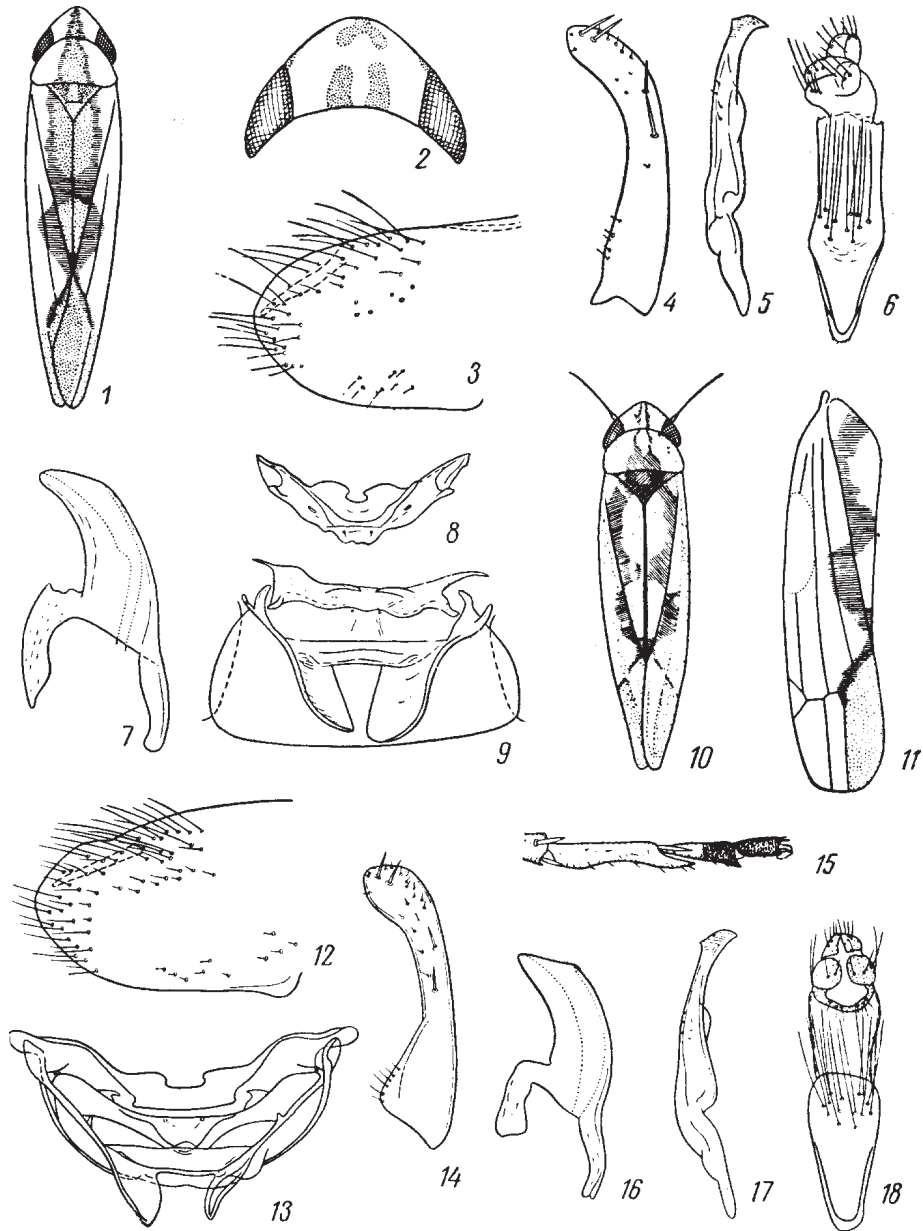


Fig. 75. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev and Dworakowska).

1-6, *Alnetoidia sapporensis*: 1, fore wing; 2, hind wing; 3, 4, genital block of male (3, lateral view; 4, ventral view); 5, 6, penis (5, ventral view; 6, lateral view); 7-10, *A. straminea*: 7, 8, genital block of male (7, lateral view; 8, ventral view); 9, 10, penis (9, ventral view; 10, lateral view); 11-14, *Zygina yamashiroensis*: 11, fore wing; 12, anterior part of body, dorsal view; 13, penis, lateral view; 14, stylus; 15, 16, *Z. spinosa*: 15, penis, lateral view; 16, apex of stylus.

and closely adjacent to claval suture. In young specimens, only brown part of pattern is present; later, the yellow pattern occurs, gradually becoming carmine red. Hind tarsi in male with dark 3rd segment and distal half of 2nd segment. 3.2-3.4. – Prim. – Kazakhstan, Middle Asia, European part of USSR. – Mongolia, N and C Europe, introduced to N America. – On various trees and shrubs in forests and forest edges. (Figs. 76: 10-18) *Z. flammigera* Geoffr.

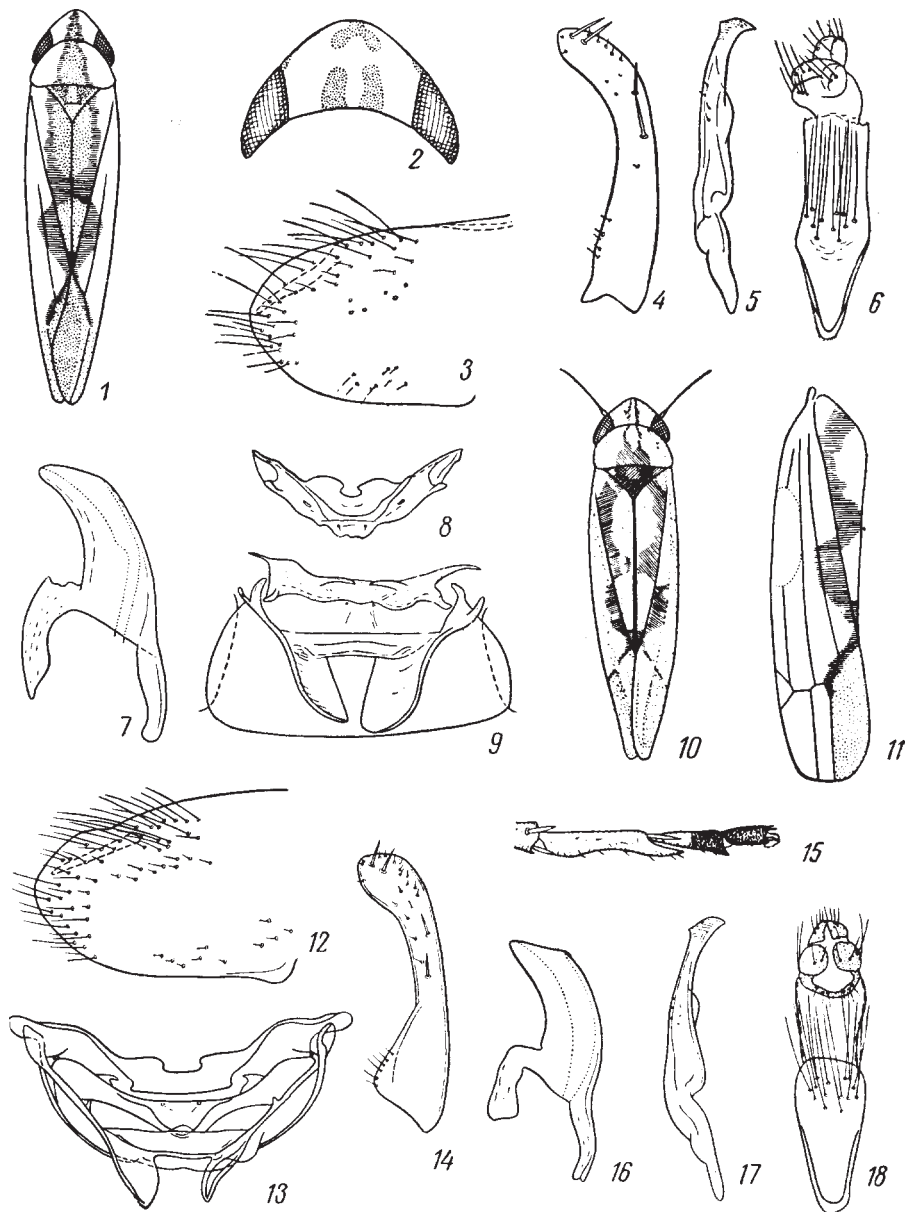


Fig. 76. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Dworakowska, Ossiannilsson, and Ribaut).

1-9, *Zygina angusta*: 1, general appearance; 2, head, dorsal view; 3, lobe of pygofer; 4, genital plate, ventral view; 5, stylus; 6, anal tube of male, dorsal view; 7, penis, lateral view; 8, sternite I of male abdomen, anterior view; 9, sternites I-III of male abdomen, dorsal view; 10-18, *Z. flammigera*: 10, general appearance; 11, fore wing; 12, lobe of pygofer; 13, sternites I and II of male abdomen, dorsal view; 14, genital plate, ventral view; 15, hind tarsus of male, lateral view; 16, penis, lateral view; 17, stylus; 18, anal tube of male, dorsal view.

- Scutellum light 4
- 4. Bristles on dorsal surface of anal tube arranged in 2 lateral groups. – Yellowish, dorsally without pattern or with red pattern consisting of 2 parallel longitudinal red lines or 1 parallel-sided stripe on pronotum and longitudinal stripe on each hemelytron, which does not reach scutellar margin of clavus and claval suture.

- Hind tarsi in male completely light or partly darkened. 2.9-3.05. – Prim.; Georgia, C and S European part of USSR. – Nearly whole Europe. – In W Europe on *Rhamnus*. August. (Figs. 77: 1-6) **Z. suavis** Rey
- Bristles on dorsal surface of anal tube arranged in 1 group. Similar to *Z. flam-migera*. 2.85-4.25. – Altai, Kazakhstan, Transcaucasia. – Mongolia, Cyprus, nearly whole Europe. – In Europe on willows and other hardwood trees. August. (Figs. 77: 7-12) **Z. ordinaria** Rib.

48. **Arboridia** Zachv. Moderately slender; hemelytra not more than 4 times as long as wide. Frontoclypeus noticeably convex in lateral view. Length of face less than twice its width between eyes. Vertex moderately projecting forward, usually with 2 rounded spots. Male. Genital plates [p. 118] widening from base, then gradually narrowing to rounded apex; their lateral margin concave and apex (in lateral view) strongly slanting upwards. A row of bristles situated along outer margins of genital plates: few bristles opposite the lateral incision, short thick bristles basal to these, and thin bristles apical to these. Lobes of pygofer with widely rounded posterior margin and projection opposite lateral incision of genital plate devoid of bristles; lobes of pygofer [p. 120] with hook-shaped, often bifurcate at end process on inner surface of lobes, at base of anal tube. Connective U- or V-shaped. Stylus with subapical lobe and slightly slanting outwards apical part bearing 3-4 teeth. Penis with wide base, arcuate shaft, subapical ventral gonopore, and often with 1 or 2 processes arising from base of penis near the shaft base. Female. Subgenital sternite in the middle parabolic, projecting backwards, sometimes with weak incision opposite valvulae of ovipositor. – Not less than 12 species (in USSR not less than 20).

LITERATURE. Dworakowska, I. On the genus *Arboridia* Zachv. (Auchenorrhyncha, Cicadellidae, Typhlocybinae). Bull. Acad. Pol. Sci. Ser. Sci. Biol. 1970. Vol. 18, no. 10. P. 607-615.

1. Vertex with 4 black spots, 2 of these situated at posterior margin, 2 on the turn into frontoclypeus. Dark brown. Pronotum with 4-6 light spots; hemelytra with 3 lightened areas at costal margin, a light spot at apex of clavus and a spot in inner apical cell. 2.6-3. – Prim. – Japan (Hokkaido, Kyushu). In broad-leaved and mixed forests. Late July. (Figs. 77: 13, 14) **A. yanonis** Mats.
- Vertex with 2 or 3 spots 2
2. Processes of pygofer lobes very long, reaching lower margin of lobes. Stylus at apex with 2 pointed teeth and obtuse subapical projection. Yellowish, whitish or slightly greenish, with a pair of rounded spots on vertex and numerous indistinct brown spots on pronotum and hemelytra. 3.1-3.5. – S Khab., Prim., S Kur. – Japan, Korea, China (NE, Taiwan). – On *Vitis amurensis* and *V. coignetiae* in broad-leaved and mixed forests, forest edges, in shrubberies. May to June, late July to September. (Figs. 77: 15-26) **A. apicalis** Nawa
- Processes of pygofer lobes shorter, not reaching lower margin of lobes 3
3. Processes of pygofer lobes two-branched. Similar to *A. apicalis*. 2.6-3.1. – Prim. – Japan (Honshu, Kyushu), Korea. – In mixed and broad-leaved forests. Late August. (Figs. 78: 1-8) **A. kakogawana** Mats.
- Processes of pygofer lobes not split into 2 branches, though may have 2 apices 4
4. Penis with long shaft bearing 3 processes at apex. Dark brown; vertex yellowish, with small black-brown spots; several light spots on pronotum, scutellum and hemelytra. 3. – S Prim. – In mixed forests with *Pinus sibirica* and *P. koraiensis*. Late September. (Figs. 78: 9-15) **A. suputinkaensis** Vilb.

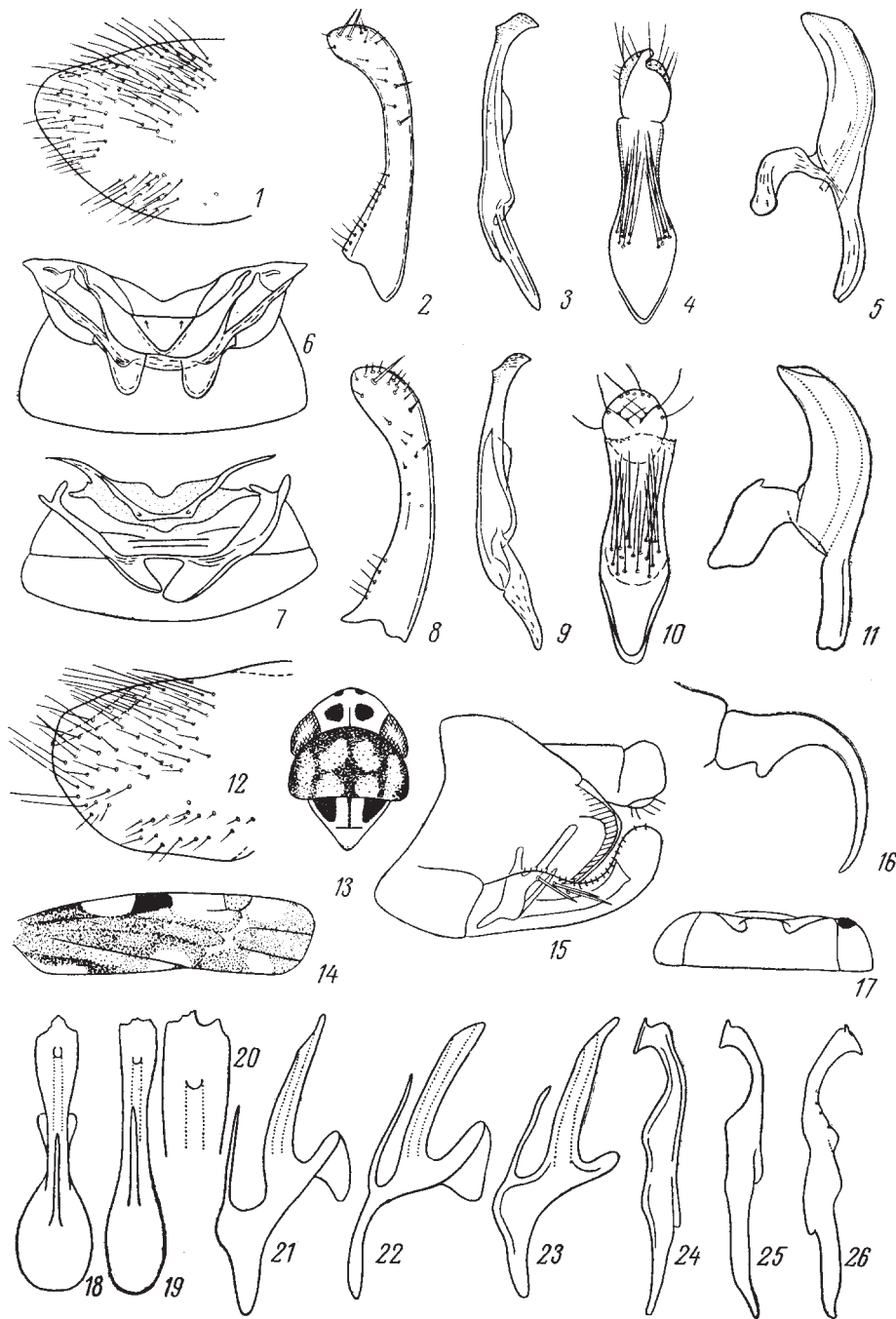


Fig. 77. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev, Dworakowska, Ossiannilsson, and Vilbaste).

1-6, *Zygina suavis*: 1, lobe of pygofer, lateral view; 2, genital plate, ventral view; 3, stylus; 4, anal tube of male, dorsal view; 5, penis, lateral view; 6, sternites I-III of male abdomen, dorsal view; 7-12, *Z. ordinaria*: 7, sternites I-III of male abdomen, dorsal view; 8, genital plate, ventral view; 9, stylus; 10, anal tube of male, dorsal view; 11, penis, lateral view; 12, lobe of pygofer, lateral view; 13, 14, *Arboridia yanonis*: 13, anterior part of body; 14, fore wing; 15-26, *A. apicalis*: 15, genital block of male, lateral view; 16, process of pygofer; 17, apodemes of abdomen; 18, 19, penis, ventral view; 20, apex of penis; 21-23, penis, lateral view; 24-26, stylus.



Fig. 78. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev, Dworakowska, and Vilbaste).

1-8, *Arboridia kakogawana*: 1, anterior part of body; 2-3, genital block of male (2, lateral view; 3, ventral view); 4, process of pygofer; 5, stylus; 6, 7, penis (6, ventral view; 7, lateral view); 8, apex of stylus; 9-15, *A. sputinkaensis*: 9, 10, genital block of male (9, lateral view; 10, ventral view); 11, process of pygofer; 12, connective and stylus; 13, apex of stylus; 14, 15, penis (14, ventral view; 15, lateral view); 16-25, *A. okamotoi*: 16, general appearance; 17, 18, process of pygofer lobe; 19, apodemes of abdomen; 20, 21, genital block of male (20, lateral view; 21, ventral view); 22, 23, penis (22, ventral view; 23, lateral view); 24, 25, stylus.

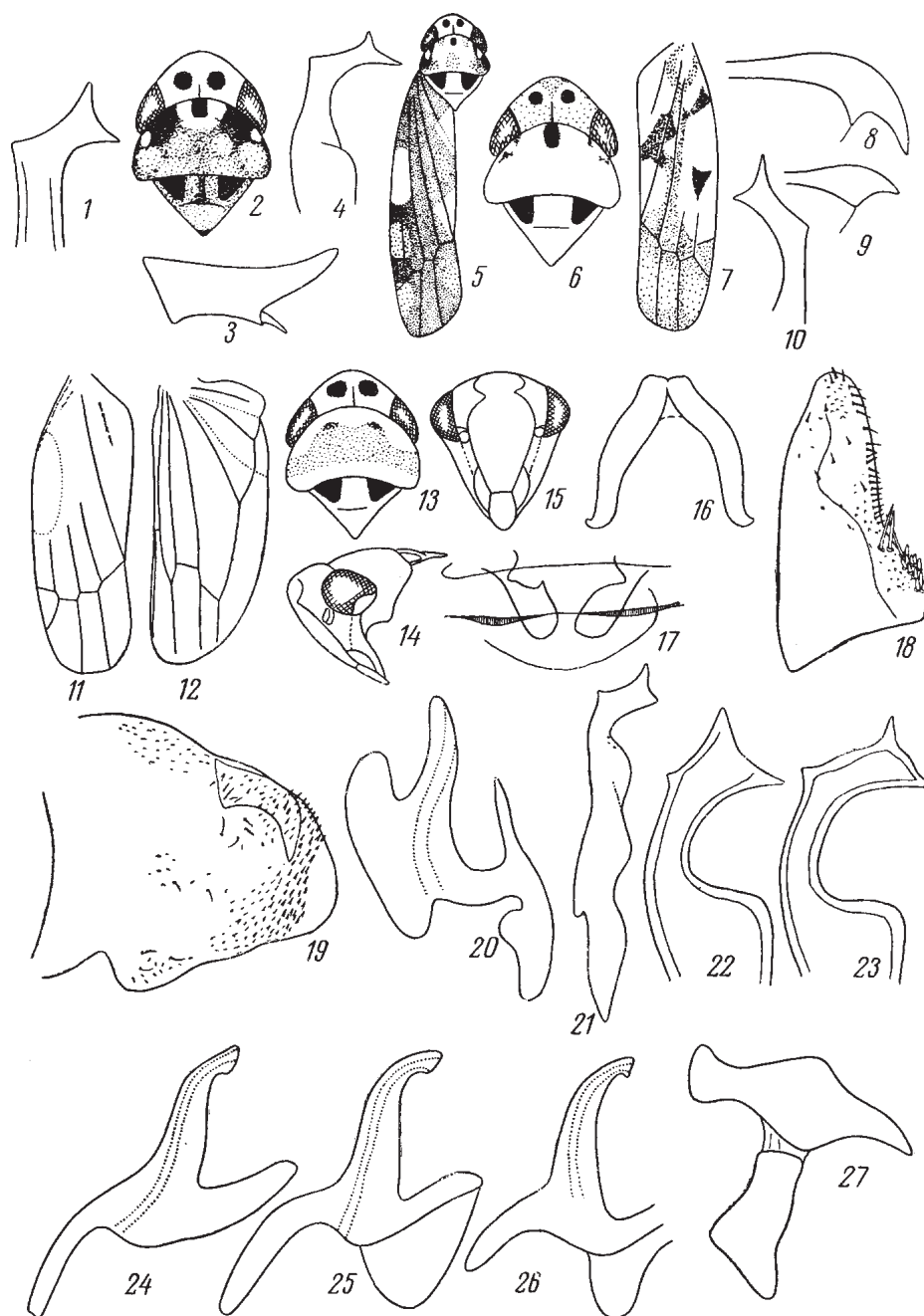


Fig. 79. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev, Dworakowska, and Vilbaste).

1, *Arboridia okamotonis*, apex of stylus; 2-4, *A. maculifrons*: 2, anterior part of body; 3, process of pygofer lobe; 4, apex of stylus; 5-10, *A. koreacola*: 5, general appearance; 6, anterior part of body; 7, fore wing; 8, 9, processes of pygofer lobe; 10, apex of stylus; 11-21, *A. parvula*: 11, fore wing; 12, hind wing; 13, 14, anterior part of body (13, dorsal view; 14, lateral view); 15, head, anterior view; 16, connective; 17, apodemes of abdomen; 18, genital plate; 19, lobe of pygofer; 20, penis, lateral view; 21, stylus; 22-27, *A. agrillacea*: 22, 23, apex of stylus; 24-26, penis, lateral view; 27, process of pygofer lobe.

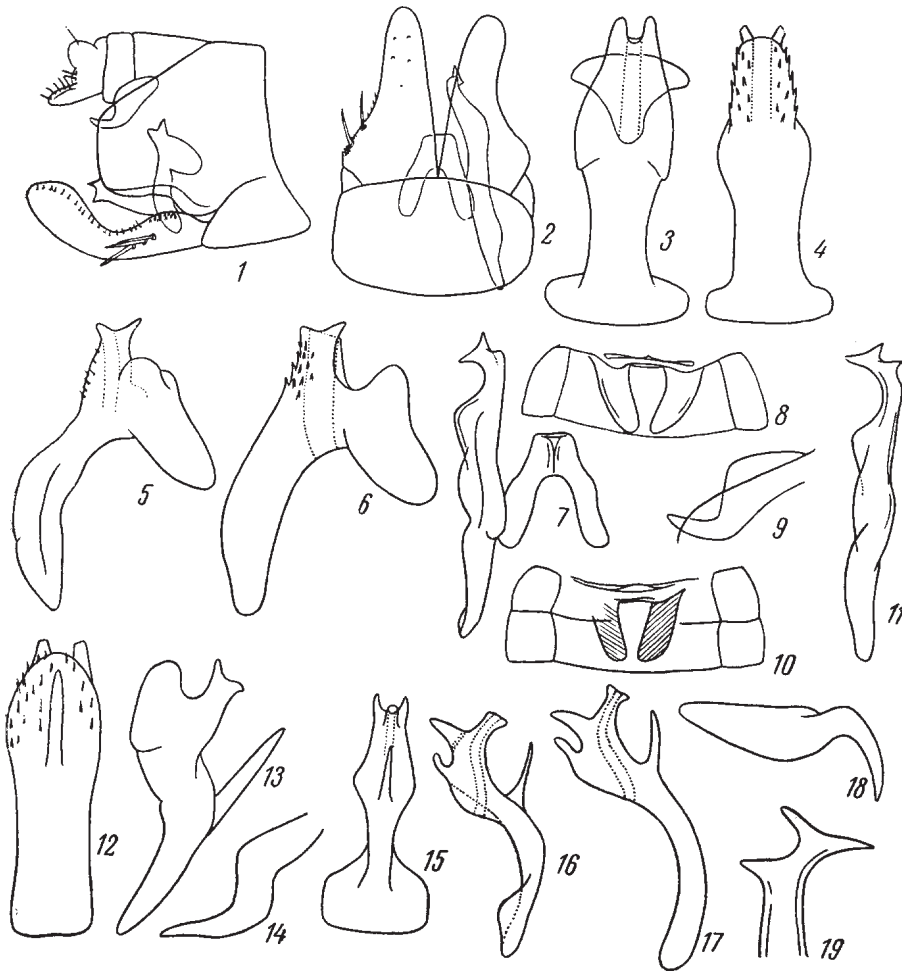


Fig. 80. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev and Vilbaste).

1-9, *Arboridia silvarum*: 1, 2, genital block of male (1, lateral view; 2, ventral view); 3-6, penis (3, 4, ventral view; 5, 6, lateral view); 7, connective and stylus; 8, apodemes of abdomen; 9, process of pygofer lobe; 10-14, *A. suzukii*: 10, base of male abdomen; 11, stylus; 12, 13, penis (12, ventral view; 13, lateral view); 14, process of pygofer lobe; 15-19, *A. remmi*: 15-17, penis (15, ventral view; 16, 17, lateral view); 18, process of pygofer lobe; 19, apex of stylus.

- Structure of penis not as above 5
- 5. Penis with a pair of processes arising from base (Figs. 78: 22; 79: 20) 6
- Penis with 1 process arising from base or without processes 9
- 6. Processes arising from base of penis are approximate to shaft (Figs. 78: 22, 23) 7
- Processes arising from base of penis situated at some distance from shaft. Light brown or grayish, with a pair of rounded dark spots on vertex. 2.6-3.1. – Prim. – Siberia, Kazakhstan, Middle Asia, Caucasus and Transcaucasia. – Europe, except the extreme north, N Africa. – In mixed and broad-leaved forests, in glades. Late June, late August. (Figs. 79: 11-21) **A. parvula** Boh.
- 7. Processes of pygofer with 2 apices (Figs. 78: 17, 18) 8
- Processes of pygofer with one apex, hook-shaped. Similar to *A. maculifrons*. 3. – S Prim. – Korea. – On *Vitis amurensis* in mixed and broad-leaved forests. Late August. (Figs. 79: 5-10) **A. koreacola** Mats.

8. Vertex, in addition to 2 lateral rounded spots, with dark spot on the turn into face, the spot becoming lighter to the center. Pronotum, scutellum and hemelytra dark brown, with small light spots. 2.8-3. – Prim. – Korea. – [p. 123] On *Vitis amurensis* in mixed and broad-leaved forests. Mid-May, late August to September. (Figs. 78: 16-25; 79: 1) **A. okamotonis** Mats.
- The turn of vertex into face without black spot. Similar to *A. okamotonis*, but lighter colored. 3-3.2. – Prim. – Korea. – On *Vitis amurensis* in mixed and broad-leaved forests. Early September. (Figs. 79: 2-4) **A. maculifrons** Vilb.
9. Penis without process arising from base (Figs. 80: 3, 4) 10
- Penis with process arising from base (Figs. 80: 13, 16, 17) 11
10. Shaft of penis long, smooth, slightly widened at apex. Similar to *A. parvula*. 3.1-3.5. – Prim. – In mixed and broad-leaved forests. Mid-May, late August to mid-September. (Figs. 79: 22-27) **A. agrillacea** Anufr.
- Shaft of penis with spines, short and wide, with teeth at apex. Similar to *A. parvula*. 2.9-3.1. – Prim. – Korea. – On shrubs in mixed and broad-leaved forests. August. (Figs. 80: 1-9) **A. silvarum** Vilb. [p. 124]
11. Shaft of penis with spines and at apex with a pair of teeth. Similar to *A. parvula*. 2.9-3.1. – Prim. – Japan (Honshu, Shikoku, Kyushu), Korea. – In mixed and broad-leaved forests on shrubs. Late May, July to early September. (Figs. 80: 10-14) **A. suzukii** Mats.
- Shaft of penis smooth, with a pair of teeth at base. Similar to *A. parvula*. 2.8-3.3. – Prim. – In mixed and broad-leaved forests. May, late July to mid-September. (Figs. 80: 15-19) **A. remmi** Vilb.

49. **Punctigerella** Vilb. Moderately slender, in general appearance similar to representatives of the genus *Arboridia*. Male. Genital plates and pygofer as in *Arboridia*, but basal projection of pygofer lobes bearing a group of thick bristles. Connective U-shaped. Stylus with subapical lobe and apical part widening to denticulate posterior margin. Penis symmetrical, with tubular shaft and 2 pairs of subapical processes; gonopore apical or subapical. Female. Subapical sternite transverse, with posterior margin weakly parabolic, projecting in the middle. – 3 species (the genus comprises 4 species).

LITERATURE. Anufriev, G. A. Six new Far Eastern species of leafhoppers (Homoptera: Auchenorrhyncha). Bull. Acad. Pol. Sci. Ser. Sci. Biol. 1971. Vol. 19, no. 7-8. P. 517-522.

1. Processes of pygofer with two teeth at apex. Shaft of penis compressed laterally, strongly widened to base; base of penis nearly completely fused with shaft. Yellow, with brown pattern; 2 rounded spots on vertex, lateral triangles on scutellum and spot in the middle of brachial cell black castaneous; hemelytra with zigzagged brown stripe occupying most part of clavus, except its apex, and posterior part of membrane, beginning from the spot on brachial cell. 3.2-3.8. – S Khab., Amur., Prim. – In swamp meadows and herbaceous swamps. Early June, mid-July, August to September. (Figs. 81: 1-6) **P. lamellaris** Vilb.
- Processes of pygofer with single apex, pointed. Penis with shaft rounded in cross-section, not widened to base; base of penis dorsally not adjacent to shaft at a considerable length 2
2. Penis longer; shaft in the middle straight in lateral view; ventral processes of penis shorter, about 1/4 times as long as shaft. Outer half of posterior margin of stylus denticulate. Similar to *P. lamellaris*. 2.9-3.1. – Prim. – Korea. – In meadows, glades, low forests. Early August to mid-September. (Figs. 81: 7-10) **P. betulae** Vilb.

- Penis shorter; shaft in the middle weakly bent in lateral view; ventral processes of penis longer, about half as long as shaft. Outer half of posterior margin of stylus strongly denticulate. Similar to *P. lamellaris*. 2.6-3. – Prim. – In dry glades. Mid-August. (Figs. 81: 11, 12) ***P. juchani*** Anufr.

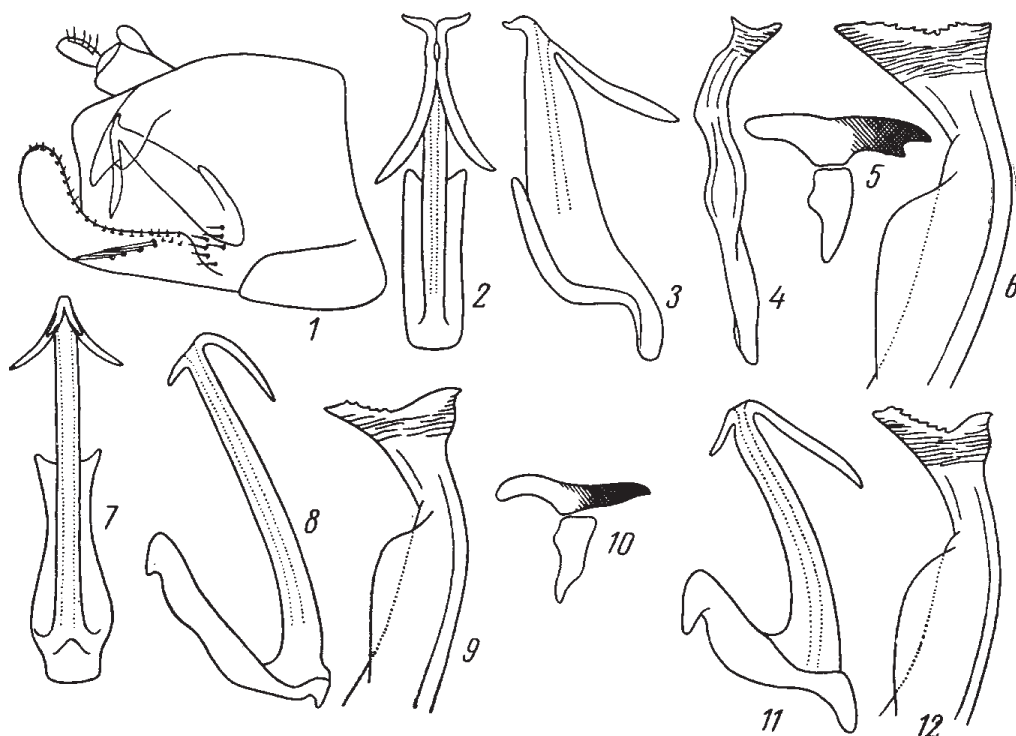


Fig. 81. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev and Vilbaste).

1-6, *Punctigerella lamellaris*: 1, genital block of male, lateral view; 2, 3, penis (2, ventral view; 3, lateral view); 4, stylus; 5, appendage of pygofer lobe; 6, apex of stylus; 7-10, *P. betulae*: 7, 8, penis (7, ventral view; 8, lateral view); 9, apex of stylus; 10, appendage of pygofer lobe; 11, 12, *P. juchani*: 11, penis, lateral view; 12, apex of stylus.

50. ***Ziczacella*** Anufr. Moderately slender, in general appearance reminding representatives of the genera *Arboridia* and *Punctigerella*. Yellowish, with a pair of rounded dark spots on vertex, sometimes lacking, brown pattern on pronotum and scutellum, and zigzagged stripe on hemelytra. Male. Pygofer with rather long, well sclerotized along the whole length processes arising from dorsal margin of lobes and running along their inner surface. Styli with very long, thin, inner apical process, which is at least twice as long as outer and subapical process. Shaft of penis connected with base bearing a pair of robust pincers-shaped processes, by weakly sclerotized membranous bridge. Female. Posterior margin of subgenital sternite in the middle strongly parabolic, projecting backwards. – 2 species (the genus comprises not less than 6 species).

LITERATURE. Dworakowska, I. On some Palearctic Erythroneurini (Auchenorrhyncha, Cicadellidae, Typhlocybinae). Bull. Acad. Pol. Sci. Ser. Biol. 1980 (1981). Vol. 28, no. 6. P. 371-379. [p. 125]

1. Processes of pygofer with 2 apices. Shaft of penis without subapical lateral processes. 2.3-2.7. – Prim.; Tuva. – In meadows and under canopy of broad-leaved,

- small-leaved and mixed forests in herbage. – Late May, mid-July to mid-September. (Figs. 82: 1-11) **Z. dworakowskiae** Anufr.
- Processes of pygofer with single apex. Shaft of penis with a pair of subapical lateral processes. 2.6-3. – S Khab., Prim.; Kazakhstan, Middle Asia, S Urals. – China (NE, Beijing). In herbage in mixed, small-leaved and broad-leaved forests. Mid-May, mid-June, mid-August to late September. (Figs. 82: 12-20) **Z. heptapotamica** Kusn. (*inazuma* Kato)

51. **Tautoneura** Anufr. (*Balila* Dwor., *Havelia* Ashmead). Slender, whitish or yellowish, with more or less expressed red and brown spots on hemelytra. Male. Lobes of pygofer widely rounded on posterior margin, with long bristles on basal part ventrally, often with ventral projection; a hook-shaped process present on inner surface opposite the base of anal tube. Anal tube with more or less long basal processes from each side. Styli with subapical lobe and more or less long apical part having 1-3 apices. Connective with well expressed central lobe and lateral branches. Penis symmetrical or asymmetrical, with large base sometimes bearing processes and tubular shaft often bearing pregonoporal and (or) postgonoporal processes; gonopore ventral, apical or dorsal. – 1 species (the genus comprises more than 30 species, mainly in the Oriental Region).

1. Anal tube with very long, L-shaped, bent processes. Penis asymmetrical, with wide long process dorsally and a pair of short processes ventrally, all processes arising from shaft of penis near its apex, before subapical gonopore. Stylus with arcuate apical part bearing 3 teeth. Yellowish white; spot at base of clavus and spot in its middle part, also spot in the middle of brachial cell yellow [p. 127] or red; 2 spots at base of 2nd and 3rd apical cells and 2 spots in costal area black castaneous. 2.7-2.8. – Prim. – In mixed and broad-leaved forests. Late July. (Figs. 82: 21-25) **T. tricolor** Anufr.

Tribe *EMPOASCINI*

52. **Schizandrasca** Anufr. Vertex with not parallel anterior and posterior margins, in the middle somewhat longer than at eyes. Hemelytra with stalked 3rd apical cell, its rather long stalk beginning between *R* and *M*. Submarginal vein of hind wings reaching only to *R+M*. *Cu*₁ branched; the fork situated apical to transverse mediocubital vein. Male. Lobes of pygofer angular, strongly projecting backwards. Genital plates with numerous bristles along lower margin. Anal tube with appendages bearing processes directed inwards. Styli nearly parallel-sided in basal part and strongly narrowed at apex; apical part of stylus slanting inwards, with 3-4 denticles. Penis asymmetrical, with very long filiform shaft; gonopore apical. Female. Subgenital sternite transverse rectangular, with slightly undulated posterior margin. Monotypic genus.

1. Reddish; head yellow, rather often with reddish spot at its apex. Pronotum red, becoming yellow anteriorly. Scutellum yellow, with slightly darkened basal triangles. Hemelytra semihyaline, reddish, with well noticeable red veins and grayish stripe along claval suture. 4.2-4.8. – Prim. – Korea. – On *Schizandra chinensis* in mixed and broad-leaved forests. Mid-July to late September. (Figs. 83: 1-6) .. **S. ussurica** Vilb.

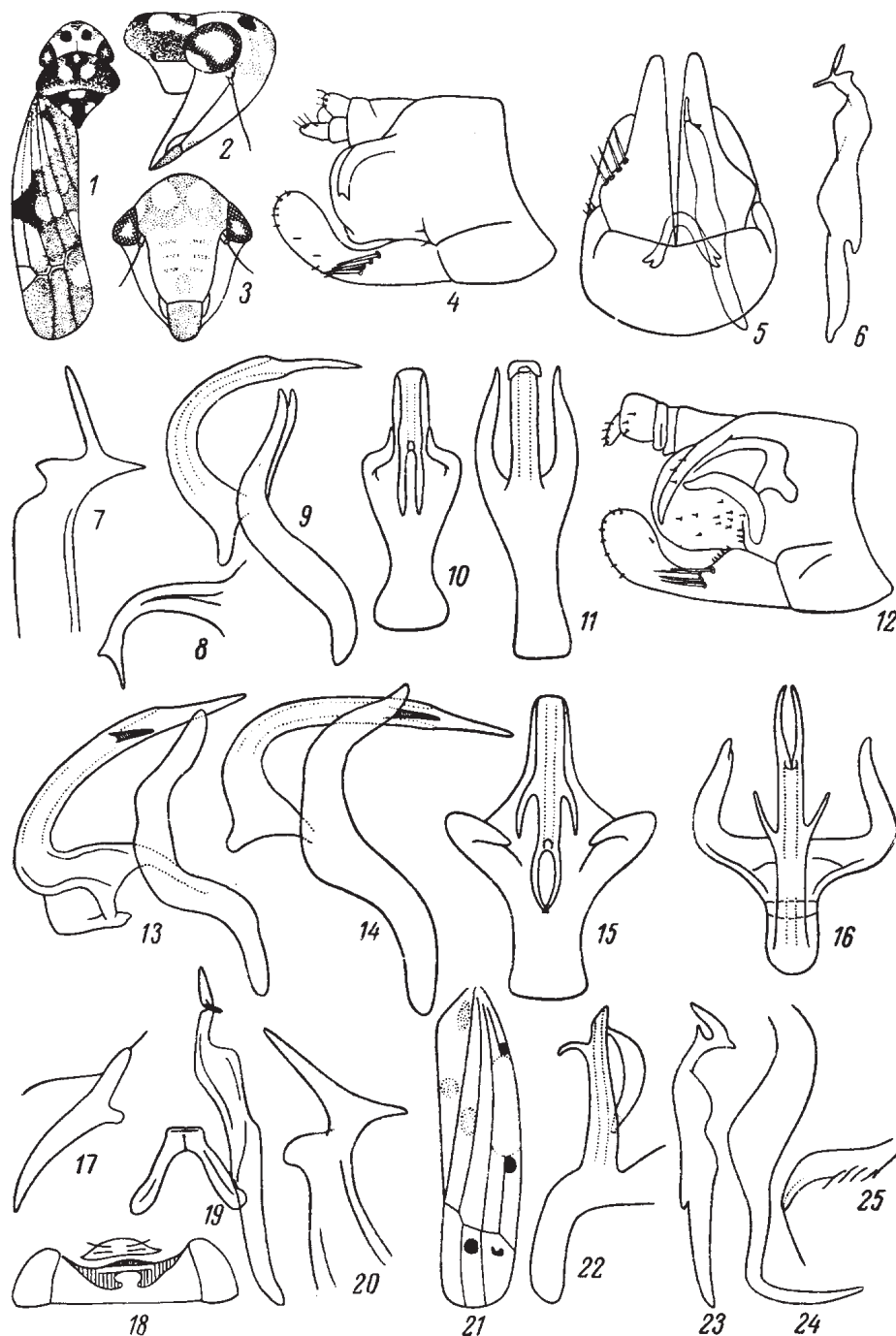


Fig. 82. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev and Vilbaste).

1-11, *Zizacella dworakowskiae*: 1, general appearance; 2, anterior part of body; 3, head, anterior view; 4, 5, genital block of male (4, lateral view; 5, ventral view); 6, stylus; 7, apex of stylus; 8, appendage of pygofer lobe; 9-11, penis (9, lateral view; 10, dorsal view; 11, posterior view); 12-20, *Z. heptapotamica*: 12, genital block of male, lateral view; 13-16, penis (13, 14, lateral view; 15, dorsal view; 16, posterior view); 17, appendage of pygofer lobe; 18, base of male abdomen; 19, connective and stylus; 20, apex of stylus; 21-25, *Tautoneura tricolor*: 21, fore wing; 22, penis, lateral view; 23, stylus; 24, process of anal tube; 25, appendage of pygofer lobe.

53. **Alebroides** Mats. Slender; hemelytra with stalked 3rd apical cell; hind wings with forked Cu_1 . Male. Lobes of pygofer inside with process arising near base of ventral margin. Genital plates nearly parallel-sided, with rounded ends, and somewhat slanting upwards; a stripe of bristles running along ventral surface of plates. Anal tube at base with a pair of processes. Connective plate-shaped, trapezoid. Stylus with very long apical part slanting outwards and denticulate at end. Penis with long base strongly widened to shaft; shaft tubular, with subapical gonopore. Female. Subgenital sternite transverse, rectangular, slightly incised in the middle of posterior margin. – 1 species (many species in the Oriental Region).

1. Ventral processes of pygofer lobes not branching, nearly straight, with pointed ends. Processes of anal tube hook-shaped, bent forward, pointed at end, with single apex. Shaft of penis compressed laterally, especially at base. Unicolorous whitish or greenish, often with weak greenish tint. 3.8-4.5. – Prim. – Korea. In meadows and forest edges, evidently on *Artemisia*. Mid-June to early October. (Figs. 83: 7-12) **A. salicis** Vilb.

54. **Acia** McAtee (*Ussuriasca* Anufr.). Vertex in the middle much longer than at eyes, noticeably projecting forward. Head with eyes as wide as pronotum or wider. Pronotum usually longer than scutellum. Hemelytra narrow and long; bases of 4th and 1st apical cells situated about at the same level; 3rd apical cell stalked, its rather long stalk arising between *R* and *M*. On hind wings, submarginal vein reaches only to *R+M*, Cu_1 simple, not branching. Male. Lobes of pygofer elongate, rounded angular posteriorly, with strong disorderly bristles at apex, on dorsal margin; a thin, more or less straight process arising from the inner side runs along ventral margin of lobes. Genital plates flat, with irregular row of bristles on ventral surface, numerous bristles and setae outside of it and a group of long bristles near base, [p. 128] by dorsal margin. Anal tube long, robust, usually considerably projecting backwards beyond the limits of pygofer, with a pair of wide basal processes with blunt ends, bearing sensory pits. Styli with long, distinctly denticulate apical part. Connective plate-shaped, with bilobate apex. Penis with robust base and long tubular shaft often bearing processes. Gonopore subapical, ventral. – 1 species from the nominotypical subgenus (the genus comprises more than 30 species from 5 subgenera distributed mainly in the Oriental and Afrotropical Regions).

LITERATURE. Dworakowska, I. On the genera *Acia* McAtee and *Omiya* gen. n. (Typhlocybinae, Cicadellidae). Annot. Zool. et Bot. 1981. no. 141. P. 1-47.

1. Shaft of penis with a pair of subapical processes laterally. Castaneous yellow or olive brown. Vertex with castaneous tint, on periphery and midline yellow, with 2 large bright yellow rounded spots lateral to midline. Face yellow, lightest in apical part. Pronotum with castaneous tint, [p. 129] with several yellow spots slightly standing out on general background. Scutellum castaneous, with 3 longitudinal dim yellow stripes and yellow small spots on basal angles. Hemelytra castaneous yellow, with brown apical cells. 4.1-4.4. – S Khab., Prim. – In mixed and broad-leaved forests of Sikhote-Alin Mts. Early July to late August (Figs. 83: 13-19) **A. olivacea** Anufr.

55. **Kybos** Fieb. Slender, green-colored; dendrophilous; vertex short and wide, with anterior arcuate margin more or less parallel to posterior margin. Pronotum as wide as head with eyes (Fig. 91: 1). Hemelytra with stalked 3rd apical cell or apical

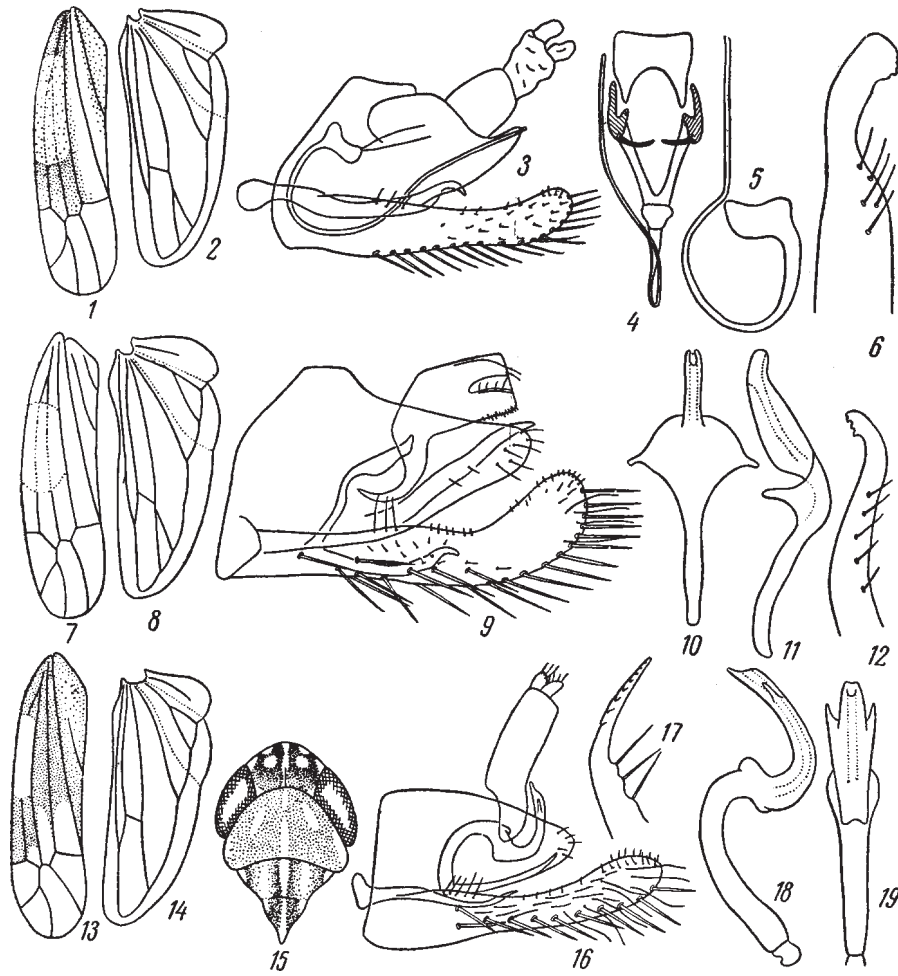


Fig. 83. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev and Vilbaste).

1-6, *Schizandrasca ussurica*: 1, fore wing; 2, hind wing; 3, genital block of male, lateral view; 4, anal tube and penis with appendage, ventral view; 5, penis, lateral view; 6, apex of stylus; 7-12, *Alebroides salicis*: 7, fore wing; 8, hind wing; 9, genital block of male, lateral view; 10, 11, penis (10, ventral view; 11, lateral view); 12, apex of stylus; 13-19, *Acia olivacea*: 13, fore wing; 14, hind wing; 15, anterior part of body; 16, genital block of male, lateral view; 17, apex of stylus; 18, 19, penis (18, lateral view; 19, ventral view).

veins at its base approximate, arising between *R* and *M*. Cu_1 of hind wings not branched. Male. Lobes of pygofer with ventral process running along inner surface of ventral margin. Anal tube short, with a pair of rather long crescent-shaped basal processes with apices directed forward, bearing sensory pits at end of widened base. Genital plates more or less semicircular bent upwards, with somewhat widened base and apical part; a stripe of dense numerous long bristles running along ventral surface; long setae and bristles present outside from stripe; a group of bristles situated at dorsal margin of basal widening. Styli with separated apical part devoid of bristles and denticulate on inner margin; distinct subapical widening bearing numerous long setae. Connective plate-shaped, trapezoid, with very short articulatory branches. Penis with long base, rather often bearing processes near base of shaft, and with comparatively short, straight or weakly bent tubular shaft often

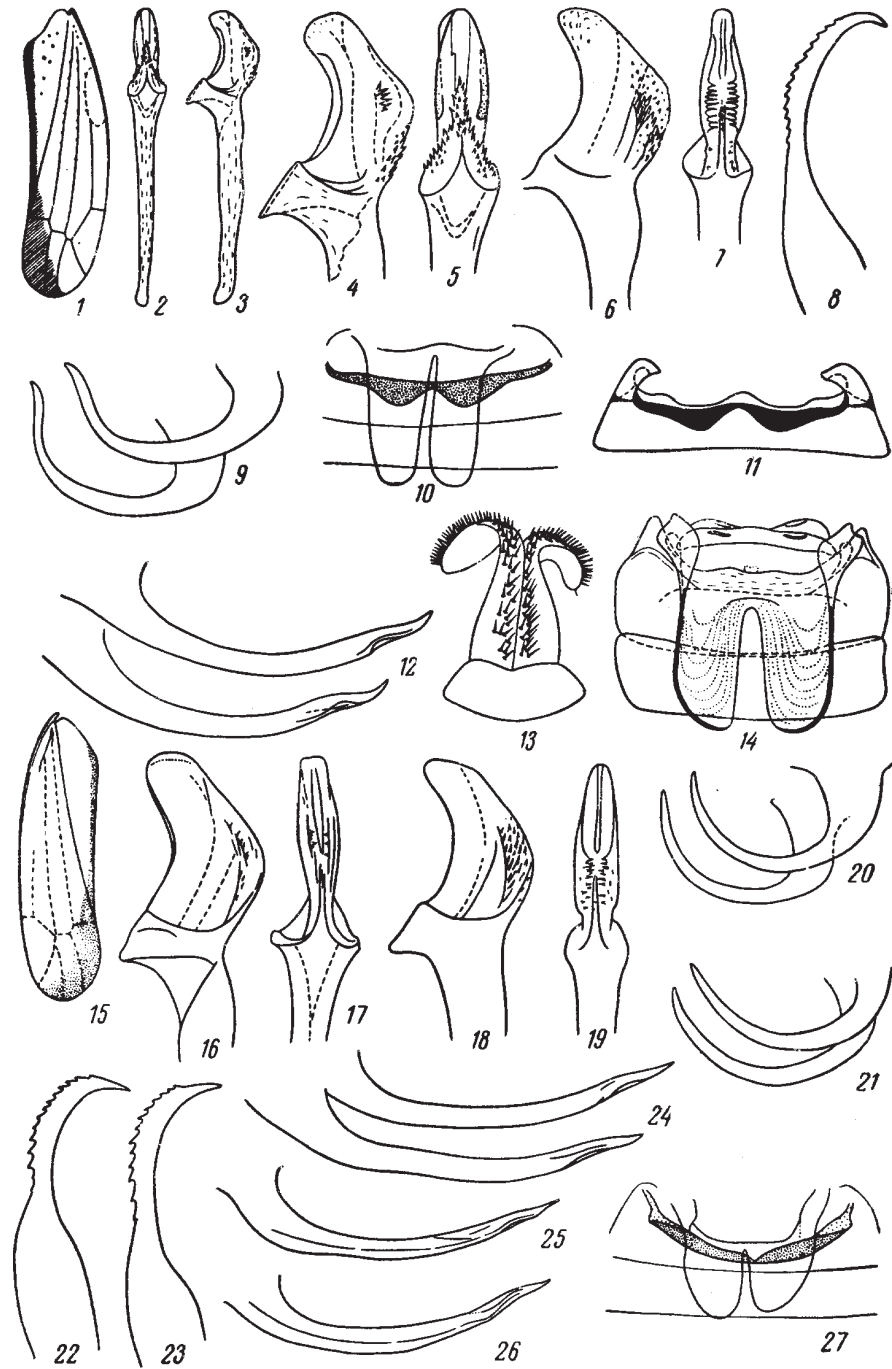


Fig. 84. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Dworakowska and Ossiannilsson).

1-14, *Kybos rufescens rufescens*: 1, fore wing; 2, 3, penis (2, ventral view; 3, lateral view); 4-7, apex of penis (4, 6, lateral view; 5, 7, ventral view); 8, apex of stylus; 9, processes of anal tube; 10, apodemes of abdomen; 11, tergite III of male abdomen, ventral view; 12, processes of pygofer lobes; 13, genital valve and genital plates, ventral view; 14, sternites I-IV of male abdomen, dorsal view; 15-27, *K. rufescens matsumurai*: 15, fore wing of female; 16-19, apex of penis (16, 18, lateral view; 17, 19, ventral view); 20, 21, processes of anal tube; 22, 23, apex of stylus; 24-26, processes of pygofer lobes; 27, apodemes of abdomen.

compressed laterally; gonopore subapical, ventral. At base of abdomen, 2 pairs of apodemes (Fig. 84: 10). Female. Subgenital sternite elongate, with parabolic posterior margin. Sometimes considered as subgenus of the genus *Empoasca*. – Not less than 8 species (in USSR about 25, in Palearctic more than 35).

LITERATURE. Dworakowska, I. Kybos Fieb., subgenus of *Empoasca* Walsh (Auchenorrhyncha, Cicadellidae, Typhlocybinae) in Palearctic. Acta Zool. Crac. 1976. T. 21, no. 13. P. 387-463.

1. Hemelytra with longitudinal dark stripe along commissural margin often extending on mesonotum and pronotum. Penis without processes arising from base. Processes of anal tube long and thin. – On willows 2
- Hemelytra without distinct longitudinal dark stripe along commissural margin, though commissural vein itself may be darkened. Penis without processes or with processes arising from base 3
2. Phragmata of tergite III of male abdomen short, much shorter than wide. Face ochraceous above, greenish below; white hypodermal pattern well developed; at least, inner parts of genae and often upper parts of lora, upper third of anteclypeus and distinct spots at eyes above antennae white; white middle stripe on frontoclypeus strongly widened at base and narrowed to coronal suture. Vertex yellowish green or olive green, rarely with 2 dark spots. Pronotum yellowish green or light olive green, darkened to posterior margin; 3 indistinct whitish spots near anterior margin; a semicircular or triangular grayish spot always divided by light longitudinal stripe in center of pronotum. Mesonotum with brown scutum; its longitudinal white stripe with 2 distinct dark dots; scutellum with a large heart-shaped spot at anterior margin. Hemelytra greenish, semihyaline, with longitudinal brown stripe along commissural and posterior margins occupying only hind part of 2nd and 3rd apical cells. 3.9-4.6. – Kamch., Prim.; Tuva, Kazakhstan, European part of USSR. – Korea, NE China, Mongolia, N and C Europe. – In Prim., NE China and Korea, ssp. *matsumurai* Dwor. (Figs. 84: 15-27) differing from the nominotypical subspecies in lighter pigmented body. – On willows; [p. 131] in Europe, especially on *Salix purpurea* and also on *Alnus glutinosa*. June to August. (Figs. 84: 1-14) **K. rufescens** Mel.
- Phragmata of tergite III of male abdomen long, about as long as wide. Face yellow green, with not contrasting white hypodermal pattern and more green lower part; white in color are: inner parts of genae, upper parts of lora, sometimes upper part of anteclypeus, narrow spots above antennae at eyes, small spots above ocelli and medial to them, sometimes very small spots lateral to frontal sutures, and narrow middle stripe on frontoclypeus often disappearing below. Vertex olive, with 2 darker small spots; coronal suture with light edging and often with brown shading at anterior margin. Pronotum olive, with a small whitish spot near the middle of anterior margin and 2 small spots beyond eyes; posterior margin often darkened, but posterior angles remain green; large semicircular or triangular spot on disc often interrupted by light longitudinal stripe. Mesonotum with brown scutum having a narrow light [p. 132] stripe in the middle; scutellum brown laterally and olive posteriorly, with yellowish or whitish spot in center. Hemelytra emerald green, with wide stripe along commissural and posterior margins occupying apices of medial and cubital cells, 4th apical cell and most of 3rd and 2nd apical cells. 3.9-4.7. – Mag., Kamch., N Khab.; Transbaikal, Tuva, Baltia. – Mongolia, N and C Europe, N America where evidently it was introduced. – On various willows; in Europe, on *Salix repens*, *S. cinerea*, *S. caprea*, *S. myrsinifolia*, etc. June to September. (Figs. 85: 1-14) **K. butleri** Edw.

3. Claval suture not contrasting in color to general background and veins of hemelytra. Penis without basal processes. Processes of anal tube long, thin. On willows and poplars 4

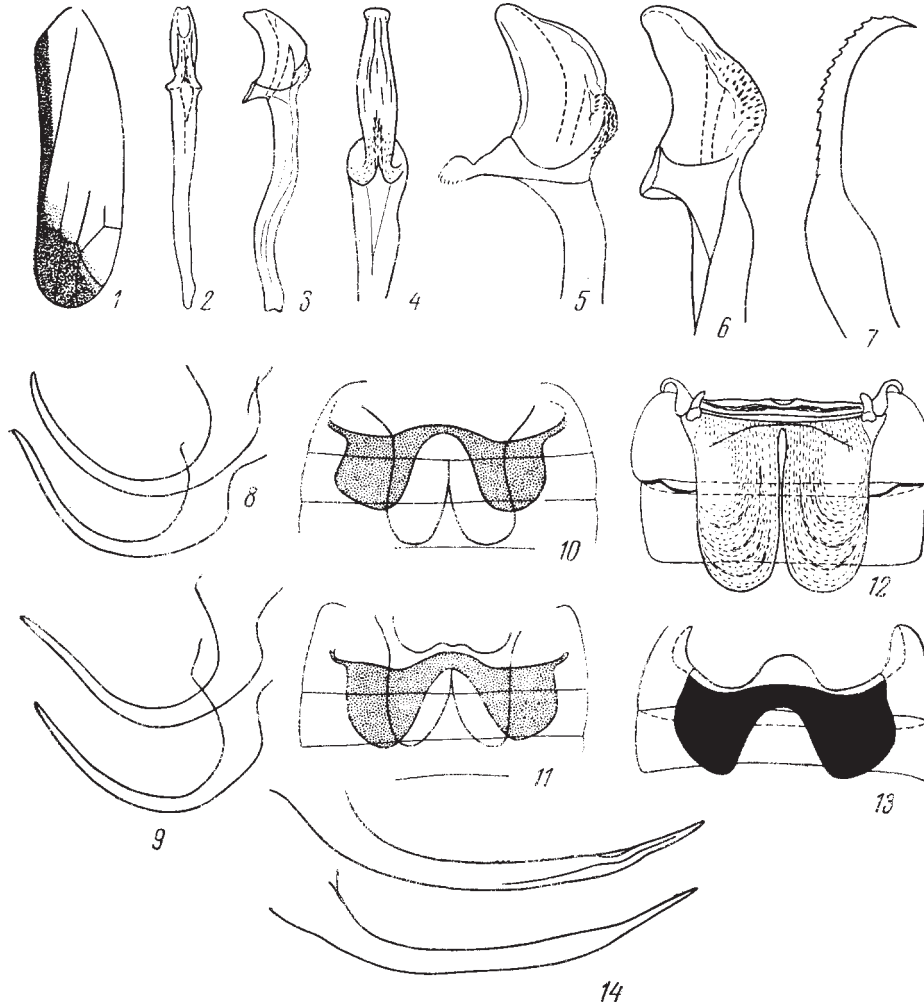


Fig. 85. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Dworakowska and Ossiannilsson).

1-14. *Kybos butleri*: 1, fore wing; 2, 3, penis (2, ventral view; 3, lateral view); 4-6, apex of penis (4, ventral view; 5, 6, lateral view); 7, apex of stylus; 8, 9, processes of anal tube; 10, 11, apodemes of male abdomen; 12, segments II-IV of male abdomen, dorsal view; 13, tergites III and IV of male abdomen, ventral view; 14, processes of pygofer lobes.

- Claval suture darkened, darker than general background and veins of hemelytra. Penis with a pair of processes arising from base. Processes of anal tube short and thick. On various species of *Betula* and *Alnus* 8
- 4. Phragmata of tergite III of male abdomen long, of subequal length and width. Shaft of penis very wide in lateral view; its length and the greatest width [p. 133] nearly equal. Face with brown frontoclypeus, upper part of lora and genae; lower part of anteclypeus olive green or yellow; large areas at eyes and spots above antennae and at ocelli yellowish white. Vertex olive, with olive green or yellow spots at eyes and edging of coronal suture. Pronotum olive green or yellowish, with

lighter posterior angles, a large brown spot in center and brown posterior margin; 3 whitish spots at anterior margin, lateral ones larger than middle spot. Mesonotum with brown scutum, castaneous basal triangles and whitish yellow middle stripe; scutellum brown in posterior part, anteriorly with large wide whitish green spot. 4-4.8. – N Khab.; Yakutia, Tuva, C European part of USSR. – N Europe, Alaska, Canada. – On willows; in Europe, on *S. caprea*, *S. phylicifolia*, *S. purpurea*, *S. myrsinifolia*. June to August. (Figs. 86: 1-13) **K. sordidulus** Oss.

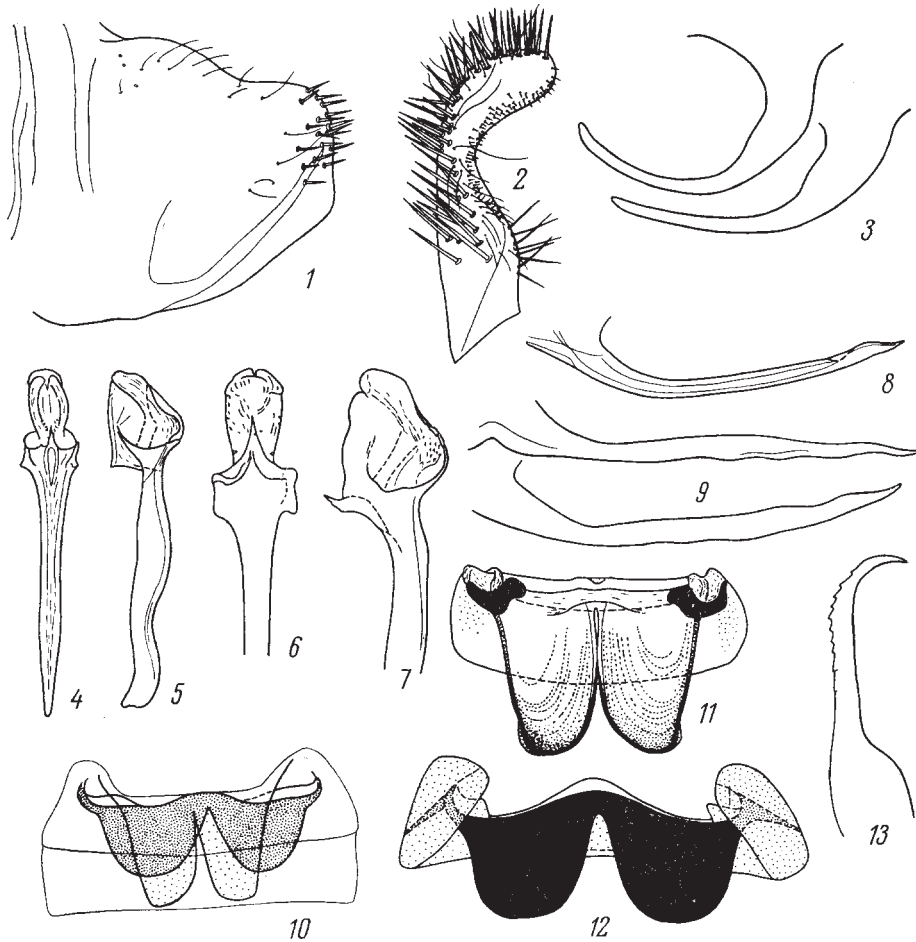


Fig. 86. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Dworakowska and Ossiannilsson).

1-13, *Kybos sordidulus*: 1, lobe of pygofer; 2, genital plate; 3, processes of anal tube; 4, 5, penis (4, ventral view; 5, lateral view); 6, 7, shaft of penis (6, ventral view; 7, lateral view); 8, 9, processes of pygofer lobes; 10, apodemes of male abdomen; 11, sternites II and III of male abdomen; 12, tergite III of male abdomen, ventral view; 13, apex of stylus.

- Phragmata of tergite III of male abdomen short, their length much less than width. Shaft of penis of moderate width in lateral view, much longer than wide 5
- 5. Apodemes of sternite II of male abdomen short, not extending or slightly extending beyond limits of sternite III, widely spaced; the distance between apodemes not less than half of apodeme width. – Face with yellowish green frontoclypeus, genae yellowish from above and green below, green lower parts of lora and anteclypeus; small whitish spots lateral to frontal sutures and large

white parts at eyes above antennae and at ocelli are present. Vertex ochraceous or greenish, with lighter stripe along coronal suture. Pronotum yellowish green, with whitish posterior margin and 3 white spots at anterior margin, the middle one the largest; a whitish stripe often present along the midline. Mesonotum yellowish olive; scutum between basal triangles with large white spot extending on scutellum; at anterior margin of scutellum, 2 small triangular white spots lateral to the middle spot. Hemelytra light green, semihyaline; apices of apical veins and adjacent areas of membrane slightly darkened. 4-4.6. – Prim. – Korea, China (Hubei). – On *Populus* in flood plain forests. July to August. (Figs. 87: 1-11)

..... **K. koreanus** Mats.

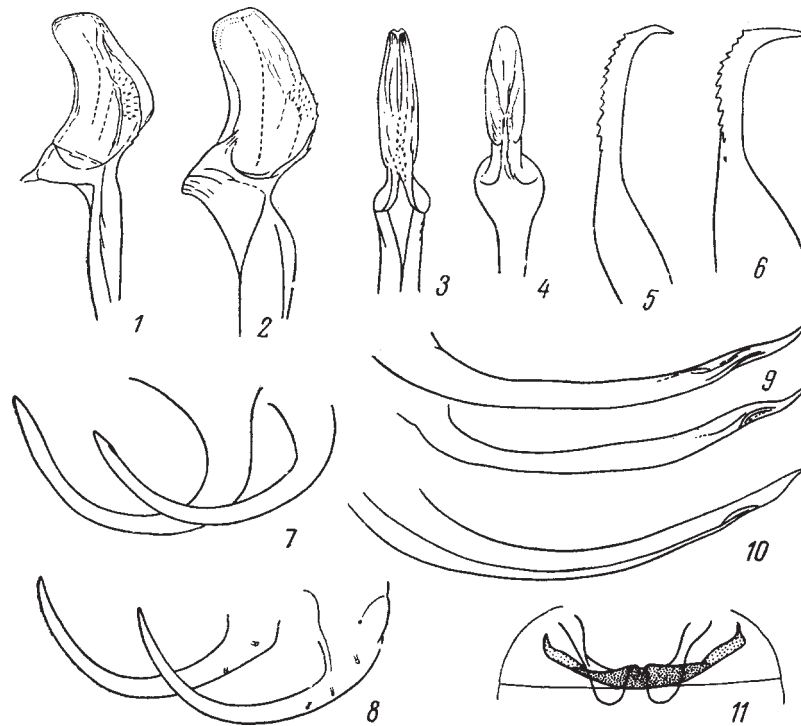


Fig. 87. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Dworakowska).

1-11, *Kybos koreanus*: 1-4, shaft of penis (1, 2, lateral view; 3, 4, ventral view); 5, 6, apex of stylus; 7, 8, processes of anal tube; 9, 10, processes of pygofer lobes; 11, apodemes of male abdomen.

- Apodemes of sternite II of male abdomen reaching or nearly reaching to sternite V, approximate to each other 6
- 6. Processes of pygofer lobes wide nearly up to the very apex, which is shortly pointed and often excised ventrally. Face with ochraceous or brownish frontoclypeus, often bearing brown transverse stripes; inner parts of genae and upper parts of lora whitish; sides and lower 2/3 of anteclypeus greenish; white hypodermal pattern formed by longitudinal stripe on frontoclypeus narrowed at its ends and small spots at inner margins of eyes and at ocelli. Vertex olive, greenish backwards. Pronotum olive, darker in the middle, with 3 small whitish spots at anterior margin. Mesonotum olive brown, with narrow whitish longitudinal stripe on the scutum and heart-shaped spot at anterior margin of scutellum. Hemelytra light olive; a wide brown stripe with dim margins present at posterior margin of clavus; apices of apical veins and membrane in area of api-

- cal cells darkened. 3.8-4.8. – Mag., N Khab.; Siberia, Kazakhstan, N and C European part of USSR. – W Europe. – In flood plain forests on *Populus suaveolens*; in Europe, on *P. nigra* and related cultivated species, *P. alba* and aspen; 2 generations. June to September. (Figs. 88: 1-14) **K. populi** Edw.
- Processes of pygofer lobes comparatively narrow, gradually becoming thinner to long-pointed apices. On willows 7
7. Shaft of penis ventrally with triangular plate-shaped widening at base. Processes of anal tube slightly widened before apices. – Face with ochraceous frontoclypeus and frons; genae laterally and [p. 134] lower part of anteclypeus green; white are: upper quarter of anteclypeus, the very upper part of lora, inner parts of genae, comparatively wide stripe on frontoclypeus, narrow spots lateral to frontal sutures, stripes at eyes and rounded spots at ocelli. Vertex olive green, with 2 small white spots at base; coronal suture with narrow white edging. Pronotum light green, with irregular spots beyond eyes and small spot in the middle at anterior margin. Mesonotum ochraceous; scutum with narrow middle stripe; scutellum with large triangular spot at the middle of anterior margin and 2 distinct longitudinal spots on anterior angles. Hemelytra light green, semihyaline. 3.6-4.4. – Prim. – Korea. – In flood plain forests on *Salix*. July to September. (Figs. 88: 15-21) **K. cornutus** Dwor.
- Shaft of penis ventrally without triangular plate-shaped widening at base. Processes of anal tube gradually narrowing to apices, without subapical widening. (Figs. 84: 15-27). See also couplet 2 **K. rufescens matsumurai** Dwor.
8. Apodemes of sternite II of male abdomen very short, weakly noticeable. On various species of alder. – Face laterally and in lower part green, with yellowish green frontoclypeus having a narrow white median stripe; whitish also are: upper part of anteclypeus, upper parts of genae, spots above antennae and at ocelli. Vertex ochraceous, with 2 angular spots with castaneous tint; coronal suture with white edging. Pronotum olive green, with whitish spot in the middle of anterior margin and 2 lightened areas laterally beyond eyes, often with a whitish longitudinal stripe in the middle; on disc, large semicircular or triangular brown spot; along posterior margin, wide darkening. Mesonotum brown, with short whitish stripe [p. 136] in the middle of scutum and triangular whitish spot on scutellum. Hemelytra, especially their bases and clavus, emerald green, semihyaline at costal margin; apical cells, apices of cubital and medial cells darkened. Inner and posterior margins of hemelytra, apex of clavus and claval suture with brown edging; a brown stripe often present in central part of radial cell. 3.8-4.6. – ?Sakh.; Siberia, Kazakhstan, Middle Asia, European part of USSR. – Nearly whole Europe. – On various species of *Alnus*; in Europe, on *A. glutinosa* and *A. incana*; eggs overwintering. June to September. (Figs. 89: 1-23) **K smaragdulus** Fall.
- Apodemes of sternite II of male abdomen of about equal length and width. On *Betula* 9
9. Basal processes of penis widely spaced. – Similar to *K. smaragdulus*, but whitish spots on face smaller, coronal suture without light edging, brown edging of hemelytral margins and of claval suture narrower and lighter, and apical cells darkened insignificantly. 4.1-4.7. – Mag., Kamch. – Mongolia, Great Britain, Netherlands, Germany, Sweden, Norway, introduced into Canada. – On *Betula*; in Europe, on *B. pendula* and *B. pubescens*. July to September. (Figs. 90: 1-16) **K. betulicola** W. Wagn.
- Basal processes of penis with closely approximate bases. – Face with yellowish frontoclypeus; genae laterally and anteclypeus greenish; white hypodermal pat-

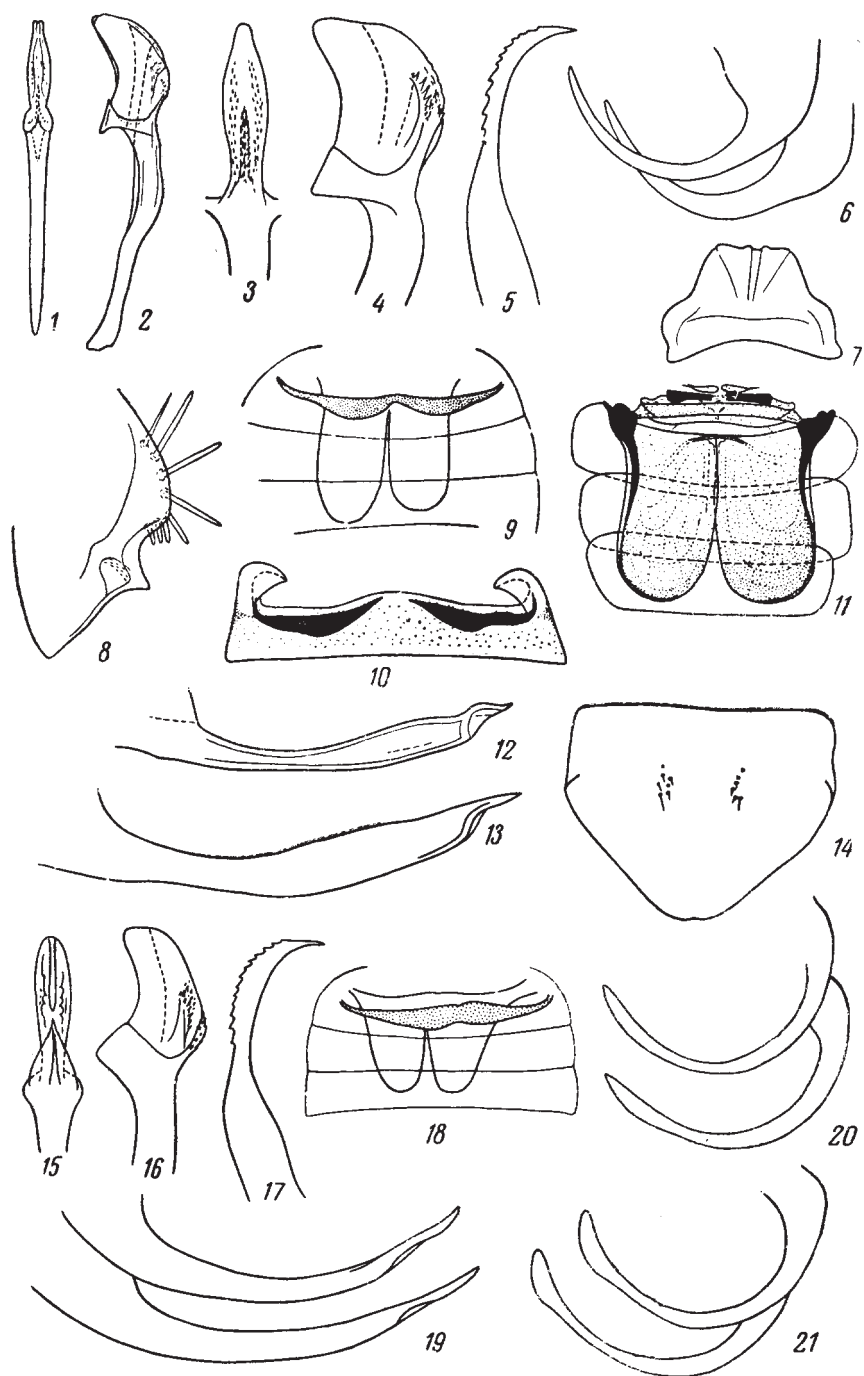


Fig. 88. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Dworakowska and Ossianilsson).

1-14, *Kybos populi*: 1, 2, penis (1, ventral view; 2, lateral view); 3, 4, shaft of penis (3, ventral view; 4, lateral view); 5, apex of stylus; 6, processes of anal tube; 7, connective; 8, base of genital plate; 9, apodemes of abdomen; 10, tergite III of male abdomen, ventral view; 11, sternites I-V of male abdomen, dorsal view; 12, 13, process of pygofer lobe; 14, sternite VII of female abdomen, ventral view; 15-21, *K. cornutus*: 15, 16, shaft of penis (15, ventral view; 16, lateral view); 17, apex of stylus; 18, apodemes of male abdomen; 19, processes of pygofer lobes; 20, 21, processes of anal tube.



Fig. 89. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Dworakowska and Ossiannilsson).

1-23, *Kybos smaragdulus*: 1, genital block of male, lateral view; 2, genital plate, ventral view; 3, 4, stylus; 5, apex of stylus; 6, apex of pygofer lobe, lateral view; 7, anal tube, lateral view; 8-10, process of anal tube; 11-13, penis (11, ventral view; 12, 13, lateral view); 14, 15, apical half of penis (14, ventral view; 15, lateral view); 16, apodemes of male abdomen; 17, tergites II and III of male abdomen, ventral view; 18, tergites II and III of male abdomen, dorsal view; 19, sternite VII of female abdomen, ventral view; 20-23, process of pygofer lobe.



Fig. 89. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Dworakowska and Ossiannilsson).

1-23, *Kybos smaragdulus*: 1, genital block of male, lateral view; 2, genital plate, ventral view; 3, 4, stylus; 5, apex of stylus; 6, apex of pygofer lobe, lateral view; 7, anal tube, lateral view; 8-10, process of anal tube; 11-13, penis (11, ventral view; 12, 13, lateral view); 14, 15, apical half of penis (14, ventral view; 15, lateral view); 16, apodemes of male abdomen; 17, tergites II and III of male abdomen, ventral view; 18, tergites II and III of male abdomen, dorsal view; 19, sternite VII of female abdomen, ventral view; 20-23, process of pygofer lobe.

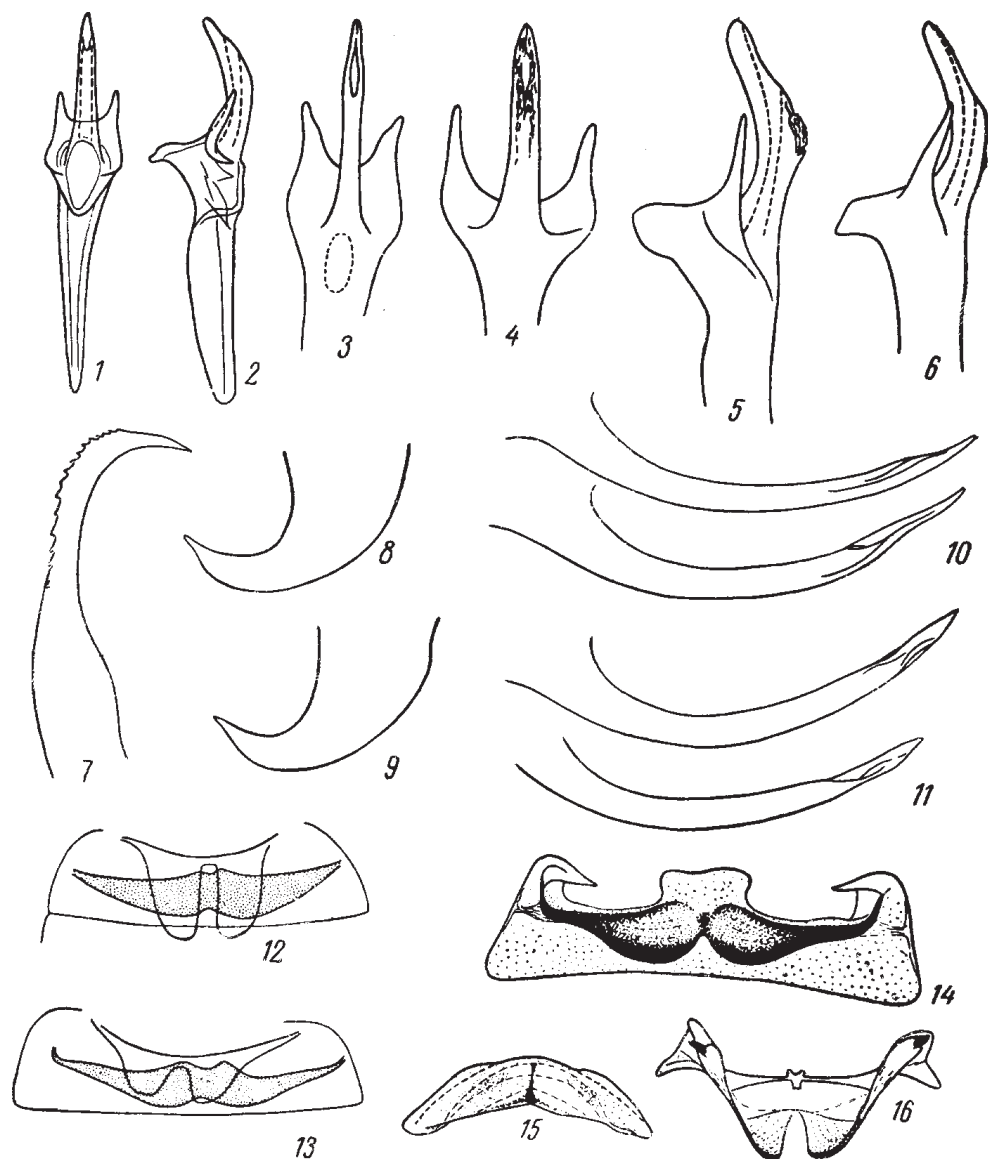


Fig. 90. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Dworakowska and Ossiannilsson).

1-16, *Kybos betulicola*: 1, 2, penis (1, ventral view; 2, lateral view); 3-6, apical half of penis (3, 4, ventral view; 5, 6, lateral view); 7, apex of stylus; 8, 9, process of anal tube; 10, 11, processes of pygofer lobes; 12, 13, apodemes of male abdomen; 14, tergite III of male abdomen, ventral view; 15, tergite II of male abdomen, ventral view; 16, sternite II of male abdomen, dorsal view.

tern represented by very narrow median longitudinal stripe on frontoclypeus, whitish upper part of anteclypeus, spots at eyes and small spots at ocelli. Vertex ochraceous, with a dim olive stripe. Pronotum olive yellow, with white spot in the middle at anterior margin and 2 lightened areas beyond eyes; posterior margin slightly darkened; disc with dark olive semicircular or triangular spot often interrupted in the middle by light longitudinal stripe. Mesonotum with dark ochraceous scutum, sometimes having a narrow median white stripe, and

ochraceous scutellum with triangular white spot. Hemelytra olive green, slightly lightened at costal margin; apical part slightly darkened; inner margin of clavus and claval suture with narrow brown edging; posterior angle of clavus dark. 3.9-4.8. – Yakutia, Tuva, W Siberia, Kazakhstan, C European part of USSR, Baltia. – Sweden, Finland, E Germany, Czechoslovakia. – On *Betula*; in Europe, on *B. pendula*, *B. pubescens* and *B. nana*; in Kazakhstan, on *B. kirghisorum*. June to August. (Figs. 91: 2-19) **K. lindbergi** Lnv.

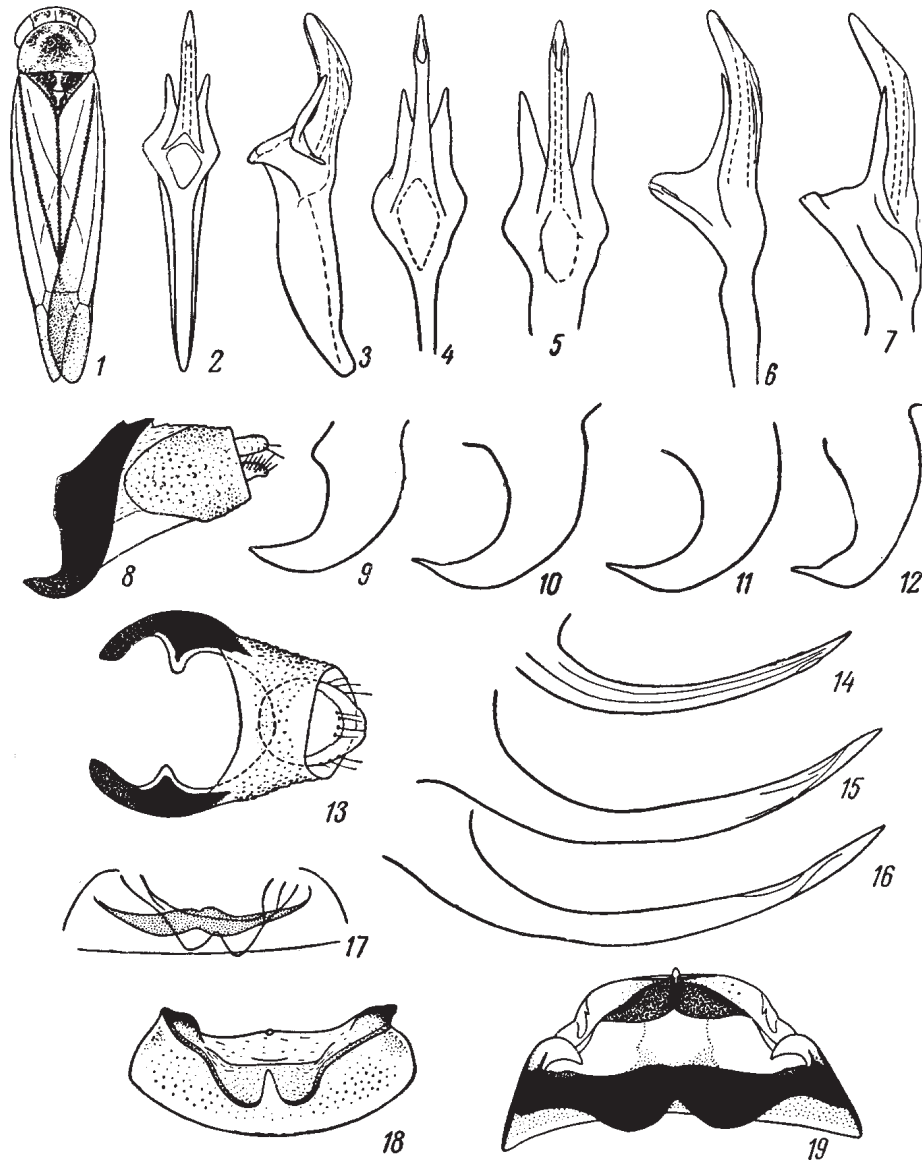


Fig. 91. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Dworakowska and Ossiannilsson).

1, *Kybos perplexus* Rib.; 2-19, *K. lindbergi*: 2, 3, penis (2, ventral view; 3, lateral view); 4-7, apical half of penis (4, 5, ventral view; 6, 7, lateral view); 8, anal tube, lateral view; 9-12, processes of anal tube; 13, anal tube, ventral view; 14-16, processes of pygofer lobe; 17, apodemes of male abdomen; 18, sternites II and III of male abdomen, dorsal view; 19, tergites II and III of male abdomen, ventral view.

56. **Empoasca** Walsh. Slender, delicate, green-colored, with middle part of vertex slightly elongate compared to its sides, rather often with white hypodermal pattern on head and pronotum. Hemelytra with rectangular apical cells; more rarely 3rd apical cell stalked or triangular. Male. Lobes of pygofer more or less widely rounded on posterior margin; processes running along ventral margin and rather often projecting beyond pygofer. Anal tube at base with 1 or 2 pairs of processes. Genital plates triangular or nearly parallel-sided, with apices slightly slanting upwards; stripe of bristles situated along their ventral surface; dorsal half with long setae; along dorsal margin, a row of bristles often divided into basal group of longer and distal group of shorter bristles. Styli with weakly separated apical part denticulate on ventromedial margin and devoid of bristles; long bristles present on outer margin of subapical part. Penis with moderately long base, sometimes bearing processes at place where shaft arises, and tubular, sometimes flattened shaft; gonopore subapical or apical. At base of abdomen, well developed long apodemes arise from sternite II. Female. Subgenital sternite slightly elongate, with more or less projecting parabolic posterior margin. Females in most species are difficult to identify. – Not less than 22 species (in USSR more than 25, in Palearctic more than 40).

LITERATURE. Anufriev, G. A. The genus *Empoasca* Walsh, 1864 (Homoptera, Cicadellidae, Typhlocybinae) in the Soviet Maritime Territory. Ann. Zool. 1973. T. 30, no. 18. P. 537-558. [p. 138]

1. 3rd apical cell of hemelytra stalked or triangular. Penis with a pair of processes at base. Genital plates triangular; their bases very wide, projecting on sides of pygofer. (Subgenus *Matsumurasca* Anufr.). Yellowish green, with white hypodermal pattern on face, vertex, pronotum and mesonotum. 4.3-4.8. – S Khab., Prim., S Sakh., S Kur. – On *Phellodendron amurense* and *Ph. sachalinense* in mixed and broad-leaved, mainly valley forests. May to September. (Figs. 93: 1-9) **E. (M.) diversa** Vilb.
- 3rd apical cell of hemelytra quadrangular. Penis at base without processes. Genital plates more or less parallel-sided in ventral view, only slightly narrowed to rounded apices; their bases [p. 139] of moderate width, not projecting on sides of pygofer. (Subgenus *Empoasca* Walsh) 2
2. Large bristles on dorsal margin of genital plates situated nearer to apex than to base; a row of bristles on ventral surface of genital plates beginning at some distance from apex. Processes of pygofer lobes smooth, without noticeable widenings and knots, with apices smoothly slanting upwards and laterad. Pale greenish. 3-3.3. – Prim. – Korea. In mixed and broad-leaved forests. Late June to late August. (Figs. 93: 10-14) **E. amurensis** Anufr.
- Large bristles on dorsal margin of genital plates situated nearer to base than to apex; a row of bristles on ventral surface beginning immediately from apices of genital plates 3 [p. 143]
3. Anal tube with 2 pairs of processes (Figs. 93: 17; 94: 5) 4
- Anal tube with 1 pair of processes (Fig. 96: 6) 6
4. Comparatively long anterior processes of anal tube bent inwards and backwards. Pale green. 3.4-3.9. – Prim., Sakh., S Kur.; Altai. – Korea, Mongolia. – In forests. Late May to mid-September. (Figs. 93: 15-19) **E. altaica** Vilb.
- Comparatively short anterior processes of anal tube only slightly slanting inwards (Fig. 94: 6) 5
5. Processes of pygofer lobes with blunt ends, slanting obliquely upwards and laterad. Light greenish. 3.3-3.7. – Prim. – N China (Shaanxi). – In broad-leaved and mixed forests. Mid-June to early October. (Figs. 94: 1-3) **E. furcata** Vilb.

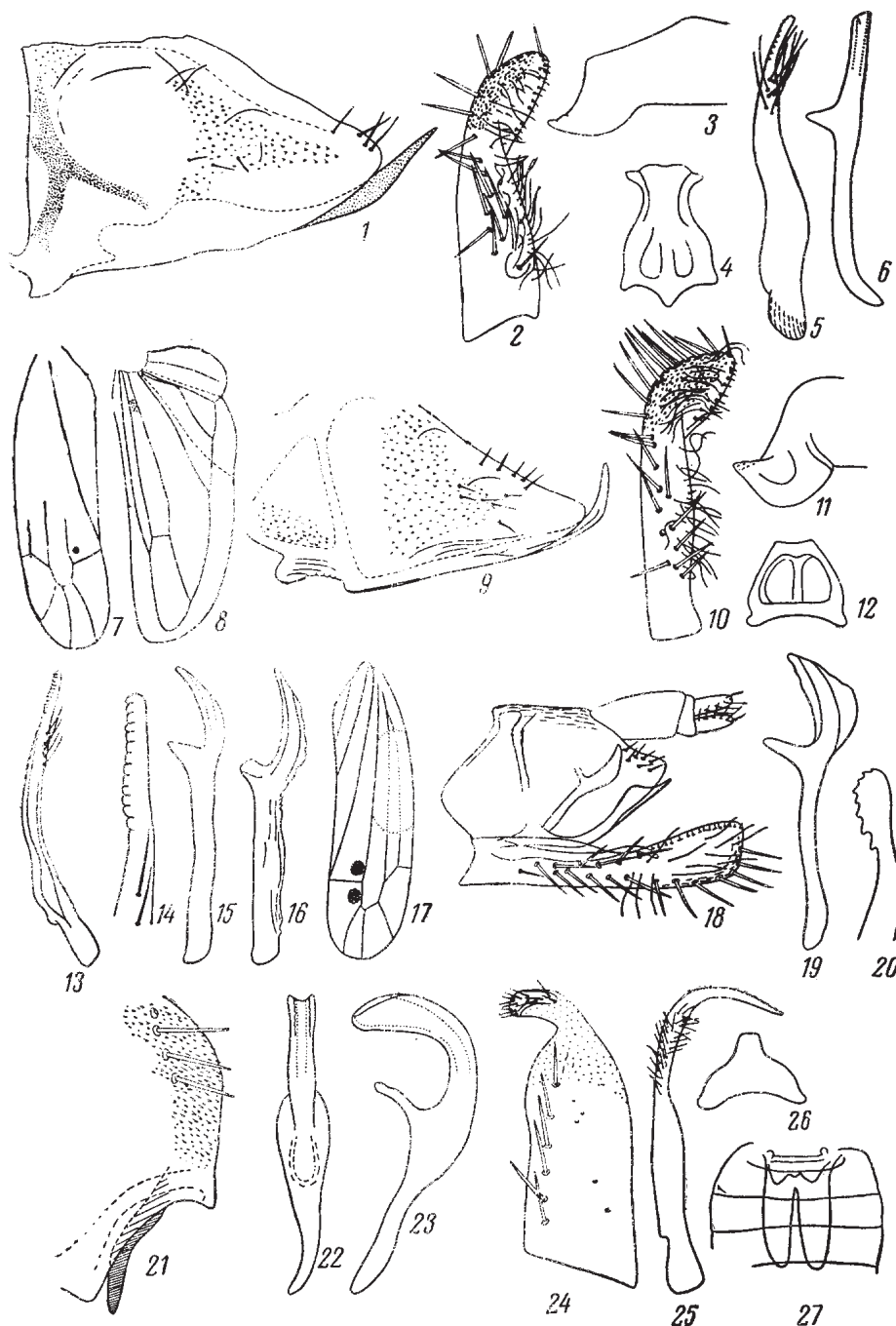


Fig. 92. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev, Dworakowska, and Zachvatkin).

1-6, *Austroasca vittata*: 1, lobe of pygofer, lateral view; 2, genital plate; 3, process of anal tube; 4, connective; 5, stylus; 6, penis, lateral view; 7-16, *Kyboasca bipunctata*: 7, fore wing; 8, hind wing; 9, lobe of pygofer, lateral view; 10, genital plate; 11, process of anal tube; 12, connective; 13, stylus; 14, apex of stylus; 15, 16, penis, lateral view; 17-20, *K. sexevicens*: 17, fore wing; 18, genital block of male, lateral view; 19, penis, lateral view; 20, apex of stylus; 21-27, *Zyginella mali*: 21, apex of pygofer lobe; 22, 23, penis (22, ventral view; 23, lateral view); 24, genital plate; 25, stylus; 26, connective; 27, apodemes of abdomen.



Fig. 93. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev, Dworakowska, and Vilbaste).

1-9, *Empoasca diversa*: 1, fore wing; 2, hind wing; 3, 4, genital block of male (3, lateral view; 4, ventral view); 5, apodemes of base of male abdomen; 6, genital plate; 7, 8, penis (7, ventral view; 8, lateral view); 9, apex of stylus; 10-14, *E. amurensis*: 10, fore wing; 11, hind wing; 12, 13, genital block of male (12, lateral view; 13, ventral view); 14, process of pygofer lobe; 15-19, *E. altaica*: 15, genital block of male, lateral view; 16-18, anal tube (16, 17, lateral view; 18, ventral view); 19, apex of process of pygofer lobe.

- Processes of pygofer lobes with pointed ends, slanting only obliquely upwards. Light greenish. 2.5-2.9. – Prim. – In broad-leaved and mixed forests, open woodlands. Mid-July to late August. (Figs. 94: 4-7) **E. hankaensis** Vilb.
- 6. Processes of pygofer with smooth widening before apex (Figs. 94: 10, 11, 14, 17) 7
 - Processes of pygofer before apex without widening or with widening denticulate at least on one side 9
- 7. Widening of pygofer processes situated on their inner side (see from below) (Figs. 94: 10, 11, 14) 8
 - Large plate-shaped widening of pygofer processes situated on their outer side (see from below); apical part of processes smooth. Light green. 3.8-4. – Prim. – In mixed and broad-leaved forests. Mid-July to mid-September. (Figs. 94: 15-17) **E. sichotana** Anufr.
- 8. Comparatively small knot-shaped widening of pygofer processes situated at a considerable distance from apex; apical part of processes slightly denticulate on both sides. Light greenish. 3.6-3.7. – Prim. – In mixed and broad-leaved forests. Late August. (Figs. 94: 8-11) **E. ishiharai** Anufr.
 - Large widening of pygofer processes situated near apex. Apical part of processes smooth or slightly denticulate on outer margin. Light green. 3.9-4.3. – Prim.; Altai. – Korea, Mongolia. – In broad-leaved, small-leaved and mixed forests. Early June to mid-September. (Figs. 94: 12-14) **E. sibirica** Vilb.
- 9. Processes of pygofer smooth, steeply bent upwards. Bright olive green or yellow green; apices of hemelytra slightly darkened. 3.3-3.5. – S Sakh., S Kur. – Japan (Hokkaido, Honshu). – In mixed and coniferous forests, on *Abies sachalinensis*. August. (Figs. 95: 1-5) **E. abietis** Mats.
 - Processes of pygofer denticulate near apex (Figs. 95: 8; 96: 14) 10
- 10. Processes of pygofer denticulate only on one side (Fig. 95: 8) 11
 - Processes of pygofer denticulate on both sides (Fig. 96: 14) 14
- 11. Inner margins of pygofer processes denticulate at a considerable length. Yellowish greenish. 2.8-3.8. – Khab., Prim., S Kur.; Siberia, Middle Asia, European part of USSR. – Japan (Honshu, Kyushu, Shikoku), Korea, NE China, N and C Europe, N Africa, Nearctic and Oriental Regions. – Polyphagous, on lower surface of leaves of various trees and shrubs, mainly in forests; up to several generations per year, imagines overwintering. During the whole year. (Figs. 95: 6-8) **E. vitis** Göthe
 - Outer margins of pygofer processes denticulate (Figs. 95: 11, 14) 12
- 12. Processes of pygofer with subapical widening; outer convex margin of the widening denticulate. Pale yellowish, with greenish tint. 3.3-4. – S Khab., Prim.; Tuva, Altai, Baltia, Carpathian Mts. – [p. 146] Finland, Sweden. – In forests. May to September. (Figs. 95: 9-11) **E. ossianilssoni** Nuorteva
 - Processes of pygofer without subapical widening 13
- 13. Processes of pygofer strongly projecting beyond pygofer lobes, denticulate at a considerable distance from apex. Pale green. 3.4-3.5. – Prim. – Under forest canopy. Early August. (Figs. 95: 12-14) **E. viburni** Vilb.
 - Processes of pygofer only somewhat projecting beyond limits of lobes, denticulate beginning from apex. Greenish yellow, with slightly darkened apex of hemelytra. 3.7-4.3. – S Khab., Prim.; Altai, Krasnoyarsk Terr. – Korea. – In forests. June to September. (Figs. 96: 1, 2) **E. betuleti** Vilb.
- 14. Processes of pygofer with a sharp denticulate subapical widening (Fig. 96: 14) 15
 - Processes of pygofer without sharp denticulate subapical widening (Figs. 98: 19, 20) 17

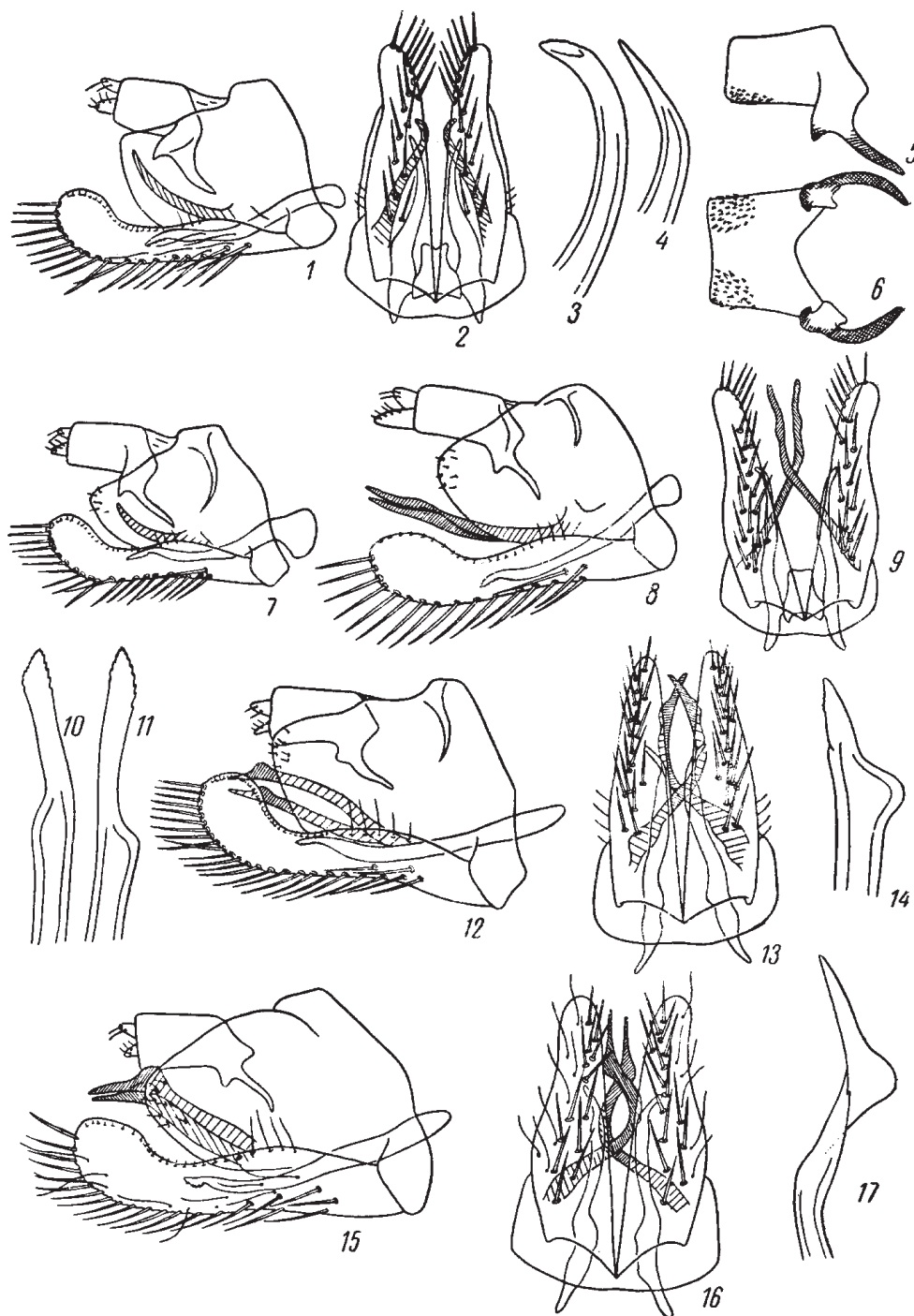


Fig. 94. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev).

1-3, *Empoasca furcata*: 1, 2, genital block of male (1, lateral view; 2, ventral view); 3, apex of process of pygofer lobe; 4-7, *E. hankaensis*: 4, apex of process of pygofer lobe; 5, 6, anal tube (5, lateral view; 6, ventral view); 7, genital block of male, lateral view; 8-11, *E. ishiharai*: 8, 9, genital block of male (8, lateral view; 9, ventral view); 10, 11, apices of processes of pygofer lobes; 12-14, *E. sibirica*: 12, 13, genital block of male (12, lateral view; 13, ventral view); 14, apex of process of pygofer lobe; 15-17, *E. sichotana*: 15, 16, genital block of male (15, lateral view; 16, ventral view); 17, apex of process of pygofer lobe.

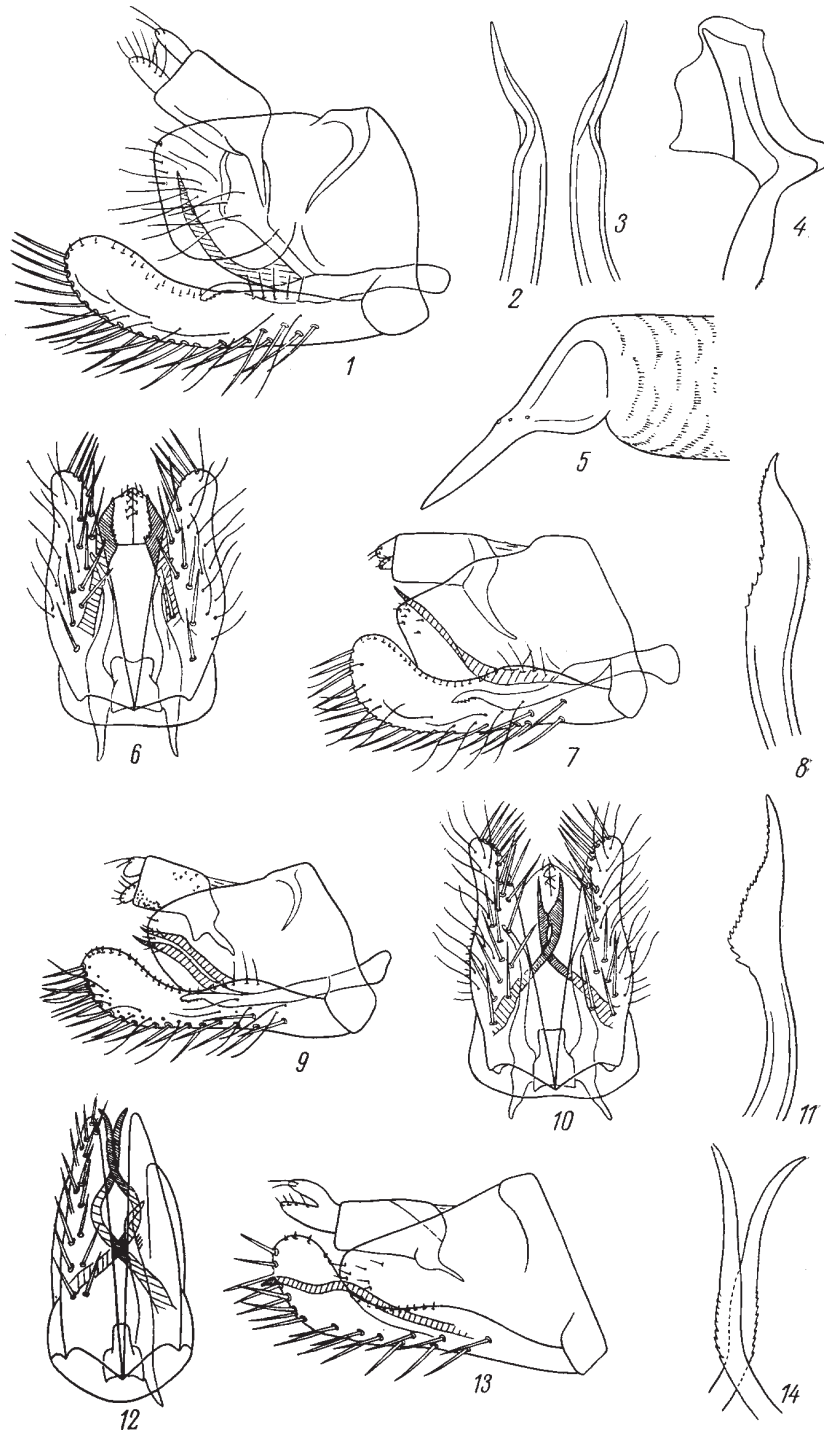


Fig. 95. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev and Vilbaste).

1-5, *Empoasca abietis*: 1, genital block of male, lateral view; 2, 3, apices of processes of pygofer lobes; 4, penis, lateral view; 5, process of anal tube, lateral view; 6-8, *E. vitis*: 6, 7, genital block of male (6, ventral view; 7, lateral view); 8, apex of process of pygofer lobe; 9-11, *E. ossiannilssoni*: 9, 10, genital block of male (9, lateral view; 10, ventral view); 11, apex of process of pygofer lobe; 12-14, *E. viburni*: 12, 13, genital block of male (12, ventral view; 13, lateral view); 14, apices of processes of pygofer lobes.

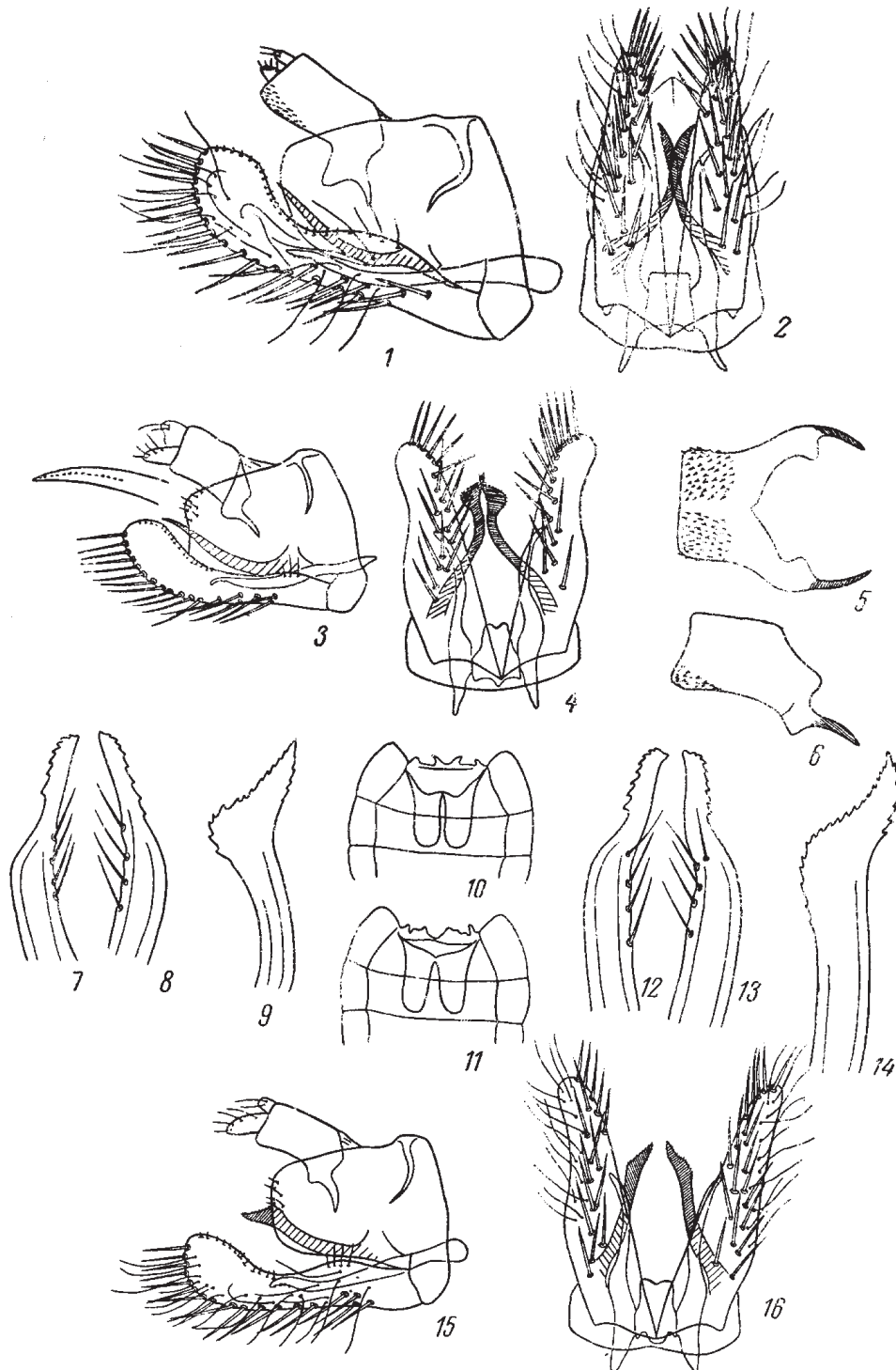


Fig. 96. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev).

1, 2, *Empoasca betuleti*, genital block of male (1, lateral view; 2, ventral view); 3-10, *E. emeljanovi* : 3, 4, genital block of male (3, lateral view; 4, ventral view); 5, 6, anal tube (5, ventral view; 6, lateral view); 7, 8, apices of styli; 9, apex of process of pygofer lobe; 10, apodemes of base of male abdomen; 11-16, *E. apicalis*: 11, apodemes of base of male abdomen; 12, 13, apices of styli; 14, apex of process of pygofer lobe; 15, 16, genital block of male (15, lateral view; 16, ventral view).

15. Convex margin of subapical widening of pygofer processes situated on their outer side (Fig. 96: 4) 16
- Convex margin of subapical widening of pygofer processes [p. 147] situated on their inner side. Pale greenish. 3.4. – Prim. – In forests, under canopy. May, August to September. (Figs. 97: 1-3) *E. silvatica* Vilb.

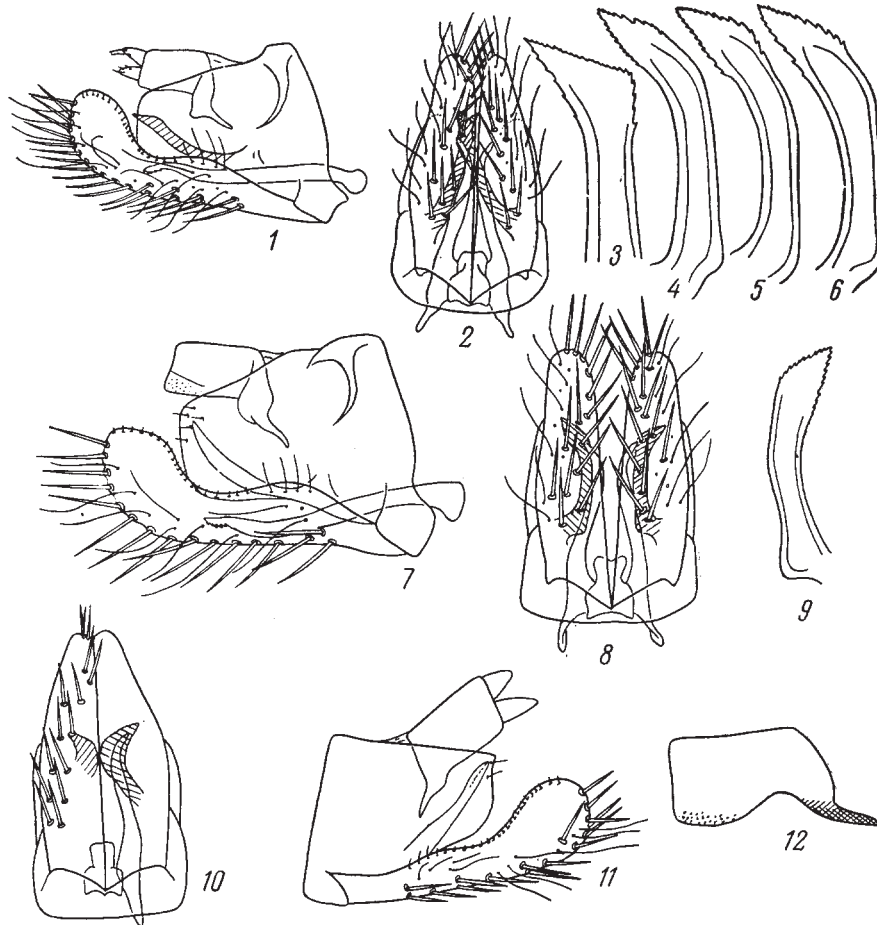


Fig. 97. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev and Vilbaste).

1-3, *Empoasca silvatica*: 1, 2, genital block of male (1, lateral view; 2, ventral view); 3, apex of process of pygofer lobe; 4-8, *E. arborescens*: 4-6, apices of processes of pygofer lobes; 7, 8, genital block of male (7, lateral view; 8, ventral view); 9-12, *E. ussurica*: 9, process of pygofer lobe; 10, 11, genital block of male (10, ventral view; 11, lateral view); 12, anal tube, lateral view.

16. Plate-shaped subapical widenings of pygofer processes situated transversally; therefore, genital segments are not noticeable in lateral view and well visible from below; apices of processes somewhat slanting inwards and downwards. Light greenish. 3.2-3.6. – N Khab., N Prim. – In forests. Mid-August to mid-September. (Figs. 96: 3-10) *E. emeljanovi* Anufr.
- Plate-shaped subapical widenings of pygofer processes inclined, therefore, are well noticeable both in lateral view and from below. Greenish, with darkened apices of hemelytra. 3.6-4.1. – N Khab., N Prim.; Tuva, Kazakhstan, European part of USSR (N and C, Ukraine). – Korea, W Europe. – Under forest canopy, on

- Lonicera*; in Europe, on *L. xylosteum*; in Prim., on *L. maximowiczii*; in Kazakhstan, also on *Padus*, *Humulus*, *Filipendula*, raspberries, blackberries. Late August to September. (Figs. 96: 11-16) **E. apicalis** Fl.
17. Processes of pygofer comparatively short, much shorter than genital plates, sometimes slightly projecting beyond limits of lobes 18
- Processes of pygofer long, strongly projecting beyond limits of lobes and nearly reaching to apices of genital plates. Greenish. 3.5-4. – Khab., Prim.; E Sayan Mts., Tuva, Altai, European part of USSR (Gorki Prov.). – N China (Shanxi), Mongolia. Under canopy of mixed and small-leaved forests, in river flood plains. June to September. (Figs. 98: 15-21) **E. serrata** Vilb.
18. Processes of pygofer at apex denticulate on both sides about at the same length 19
- Processes of pygofer on inner margin denticulate at greater length than on outer one. Pale greenish. 3.5-3.8. – Prim., S Sakh., S Kur. Under forest canopy. May to September. (Figs. 98: 8-14) **E. juchani** Anufr.
19. Processes of anal tube without developed basal projections. Apices of pygofer processes directed upwards 20
- Processes of anal tube with robust rounded basal projections. Apices of pygofer processes slanting downwards. Pale greenish. 3.1-3.8. – Prim. – Under canopy of mixed and broad-leaved forests. May, August to early September. (Figs. 98: 5-7) **E. pacifica** Vilb.
20. Processes of pygofer lobes nearly straight (see from below), with apices slightly slanting outwards. Pale green, usually with not developed hypodermal pattern on head, pronotum and mesonotum. 3.3-3.5. – Prim. – In forests. Late May to early September. (Figs. 97: 4-8) **E. arborescens** Vilb.
- Processes of pygofer lobes with apices semicircularly slanting outwards (see from below). White hypodermal pattern on head, pronotum and mesonotum usually well developed 21
21. Processes of pygofer lobes comparatively short. Processes of anal tube without basal projections. Pale greenish. 3.5-3.7. – Prim. – Under forest canopy. Mid-August to mid-September. (Figs. 97: 9-12) **E. ussurica** Vilb.
- Processes of pygofer lobes relatively long. Processes of anal tube with small basal projections. Pale greenish. 3.7-3.8. – Prim. – Under forest canopy. Mid-June, mid-September. (Figs. 98: 1-4) **E. vilbastei** Anufr.

57. **Austroasca** Lower. Slender or moderately slender, green-colored. All apical veins of hemelytra arising from distal part of medial cell. Male. Lobes of pygofer elongate and triangular, with processes following the ventral margin and smoothly bent upwards on caudal margin; genital plates nearly parallel-sided, with rounded apex; a row of bristles situated along ventral surface, a row of setae, with longer setae between them, along dorsal margin. Anal tube with a pair of wide short processes at base. Styli long, becoming thinner to apex, with apical part denticulate on inner side. Connective lamelliform, trapezoidal or T-shaped. Penis [p. 149] with long base and tubular shaft arising from it nearly at a right angle; gonopore apical or subapical. Developed phragmata present only on basal tergite of abdomen; basal sternite with small bristles. Female. Subgenital sternite parabolic and projecting backwards. – 1 species (in USSR 5, in Palearctic not less than 8).

1. Body green, its anterior part with light small spots; hemelytra with yellow stripes along cells and more or less darkened apices. 3-3.4. – S Khab., Prim.; S Siberia, Kazakhstan, Middle Asia, S European part of USSR. – Japan (Honshu, Kyushu), Korea, China, Mongolia, Vietnam. – In meadows, glades, forest edges on *Artemisia*. Mid-June to early October. (Figs. 92: 1-6) **A. vittata** Leth.

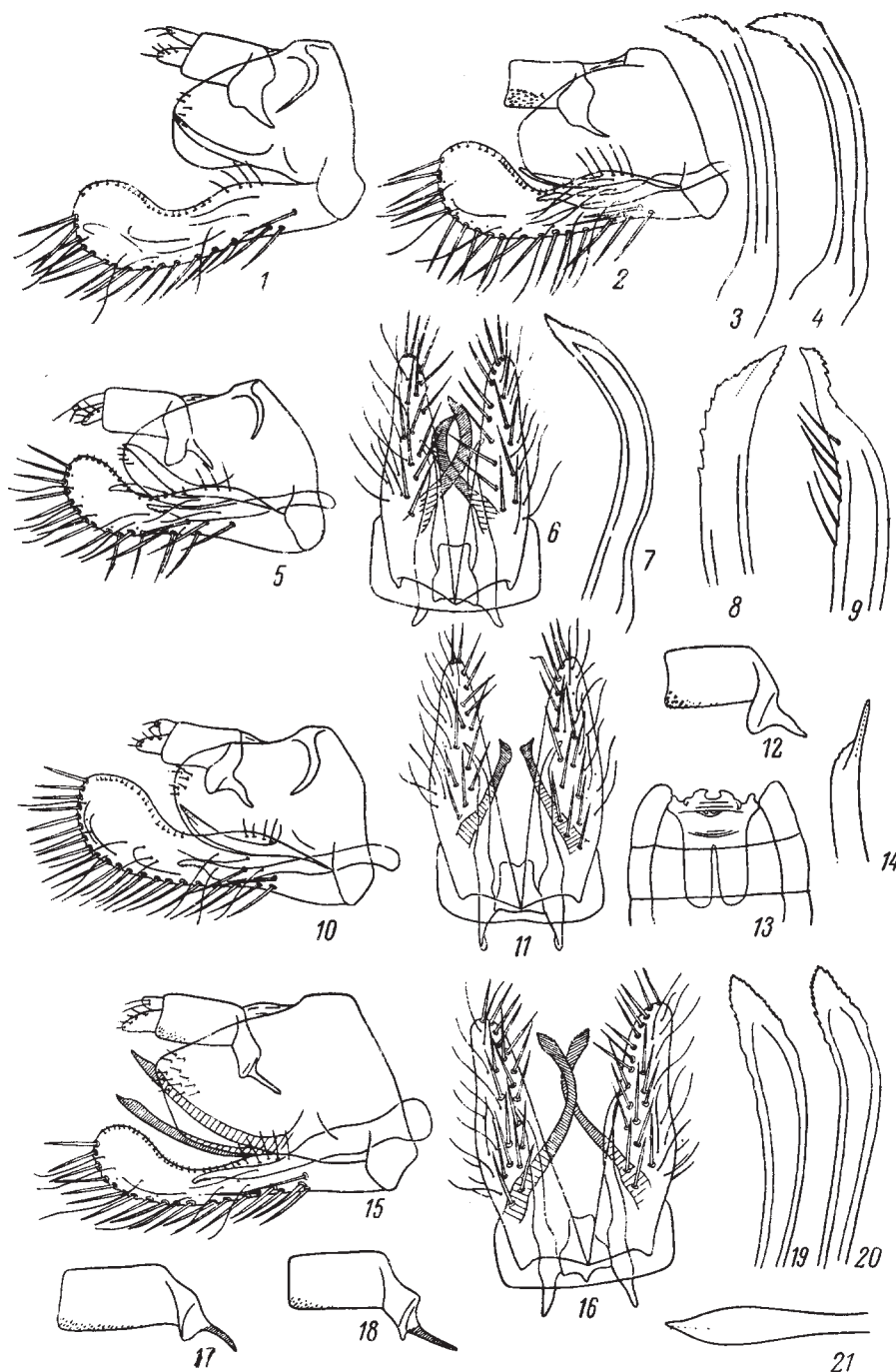


Fig. 98. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev).

1-4, *Empoasca vilbastei*: 1, 2, genital block of male, lateral view; 3, 4, processes of pygofer lobes; 5-7, *E. pacifica*: 5, 6, genital block of male (5, lateral view; 6, ventral view); 7, process of pygofer lobe; 8-14, *E. juchani*: 8, apex of process of pygofer lobe; 9, apex of stylus; 10, 11, genital block of male (10, lateral view; 11, ventral view); 12, anal tube, lateral view; 13, apodemes of base of male abdomen; 14, apex of process of pygofer lobe, lateral view; 15-21, *E. serrata*: 15, 16, genital block of male (15, lateral view; 16, ventral view); 17, 18, anal tube, lateral view; 19, 20, processes of pygofer lobes, in plane; 21, the same, lateral view.

58. **Kyboasca** Zachv. Body slender, green-colored, often with brown spots in apical cells of hemelytra. All apical veins of hemelytra arising from distal part of medial cell. Male. Lobes of pygofer triangular and lengthened backwards, with processes following the ventral margin. Genital plates nearly parallel-sided, with apices slightly slanting upwards and rounded at the end; a row of bristles present along ventral surface; a more or less extended row of setae with long hairs between them situated along dorsal margin. Anal tube with wide short processes at base. Styli with elongate apical part; their apices serrate on inner margin. Connective lamelliform, trapezoidal. Penis with long base and arched, slightly flattened laterally shaft arising from the base at an acute angle; gonopore situated subapically and ventrally. Most of abdominal tergites with strongly developed phragmata; basal sternite with small bristles. Female. Subgenital sternite longitudinally lengthened; its posterior margin with 2 more or less deep excisions lateral to the middle lobe, which is parabolic and projected backwards. – 2 species (in USSR 5, in Palearctic 6).

1. Processes of pygofer widened before the pointed apex. Styli with widened apical part. Body greenish; hemelytra with 2 brown spots: one in inner apical cell and one at apex of brachial cell. 3.7-4.2. – Prim.; Transbaikal. – Mongolia. – On elms in broad-leaved forests and open woodlands. Late June to late August. (Figs. 92: 17-20) **K. sexevidens** Dlab.
- Processes of pygofer not widened before the rounded apex. Styli with straight, not widened apical part. Body greenish; hemelytra with more or less noticeable brown spot in the inner apical cell. 3.3-3.6. – Prim.; S Siberia, Kazakhstan, Middle Asia, Transcaucasia, C and S European part of USSR. – Korea, NE China, Mongolia, many European countries, introduced to N America. – On elms in broad-leaved forests and open woodlands; outside the Far East polyphagous, feeding also on herbaceous plants: *Cannabis*, *Glycyrrhiza*, etc. Late June to early September. (Figs. 92: 7-16) **K. bipunctata** Osh.

Tribe ZYGINELLINI

LITERATURE. Dworakowska, I. The leafhopper tribe Zygineellini (Homoptera, Auchenorrhyncha, Cicadellidae, Typhlocybinae). Rev. Zool. Afr. 1979. Vol. 93, no. 2. P. 299-331.

59. **Zyginella** Löw. Body slender, mostly bright and contrasting colored. Vertex moderately projecting forwards; face flattened. The 1st (inner) apical cell of hemelytra short; the 3rd apical cell often stalked, rather often with a distinct dark spot. Marginal vein of hind wing runs in Cu_1 much more apical than transverse mcu . Male. Pygofer lengthened backwards to various extent; its lobes posteriorly from widely truncate to angular and attenuate, with several large bristles on posterior margin, and on the inner surface with a wide tooth directed downwards or backwards. Genital plates mostly more or less parallel-sided; [p. 150] their apex often sharply narrowed and slanting upwards, forming a pocket-shaped hollow; several bristles usually present near the middle of genital plates. Styli without subapical lobe, with long straight or smoothly bent apical part bearing in the basal half numerous setae and gradually narrowing towards pointed apex. Connective short, V-shaped. Penis with rather long base and arched shaft, often with a pair of processes arising from the base and directed along shaft; gonopore apical or subapical. Female. Subgenital sternite transverse, more or less rectangular, with posterior margin straight or weakly projected backwards and sometimes bearing shallow incision in the middle. – 1 species (in USSR 3, in Palearctic not less than 4).

LITERATURE. Dworakowska, I. On the genera *Zyginella* Löw, and *Limassolia* Dlab. (Cicadellidae, Typhlocybinae). Bull. Acad. Pol. Sci. Ser. Sci. Biol. 1969. Vol. 17, no. 7. P. 433-438. Dworakowska, I. On some genera of Typhlocybini and Empoascini (Auchenorrhyncha, Cicadellidae, Typhlocybinae). Bull. Acad. Pol. Sci. Ser. Sci. Biol. 1970. Vol. 18, no. 11. P. 707-716.

1. Vertex and face yellow; 2 black parallel stripes often interrupted in the middle on anterior part of face at its turn into vertex. Pronotum yellow in the middle and black laterally. Mesonotum black; apex of scutellum yellow. Hemelytra black brown, with large yellow semicircular spot in the basal half (forming together a circle, when hemelytra are folded), a small light spot present beyond apex of clavus and a pair of yellow spots at costal margin. 3.2-3.8. – Prim. – China (Gansu). – On apple trees, in broad-leaved forests, in China injurious to orchards. Late July to late August. (Figs. 92: 21-27) ***Z. mali** Yang

Tribe *TYPHLOCYBINI*

LITERATURE. Dworakowska, I. Typhlocybini of Asia (Homoptera, Auchenorrhyncha, Cicadellidae). Entomol. Abh. 1982. Bd. 45, H. 6. P. 99-181.

60. **Aguriahana** Dist. Body moderately slender; dendrophilous; vertex moderately elongate (in the middle about 1.5 times as long as at eyes); hemelytra somewhat widened backwards, usually straightly truncate at apex. The transverse vein between *Cu*₁ and the marginal vein on the hind wing situated at the same level as transverse vein *mcu* or apical to it. Male. Lobes of pygofer with rounded posterior margin and near their dorsal margin with a group of denticles directed downwards. Genital plates nearly parallel-sided, with apices slanting obliquely upwards and rounded at end; few (2-3) bristles present near the middle of ventral surface of the plates; a group of setae on ventral margin near apex. Styli with long apical part often bearing a weakly expressed projection on inner margin. Connective T-shaped, short. Penis symmetrical or asymmetrical, with tubular shaft having an unpaired and (or) paired processes; gonopore subapical, ventral. Female. Subgenital sternite longitudinal, lengthened, with parabolic, three-lobed or three-toothed posterior margin. – 7 species (in USSR 7, in Palearctic not less than 10).

LITERATURE. Dworakowska, I. Revision of the genus *Aguriahana* Dist. (Auchenorrhyncha, Cicadellidae, Typhlocybinae). Bull. Entomol. Pol. 1972. T. 42, no. 2. P. 273-312.

1. Dorsally yellowish brown or olive colored, without contrasting dark pattern. Penis with a pair of long processes arising from the base. On coniferous trees .. 2
- The prevailing coloration dorsally green or white, with contrasting dark pattern. Penis without processes arising from the base. On hardwood trees 4 [p. 151]
2. Styli on outer margin with long recurrent process. Penis shaft with unpaired subapical process. Vertex and face brownish yellow, with narrow, lighter, not contrasting zigzagged band on anterior margin limited from both sides by narrow brownish lines. Pronotum, mesonotum and hemelytra yellowish brown, with smoky or olive tint. 3.5-4.7. – Khab., S Kur.; Irkutsk Prov., Tuva, Altai. – Mongolia. – On *Pinus pumila*. Mid-August to early September. (Figs. 99: 1-10) ..
..... **A. uncinata** Vilb.
- Styli on outer margin without long process. Penis shaft with unpaired subapical process or without such a process 3 [p. 152]
3. Penis shaft with unpaired subapical process. Body brownish yellow; hemelytra slightly smoky. 3.9-4.7. – ?Prim.; Transbaikal, Tuva, Altai, W Siberia, Kazakhstan, Georgia, European part of USSR. – Mongolia, N and C Europe, N Africa (possi-

bly introduced). – On *Pinus sylvestris* and, probably, on *Pinus sibirica*; in Europe, also on *Pinus montana* and *P. nigra*. July to August. (Figs. 99: 11-20)

- *A. germari* Zett.
 – Penis shaft without unpaired subapical process. Similar in color to *A. uncinata*. 3.7-4. Prim. – In mixed and coniferous forests, evidently on *P. koraiensis*. Early July to mid-September. (Figs. 90: 21-23) *A. sichotana* Anufr.



Fig. 99. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev, Dworakowska, and Ossiannilsson).

1-10, *Aguriahana uncinata*: 1, fore wing; 2, hind wing; 3, apex of pygofer lobe; 4, genital plate; 5, stylus; 6, 7, penis (6, ventral view; 7, lateral view); 8, connective; 9, apodemes of abdomen; 10, apex of female abdomen, ventral view; 11-20, *A. germari*: 11, apex of pygofer lobe; 12, genital plate; 13, apex of female abdomen, ventral view; 14, 15, penis (14, ventral view; 15, lateral view); 16, sternites I-VI of male abdomen, dorsal view; 17, tergite II of male abdomen, anterior view; 18, penis, lateral view; 19, apex of stylus; 20, stylus; 21-23, *A. sichotana*: 21, penis, lateral view; 22, apex of stylus; 23, stylus.

4. Basic color of body white 5
- Basic color of body yellow 6
5. Penis asymmetrical, with 2 recurrent processes, ventral subapical and dorsal ones. White, anterior margin of vertex and pronotum laterally with dark brown stripe. Fore wings with weak brownish longitudinal stripes in the basal half and dark brown star-shaped pattern at apex. 3.3-3.6. – Khab., Prim.; Tuva, E Sayan Mts, Altai, N and C European part of USSR. – Korea, many European countries. – In coniferous and mixed forests, on *Rhododendron dauricum*; in Europe, on *Vaccinium myrtillus*. Mid-July to early September. (Figs. 100: 1-8) **A. pictilis** Stål
- Penis more or less symmetrical, with 2 short lateral subapical processes directed backwards. Body milky white; apices of hemelytra with dark brown spot and fan-shaped brown stripes diverging from it beyond apex of clavus. 3.9-4.4. – S Khab., Prim.; Transbaikal, Tuva, E Sayan Mts, Kazakhstan, European part of USSR. – Japan (Honshu), nearly whole Europe, N Africa, introduced to N America. – On various hardwood trees in mixed and broad-leaved forests. Mid-July to late August. (Figs. 100: 9-17) **A. stellulata** Burm.
6. Penis shaft smoothly arcuate, with long, recurved and crossed processes arising from about the middle of shaft. Body yellow, with brown spot in the inner apical cell adjacent to apical vein. 3.5-4. – Prim. – In broad-leaved and mixed forests, on *Acer pseudosieboldianum*. Mid-August. (Figs. 100: 18-23) **A. anufrievi** Dwor.
- Penis shaft rather sharply bent at the middle. Body yellow, with brown spot in the middle of inner apical cell not adjacent to apical vein. 3.2-3.3. – Prim. – Japan (Hokkaido). – In mixed and broad-leaved forests, on *Acer tegmentosum*. Late June to early September. (Figs. 100: 24-30) **A. niisimai** Mats.

61. **Eupteryx** Curt. Body moderately slender, of various coloration. Vertex in the middle a little longer than at eyes, widely rounded at apex. Hemelytra more or less parallel-sided, usually slightly widened at the middle; the 3rd apical cell stalked. Male. Lobes of pygofer widely rounded on posterior margin; the ventral margin with processes of various configuration slanting inwards and backwards. Genital plates gradually narrowed towards apex and slightly arc-like bent upwards; few (1-2) setae situated near their base. Anal tube without processes. Styli with elongate apical part narrowed towards apex and distinct angular projection on the inner margin. Connective short, trapezoid or Y-shaped. Penis usually more or less symmetrical, with tubular shaft bearing subapical or apical processes. Gonopore apical or subapical, ventral. Female. Subgenital sternite rounded trapezoid, semicircular or semioval, with posterior margin more or less straight or parabolic and projected backwards. – 3 species (in USSR not less than 35, in Palearctic not less than 60).

1. Black, with a pair of small yellow spots on vertex and yellow or whitish spots on hemelytra. Penis with a pair of widely diverging, somewhat flattened apical processes slanting anteroventrad. [p. 154] 2.6-2.9. – S Prim. – Japan (Honshu, Shikoku). – In grass, in broad-leaved and mixed forests. Mid-June to mid-September. (Figs. 101: 1-3) **E. melanocephala** Mel.
- The predominant color of body whitish or yellowish. Penis with a pair of more or less parallel or weakly diverging processes 2
2. Penis with short awl-like processes, which are shorter than shaft. Yellowish; hemelytra with brown spots and brown edging of cells; veins usually with brown spots. 2.6-3.2. – Prim.; Altai. – Korea, China (Shaanxi), Mongolia. – On *Artemisia*, in meadows, glades, forest edges. Mid-June to early October. (Figs. 101: 4-11) **E. undomarginata** Lindb.

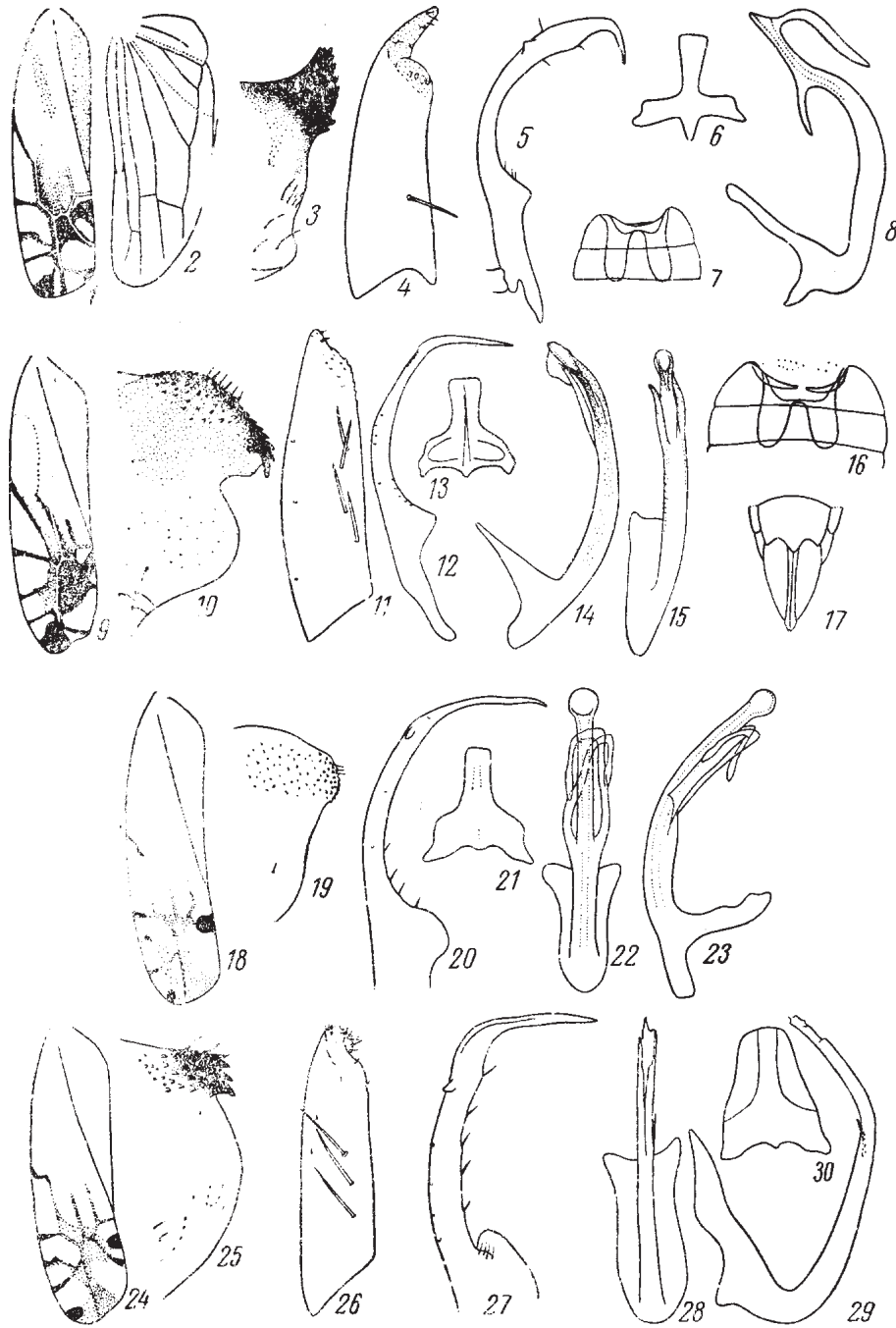


Fig. 100. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev and Dworakowska).

1-8, *Aguriahana pictilis*: 1, fore wing; 2, hind wing; 3, apex of pygofer lobe; 4, genital plate; 5, stylus; 6, connective; 7, apodemes of abdomen; 8, penis, lateral view; 9-17, *A. stellulata*: 9, fore wing; 10, apex of pygofer lobe; 11, genital plate; 12, stylus; 13, connective; 14, 15, penis (14, lateral view; 15, ventral view); 16, apodemes of abdomen; 17, apex of female abdomen, ventral view; 18-23, *A. anufrievi*: 18, fore wing; 19, apex of pygofer lobe; 20, apex of stylus; 21, connective; 22, 23, penis (22, ventral view; 23, lateral view); 24-30, *A. niisimai*: 24, fore wing; 25, apex of pygofer lobe; 26, genital plate; 27, apex of stylus; 28, 29, penis (apex damaged) (28, ventral view; 29, lateral view); 30, connective.

- Penis with very long filiform recurved processes. Yellowish white or brownish, with disorderly brown spots on hemelytra; veins completely light. 2.6-3.1. – Prim. – Japan, Korea, China (Jiangsu, Taiwan). – In meadows on *Artemisia*. June to September. (Figs. 101: 12-19) *E. minuscula* Lindb. [p. 155]

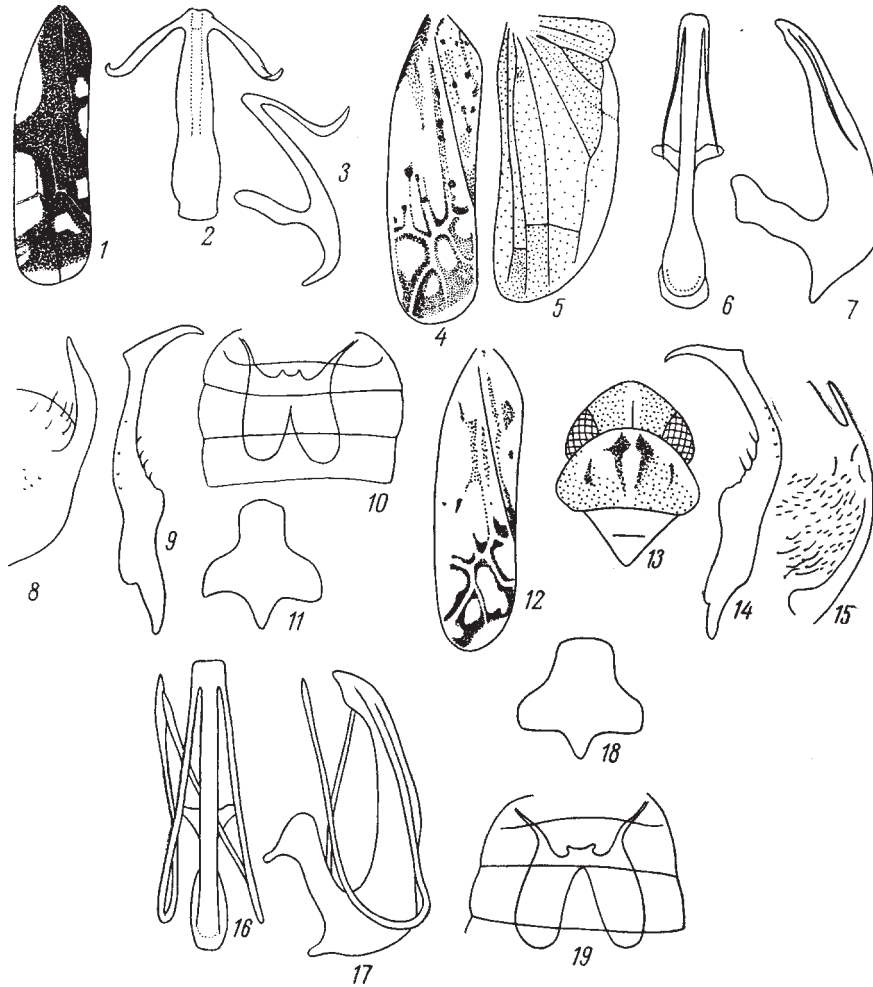


Fig. 101. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Dworakowska).

1-3, *Eupteryx melanocephala*: 1, fore wing; 2, 3, penis (2, ventral view; 3, lateral view); 4-11, *E. undomarginata*: 4, fore wing; 5, hind wing; 6, 7, penis (6, ventral view; 7, lateral view); 8, apex of pygofer lobe; 9, stylus; 10, apodemes of abdomen; 11, connective; 12-19, *E. minuscula*: 12, fore wing; 13, anterior part of body; 14, stylus; 15, apex of pygofer lobe; 16, 17, penis (16, ventral view; 17, lateral view); 18, connective; 19, apodemes of abdomen.

62. Eurhadina Hpt. Moderately slender or sturdy, light colored, often somewhat flattened dorsoventrally; dendrophilous. Hemelytra usually with more or less well expressed pattern of brown spots and stripes in apical half; the widest part of hemelytra usually in the area of apical cells; 3rd apical cell stalked. Male. Lobes of pygofer posteriorly widely rounded and with more or less noticeable incision in the middle of posterior margin. Genital plates long, gradually narrowing towards apex, with 1 bristle before middle and several setae near apex. Styli with well expressed subapical lobe and elongate apical part without projections on the inner margin. Connective Y-shaped. Penis symmetrical or slightly asymmetrical, with tubular shaft

often flattened laterally and having at apex at least 2 pairs of simple or branched processes; gonopore subapical, ventral. Female. Subgenital sternite trapezoidal, in the middle of posterior margin with projection, which is often slightly split at the end. – 3 species (in USSR 7, in Palearctic 13).

LITERATURE. Dworakowska, I. Revision of the Palaearctic and Oriental species of the genus *Eurhadina* Hpt. (Homoptera, Cicadellidae, Typhlocybinae). Ann. Zool. 1969. T. 27, no. 5. P. 67-88.

1. Penis with branching processes of both apical and subapical pairs. Yellow; hemelytra brownish in apical part, with brown stripe along posterior margin of waxy spot; pronotum with dark brown spot. 3.6-4.2. – Khab., Amur., Prim.; Kazakhstan, European part of USSR. – Korea, many European countries, N Africa. In the Far East, subspecies *orientalis* Dwor. – On *Quercus mongolica* in broad-leaved and mixed forests; in Europe, on other oaks. Late June to mid-September. (Figs. 102: 1-6) **E. pulchella** Fall.
- Penis with a pair of branching processes and a pair of not branching ones. Basic coloration white 2
2. Penis with not branching processes of subapical pair; processes of apical pair branched at base. White; hemelytra in apical part brownish; a brown stripe present along posterior margin of waxy spot; a dark brown spot on pronotum. 3.4-4.1. – Prim., S Kur. – Japan (Honshu). – On birches in broad-leaved, small-leaved and mixed forests. Mid- to late August. (Figs. 102: 7-13) **E. betularia** Anufr.
- Penis with not branching processes of apical pair; processes of subapical pair branched at the middle. Similar to *E. betularia*. 3.6-4. – Prim., S Kur.; Transbaik. – China (Shaanxi), Mongolia. – On elms in broad-leaved and mixed forests and in forest steppe associations. Mid-July to late August. (Figs. 102: 14-16) **E. callissima** Dwor.

63. **Linnavuoriana** Dlab. Slender; dendrophilous. Head with eyes narrower than pronotum; vertex in the middle somewhat longer than at eyes, its anterior margin angular rounded. Vertex, pronotum, mesonotum and hemelytra often with pattern of brown spots and (or) stripes. Male. Pygofer of moderate length, with truncate apex; caudodorsal angle of lobes well sclerotized and often more or less slanting inwards. Genital plates triangular, in the middle laterally with large lobe-like projections, without bristles and long setae (in the subgenus *Sharmana* Dwor., plates more or less parallel-sided, without lateral lobe-like projections and bearing long setae). Styli with long apical part bifurcate at apex; the inner tooth usually longer than the outer one; subapical lobes lacking. Connective cruciate, with rather long base and wide, short branches. Penis symmetrical, with long, slightly arcuate shaft, somewhat flattened laterally and bearing in the basal half 2 dorsal lamellate projections. Female. Subgenital sternite square or transversely rectangular, with undulated posterior margin. – 2 species (in USSR 4) belonging to the nominotypical subgenus. [p. 157]

1. Face entirely light. Pronotum with 4 black spots. Dorsal lamelliform projections in the basal half of penis low. Yellowish greenish; vertex with 2 brown spots; pronotum with 4 spots rather often fused in pairs; hemelytra with 2 brownish oblique bands in the basal half and darkened apical cells. 3.2-4. – Prim., S Kur.; Siberia, Kazakhstan, Uzbekistan, European part of USSR. – Europe. – On willows in flood plain willow stands. Spring to autumn; imagines overwintering. (Figs. 102: 17-22) **L. sexmaculata** Hardy

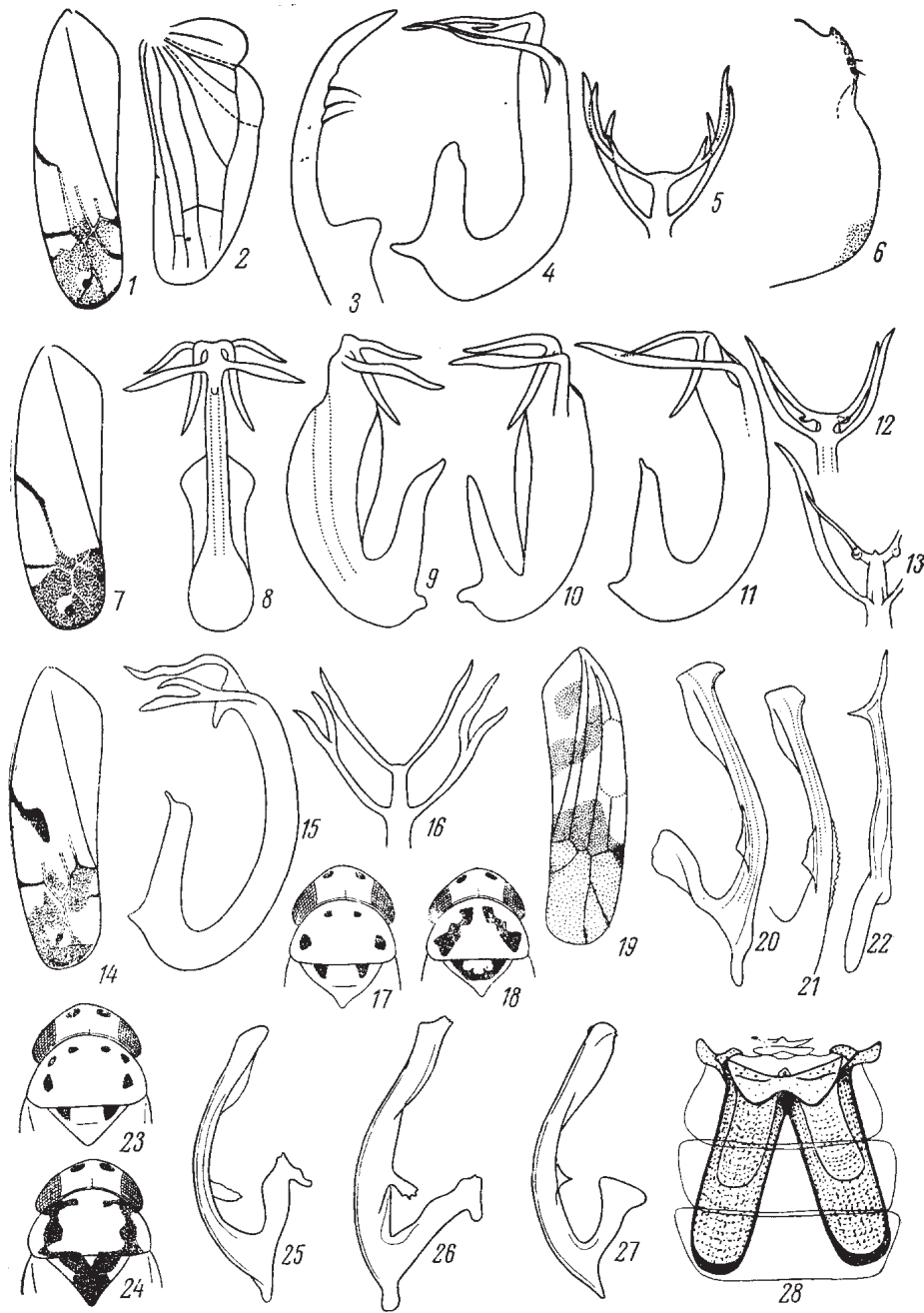


Fig. 102. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev, Dworakowska, Ossiannilsson, and Ribaut).

1-6, *Eurhadina pulchella orientalis*: 1, fore wing; 2, hind wing; 3, apex of stylus; 4, penis, lateral view; 5, apex of penis, posterior view; 6, apex of pygofer lobe; 7-13, *E. betularia*: 7, fore wing; 8-11, penis (8, ventral view; 9-11, lateral view); 12, 13, apex of penis, posterior view; 14-16, *E. callissima*: 14, fore wing; 15, penis, lateral view; 16, apex of penis, posterior view; 17-22, *Linnavuoriana sexmaculata*: 17, 18, anterior part of body; 19, fore wing; 20, 21, penis, lateral view; 22, stylus; 23-28, *L. decempunctata*: 23, 24, anterior part of body; 25-27, penis, lateral view (27, subspecies *intercedens*); 28, sternites I-V of male abdomen, dorsal view.

- Face darkened laterally. Pronotum with 6 spots. Dorsal lamelliform projections in the basal half of penis elongate, with rounded or slightly denticulate apex (nominotypical subspecies) or rectangular (subspecies *intercedens* Lnv.). Similar to *L. sexmaculata*, often with reddish tint. 3.4-3.7. – Prim. – Mongolia, Europe. – On various species of birch (nominotypical subspecies) or alder (subspecies *intercedens* Lnv.) in broad-leaved, small-leaved and mixed forests. Spring to autumn; imagines overwintering. (Figs. 102: 23-28) **L. decempunctata** Fall.

64. **Empoa** Fitch. Head with eyes narrower than pronotum; vertex in the middle a little longer than at eyes, the anterior margin smoothly rounded. Male. Lobes of pygofer at apex widely rounded or with somewhat projecting caudodorsal angle; another angular projection often present on dorsal margin; pygofer without large bristles. Genital plates long, gradually narrowing towards rounded apex, arc-like bent upwards; 1 large bristle present at base of genital plates and a row of short setae near apex. Styli with long apical part, the apex of which is smoothly, arc-like slanting outwards and pointed at the end. Connective elongate, trapezoid. Penis symmetrical, with tubular shaft bearing 1-3 pairs of processes at apex; gonopore apical or subapical, ventral. Female. Subgenital sternite semicircular or parabolic and projecting backwards, with posterior margin often slightly cut in the middle. – 7 species (in Palearctic 8).

1. Hemelytra with simple 2nd apical cell. Penis with 1 pair of apical processes and short ridge at the base of dorsal margin. (Subgenus *Parempoa* Anufr. et Em., subgen. n. Type species *Empoa albifascia* Anufr.). White, with black mesonotum; hemelytra with black bands in basal half and in apical third. 3.5. – S Prim., S Kur. – Early August. (Figs. 103: 1-11) **E. (P.) albifascia** Anufr.
- Hemelytra with stalked 2nd apical cell. Penis with 2 pairs of apical processes; the dorsal margin of shaft without ridge. (Subgenus *Empoides* Vilb.). Basic coloration yellow, brown or red 2
2. Penis with thin processes of ventral pair slanting dorsad and passing between bases of processes of dorsal pair; processes of dorsal pair widened and lamellate beyond the bases and crossing at the middle. Ruby red, with yellow face and legs. Hemelytra red; apical cells semihyaline, colorless or brownish darkened. 3-3.4. – Prim.. – Japan (Hokkaido, Honshu), Korea. – On elms in broad-leaved and mixed forests and in forest-steppe associations. July to August. (Figs. 104: 1-9) **E. (E.) punicea** Mats.
- Penis with processes not as above. Basic coloration yellow; body with longitudinal reddish or brown stripe from vertex or pronotum to apical cells of hemelytra ... 3
3. Lobes of pygofer with 2 sclerotized projections on dorsal margin 4
- Lobes of pygofer with 1 sclerotized projection on dorsal margin 5
4. Penis with 2 pairs of crossed processes; processes of ventral pair slanting dorsad and passing between bases of processes of dorsal pair. Body yellow; disc of pronotum and mesonotum brownish; hemelytra with reddish brown stripe along inner margin; membrane brown. 3.1-3.9. – Prim., S Kur.; Buryatia. – Mongolia. – On elms in broad-leaved [p. 158] and mixed forests and in forest steppe associations. July. (Figs. 104: 10-13) **E. (E.) fumapicata** Dlab. (*maaki* Vilb.)
- Penis with 1 pair of crossed processes, processes of ventral pair short, diverging. Similar to *E. fumapicata*, but somewhat darker, the longitudinal brown stripe occupying vertex, nearly whole pronotum, mesonotum, clavus and membrane. 3.2. – S Prim. – Korea. On elms in broad-leaved and mixed forests. Early August. (Figs. 104: 14, 15) **E. (E.) anufrievi** Dwor.

5. Penis with crossed processes of ventral pair slanting dorsad and passing between bases of processes of dorsal pair. – Similar to *E. fumapicata*, but darker; longitudinal brown stripe beginning on vertex is often limited anteriorly by 2 dark brown arcuate spots, continues backwards to pronotum, mesonotum, clavus and membrane. 3.1-3.4. – Prim. – On elms in broad-leaved and mixed forests. Early July. (Figs. 104: 16, 17) **E. (E.) euphrosyne** Anufr.
- Penis with not crossed processes of ventral pair 6

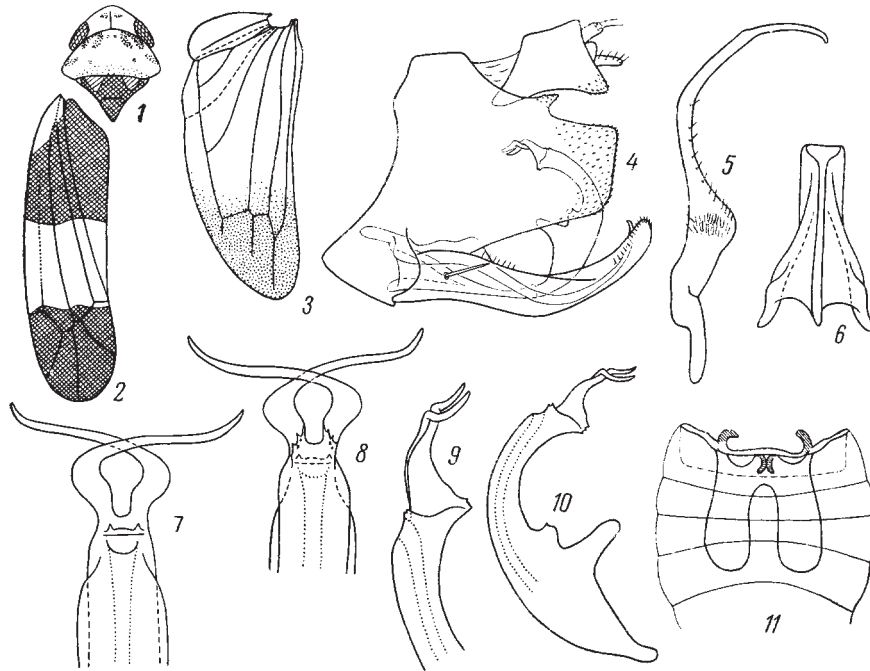


Fig. 103. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev).

1-11, *Empoa albifascia*: 1, anterior part of body; 2, fore wing; 3, hind wing; 4, genital block of male, lateral view; 5, stylus; 6, connective; 7-9, apex of penis (7, ventral view; 8, dorsal view; 9, lateral view); 10, penis, lateral view; 11, apodemes of abdomen.

6. Penis shaft smooth; its processes slanting dorsad, forming an angle with the shaft axis; processes of dorsal pair flattened, widened in basal half, crossed in the middle. Yellow; vertex with 2 dark brown arcuate spots at anterior margin; brown stripe after light interspace beyond these spots passing on vertex, middle part of pronotum, mesonotum, clavus and membrane. 3.1-3.6. – Prim.; Buryatia. – Mongolia. – On elms in broad-leaved and mixed forests and forest-steppe associations. Late June to mid-August. (Figs. 104: 18, 19) **E. (E.) aglaie** Anufr.
- Penis shaft with spines; its processes smoothly arcuate, following shaft axis; processes of dorsal pair narrow, crossed; processes of ventral pair diverging. Yellow, with wide brown stripe occupying vertex, pronotum except sides, mesonotum, [p. 160] clavus, posterior half of brachial cell and membrane. 3.2-3.7. – S Khab., Amur., Prim. – On elms in broad-leaved and mixed forests. Late June to early September. (Figs. 104: 20, 21) **E. (E.) thalia** Anufr.

65. **Typhlocyba** Germ. Slender, yellow-colored; dendrophilous; hemelytra usually with pattern of red orange spots forming 2-3 interrupted stripes. Male. Pygofer posteriorly from widely rounded or truncate to smoothly narrowed to the pointed,

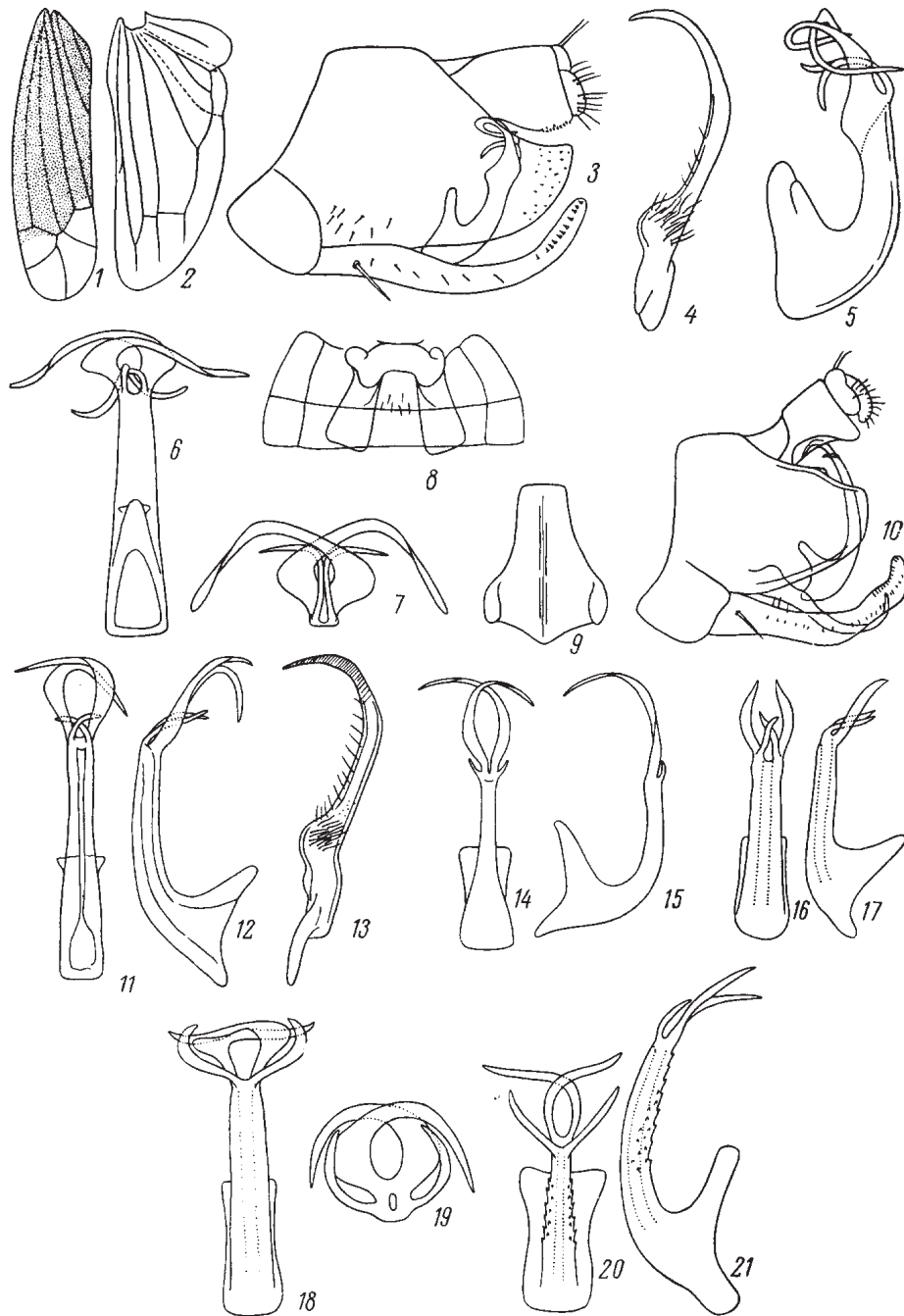


Fig. 104. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev, Dworakowska, and Vilbaste).

1-9, *Empoa punicea*: 1, fore wing; 2, hind wing; 3, genital block of male, lateral view; 4, stylus; 5, 6, penis (5, lateral view; 6, ventral view); 7, apex of penis, posterior view; 8, apodemes of abdomen; 9, connective; 10-13, *E. fumapicata*: 10, genital block of male, lateral view; 11, 12, penis (11, ventral view; 12, lateral view); 13, stylus; 14, 15, *E. anufrievi*, penis (14, ventral view; 15, lateral view); 16, 17, *E. euphrosyne*, penis (16, ventral view; 17, lateral view); 18, 19, *E. aglaie*: 18, penis, ventral view; 19, apex of penis, posterior view; 20, 21, *E. thalia*, penis (20, ventral view; 21, lateral view).

well sclerotized caudodorsal angle and rather often with spinose or smooth projection or tooth directed inwards under it. Genital plates long, narrow, parallel-sided or narrowed towards apices, which are stretched outwards and projecting angle-like or finger-like (see from below); 1 large bristle at base of genital plates; few setae on posterior margin of apical projection. Styli with moderately long apical part awl-like or blunt at the end. Connective trapezoidal. Penis symmetrical, somewhat flattened dorsoventrally, with paired basal or subapical processes. Female. Subgenital sternite with semicircular or widely parabolic posterior margin. – 3 species (in USSR 4, in Palearctic not less than 5).

LITERATURE. Anufriev, G. A. Notes on the genus *Typhlocyba* Germ. (Homoptera, Cicadellidae, Typhlocybinae). Bull. Acad. Pol. Sci. Ser. Sci. Biol. 1973. Vol. 21, no. 7-8. P. 505-509.

1. Vertex anteriorly with 2 elongate dumb-bell-shaped dark brown spots. Penis shaft divided by a bend into basal and distal parts; the distal part with 2 processes. Yellow; orange are: half of pronotum, basal and apical triangles of mesonotum and spots in anterior part of hemelytra partly fusing into oblique stripes; orange spots and stripes of hemelytra at places with brown edging; membrane, except veins, mostly brown. 2.7-3. – S Prim. – On *Quercus dentata* in steppized open woodlands. Mid-July to early August. (Figs. 105: 1-8) **T. coronulifera** Anufr.
- Vertex without dark brown pattern. Penis shaft not divided by bend into 2 parts, with 2 basal processes more or less following the shaft 2
2. Genital plates wider, with small incision before apex. Processes of penis slightly undulated before apex. Yellow; 2 spots on clavus at outer margin; oblique interrupted stripes formed by red orange spots on corium. 3-3.4. – Prim.; Tuva, Altai, E Kazakhstan. – N China (Shaanxi), Mongolia. – On trees and shrubs in broad-leaved, small-leaved and mixed forests. Late June to mid-August. (Figs. 106: 1-5) **T. quercussimilis** Dwor.
- Genital plates narrow, without incision near apex. Processes of penis with straight apices. Similar to *T. quercussimilis*, but with 3 red-orange spots on clavus near outer margin. 2.9-3.2. – Prim. – Japan (Honshu), China. – On various trees and shrubs in broad-leaved, small-leaved and mixed forests. Early July to early September. (Figs. 106: 6-12) **T. babai** Ish.

66. **Paracyba** Vilb. Head with eyes as wide as pronotum; vertex in the middle somewhat longer than at eyes; its anterior margin from widely parabolic to angular and parabolic. Male. Lobes of pygofer widely rounded on posterior margin, with lobe-shaped projection above bases of genital plates bearing numerous bristles. Genital plates triangular, with apices slightly slanting upwards, 1 large bristle at base and often with 2 thick short setae at apex. Stylus with long apical part, smoothly slanting outwards and pointed at apex. Connective elongate and trapezoid. Penis asymmetrical, with 3 apical or subapical processes; gonopore subapical on the right side of shaft. Female. Subgenital sternite projecting backwards, semicircular or parabolic. – 1 species (the genus comprises 2 species). [p. 161]

1. Yellowish, with irregular brown longitudinal stripe from apex of vertex to apical cell of hemelytra. All three processes of penis apical. Genital plates with 2 thick, short setae at apex. 3.4-3.8 – S Prim., S Sakh., S Kur. – Japan. – In broad-leaved and mixed forests. Mid-July to mid-September. (Figs. 106: 13-21) **P. nopporensis** Mats. (*akashiensis* auct.)

67. *Edwardsiana* Zachv. Slender; dendrophilous; yellow or whitish yellow, sometimes with dark pattern. Male. Pygofer with lobes truncate on posterior margin, usually having small caudodorsal projection; a group of bristles situated above bases of genital plates. Genital plates rather long, narrowed towards rounded apex, arc-like bent upwards, with 1 large bristle at base and a row of setae along dorsal margin. Styli with long apical part having pointed apex smoothly slanting outwards. Connective elongate and trapezoid. Penis symmetrical, with rather long tubular shaft bearing 1 or 2 pairs of processes at apex, which may often be branched. Female. Subgenital sternite with parabolic posterior margin. – Not less than 7 species (in USSR more than 30, in Palearctic more than 50).

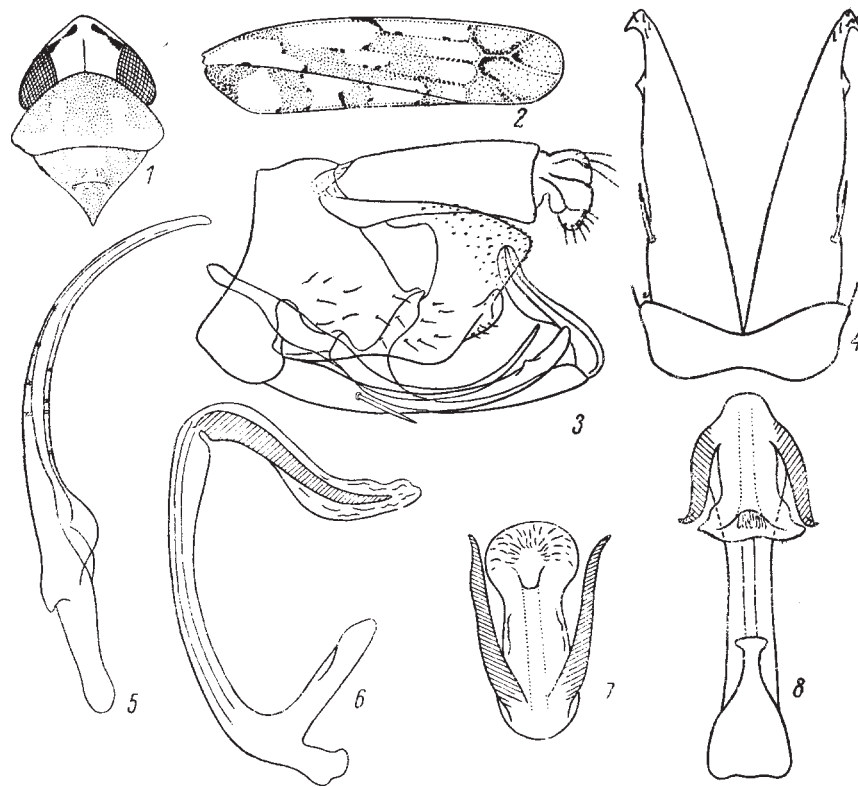


Fig. 105. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (original).

1-8, *Typhlocyba coronulifera*: 1, anterior part of body; 2, fore wing; 3, genital block of male, lateral view; 4, genital valve and genital plates, ventral view; 5, stylus; 6-8, penis (6, lateral view; 7, posterior view; 8, dorsal view).

1. Processes of both pairs of penis apex not branched 2
- Processes of one or both pairs of penis apex branched 4
2. Ventral side of penis shaft convex in lateral view 3
- Ventral side of penis shaft concave in lateral view. – Yellowish white, shiny, with slightly darkened apical part of hemelytra. 4-4.2. – Altai, [p. 165] Kazakhstan, Baltia. – Mongolia, Iran, many European countries. – On willows; in Europe, mainly on *Salix aurita*. August. (Figs. 107:1-6) *E. salicicola* Edw.
3. Penis shaft with high dorsal ridge and therefore looking very wide in lateral view. White or yellowish white, shiny, with slightly darkened apical part of hemelytra. 3.4-3.9. – Transbaikal, Tuva, Kazakhstan, Middle Asia, Azerbaijan, Euro-



Fig. 106. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev, Dworakowska, Ishihara, and Vilbaste).

1-5, *Typhlocyba quercussimilis*: 1, fore wing; 2, lobe of pygofer; 3, genital valve and genital plates, ventral view; 4, 5, penis (4, ventral view; 5, lateral view); 6-12, *T. babai*: 6, fore wing; 7, hind wing; 8, anterior part of body; 9, genital valve and genital plates, ventral view; 10, penis, ventral view; 11, lobe of pygofer; 12, penis, lateral view; 13-21, *Paracyba nopporensis*: 13, genital block of male, lateral view; 14, anterior part of body; 15, fore wing; 16, genital block of male, ventral view; 17, apex of genital plate; 18, connective; 19, stylus; 20, 21, penis (20, lateral view; 21, ventral view).

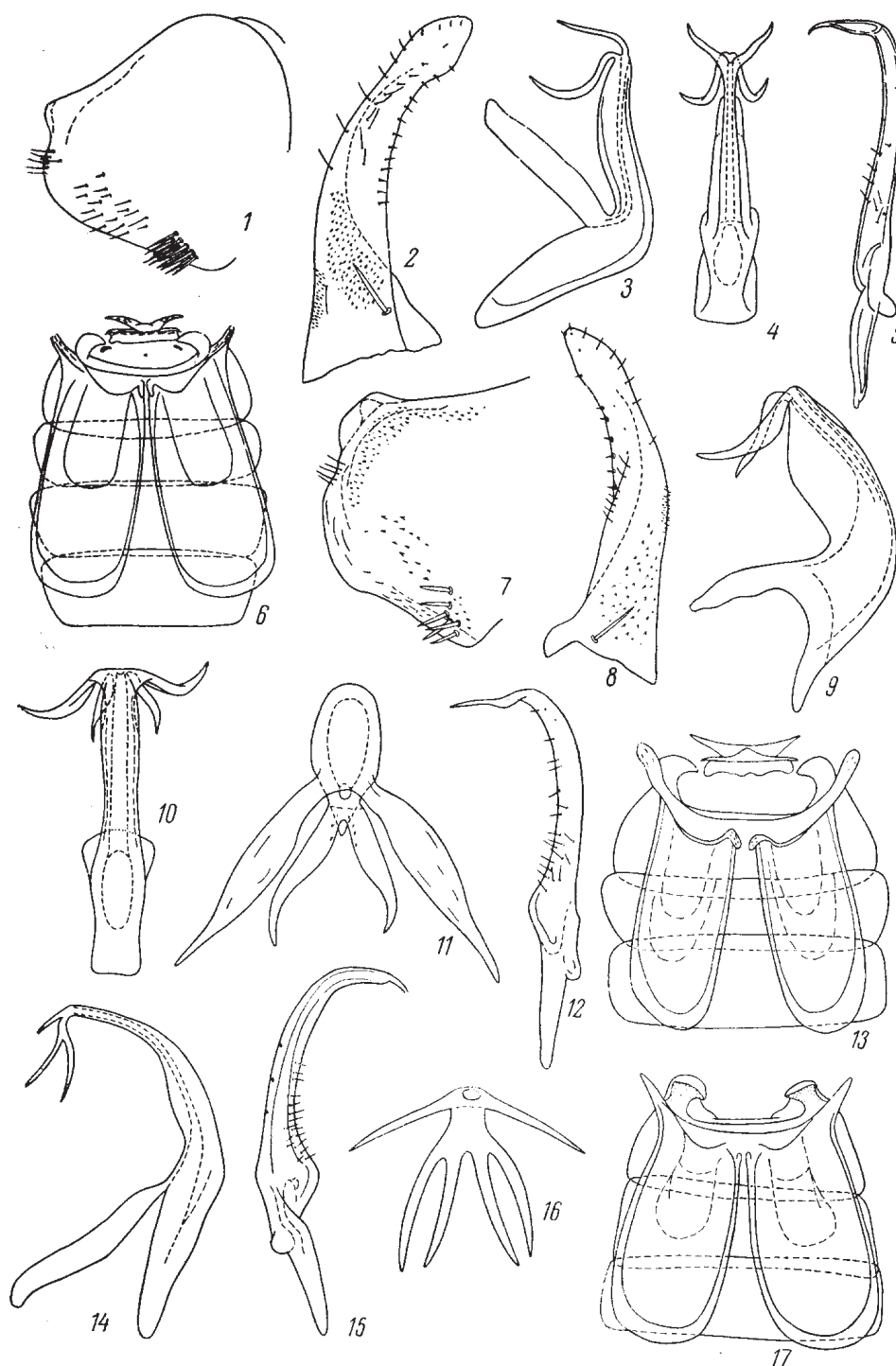


Fig. 107. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Ossiannilsson).

1-6, *Edwardsiana salicicola*: 1, lobe of pygofer; 2, genital plate; 3, 4, penis (3, lateral view; 4, ventral view); 5, stylus; 6, sternites I-VI of male abdomen, dorsal view; 7-13, *E. rosae*: 7, lobe of pygofer; 8, genital plate; 9, 10, penis (9, lateral view; 10, ventral view); 11, apex of penis, posterior view; 12, stylus; 13, sternites I-V of male abdomen, dorsal view; 14-17, *E. tersa*: 14, penis, lateral view; 15, stylus; 16, apex of penis, posterior view; 17, sternites II-V of male abdomen, dorsal view.

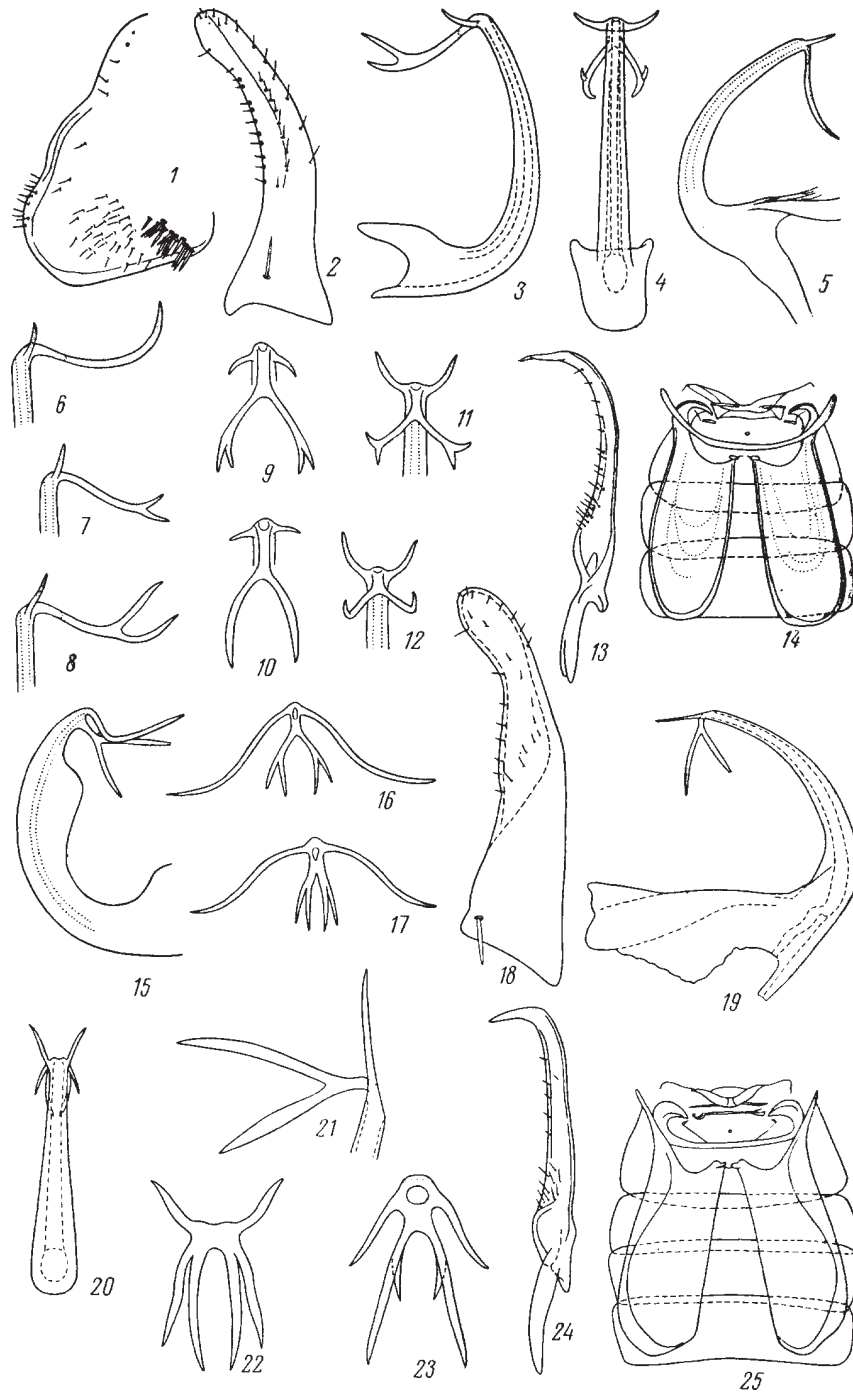


Fig. 108. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev, Dlabola, and Ossiannilsson).

1-14, *Edwardsiana soror*: 1, lobe of pygofer; 2, genital plate; 3-5, penis (3, 5, lateral view; 4, ventral view); 6-12, apex of penis of various specimens (6-8, lateral view; 9, 10, posterior view; 11, 12, dorsal view); 13, stylus; 14, sternites I-V of male abdomen, dorsal view; 15-17, *E. zaisanica*: 15, penis, lateral view; 16, 17, apex of penis of various specimens, posterior view; 18-25, *E. kemneri*: 18, genital plate, ventral view; 19, 20, penis (19, lateral view; 20, ventral view); 21-23, apex of penis (21, lateral view; 22, anterior view; 23, posterior view); 24, stylus; 25, sternites I-VI of male abdomen, dorsal view.

pean part of USSR. – Japan (Hokkaido, Honshu), Iran, Turkey, Cyprus, nearly whole Europe, Nearctic and Oriental Regions. – On various Rosaceae plants, mainly trees and shrubs, especially roses, raspberry, strawberry; injurious to roses. Two generations in N Europe, the first one always on roses; eggs overwintering. (Figs. 107: 7-13) **E. rosae* L. (*subrosea* Vilb.)

- Penis shaft without dorsal ridge, narrow in lateral view. Dorsal processes of penis with rather long common base (see also couplet 7) *E. soror* Lnv.

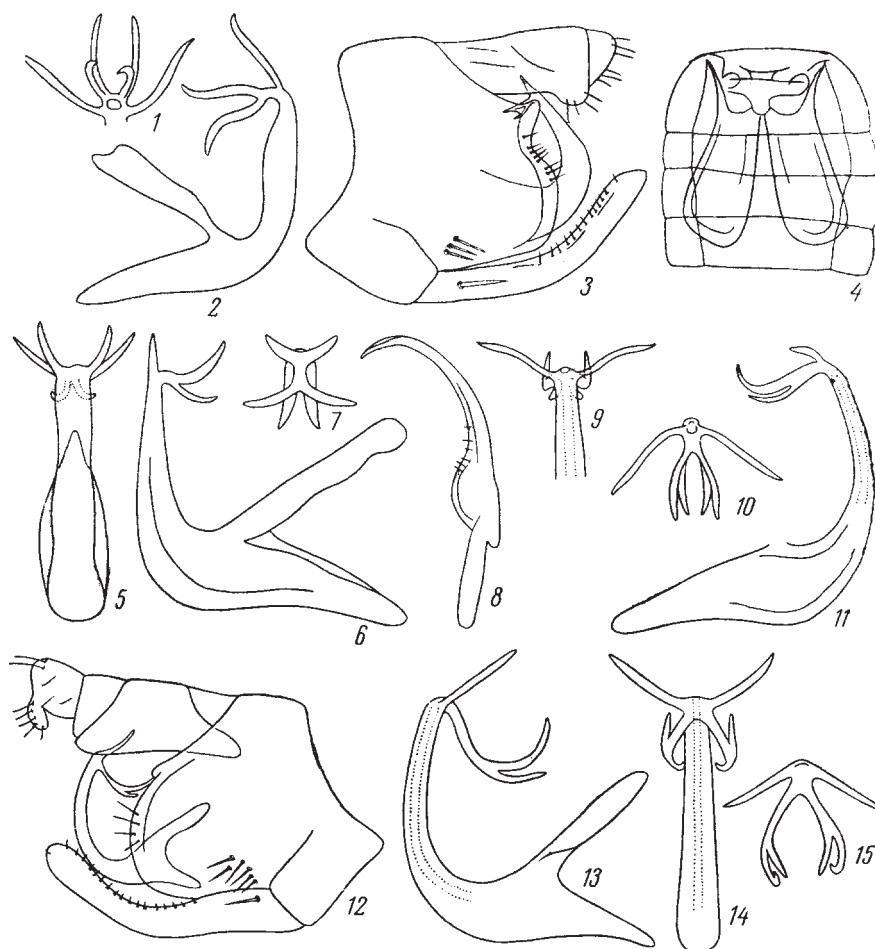


Fig. 109. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Dworakowska, Vilbaste, and Zachvatkin).

1, 2, *Edwardsiana indefinita*: 1, apex of penis, posterior view; 2, penis, lateral view; 3-8, *E. corylicola*: 3, genital block of male, lateral view; 4, apodemes of abdomen; 5, 6, penis (5, ventral view; 6, lateral view); 7, apex of penis, posterior view; 8, stylus; 9-11, *E. menzbieri*: 9, 10: apex of penis (9, ventral view; 10, posterior view); 11, penis, lateral view; 12-15, *E. ishidae*: 12, genital block of male, lateral view; 13, 14, penis (13, lateral view; 14, dorsal view); 15, apex of penis, posterior view.

- 4. Only dorsal processes of penis branched 5 [p. 166]
- Both ventral and dorsal processes of penis branched 12
- 5. Penis shaft widened at the middle or near base in lateral view 6
- Penis shaft smoothly narrowed from the base towards apex 7
- 6. Ventral processes of penis comparatively short, following the shaft axis in its apical part (in lateral view). Dorsal widening of penis shaft situated near its base.

Body whitish, shiny; hemelytra with a brownish spot at distal end of cubital cell; apical cells more or less darkened. 3.9-4.4. – Tuva, Altai, Lithuania. – Turkey (Anatolia), N and C Europe. – In W Europe on *Salix aurita*, *S. viminalis*, *S. lapponum*. July to September. (Figs. 107: 14-17) **E. tersa** Edw.

- Ventral processes of penis very long, not following the shaft axis in its apical part (in lateral view). Dorsal widening of penis shaft situated near its middle. Whitish, shiny. 3.3-3.6. – S Buryatia. – N Mongolia. – On steepized slopes of hills. Late July. (Figs. 108: 15-17) **E. zaisanica** Dlab.

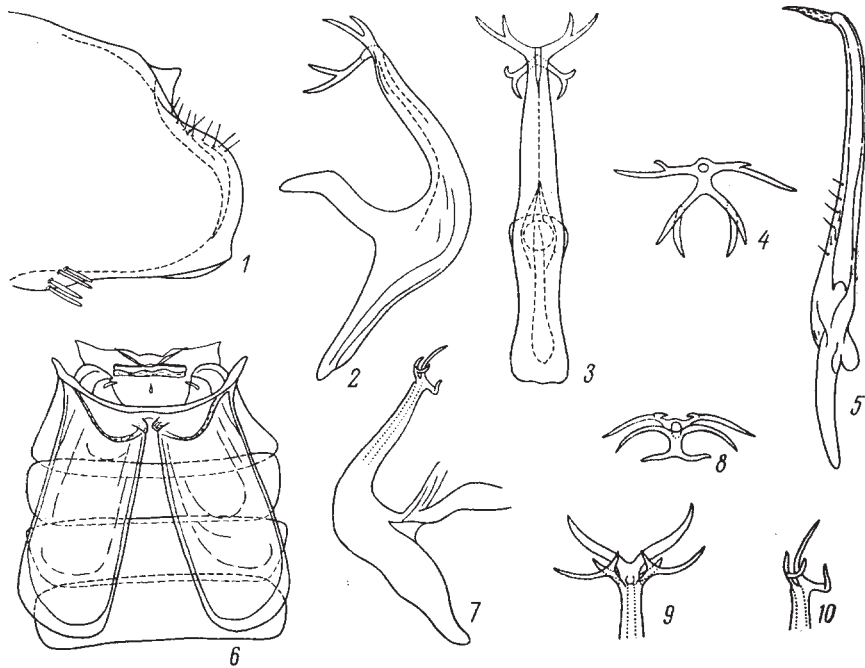


Fig. 110. Cicadines. Family Cicadellidae, subfamily Typhlocybinae (after Anufriev and Ossiannilsson).

1-6, *Edwardsiana bergmani*: 1, lobe of pygofer; 2, 3, penis (2, lateral view; 3, ventral view); 4, apex of penis, posterior view; 5, stylus; 6, sternites I-VI of male abdomen, dorsal view; 7-10, *E. singularis*: 7, penis, lateral view; 8-10, apex of penis (8, posterior view; 9, ventral view; 10, lateral view).

- 7. Dorsal processes of penis with rather long common base, simple (see also couplet 3) or branched beyond middle; their both branches slanting backwards; ventral processes noticeably shorter than dorsal ones. Whitish or pale yellow. 3.5-4. – S Khab., Amur., Prim.; Buryatia, Tuva, Baltia. – N Europe, E Germany, Austria, Poland. – On *Alnus* spp. In floodland forests in W Europe, on *A. incana*. July to August. (Figs. 108: 1-14) **E. soror** Lnv.
- Dorsal processes of penis without common base or it is very short and always branched, usually before middle 8
- 8. Branches of penis processes of about equal length in lateral view 9
- Posterior branches of dorsal processes of penis longer than anterior branches in lateral view 10
- 9. Penis shaft very narrow in lateral view; branches of dorsal processes nearly straight. Whitish, shiny. 4.1. – E Kazakhstan. – N Mongolia, Sweden, W Germany, [p. 167] Czechoslovakia, Rumania, Cyprus, Canada. – In N Europe and N Mongolia in August. (Figs. 108: 18-25) **E. kemneri** Oss.

- Penis shaft wider in lateral view, branches of dorsal processes bent, their apices directed to different sides (in lateral view). Unicolourous yellow. 3.1-3.5. - Prim. - Korea. - On shrubs and trees in broad-leaved and mixed forests. Late June to late August. (Figs. 109: 1, 2) **E. indefinita** Dwor.
- 10. Anterior branches of dorsal processes of penis nearly parallel and posterior branches directed laterad; therefore anterior and posterior branches form an angle close to a right angle (in posterior view). Light yellow. 3.2-3.8. - Prim. - Korea. - On trees and shrubs in broad-leaved and mixed forests. Late June to mid-September. (Figs. 109: 3-8) **E. corylicola** Vilb.

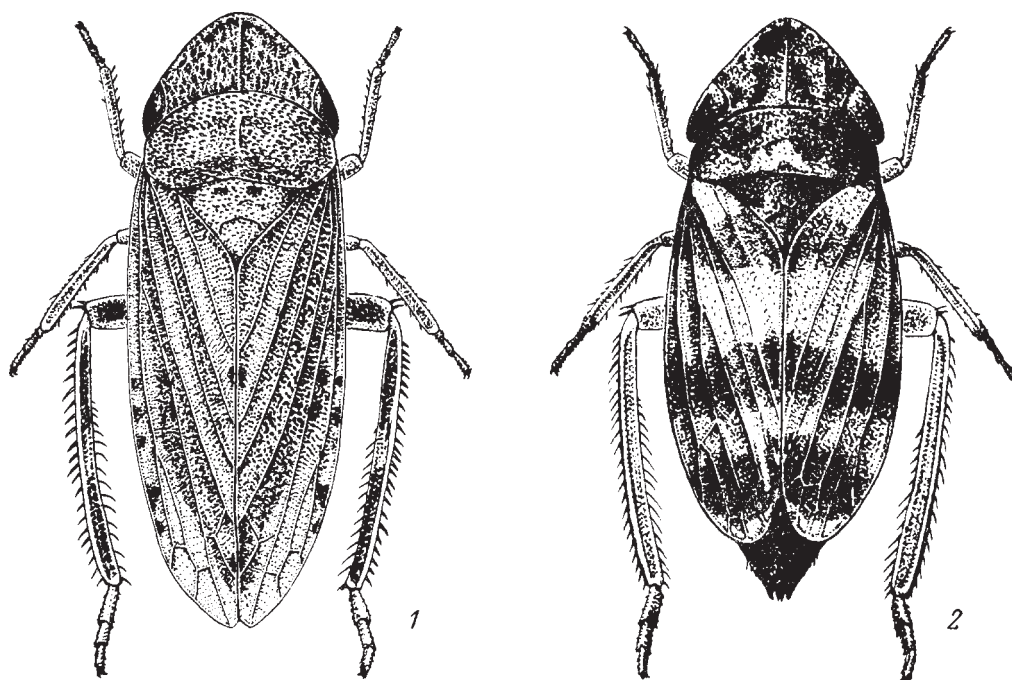


Fig. 111. Cicadines. Family Cicadellidae (original).

1, *Aphrodes bicinctus*, female; 2, *A. nigricans*, male.

- Anterior and posterior branches of penis processes nearly parallel 11
- 11. Ventral processes of penis slightly slanting forwards (in lateral view), comparatively short. Dorsal processes approximate, their bases forming an acute angle (in posterior view). Posterior branches of dorsal processes nearly straight at base, only their apical third slanting (in lateral view). Light yellow. 2.8-4. - Khab., Amur., Prim., Sakh., S Kur.; Altai, C European part of USSR, Baltia. - Japan (Hokkaido), N Mongolia, N Europe. - In mixed and broad-leaved forests; in Europe, on willows. Early July to mid-September. (Figs. 109: 9-11) **E. menzbieri** Zachv.
- Ventral processes of penis straight or slightly slanting backwards (in lateral view), long. Bases of dorsal processes forming a wide arc (in posterior view). Posterior branches of dorsal processes evenly arcuate, branching of dorsal processes usually situated at a considerable distance from their base (in lateral view). Yellowish white, shiny; apical cells of hemelytra slightly darkened. 3.3-4.3. - Kamch., Prim., Sakh., S Kur.; Buryatia, W Siberia. - Japan (Hokkaido), N

- Mongolia, N and C Europe. – [p. 168] In small-leaved, mixed and broad-leaved forests on various trees and shrubs, especially elms. Late June to mid-September. (Figs. 109: 12-15) **E. ishidae** Mats. (*lanternae* W. Wagn., *ussurica* Vilb.)
12. Dorsal and ventral processes of penis branching near middle; inner and outer branches of ventral processes forming an acute angle. Yellowish white, shiny; hemelytra often yellow; their apical part slightly darkened. 3.9-4.5. – Kamch., N Khab., Amur.; Buryatia, Tuva, C European part of USSR. – N Mongolia, many European countries; in N America, subspecies *ariadne* McAtee. – In forests on alders and birches. June to August. (Figs. 110: 1-6) **E. bergmani** Tullgr.
- Ventral processes of penis branching near middle and dorsal processes branching at base; inner and outer branches of ventral processes forming an obtuse angle. Whitish yellow. 3.1-3.3. – Kamch., N Khab., Amur. In forests, probably on hawthorns. – Mid-June to August. (Figs. 110: 7-10) **E. singularis** Anufr.

Subfamily XESTOCEPHALINAE

68. **Xestocephalus** V. D. Small, moderately slender, with smooth, rounded turn of frons to vertex (Figs. 25: 1, 2). Dark tones prevailing in coloration. Male. Pygofer short, with widely rounded posterior margin; lobes of pygofer with processes on inner surface at posterior margin. Genital valve trapezoid. Genital plates wide, arcuate, nearly parallel-sided, with widely rounded apices, with a group of disorderly bristles and long setae. Styli without subapical tooth, with bent, crescent-shaped apical part pointed at end and often bearing projections and teeth on inner margin. Connective cruciate, with well developed articulatory apophyses. Penis with an arcuate shaft gradually narrowing towards apex and with a pair of processes or appendages at base of shaft; gonopore subapical, dorsal. Larvae apparently have hidden habits. – 2 species (in USSR 3).

1. Lobes of pygofer with a pair of long processes on inner surface. Styli with several subapical teeth on inner margin. Penis with rather short lateral processes closely pressed to shaft; and a pair of membranous appendages at base. Black; fore wings dark brown, with black spots. 3.3-3.9. – Prim. – NE China. In broad-leaved and mixed forests and their edges. Late May to late August. (Figs. 112: 1-4) **X. sjolinus** Dlab.
- Lobes of pygofer with small denticle on inner surface. Styli with one subapical tooth on inner margin. Penis with widely spaced, long lateral processes, without membranous appendages at the base of shaft. Brown; fore wings light brown, with lighter spots. 2.5-3.5. – Prim. – Japan, Korea. – In broad-leaved and mixed forests and their edges. Mid-July to late August (Figs. 112: 5-8) **X. guttatus** Mats. (*japonicus* Ish.)

Subfamily APHRODINAE

69. **Stroggylocephalus** Fl. Sturdy, brown, with flat vertex often having finely striate sculpture in anterior half. Male. Pygofer short, widely rounded posteriorly; its lobes externally with hook-shaped process on ventral margin. Genital valve trapezoid; genital plates nearly parallel-sided, closed, widely rounded at apex, with wide oblique stripe of bristles. Styli without subapical angle; their apical part [p. 169] crescent-shaped, disorderly denticulate on margins. Connective short, Y-shaped. Penis symmetrical, with more or less straight shaft and a pair of processes situated lateral to gonopore; gonopore subapical, dorsal. – The genus comprises 2 species.

1. Vertex with a distinct arcuate dark brown stripe parallel to anterior margin and passing across ocelli. Lobes of pygofer with 1 process. The inner side of stylus with 3-4 large teeth at apex. Subgenital sternite in female with deep excision in the middle. Brown, with dark brown speckled pattern. 5-6. – Prim. – Mongolia, Europe. – On grasses and sedges in swamped areas of mixed and broad-leaved forests. May and September. (Figs. 112: 9-12) *S. livens* Zett.

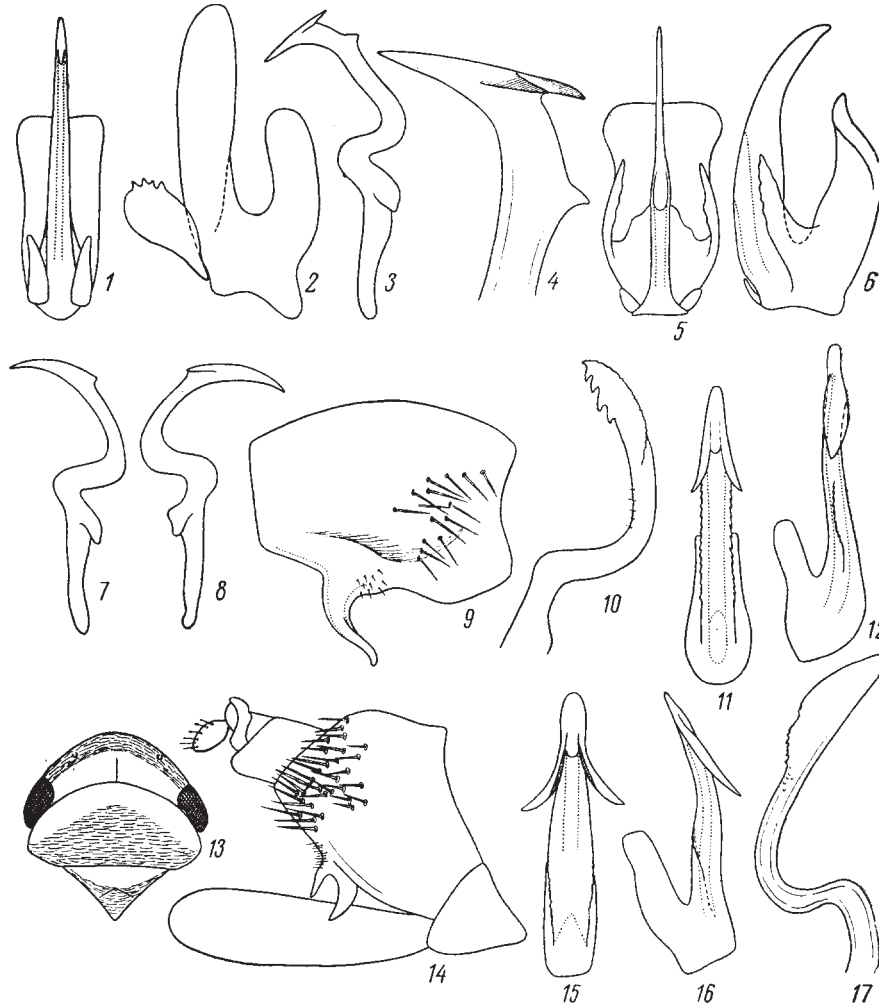


Fig. 112. Cicadines. Family Cicadellidae, subfamilies Xestocephalinae and Aphrodinae (after Anufriev, Ribaut, and Vilbaste).

1-4, *Xestocephalus sjaolinus*: 1, 2, penis (1, posterior view; 2, lateral view); 3, stylus; 4, apex of stylus; 5-8, *X. guttatus*: 5, 6, penis (5, posterior view; 6, lateral view); 7, 8, styli; 9-12, *Stroggylocephalus livens*: 9, lobe of pygofer; 10, stylus; 11, 12, penis (11, posterior view; 12, lateral view); 13-17, *S. agrestis*: 13, anterior part of body; 14, genital block of male, lateral view; 15, 16, penis (15, posterior view; 16, lateral view); 17, stylus.

- Vertex without distinct dark brown band along anterior margin. Lobes of pygofer below with 2 processes. The inner margin of styli smooth at apex. Subgenital sternite in female usually with small incision in the middle. [p. 170] 4.7-7. Amur., Prim.; Siberia, Kazakhstan, Middle Asia. – Japan, Korea, NE China, Mongolia, Europe, N Africa, N America. – On grasses and sedges in swamping meadows, glades, grass marshes. Late June to late September. (Figs. 112: 13-17) *S. agrestis* Fall.

70. *Aphrodes* Curt. Sturdy; vertex flat, with medial carina. Brown, white and black colored, often with contrasting pattern, especially in males. Male. Pygofer short, widely rounded posteriorly; its lobes with angular projection and hook-shaped process. Genital valve trapezoid. Genital plates elongate and triangular, bent, arcuate, with numerous short setae. Styli without subapical angle, with long crescent-shaped apical part denticulate on ventral margin. Connective short, Y-shaped. Penis symmetrical, with straight shaft often flattened laterally, bearing several pairs of processes. – 5 species.

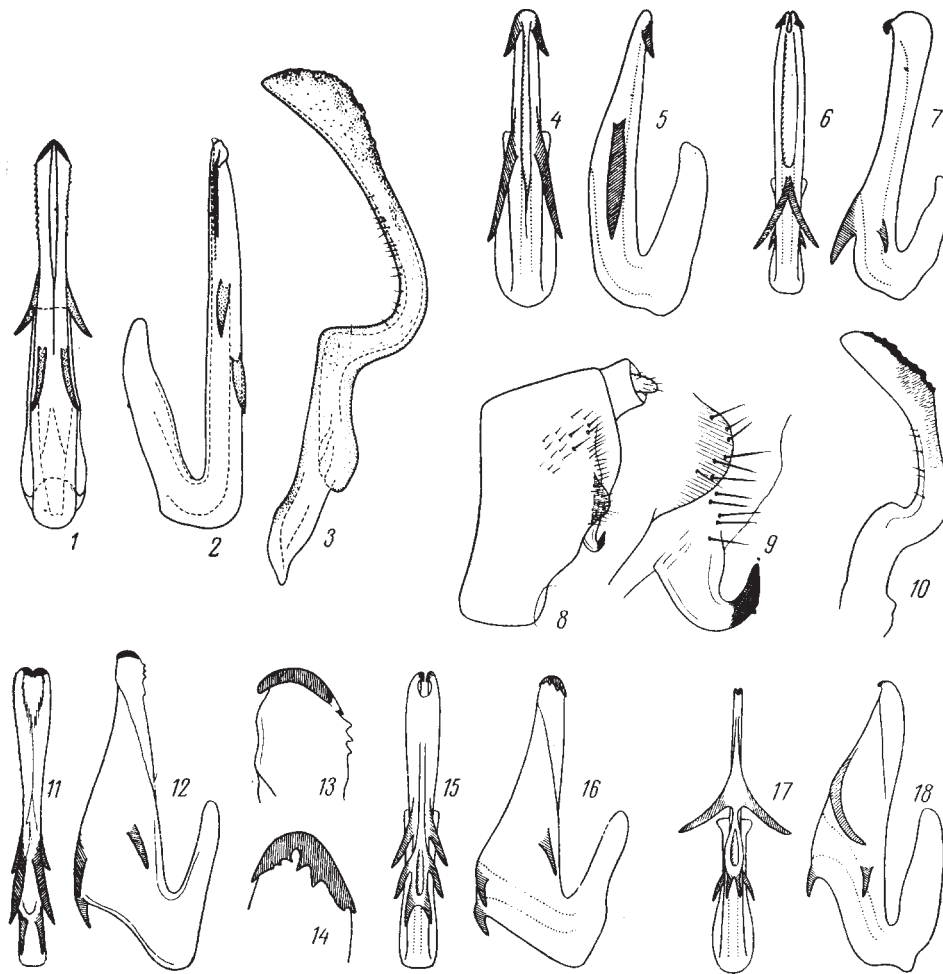


Fig. 113. Cicadines. Family Cicadellidae, subfamily Aphrodinae (after Anufriev, Ossiannilsson, and Vilbaste).

1-3, *Aphrodes bicinctus*: 1, 2, penis (1, posterior view; 2, lateral view); 3, stylus; 4, 5, *A. flavostrigatus*, penis (4, posterior view; 5, lateral view); 6, 7, *A. sahlbergi*, penis (6, posterior view; 7, lateral view); 8-16, *A. monticola*: 8, genital block of male, lateral view; 9, process of pygofer lobe; 10, stylus; 11, 12, 15, 16, penis (11, 15, posterior view; 12, 16, lateral view); 13, 14, apex of penis, lateral view; 17, 18, *A. nigricans*, penis (17, posterior view; 18, lateral view).

1. Penis shaft in apical half with denticulate lateral margins. (Subgenus *Aphrodes* Curt.). Males brown, with white bands on vertex and anterior [p. 171] margin of pronotum, and also with whitish longitudinal veins on fore wing. Females unicolorous brown or greenish, slightly speckled. 5.7-7.4. – Prim., Sakh., Kur.; Si-

- beria, Kazakhstan, Middle Asia. – Mongolia, Europe, N Africa, N America. – In meadows. Polyphagous, prefers Fabaceae. 1 generation per year; eggs overwintering. Mid-July to early September. (Figs. 111: 1; 113: 1-3) **A. bicinctus** Schrank
- Lateral margins of penis shaft smooth, not denticulate 2
2. Penis with 2 pairs of processes. Apical processes rather short, slanting ventrad; subapical processes long, slanting dorsad. (Subgenus *Anoscopus* Kbm.). Males whitish, with brown or black pattern; vertex with black T-shaped spot in the middle and 2 rounded spots lateral to it at posterior margin, which may more or less fuse together; pronotum with narrow black band; fore wings with whitish veins and brown or black cells. Females brown, without spots and stripes. 2.6-4.5. – Prim.; Siberia, Kazakhstan, Middle Asia. – Europe; N America. – In meadows. Polyphagous, prefers Fabaceae. August. (Figs. 113: 4, 5) **A. (A.) flavostrigatus** Donovan
- Penis with not less than 3 pairs of processes. (Subgenus *Planaphrodes* Hamilton) 3
3. Penis narrow, approximately parallel-sided, with a pair of apical denticles and 2 pairs of processes situated nearer to the base than to the apex. Males dark brown to black, with white band at posterior margin of pronotum, 2 narrow, interrupted bands in the middle of fore wings and white spots at their apices, sometimes entirely black. Females unicolorous brown. 3.4-5.5. – Prim.; Transbaikal. – Korea, Mongolia. – In meadows, glades, coasts. Early July to late August. (Figs. 113: 6, 7) **A. (P.) sahlbergi** Sign.
- Penis strongly widened in the middle, with a pair of apical teeth and 3 pairs of processes nearer to the base 4
4. All processes of penis, except apical denticles, of about equal length. Similar to *A. sahlbergi*, but apices of fore wings in male without white spots and bands continuous, not interrupted. 3.9-4.4. – Kamch., Prim.; Tuva, Altai, Caucasus, Crimea. – Mongolia. – In meadows. Late July. (Figs. 113: 8-16) **A. (P.) monticola** Logvinenko
- Processes of anterior pair longer than other processes. Similar to *A. sahlbergi*, but base of fore wing with white spot in male, females unicolorous brown. 3.8-5.2. – Prim.; Transbaikal. – Japan, Korea, NE China. – In meadows. Early July to mid-August. (Figs. 111: 2; 113: 17, 18) **A. (P.) nigricans** Mats.

Subfamily PENTHIMIINAE

71. **Penthimia** Germ. Sturdy, moderately flattened, with rounded boundary between frons and vertex. Apex of vertex and frontoclypeus transversely striate. Male. Pygofer short, with lobes widely rounded on posterior margin. Genital valve large; genital plates triangular, with concave lateral margins. Styli with smoothed subapical angle and thin apex. Connective Y-shaped. Penis with wide base and shaft gradually narrowing towards apex; gonopore subapical. – 2-4 species.

1. Apical part of stylus with 2 apices. Posterior margin of subgenital sternite in female with wide incision and projection in its middle, which extends to the level of lateral lobes of the sternite. Body from black with rust-colored band at posterior margin of pronotum (sometimes interrupted into large spots) and numerous reddish yellow spots on fore wings to reddish rust-colored with black head, basal half of pronotum, scutellum and a net of veins and spots on fore wings. 4.7-5.4. – Prim. – Afghanistan, Iran, tropical Africa. – Mid-June to early September. (Figs. 114: 10-12) **P. scutellata** Mel.

- Apical part of stylus pointed. Posterior margin of subgenital sternite in female with projection in the middle. Strongly varying in color. Usually black, [p. 172] shiny, with less pigmented apex of fore wings; several large yellow spots may be present on pronotum and wings. 4-5. – Khab., Prim. – Japan (Honshu, Kyushu, Shikoku, Okinawa), Korea, China. – In glades in mixed and broad-leaved forests, in meadows. Late May to early August. (Figs. 114: 1 -9; 116: 1) .

..... *P. nitida* Leth.

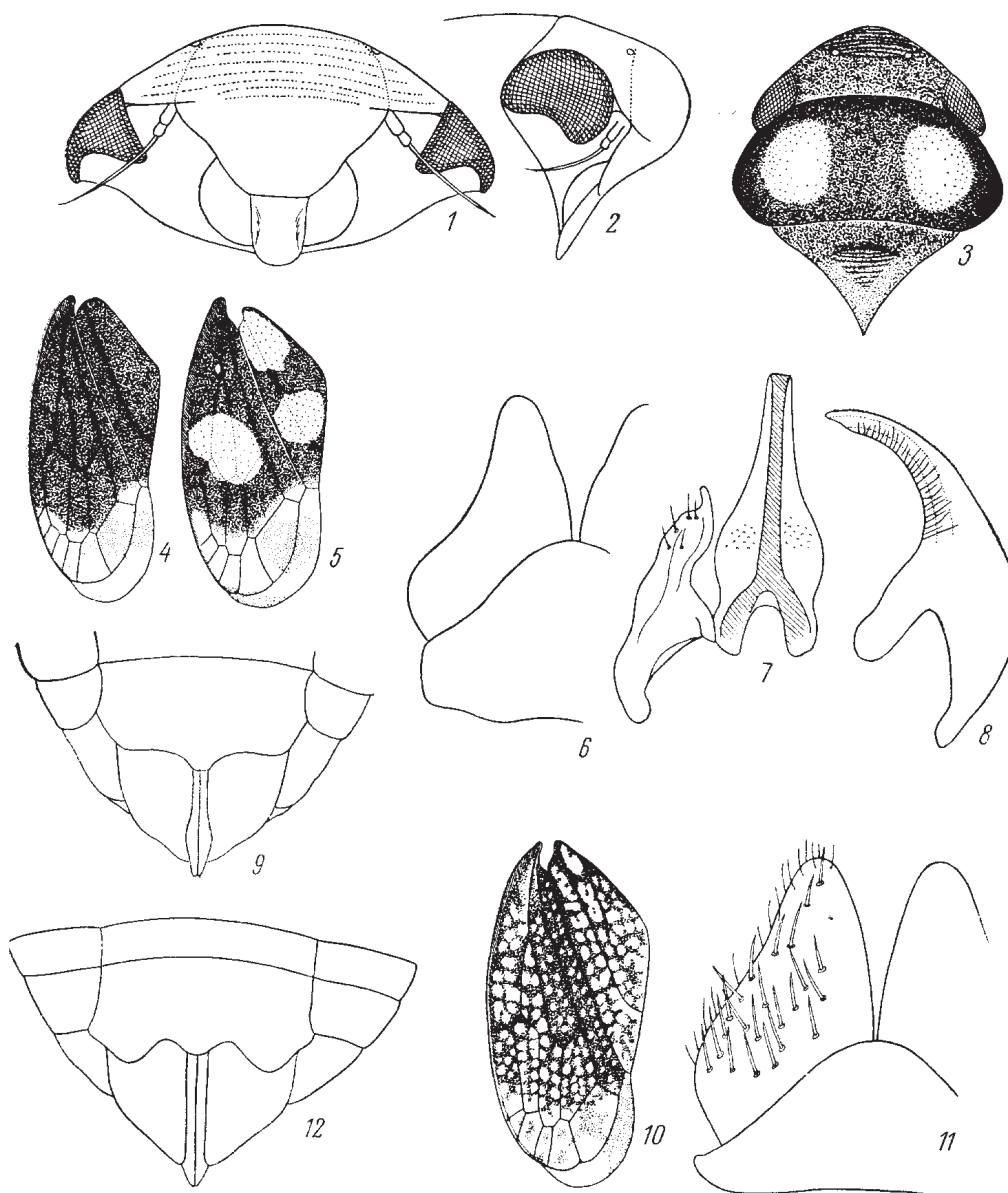


Fig. 114. Cicadines. Family Cicadellidae, subfamily Penthimiinae (after Anufriev).

1-9, *Penthimia nitida*: 1, face; 2, head, lateral view; 3, anterior part of body; 4, 5, fore wing, various color forms; 6, genital valve and genital plate, ventral view; 7, connective and stylus; 8, penis, lateral view; 9, apex of female abdomen, ventral view; 10-12, *P. scutellata*: 10, fore wing; 11, genital valve and genital plate, ventral view; 12, apex of female abdomen, ventral view.

72. **Athysanopsis** Mats. Slender, with parallel-sided vertex and furrow between ocelli on the turn of face into vertex. Male. Lobes of pygofer with robust, well sclerotized processes arising from the posterior dorsal angle and directed downwards. Genital plates without bristles, in apical half weakly sclerotized and slanting upwards. Styli with rather long apex, outer [p. 173] angle of which is stretched into a long tooth. Penis with apical gonopore and a pair of processes arising from upper surface of shaft near its base. Connective bifurcate, with long narrow base and rather short branches. – 1 species (the genus comprises 20 species).

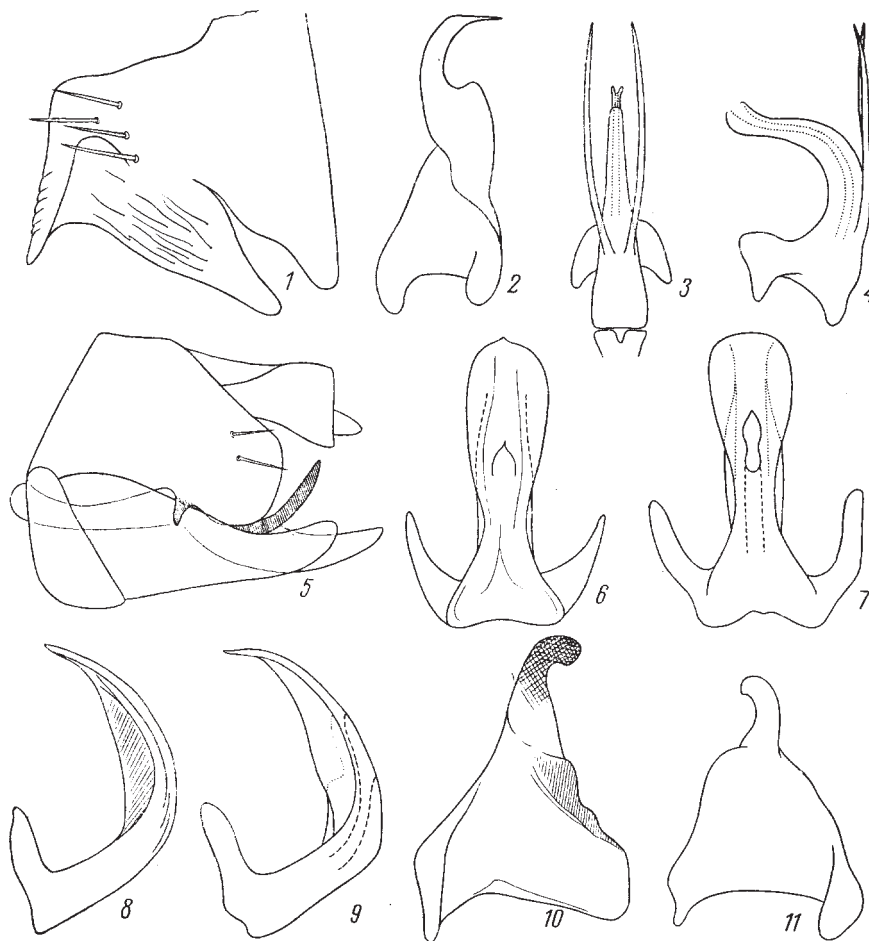


Fig. 115. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev and Vilbaste).

1-4, *Athysanopsis salicis*: 1, lobes of pygofer; 2, stylus; 3, 4, penis (3, posterior view; 4, lateral view); 5-11, *Drabescus nuchalis*: 5, genital block of male, lateral view; 6-9, penis (6, 7, posterior view; 8, 9, lateral view); 10, 11, stylus.

1. Yellow; margin of vertex with 2 large black spots inwards from ocelli. Pronotum with 8 black spots along anterior margin; the middle pair larger than other spots. Scutellum with black lateral triangles and black spot at furrow of scutoscutellar suture. Fore wings with light yellowish costal margin and light clavus. *R*, *M* and *CuA* dark; the space between them gray. 6-7.5. – S Prim. – Japan, Korea, NE China. – On willows in floodland forests, rare. Mid-August to early September. (Figs. 115: 1-4) **A. salicis** Mats.

73. *Drabescus* Stål. Large, with wide head and short vertex, with furrow passing along boundary between face and vertex between ocelli, which are approximate to eyes. Male. Lobes of pygofer rounded posteriorly, with 1 or 2 processes arising from posterior or lower margin. Genital plates triangular, devoid of bristles, with apex more or less strongly attenuate [p. 174] and weakly sclerotized. Styli of various shapes. Connective X-shaped or Y-shaped, with narrow or wide base. Penis with basal processes or without such processes; gonopore subapical, dorsal. – 4 species.

1. All veins of fore wings but C unicolorous, brown or yellowish, without distinct white specks. Penis without basal processes 2

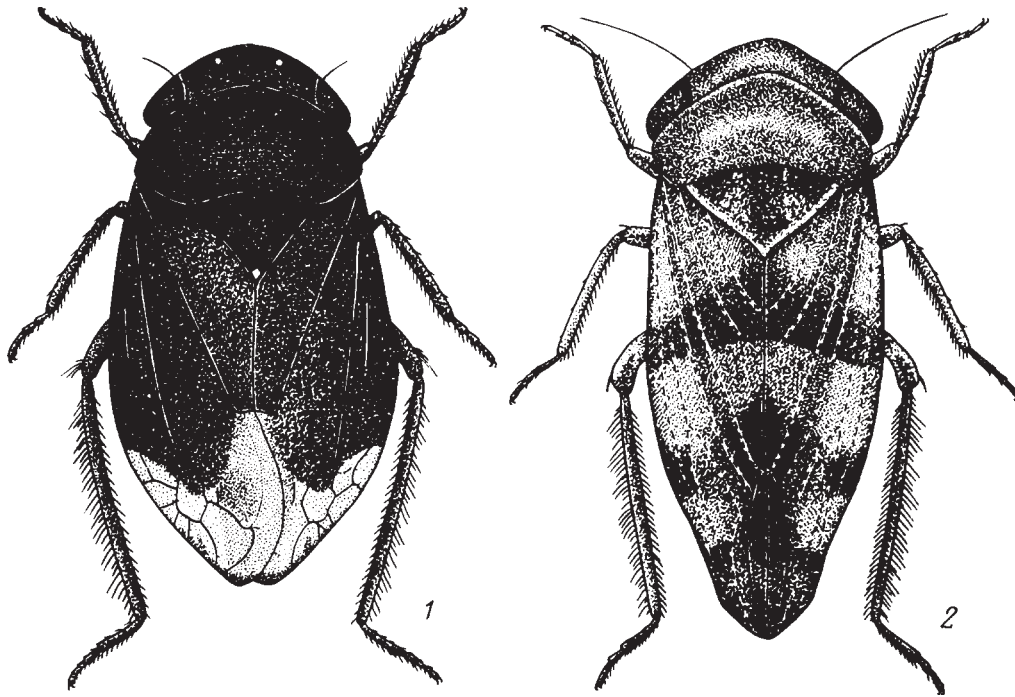


Fig. 116. Cicadines. Family Cicadellidae (after Esaki).

1, *Penthimia nitida*; 2, *Drabescus nigrifemoratus*.

- All veins of fore wings brown or black, with numerous, well noticeable white specks. Penis with 2 basal processes. (Subgenus *Leucostigmidium* Anufr. et Em., subgen. n. Type species *Selenocephalus nigrifemoratus* Mats.) 3
- 2. Fore wings without bands, their cells darkened in the middle. Lobes of pygofer with 2 processes. Genital plates comparatively short, smoothly narrowing towards apex. Styli short, with strongly widened bases. Penis with dorsal gonopore, widely spaced branches of the base and widened, spade-shaped apex. Posterior margin of subgenital sternite in female weakly incised, arc-like, with small projection in the middle. (Subgenus *Drabescoides* Kwon et Lee). Brown; vertex yellow, with dark brown band between ocelli. Pronotum with grayish brown marble pattern. Fore wings semihyaline, with dark brown veins and darkenings in the middle of cells. 7.2-8.8. – S Prim. – Korea, NE China. – In mixed and broad-leaved forests, probably on elms; was recorded also from dogrose and willows. Early August to early September. (Figs. 115: 5-11; 117: 1-4) D. (D.) *nuchalis* Jacobi

- Fore wings with light hyaline transverse band passing across apex of A_1 . Cells of fore wings with brownish pattern flowing longitudinally. Lobes of pygofer with 1 robust hook-shaped process on posterior margin. Genital plates comparatively long, sharply turning into rather short apical processes. Penis with smoothly bent shaft and subapical [p. 175] gonpore; its upper surface gutter-shaped. Posterior margin of subgenital sternite in female with deep excision in the middle. (Subgenus *Ochrescus* Anufr. et Em., subgen. n. Type species *Drabescus ochrifrons* Vilb.). Body ochraceous yellow; anterior part of body with marble pattern. 9.6-11.9. - Prim. - NE and E China. - In mixed and broadleaved forests on birches. Late July to early September. (Figs. 117: 5-13; 118: 1, 2) .. **D. (O.) ochrifrons** Vilb.

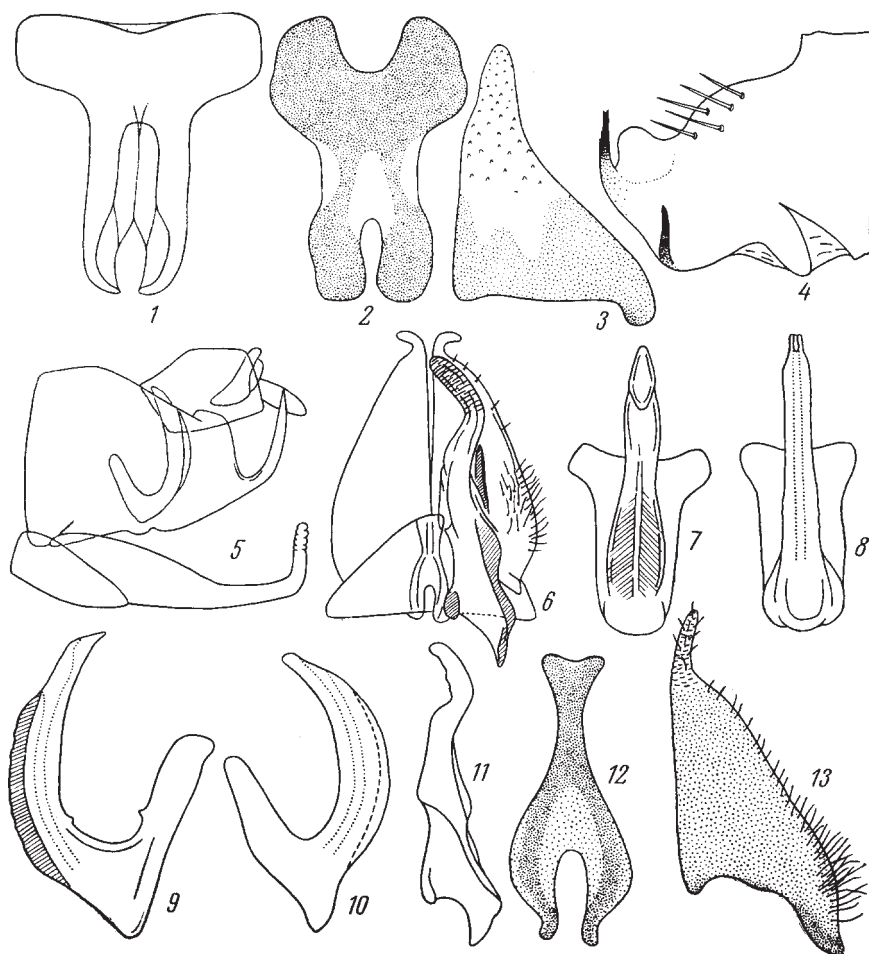


Fig. 117. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev and Vilbaste).

1-4, *Drabescus nuchalis*: 1, 2, connective; 3, genital plate; 4, lobe of pygofer; 5-13, *D. ochrifrons*: 5, genital block of male, lateral view; 6, genital valve, genital plates, connective and stylus; 7-10, penis (7, 8, posterior view; 9, 10, lateral view); 11, stylus; 12, connective; 13, genital plate.

3. Genital plates turning sharply into apical process. Styli with wide base and well noticeable subapical angle. Basal processes of penis set aside from shaft, 2/3 times as long as shaft. Penis shaft a little compressed laterally, without teeth at apex. Subgenital sternite in female straight or weakly rounded, projecting in the middle. Yellow brown. Anteclypeus and frontoclypeus black, with yellow spots;

temples, genae and lora from black to brown or dirty yellow, with anastomosing yellow spots. Veins of fore wings with specks. 8-10.5. – Prim., S Kur. – Japan. – In mixed and broad-leaved forests on birches. Early August to early September. (Figs. 118: 3-8) **D. (L.) nitobei** Mats.

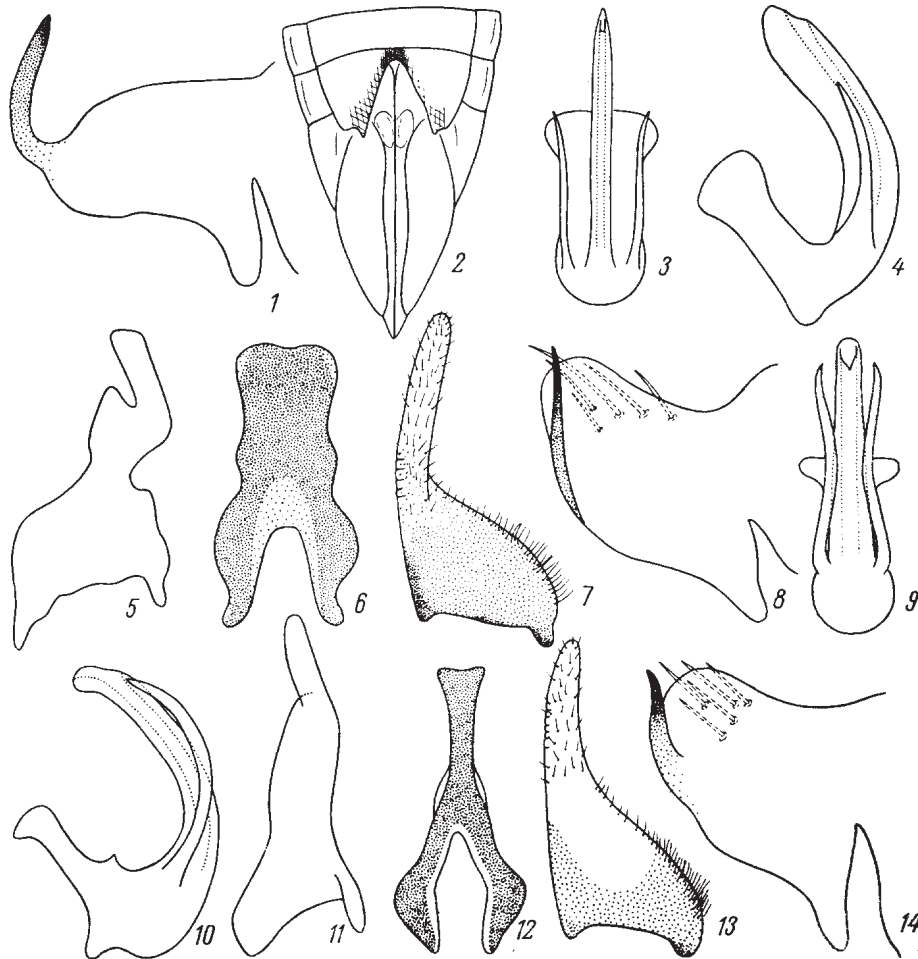


Fig. 118. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev and Vilbaste).

1, 2, *Drabescus ochrifrons*: 1, lobe of pygofer; 2, apex of female abdomen, ventral view; 3-8, *D. nitobei*: 3, 4, penis (3, posterior view; 4, lateral view); 5, stylus; 6, connective; 7, genital plate; 8, lobe of pygofer; 9-14, *D. nigrifemoratus*: 9, 10, penis (9, posterior view; 10, lateral view); 11, stylus; 12, connective; 13, genital plate; 14, lobe of pygofer.

- Genital plates smoothly turning into apical process. Styli with narrow base and smoothed subapical angle. Penis with basal processes pressed to shaft [p. 176] and nearly reaching its apex. Penis shaft not compressed laterally, round in cross-section; base of shaft with a tooth well noticeable from below. Posterior margin of subgenital sternite in female with deep excision. Similar to *D. nitobei*, but anteclypeus and frontoclypeus nearly completely black, glossy, without anastomosing yellow spots. Lora and genae lemon yellow. 7-8.5. – Prim. – Japan, Korea. – In mixed and broad-leaved forests on *Quercus mongolica*. Early August to mid-September. (Figs. 116: 2; 118: 9-14) **D. (L.) nigrifemoratus** Mats.

74. **Hecalus** Stål. Slender, usually green-colored, with parabolic vertex and acute margin of vertex. Male. Pygofer elongate, with numerous disorderly setae in apical half; dorsal incision shallow. Genital valve large, triangular. Genital plates elongate and triangular, with attenuate apices; few setae in a marginal row. Styli with distinct subapical angle and small apical part. Connective Y-shaped. Penis symmetrical, tubular, with processes at apex; gonopore apical or subapical, dorsal. – 3 species (in USSR 4). [p. 177]

1. Penis with 1 pair of thin processes at apex. Green, with brown tint; anterior margin of head lighter, edged by black lines. 5.8-8.7. – S Prim. – Japan, E China, Thailand, Philippines, Laos. (Figs. 119: 11, 12) **H. prasinus** Mats.
- Penis with 2 pairs of processes at apex..... 2
2. Penis at apex with 2 pairs of processes of about equal length. Subgenital sternite in female with wide excision on posterior margin. Body yellowish green, with 4 longitudinal orange stripes on vertex and pronotum. 6.3-7. – S Prim. – Japan, Korea. – In meadows. Mid-July to late August. (Figs. 119: 1-4) **H. lineatus** Horv.
- Penis with a pair of long wide processes at apex, and a pair of thin short processes at their bases. Posterior margin of subgenital sternite in female nearly straight, with small projection in the middle. Greenish, sometimes (overwintered specimens) with orange tint. In male, apical half of fore wings brownish, with 3 brown spots at costal margin and 1 spot at inner margin; in female, each wing only with 2 spots, and spots are much smaller. 2.9-4.5. – S Prim.; Transbaikai, Tuva, Altai. – Japan, Korea, Mongolia. – In steppized meadows. Early July to late August. (Figs. 119: 5-10) **H. tripunctatus** Mats.

75. **Glossocratus** Fieb. Brown-colored, with flattened parabolic vertex stretched forwards, its margin flattened, foliaceous. Male. Pygofer very long, with stretched dorsal angles of lobes and numerous disorderly bristles in their apical half. Genital valve and genital plates short, several times shorter than pygofer. Styli short, with distinct subapical angle and well developed apical part. Connective Y-shaped, with well developed articulatory apophyses. Penis tubular, with 2 pairs of apical processes; gonopore apical. – In USSR 1 species.

1. Body brownish gray, sometimes with 2 longitudinal dark stripes on sides of pronotum and on fore wings. 6.8-10. – Prim.; Transbaikai, S Siberia, Kazakhstan, S European part of USSR. – Mongolia, Afghanistan, Hungary. In Prim., in swamping meadows and grass marshes; in other parts of the range, mostly in salt meadows, on grasses. Late June to early October. (Figs. 119: 13-17) **G. foveolatus** Fieb.

76. **Eupelix** Germ. Body slender, with wide, flat, triangular and parabolic head. Boundary between frons and vertex foliaceous; its posterior lobes continue on eyes, dividing them anteriorly into lower and upper part. Vertex slightly concave, with a middle carina. Frontoclypeus with high longitudinal carina; genae wide, their posterolateral angles to a large extent covering bases of anterior coxae and propleura from below. Pronotum nearly parallel-sided, narrower than head with eyes, with a middle longitudinal carina and 2 approximate longitudinal lateral carinae beyond eyes. Longitudinal veins of fore wings carina-shaped. Lobes of pygofer without processes, slightly narrowing towards widely rounded apex; dorsal excision deep. Anal tube small, above completely sclerotized. Genital valve triangular. Genital plates triangular, closed,

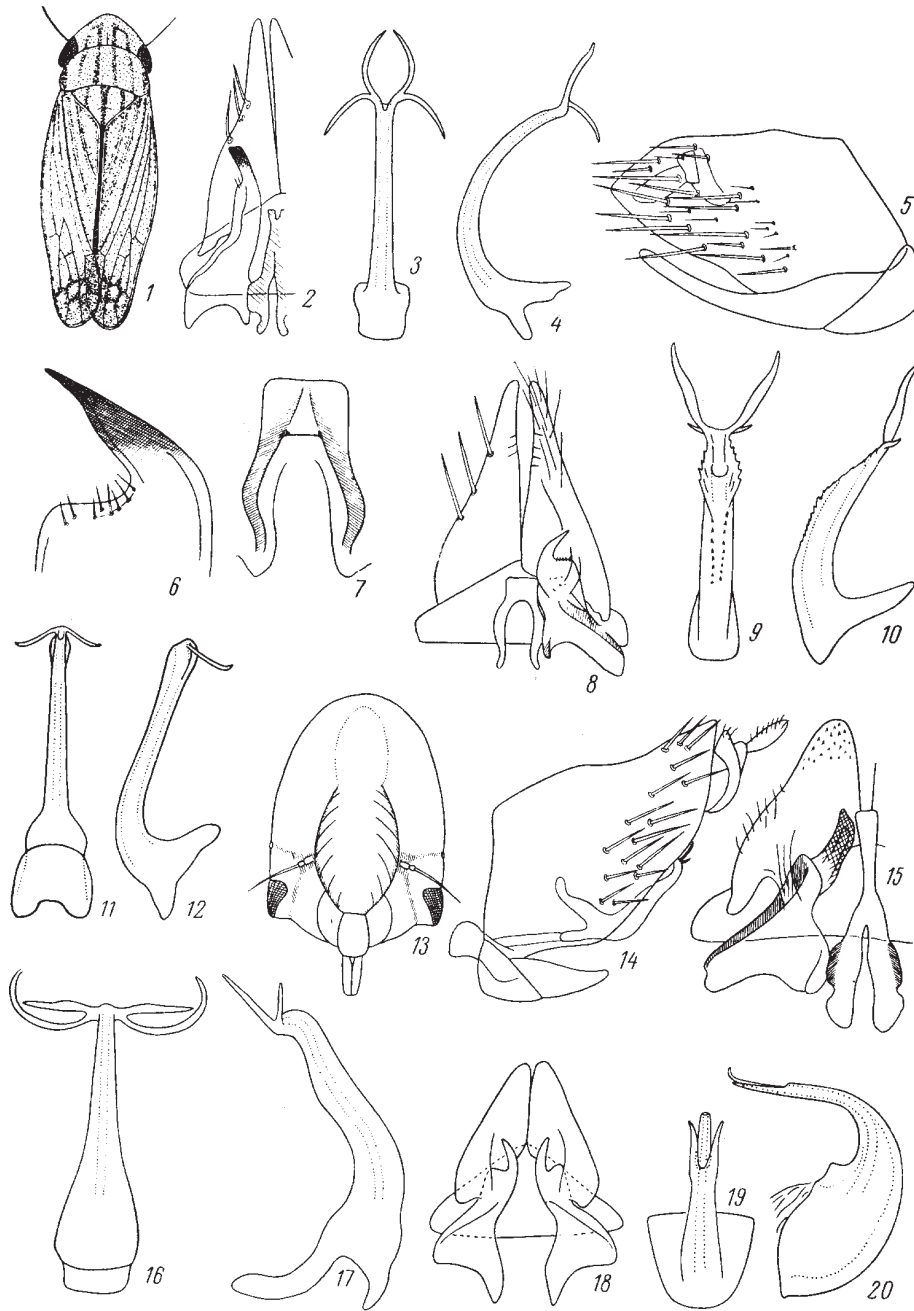


Fig. 119. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev, Ishihara, Ribaut, and Vilbaste).

1-4, *Hecalus lineatus*: 1, general appearance; 2, genital valve, genital plate, connective and stylus; 3, 4, penis (3, posterior view; 4, lateral view); 5-10, *H. tripunctatus*: 5, genital block of male, lateral view; 6, apex of stylus; 7, connective; 8, genital valve, genital plates, connective and stylus; 9, 10, penis (9, posterior view; 10, lateral view); 11, 12, *H. prasinus*, penis (11, posterior view; 12, lateral view); 13-17, *Glossocratus foveolatus*: 13, face; 14, genital block of male, lateral view; 15, genital valve, genital plate, connective and stylus; 16, 17, penis (16, posterior view; 17, lateral view); 18-20, *Eupelix cuspidata*: genital valve, genital plates and styli, dorsal view; 19, 20, penis (19, posterior view; 20, lateral view).

with narrowly and separately rounded apices and approximately straight outer margin, without bristles. Styli with obliquely longitudinal, slightly arcuate, obliquely truncate apices and well developed subapical projection. Connective stretched, narrow, Y-shaped, with long handle. Penis arcuate, with conical base smoothly turned into shaft; shaft in the middle part with processes pressed to it and directed towards apex, but ending a little before it. Gonopore apical. Monotypic genus.

1. Gray or earthy brown. Vertex often with indistinct dark spots and oblique stripes; sometimes pronotum, scutellum and hemelytra also darkened. Shape and width of head varying significantly. 5-9. – Amur.; C Yakutia, [p. 179] Transbaikial, S Siberia, Middle Asia. – Mongolia, Near and Middle East, Europe, N Africa. – In dry meadows on grasses. Late July to late August. (Figs. 119: 18-20; 128: 1) **E. cuspidata** F.

77. **Hishimonus** Ish. Moderately slender, with rounded or rounded and obtuse-angled, projecting head, with rounded but rather sharp turn of face into vertex. Male. Lobes of pygofer without processes, with numerous bristles in apical half. Genital plates with attenuate apices and numerous marginal small bristles and long setae. Styli with rather long apex and not developed subapical projection. Connective Y-shaped, its base and branches of about equal length. Penis with small base and two U-shaped branches arising from base. – 1 species (in USSR 2).

1. Head, pronotum and scutellum greenish yellow. Fore wings whitish, with brownish veins and brown marble pattern forming in the middle a darker rhomboidal spot. Apices of penis shafts with lobes, gonopore situated between lobes. 4.5-4.7. – Prim. – In broad-leaved and mixed forests, probably on elms. Well attracted to light traps. Mid- to late August. (Figs. 120: 1, 2) **H. bucephalus** Em.

78. **Hishimonoides** Ish. Moderately slender, with rounded or rounded and obtuse-angled, projecting head, with rounded but rather sharp turn of face into vertex; vertex with indistinct transverse linear depression near anterior margin. Male. Lobes of pygofer of moderate length; their posterior margin slanting downwards; hind upper terminal part rounded and on outer wall covered with denticles; a process with denticulate posterior margin arising from hind lower angle passes obliquely from above along posterior margin of lobes; distal part of outer wall with disorderly bristles. Anal tube small. Genital valve long, with convex lateral margins and rounded apex. Genital plates in basal part with convex lateral margin, in apical part, with concave lateral margin; apices narrow, attenuate. Connective narrow, forked. Styli with small, weakly bent apices and rounded subapical projection. Penis with longitudinal base and 2 short shafts arising from its lower part, as well as a robust projection continued into 2 pairs of long processes extending far beyond apices of shafts; ventral pair of processes especially long. – In USSR 1 species.

1. Integument reddish brown. Face and pronotum covered with small, indistinct light specks. Vertex and scutellum yellowish, with indistinct pattern. Fore wings whitish, with brown veins and specks in cells; brown, indistinct, zigzagged stripe passes across each wing, from base of claval suture to the middle of costal vein, from there to apex of clavus, beyond it, the 3rd to 5th bends of stripe are washing down and pass on membrane; apex of wing intensely darkened along margin. 4.2-4.4. – S Transbaikial (Kyakhta, Darasun). – NE and E China, C and E Mongolia. – On *Ulmus pumila*. Late July to late August. (Figs. 120: 7-11) **H. chinensis** Anufr.

79. **Norva** Em. Moderately slender, with rounded projecting head; the turn of face into vertex rounded but rather sharp; vertex with an indistinct transverse linear depression near anterior margin. Male. Lobes of pygofer with tooth on ventral margin, in apical half with numerous bristles and setae. Styli with more or less long apex and well developed subapical angle. Connective Y-shaped; its base much longer than branches. Penis with rather large base and 2 dorsal, closely approximate shafts and an unpaired long process arising from it; the shafts bent subapically. Genital plates large, closed, with slightly attenuate apices; their lateral margins with rows of small bristles and with setae. – In USSR 1 species. [p. 180]

1. Basic color rusty red; basal quarter of fore wings light, with brown veins; light small spots present on distal part of wing, at its middle and on membrane. Processes of pygofer directed downwards. Apex of stylus very long, its length nearly equal to length of stylus base. 5.2-5.6. – Prim., Korea. – In broad-leaved forests; probably dendrophilous. Attracted to light traps. August. (Figs. 120: 3-6)
..... **N. anufrievi** Em.

80. **Neoaliturus** Dist. Moderately slender, with rounded projecting head and smooth turn of face into vertex. Male. Lobes of pygofer internally with long process arising from lower margin and directed upwards; bristles robust, situated in the middle part of lobes. Genital plates closed, triangular, but in certain representatives (not in *N. fenestratus*) pentagonal, with triangularly projected lateral margins and rectangular, with straightly truncate apices, with a marginal row of bristles. Styli with long apex, sometimes flattened, and with distinct subapical projection. Connective Y-shaped. Penis with T-shaped branching shaft; branches recurved and forming a semicircle or nearly complete circle. Gonopores situated on apices of branches. – 1 species (in USSR more than 10).

1. Black or brown. Fore wings with several rounded hyaline areas (spots); spots fuse, forming a band at the base of membrane. 2.8-3.4. – Prim.; S Siberia, Kazakhstan, Middle Asia, Caucasus. – Japan, China, Mongolia, Afghanistan, Near East, S and C Europe, N Africa, India. – In meadows (more or less dry ones) on Asteraceae. Early July to late August. (Figs. 120: 12-19) **N. fenestratus** H.-S.

81. **Goniagnathus** Fieb. Robust, sturdy, slightly flattened dorsoventrally, with wide and relatively short head arcuately projecting forwards. Coloration dark brown or gray. Male. Pygofer short and wide, with numerous strong short bristles. Genital plates fused together and with genital valve, devoid of bristles. Styli with long apical part. Connective narrow, forked, fused with penis; penis shaft arcuate, gonopore ventral, subapical. – 1 species (in USSR about 10).

1. Sturdy, gray, with numerous dark small spots and specks; face with black pattern. Apical part of styli nearly parallel-sided, obliquely truncate and excised. Penis weakly arcuate, without processes, dorsally with lobe-shaped carina at apex and at base. 4-6. – Prim.; Transbaikal, Tuva, S Siberia, Altai, Kazakhstan, Middle Asia, S European part of USSR. – Korea, Mongolia. – In dry meadows on *Artemisia*, also in steppes. Early July to mid-September. (Figs. 121: 1-6) **G. rugulosus** Hpt.

82. **Phlogotettix** Rib. Slender, with obtuse-angled and rounded projecting head and rounded turn of face into vertex. Male. Lobes of pygofer with robust process along ventral margin, its apex slanting upwards; very long bristles concentrated in



Fig. 120. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev, Knight, Ossiannilsson, and Ribaut).

1, 2, *Hishimonus bucephalus*: 1, 2, penis (1, lateral view; 2, posterior view); 3-6, *Norva anufrievi*: 3, genital valve, genital plate, connective and stylus; 4, lobe of pygofer; 5, 6, penis (5, lateral view; 6, anterodorsal view); 7-11, *Hishimonoides chinensis*: 7, pygofer, lateral view; 8, sculpture of apical part of pygofer lobe; 9, genital valve, genital plate, connective and stylus; 10, 11, penis (10, lateral view; 11, posterior view); 12-19, *Neoaliturus fenestratus*: 12, fore wing; 13, 14, penis (13, posterior view; 14, lateral view); 15, process of pygofer lobe; 16, pygofer, lateral view; 17, genital valve and genital plates, ventral view; 18, stylus; 19, subgenital plate of female.

the middle part of lobes. Genital plates at base nearly parallel-sided, sharply narrowed toward apex into long processes; posterior margin starting from the bend with marginal row of small bristles and numerous dense setae. Connective with short base and longer, transversely spaced branches. Penis symmetrical, arcuate, ventrally with long process, its apex bearing 2 teeth. Monotypic genus.

1. Slender, brownish or yellowish, glossy. A round black spot at posterior margin of vertex; black spots above anteclypeus lateral to frontoclypeus. 4.5-5.5. – S Khab., Amur., Prim.; Transcaucasia, S European part [p. 183] of USSR. – Japan, Korea, NE China, Near East, S and C Europe. – Under canopy of broad-leaved and mixed forests, in their edges and glades. Late July to early September. (Figs. 121: 7-14) **Ph. cyclops** M. R.

83. **Balclutha** Kirk. Slender, with rounded transverse head, which across eyes is usually narrower than pronotum; sides of pronotum usually noticeably narrowed forwards. Male. Genital valve rounded and triangular or semicircular. Genital plates triangular, usually with strongly attenuate and weakly sclerotized apex, and few large bristles in marginal row. Pygofer with lobes widely rounded posteriorly and bearing small projection at lower posterior angle; numerous bristles are disorderly scattered on apical part of lobes. Connective Y-shaped, with long branches and base. Styli with well expressed subapical angle and small apical part slanting outwards. Penis with arcuate shaft and ventral or subapical gonopore. Well expressed seasonal dimorphism in color occurs in some species. – 4-5 species.

1. Lobes of pygofer attenuate toward apex in the shape of a tooth slanting downwards. Genital plates with a pair of teeth on inner surface. Penis with short shaft, which is not longer than strongly developed base. Subgenital sternite in female with large rectangular projection on posterior margin. Nearly entirely emerald green (1st generation) or whitish ochraceous yellow, green grayish, often with orange pattern on anterior part of body and more or less fused spots on fore wings (2nd generation). 3.4-4.3. – Prim. – Korea. In mixed and coniferous forests, among grasses. Late May to September. (Figs. 121: 15-19; 122: 1) **B. pseudoviridis** Vilb.
- Lobes of pygofer widely rounded on posterior margin. Genital plates without teeth on inner surface. Penis with long shaft, which is several times as long as base. Subgenital sternite in female nearly straight or with small projection in the middle 2
2. Penis with very long, thin shaft extending far beyond the line of basal margin of base. Ochraceous yellow, greenish or gray; in dorsal view looks as if splashed with dense dark brown specks. 4-4.8. – Prim., Sakh., S Kur. – In mixed and coniferous forests among grasses. Mid-June to September. (Figs. 122: 2-7) **B. versicolor** Vilb.
- Penis with shorter shaft not extending beyond the line of basal margin of base 3
3. Connective with incised apical margin; its base longer than branches. Penis base narrow and high in lateral view; the turn of base into shaft very smooth. Subgenital sternite in female with nearly straight posterior margin. Greenish, grayish or brown, often with brown spots on head, pronotum and fore wings. 3.3-4.1. – Kamch., Prim., Kur. – Whole non-tropical Eurasia, N Africa and N America. – In edges and glades of broad-leaved and mixed forests and in meadows on grasses. Early May to late September. (Figs. 122: 8-11) ... **B. punctata** F.

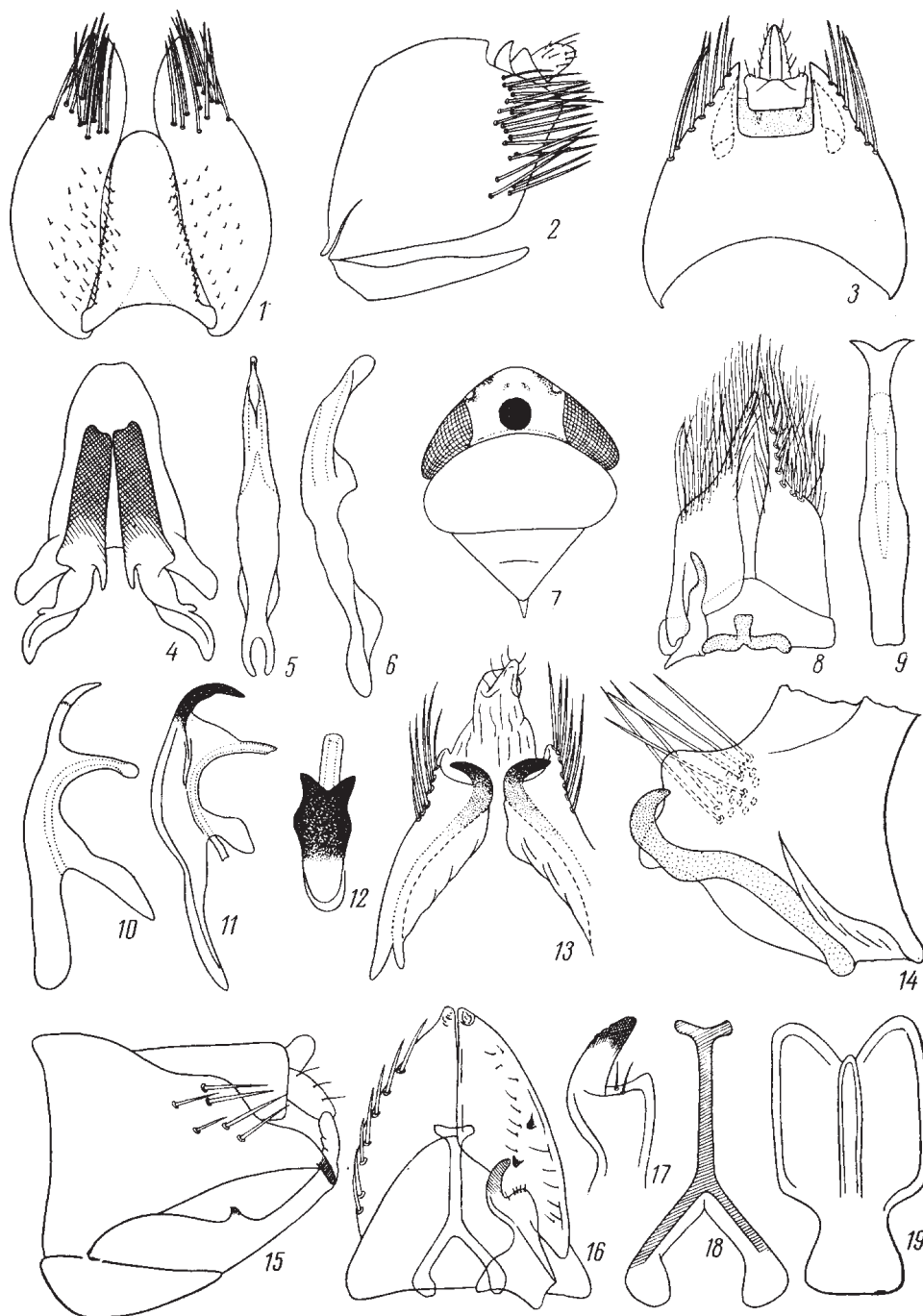


Fig. 121. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev, Kwon, Ribaut, and Vilbaste).

1-6, *Goniagnathus rugulosus*: 1-3, genital block of male (1, lateral view; 2, ventral view; 3, dorsal view); 4, genital valve, genital plates and styli, dorsal view; 5, 6, penis (5, posterior view; 6, lateral view); 7-14, *Phlogotettix cyclops*: 7, anterior part of body; 8, genital valve, genital plates, connective and stylus; 9-12, penis (9, posterior view; 10, 11, lateral view; 12, dorsal view); 13, pygofer and anal tube, ventral view; 14, lobe of pygofer, view from inside; 15-19, *Balclutha pseudoviridis*: 15, genital block of male, lateral view; 16, genital valve, genital plates, connective and stylus; 17, apex of stylus; 18, connective; 19, penis, posterior view.

- Connective with straight apical margin; its base and branches of about equal length. Penis base wide and short in lateral view, the turn into shaft distinct enough. Subgenital sternite in female with small projection in the middle. Greenish or yellowish brown, with dark brown spots. 2.4-3.3. – Prim. – Japan, NE China, C and S Europe, N Africa, N and S America. – In meadows. Early to mid-September. (Figs. 122: 12; 123: 1-6) **B. saltuella** Kbm.

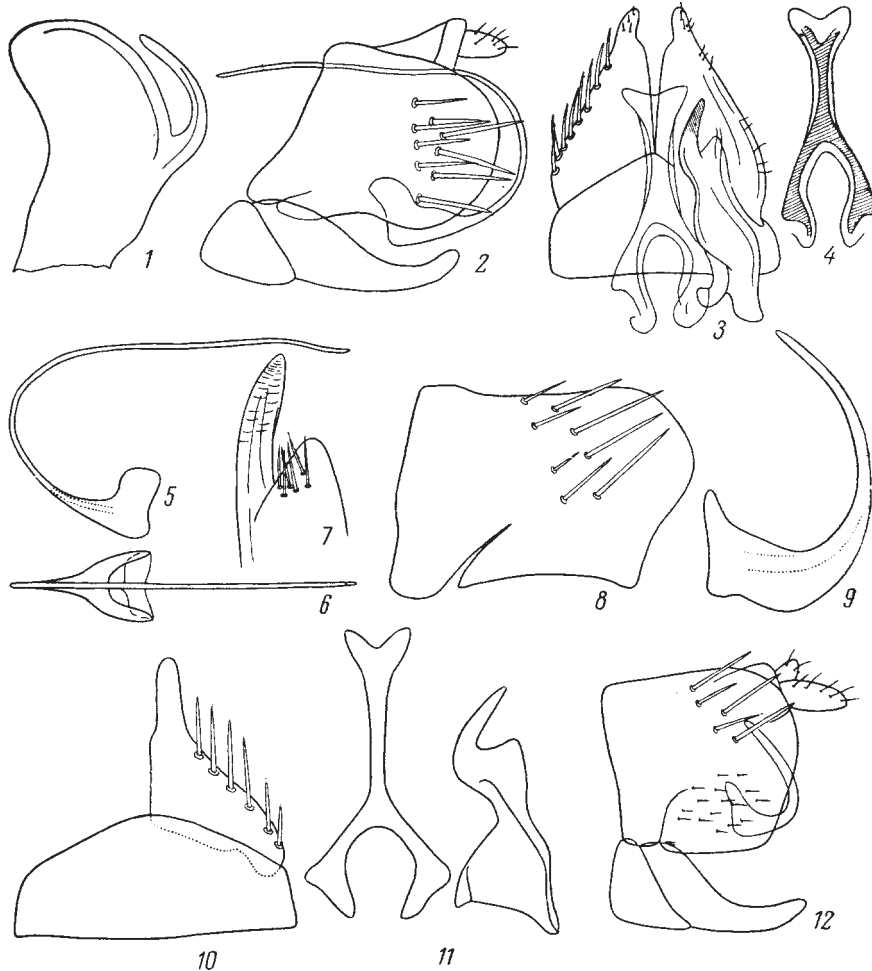


Fig. 122. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev, Blocker, and Vilbaste).

1, *Balclutha pseudoviridis*, penis, lateral view; 2-7, *B. versicolor*: 2, genital block of male, lateral view; 3, genital valve, genital plates, connective and stylus; 4, connective; 5, 6, penis (5, lateral view; 6, posterior view); 7, apex of stylus; 8-11, *B. punctata*: 8, lobe of pygofer; 9, penis, lateral view; 10, genital plate and genital valve, ventral view; 11, connective and stylus; 12, *B. saltuella*, genital block of male, lateral view.

84. **Macrosteles** Fieb. Moderately slender or slender. Head usually as wide as pronotum, rarely narrower. The turn of face into vertex smoothly rounded; head rounded or rounded and obtuse angled projecting forwards. Male. Genital valve rounded and triangular or semicircular. Genital plates triangular, [p. 184] with convex lateral margin in basal part and attenuate membranous apices, bearing large bristles in a marginal row. Lobes of pygofer rounded posteriorly, often with spinulose

sculpture on posterior margin and small projection at the turn of lower margin into posterior margin; lobes in apical half with numerous disorderly bristles. Connective Y-shaped, with moderately long base and long branches. Styli with well expressed subapical angle and small apical part usually rounded at apex. Penis with tubular shaft bearing a pair of processes at apex. Gonopore subapical, ventral. – 15 species (in USSR not less than 30).

1. Processes of penis recurved at base, passing along ventral side of shaft or at least slanting perpendicular to axis of shaft ventrad 8
- Processes of penis not recurved and not slanting ventrad 2

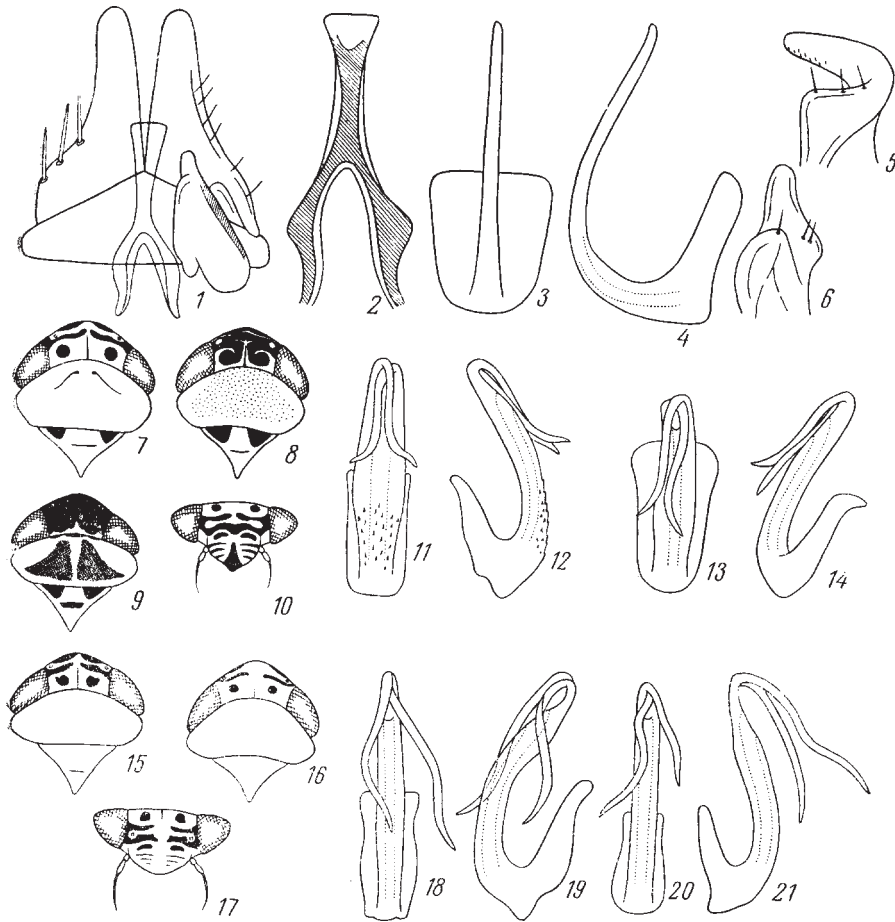


Fig. 123. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev and Vilbaste).

1-6, *Balclutha saltuella*: 1, genital valve, genital plates, connective and stylus; 2, connective; 3, 4, penis (3, posterior view; 4, lateral view); 5, 6, apex of stylus (5, lateral view; 6, dorsal view); 7-14, *Macrosteles strifrons*: 7-9, anterior part of body; 10, head, anterior view; 11-14, penis (11, 13, posterior view; 12, 14, lateral view); 15-21, *M. abludens*: 15, 16, anterior part of body; 17, head, anterior view; 18-21, penis (18, posterior view; 19, right lateral view; 20, dorsal view; 21, left lateral view).

2. Processes of penis slanting ventrad from base at a right angle and crossed, with slightly diverging apices; apex of shaft [p. 185] with a pair of teeth lateral to gonopore. – Nearly entirely black; light spots appear on vertex, pronotum and scutellum. 4-5. – Kamch., Amur.; Irkutsk Prov. – Alaska, N Canada. – Grass marshes. Mid-June. (Figs. 125: 10, 11) **M. osborni** Dorst

- Processes of penis recurved from base 3
- 3. Head narrower than pronotum, with long diverging sides. Penis shaft serrate only dorsally. Body from dirty yellow, with a black pattern and black veins of fore wing to completely black, with bluish tint. 3.8-5. – Prim., S Kur. – Japan, Europe. – On floating leaves of *Nymphaea*, *Nuphar*, *Potamogeton*. Late August to mid-September. (Figs. 124: 22, 23) **M. cyane** Boh.
- Head not narrower than pronotum, with short, more or less parallel sides. Penis shaft smooth or serrate ventrally or ventrally and dorsally 4

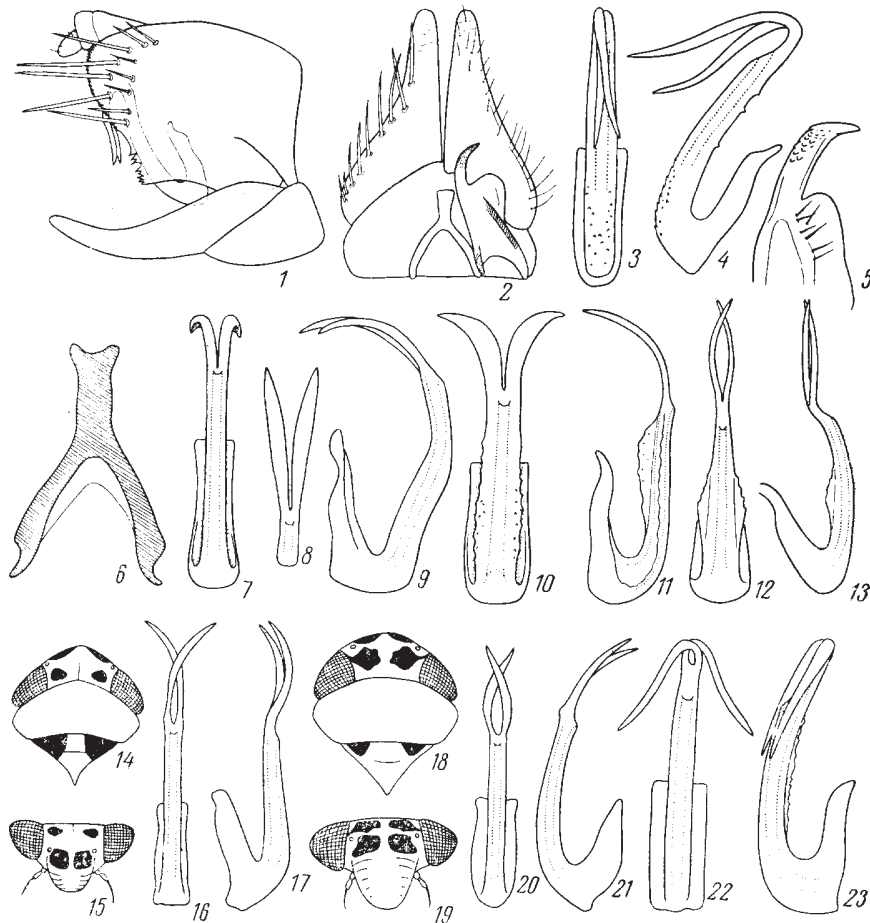


Fig. 124. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev, Ribaut, and Vilbaste).

1-6, *Macrosteles albicostalis*: 1, genital block of male, lateral view; 2, genital valve, genital plates, connective and stylus; 3, 4, penis (3, posterior view; 4, lateral view); 5, apex of stylus; 6, connective; 7-9, *M. laevis*: 7, penis, posterior view; 8, apex of penis, dorsal view; 9, penis, lateral view; 10, 11, *M. cristatus*, penis (10, posterior view; 11, lateral view); 12, 13, *M. lividus*, penis (12, posterior view; 13, lateral view); 14-17, *M. brunnescens*: 14, anterior part of body; 15, head, anterior view; 16, 17, penis (16, posterior view; 17, lateral view); 18-21, *M. quadrimaculatus*: 18, anterior part of body; 19, head, anterior view; 20, 21, penis (20, posterior view; 21, lateral view); 22, 23, *M. cyane*, penis (22, posterior view; 23, lateral view).

- 4. Processes of penis apex short, steeply arcuate, with apices directed dorsad. Light yellow to brown, with black spotted pattern on vertex. 3.4-4.7. – Kamch.; Tuva. – Europe. – On *Equisetum silvaticum*. August. (Figs. 125: 8, 9)
..... **M. frontalis** Scott [p. 186]

- Processes of apex of penis shaft long, with ends directed toward penis base or a little slanting ventrad 5
- 5. Base of processes of penis apex with 2 lateral teeth. Yellowish green, with 4 spots on vertex, anterior spots continuing to upper part of face; a pair of spots on sides of scutellum; pronotum and hemelytra more or less darkened, hemelytra with light spots. 3.8-4.7. – Kamch.; Kazakhstan, Kirghizia, Urals, – Japan, Korea, Europe, N America. – In forests. June to August. (Figs. 125: 12, 13) **M. variatus** Fall.
- Base of processes of penis apex without teeth 6

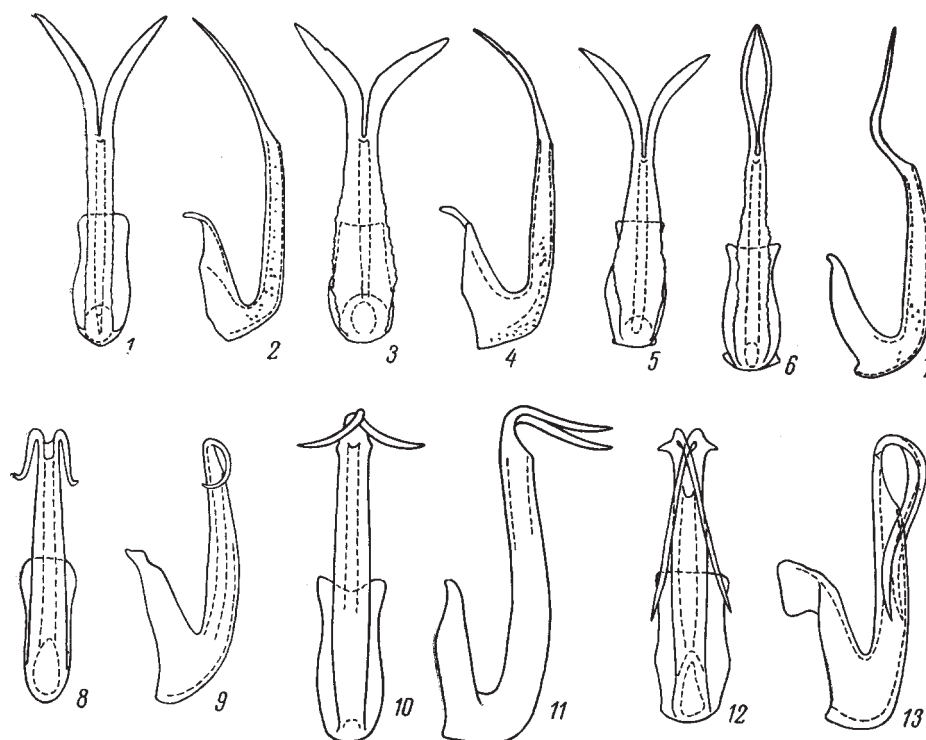


Fig. 125. Cicadines. Family Cicadellidae, subfamily Deltocephalinae, penis (after Beirne, Hamilton, and Ossiannilsson).

1, 2, *Macrosteles alpinus*: 1, posterior view; 2, lateral view; 3-5, *M. fascifrons*: 3, 5, posterior view; 4, lateral view; 6, 7, *M. fieberi*: 6, posterior view; 7, lateral view; 8, 9, *M. frontalis*: 8, posterior view; 9, lateral view; 10, 11, *M. osborni*: 10, posterior view; 11, lateral view; 12, 13, *M. variatus*: 12, posterior view; 13, lateral view.

- 6. Black pattern on head consists of 2 rounded spots in posterior half of vertex, interrupted stripe in front of them, stripe on the turn of vertex into face, 2 crescent-shaped spots under it and several transverse stripes on frontoclypeus lower than crescent spots 7
- Black pattern on head consists of 2 rounded spots in posterior half of vertex and 2 large spots at anterior margin of vertex continuing on frontoclypeus. [p. 187] Yellowish green, with black pattern. 3.5-4.3. – Prim. – In marshes, swamping meadows, river banks, probably on *Polygonum*. Mid-July to late August. (Figs. 124: 1-6) **M. albicostalis** Vilb.
- 7. Scutellum with dark lateral triangles. Penis comparatively short; its processes of about equal length, symmetrical. Light yellow or greenish, with black pattern on

- vertex and scutellum. 3.1-4. – Prim., S Kur. – Japan. – On grasses in meadows, especially in swamping meadows. Mid-June to late September. (Figs. 123: 7-14) ..
 **M. striifrons** Anufr.
- Scutellum without dark lateral triangles. Penis comparatively long, with asymmetrical processes of different length. Externally similar to *M. striifrons*. 3.4-3.8. – Prim. – In meadows and forests, probably on *Equisetum*. Late June to late August. (Figs. 123: 15-21) **M. abludens** Anufr.
8. Processes of penis wide, flattened, with diverging apices 9
- Processes of penis not widened, rounded in cross section, crossed or with apices directed toward each other 12
9. Penis shaft beyond middle distinctly bent at an obtuse angle in lateral view, in basal part directed at an angle toward the base. – Yellowish green; head with black pattern consisting of 2 spots on the turn of face into vertex, interrupted stripe at anterior margin of vertex and 2 spots beyond it; spots may more or less fuse together. 3.2-4. – Kamch., Prim., S Kur. – Non-tropical Asia, Europe, N Africa, N America. In meadows and fields with cereals. Polyphagous, prefers grasses. Injurious to wheat, rice, corn, oats, barley and other grasses in winter and spring fields, producing white spots at pricks, drying up of shoots and leaves. Mid-July [p. 188] to late August. (Figs. 124: 7-9) ***M. laevis** Rib.
- Penis shaft straight and more or less parallel to base in lateral view. Processes of penis smoothly arcuate, following the axis of shaft 10
10. Dorsal side of penis shaft smooth, even 11
- Dorsal side of penis shaft with lamellate ridge having a lacerate or denticulate margin, sometimes the ridge is weakly expressed. Sides of penis shaft noticeably widened. Externally similar to the previous species. 3.3-4.2. – Kamch., Prim., S Kur. – Non-tropical Asia, Europe, N Africa and N America. – In meadows, glades and edges of broad-leaved and mixed forests. Early June to mid-September. (Figs. 124: 10, 11) **M. cristatus** Rib.
11. Sides of penis shaft not widened laterally. Similar to *M. laevis*. 3-3.5. – Kamch.; Siberia, Tuva, Altai, Kirghizia. – Mongolia, Europe. – In swamping meadows and grass marshes. July to August. (Figs. 125: 1, 2) **M. alpinus** Zett.
- Sides of penis shaft widened and denticulate. Similar to *M. laevis*. 4-4.5. – N America. – In grass meadows. Late July. (Figs. 125: 3-5) **M. fascifrons** Stål
12. Penis shaft with spread, denticulate lateral margins. Black pattern of head consists of at least 6 spots, which may become more or less fused 13
- Lateral margins of penis shaft smooth. Black pattern on head consisting of 4 spots 14
13. Apodemes of sternite II of male abdomen long. Similar to *M. laevis*. 3.5-4. – Kamch.; Tuva, Kazakhstan, Kirghizia, Caucasus. – Mongolia, Iran, Turkey (Anatolia), Europe, N America. – On *Scirpus*. August. (Figs. 125: 6, 7)
 **M. fieberi** Edw.
- Apodemes of sternite II of male abdomen short. Similar to *M. laevis*. 3.5-4.5. – Prim.; Kazakhstan, Middle Asia. – Mongolia, many European countries. – On *Phragmites*. August. (Figs. 124: 12, 13) **M. lividus** Edw.
14. Spots on the turn of face into vertex much larger than spots at base of vertex. Branches of penis in lateral view not smoothly arcuate and following the axis of penis shaft, but somewhat slanting dorsad. Light yellow to brown, with black pattern on vertex. 3.1-4.4 – Prim. – Japan, Korea. – In meadows, glades and edges in mixed and broad-leaved forests, on *Artemisia*. Mid-May to early October. (Figs. 124: 14-17) **M. brunnescens** Anufr.

- Spots at base of vertex larger than or equal to spots at the turn of face into vertex. In lateral view, branches of penis smoothly arcuate and following the axis of penis shaft. Yellowish brown, with black pattern on head. 3.5-4. – Prim. – Japan, Korea, China. – In edges and glades of broad-leaved and mixed forests and in meadows, on *Artemisia*. Mid-June to late September. (Figs. 124: 18-21)
 **M. quadrimaculatus** Mats.

85. **Sagatus** Rib. Slender, more or less cylindrical, with transverse head more or less rounded or gently obtuse-angled anteriorly; the turn of face into vertex smoothed. Male. Lobes of pygofer simple, without projections and ridges on margin. Anal tube small, with membranous dorsal wall. Genital valve longitudinal and parabolic. Genital plates narrowed toward fleshy, finger-shaped apices, which are attenuate and slanting upwards; bristles arranged in many disorderly rows form a stripe along lateral margin of plates. Styli with long, broken arcuate apex and robust, acute-angled and rounded subapical tooth. Connective forked. Penis short, straight, with a pair of slightly crossed processes at apex, which are slanting dorsad from base. Gonopore apical. Monotypic genus. [p. 189]

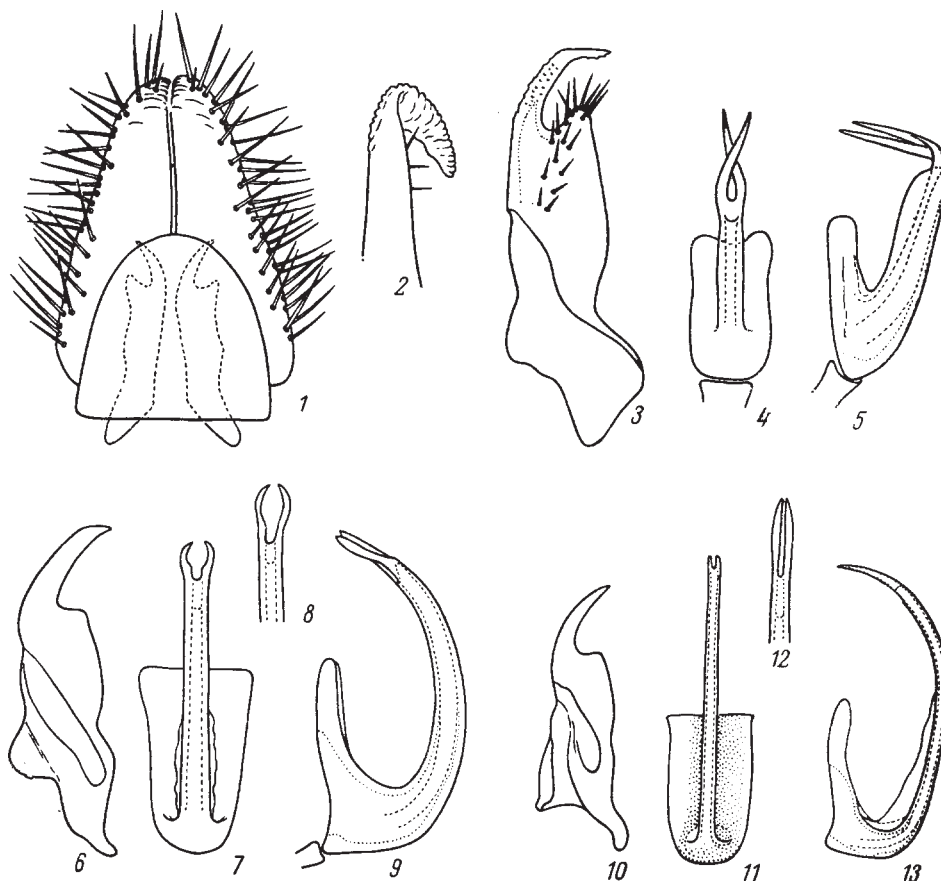


Fig. 126. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Ribaut).

1-5, *Sagatus punctifrons*: 1, genital valve and genital plates, ventral view; 2, apex of left genital plate, medial view; 3, stylus, dorsal view; 4, 5, penis (4, posterior view; 5, lateral view); 6-9, *Sonronius dahlbomi*: 6, stylus; 7, penis, posterior view; 8, apex of penis; 9, penis, lateral view; 10-13, *S. binotatus*: 10, stylus; 11, penis, posterior view; 12, apex of penis; 13, penis, lateral view.

1. Yellowish greenish. Vertex with 2 round spots beyond ocelli. Cells of fore wing may be slightly edged by brown color. 4-6. – N Khab.; Tuva, Altai, Kazakhstan. – Europe, N America. – On willows. August. (Figs. 126: 1-5) **S. punctifrons** Fall.

86. **Sonronius** Dorst. Slender, more or less cylindrical, with head rounded anteriorly and smoothed turn of face into vertex. Male. Lobes of pygofer not long, rounded and parabolic, with comb of small, weakly sclerotized denticles on hind lower margin and several large bristles on outer wall. Anal tube small, with membranous dorsal wall. Genital valve rounded triangular, rather long. Genital plates triangular, closed, stretched, with desclerotized attenuate apices and weakly concave outer margin bearing an even row of bristles. Styli with gently arcuate, pointed or obliquely truncate apex and large subapical projection. Connective forked. Penis arcuate, with a pair of directed distad processes lateral to apical gonopore. In USSR 2 species.

1. Processes at apex of penis short, bent, with converging apices; penis thicker and shorter. Yellowish green; vertex with 2 round black spots; frontoclypeus with 2 transverse black [p. 190] spots in upper part; each temple with 2 small black spots. In darker specimens, usually in males, there are additional dark spots on face and vertex, sutures are darkened, frontoclypeus with transverse stripes, pronotum and scutellum with dark spots, veins of fore wings black. 4.7-5.3. – Kamch., Sakh.; Altai, Kazakhstan. – Mongolia, Europe, N America. – On *Filipendula*. Late July to mid-August. (Figs. 126: 6-9) **S. dahlbomi** Zett.
- Processes at apex of penis long, straight. Penis slenderer and stretched. Externally similar to the previous species. 3.6-4.4. – Kamch.; Transbaikial, Altai, Kazakhstan. – Mongolia, Europe. – Late July to late August. (Figs. 126: 10-13) ...
..... **S. binotatus** J. Sahlb.

87. **Scaphoideus** Uhl. Slender, with narrow, rather strongly rounded head projecting forwards. The turn of face into vertex rounded; vertex rather narrow. Variegate. Male. Lobes of pygofer elongate, with numerous long bristles often grouped in more or less separated bunches. Genital plates elongate and triangular, with apices rounded separately; few bristles in a marginal row. Anal tube short, well sclerotized only laterally. Styli with distinct subapical angle and rather [p. 191] long apical part pointed at end. Connective with long paired processes, paraphyses, which are fused with it. Penis separated from connective and paraphyses and connected with them only by membranous wall of genital chamber; penis is connected with anal tube by more or less sclerotized separate plate, an appendage of penis base. In USSR 3 species.

1. Paraphyses simple, bar-shaped. Penis shaft narrow, without dorsal ridge connecting it with the base 2
- Paraphyses in apical half widened, axe-shaped. Penis shaft connected dorsally with the base by ridge and therefore looking triangular. – Yellowish white, with black transverse stripes on the turn of face into vertex, reddish brown bands on vertex and pronotum, and black-brown marble pattern on fore wings, which includes darkening along veins. 4.5-6. – S Prim. – Japan, Korea, China (NE, Taiwan), India, Sri Lanka. – Under canopy of broad-leaved and mixed forests and in their edges, glades, meadows. Late July to early September. (Figs. 127: 10-12; 128: 2; 129: 1-6) **S. festivus** Mats.

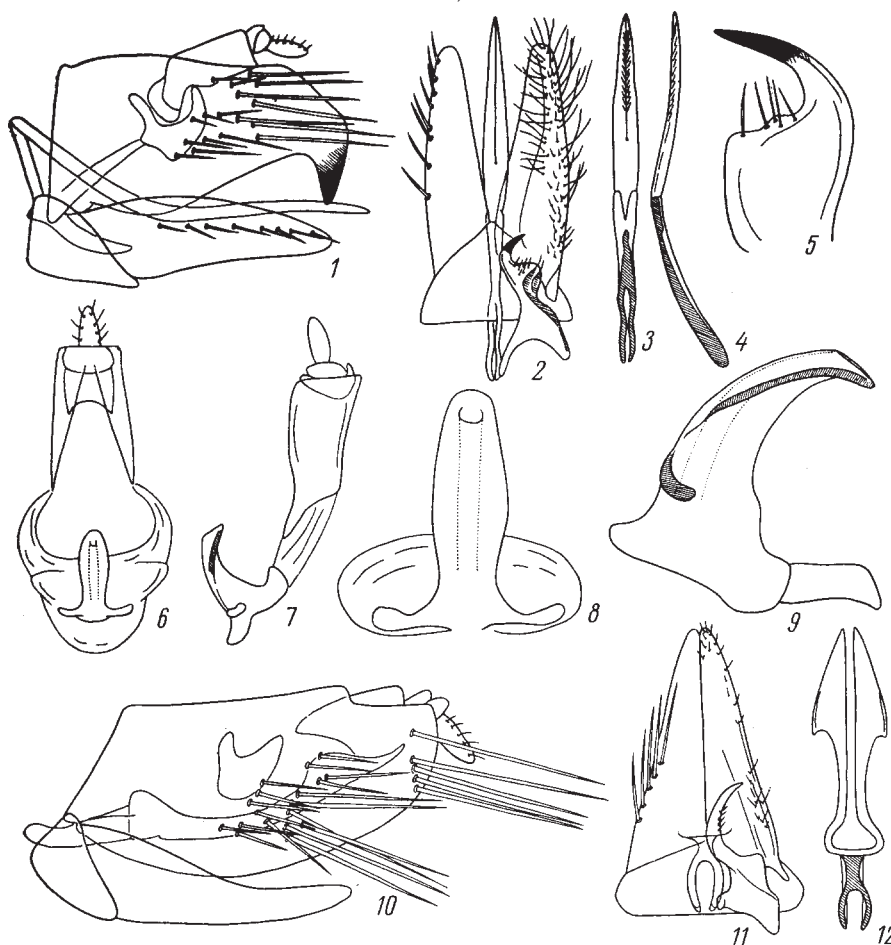


Fig. 127. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Vilbaste).

1-9, *Scaphoideus varius*: 1, genital block of male, lateral view; 2, genital valve, genital plates, connective and stylus; 3, 4, connective with paraphyses (3, dorsal view; 4, lateral view); 5, apex of stylus; 6, 7, penis and anal tube (6, ventral view; 7, lateral view); 8, 9, penis (8, posterior view; 9, lateral view); 10-12, *S. festivus*: 10, genital block of male, lateral view; 11, genital valve, genital plates, connective and stylus; 12, connective with paraphyses, dorsal view.

2. Apices of pygofer lobes slanting downwards in the shape of robust obtuse tooth. Penis shaft at base with lateral projections. Yellowish white, with black brown marble pattern on dorsal surface; all veins dark. 5.6-6.4. – S Prim. – Korea. – Under canopy of broad-leaved and mixed forests, in their edges, glades, usually among shrubs. August to early September. (Figs. 127: 1-9) ***S. varius*** Vilb.
- Apices of pygofer lobes not slanting downwards. Base of penis shaft without projections. Pale, brownish, with pale yellowish longitudinal stripe disappearing at apices of wings. Vertex with 4 black spots on anterior margin; frons with 3 black spots in a transverse row. Fore wings with oblique brown stripes, mainly along transverse veins. 4.9-6.2. – S Prim. – Japan, Korea. – Late June to mid-September. (Figs. 128: 3; 129: 7-13) ***S. albovittatus*** Mats.

88. ***Scaphoidella*** Vilb. Slender, with rounded, moderately projecting head; the turn of face into vertex rounded, variegate in brown, black and white tones. Male. Lobes of pygofer with wide tooth on dorsal margin and numerous bristles above base of

anal tube. Genital plates elongate, closed, their apices widely rounded separately; numerous bristles arranged disorderly along outer margins of lobes in a more or less marginal row. Anal tube with deep basal excision in dorsal sclerotization. Styli with rounded subapical angle and long apical part, which is pointed at apex. Connective Y- or X-shaped, with long paraphyses, immovably connected with base of penis. Gonopore apical. The genus comprises 2 species.

1. Face yellow, with few small brown spots. Penis shaft bent, hook-shaped, without long processes at apex. Styli comparatively short, with moderately stretched apical part. Connective Y-shaped, with short base in a single piece. Body whitish, with black-brown marble pattern. 4.5-5.3. – S Prim. – In broad-leaved and mixed forests. August. (Figs. 129: 14-18) **S. arboricola** Vilb.
- Face with well developed brown pattern consisting of transverse, often fused stripes on frontoclypeus and darkenings in lower part of frontoclypeus, genae and lora. Penis shaft straight, with a pair of long processes at apex. Styli relatively long, with long apical part. Connective X-shaped, with long base bifurcate at end. Similar to the previous species, but with darker face. 4.3-5.1. – Amur., Prim. – NE China. Late August to early September. (Figs. 130: 1-7) **S. stenopaea** Anufr. [p. 192]

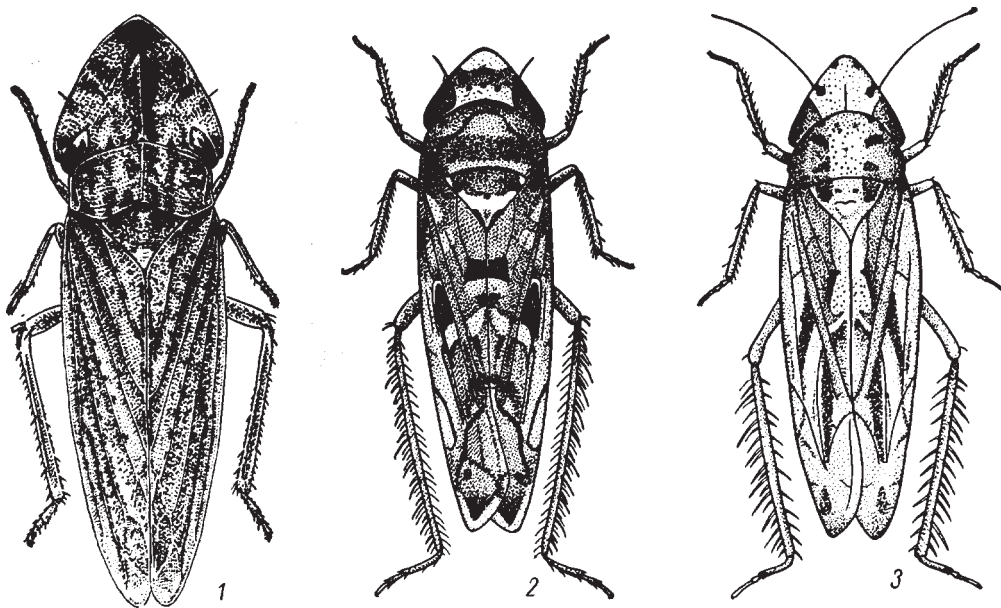


Fig. 128. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Esaki and original).

1, *Eupelix cuspidata*; 2, *Scaphoideus festivus*; 3, *S. albovittatus*.

89. **Mimotettix** Mats. Slender, spindle-shaped, with relatively wide, obtuse-angled, projecting head. The turn of face into vertex smoothed. Dark brown tones prevailing in coloration. Male. Lobes of pygofer weakly stretched, without processes, bearing disorderly long bristles on outer wall; dorsal excision of pygofer deep. Anal tube cylindrical, moderately stretched. Genital valve triangular. Genital plates roughly triangular, their outer margin at base convex, then gently concave, each of their apices rounded separately and not widely; genital plates with marginal even row of

bristles. Styli with hook-shaped, narrowly pointed apex and robust subapical projection. Connective Y-shaped. Penis with narrow base and gently bent, S-shaped shaft arising from lower part of base; apex of penis slanting ventrad, bearing a long, recurrent ventral process. Gonopore dorsal. In USSR 1 species.



Fig. 129. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Vilbaste and Okada).

1-6, *Scaphoideus festivus*: 1, connective with paraphyses, lateral view; 2, 3, anal tube and penis (2, ventral view; 3, lateral view); 4, 5, penis (4, posterior view; 5, lateral view); 6, apex of stylus; 7-13, *S. albobittatus*: 7, genital block of male, ventral view; 8, connective with paraphyses and styli; 9, part of female abdomen in the area of subgenital plate, ventral view; 10, 11, penis (10, lateral view; 11, posterior view); 12, anterior part of body; 13, fore wing; 14-18, *Scaphoidella arboricola*: 14, genital block of male, lateral view; 15, genital valve, genital plates, connective and stylus; 16, 17, penis and connective (16, posterior view; 17, lateral view); 18, apex of stylus.

1. Recurrent process of penis shorter than shaft. Apex of stylus without subapical tooth. Brown. Three yellowish white stripes alternating with 4 dark brown stripes on the turn of frons into vertex; a middle light stripe connects ocelli. Scutellum with 2 pairs of light small spots on sides. Fore wings with dark brown

veins; cells, except apical cells, dark brown, with light edging; apical cells light, with large dark brown spots on veins; round light small spots at places on cells of corium. 5-5.6. – S Prim. – Japan, China (Taiwan, Fujian). – August. (Figs. 130: 8-11) **M. kawamurae** Mats.

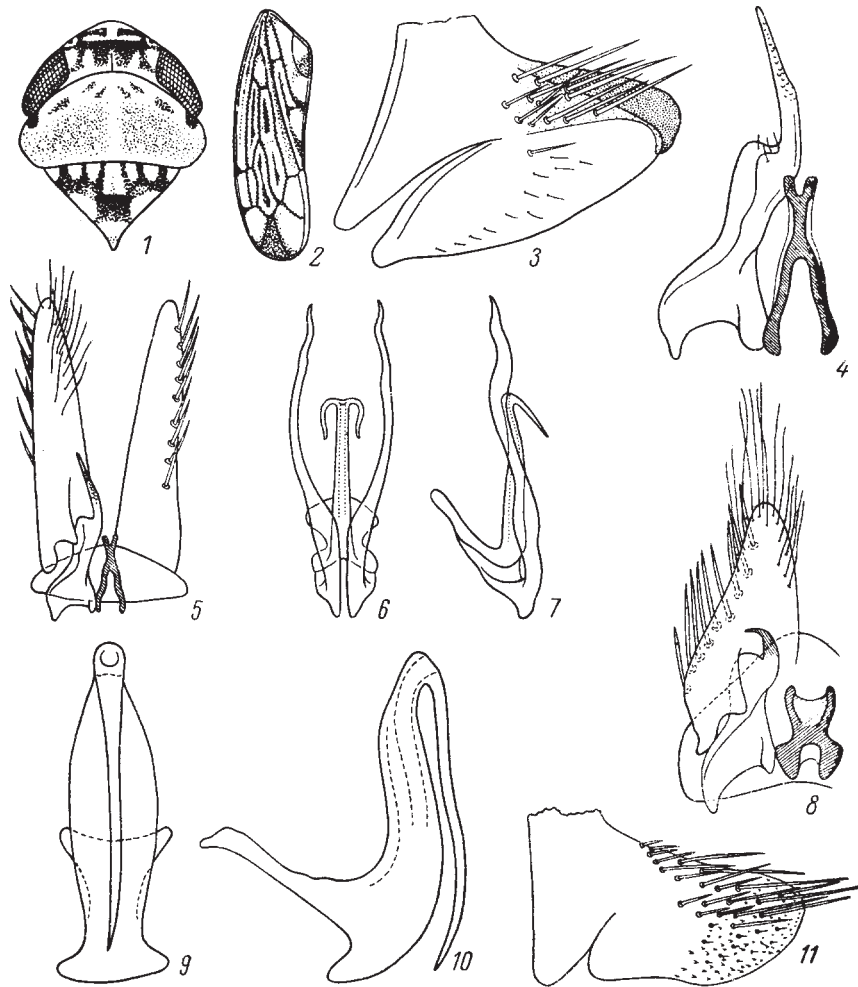


Fig. 130. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev and original).

1-7, *Scaphoidella stenopaea*: 1, anterior part of body; 2, fore wing; 3, lobe of pygofer; 4, connective and stylus; 5, genital valve, genital plates, connective and stylus; 6, 7, penis (6, posterior view; 7, lateral view); 8-11, *Mimotettix kawamurae*: 8, genital valve, genital plate, connective and stylus; 9, 10, penis (9, posterior view; 10, lateral view); 11, pygofer, lateral view.

90. **Idiodonus** Ball. Slender, with transverse, rounded, projecting head. The turn of face into vertex rounded. Male. Lobes of pygofer with pointed apical angle and posterior margin bevelled downwards; distal part of lobes covered with dense denticles. Genital plates with elongate, attenuate apices; few bristles arranged in one marginal row on middle part of outer margin. Anal tube very short. Styli with small apex truncate at end and distinct subapical angle. Penis with apical gonopore [p. 193] and a pair of processes arising from the shaft base dorsal to shaft. Connective forked, with parallel branches; its robust base much shorter than branches. In USSR 1 species.

1. Yellowish or light brown; face and dorsal surface covered with numerous red specks. 4.3-5.5. – Mag., Kamch., Khab., Amur., Prim., Sakh., S Kur.; Transbaikal, Siberia, Altai, Kazakhstan. – Korea, Europe, N Africa. In forests and their edges, glades. Early August to mid-September. (Figs. 131: 1-4) **I. cruentatus** Panz.

91. **Colladonus** Ball. Slender, with obtuse-angled rounded head projecting forwards. The turn of face into vertex rounded. Male. Lobes of pygofer with tooth [p. 194] on hind margin and numerous bristles in posterior third. Genital plates with bristles arranged in a marginal row. Anal tube very short. Styli with distinct subapical angle and well developed apical part pointed at apex. Connective Y-shaped, with long base and short branches. Penis symmetrical, at apex with rather long processes slanting dorsad and crossed. Gonopore dorsal, situated at the middle of shaft. In USSR 1 species.

1. Light brown or yellowish; face often with dark sutures and dark transverse lines on frontoclypeus. Vertex usually with 2 black spots anteriorly at the turn into face, and 2 spots at eyes, which are often united into continuous transverse stripe; sometimes spots completely lacking. Fore wings semihyaline, with light veins. 4.4-4.9. – Chuk., Mag., Kamch., Khab., Amur., Prim., Kur.; Transbaikal, Siberia, Altai, Kazakhstan, Middle Asia. – Korea, Mongolia, NE China, Turkey (Anatolia), Europe, N Africa. – In forest shrubs under forest canopy and in glades. Mid-May to late August. (Figs. 131: 5-10) **C. torneellus** Zett. [p. 196]

92. **Bambusana** Anufr. Slender, with weakly projecting, obtuse-angled rounded head. Male. Lobes of pygofer with 1 or 2 denticulate processes on ventral margin. Genital valve long, its width about equal to its length. Genital plates triangular, pressed to each other, bearing a marginal row of bristles. Styli with rather long apical part having reticular sculpture and with well expressed subapical angle. Connective Y-shaped, with narrow shaft and branches. Penis with wide base and long tubular shaft; the base weakly sclerotized; base of shaft ventrally with long recurrent tooth. Gonopore dorsal, subapical. In USSR 1 species.

1. Lobes of pygofer with 2 pairs of processes on ventral margin. Head, prothorax and scutellum orange. A white stripe at boundary between frons and vertex under eyes; a narrow dark brown stripe often interrupted into 4 triangular spots between ocelli and above the white stripe. Fore wings ochraceous brown. Venter with dark brown spots; legs light. 4.6-5.5. – S Kur. – Japan. – On *Sasa*. Early August to early September. (Figs. 131: 11-15) **B. bambusae** Mats.

93. **Platymetopius** Burm. Slender, usually with sharp boundary between face and vertex; anterior margin of vertex from rounded and weakly projecting to acute-angled and strongly projecting. Male. Lobes of pygofer with process arising posteriorly from lower margin and directed upwards or obliquely upwards and backwards, with numerous bristles [p. 197] at posterior margin. Genital plates elongate, triangular, closed, with a marginal row of bristles. Anal tube short, its dorsal sclerotization excised at base. Styli with distinct subapical angle and well developed apical part. Connective Y-shaped, its base much longer than branches. Penis arcuate, tubular, usually with developed basal and apical processes; base weakly developed; gonopore apical. – 2 species (in USSR more than 30 species).

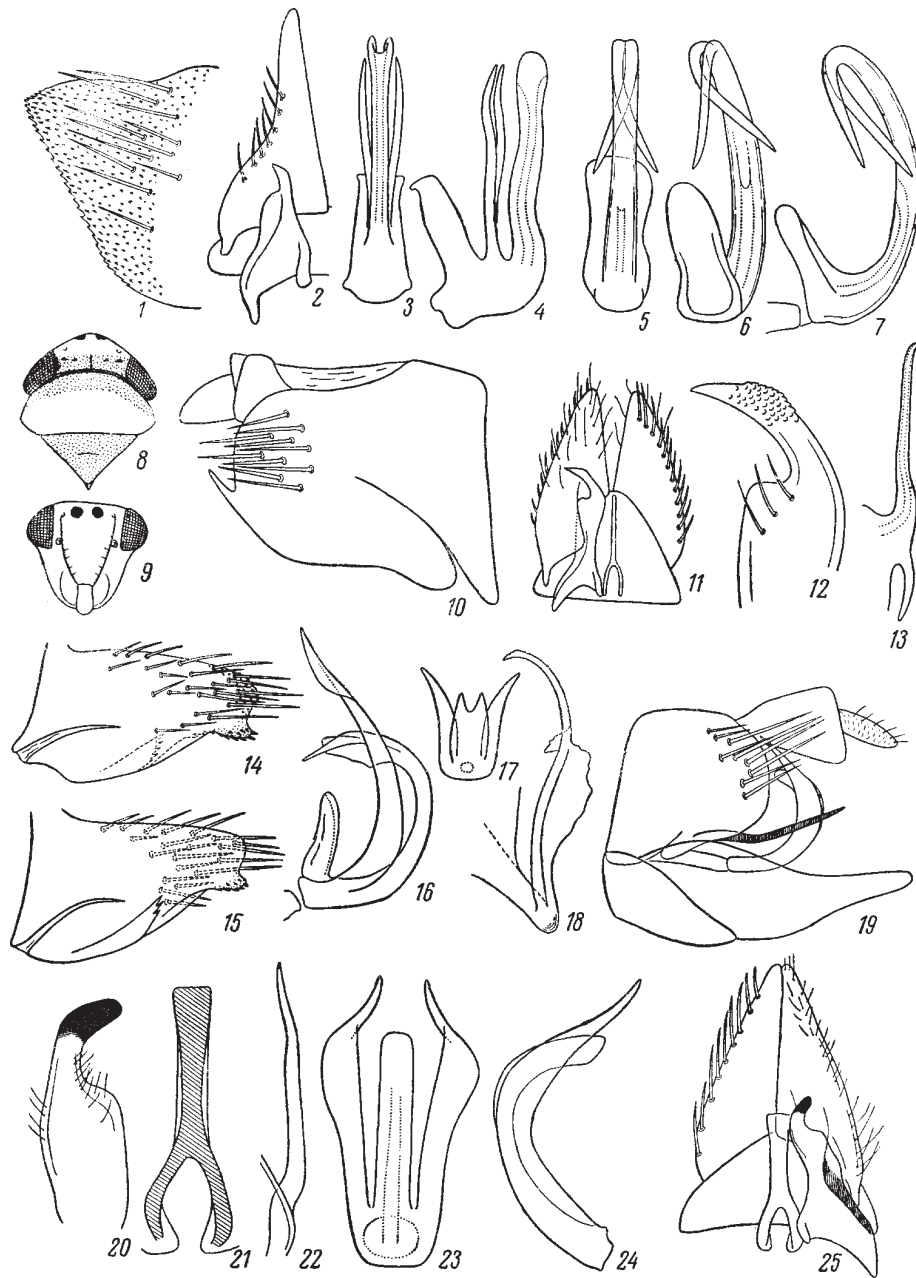


Fig. 131. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev, Ribaut, and Vilbaste).

1-4, *Idiodonus cruentatus*: 1, apex of pygofer lobe; 2, genital valve, genital plate and stylus, dorsal view; 3, 4, penis (3, posterior view; 4, lateral view); 5-10, *Colladonus torneellus*: 5-7, penis (5, posterior view; 6, oblique anterolateral view; 7, lateral view); 8, anterior part of body; 9, face; 10, pygofer and anal tube, lateral view; 11-15, *Bambusana bambusae*: 11, genital valve, genital plates, connective and stylus; 12, apex of stylus; 13, penis, lateral view; 14, 15, pygofer, lateral view (14, external view; 15, internal view); 16-18, *Platymetopius undatus*: 16, penis, lateral view; 17, apex of penis, dorsal view; 18, process of pygofer lobe; 19-25, *P. koreanus*: 19, genital block of male, lateral view; 20, apex of stylus; 21, connective; 22, process of pygofer lobe; 23, 24, penis (23, posterior view; 24, lateral view); 25, genital valve, genital plates, connective and stylus.

1. Lobes of pygofer with long, elbow-shaped, bent at an acute angle process; lateral margin of the lobe on the process angular and projecting. Penis shaft with processes at apex. Yellow; vertex, pronotum, scutellum and a stripe along inner margin of fore wings brown. 4.3-5.4 – Prim.; Siberia, Kazakhstan. – Korea, Europe, N Africa. Rarely in meadows and glades. Mid-August to early September. (Figs. 131: 16-18) **P. undatus** De Geer

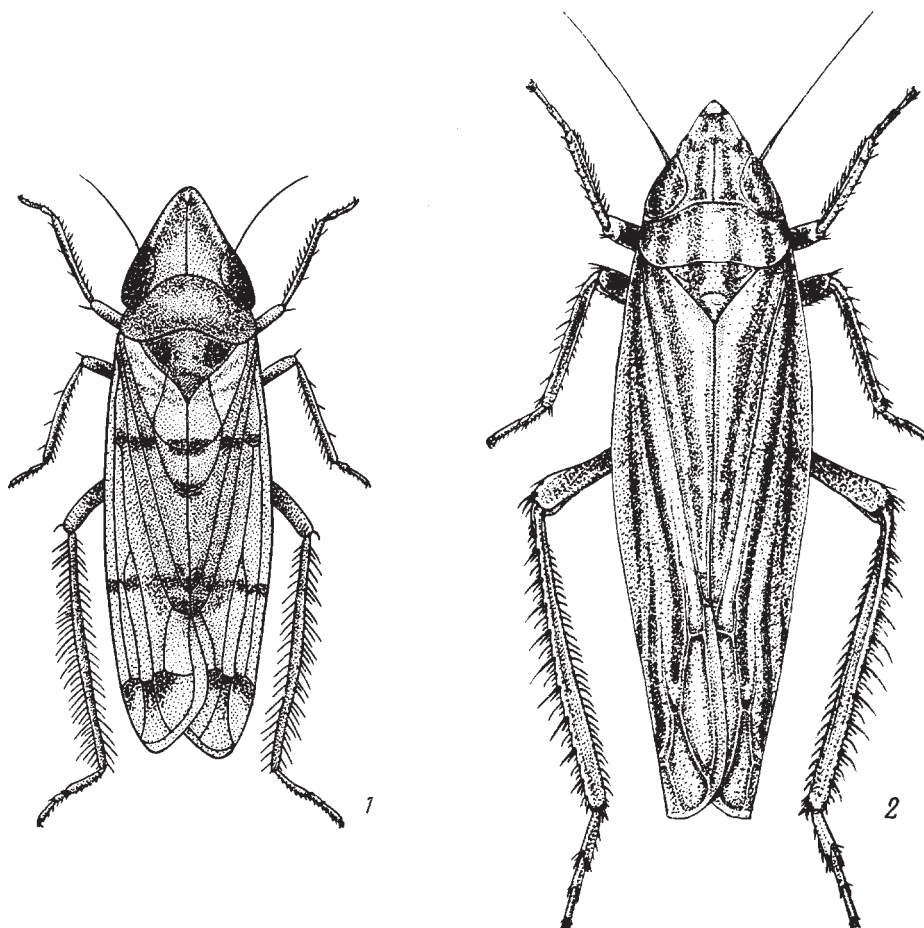


Fig. 132. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Esaki and original).

1, *Japananus hyalinus*; 2, *Stymphalus rubrostriatus*.

- Lobes of pygofer with more or less straight process. Penis shaft without processes at apex. Brown dorsally and entirely yellow ventrally; fore wings with yellow costal margin and white spots on the rest of brown part. 5-6. – S Khab., Amur., Prim.; Transbaikal, W Sayan Mts, Tuva. – Korea, Mongolia. In meadows, glades, forest edges. Mid-August to early September. (Figs. 131: 19-25) **P. koreanus** Mats.

94. **Japananus** Ball. Slender, with acute-angled projecting vertex. Exclusively on maples. Male. Lobes of pygofer with very short upper margin and long, arcuate lower margin; numerous bristles situated disorderly near lower margin. Genital plates without bristles, with apices strongly attenuate and slanting upwards; plates not contiguous in the middle. Connective Y-shaped, with rather long base and long

branches. Styli with smoothed subapical angle and long apical part often widened at apex. Penis U-shaped, with 2 long shafts bearing at apex 2 processes forming a fork; gonopore opening at base of the fork. In USSR 2 species.

1. Subapical processes of penis shafts bent, U-shaped, with recurring apices. Subgenital sternite in female relatively narrow and long, with concave sides, much longer than the parts of ovipositor valvulae visible from below. Yellowish green, with 3 indistinct brown bands on fore wings. Face mostly yellow. 4.1-6. S Prim. – Japan, Korea, introduced to N America, S Europe and Transcaucasia. – Rarely in mixed and broad-leaved, mainly valley forests of S Prim., on maples, predominantly, on *Acer ginnala*. Mid-August to early October. (Figs. 132: 1; 133: 8, 9) **J. hyalinus** Osborn
- Subapical processes of penis shafts straight, with apices directed mediad. Subgenital segment in female comparatively wide and short, with nearly straight sides, not longer or slightly longer than the parts of ovipositor valvulae visible from below. Greenish brown, often with orange tint. Face yellowish brown, with light middle line. 5.8-7.3. – S Prim. – Japan, Korea, E China. – On maples, in particular, on *Acer mono*. Late July to early September. (Figs. 133: 1-7) **J. aceri** Mats.

95. **Stymphalus** Stål. Slender, with acute-angled projecting vertex. Apices of fore wings obliquely truncate. On grasses. Male. Lobes of pygofer comparatively short, with hind lower angle stretched into long process. Anal tube ventrally with a pair of small denticles. Genital plates elongate and triangular, closed, with apices rounded jointly, and numerous disorderly bristles at outer margins. Connective U-shaped, with short wide base and long branches. Styli with distinct subapical angle and short apical part. Penis with shaft compressed [p. 198] laterally, undulated in lateral view and bearing a long tooth near apex. Gonopore apical. In USSR 1 species.

1. Yellow, with orange red longitudinal stripes. 5-6. – S Prim.; SW Turkmenia, Armenia. – Japan, Korea, China, Mediterranean Region. In Prim., in meadows with *Miscanthus sinensis*; in Near East, on the grass *Imperata cylindrica*. Late August to mid-September. (Figs. 132: 2; 133: 10-16) **S. rubrostriatus** Horv. [p. 199]

96. **Orientus** Del. Slender, with projecting, rounded, not wide head. Vertex transverse, with transverse shallow furrow near anterior margin. The turn of face into vertex rounded. Pattern dark, reticulate on light background. Male. Lobes of pygofer elongate, with numerous bristles and immovable processes arising opposite base of anal tube and passing downwards along inner surface of lobes. Genital plates closed, triangular, posteriorly stretched into long apical process, without bristles. Anal tube short; its dorsal surface from base with deep excision in sclerotization. Styli with distinct subapical angle and small apical part. Connective Y-shaped, with very wide and short base and short branches forming a gentle arc. Penis small, with long base and rather short, bent, hook-shaped shaft. Gonopore ventral, subapical. Monotypic genus.

1. Whitish or yellowish, with dark brown or nearly black marble pattern. 4.3-6.5. – Prim. – Japan, Korea, China [p. 200] (Taiwan), introduced to N America, Philippines. – Under canopy of broad-leaved and mixed forests, in their edges, glades, meadows, on various shrubs. Mid-July to early September. (Figs. 134: 1-6) **O. ishidae** Mats.

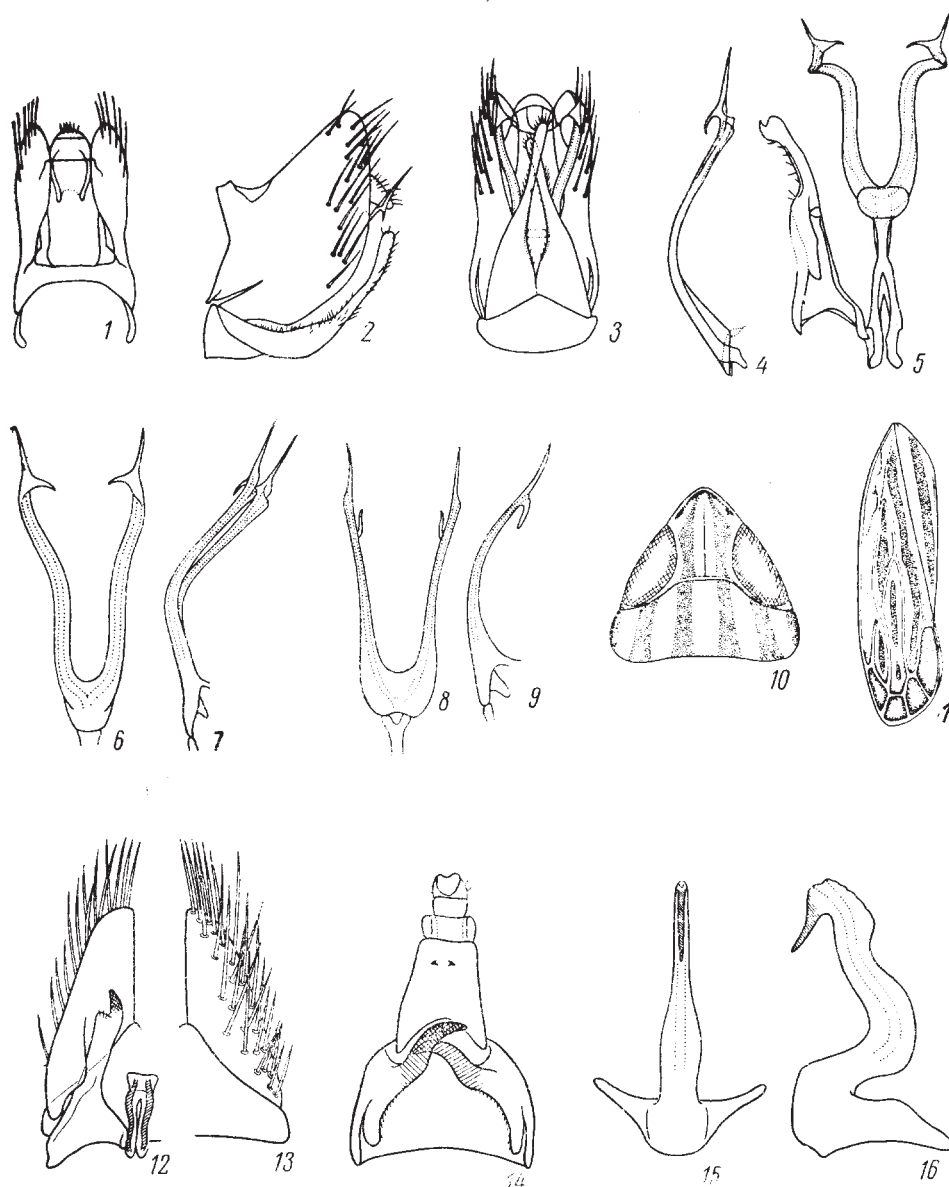


Fig. 133. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev, Kwon & Lee, and Zachvatkin).

1-7, *Japananus aceri*: 1-3, genital block of male (1, dorsal view; 2, lateral view; 3, ventral view); 4, 6, 7, penis (4, 7, lateral view; 6, posterior view); 5, stylus, connective and penis, posterior view; 8, 9, *J. hyalinus*, penis: 8, posterior (posteroventral) view; 9, lateral view; 10-16, *Stymphalus rubrostriatus*: 10, head and pronotum, dorsal view; 11, fore wing; 12, genital valve, genital plate, connective and stylus, dorsal view, right half; 13, genital valve and genital plate, ventral view, right half; 14, pygofer and anal tube, ventral view; 15, 16, penis (15, posterior view; 16, lateral view).

97. **Stictocoris** Thomson. Moderately sturdy, spindle-shaped, with relatively wide, obtuse-angled and rounded, projecting head. The turn of face into vertex smoothed. Male. Lobes of pygofer rounded, without processes, short and high, with numerous bristles on the whole surface; dorsal excision of pygofer rather deep. Anal tube with only ventral sclerotization of segment X. Genital valve triangular. Genital plates triangular, with slightly attenuate apices, bearing 1 marginal row of bristles. Styli

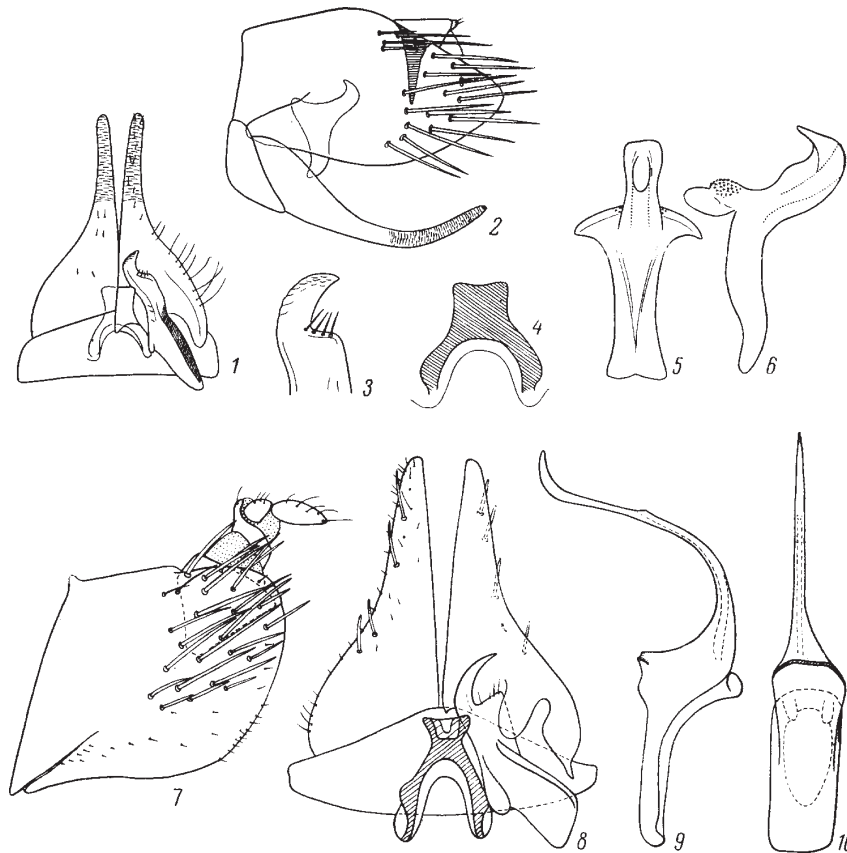


Fig. 134. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Vilbaste and original).

1-6, *Orientus ishidae*: 1, genital valve, genital plates, connective and stylus; 2, genital block of male, lateral view; 3, apex of stylus; 4, connective; 5, 6, penis (5, posterior view; 6, lateral view); 7-10, *Bobacella corvina*: 7, pygofer and anal tube, lateral view; 8, genital valve, genital plates, connective and stylus; 9, 10, penis (9, right lateral view; 10, ventral view).

thickened at the level of subapical projection; the projection acutangulate, with small apex, which is slightly bent and blunt. Connective bifurcate. Penis narrow, tapering to apex; its base small, not separated from shaft; shaft slightly bent ventrad; gonopore subapical, on the right side of shaft. Subgenital sternite in female in the shape of rounded shield. Monotypic genus.

1. Whitish yellowish, with black pattern. Face with blackened outer margins of lora, middle line of anteclypeus, and 3 blackened large spots in a row under antennae and in the middle of frontoclypeus; frontoclypeus with 2 rounded spots in upper part; 2 similar spots on vertex, its apex with 2 small spot, [p. 201] and hind margin in the middle with transverse small spot. Pronotum with large rounded spot in the middle, nearer to posterior margin, 2 small spots lateral to it and another pair of spots anteriorly, medial to eyes. Scutellum with transverse spot on anterior margin. Fore wings with blackened veins, except C, peripheral vein and posterior branch of mediane on corium. Venter and legs with black spots, bands and stripes. 4-4.8. – Amur.; C Yakutia, Transbaikal, S Siberia, Altai, Kazakhstan. – Europe, Turkey (Anatolia). – In dry meadows. June to early August. (Figs. 135: 1-12) **S. picturatus** C. Sahlb.

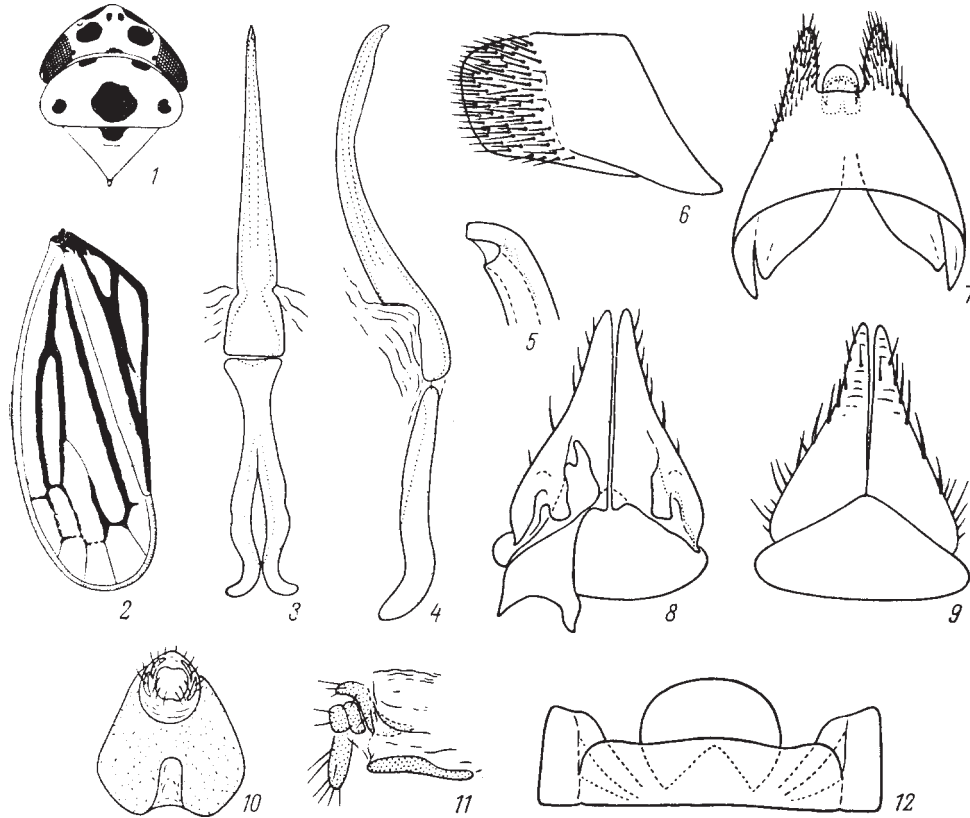


Fig. 135. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Ribaut).

1-12, *Stictocoris picturatus*: 1, anterior part of body; 2, fore wing; 3, 4, connective and penis (3, posterior view; 4, lateral view); 5, apex of penis, right lateral view; 6, 7, pygofer (6, lateral view; 7, dorsal view); 8, genital valve, genital plate and stylus, dorsal view; 9, genital valve and genital plates, ventral view; 10, 11, anal tube (10, ventral view; 11, lateral view); 12, subgenital sternite of female, ventral view.

98. **Bobacella** Kusun. Sturdy, spindle-shaped, usually brachypterous, with relatively wide, obtuse-angled and rounded, projecting head. The turn of face to vertex smoothed. Male. Lobes of pygofer rounded, without processes, short; covered with disorderly bristles. Dorsal excision of pygofer rather deep. Anal tube very short, its dorsal sclerotization nearly interrupted in the middle. Genital valve triangular. Genital plates triangular, with slightly attenuate apices and 1 marginal row of bristles. Styli small, with crescent-shaped apices. Connective bifurcate. Penis symmetrical, with large elongate base, thin, bent, S-shaped shaft arising from dorsal part of base. Gonopore dorsal, at the middle of shaft. Subgenital sternite in female large, parabolic, projected backwards. Monotypic genus.

1. Body glossy, entirely black or light brown with dark brown pattern on upper part of face, vertex, at anterior margin of pronotum; fore wings light brown; abdomen often with light posterior margins of tergites. 2.5-3. – Mag.; Yakutia, Transbaikalia, Sayan Mts, Altai, Kazakhstan, S Ukraine. – Mongolia, Austria, Hungary. – Steppized meadows, herb-grass steppes, mountain steppes transitory to heathlands. May to July. (Figs. 134: 7-10; 140: 2) **B. corvina** Horv.

99. **Graphocraerus** Thomson. Sturdy, with obtuse-angled rounded, moderately projecting, wide head. Vertex moderately transverse, more or less flat; the turn of face into vertex rather sharp. Male. Lobes of pygofer with hind lower angle stretched into long process and with few bristles above its base. Genital plates short, diverging nearly from base, with inner margins convex and outer margins more or less straight; their apices rather narrowly rounded, distance between apices equal to width of plate; whole surface of plates covered with disorderly bristles. Anal tube short, about as long as wide. Styli with long apex, bearing denticulate ridge; subapical angle distinct. Connective Y-shaped, with short base and long diverging branches. Penis symmetrical, arcuate; gonopore ventral; penis shaft considerably narrowed beyond gonopore. Monotypic genus.

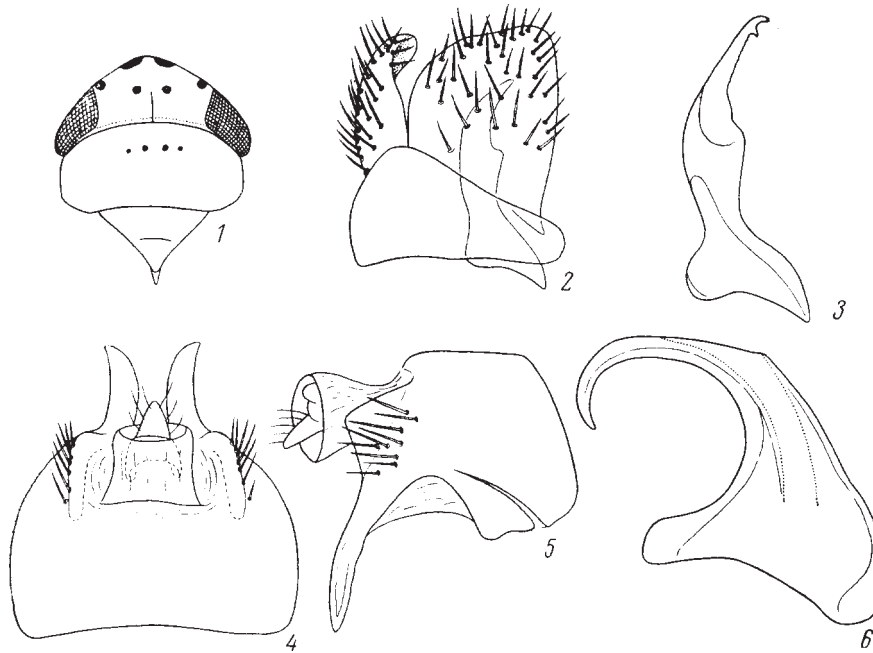


Fig. 136. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Ribaut).

1-6, *Graphocraerus ventralis*: 1, anterior part of body; 2, genital valve and genital plates, latero-ventral view; 3, stylus; 4, genital block of male, dorsal view; 5, pygofer and anal tube, lateral view; 6, penis, lateral view.

1. Light green, in male often with orange tint. Face often with 2 black small spots above antennae and 2 spots on the turn of frontoclypeus into vertex; vertex with 2 small spots lateral to ocelli and 2 spots in the middle part. Pronotum with 2 or 4 small spots in a transverse row. 5-6.5. – Prim.; S Siberia, Altai, Kazakhstan. – Mongolia, Europe, Turkey (Anatolia), N Africa. – On grasses in meadows, mainly dry and steppized. Mid-June to early September. (Figs. 136: 1-6) **G. ventralis** Fall.

100. **Hardya** Edw. Leafhoppers of average proportions, with approximately rounded and rectangular, projecting head. The turn of face into vertex smoothed. Male. Lobes of pygofer slightly attenuate, with rounded or pointed posterior part bearing dorsally and posteriorly a comb of large dense teeth. Anal tube cylindrical, elongate, entirely sclerotized dorsally. Genital valve triangular, long. Genital plates not closed, strongly slanting upwards along articulation with genital valve; each

plate triangular, with deep cut at apex. Styli with large, roughly L-shaped apices, [p. 202] posterior margin of apices rasp-like. Connective Y-shaped. Penis arcuate, with narrow high base, cylindrical shaft and dorsal, subapical gonopore. Brown and dark brown, with darker simple pattern. – 2 species (in USSR about 10).

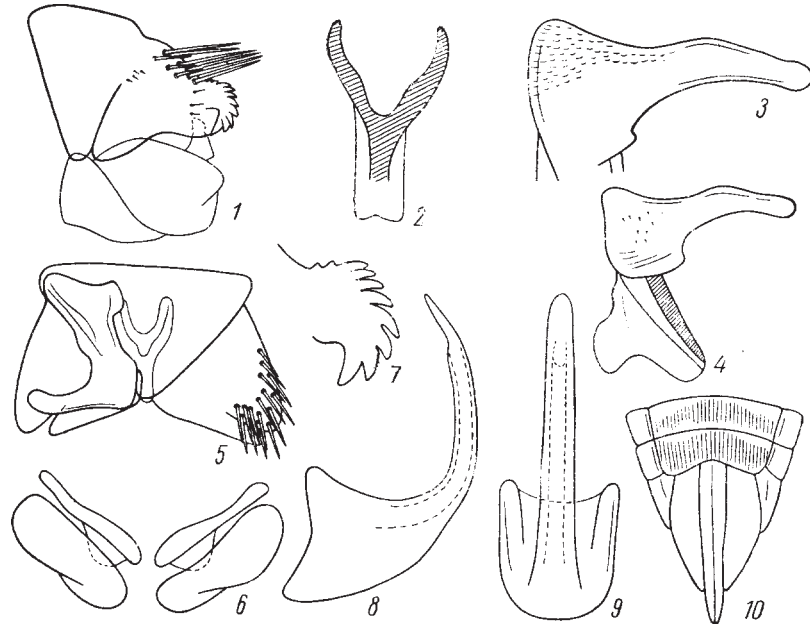


Fig. 137. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Vilbaste).

1-10, *Hardya melanopsis*: 1, genital block of male, lateral view; 2, connective; 3, apex of stylus; 4, stylus; 5, genital valve, genital plate, connective and stylus; 6, genital plates and styli, posterior view; 7, apex of pygofer lobe, lateral view; 8, 9, penis (8, lateral view; 9, posterior view); 10, apex of female abdomen, ventral view.

1. Posterior margin of stylus concave in the medial half. Lower tooth of comb at apex of pygofer lobes not larger than other teeth and not standing out in the row. Face and frontoclypeus with darkened sutures; frontoclypeus also with alternating light and dark stripes. Vertex with very typical marble pattern consisting of dark band of uneven width at anterior margin and 4 stretched narrow brackets along vertex turned forwards by convex part. Pronotum with dim pattern of small spots; scutellum with dark spots in the middle part. Fore wings with several scattered dark spots. 2.9-3.3. – Mag.; Yamal, Taimyr. – Great Britain, France, W Germany, Italy, Czechoslovakia, Rumania. – Mid-June to early August. (Figs. 137: 1-10; 138: 4, 5) **H. melanopsis** Hardy (*taimyrica* Vilb.)
- Posterior margin of stylus convex in the medial half. Lower tooth of comb at apex of pygofer lobes much longer than other teeth and standing out in the row. Externally similar to the previous species. 3-3.5. – Chuk. (Wrangel Island); Polar Urals, Taimyr. – N Alaska. – Late June to late July. (Figs. 138: 1-3) **H. youngi** Beirne

101. **Stenometopiellus** Hpt. Of average built or moderately slender, with rounded and obtuse-angled or rounded head. The turn of face into vertex smoothed. Male. Lobes of pygofer elongate, narrowed toward apex, at apex below usually with large lobe directed downwards. Anal tube elongate, cylindrical, without noticeable incision above at base. Genital valve triangular, with convex lateral margins. Genital plates with apices widely [p. 203] rounded separately and an obtuse-angled excision on

outer margin. Styli simple, with small, nearly straight apices. Connective Y-shaped. Penis with developed upper part of base and arcuate shaft, which is conically narrowed in basal part and thin in distal part. Gonopore subapical, ventral. May be found in Mag. and Amur. In USSR up to 15 species.



Fig. 138. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (original).

1-3, *Hardya youngi*: 1, apex of pygofer lobe; 2, penis, lateral view; 3, genital valve, genital plates and styli, dorsal view; 4, 5, *H. melanopsis*: 4, apex of pygofer lobe; 5, penis, lateral view; 6-10, *Stenometopiellus perexiguus*: 6, genital valve and genital plates, ventral view; 7, connective; 8, pygofer and anal tube, lateral view; 9, penis, lateral view; 10, genital plate and stylus, dorsolateral view.

1. Light brown, with dim dark pattern. Vertex with arcuate lines usually forming typical pattern, as in *Hardya* spp. Face with dark sutures and flowing pattern on frontoclypeus. Pronotum, scutellum, and hemelytra with brown spots. Venter more or less darkened. 2-2.4. – C Yakutia. – Mongolia. – In steppe associations. Late July to late September. (Figs. 138: 6-10) **S. perexiguus** Lnv.

102. **Amimenus** Ish. Moderately slender, with obtuse-angled and rounded head projecting forwards; head very slightly narrower than pronotum. The turn of face into vertex rounded. Male. Lobes of pygofer widely rounded, bearing numerous bristles. Genital plates long, triangular, rounded at end, bearing disorderly bristles. Anal tube very short. Styli with long apex bearing 2 teeth; subapical angle well developed. Penis wide, somewhat compressed laterally, with 2 processes ventrally at apex; gonopore subapical. Connective bifurcate, its base about 1.5 times as long as branches. Monotypic genus.

1. Grayish brown. Vertex with yellow band at anterior margin between ocelli, which is limited anteriorly and posteriorly by dark stripes. Pronotum with longitudinal dim stripes. Fore wings whitish, with reddish brown veins and brown marble pattern. 6.3-6.7. – Prim. – Japan, Korea. Mid-July to August. (Figs. 139: 1-5)
 **A. mojiensis** Mats. [p. 204]

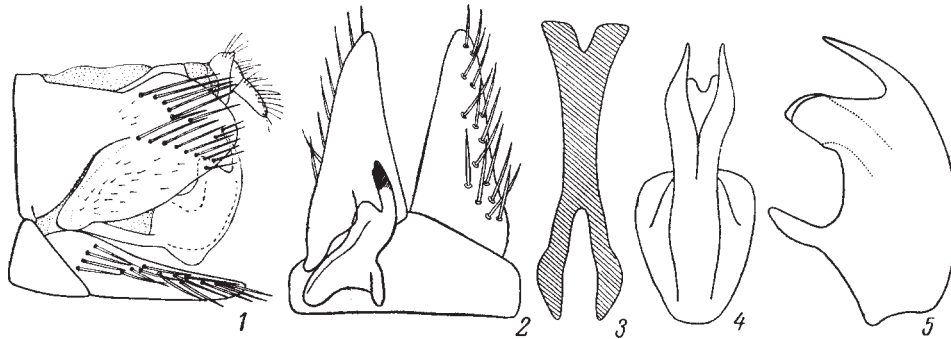


Fig. 139. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev and Kwon).

1-5, *Amimenus mojiensis*: 1, genital block of male, lateral view; 2, genital valve, genital plates and stylus, dorsal view; 3, connective; 4, 5, penis (4, posterior view; 5, lateral view).

103. **Matsumurella** Ish. Moderately slender, with obtuse-angled rounded projecting head, which is a little narrower than pronotum. Vertex transverse; the turn of face into vertex rounded. Male. Lobes of pygofer with robust posteroventral tooth, which is sometimes stretched and bent; bristles concentrated at dorsal margin of lobes. Genital plates with subapical excision on inner margin and numerous disorderly bristles along outer margins. Anal tube very short. Connective Y-shaped, with closely approximated branches. Styli without distinct subapical angle, with pointed apical part. Penis ribbon-shaped, sometimes slightly asymmetrical due to twisting of shaft, with a pair of short processes at apex. Gonopore apical or dorsal. In USSR 3 species.

1. Gonopore apical, situated between subparallel processes. Brown, veins of fore wing light. 8.7. – Amur., Prim. – Apparently [p. 205], in wet meadows. Late July to mid-August. Rare. (Figs. 141: 8-11) **M. phaea** Em.
- Gonopore dorsal, situated at the middle of shaft 2
2. Apices of pygofer lobes with short tooth directed downwards. Processes at penis apex diverging. Subgenital sternite of female in the middle with rather long and narrow projection, which has 2 apices and is separated from lateral lobes by wide incisions. Brown; frontoclypeus with noticeable transverse stripes; vertex with weak transverse band. Fore wings from brown to dark brown, at places with light veins. 7.5-9. – Prim., S Sakh., S Kur. – Japan, Korea, NE China. – Well

- moistened meadows, glades in broad-leaved and mixed forests. Late June to early September. (Figs. 140: 1; 141: 1-7, 12) **M. praesul** Horv.
- Apices of pygofer lobes with a long, crescent-shaped tooth; its apex bent outwards. Processes at penis apex arcuate, with approximated apices. Subgenital sternite in female with wide and short projection, which is bifurcate at apex and separated from lateral lobes by narrow cuts. Similar to the previous species. 7.6-8.2. – Transbaikal. – NE China, Mongolia. – Flood plain meadows. Late June to July. (Figs. 141: 13; 142: 1-5) **M. expansa** Em.

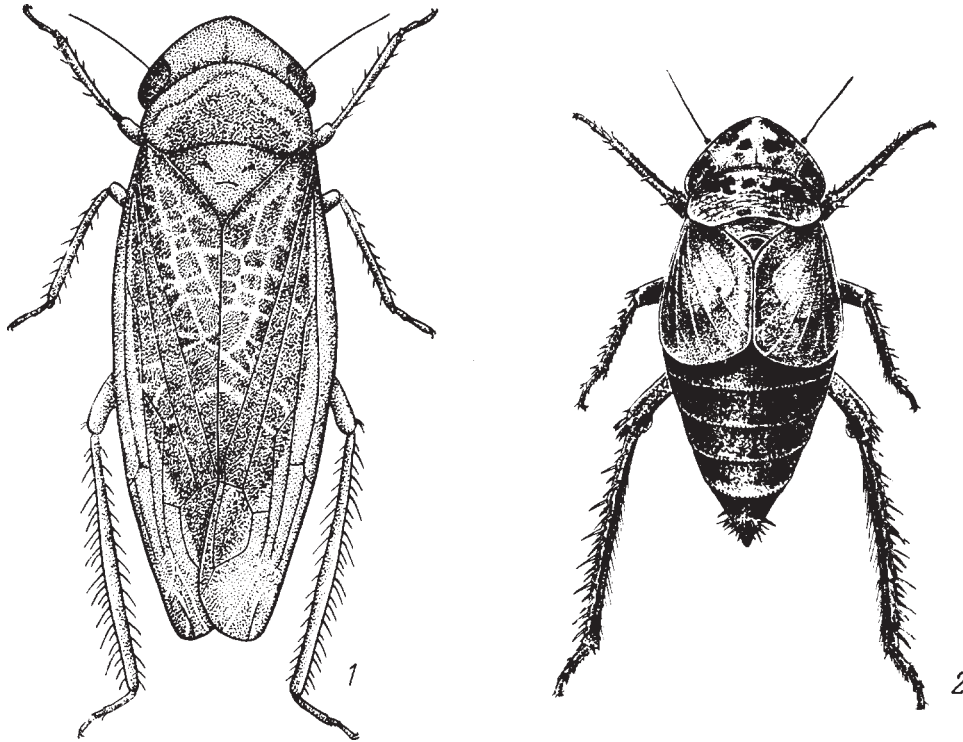


Fig. 140. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Esaki and original).

1, *Matsumurella praesul*; 2, *Bobacella corvina*.

104. **Thamnotettix** Zett. Slender or moderately slender, with obtuse-angled rounded projecting head, which is about as wide as pronotum. Vertex transverse; the turn of face into vertex rounded. Male. Lobes of pygofer with wide, attenuate lower apical angle and small tooth on dorsal margin. Genital plates long, gradually narrowing, at end jointly widely rounded. Anal tube comparatively short; its sclerotization with dorsal basal incision. Stylus with small apex and weakly developed subapical angle. Penis compressed laterally, long, with a pair of small processes at apex; gonopore ventral, usually at apex of a tubular process. Base of penis with well developed ventral part; shaft arising from dorsal margin of the base. – 1 species (in USSR 4).

1. Pale green. Gonopore process (hypertrophied margin of gonopore) situated approximately in the middle of shaft length, where the shaft is bent at obtuse angle. 5.6-7.7. – Khab., Prim. – Non-tropical Eurasia, N Africa, N America. – Meadows, glades and larch peatmoss bog forests with *Calamagrostis*. Mid-June to early August. (Figs. 143: 1-3) **Th. confinis** Zett.

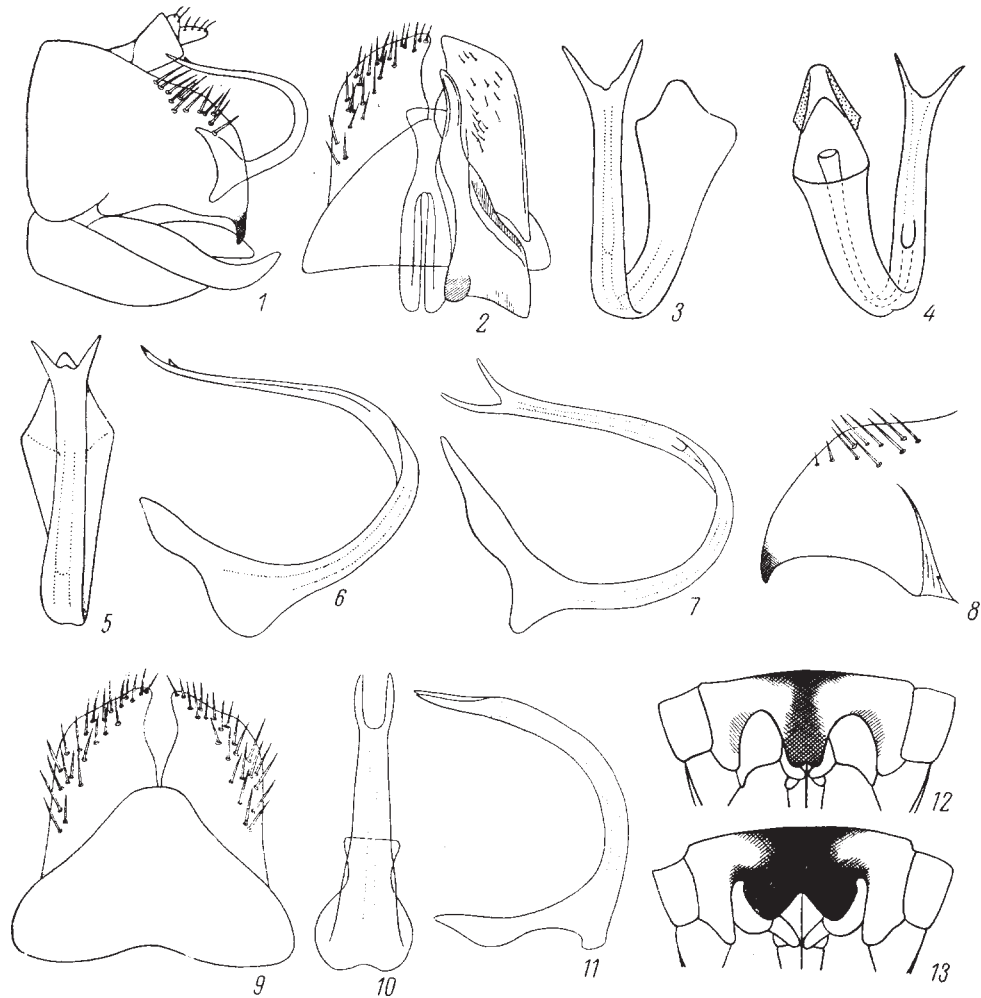


Fig. 141. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev, Vilbaste, and original).

1-7, *Matsumurella praesul*: 1, genital block of male, lateral view; 2, genital valve, genital plates, connective and stylus; 3-7, penis (3, oblique posterior view; 4, oblique anterior view; 5, posterior view; 6, 7, lateral view); 8-11, *M. phaea*: 8, lobe of pygofer; 9, genital plates; 10, 11, penis (10, posterior view; 11, lateral view); 12, 13, subgenital plate of female, ventral view: 12, *M. praesul*; 13, *M. expansa*.

105. **Albicostella** Ish. Slender or moderately slender, with obtuse-angled rounded, projecting head. The turn of face into vertex rounded. Vertex [p. 206] transverse. Male. Posterior lower angles of pygofer stretched into processes directed downwards. Genital plates of various shape, posteriorly rounded jointly or straightly truncate, with marginal row of bristles. Anal tube of moderate length; its dorsal surface with very deep basal excision in sclerotization. Stylus with smoothed subapical angle and small apical part. Connective Y-shaped, with short base and long diverging branches. Penis of various shape; gonopore situated directly on shaft; base of penis with weakly developed ventral part, which is not wider than penis base. In USSR 2 species.

1. Base of penis shaft dorsally with 2 thin processes. Apex of shaft without unpaired process with single apex. Light brown; head and venter light yellow. Fore wings brown, with light veins and light semihyaline costal margin. 5.8-6.3. – S Khab., Amur., Prim.; Transbaikal. – Korea, Mongolia. – Under canopy of mixed and broad-leaved forests on grasses. Mid-June to early September. (Figs. 143: 4-9) **A. marginata** Em.

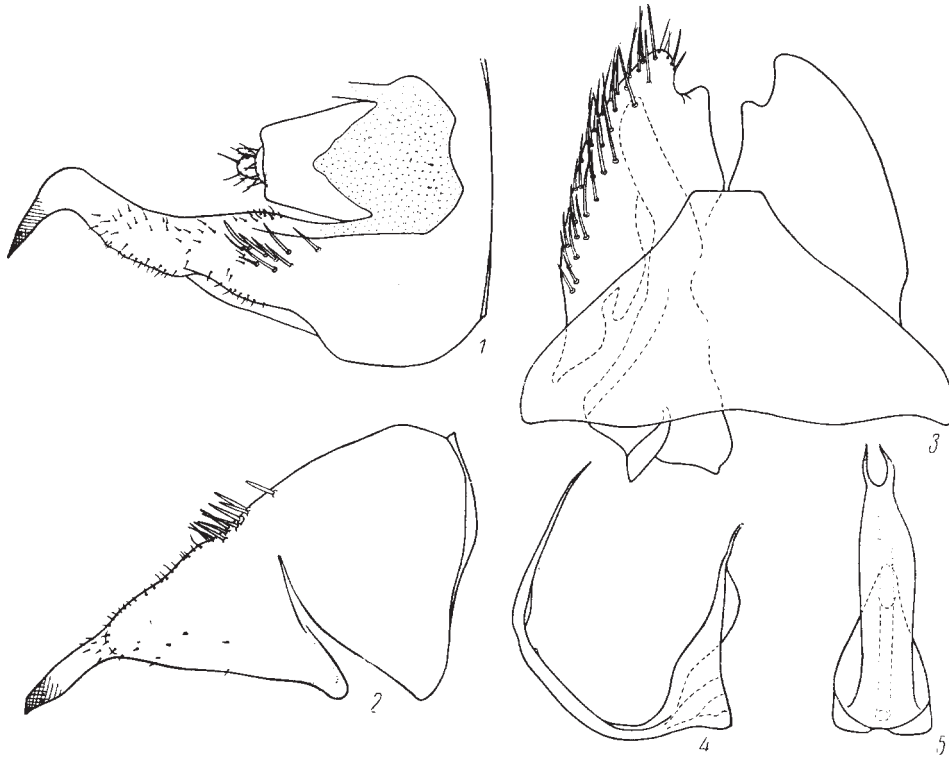


Fig. 142. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (original).

1-5. *Matsumurella expansa*: 1, pygofer (right side) and anal tube, dorsal view; 2, pygofer, lateral view; 3, genital valve and genital plates, ventral view; 4, 5, penis (4, lateral view; 5, posterior view).

- Base of penis shaft without processes. Apex of penis shaft, in addition to paired processes, also with unpaired tooth. Pale, brownish, without well expressed pattern; fore wings brownish, with lighter veins and costal field. 4.9-5.6. – S Kur. – Mid-June to mid-August. (Figs. 143: 10-13) **A. deminuta** Anufr.

106. **Pithyotettix** Rib. Moderately slender, with rounded triangular, projecting head; the turn of face into vertex rounded. Male. Posterior angles of pygofer lobes stretched into processes directed downwards. Genital plates closed, with widely rounded apex and disorderly bristles concentrated [p. 207] at their outer and hind margins. Anal tube short. Connective Y-shaped, with short base and rather long branches. Styli with smoothed subapical angle and truncate end of apical part. Penis symmetrical or slightly asymmetrical due to twisting of shaft. Oligophagous on spruces and firs. – 4-5 species (in USSR 8).

1. Penis symmetrical 2

- Penis asymmetrical, twisted along longitudinal axis. – Brown; vertex, scutellum, spots at costal margin of fore wings and, at places, veins yellowish. 6.2-6.9. – N Khab., Prim. – On *Picea ajanensis*. Late June to early July. (Figs. 146: 9- 11)
 **P. sichotensis** Anufr.

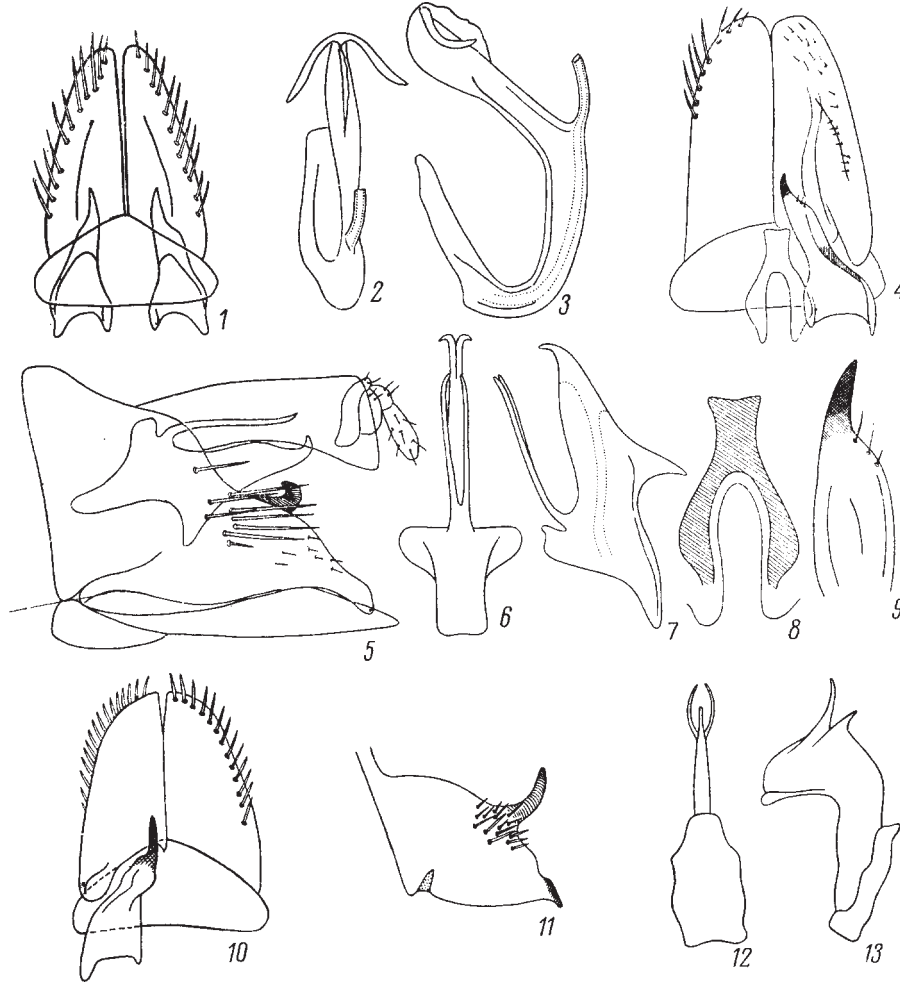


Fig. 143. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev, Ribaut, and Vilbaste).

1-3, *Thamnotettix confinis*: 1, genital valve, genital plates and styli, ventral view; 2, 3, penis (2, posterior view; 3, lateral view); 4-9, *Albicostella marginata*: 4, genital valve, genital plates, connective and stylus; 5, genital block of male, lateral view; 6, 7, penis (6, posterior view; 7, lateral view); 8, connective; 9, apex of stylus; 10-13, *A. diminuta*: 10, genital valve, genital plates and styli; 11, pygofer, lateral view; 12, 13, penis (12, posterior view; 13, lateral view).

2. Penis with 2 pairs of processes. – Whitish or greenish yellow, with reddish brown pattern. Frontoclypeus brown, with light transverse stripes. Dark spots and specks may be present on pronotum and scutellum. Fore wings mostly brown; veins light on corium; whitish spot present in basal third between radius and suture of clavus, another indistinct oblique [p. 208] spot opposite the apex of clavus in front of apical cells; costal field weakly darkened; whole clavus brown, only apices of veins *Pcu* and *A*₁ white. 5.3-5.8. – C Yakutia, Transbaikal, Altai, Ural, NE European part of USSR. – N Mongolia. – On spruce. Mid-June to mid-July. (Figs. 144: 1-8) **P. altaicus** Vilb.

- Penis with 1 pair of processes 3
- 3. Processes of penis continuing it, nearly parallel. – Similar to the previous species in coloration, sometimes head, pronotum and scutellum with reddish specks. 5.8-6.2. – S Kur. – On *Picea glehnii*. Late July to mid-August. (Figs. 145: 1-6) **P. kerzhneri** Anufr.

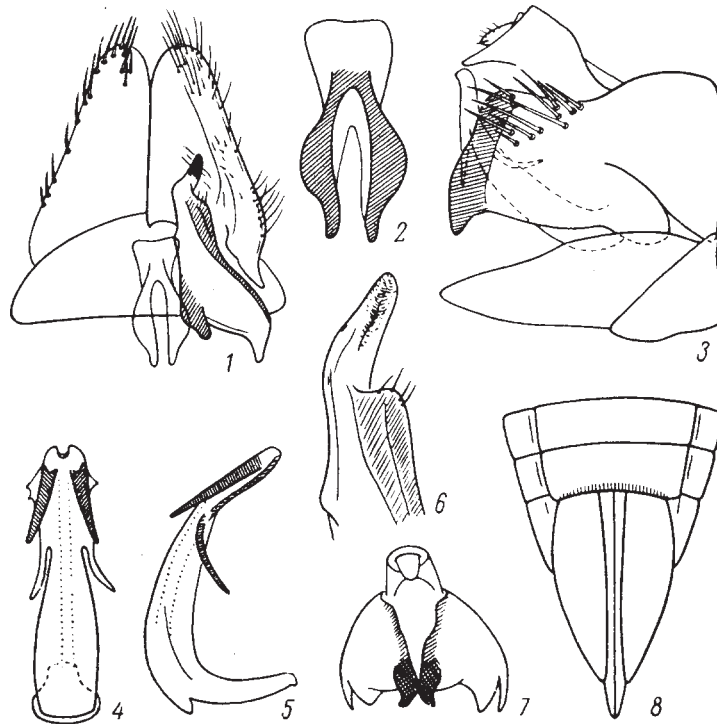


Fig. 144. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Vilbaste).

1-8, *Pithyotettix altaicus*: 1, genital valve, genital plates, connective and stylus; 2, connective; 3, genital block of male, lateral view; 4, 5, penis (4, posterior view; 5, lateral view); 6, apex of stylus; 7, pygofer and anal tube, posterior view; 8, apex of female abdomen, ventral view.

- Processes of penis with apices facing base of shaft 4
- 4. Processes arising from shaft apex transversely at right angle. Similar to the previous species in pattern, but often with brown spots developed on vertex, pronotum and scutellum and diminished light spots on fore wings. – 5.5-6.2. – Prim. – On spruce or fir. Late June to early July. (Figs. 146: 1, 2) **P. falkovitshi** Em.
- Processes of penis apex from base recurrent, first pressed to shaft, then obliquely diverging. Similar to *P. altaicus*. 4.6-5.8. – Prim.; Transbaikal, Krasnoyarsk, W Siberia, Altai, Urals. – On fir. Late June to early July. (Figs. 146: 3-8) **P. sibiricus** Mitjaev

107. **Perotettix** Rib. Moderately slender, with rounded triangular, projecting head; the turn of face into vertex rounded. Male. Pygofer asymmetrical; apical process of left lobe of pygofer slanting upwards; apical process of right lobe slanting downwards; bristles situated above bases of processes. Genital plates closed, widely rounded on posterior margin; numerous small disorderly bristles concentrated along outer and posterior margins of plates. Anal tube short, [p. 209] with basal dorsal

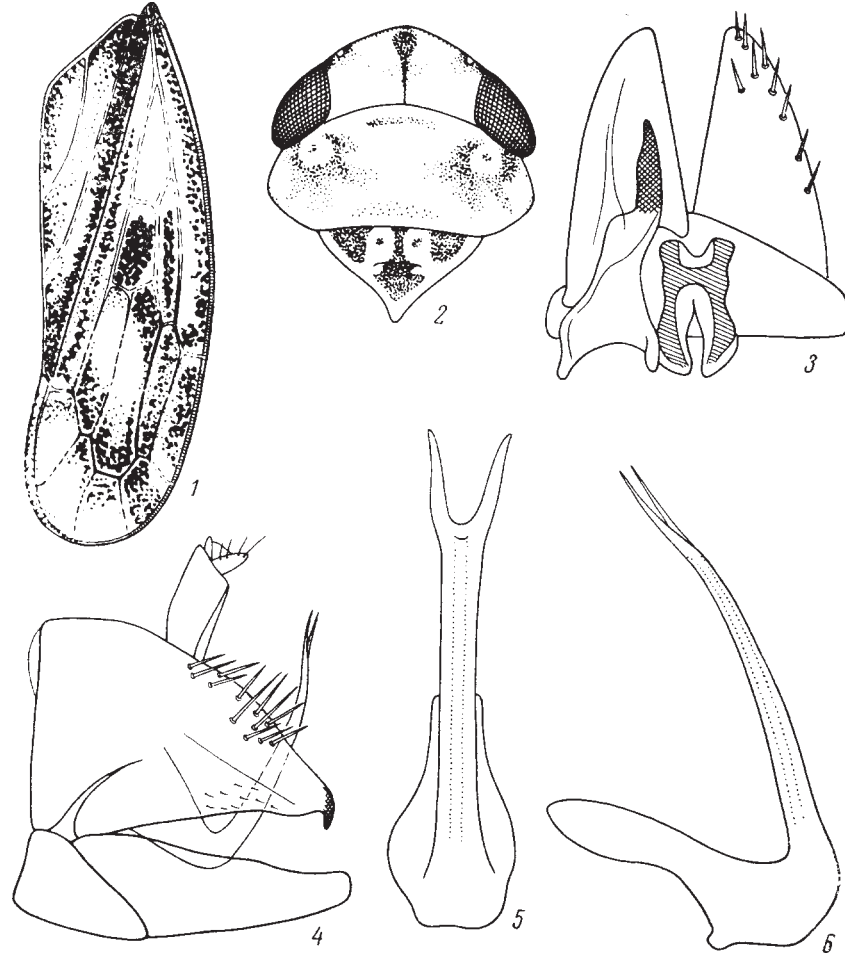


Fig. 145. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev).

1-6, *Pithyotettix kerzhneri*: 1, fore wing; 2, anterior part of body; 3, genital valve, genital plates, connective and stylus, dorsal view; 4, genital block of male, lateral view; 5, 6, penis (5, posterior view; 6, lateral view).

excision in sclerotization. Stylus with smoothed subapical angle and rather long apical part truncate at apex. Connective Y-shaped, with a wide, short base and long, more or less parallel branches. Penis asymmetrical, with short irregular process at apex. – 1 species (in USSR 2).

1. Reddish brown. Vertex and face yellowish, often with minute red specks. Pronotum anteriorly brown, posteriorly grayish; scutellum reddish brown or yellowish brown. Fore wings light brown, often with barely noticeable light spots. 5.9-6. – Prim. – Apparently, on *Picea ajanensis*. Late June to late August. (Figs. 146: 12-18) **P. orientalis** Anufr.

108. **Doliotettix** Rib. Moderately slender, with obtuse-angled rounded head projecting forwards. The turn of face into vertex rounded. Male. Pygofer elongate, with long bristles under anal tube; [p. 210] a tooth directed backwards arises from inner wall, at posterior margin of lobe. Genital plates triangular, with marginal row of

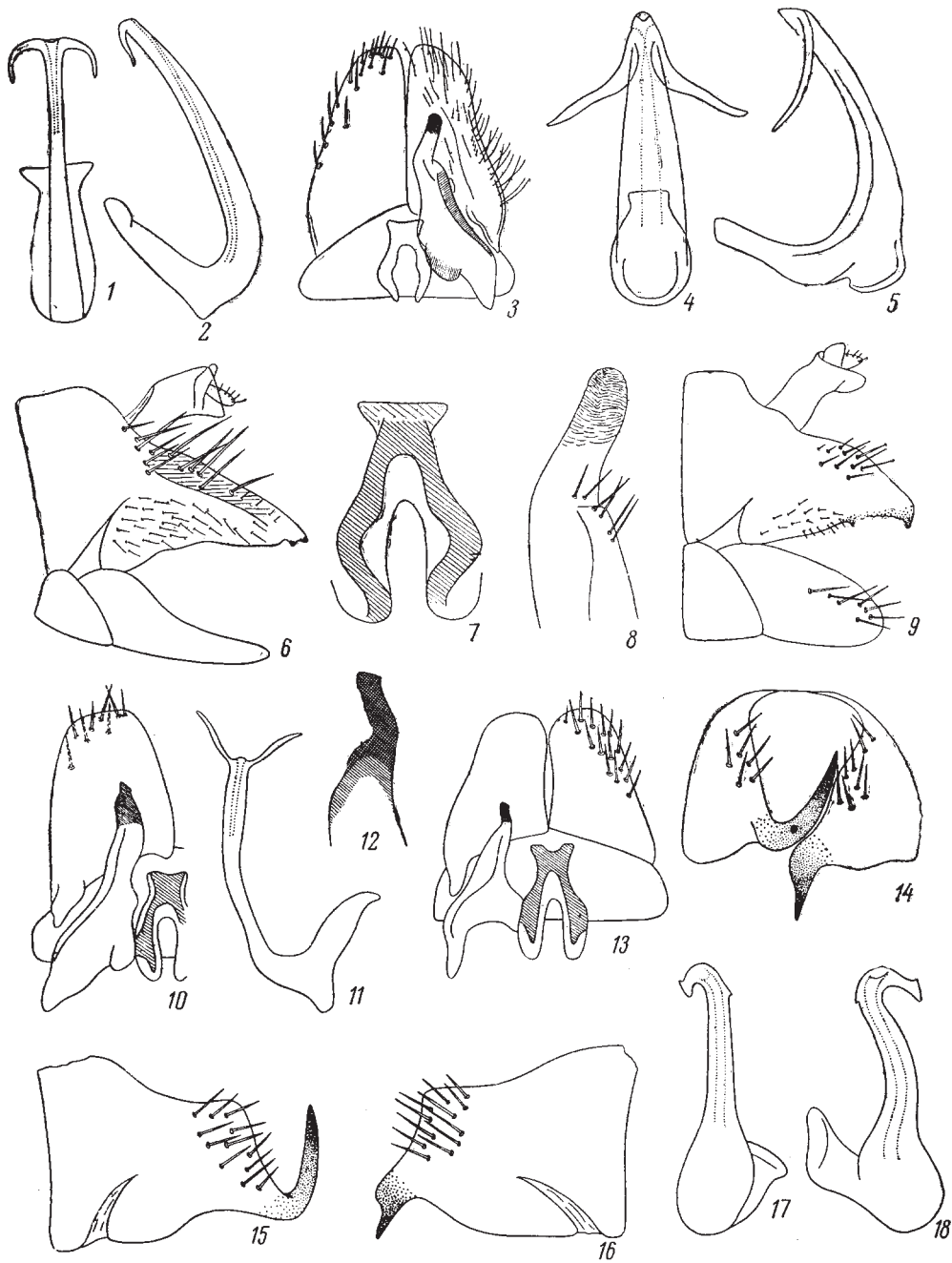


Fig. 146. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev, Emeljanov, and Vilbaste).

1, 2, *Pithyotettix falkovitshi*, penis (1, posterior view; 2, lateral view); 3-8, *P. sibiricus*: 3, genital valve, genital plates, connective and stylus; 4, 5, penis (4, posterior view; 5, lateral view); 6, genital block of male, lateral view; 7, connective; 8, apex of stylus; 9-11, *P. sichotensis*: 9, genital block of male, lateral view; 10, genital valve, genital plate, connective and stylus; 11, penis, lateral view; 12-18, *Perotettix orientalis*: 12, apex of stylus; 13, genital valve, genital plates, connective and stylus; 14, pygofer, posterior view; 15, left lobe of pygofer, lateral view; 16, right lobe of pygofer, lateral view; 17, 18, penis (17, posterior view; 18, lateral view).

bristles. Anal tube short. Segment X not sclerotized. Stylus with large subapical angle and short apical part. Connective Y-shaped, with long base and short branches. Penis small, with wide base and arcuate wide shaft; 2 sclerotized appendages articulated movably with penis base and with bases of hooks of pygofer lobes are present. Gonopore apical. Monotypic genus.

1. Yellow green, with black venter and brown pattern on face. 4-4.8. – Mag., Kamch., Prim.; Siberia, Altai. – China, N and C Europe. – In meadows, glades, larch peatmoss bog forests along rivers, apparently on *Calamagrostis*. Late June to early July. (Figs. 147: 1-6) **D. lunulatus** Zett.

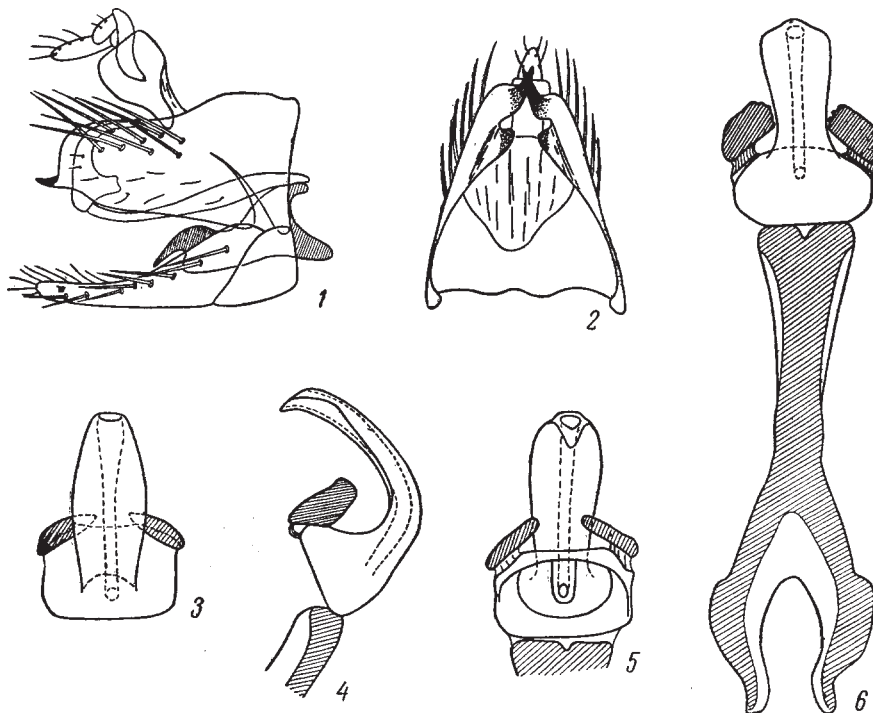


Fig. 147. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev and original).

1-6, *Doliotettix lunulatus*: 1, genital block of male, lateral view; 2, pygofer and anal tube, ventral view; 3-5, penis (3, posterior view; 4, lateral view; 5, anterior view); 6, connective and penis, ventral view.

109. **Speudotettix** Rib. Moderately slender, with obtuse-angled rounded, projecting head, which is a little wider than pronotum. Vertex transverse; the turn of face into vertex rounded. Male. Lobes of pygofer at apex on ventral margin with small blunt denticle directed downwards. Genital plates with marginal row of bristles; outer margin convex; apex narrowly or widely rounded. Styli with long apex; subapical angle not expressed. Connective Y-shaped, its base and branches of about equal length, branches more or less parallel. Penis arcuate, with gonopore situated asymmetrically at the middle of shaft on its left side. In USSR 2 species.

1. Larger. Genital plates narrowly rounded at apex. Penis comparatively short, in the middle with small lamellate widening on dorsal surface in lateral view. Subgenital sternite in female with widely rounded excision on posterior margin. Brown to nearly black; venter black; [p. 211] frontoclypeus brown, with dark pat-

- tern of transverse stripes. Vertex with indistinct dark band often consisting of 4 separate spots. Veins of fore wings often lighter than general background. 5-5.8.-Kamch., Prim., Kur.; Siberia, Kazakhstan. – Japan, Korea, Mongolia, Iran, Europe, N Africa, N America. – In forest edges, glades, under forest canopy. Mid-May to July. (Figs. 148: 1-6) **S. subfuscus** Fall.
- Comparatively smaller. Genital plates widely rounded at apex. Penis comparatively long, without lamellate widening on dorsal surface. Posterior margin of subgenital sternite in female with deep acute-angled excision. Similar to the previous species, but sturdier and with less clear pattern on vertex. Females often with indistinct less pigmented band at the middle of fore wings. 3.9-5.2. – Chuk., Mag., Kamch., Amur., Prim.; Transbaikal, S Siberia, Tuva, Altai. – Korea, Mongolia. – In forest edges, glades, under forest canopy. May to July. (Figs. 148: 7-10) **S. minor** Em.

110. **Macustus** Rib. Sturdy, with obtuse-angled rounded, projecting head, which is a little wider than pronotum. Vertex transverse; the turn of face into vertex rounded. Male. Lobes of pygofer with apices slightly slanting upwards. [p. 213] Genital plates triangular, rounded at apex, with marginal row of bristles. Anal tube small, short. Styli with elongate, parallel-sided apex truncate at end; subapical angle not developed. Connective Y-shaped, with short robust base and widely spaced branches, which are slightly longer than base. Penis arcuate, asymmetrical; gonopore situated laterally at the middle of shaft; 2 closely approximated processes present at penis apex; shaft sharply bent in apical third. Monotypic genus.

1. Brown; vertex with 2 dark bands separated from each other by narrow yellow stripe; anterior band obtuse-angled, projecting forwards. Pronotum with indistinct, wide, longitudinal brown stripes. Fore wings with light veins and brown, sometimes nearly black cells. 4.2-5.6. – Kamch., Prim.; Siberia, Altai, Kazakhstan, Caucasus. – Mongolia, Turkey (Anatolia), Europe, N America. – In moist meadows with *Calamagrostis* and larch peatmoss bog forests. Late June to early July. (Figs. 148: 11-17) **M. grisescens** Zett.

111. **Morinda** Em. Sturdy, moderately slender, with wide obtuse-angled, projecting head. The turn of face into vertex smoothed. Male. Lobes of pygofer narrowing toward blunt thickened apices, which bear a knob externally. Anal tube cylindrical, short. Genital valve triangular, transverse. Genital plates moderately tapering toward truncate apices, with lateral row of bristles. Styli large, with weak subapical projection and straight apex. Connective bifurcate. Penis with narrow base; the flattened dorsoventrally, bent, arcuate shaft arises from lower margin of penis base; near apex, shaft is tapered and bent ventrad, at apex, it bears a pair of processes slanting backwards; gonopore ventral, subapical. Monotypic genus. [p. 215]

1. Brown or reddish brown, with dark brown pattern. Face brownish, with dark dim spots on genae and sutures; frontoclypeus brown, with lateral light transverse stripes. Vertex with dark brown band between ocelli, which is obtuse-angled, widened in the middle part and projecting forwards, a transverse band interrupted in the middle beyond it, a dark longitudinal stripe, and 2 spots posterolaterally. Pronotum with speckled pattern of fusing small spots; dark spots present on scutellum. Fore wings with light veins and more or less developed uneven darkening of cells. Venter and legs mainly brown. 4-4.6. – Chuk., Kamch., Mag.; Yakutia. – N Mongolia. – On blueberry (*Vaccinium uliginosum*). Late June to mid-August. (Figs. 149: 1-4) **M. sibirica** Em. [p. 216]

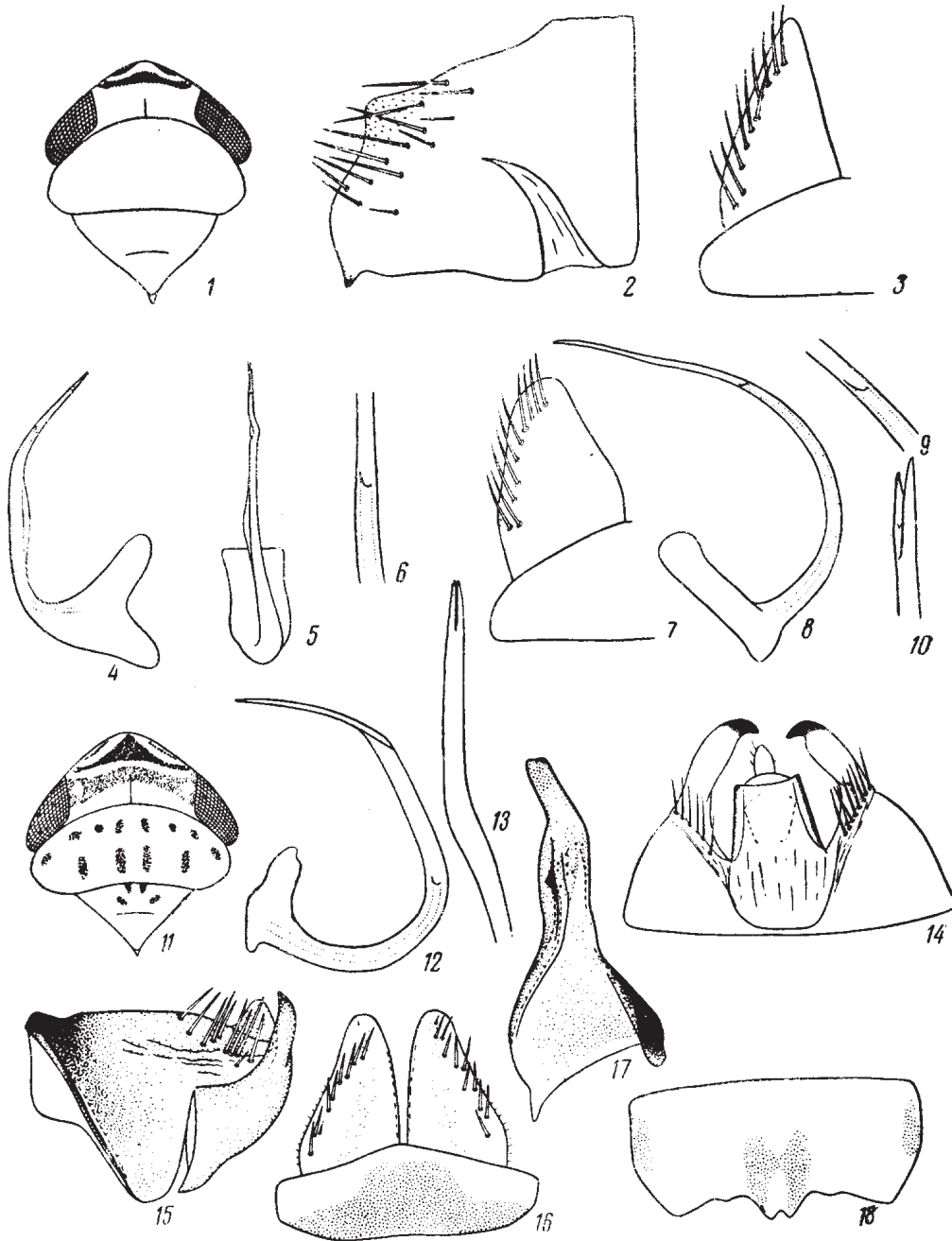


Fig. 148. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev, Ossiannilsson, and Ribaut).

1-6, *Speudotettix subfuscus*: 1, anterior part of body; 2, pygofer, lateral view; 3, genital valve and genital plate, ventral view; 4, 5, penis (4, lateral view; 5, posterior view) 6, shaft of penis in area of gonopore, lateral view; 7-10, *S. minor*: 7, genital valve and genital plate, ventral view; 8, penis, lateral view; 9, shaft of penis in area of gonopore, lateral view; 10, apex of penis, lateral view; 11-18, *Macustus grisescens*: 11, anterior part of body; 12, penis, lateral view; 13, apex of penis, posterior view; 14, pygofer and anal tube, dorsal view; 15, pygofer, lateral view; 16, genital valve and genital plates, ventral view; 17, stylus; 18, subgenital plate of female.

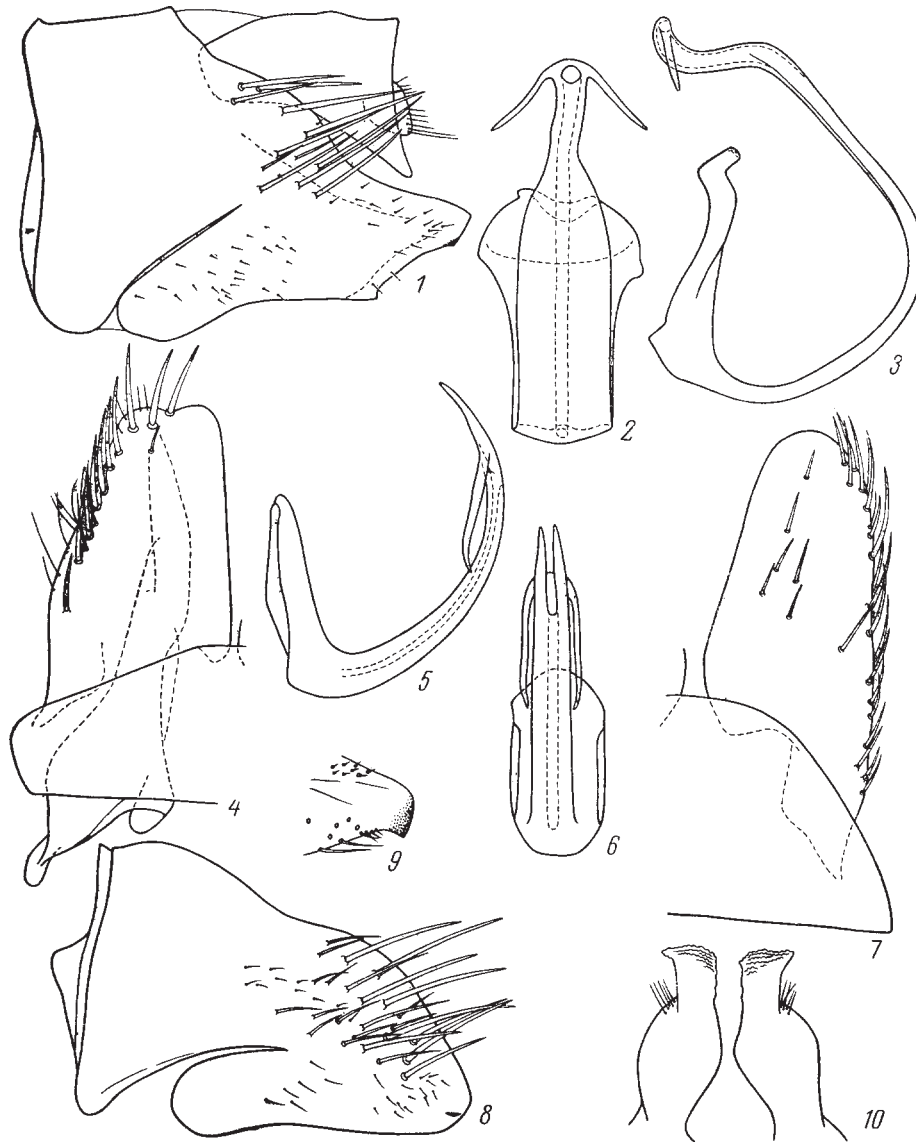


Fig. 149. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (original).

1-4, *Morinda sibirica*: 1, pygofer and anal tube, lateral view; 2, 3, penis (2, posterior view; 3, lateral view); 4, genital valve and genital plate, ventral view; 5-10, *Mimallygus saracinus*: 5, 6, penis (5, lateral view; 6, posterior view); 7, genital valve and genital plate, ventral view; 8, lobe of pygofer, lateral view; 9, apex of pygofer lobe, dorsal view; 10, apices of styli, dorsal view.

112. **Mimallygus** Rib. Sturdy, moderately slender, with a wide, obtuse-angled, projecting head; vertex flat, the turn of face into vertex smooth, but rather steep. Male. Lobes of pygofer wedge-shaped, tapering toward blunt thickened apices bearing a knob on outer side. Anal tube moderately elongate, more or less cylindrical but with a concave (in lateral view) lower desclerotized wall. Genital valve parabolic. Genital plates closed, moderately elongate, jointly parabolic, bearing a double uneven row of bristles on margin and scanty bristles far away from margin. Styli robust, with slightly widened, straightly truncate apex and distinct subapical projection. Connective bifurcate. Penis arcuate, shaft arising from ventral margin of longitudinal base, at apex with incision and a pair of long recurrent processes. Gonopore ventral, subapical. In USSR 1 species.

1. Brown, with dark brown pattern. Face darkened on sutures. Frontoclypeus brown, with light transverse stripes. Vertex with narrow band interrupted in the middle and indistinct small spots; pronotum and scutellum with small spots; pronotum often darkened posteriorly. Fore wings with brown speckled pattern and whitish veins in distal part. Venter and legs mainly brown. 4.2-6.2. – N Khab.; C Yakutia, Tuva, Altai, C and E Kazakhstan. [p. 217] – NE Mongolia. – On willows in flood plains of rivers. July. (Figs. 149: 5-10) **M. saracinus** Em.

113. **Euscelis** Brullé. Robust, moderately sturdy, with wide, rounded obtuse-angled, projecting head. The turn of face into vertex smoothed. Male. Lobes of pygofer more or less rounded, parabolic, without processes, dorsal excision deep. Anal tube wide, with completely sclerotized dorsal wall. Genital valve triangular, transverse. Genital plates triangular, closed, with narrowly rounded apices and marginal even row of bristles. Styli with straight apices slightly obliquely slanting laterad and round acute-angled subapical projection. Connective Y-shaped. Penis with narrow base and ribbon-shaped, flattened dorsoventrally, wide arcuate shaft arising from dorsal part of base. Penis at apex with a pair of processes and median excision. Gonopore ventral, subapical. – 2 species.

1. Penis at apex with deep excision and a pair of processes lateral to it; apices of processes slanting backwards, but not reaching the level of the middle excision. Brown, with dark brown speckled pattern. Pattern nearly not expressed in pale specimens. Dark stripes present on sutures of face; darkening near antennae present; frontoclypeus with close transverse stripes. Vertex with 4 small spots near anterior margin, with transverse band beyond it often interrupted into 4 small spots, and 2 small spots on sides of posterior margin. Pronotum with spots fusing together at anterior margin and speckled longitudinal stripes on the rest of its surface. Fore wings with light veins and cells darkened by fusing small spots usually arranged denser near veins. Venter with dark spots; legs brown. 3.1-4. – Mag.; NE Yakutia. – Mongolia, Europe, NW Africa. – In moist meadows. Mid-July to late August. (Figs. 151: 1-3) **E. distinguendus** Kbm.
- Apex of penis undulated truncate, with 4 projections separated by excisions or with an excision and 2 lateral processes slanting as in the previous species, but in that case apices of processes reaching the level of the median excision. Similar to the previous species. 3.1-4. – Kamch.; Kazakhstan, Middle Asia. – Afghanistan, Iran, Asia, Europe, N Africa. – In dry meadows, ruderal habitats, in Kamch., among wormwoods at thermal springs (locality Dolina Geizerov). Late July. (Figs. 150: 1-9; 155: 2) **E. incisus** Kbm. [p. 218]

114. **Streptanus** Rib. Sturdy or moderately slender, with rounded, obtuse-angled, projecting head. Often subbrachypterous. Male. Pygofer short; posterior lower angles of lobes slanting backwards and even a little upwards, widely rounded at end. Lobes of pygofer on dorsal margin under base of anal tube with numerous long bristles. Anal tube large, with completely sclerotized dorsal wall. Genital plates closed, with more or less convex outer margin bearing marginal row of bristles. Styli with stretched robust apices more or less distinctly obliquely truncate at end, and with subapical projection, which is not always well visible from above. Connective Y-shaped. Penis with longitudinal narrow base; ribbon-shaped shaft arises from penis base from below; shaft more or less asymmetrically slanting awry [p. 219] or weakly spirally bent along its longitudinal axis. Penis at apex with lateral teeth or with more or less rectangular longitudinal widening. Gonopore ventral, mostly at some distance from shaft apex. – 5 species (in USSR not less than 10).

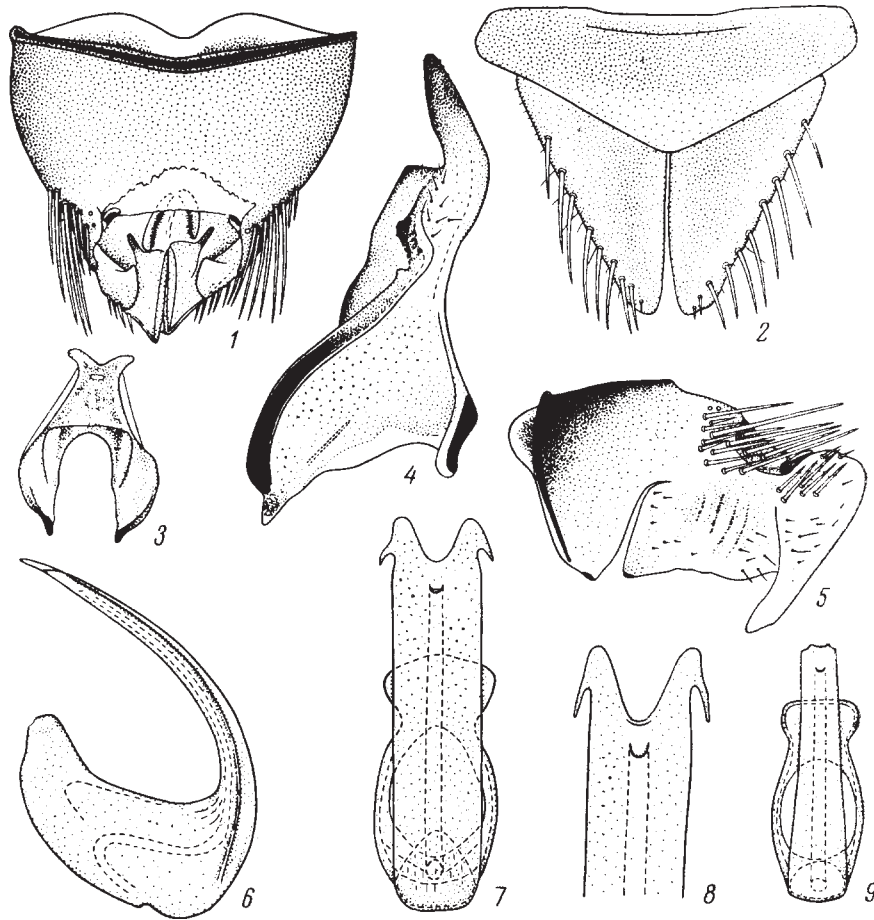


Fig. 150. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Ossiannilsson).

1-9, *Euscelis incisus*: 1, pygofer of male, dorsal view; 2, genital valve and genital plates, ventral view; 3, connective; 4, stylus; 5, lobe of pygofer, lateral view; 6, 7, penis (6, lateral view; 7, posterior view); 8, apex of penis, posterior view, another specimen; 9, penis, posterior view, spring form.

1. Widening at penis apex formed only by lateral teeth slanting backwards; spade not expressed. Whole shaft or its most part not tapering toward apex 2
- Apex of penis with spade, rectangular or trapezoid widening which is longer than wide and its basal angles are slightly attenuate. Penis shaft gradually tapering toward apex 3
2. Teeth on penis apex long, slanting backwards; apex of penis distinctly asymmetrical; shaft noticeably narrowed before it. Fore wings in female usually a little shorter than abdomen. Brown, with black or dark brown pattern varying in the degree of its development. Vertex with dark band usually interrupted in the middle; sometimes vertex nearly entirely blackened, except the hind margin. Face with dark spots and sutures; frontoclypeus with alternating dark and light transverse stripes. Pronotum and scutellum from light, nearly without any pattern, to nearly entirely blackened. Fore wings with light veins and more or less darkened cells. 4-5. – Prim., S Kur. – Mongolia. – Among forest herbs and in meadows. Mid-July to late August. (Figs. 152: 1-4) **S. bovinus** Dlab.

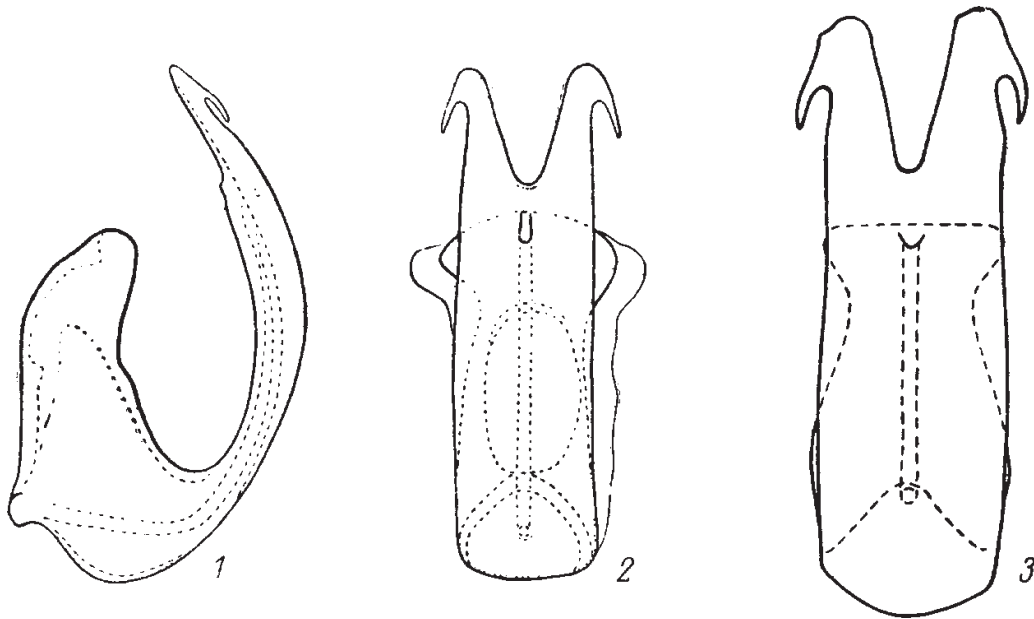


Fig. 151. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Ossiannilsson and original).

1-3, *Euscelis distinguendus*, penis: 1, lateral view; 2, 3, posterior view (2, specimen from Scandinavia; 3, specimen from Magadan Province).

- Teeth on penis apex short. Apex of penis symmetrical, asymmetry of penis occurring only due to twisting of shaft; shaft not narrowed before apex. Fore wings in female usually noticeably shorter than abdomen, in male, slightly longer, brown, with dark brown pattern varying in its intensity. Upper margin of frontoclypeus usually edged with dark brown stripe; beyond it, vertex with band widened in the middle part and projecting in the middle forwards in the shape of obtuse angle; beyond it, there is second uneven band connected with wide longitudinal stripe passing up to occiput; indistinct dark small spots may be present at occiput, on its sides. Similar to the previous species in the rest of characters. 3.2-4. – Chuk. (Wrangel Island); E Kazakhstan. – N and C Europe, Alaska, Canada. – Forests and forest marshes. Mid-to late July. (Figs. 152: 9, 10).....
..... **S. marginatus** Kbm.
- 3. Angular widening present at base of shaft, from the left or on both sides 4
- Widenings at base of shaft not developed. Similar to the previous species. 3.2-5. – Mag. – N and C Europe, Canada. – In meadows. Late July to mid-August. (Figs. 152: 11-14) **S. confinis** Reut.
- 4. Angular widening at base of shaft developed on both sides. Spade symmetrical; penis shaft noticeably narrowed before it. Externally similar to the previous species. 4.5-5.6. – Kamch.; Kazakhstan. – N and C Europe. – In meadows. Early July to late August. (Figs. 152: 5-8) **S. aemulans** Kbm.
- Angular widening developed only on the left side of shaft base. Spade slightly asymmetrical. Externally similar to the previous species. 4.5-5.5. – Sakh., Kur.; Middle Siberia, N and C European part of USSR. – Alaska, Canada. – In forests on *Calamagrostis*. August **S. ogumae** Mats. (*okaensis* Zachv.)

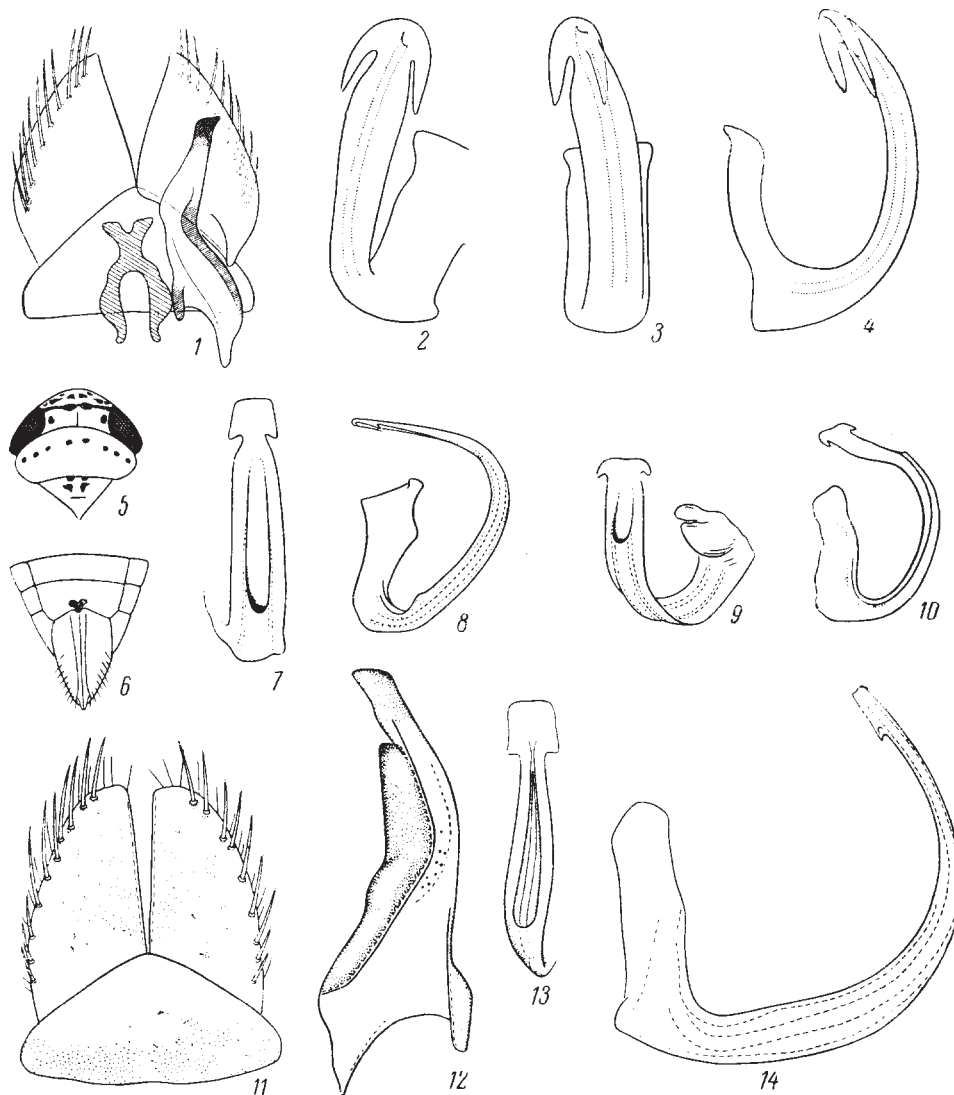


Fig. 152. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev, Ossiannilsson, Ribaut, and Zachvatkin).

1-4, *Streptanus bovinus*: 1, genital valve, genital plates, connective and stylus; 2-4, penis (2, oblique posterior view; 3, posterior view; 4, lateral view); 5-8, *S. aemulans*: 5, anterior part of body; 6, apex of female abdomen, ventral view; 7, 8, penis (7, oblique dorsal view; 8, posterior view); 9, 10, *S. marginatus*, penis (9, posterior view; 10, lateral view); 11-14, *S. confinis*: 11, genital valve and genital plates, ventral view; 12, stylus; 13, apex of penis, posterior view; 14, penis, lateral view.

115. **Coulinus** Beirne. Robust, moderately sturdy, with wide, rounded and obtuse-angled, projecting head. The turn of face into vertex smoothed. Male. Lobes of pygofer more or less tapering toward narrowly rounded apex; robust knob or tooth present on outer wall at the very apex; dorsal excision of pygofer deep. Anal tube small, only lateral walls weakly sclerotized. Genital valve triangular, transverse. Genital plates closed, short, with convex outer margin bearing an even row of bristles. Styli with straight apex slightly slanting sideways and weakly expressed subapical projection. Connective bifurcate. Penis with more or less narrow base articulated [p. 220] with appendage divided along the midline, and with arcuate shaft

arising from lower margin of base. Shaft flattened dorsoventrally, with denticulate, uneven lateral margins bearing in the middle part 2 long processes slanting toward apex. Gonopore ventral, subapical. In USSR 2 species.



Fig. 153. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (original).

1-7, *Coulinus usnus*: 1, pygofer, anal tube and appendage of penis base, ventral view; 2, apices of genital plates, penis and appendages of its base, posterior view; 3-5, penis (3, posterodorsal view; 4, posterior view; 5, lateral view); 6, pygofer, lateral view; 7, genital valve and genital plate, ventral view; 8-12, *C. kushakevitshi*: 8, genital valve and genital plate, ventral view; 9, pygofer, lateral view; 10-12, penis (10, lateral view; 11, posterior view; 12, posterodorsal view).

1. Lateral processes of penis follow the shaft, their apices slightly slanting. Penis shaft wide. Brown, with dark brown pattern; sometimes entirely black, except vertex. Face black, with light transverse stripes often noticeable on frontoclypeus. Vertex with black transverse band and 2 small posterolateral spots. Pronotum anteriorly with dark small spots, the rest of its surface entirely darkened. Scutellum with dark spots. Fore wings dark, with light veins. Venter and legs dark. 3.5-4. – Mag., Amur. – Marshes. Late May to late June. (Figs. 153: 8-12)
 *C. kushakevitshi* Em. [p. 221]

- Lateral processes of penis steeply arcuate, diverging far from shaft and with apices directed mediad. Shaft relatively narrow. Dorsally light brown, nearly without pattern; pronotum and scutellum with indistinct, dark, small spots. Face and venter dark brown; frontoclypeus with light transverse stripes situated laterally and in upper part. 3.5-4. – N Yakutia, Polar Urals. – Alaska, N Canada. – Late July. (Figs. 153: 1-7) **C. usnus** Beirne [p. 222]

116. **Laburris** Rib. Moderately slender or sturdy, with wide rounded head projecting forwards. Vertex transverse; the turn of face into vertex rounded. Male. Lobes of pygofer with posterior angle slightly stretched upwards. Genital plates triangular, closed, with marginal row of bristles. Anal tube short. Styli with distinct subapical angle and long apical part pointed at apex. Connective Y-shaped, with short base and long branches. Penis with arched tubular shaft bearing at apex 2 processes; gonopore apical or subapical. – 1 species.

1. Yellowish green or greenish yellow; apices of fore wings often brown or nearly black. 4-6. – Prim., S Kur.; Transbaikial, Siberia, Kazakhstan. – Korea, NE China, Mongolia, Europe. – On *Artemisia* in meadows, glades, forest edges. July to September. (Figs. 154: 1-8) **L. impictifrons** Boh.

117. **Athysanus** Burm. Moderately slender, with wide, rounded, projecting, transverse head. The turn of face into vertex rounded. Male. Posterior lower angle of pygofer lobes attenuate and slightly slanting upwards, narrowly rounded at end; numerous long bristles present on dorsal margin under base of anal tube. Genital plates closed, with convex outer margin; numerous disorderly bristles situated along outer margin in a wide stripe. Anal tube about 1.5 times as long as wide. Styli with distinct subapical angle and long, slightly S-shaped apical part. Connective Y-shaped, with short base and long, more or less parallel branches. Penis symmetrical, rounded in cross-section or slightly flattened, with spread lateral margins, at apex with a pair of small processes; gonopore ventral, subapical. – 1 species (in USSR 2). [p. 223]

1. Brown, with pattern of fusing black spots. Fore wings with indistinct V-shaped light band in basal half. Penis with lacerately denticulate lateral ridges; processes of penis subapical. 4.8-5.6. – Khab., Amur., Prim., Sakh., S Kur.; Transbaikial, Siberia, Kazakhstan. – Korea, Mongolia, Europe. – In broad-leaved and mixed forests, in glades, forest edges, well moistened meadows. Mid-July to September. (Figs. 154: 9-16; 155: 1) **A. quadrum** Boh.

118. **Ederranus** Rib. Slender or moderately slender, with wide, transverse, rounded triangular, projecting head. The turn of face into vertex rounded. Male. Posterior lower angle of pygofer lobes attenuate and slanting upwards, widely rounded at end; numerous long bristles situated at dorsal margin under base of anal tube. Genital plates closed, with convex outer margin; numerous disorderly bristles forming wide stripe along outer margin. Anal tube about as long as wide. Styli with distinct subapical angle not noticeable from above and rather long apex blunt at end. Connective Y-shaped, with short base and long branches. Penis ribbon-shaped, gently bent, symmetrical, with a pair of small processes at apex; gonopore ventral, subapical. – 1 species (in USSR 2).

1. Yellow, with black spots: 2 or 4 spots on face, 2 spots on vertex and 2 spots on pronotum. 5-6.5. – Khab., Prim., Sakh., S Kur.; Siberia, Altai, N European part of

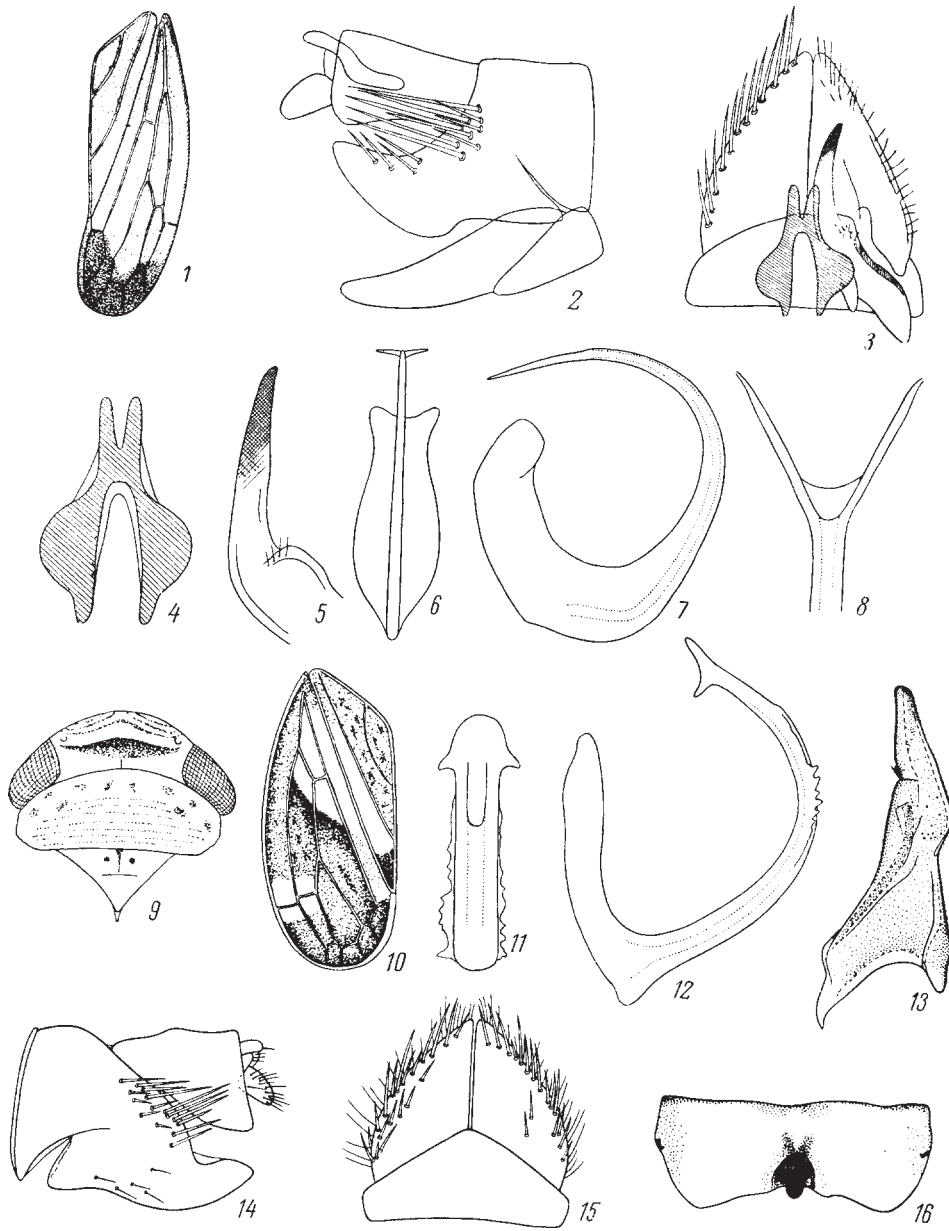


Fig. 154. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev, Ossiannilsson, Ribaut, and Vilbaste).

1-8, *Laburrus impictifrons*: 1, fore wing; 2, genital block of male, lateral view; 3, genital valve, genital plates, connective and stylus; 4, connective; 5, apex of stylus; 6, 7, penis (6, posterior view; 7, lateral view); 8, apex of penis; 9-16, *Athysanus quadrum*: 9, anterior part of body; 10, fore wing; 11, 12, penis (11, posterodorsal view; 12, lateral view); 13, stylus; 14, pygofer and anal tube, lateral view; 15, genital valve and genital plates, ventral view; 16, subgenital plate of female.

USSR. – Korea, Mongolia, N Europe. – In herbaceous swamps and swamping forests on *Calamagrostis*. July to early October. (Figs. 156: 1-7)
 *E. sachalinensis* Mats.

119. **Handianus** Rib. Moderately slender and sturdy, wide, slightly flattened dorsoventrally, with wide, rounded, projecting head. Vertex transverse; the turn of face into vertex rounded. Male. Lobes of pygofer with apices slanting outwards and upwards, and several more or less large bristles near ventral margin. Genital plates with closed or diverging apices rounded narrowly or widely; bristles on genital plates situated disorderly, at least at apices. Anal tube short, of about equal width and length. Styli with smoothed subapical angle and apical part pointed at end. Connective Y-shaped, with very short base and long, rather widely spaced branches. Penis Y- or T-shaped, with apical gonopore in the shape of a transverse slit continued on processes. – 2 species (in USSR more than 30 species).

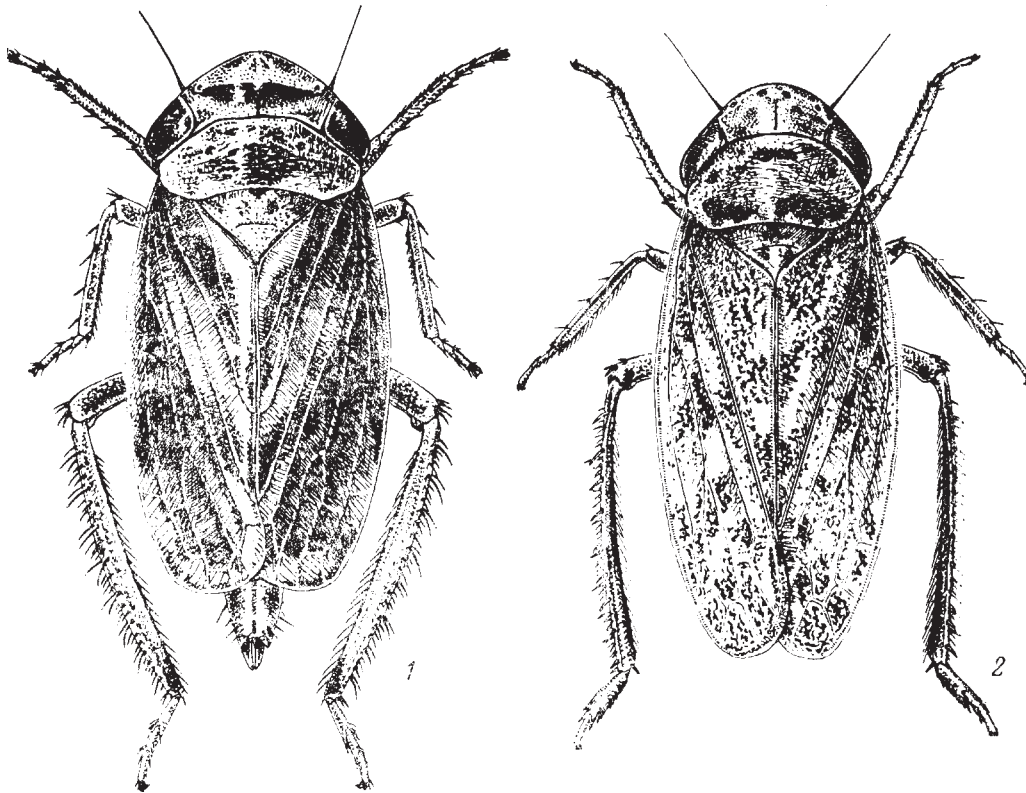


Fig. 155. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (original).

1, *Athysanus quadrum*, female; 2, *Euscelis incisus*.

1. Apices of elbow-shaped processes of penis nearly reaching lower margin of penis base. Yellowish gray; apex of frontoclypeus with 2 large black spots continued on vertex; vertex also with a pair of black transverse spots, sometimes fused into transverse band, and 2 small spots at apex. Pronotum usually blackened in posterior half. Fore wings with bright yellow stripe along costal margin separated from the rest brownish yellow part of wings by bright dark brown stripe; suture of clavus darkened linearly. 5.8-7.2. – Prim. – Japan, Korea. – In edges and glades of mixed and broad-leaved forests, in mesophilous meadows. Late June to mid-September. (Figs. 156: 9, 10) **H. limbifer** Mats.
- Apices of elbow-shaped processes of penis arc-like slanting outwards and situated near base of shaft. Yellowish gray; frontoclypeus at apex with 4 dim black spots, 2 small spots between and above them; vertex usually with 3 black or

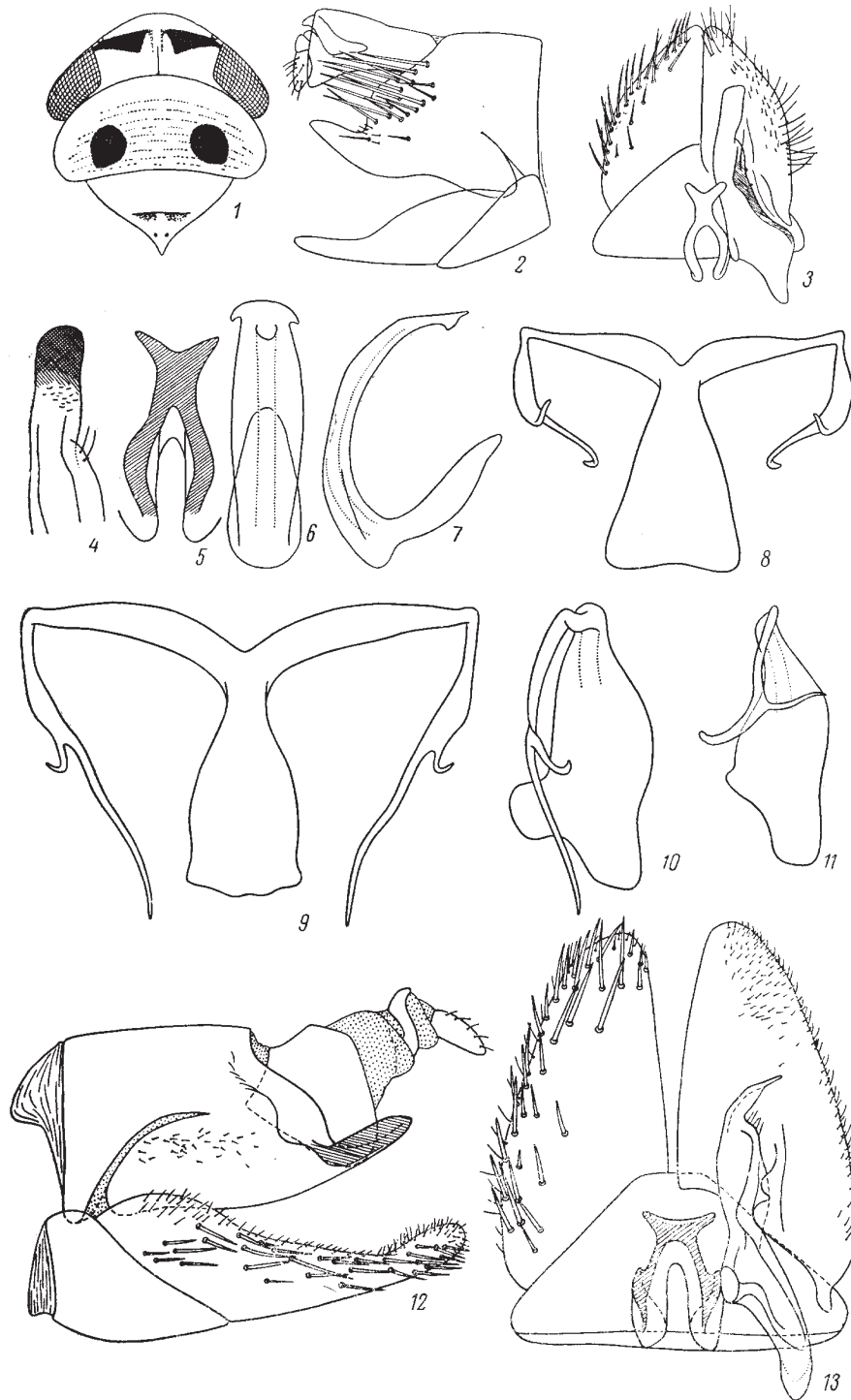


Fig. 156. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev, Vilbaste, and original).

1-7, *Ederranus sachalinensis*: 1, anterior part of body; 2, genital block of male, lateral view; 3, genital valve, genital plates, connective and stylus; 4, apex of stylus; 5, connective; 6, 7, penis (6, posterior view; 7, lateral view); 8, *Handianus maculaticeps*, penis, posteroventral view; 9, 10, *H. limbifer*, penis (9, posteroventral view; 10, left lateral view); 11-13, *H. maculaticeps*: 11, penis, left lateral view; 12, genital block of male, lateral view; 13, genital valve, genital plates, connective and stylus.

brown spots at anterior margin. Pronotum, scutellum and fore wings grayish, costal margin of wings somewhat less pigmented. 5.4-7. Amur., Prim.; Transbaikal, Sayan Mts, Altai. – Korea, [p. 225] SE China, Mongolia. – In meadows, mainly steppized, among steppe shrubs. Late June to August. (Figs. 156: 8, 11-13) **H. maculaticeps** Reut.

120. **Limotettix** J. Sahlb. Slender, with wide, transverse, arcuate, weakly projecting head, and smooth turn of face into vertex. Male. Lobes of pygofer with bristles and with 1, less often 2 processes on posterior margin; a small sclerotized lobe, which is weaker than a tooth, situated under lower process. Genital plates rounded triangular or triangular with slightly attenuate apices; bristles situated disorderly. Anal tube short, with deep basal excision on dorsal surface. Styli with well expressed subapical angle and usually long and even widened at end apical part. Connective Y-shaped, with long base and short branches. Penis in the shape of thick tube, indistinctly separated from base; gonopore large, apical, usually 2 teeth under it. Appendage of penis base sclerotized, rounded, articulated or fused with base; when it is fused, boundary between it and base distinct. – 5 species (in USSR more than 10).

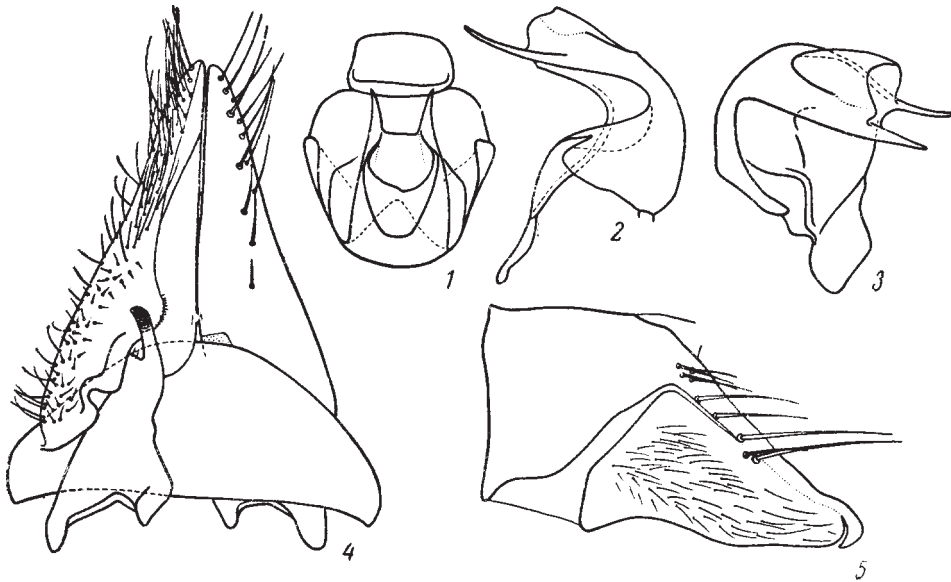


Fig. 157. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (original).

1-5, *Limotettix paludosus*: 1-3, penis (1, posterior view; 2, lateral view; 3, oblique dorsolateral posterior view); 4, genital valve, genital plates and stylus; 5, pygofer, lateral view.

1. Genital plates with concave outer margin and slightly attenuate thick apices. Styli with small apical parts. Appendage fused with penis base. (Subgenus *Ophiolix* Rib.). Yellowish, with black speckled pattern; a black band on vertex, and another band interrupted in the middle beyond it. Fore wings with dark longitudinal stripes. 4-4.8. – NE Yakutia, Transbaikal, Siberia, Altai. – Mongolia, N Europe, Alaska. – In sedge marshes. June to August. (Figs. 157: 1-5) **L. (O.) paludosus** Boh.
- Genital plates with convex outer margin. Styli with robust apical parts straightly truncate or bent, L-shaped. Appendage free. (Subgenus *Limotettix* J. Sahlb.) 2

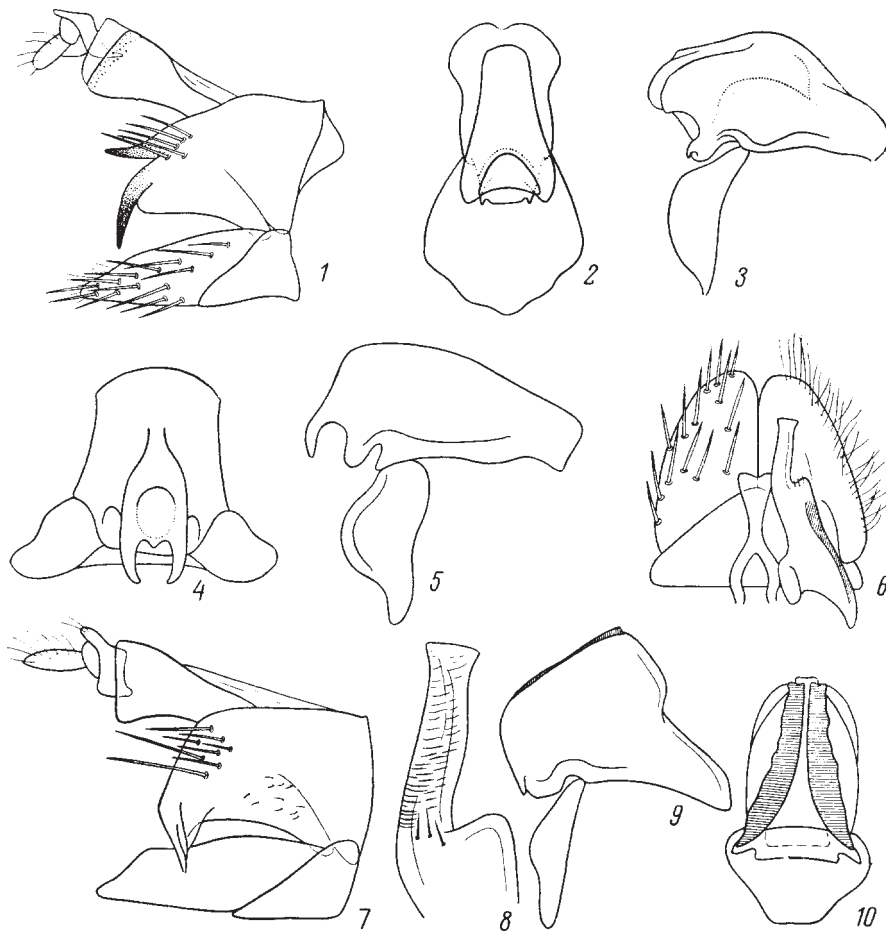


Fig. 158. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev, Emeljanov, and Vilbaste).

1-3, *Limotettix intricatus*: 1, genital block of male, lateral view; 2, 3, penis (2, dorsal view; 3, lateral view); 4, 5, *L. adipatus*, penis (4, dorsal view; 5, lateral view); 6-10, *L. kuwayamai*: 6, genital valve, genital plates, connective and stylus; 7, genital block of male, lateral view; 8, apex of stylus; 9, 10, penis (9, lateral view; 10, dorsal view).

2. Each of pygofer lobes with 2 processes. Greenish yellow; face with black speckled pattern; vertex anteriorly with black band. 4.1-4.4. – Prim. [p. 226] – In moist and swamping meadows and herbaceous swamps. June to mid-September. (Figs. 158: 1-3) ***L. intricatus*** Anufr.
- Each of pygofer lobes at apex with 1 process slanting downwards 3
3. Stylus apex slightly widened and sharply straightly or obliquely truncate 4
- Stylus apex bent, L-shaped. Lateral carinae of penis posteriorly coming abruptly to an end. Yellowish green; face with black speckled pattern; vertex with black band. 4-5.4. – Amur., Prim. Kazakhstan. – Mongolia, N Europe. – July to early August. (Figs. 159: 6-8) ***L. ochrifrons*** Vilb.
4. Styli obliquely truncate at apex. Penis with a pair of rather long, approximated, parallel teeth above gonopore. Oily yellow, with intense black pattern on head, scheme of pattern as in *L. ochrifrons*. 4.4-5.3. – Prim., S Kur. – In moist and swamping meadows and herbaceous swamps. Mid-July to mid-September. (Figs. 158: 4, 5) ***L. adipatus*** Em.

- Styli straightly truncate at apex. Penis with a pair of short teeth under gonopore, which are directed by their apices more or less laterad 5 [p. 227]
- 5. Lateral ridges of penis shaft gently tapering from apex to base, vanishing without a step, or step indistinct and insignificant. Processes of pygofer directed vertically downwards, comparatively wide. Genital plates widely rounded at apex. Similar to *L. ochrifrons*. 3.7-4.7. Prim., Kur.; E Kazakhstan. – In moist and swampy meadows and herbaceous swamps. Late July to August. (Figs. 158: 6-10).....
..... ***L. kuwayamai* Ish. (?*typhae* Vilb.)**

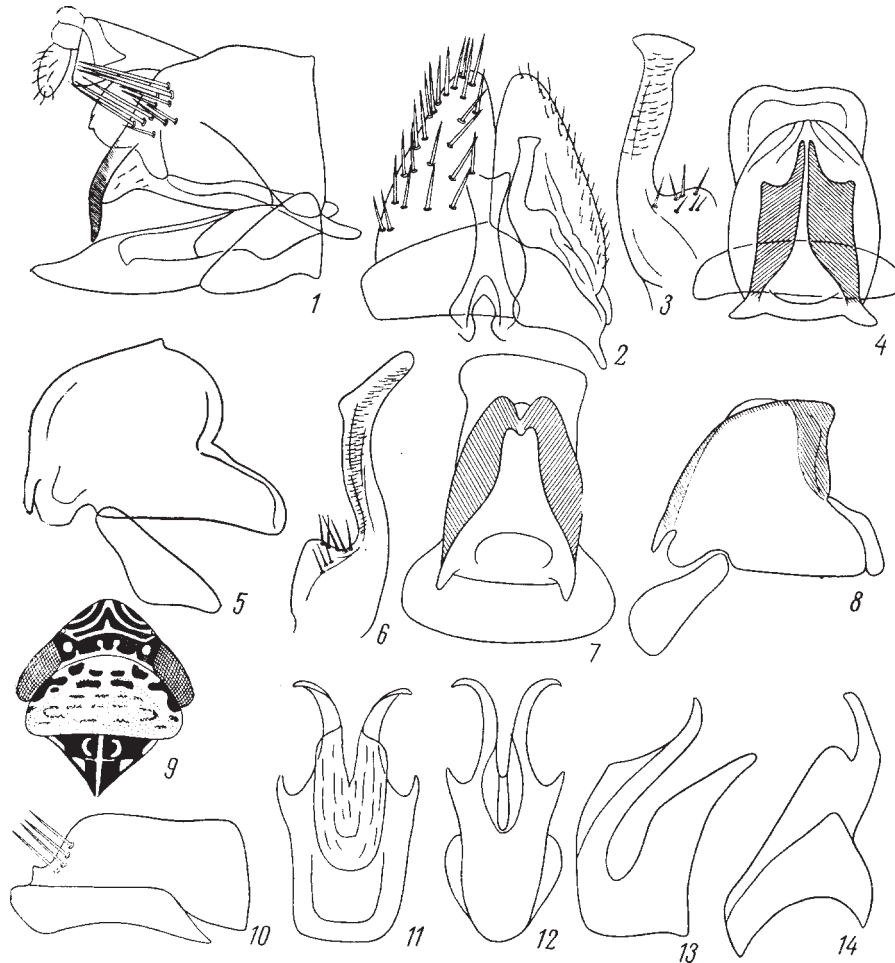


Fig. 159. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after LeQuesne, Ribaut, and Vilbaste).

1-5, *Limotettix striola*: 1, genital block of male, lateral view; 2, genital valve, genital plates, connective and stylus; 3, apex of stylus; 4, 5, penis (4, dorsal view; 5, lateral view); 6-8, *L. ochrifrons*: 6, apex of stylus; 7, 8, penis (7, dorsal view; 8, lateral view); 9-14, *Ophiola cornicula*: 9, anterior part of body; 10, pygofer, lateral view; 11-13, penis (11, 12, posterior view; 13, lateral view) 14, stylus.

- Lateral ridges of penis shaft from apex more or less parallel, then coming abruptly to end by a high step. Processes of pygofer inclined backwards and downwards, comparatively narrow. Genital plates triangular, with narrowly rounded apex. Similar to *L. ochrifrons*. 3.5-4.7. – Amur., Prim., Kur.; Siberia,

Kazakhstan, Middle Asia. – Japan, Korea, China, Mongolia, Near East, Europe, N Africa, N America. – In herbaceous swamps and wet meadows, on river banks. Late June to August. (Figs. 159: 1-5; 161: 1) **L. striola** Fall. [p. 228]

121. **Ophiola** Edw. Slender or moderately slender, with obtuse-angled rounded head projecting forwards. The turn of face into vertex rounded. Male. Lobes of pygofer with numerous bristles at posterior upper margin bearing a small projection. Genital plates rounded triangular, with numerous bristles arranged disorderly in lateral part of plates. Anal tube very short. Styli with distinct subapical angle and long apical part more or less pointed at apex. Connective Y-shaped, with long base and short branches. Penis in the shape of wide stripe flattened dorsoventrally and arcuate, with processes at apex; gonopore subapical; lamelliform appendage fused with upper margin of penis base is present. – 4 species (in USSR about 10).

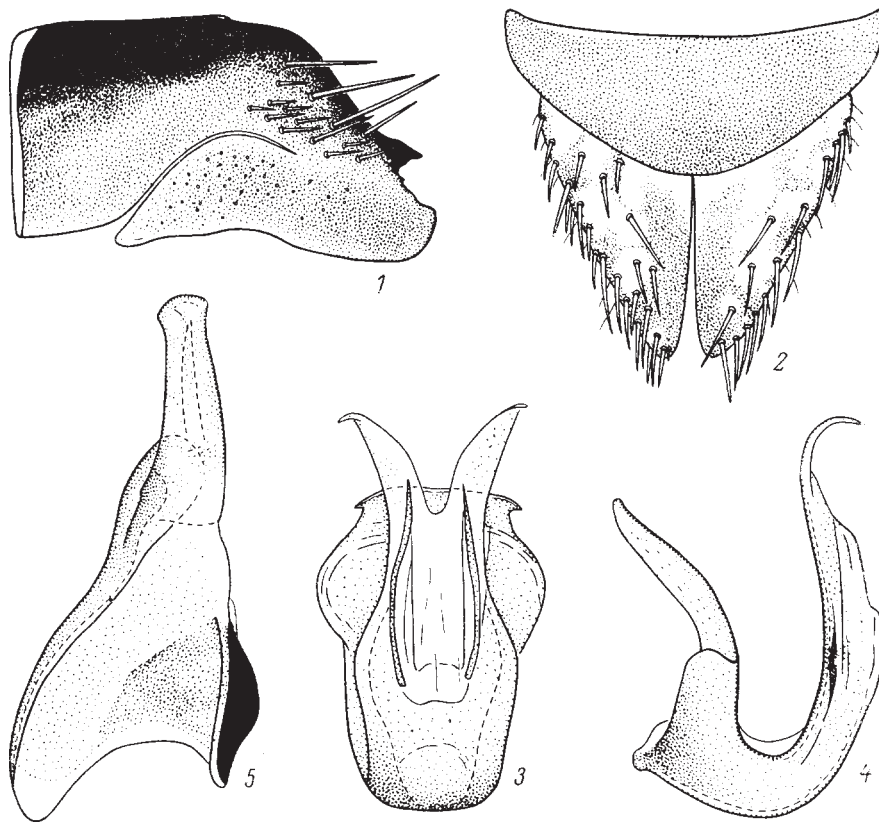


Fig. 160. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Ossiannilsson).

1-5, *Ophiola decumana*: 1, pygofer, lateral view; 2, genital valve and genital plates, ventral view; 3, 4, penis (3, lateral view; 4, posterior view); 5, stylus.

1. Sides of penis shaft with pointed teeth directed forwards. – Black or dark brown; head with pattern of light lines and specks; pronotum and scutellum variegate; fore wings with dark edged cells. 3.5-5. – Kamch., Prim., Sakh.; Transbaikal, Siberia, Kazakhstan, Middle Asia. – Japan, NE China, Turkey, Europe, N Africa, N America. – In meadows, glades, fields among ruderal plants. Late June to September. (Figs. 159: 9-14) **O. cornicula** Marshall
- Sides of penis shaft not as above 2
2. Sides of penis shaft without projections or with blunt projections 3

- Sides of penis shaft absolutely even. Upper projection of pygofer lobes [p. 229] with apex directed upwards. Apical processes of penis shaft strongly slanting outwards. Head, pronotum and scutellum speckled, dark brown or black with yellowish spots; fore wings greenish yellow, with distinct dark stripe along suture of clavus and posterior margin of membrane. 3.4-5. – Amur., Prim., Transbaikal, S Siberia. – Japan, Korea, Mongolia. – In glades, dry and steppized meadows, ruderal habitats with *Artemisia*. Early July to mid-September. (Figs. 161: 2; 162: 7-11) **O. jakowleffi** Leth.

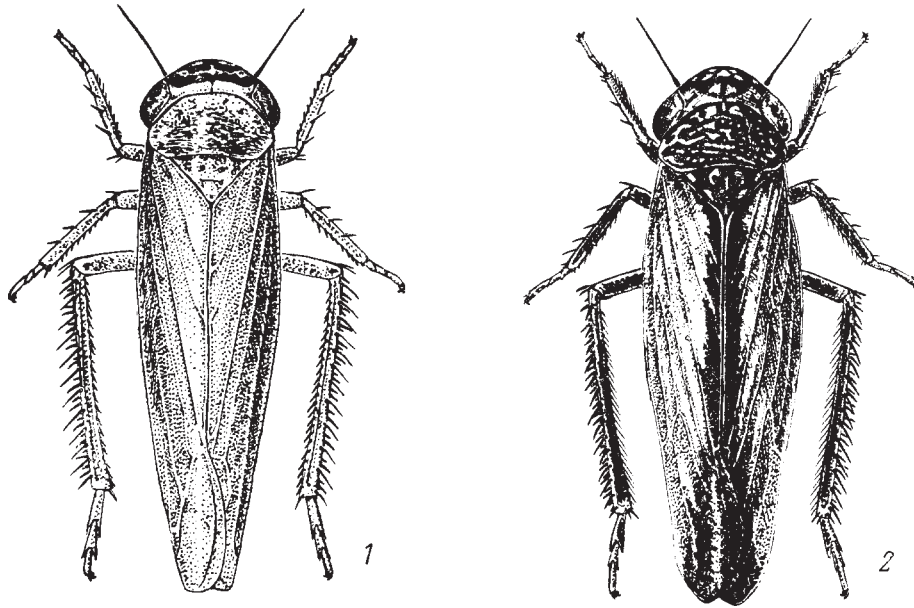


Fig. 161. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (original).

1, *Limotettix striola*; 2, *Ophiola jakowleffi*.

- 3. Upper projection of pygofer lobes pointed, directed backwards. Similar to *O. cornicula*. 3.4-4.8. – Kamch. – Europe. – In meadows with herbs. Late July to early August. (Figs. 160: 1-5) **O. decumana** Kontkanen
- Upper projection of pygofer lobes short, blunt. Similar to *O. decumana*. 2.7-4.5. – Kamch., Prim.; Siberia. – N and C Europe, N America. – In marshes and meadows, mainly swamping ones. Mid-July to late August. (Figs. 162: 1-6) **O. russeola** Fall.

122. **Watanabella** Vilb. Moderately slender, with obtuse-angled rounded, projecting head. The turn of face into vertex rounded. Male. Lobes of pygofer with a tooth on inner side near posterior margin. Genital plates closed, with convex outer margin and marginal row of bristles. Anal tube short. Styli with smoothed subapical angle and long, more or less straight, pointed at end apical part slightly extending beyond apex of genital plates. Connective Y-shaped; its base and branches of about equal length; branches arcuate. Penis with apical gonopore and 2 processes at apex; an appendage immovably fused with base is present. Monotypic genus.

- 1. Yellowish brown or orange brown. Vertex often with 2 specks at apex. Face yellow, with dark brown or black spots, dark transverse stripes on frontoclypeus and dark areas around antennae; in dark specimens, the middle of the lower half

of frontoclypeus and narrow strokes separating dark [p. 230] stripes from each other remain light. 4.3-4.6. – Prim., Sakh., S Kur. – Japan (Hokkaido). – In mountain meadows and glades. Late April to mid-September. (Figs. 162: 12-16)

..... **W. montivaga** Baker

123. **Elymana** DeL. Slender, with obtuse-angled rounded or rounded head projecting forwards. The turn of face into vertex rounded. Male. Lobes of pygofer with 1 or 2 processes (teeth) on dorsal margin and a few bristles at their base. Genital

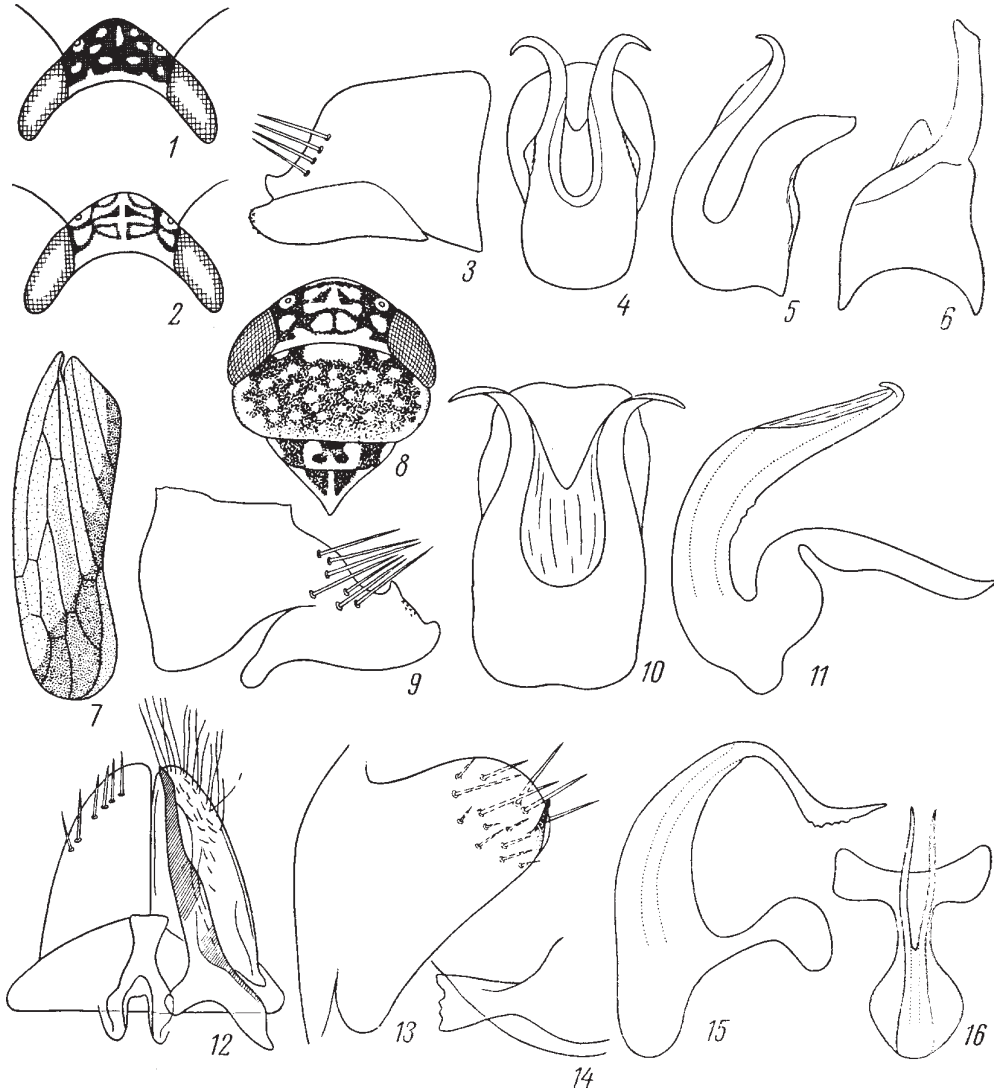


Fig. 162. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev, LeQuesne, and Vilbaste).

1-6, *Ophiola russeola*: 1, 2, head, dorsal view; 3, pygofer, lateral view; 4, 5, penis (4, posterior view; 5, lateral view); 6, stylus; 7-11, *O. jakowleffi*: 7, fore wing; 8, anterior part of body; 9, pygofer, lateral view; 10, 11, penis (10, posterior view; 11, lateral view); 12-16, *Watanabella montivaga*: 12, genital valve, genital plates, connective and stylus; 13, lobe of pygofer, internal view; 14, process of pygofer lobe; 15, 16, penis (15, lateral view; 16, posterior view).

valve comparatively short, about half as long as wide. Genital plates elongate triangular, with convex outer margin and marginal row of bristles. Anal tube long (at least twice as long as wide), without basal excision on dorsal surface. Styli with weakly expressed subapical angle and apical part truncate at end. Connective Y-shaped, with base usually slightly longer than branches; branches diverging. Penis arcuate, symmetrical, with 2 processes at apex; an appendage immovably fused with base is present. – 3 species (in USSR 5).

1. Lobes of pygofer with 1 tooth at apex 2
- Lobes of pygofer with 2 teeth, apical and dorsal. – Yellowish or pale green, with brownish black or reddish eyes. 5-5.5. – Prim., Sakh.; Siberia, Altai. – Mongolia, N and C Europe. – In forests in herb layer, in forest edges, glades, meadows. Mid-July to late August. (Figs. 163: 11-15) **E. kozhevnikovi** Zachv.
1. Dorsal margin of pygofer with small spinules before base of apical process; the process short, somewhat extending beyond apex of apical lobe. Yellowish green, with black spot under antennae lateral to frontoclypeus. 4.3-5.1. – Mag., Prim.; Transbaikal, S Siberia, Altai. – Japan, Korea, Mongolia. – In meadows, glades, forest edges, in forests in herb layer. Mid-July to August. (Figs. 163: 8-10) **E. emeljanovi** Dwor.
- Dorsal margin of pygofer without spinules, smooth; process of pygofer long, knife-shaped, extending far beyond apex of lobe. Yellowish or pale green, with brownish black or reddish eyes. 4.8 -5.3. – Prim. – Korea. – In herb layer of forests, forest edges and glades. Late June to mid-September. (Figs. 163: 1-7) **E. pallidipennis** Lindb.

124. **Paluda** DeL. Slender, with rounded triangular or rounded, projecting head. The turn of face into vertex rounded. Male. Lobes of pygofer with long, wide processes, apices of which are directed backwards and then slanting upwards; few bristles present at base of processes. Genital plates closed, with bristles arranged in a wide stripe along outer margin. Anal tube long (more than twice as long as wide), without basal excision on dorsal surface. Connective Y-shaped, with short base and short branches. Styli without subapical angle, with well developed apical part, which is blunt at apex. Penis with lateral lamellate widenings; gonopore apical. – 1 species (in USSR 3).

1. Light yellow or bright yellow. 4.4-5.2. – Kamch., Prim., S Kur. – On *Calamagrostis*. July to August. (Figs. 164: 1-5) **P. praecursor** Anufr.

125. **Rhopalopyx** Rib. Slender or moderately slender, with rounded obtuse-angled or even rectangular head projecting forwards. The turn of face into vertex rounded. Male. Lobes of pygofer with wide, well sclerotized processes directed obliquely downwards; numerous bristles present on processes, rather often reaching nearly to their apex. Genital plates elongate triangular, closed, with wide stripe of bristles along outer margin. Anal tube long (more than twice as long as wide), without [p. 231] basal excision on dorsal surface. Styli with smoothed subapical angle and apical part slanting outwards. Connective Y-shaped, with short base and branches. Penis symmetrical, with dorsal, subapical gonopore. – 2 species (in USSR 7).

1. Genital plates with denticle on upper side, not far from apex. Apex of pygofer lobe wedge-shaped, with straight lower margin. Anterior margin of vertex rounded or rounded obtuse-angled, weakly projecting forwards. Grayish; vertex with 4

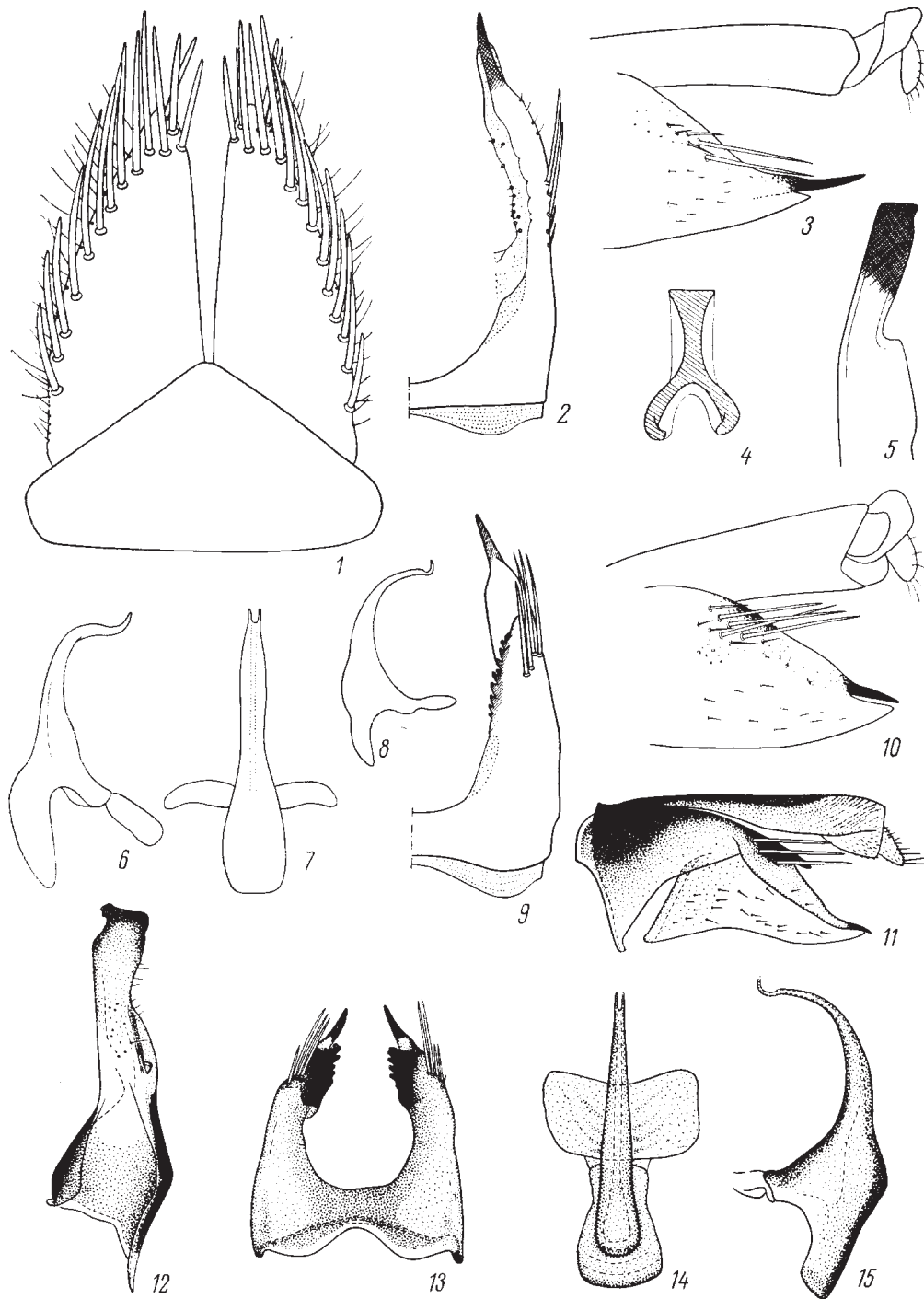


Fig. 163. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Dworakowska, Ossiannilsson, Vilbaste, and original).

1-7, *Elymana pallidipennis*: 1, genital valve and genital plates, ventral view; 2, pygofer, dorsal view, left half; 3, anal tube and lobe of pygofer, lateral view; 4, connective; 5, apex of stylus; 6, 7, penis (6, lateral view; 7, posterior view); 8-10, *E. emeljanovi*: 8, penis, lateral view; 9, pygofer, dorsal view, left half; 10, anal tube and lobe of pygofer, lateral view; 11-15, *E. kozhevnikovi*: 11, anal tube and pygofer, lateral view; 12, stylus; 13, pygofer, dorsal view; 14, 15, penis (14, posterior view; 15, lateral view).

large black spots: 2 lateral spots at ocelli, 1 spot at apex continued on frons and 1 spot at hind margin; 2 last spots often [p. 233] connected in the shape of dumb-bell. Two black spots on face under antennae, dim stripe on frontoclypeus continuing the apical spot and often speck on anteclypeus. Longitudinal black stripe on pronotum and scutellum; pronotum laterally with dim specks. Fore wings with dark stripe along suture and medial vein. 3.6-3.9. – S Khab.; Tuva, Altai, Kazakhstan. – N Mongolia, Europe. – In meadows. Early July to early August. (Figs. 165: 6-12) **Rh. preysleri** H.-S.

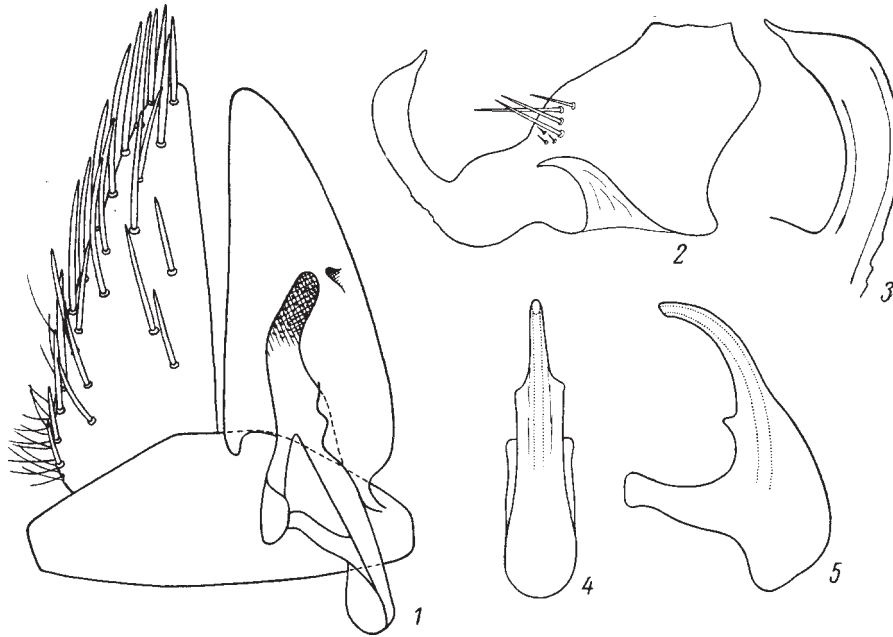


Fig. 164. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev and original).

1-5, *Paluda praecursor*: 1, genital valve, genital plates and stylus; 2, pygofer, lateral view; 3, process of pygofer lobe; 4, 5, penis (4, posterior view; 5, lateral view).

- Genital plates without denticle in apical part on upper side. Lower margin of pygofer lobes with excision before apex. Anterior margin of vertex approximately rectangular, projecting, its apex narrowly rounded. Slender, greenish gray, pale. 3-4.4. – Prim.; S Siberia, Altai, Kazakhstan. – Mongolia, C and S Europe, N Africa. – In dry glades and open woodlands with *Quercus mongolica* on grasses. Late July to late August. (Figs. 164: 1-5) **Rh. vitripennis** Fl.

126. **Cicadula** Zett. Slender, elongate, with arcuate or rounded triangular, projecting head. Male. Lobes of pygofer elongate, rather often with projections on dorsal margin and few bristles concentrated in basal part of upper margin of lobes. Anal tube long, with deep dorsal membranous excision from base. Genital plates not closed, each of their apices rounded separately; apices often marked by knob. Bristles arranged in one row, which is marginal in basal part, then steeply turns inwards across the plate in its middle part. Styli with smoothed subapical angle and apical part pointed at end. Connective Y-shaped, with long base and short branches. Penis symmetrical, with arcuate shaft often bearing apical or subapical processes. Gonopore apical or subapical, ventral. – 7 species (in USSR up to 15).

1. Lobes of pygofer with tooth-shaped projections. (Subgenus *Cicadula* Zett.) 2
- Lobes of pygofer without projections, sometimes with weak denticles. Penis shaft without processes. (Subgenus *Cyperana* DeL.) 5 [p. 234]

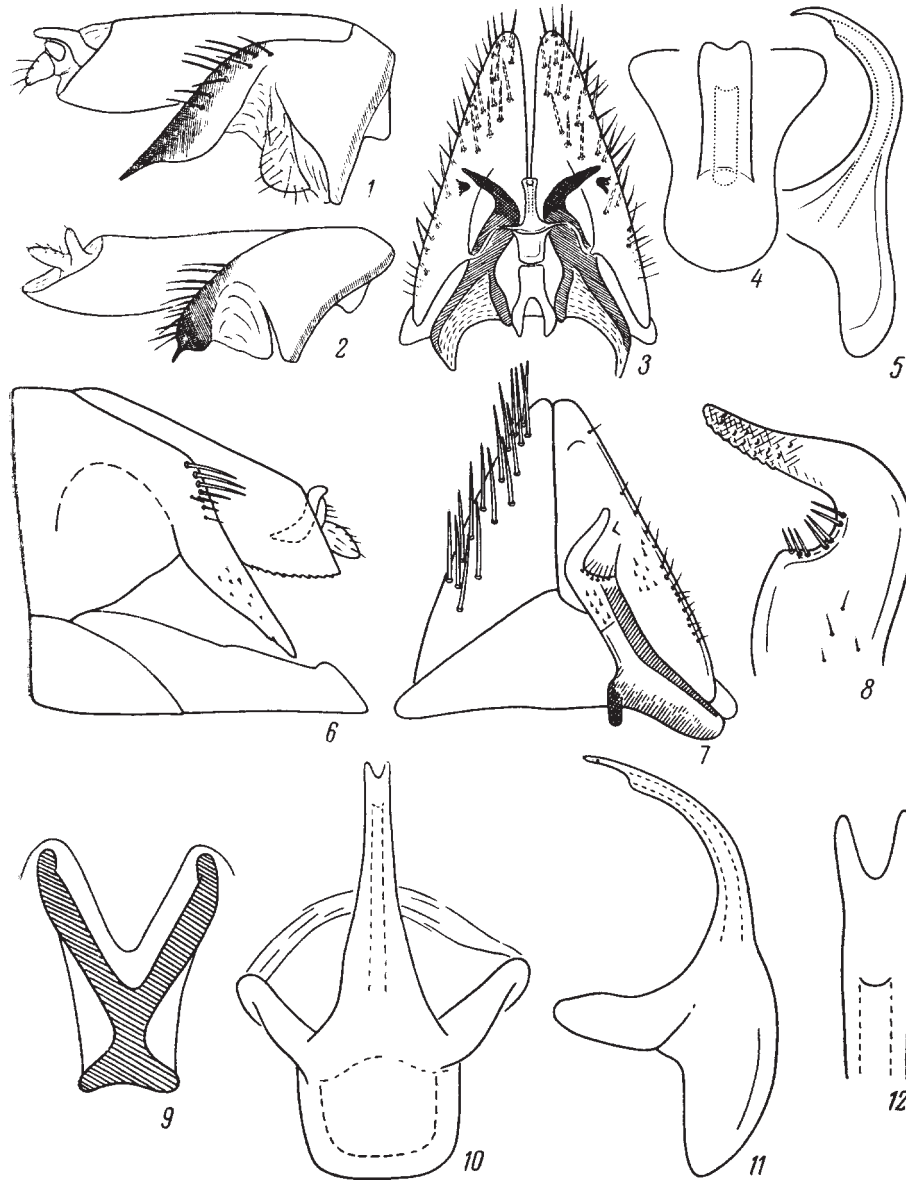


Fig. 165. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Ribaut and Vilbaste).

1-5, *Rhopalopyx vitripennis*: 1, 2, pygofer and anal tube, lateral view, variants of structure; 3, genital valve, genital plates, penis, connective and styli, dorsal view; 4, 5, penis (4, posterior view; 5, lateral view); 6-12, *Rh. preyssleri*: 6, genital block of male, lateral view; 7, genital valve, genital plates and stylus; 8, apex of stylus; 9, connective; 10, 11, penis (10, posterior view; 11, lateral view); 12, apex of penis, posterodorsal view.

2. Apex of penis with 4 simple processes. – Males orange yellow, females greenish yellow. Frontoclypeus with 2 longitudinal spots under antennae and 2 transverse spots at upper margin; vertex with 2 round spots lateral to ocelli. Pattern often

developed not completely or lacking. 4.7-5.5. – Prim., S Kur.; Altai, Kazakhstan. – Mongolia, Near East, Europe. – In swamping meadows, herbaceous swamps, forests. Late June to mid-September. (Figs. 166: 3-7) **C. flori** J. Sahlb.

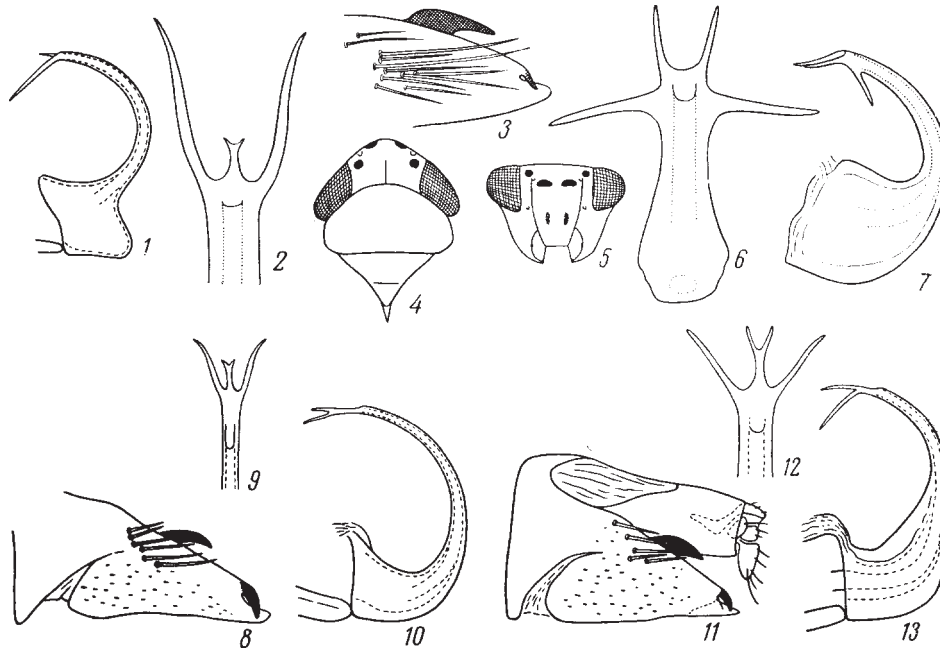


Fig. 166. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Ribaut).

1, 2, *Cicadula quadrinotata*: 1, penis, lateral view; 2, apex of penis, dorsal view; 3-7, *C. flori*: 3, apex of pygofer lobe, lateral view; 4, anterior part of body, dorsal view; 5, face, anterior view; 6, 7, penis (6, dorsal view; 7, lateral view); 8-10, *C. quinquenotata*: 8, apex of pygofer lobe, lateral view; 9, 10, penis (9, dorsal view; 10, lateral view); 11-13, *C. persimilis*: 11, 12, penis (11, dorsal view; 12, lateral view); 13, apex of penis, anterior view.

- Apex of penis with 3 projections, the middle projection bifurcate 3
- 3. Base of penis near connective cone-like swollen. The middle process at penis apex much shorter than lateral ones. – Greenish yellow, [p. 235] vertex with black spots lateral to ocelli; frontoclypeus with 2 transverse black spots in upper part, with dark spots at base of antennae and often with dark spots under antennae. 3.9-5.2. – Mag., Kamch., N Khab., Prim., Sakh., Kur.; Transbaikal, Siberia, Kazakhstan, Middle Asia, Caucasus. – Japan, Korea, NE China, Europe, N Africa. – In swamping meadows, herbaceous swamps, forests. Late June to late September. (Figs. 166: 1, 2) **C. quadrinotata** F.
- Base of penis not swollen ventrally, gradually turning into shaft. The middle processes at penis apex at least half as long as lateral ones 4
- 4. Penis evenly arcuate, with weakly thickened base. Lateral processes at penis apex situated on one line with penis apex (in lateral view). Apical process on pygofer lobes nearly as large as basal process. Yellow; frontoclypeus with 2 elongate spots under antennae and 2 transverse spots at upper margin; vertex with 2 round spots lateral to ocelli. 4.5-5.5. – Khab.; C Yakutia, Transbaikal, Tuva, Khakasia, Altai, N European part of USSR. – N Mongolia, Europe, Alaska, Canada, USA. – In swamping meadows, herbaceous swamps, forests. August. (Figs. 166: 8-10) **C. quinquenotata** Boh.

- Penis shaft bent somewhat at an angle, strongly widened at base. Lateral processes at shaft apex situated at an angle to it (in lateral view). Apical process on pygofer lobes much smaller than basal process. Similar to *C. quinquenotata*. 4.5-5.5. – S Mag., Kazakhstan. – Europe, N America. – In swamping meadows, herbaceous swamps, forests. August. (Figs. 166: 11-13) ***C. persimilis* Edw.**

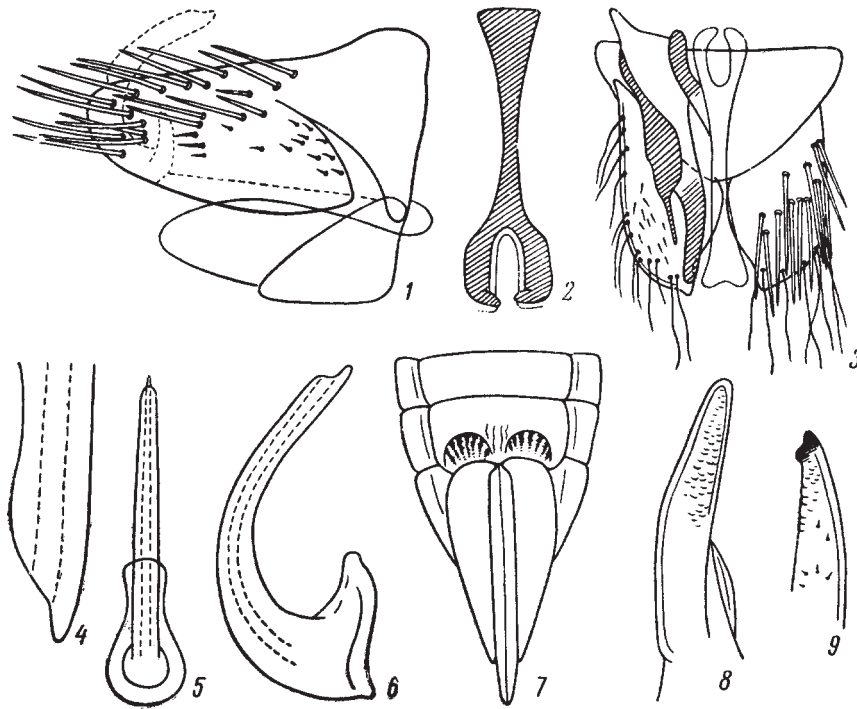


Fig. 167. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Vilbaste).

1-9, *Cicadulina ciliata*: 1, genital block of male, lateral view; 2, connective; 3, genital valve, genital plates, connective and stylus; 4, apex of penis, lateral view; 5, 6, penis (5, posterior view; 6, lateral view); 7, apex of female abdomen, ventral view; 8, 9, apex of stylus (8, dorsal view; 9, lateral view).

5. Lobes of pygofer without dorsal projection, even, weakly convex. Styli with thin apices, without distinct lateral tooth. Subgenital plates in female with gentle projection in the middle 6 [p. 236]
- Lobes of pygofer with dorsal projection at apex. Styli with wide, obliquely truncate apex. Subgenital plate in female without projection in the middle. – Yellow or orange yellow; upper margin of face with transverse black spots: 2 spots on frontoclypeus and 2 on temples. 5-6.8. – Mag., Kamch., Amur., S Kur.; Siberia, N European part of USSR, Baltia. – Mongolia, Fennoscandia, N America. – Sedge marshes and swamping meadows. August to early September. (Figs. 168: 7-11) ***C. (C.) ornata* Mel.**
6. Upper part of penis base strongly projecting; deep excision present between base and shaft (in lateral view). Inner thickening of upper margin of pygofer lobes shorter and wider. Subgenital plates with 2 separated lateral rugose areas. Similar to *C. ornata*, but green without distinct yellow tint; in addition, face often with darkened, brown frontoclypeus and sutures, and 3 dark spots appearing on vertex. 4.8-5.5. – Mag., Kamch.; Siberia, Tuva. – N America. – Sedge marshes. August. (Figs. 167: 1-9) ***C. (C.) ciliata* Osborn**

- Upper part of penis base hardly projecting, only shallow excision present between base and shaft. Inner thickening of upper margin of pygofer lobes longer and narrower. Similar to *C. ornata*. 4-5.8. – Mag., Kamch., N Khab.; Altai, N European part of USSR, Baltia. – Mongolia, N Europe, N America. Sedge marshes. Early August to mid-September. (Figs. 168: 1-6) **C. (C.) *intermedia* Boh.**

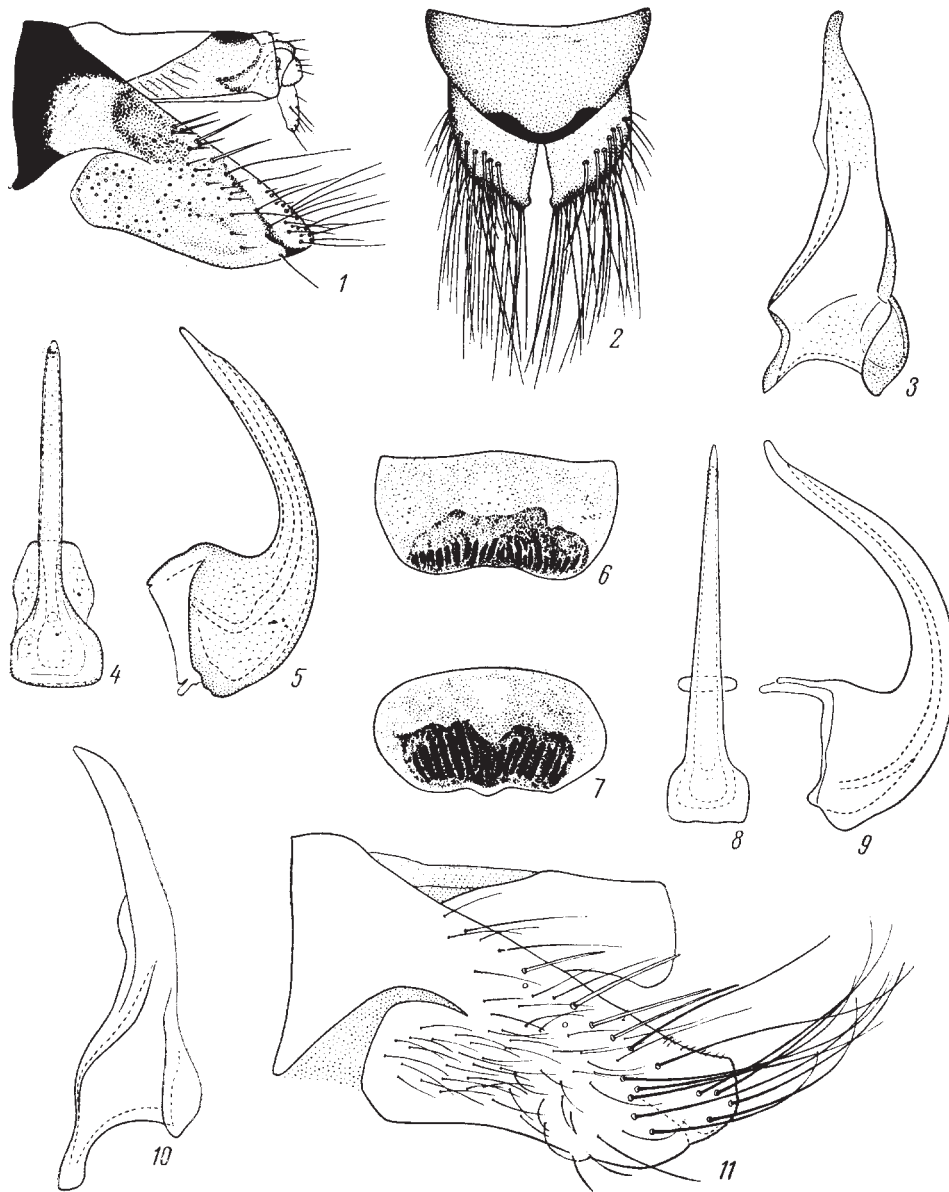


Fig. 168. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Ossiannilsson and original).

1-6, *Cicadula intermedia*: 1, pygofer and anal tube, lateral view; 2, genital valve and genital plates, ventral view; 3, stylus; 4, 5, penis (4, posterior view; 5, lateral view); 6, subgenital plate of female; 7-11, *C. ornata*: 7, subgenital plate of female; 8, 9, penis (8, posterior view; 9, lateral view); 10, stylus; 11, lobe of pygofer, lateral view.

127. **Taurotettix** Hpt. Sender, with rounded triangular head projecting forward. Vertex distinctly flattened. Male. Lobes of pygofer elongate, with few bristles under base of anal tube. Genital plates with convex outer margin and distinct apical angle. Bristles on genital plates arranged in one row passing across plate in its middle part; outer end [p. 237] of the bristle row often turning to base and becoming a sub-

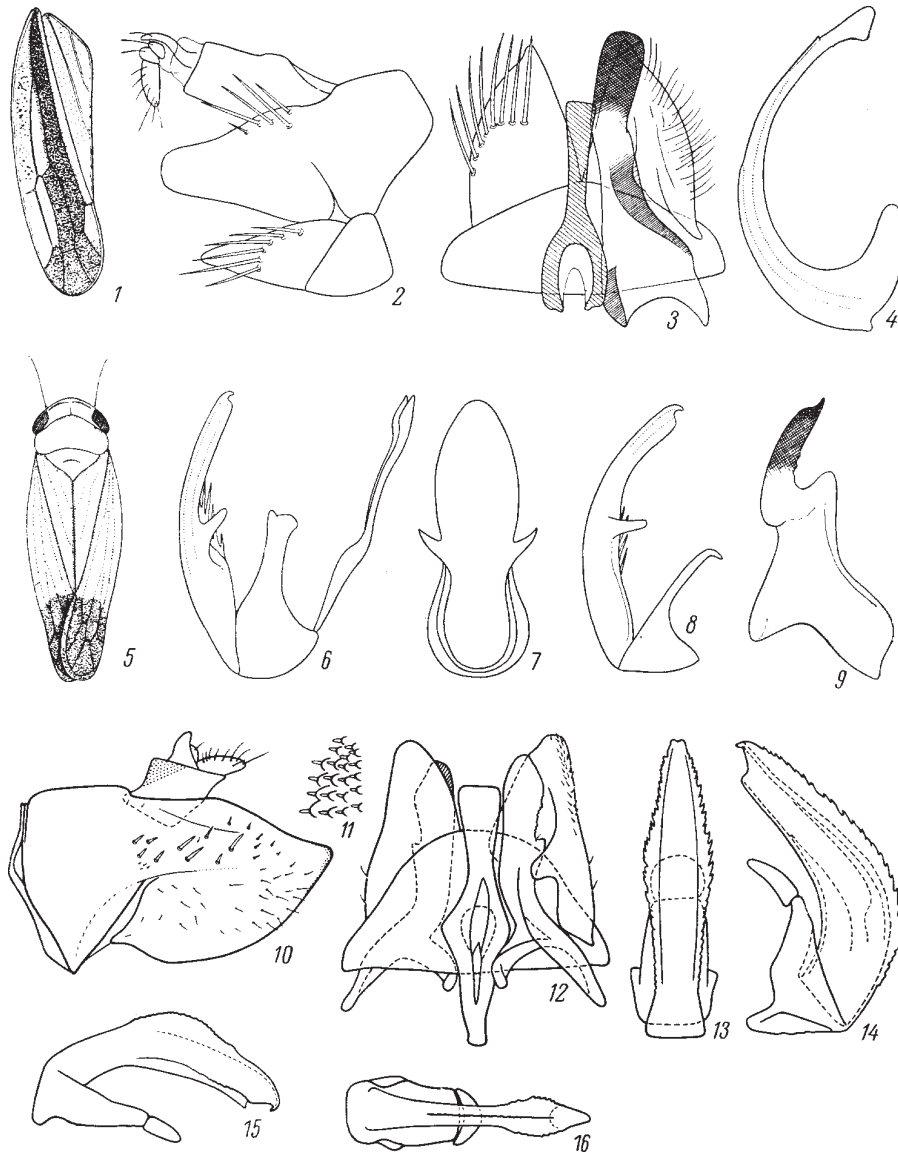


Fig. 169. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev, Emeljanov, and original).

1-4, *Taurotettix elagans*: 1, fore wing; 2, genital block of male, lateral view; 3, genital valve, genital plates, connective and stylus; 4, penis, lateral view; 5-9, *Nephrotettix cincticeps*: 5, general appearance; 6, penis and connective, lateral view; 7, 8, penis (7, posterior view; 8, lateral view); 9, stylus; 10-14, *Athysanella magadana*: 10, pygofer and anal tube, lateral view; 11, sculpture on lower surface of genital plate (arrangement as on the left genital plate, fig. 12); 12, genital valve, genital plates, connective and stylus; 13, 14, penis (13, posterior view; 14, lateral view); 15, 16, *A. profuga*, penis (15, lateral view; 16, posterior view).

marginal row. Anal tube rather long, with deep basal excision in dorsal sclerotization. Styli with smoothed subapical angle and robust apical part usually slightly projecting beyond margin of genital plates. Connective Y-shaped, with long base and short branches. Penis symmetrical, arcuate, sometimes with short processes near apex. Gonopore ventral, situated near shaft apex. – 1 species (in USSR 4).

1. Yellowish green, with black longitudinal stripe from base to apex of each wing along its midline. 5-6. – Amur., Prim.; Transbaikal, [p. 238] S Siberia, Tuva, Altai. – Korea, China (Ordos), Mongolia. – Meadows with *Elytrigia*, *Leymus* and related grasses. Late July to mid-September. (Figs. 169: 1-4) **T. elegans** Mel.

128. **Nephotettix** Mats. Moderately slender, slightly flattened dorsoventrally, with wide, weakly arcuate, projecting head. Vertex transverse, its turn into face more or less sharp or not sharp, but steeply rounded; weak transverse depression present along anterior margin of vertex. Male. Lobes of pygofer elongate, [p. 239] widely rounded at apex, with several very large bristles near posterior margin. Anal tube long, with sclerotized sides and not sclerotized dorsal wall. Genital plates triangular, narrowly rounded at apex, with marginal row of bristles. Styli with large subapical angle and parallel-sided apical part, which is often obliquely truncate at apex. Connective Y-shaped, with long base and long, nearly parallel branches. Penis shaft articulated movably with base, in the middle with lateral lobes directed transversally; dorsal side of shaft with spines. In USSR 1 species.

1. Light green, male with fore wings black in apical third, face blackened to various extent and sometimes also with black narrow band in anterior part of vertex along depression. 4-5.5. – S Prim. – Japan (Honshu, Kyushu, Shikoku and Ryukyu), Korea, E China. – In swamping meadows, rare in Prim. An important pest of rice in China and Japan, transmitting the virus of the usual and yellow dwarfness of rice. Late August. (Figs. 169: 5-9) **N. cincticeps** Uhl.

129. **Aconurella** Rib. Moderately sturdy, terete. Vertex projecting forward, rounded triangular, its turn into face smooth. Male. Pygofer with more or less denticulate processes on posterior margin; dorsal margin often spinulate. Genital plates with concave lateral margin and attenuate apices; few bristles in marginal row. Connective with long base and long branches; apices of branches approximated. Styli with well expressed subapical angle and rather short apical part, which is more or less parallel to their posterior margin. Penis shaft articulated movably with base. – 2 species (in USSR up to 10).

1. Posterior margin of pygofer lobes with 2 rows of 3-4 long processes; the middle part of processes more or less cylindrical, not narrowing distally. Fore wings of brachypters in male reaching apex of abdomen, in female reaching tergites VII-VIII. Integument glossy, greenish, with dark brown to black pattern. Males pigmented stronger than females. Postclypeus with transverse dark stripes fusing in upper part into stripe or completely darkened. Vertex with black small spot on anterior margin and often also with 2 lateral spots fusing with darkening of clypeus; the middle part of vertex often dimly darkened. Pronotum, scutellum and veins on fore wings may be darkened (more often in males). Subgenital sternite in female more or less straight posteriorly. 1.7-3. – Transbaikal, Tuva, Altai, E Kazakhstan. – Mongolia. – In steppes, on *Cleistogenes squarrosa*. Mid-June to early September. (Figs. 171: 10-15) **A. diplachnis** Em.

- Posterior margin of pygofer lobes with 2 rows of conical, relatively short teeth 2
- 2. Lobes of pygofer in upper half light, weakly sclerotized, often with small dark denticles or bristles on margin 3
- Lobes of pygofer distinctly darkened in upper and lower third, the middle part remains light, and darker stripe may be noticeable on it. – Fore wings of brachypters more or less rounded at apex, reaching abdominal tergites VII-VIII. Integument dull, rather coarse. Greenish yellowish, often with dark brown pattern. Face with dark spots. Postclypeus often with transverse stripes. The turn of face into vertex always remains light. Vertex with dark spot not fused anteriorly with darkening of face or vertex with cruciate pattern or whole vertex blackened. Fore wings often with darkened longitudinal veins; abdomen with dark spots. Males may be nearly entirely black, except costal margins of fore wings and boundary between face and vertex. 2.1-3.9. – NE Yakutia, Transbaikal, Irkutsk Prov., Tuva, Altai, E Kazakhstan. – Mongolia. – In xerophytic grass meadows, mostly in mountains. Mid-June to late July. (Figs. 171: 7-9) **A. sibirica** Leth. [p. 240]
- 3. Brachypterous; fore wings covering abdominal tergites III-IV. Lobes of male pygofer black, with wide light edging on dorsal margin, often with narrow light longitudinal spot at boundary between dark and light parts of lobes; dorsal margin of lobes only weakly denticulate. Gray, in live specimens opalescent green. Vertex light, with 3 small spots on anterior margin continuing from black frontoclypeus. Abdomen yellowish, with dark small spots at bases of tergites. 2.3-3.4. Prim. – In meadows, on grasses. Late May to early September. (Figs. 171: 1-3) **A. ussurica** Anufr. [p. 241]
- Macropterous; fore wings covering whole or nearly whole abdomen. Lobes of male pygofer dark, with wide, oval, light spot in the middle; their dorsal margin dark due to numerous, dense black denticles. Coloration as in *A. ussurica*. 2.2-3.5. – Prim. – Korea. – In xerophytic meadows. Late June to August. (Figs. 171: 4-6) **A. koreana** Mats.

130. **Doratura** J. Sahlb. Moderately slender, slightly flattened dorsoventrally, usually brachypterous. Vertex flattened, rounded or rounded obtuse-angled projecting forwards. The turn of face into vertex sharp, carinate. Male. Pygofer rather short, with few bristles in posterior half. Genital plates usually very slightly shorter than pygofer, with a few small bristles. Connective long, bifurcate, with parallel branches; base and branches of about equal length. Styli with thick subapical projection and long crescent-shaped apical part sometimes bearing lateral tooth. Penis shaft articulated movably with base; ventral surface of shaft smooth or with teeth. – 3 species (in USSR 16).

1. Ventral surface of penis shaft with strong teeth. Subgenital plate in female lobe-shaped. – Light gray. Head with 2 dark bands in upper part and dark spots in lower part; anterior margin of head blackened in the middle part. Vertex with 3 dark spots on anterior margin and varying darkening posteriorly, which is present also on pronotum and scutellum; longitudinal indistinct stripe passing often from vertex to scutellum. Fore wings often with dark longitudinal stripes. More or less distinct longitudinal stripes and spots may be present on abdomen. Pattern often hardly developed. 3.2-4.8. – S Prim.; C Yakutia, Tuva, Altai, W Siberia, Kazakhstan, Middle Asia (in mountains), Transcaucasia, European part of USSR. – Mongolia, Near East, Europe, N Africa. – Dry and steppized meadows with predominance of grasses. June to August. (Figs. 170: 16-21) **D. homophyla** Fl.

- Ventral surface of penis shaft smooth or with small, hardly distinguishable papillae. Subgenital plate in female transverse, with more or less straight posterior margin 2

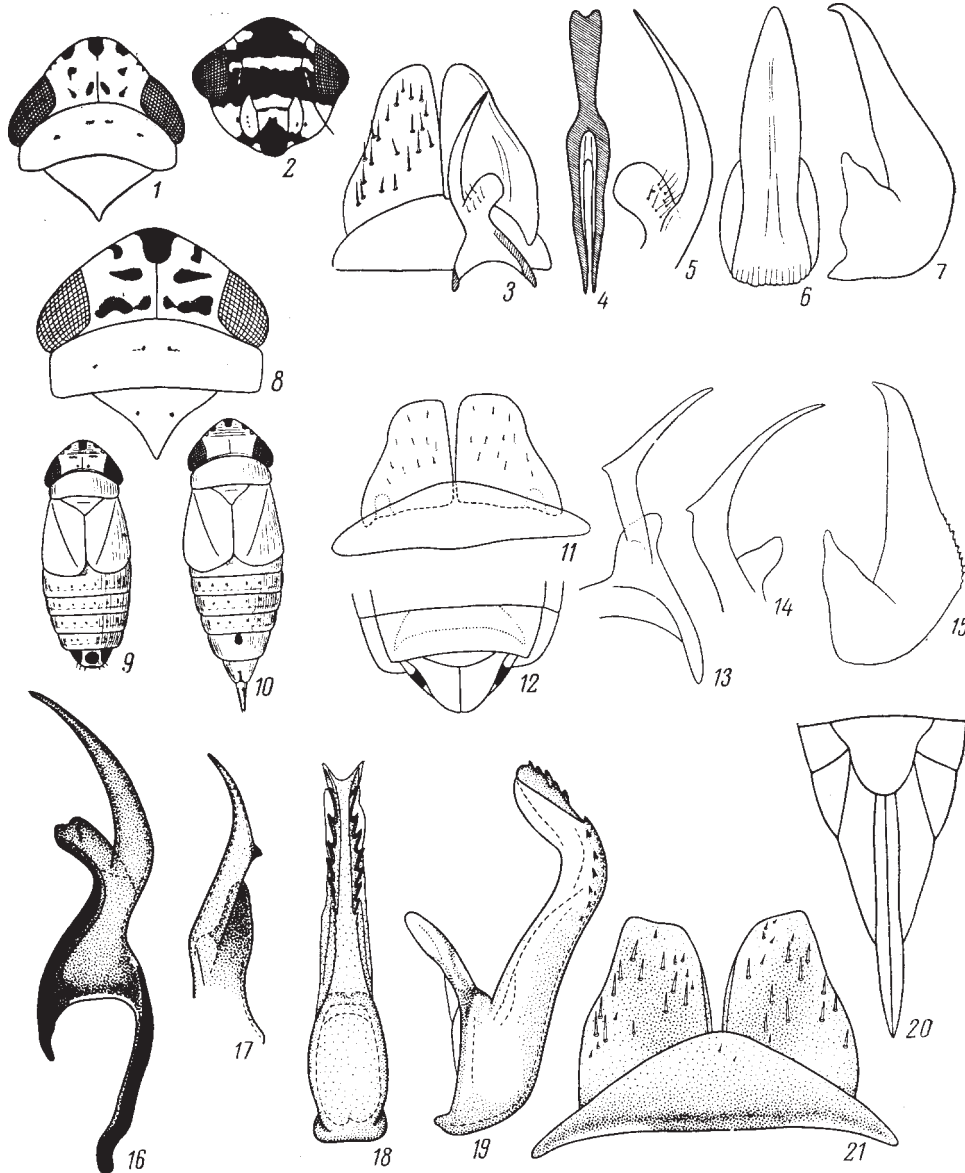


Fig. 170. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Dworakowska, Ossiannilsson, Ribaut, and Vilbaste).

1-7, *Doratura gravis*: 1, anterior part of body; 2, face; 3, genital valve, genital plates and stylus; 4, connective; 5, apex of stylus; 6, 7, penis (6, posterior view; 7, lateral view); 8-15, *D. stylata*: 8, anterior part of body; 9, male; 10, female; 11, genital valve and genital plates, ventral view; 12, apex of male abdomen, ventral view; 13, stylus; 14, apex of stylus; 15, penis, lateral view; 16-21, *D. homophyla*: 16, stylus, dorsal view; 17, apex of stylus, lateral view; 18, 19, penis (18, posterior view; 19, lateral view); 20, genital plates and genital valve, ventral view; 21, apex of female abdomen, ventral view.

2. Lobes of pygofer posteriorly angular, projecting. Penis with smooth ventral surface. The tooth on lower surface of apical part of stylus not noticeable from above. Subgenital sternite in female with more or less deep excision in the middle. Yellow-

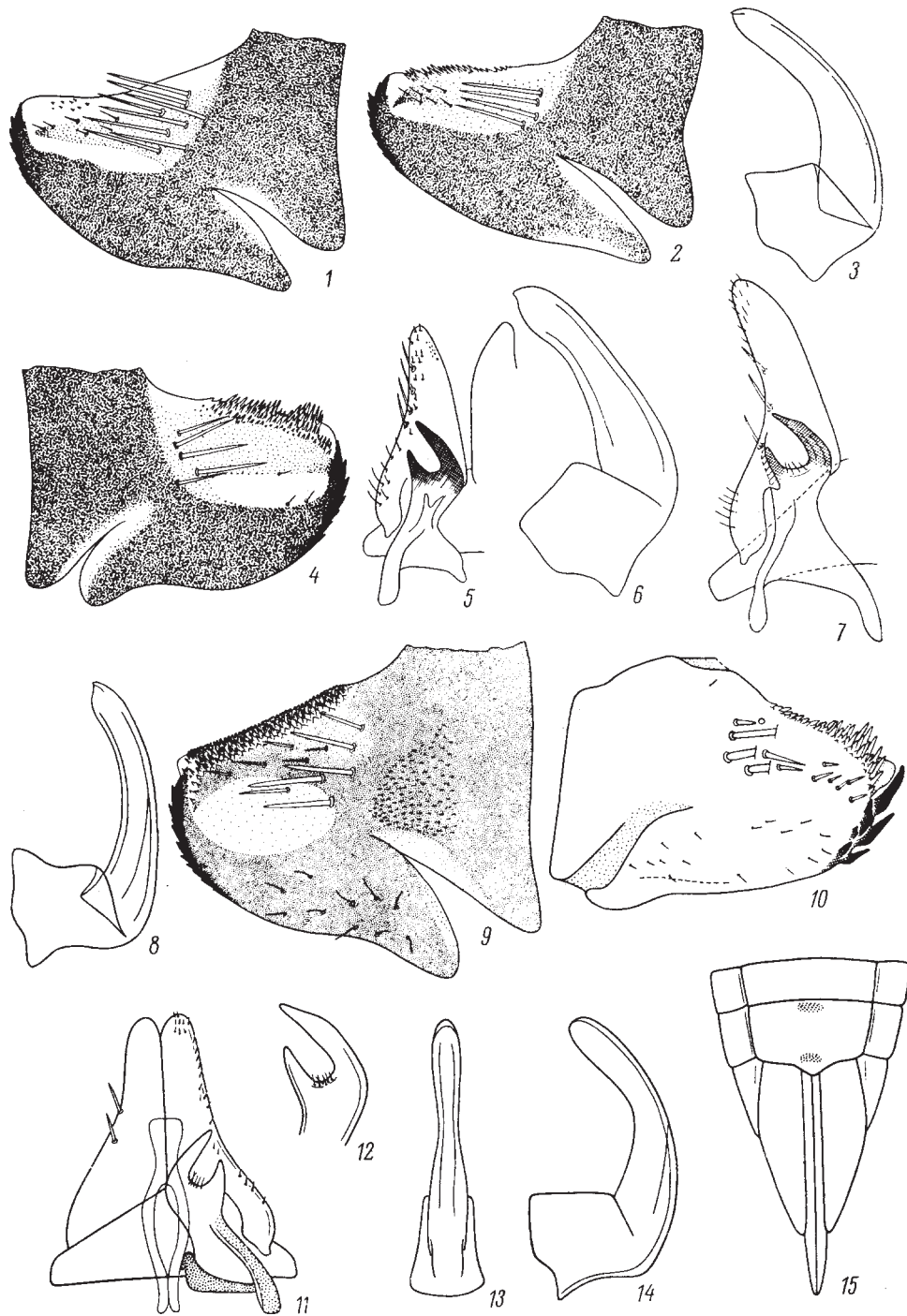


Fig. 171. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev, Vilbaste, and original).

1-3, *Aconurella ussurica*: 1, 2, pygofer, lateral view, variants of structure; 3, penis, lateral view; 4-6, *A. koreana*: 4, pygofer, lateral view; 5, genital valve, genital plate and stylus, dorsal view; 6, penis, lateral view; 7-9, *A. sibirica*: 7, genital valve, genital plate and stylus, internal view; 8, penis, lateral view; 9, lobe of pygofer; 10-15, *A. diplachnis*: 10, pygofer, posterolateral view; 11, genital valve, genital plates, connective and stylus; 12, apex of stylus; 13, 14, penis (13, posterior view; 14, lateral view); 15, apex of female abdomen, ventral view.

- ish brown, with bronze tint; live specimens opalescent green. 3.2-5.5. – Prim.; Transbaikal. – Korea, NE China, Mongolia. On grasses in meadows, mainly steppized meadows. July to mid-September. (Figs. 170: 1-7) **D. gravis** Em.
- Lobes of pygofer widely rounded posteriorly. Penis with small papillae on ventral surface (see under microscope). The tooth on inner surface of apical part of stylus well noticeable from above. Subgenital sternite in female with more or less straight posterior margin. Gray; live specimens sometimes weakly opalescent. Face with black uneven spots and bands; vertex with black small spots on anterior margin. 3.5-4.3. – Prim.; Altai, Kazakhstan, Middle Asia. – Mongolia, Europe, N Africa, introduced to N America. – In xerophytic meadows on grasses. July to mid-September. (Figs. 170: 8-15) **D. stylata** Boh.

131. **Athysanella** Baker. Moderately sturdy, spindle-shaped, usually brachypterous. Head somewhat swollen, projecting forwards, widely rounded, obtuse-angled. Male. Pygofer without bristles, with deep dorsal excision and wedge-shaped smooth lobes narrowly rounded at apices, sometimes with lobes rounded or stretched into process. Anal tube short, not reaching to apices of pygofer lobes, its dorsal wall membranous. Genital valve large, with parabolic hind margin. Genital plates without bristles, mostly diverging, often with straightly or obliquely truncate apices. Styli with thickened apex rounded or bifurcate, often protruding beyond margin of genital plates. Penis with distinct articulation between aedeagus and phallobase; aedeagus ventrally often with 2 longitudinal [p. 243] rows of denticles. Gonopore subapical, dorsal. – 2 species (in Palaearctic 4, in Nearctic more than 80).

1. Ventral surface of penis with one row of denticles. Dark, grayish brown, with indistinct, nearly black pattern. Postclypeus with striate pattern; the turn of face into vertex often with irregular black spots. Hemelytra with lighter longitudinal veins and cells with dark edging. Abdomen nearly black, often with dim brown spots. Male 3-3.7, female 4.3-4.5. – Chuk. (Wrangel Island). – Tundra with spotty herb and grass vegetation. June. (Figs. 169: 15-16). Holotype – male, Wrangel Island, Somnitelnaya Bay, slope of southern exposition, 6-15.VI.1986 (O. Khruleva); paratypes – 12 males, 3 females with identical label. Holotype kept in Zoological Museum of Moscow State University, part of paratypes in Zoological Institute, Academy of Sciences of USSR (Leningrad), part of paratypes in Gorky State University **A. profuga** Anufr. et Em., sp. n.
- Ventral surface of penis with 2 rows of denticles. Dark, reddish brown, with indistinct, nearly black pattern as in *A. profuga* sp. n., but usually with rounded distinct spots on the turn of face into vertex. Male 3.1, female 4-4.2. – Mag. – Lichen alpine tundra. Late June. (Figs. 169: 10-14) **A. magadana** Em.

132. **Ctenurella** Vilb. Moderately slender, with slightly projecting forwards, more or less rounded head. Vertex transverse, the turn of face into vertex rounded. Interclypeal suture hardly expressed. Male. Pygofer elongate; posterior lower angle of lobes denticulate, comb-like; numerous bristles are situated on dorsal half of lobes. Genital plates elongate and triangular, with convex outer margin and marginal bristles. Styli with short base, small subapical angle and long apical part obliquely truncate at end. Connective elongate; its base and branches of about equal length; branches parallel. Penis fused with connective; penis shaft tubular, undulated in sagittal plane. Monotypic genus.

1. Whitish ochraceous-yellow, with wide brown band on vertex between eyes and indistinct yellowish longitudinal stripes on pronotum. Wing cells with narrow

brown edging. 5.6-6.8. – S Prim., S Kur. – Japan. – In meadows with *Miscanthus*. Early August to mid-September. (Figs. 172: 1-6) **C. paludosa** Vilb.

133. **Recilia** Edw. Moderately slender, with rounded triangular, rather narrow vertex projecting forwards. The turn of face into vertex rounded. Male. Genital plates rounded triangular or rounded; bristles arranged in marginal row. Genital valve transverse, with weakly convex posterior margin. Pygofer with disorderly bristles in apical half. Styli with well expressed subapical angles. Connective fused with penis; branches of connective parallel, with apices fused together. Penis of simple shape, nearly straight or arcuate, often flattened dorsoventrally. Gonopore dorsal or dorsal subapical. – Not less than 4 species (in USSR not less than 7).

1. Penis shaft more or less cylindrical, strongly arcuate. Gonopore dorsal, subapical, its ventral margin with narrow process. Brownish, with dim brown speckled pattern. Face with dark brown pattern. Four dark brown small spots on the turn of face into vertex; spots are separated by light interspaces and stalks and connected with dark brown pattern of face. 3.1-3.8. – Prim., S Kur.; Altai. – Japan, Mongolia, Caucasus, Asia Minor, C and S Europe, Africa. – In meadows and glades, herbaceous [p. 244] swamps, on riverside vegetation. Mid-July to mid-September. (Figs. 172: 7-11) **R. coronifer** Marshall
- Penis shaft distinctly flattened dorsoventrally, more or less straight. Gonopore dorsal; penis shaft tapering lancet-like to pointed apex 2
2. Penis shaft wider; its widened subbasal part only 1.3 times as wide as shaft in the middle part. Apices of styli straight (viewed from above), bearing ventrally (in lateral view) subapical and middle teeth. Genital plates nearly rounded jointly. Contrasting variegate: dark brown, brownish, [p. 245] with light, nearly white spots. Face with intense dark brown pattern. Five light small spots on the turn of face into vertex, one more small spot beyond the middle; vertex with variegate pattern of light and dark small spots on brown background. Pronotum nearly entirely brown, with light small spots only on anterior margin. Scutellum more or less entirely light. Fore wings dark brown, with thin light veins and light large spots on clavus, basal part of corium and membrane. 3.8-4.8. – S Kur. – Mid-August. (Figs. 172: 12-15) **R. variegata** Anufr.
- Penis shaft narrower, its widened subbasal part twice as wide as shaft in the middle part. Apex of styli slightly undulated (viewed from above), bearing only middle tooth ventrally. Genital plates jointly rounded triangular. [p. 246] Brownish, with rather dim brown pattern barely noticeable on vertex, pronotum and scutellum. Fore wings with light veins and cells with brownish edging. Light small spots with brown edging on the turn of face into vertex often fused in continuous band. 2.8-3.7. – Prim., S Kur. – Japan, Korea. – In meadows and herbaceous swamps. Late July to early September. (Figs. 172: 16-19) **R. latifrons** Mel.

134. **Alobaldia** Em. Moderately slender, with rounded triangular vertex projecting forwards. The turn of face into vertex rounded. Male. Pygofer elongate, with disorderly bristles in apical half of lobes. Genital valve rather narrow. Genital plates triangular, with marginal row of bristles. Styli with well expressed subapical angle and small apical part. Connective fused with penis; its branches parallel, nearly contiguous. Penis straight, tubular, with 2 lateral processes following shaft; gonopore subapical. Monotypic genus.

1. Greenish yellow, pale or brown, with 2 rows of dark brown or black spots on vertex, hind spots often fusing in pairs and forming a band interrupted in the middle. Face with brown pattern. 3.2-3.6. – Prim. – Japan, Korea, NE, E and CS China. – In meadows, glades, forest edges. May to September. (Figs. 173: 1-5)..
 **A. tobae** Mats.

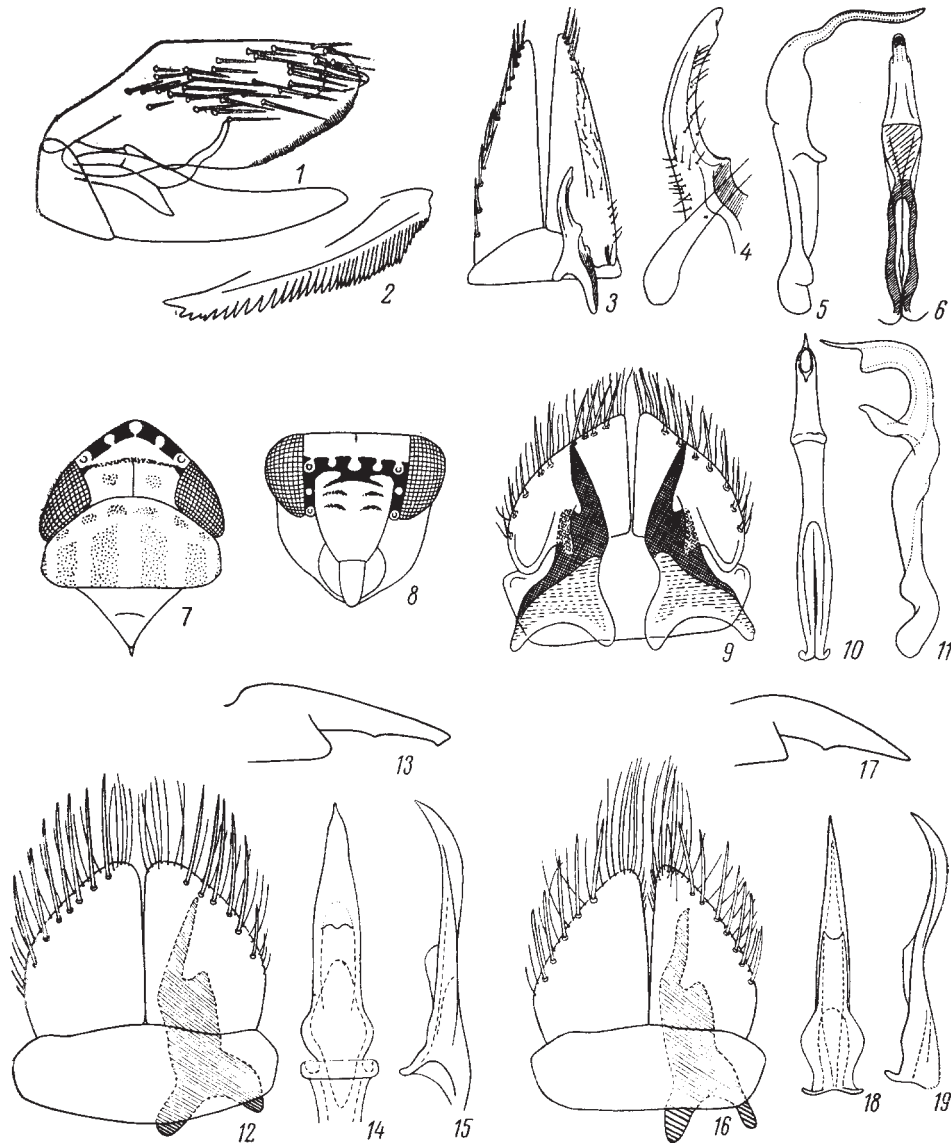


Fig. 172. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Ribaut, Vilbaste, and original).

1-6, *Ctenurella paludosa*: 1, genital block of male, lateral view; 2, margin of pygofer lobe; 3, genital valve, genital plates and stylus; 4, apex of stylus; 5, 6, penis and connective (5, lateral view; 6, anterior view); 7-11, *Recilia coronifer*: 7, anterior part of body; 8, face, anterior view; 9, genital valve, genital plates and styli, dorsal view; 10, 11, penis (10, anterior view; 11, lateral view); 12-15, *R. variegata*: 12, genital valve, genital plates and stylus; 13, apex of stylus, lateral view; 14, 15, penis (14, posterior view; 15, lateral view); 16-19, *R. latifrons*: 16, genital valve, genital plates and stylus; 17, apex of stylus, lateral view; 18, 19, penis (18, anterior view; 19, lateral view).

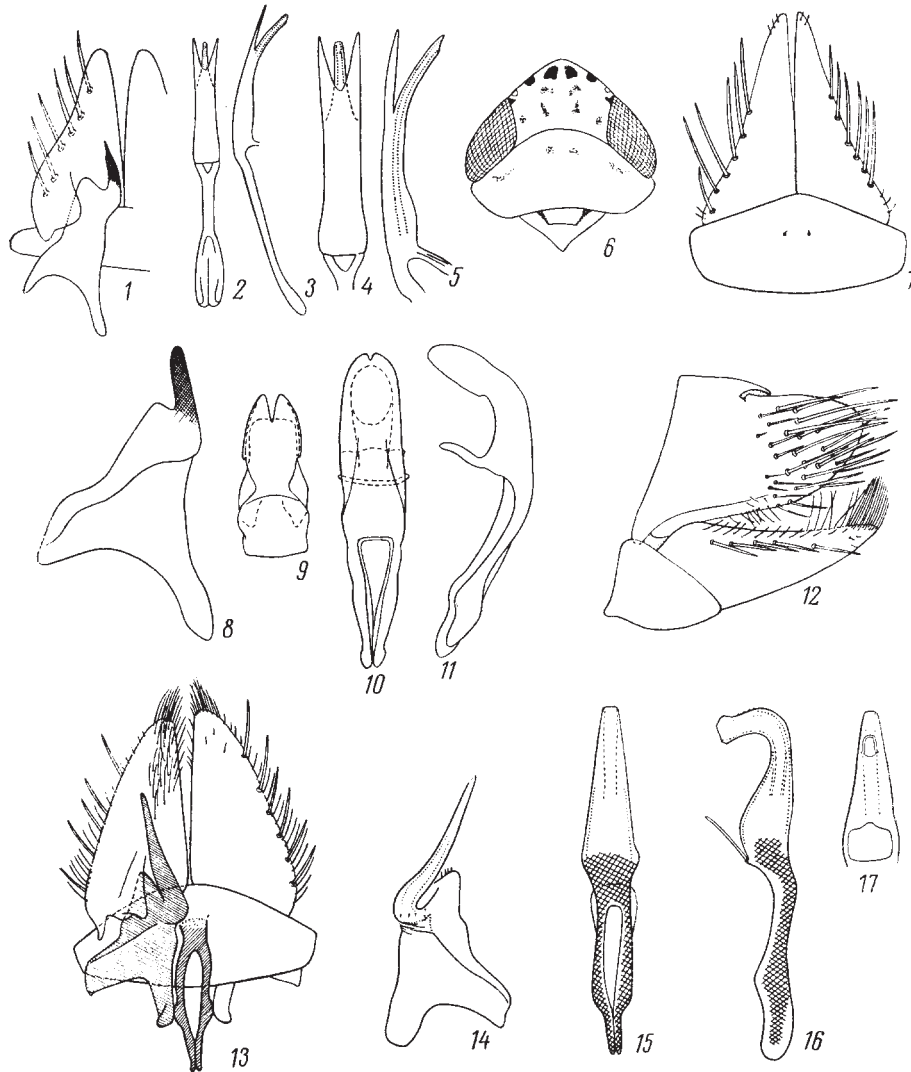


Fig. 173. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev, Cramer, Ossiannilsson, Ribaut, and original).

1-5, *Alobaldia tobae*: 1, genital valve, genital plate and stylus, dorsal view; 2, 3, connective and penis (2, posterior view; 3, lateral view); 4, 5, penis (4, posterior view; 5, lateral view); 6-11, *Amplicephalus nebulosus*: 6, head, pronotum and scutellum, dorsal view; 7, genital valve and genital plates, ventral view; 8, stylus; 9-11, penis and connective (9, dorsal view; 10, posterior view; 11, lateral view); 12-17, *Deltocephalus pulicaris*: 12, genital block of male, lateral view; 13, genital valve, genital plates, connective and stylus; 14, stylus, dorsal view; 15, 16, connective and penis (15, posterior view; 16, lateral view); 17, penis, anterior view.

135. **Deltocephalus** Burm. Moderately slender or moderately sturdy, macropterous or slightly brachypterous. Head obtuse-angled, projecting forwards. Vertex not wide; its turn into face rounded. Male. Pygofer lobes parabolic rounded, without processes, with numerous bristles; posterior lower margin of lobes finely denticulate. First segment of anal tube (segment X) and posterior part of pygofer near base of anal tube membranous. Genital plates moderately elongate, triangular, closed, with marginal row of bristles. Styli with large, acute-angled subapical projection and long awl-shaped apical part, which is directed obliquely backwards and outwards,

parallel with subapical projection. Connective elongate, loop-shaped, with apices of branches close together, fused with penis. Penis tubular, in the middle part smoothly bent at a right angle; gonopore apical, wide. In USSR 1 species.

1. Males macropterous, females with wings a little shorter than abdomen. Brownish, with spotty pattern from dark brown to black. Venter nearly entirely black. Vertex, pronotum and scutellum brownish, without pattern or with differently developed spots. Fore wings brown, with light veins and often with darker spots on this background. Abdominal tergites black, with light posterior margins. 2.1-3.2. – Mag., Kur. – Whole N Eurasia, N Africa, N America. – In meadows with grasses, occur usually on pastures and other moderately trampled down places. Late June to mid-September. (Figs. 173: 12-17) **D. pulicaris** Fall.

136. **Amplicephalus** DeL. Moderately slender, often brachypterous. Head rounded obtuse-angled, projecting forward; vertex narrow, its turn into face rounded. Male. Pygofer lobes widely rounded at apex, with numerous disorderly bristles in apical half. Genital plates elongate triangular, with marginal row of bristles. Styli with obtuse subapical angle and straight finger-shaped apical part. Connective with very short base and long branches with approximated apices. Penis fused with connective, with large dorsal gonopore and lobe-shaped widenings lateral to it. In USSR 1 species.

1. Grayish, with brown pattern; vertex with black spots; pronotum with longitudinal dim stripes; wing cells with brown edging; abdominal tergites not covered by shortened wings, with black spots near anterior margin. 3.4-4.1. – Prim.; Transbaikal, Tuva, C European part of USSR. – Korea, Mongolia, [p. 247] C Europa. – In forest meadows and glades with *Calamagrostis*. Mid-July to mid-September. (Figs. 173: 6-11) **A. nebulosus** Ball

137. **Paralimnus** Mats. Slender, with weakly rounded or rounded obtuse-angled head projecting forward. Vertex transverse; the turn of face into vertex rounded. Male. Lobes of pygofer with excision on posterior margin dividing them into 2 lobes: dorsal lobe high, with numerous long bristles, lower lobe narrow, bearing at apex a peculiar, thick and very short chaeta. Genital plates long, with rounded apices and concave outer margin; bristles in marginal row. Styli with short apical part, smoothly slanting outwards. Connective with rather narrow and long base, comparatively long branches which together are considerably wider than base. Penis symmetrical, with 2 teeth at apex: dorsal and ventral one. – 2 species (in USSR 20).

1. Ventral tooth at penis apex more than 3 times as long as dorsal one. Brownish yellow; the turn of face into vertex with light yellow band between ocelli limited by brown stripes; apex of frontoclypeus with barely noticeable brownish arcuate lines. 4.8-5.8. – Prim. – Japan, Korea. – On *Phragmites* (in brakes). July. (Figs. 174: 1-4) **P. tamagawanus** Mats.
- Ventral tooth at penis apex less than 3 times as long as dorsal one. Similar to *P. tamagawanus*, but greenish and with wide black band at apex of frontoclypeus. 4.5-6.3. – Prim.; Kazakhstan, Middle Asia, N of Caspian Sea. – NE China, Mongolia. – On *Phragmites* (in brakes). August. (Fig. 174: 5) **P. orientalis** Lindb.

138. **Metalimnus** Rib. Moderately slender, with parabolic or acute-angled rounded head projecting forward. Vertex not wide, flat; its turn into face usually sharp in the middle part and rounded in lateral parts near ocelli. Fore wings often obliquely

truncate at apex. Male. Pygofer lobes below at apex with robust process directed downwards; the lobes bear bristles of 2 kinds: large disorderly in upper part of posterior margin and short small bristles arranged in one row in lower part (above base of process). Styli with small apical part and smoothed subapical angle. Connective with rather long base and long, parallel or converging branches. Penis symmetrical, with wide base, long process arising from base dorsally and short penis shaft arising from it ventrally and bearing robust tooth on ventral margin at gonopore. – 3 species (in USSR 5).



Fig. 174. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev).

1-4, *Paralimnus tamagawanus*: 1, genital valve, genital plates, connective and styli; 2, genital block of male, lateral view; 3, lower projection of pygofer lobe; 4, penis, lateral view; 5, *P. orientalis*, penis, lateral view; 6-8, *Metalimnus ishidae*: 6, pygofer, lateral view; 7, genital valve, genital plate, connective and stylus; 8, penis, lateral view; 9, 10, penis, lateral view: 9, *M. steini*; 10, *M. marmoratus*; 11-15, • *Calamotettix viridescens*: 11, apex of stylus; 12, genital valve, genital plates and stylus; 13, genital block of male, lateral view; 14, 15, penis (14, posterior view; 15, lateral view).

1. Genital plates with straight or slightly concave outer margin. Vertex, pronotum and scutellum with continuous red longitudinal stripes on light background. Face in upper part brown, with white narrow band at margin and dark linear band on vertex. Fore wings brownish, with light veins and often at places with dark and white spots. 3-3.8. – Prim.; Altai. – Korea, Mongolia, N and C Europe. – On sedges in swamping meadows. Late June to early October. (Fig. 174: 10) **M. marmoratus** Fl.
- Genital plates with concave outer margin. Vertex, pronotum and scutellum without continuous longitudinal stripes 2
2. Pattern of vertex, pronotum and scutellum formed by orange spots and stripes on light background; vertex with 2 spots; pronotum with 4 longitudinal stripes; scutellum with 3 spots. Face usually without large dark spots. Fore wings brown, with scattered white and dark brown irregular spots. 4.2-5.3. – Prim. – Japan. – On sedges in swamping meadows and herbaceous swamps. Mid-July to early October. (Figs. 174: 6-8) **M. ishidae** Mats.
- Pattern of vertex, pronotum and scutellum formed by orange brown, brown or black spots, sometimes more or less fusing together; vertex with 2 small [p. 248] specks anteriorly and 2 small specks in the middle; pronotum with 6 spots; scutellum with 3 spots. Fore wings brownish or reddish brownish, with white and dark brown spots. 3.6-4.6. – Prim.; Tuva, Kazakhstan. – C Europe. – On sedges, in swamping meadows, glades, forest edges, herbaceous swamps. Mid-June to late September. (Fig. 174: 9) **M. steini** Fieb.

139. **Calamotettix** Em. Slender or moderately slender, with short, arcuate, projecting head. Vertex more or less transverse; the turn of face into vertex steeply rounded, distinct. Male. Pygofer long, with numerous thin bristles; each of pygofer lobes bearing on inner surface at posterior margin a thin long process directed downwards. Genital plates long, [p. 249] widely rounded jointly at apex; bristles in marginal row. Styli with bent, L-shaped apices. Connective with short wide base and long branches; their apices fused together. Penis with wide base and flat shaft bent rather steeply, almost at a right angle before middle. – 1 species (in USSR 4-6).

1. Pale green, with 2 parallel brownish lines between ocelli on the turn of frons into vertex. 4.5-5.8. – Prim.; Transbaikal, Tuva, Kazakhstan. – Mongolia. – On *Phragmites*, mostly in meadows with *Phragmites* and other grasses. July. (Figs. 174: 11-15) **C. viridescens** Em.

140. **Paramesus** Fieb. (Figs. 175: 1-4). Moderately slender. Vertex transverse, weakly arcuate, projecting forwards; its turn into face sharp, thickened and carinate. Male. Pygofer with numerous bristles, on inner surface at lower margin with 1 or 2 bristle-shaped processes directed backwards. Genital plates with slightly concave outer margin and apices widely rounded jointly; bristles in a marginal row. Styli with arcuate apex bent outwards. Connective with wide short base and long branches, apices of which are approximated. Penis usually compressed laterally, with processes at apex; gonopore ventral, subapical. – 1-2 species (in USSR 3-4).

1. Grayish brown; the turn of vertex into face with 2 dark brown parallel lines above and under ocelli; vertex with brownish band; pronotum brownish; cells of fore wings with brown edging. 4.7-6.5. – Prim. (only females are known from Prim., therefore this record should be regarded as a preliminary one);

Transbaikal, Kazakhstan, Middle Asia. – NE China, Mongolia, Afghanistan, Iran, Near East, S and C Europe, N Africa. – On shores of standing water bodies on *Bolboschoenus*. Late June to August. (Figs. 175: 5-8) **P. major** Hpt.

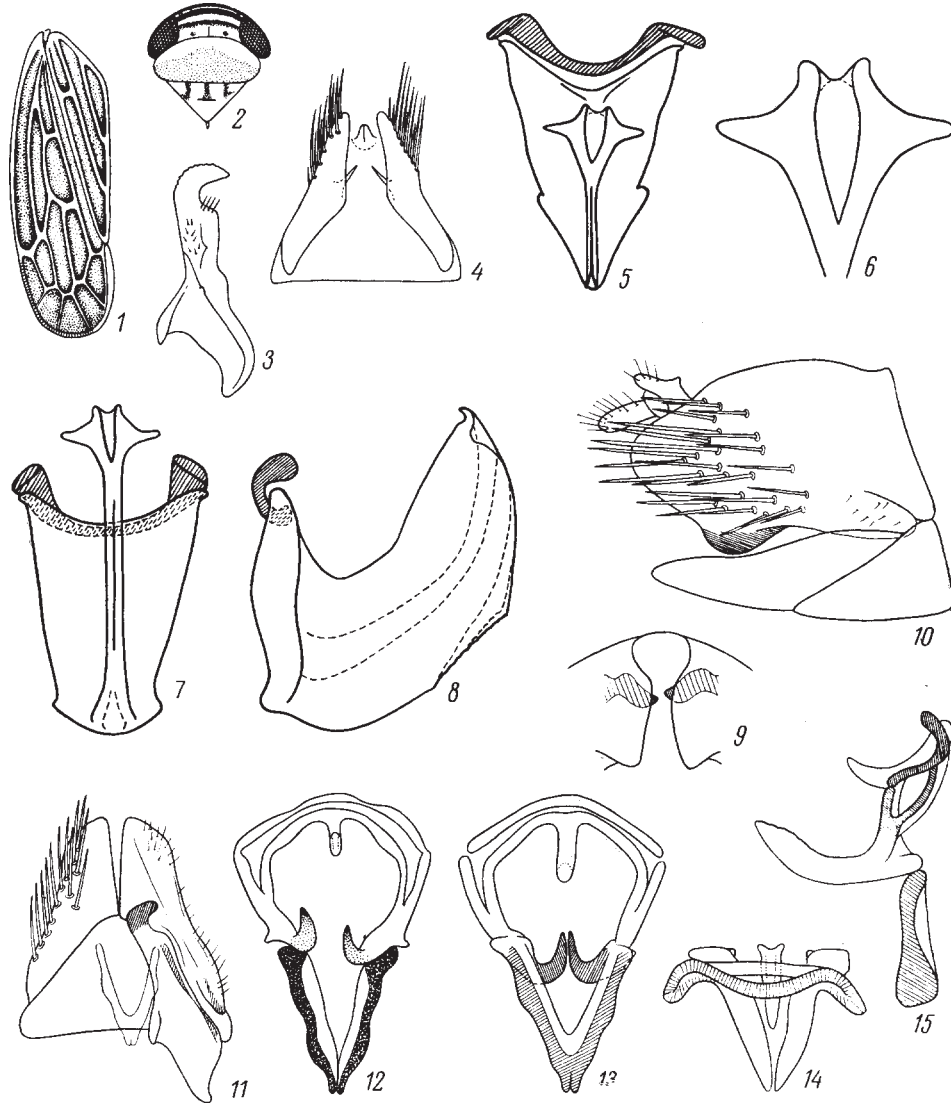


Fig. 175. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev, Ribaut, Vilbaste, and original).

1-4, *Paramesus obtusifrons* Stål: 1, fore wing; 2, anterior part of body; 3, stylus; 4, pygofer and anal tube, ventral view; 5-8, *P. major*: 5, penis, posterodorsal view; 6, apex of penis, posterodorsal view; 7, 8, penis (7, posterior view; 8, lateral view); 9-15, *Chelidinus cinerascens*: 9, apices of pygofer lobes, posterior view; 10, genital block of male, lateral view; 11, genital valve, genital plates, connective and stylus; 12, 13, 15, penis and connective (12, 13, posterior view; 15, lateral view); 14, penis, anterior view.

141. **Chelidinus** Em. Slender, with parabolic vertex and fore wings truncate at apex. Male. Lobes of pygofer with numerous disorderly bristles and on inner wall at apex with small projection directed downwards. Genital plates long, with concave lateral margins and apices rounded jointly; bristles marginal, at base situated in one row, at apex in two rows. Styli with small apex slanting outwards and smoothed subapical

angle. Connective V-shaped, with base divided into two parts and apices of branches fused together. Penis with base of complex horse-shoe shape; ends of base articulated with connective and continuing in the shape of teeth; penis shaft small, arcuate. A transverse ribbon-shaped appendage articulated laterally with special processes of base is adjacent to penis base dorsally. Gonopore apical. In USSR 1 species.

1. Yellowish white or grayish. Vertex anteriorly with a pair of transverse black lines. Pronotum with 4 wide longitudinal brownish stripes. Fore wings with light veins and brown edged cells; light spot present in their basal half at costal margin. 3.6-4.7. – Amur., Prim.; S Siberia, Kazakhstan, S European part of USSR. – Korea, Mongolia. – Steppized meadows, on *Artemisia*. Mid-July to early September. (Figs. 175: 9-16) **Ch. cinerascens** Em.

142. **Coelestinus** Em. Slender, with acute-angled head stretched forwards. Vertex flat; the turn of face into vertex rather sharp. Integument glossy. Male. Lobes of pygofer with blunt apices, on inner surface with awl-shaped process arising near dorsal margin and directed downwards. Genital plates with obliquely truncate apices and wide submarginal row of bristles widening [p. 250] towards apex. Styli with distinct subapical angle and apices pointed at end. Connective with wide base and long parallel branches with approximated apices. Penis with straight shaft; apex with 2 teeth and slit-shaped ventral gonopore arising from the very base. A sclerotized appendage of penis base is present. Anal tube at base below with sclerotized bumpy cross-piece. – 1 species (in USSR 2).

1. Greenish ochraceous. Face and venter black. Vertex with 2 black strokes at apex along margins. Cells of fore wings on membrane with brown edging. 3.1-3.5. – Amur., S Prim.; C Yakutia, Transbaikal, Tuva. – Mongolia. – [p. 252] Meadow steppes and steppized meadows with *Poa botryoides*. Mid-July to early October. (Figs. 176: 1-6) **C. incertus** Mel.

143. **Cosmotettix** Rib. Slender or moderately slender, with obtuse-angled or rectangular rounded head projecting forwards. Male. Lobes of pygofer more or less elongate, with numerous bristles, without teeth or with tooth on inner margin at the middle. Genital plates closed, with apices widely rounded jointly, bearing marginal row of bristles. Styli with distinct subapical angle and pointed apical part steeply slanting laterad. Connective loop-shaped. Penis symmetrical, usually with processes in apical part of shaft, less often in basal part of shaft; gonopore usually subapical, ventral, less often almost strictly apical. Appendage of penis base in the shape of transverse arcuate plate is present. – 5 species (in USSR 12).

1. Lobes of pygofer with tooth on lower margin at the middle 2
- Lobes of pygofer without teeth 3
2. Penis apex pointed. Penis shaft more or less cylindrical. Gonopore large, ventral, at the middle of shaft; its lateral and basal margins with membranous flange. (Subgenus *Airosius* Em.). Yellowish brownish; anterior part of body with orange tint; fore wings with 3 dark brown spots on costal margin of membrane and 1 spot on posterior (sutural) margin of membrane. 3.2-3.7. – Mag., Kamch.; Yakutia, Chita Prov., Altai. – Mongolia, N America. – In sedge hillock bogs. Late July to August. (Figs. 176: 6-10) **C. (A.) paludosus** Ball
- Penis apex wide, with shallow incision. Penis shaft compressed laterally. Gonopore narrow, small, ventral, subapical, without membranous structures. (Subge-

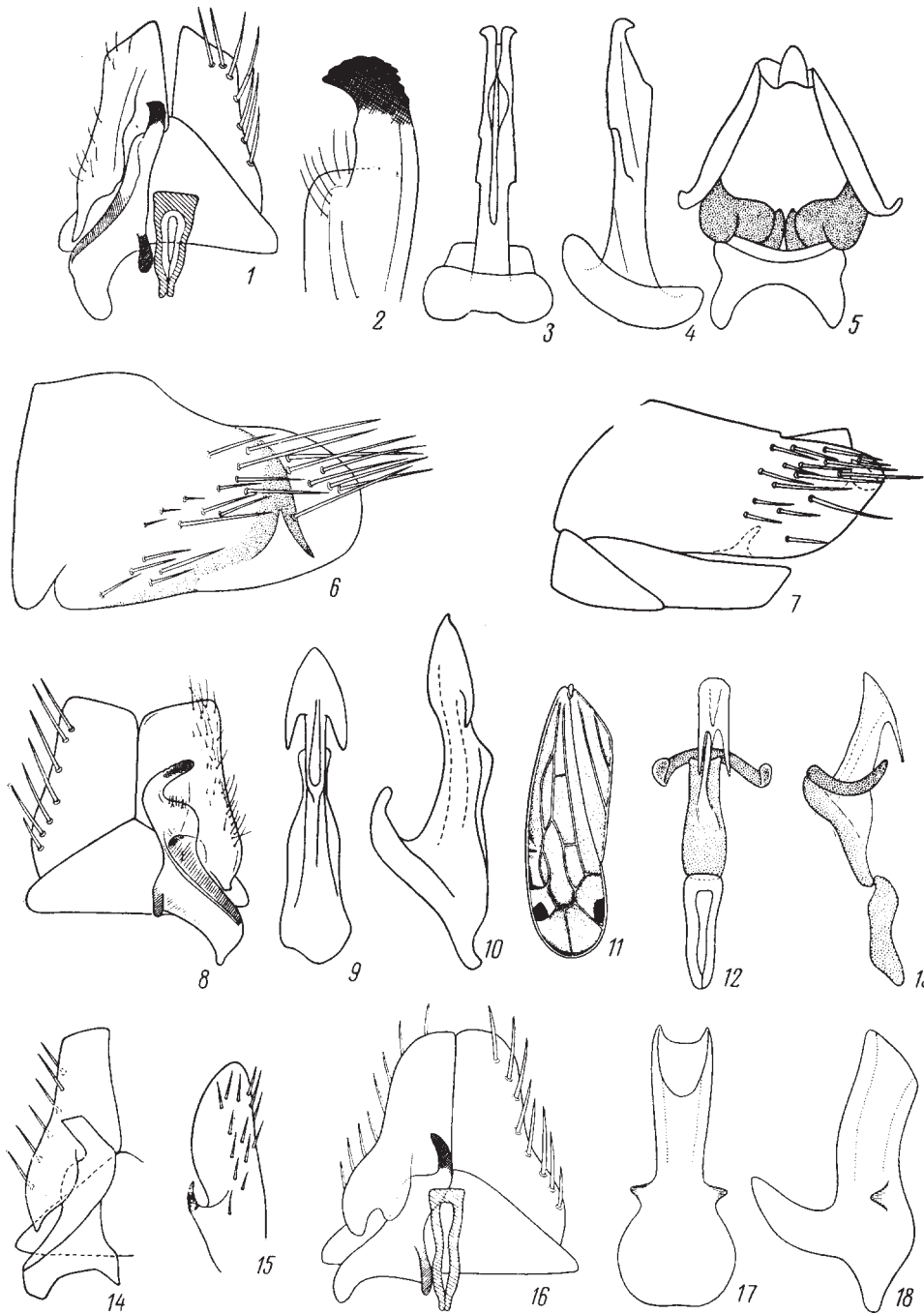


Fig. 176. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev, Emeljanov, Linnavuori, Ribaut, and Vilbaste).

1-6, *Coelestinus incertus*: 1, genital valve, genital plates, connective and stylus; 2, apex of stylus; 3, 4, penis (3, posterior view; 4, lateral view); 5, anal tube (ventral view) and appendage of penis base; 6, pygofer, lateral view; 7-10, *Cosmotettix paludosus*: 7, genital block of male, lateral view; 8, genital valve, genital plates, and stylus; 9, 10, penis (9, posterior view; 10, lateral view); 11-15, *C. costalis*: 11, fore wing; 12, 13, penis and connective (12, posterior view; 13, lateral view); 14, genital valve, genital plate and stylus, dorsal view; 15, lobe of pygofer; 16-18, *C. aurantiacus*: 16, genital valve, genital plates, connective and stylus; 17, 18, penis (17, posterior view; 18, lateral view).

nus *Airosus* Rib.). Pale, orange yellowish anteriorly; fore wings whitish bluish; membrane brownish, with 3 hyaline areas at costal margin and dark brown spot between 2 distal hyaline areas; another dark brown spot present on posterior (sutural) margin of membrane. 3-3.5. – Chita Prov., Altai, Kazakhstan. – Mongolia, C and N Europe. – In sedge marshes. Late July. (Figs. 176: 11-15)

- **C. (A.) costalis** Fall.
3. Penis shaft rather long; processes arising from its apical part. Appendage of penis base well sclerotized. (Subgenus *Cosmotettix* Rib.) 4
 - Penis shaft short, tubular; short processes situated at its base. Appendage of penis base weakly sclerotized, barely noticeable. (Subgenus *Agapelus* Em.). – Orange yellow; fore wings paler, semihyaline; membrane with 2 dark spots: 1st one at costal margin and 2nd one at the middle of posterior margin opposite 1st spot. 3-4. – Prim.; Chita Prov., European part of USSR. – Mongolia, C Europe. – Mid-June to late August. (Figs. 176: 16-18) **C. (A.) aurantiacus** Forel
 4. Apex of penis without teeth. Gonopore wide, more or less funnel-shaped. The widest part of penis shaft situated at its very apex. Pale, yellowish brownish. Vertex with 2 small spots at head apex and 2 large lateral spots in anterior part; both spots on each side fused. Dark narrow band interrupted in the middle present under ocelli; in female, spots on vertex may be reduced, and pattern becomes similar to that in *C. wagneri*. Vertex beyond spots and pronotum with brownish longitudinal stripes. 3.2-3.4. – Kamch., Amur., S Kur.; Chita Prov. – On sedges in moist habitats. Late July to mid-August. (Figs. 177: 8-15) **C. pyrifer** Em.
 - Apex of penis with a pair of teeth. Gonopore small 5
 5. Subapical processes of penis shaft long, approximated at apices; apices bent. Orange yellow; vertex with 2 small black spots at apex and 2 large lateral spots in anterior half; sometimes anterior part of body with 2 brown longitudinal stripes noticeable from above and fore wings [p. 253] with brownish darkened cells. 3.9-4.4. – Amur.; Chita Prov. – Mongolia. On sedges. Late July to early August. (Figs. 177: 6, 7) **C. limatus** Em.
 - Subapical processes of penis shaft relatively short, straight, widely spaced. Pale, brownish yellowish. Boundary between frons and vertex with 2 fine black bands interrupted in the middle and laterally turning into brown edging of lateral part of ocelli; vertex with 2 black dots and blackened suture; 2 dim brownish stripes passing on vertex, pronotum and scutellum. 4-4.4. – S Kur.; Chita Prov. – On sedges. Mid-July. (Figs. 177: 1-5) **C. wagneri** Em. [p. 254]

144. **Boreotettix** Lindb. Slender or moderately slender, with obtuse-angled rounded head projecting forwards. The turn of face into vertex rounded. Fore wings often a little shorter than abdomen. Male. Lobes of pygofer rather long, with numerous disorderly bristles and lacerately denticulate projecting part on lower margin. Genital plates long, with concave outer margin and marginal row of bristles. Styli with long pointed apex slanting outwards and smoothed subapical angle. Connective with short base and long converging branches. Penis with apical or subapical gonopore and lacerately denticulate, often also spread lateral margins. The genus comprises 2 species.

1. Penis shaft narrow, in the middle part (before the middle) rather strongly bent, with convex surface facing dorsal side. Apices of genital plates not darkened. Yellowish or yellowish greenish, without pattern. 3.3-3.9. – NE Yakutia, Tuva, E Kazakhstan. – Scandinavia, N America. – In herbaceous swamps. July to August. (Figs. 178: 6-10) **B. bidentatus** DeL. et Davidson [p. 255]

- Penis shaft with lateral widenings, nearly straight in the middle part. Apices of genital plates blackened. Similar to *B. bidentatus*. 3.4-4.1. – Primorsk Terr.; NE Yakutia, Chita Prov. – In meadows and in forests on *Calamagrostis*. From late June to late August. (Figs. 178: 1-5) **B. ribauti** Em.

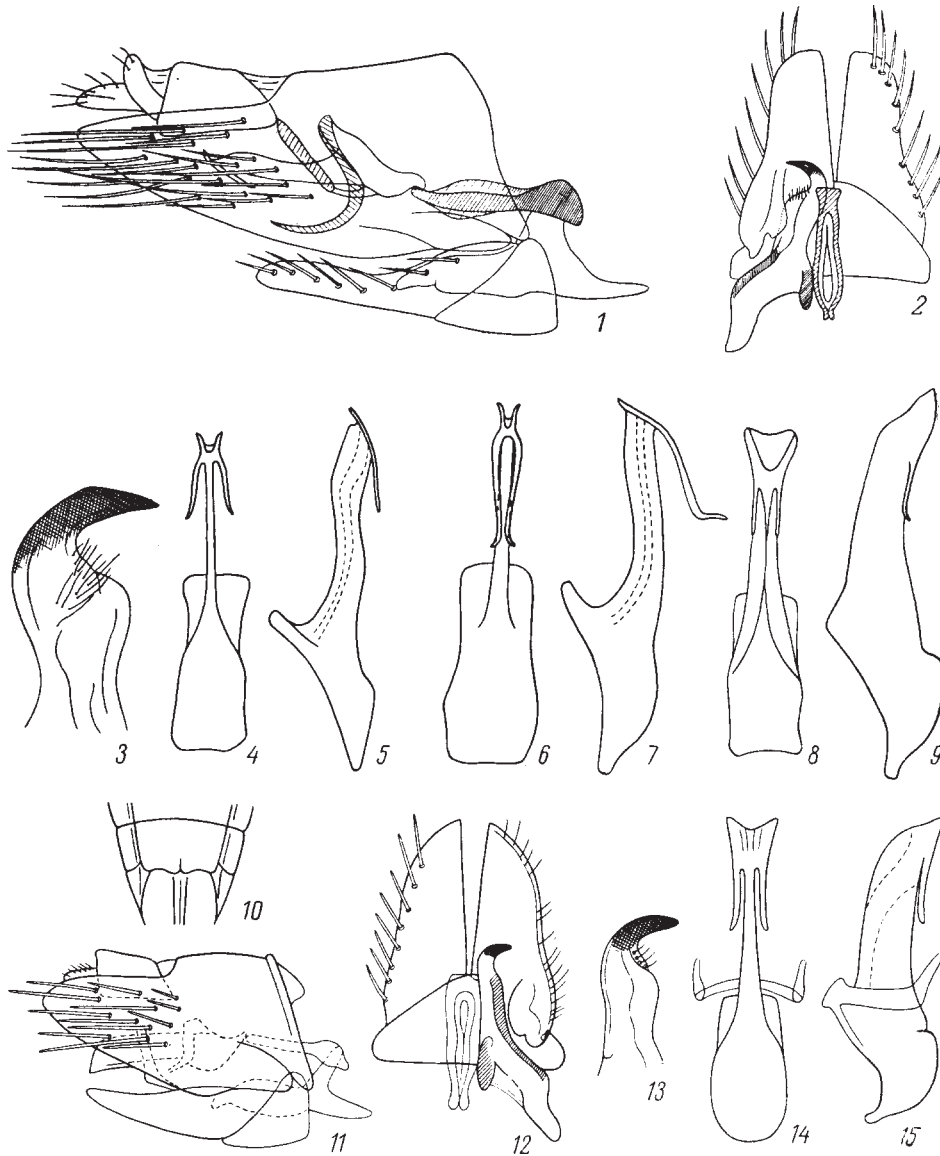


Fig. 177. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev, Emeljanov, and Vilbaste).

1-5, *Cosmotettix wagneri*: 1, genital block of male, lateral view; 2, genital valve, genital plates, connective and stylus; 3, apex of stylus; 4, 5, penis (4, posterior view; 5, lateral view); 6, 7, *C. limatus*, penis (6, posterior view; 7, lateral view); 8-15, *C. pyrifera*: 8, 9, 14, 15, penis (8, 14, posterior view; 9, 15, lateral view); 10, female abdomen in area of subgenital plate, ventral view; 11, genital block of male, lateral view; 12, genital valve, genital plates, connective and stylus; 13, apex of stylus.

145. **Mocuellus** Rib. Slender, with obtuse-angled rounded or rectangular rounded head projecting forwards. The turn of face into vertex rounded. Fore wings usually shorter than abdomen. Male. Pygofer with numerous disorderly bristles; its lobes with projection on lower margin at apex. Genital plates elongate triangular, with rounded

apices and slightly concave lateral margin; bristles in marginal row. Styli with bent, L-shaped apex and at bend with projection directed backwards. Connective with short wide base and long branches, apices of which are more or less fused together. Penis with rather long shaft and several short processes at apex and laterally. Gonopore ventral, indistinctly subapical. – 1 species (in USSR more than 20).

1. Yellowish green, sometimes with indistinct light brown pattern. 3.2-4.7. – Prim.; Transbaikal, S Siberia, Kazakhstan, Middle Asia. – Mongolia, Europe. – In xerophytic meadows with *Elytrigia*. Mid-June to late August. (Figs. 179: 7-12)
..... **M. collinus** Boh.

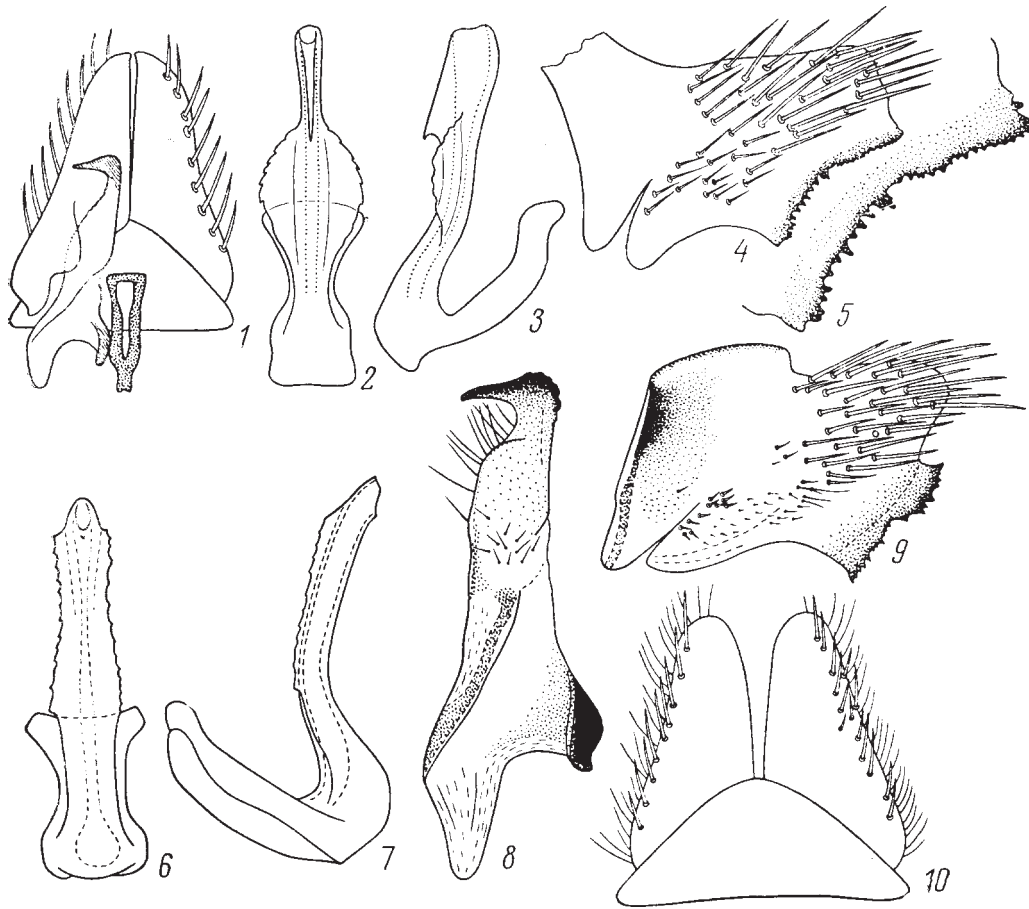


Fig. 178. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev, Ossiannilsson, and original).

1-5, *Boreotettix ribauti*: 1, genital valve, genital plates, connective and stylus; 2, 3, penis (2, posterior view; 3, right lateral view); 4, lobe of pygofer; 5, denticulate lower margin of pygofer lobe; 6-10, *B. bidentatus*: 6, 7, penis (6, posterior view; 7, left lateral view); 8, stylus; 9, pygofer, left lateral view; 10, genital valve and genital plates, ventral view.

146. **Falcitettix** Lnv. Similar in external appearance to the genus *Macuellus*. Male. Lobes of pygofer on lower margin with well sclerotized projection often bifurcate at apex. Genital plates with slightly concave lateral margins; bristles in marginal row. Styli with bent, L-shaped apex. Connective with short and wide base and long branches with connecting apices. Penis laterally and often at apex with processes. – 1 species (in USSR 6).

1. Yellowish gray, sometimes with indistinct brown pattern. Fore wings often shorter than abdomen. 2.7- 3.5. – Prim.; Transbaikial, Khakasia, Altai. – NE China, Mongolia. – In xerophytic and steppized meadows; is usual in overgrazed and ruderal habitats. August. (Figs. 179: 1- 7) **F. sibiricus** Lnv.

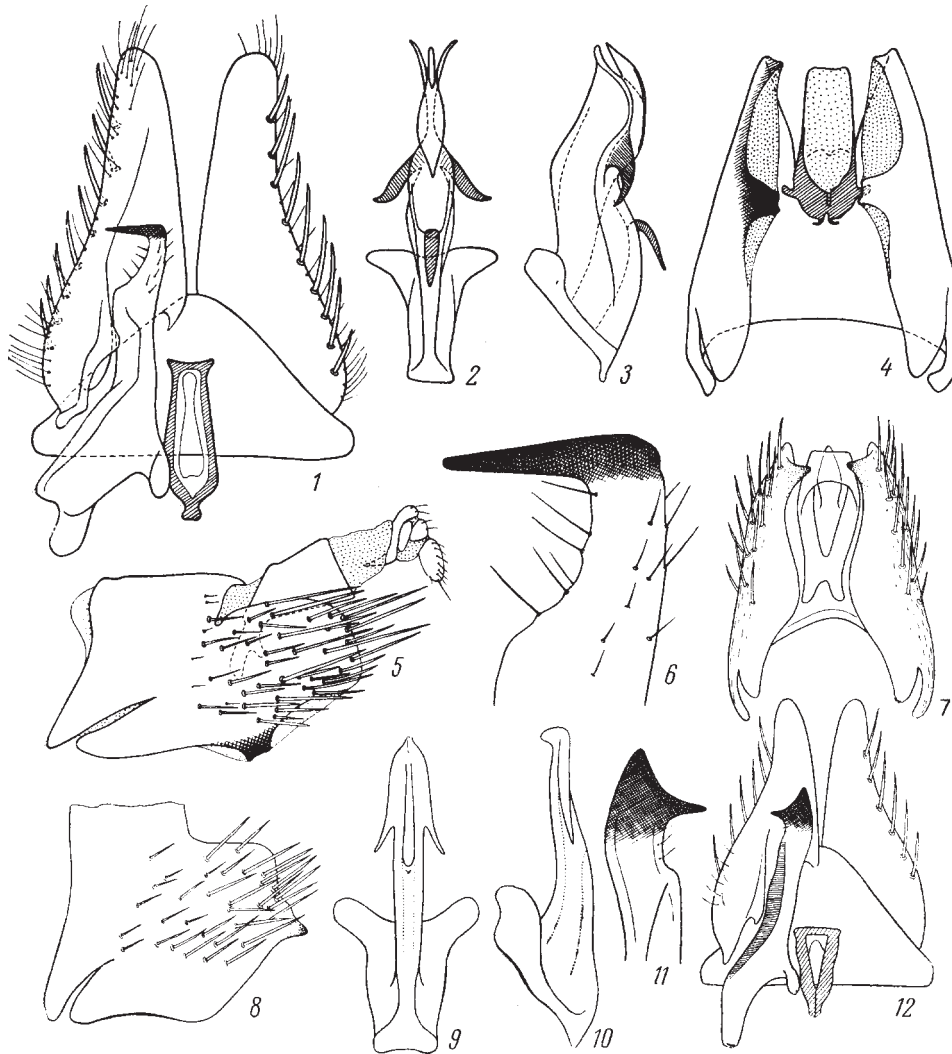


Fig. 179. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev and original).

1-7, *Falcitettix sibiricus*: 1, genital valve, genital plates, connective and stylus; 2, 3, penis (2, posterior view; 3, lateral view); 4, 5, pygofer and anal tube (4, ventral view; 5, lateral view); 6, apex of stylus; 7-12, *Mocuellus collinus*: 7, pygofer and anal tube, ventral view; 8, lobe of pygofer, lateral view; 9, 10, penis (9, posterior view; 10, lateral view); 11, apex of stylus; 12, genital valve, genital plates, connective and stylus.

147. **Futasujinus** Ish. Moderately slender, with rectangular head projecting forward; the turn of face into vertex rounded but distinct and steep; vertex more or less flat. Male. Lobes of pygofer at the end with long processes arising from the ventral side and more or less slanting inwards. Genital plates closed, forming together elongate semiellipse, with 1 marginal row of bristles. Styli with small apical part and distinct subapical angle. Connective with short wide base, loop-shaped. Penis short, at apex laterally with 2 pairs of processes: apical and subapical ones; gonopore ventral, subapical. In USSR 2 species.

1. Pygofer with comparatively short processes not reaching to apex of anal tube and slanting inwards and backwards. Apical processes of penis short, perpendicular to shaft. Apices of apical and subapical processes of penis spaced approximately equally. Light brown, with indistinct dark longitudinal stripes on pronotum, 2 middle stripes of them continuing on vertex and scutellum. Cells of fore wings with brown edging. 3.3-3.9. – Amur., Prim. – Korea, Mongolia. – In meadows and glades on grasses. Early July to early October. (Figs. 180: 1-7) **F. amuriensis** Metc.
- Pygofer with very long processes slanting transversally inwards. Apical processes of penis shaft rather long and slanting recurrently. Similar to *F. amuriensis*, but somewhat lighter, with yellowish orange tint. 3.8-4. – Prim., S Kur. – Japan, Korea. – Late June to mid-September. (Figs. 180: 8-11) **F. candidus** Mats.

148. **Turrutus** Rib. Moderately slender or sturdy, with rectangular head projecting forwards. Vertex not wide, flat; the turn of face into vertex [p. 256] steep, rounded. Usually fore wings a little shorter than abdomen. Male. Apices of pygofer lobes below stretched into long processes directed to each other. Genital plates with truncate apex and marginal row of bristles. Connective with short, wide base and long, converging branches. Styli with long, thin apex and distinct subapical angle. Penis symmetrical, sturdy, with wide base and short shaft bearing before apex foliaceous projection in the shape of a collar; gonopore apical. Monotypic genus.

1. Brown; vertex with 2 longitudinal stripes and a pair of brown specks at apex; pronotum with wide longitudinal dark stripes; cells of fore wings with brown edging. 2.7-3.2. – Prim.; S Siberia, Altai, Kazakhstan. – NE China, Mongolia, Europe, N Africa. – In xerophytic meadows on grasses. Late June to late July. (Figs. 180: 12-16) **T. socialis** Fl. [p. 258]

149. **Kaszabinus** Dlab. Moderately sturdy or moderately slender; vertex rectangular or obtuse-angled, projecting. The turn of face into vertex rounded, relatively steep. Male. Lobes of pygofer with long straight process passing along inner wall from the middle of upper margin of lobe downwards, across the lobe and projecting from below; outer wall of lobes with numerous disorderly bristles. Genital plates triangular, with tooth-shaped, strongly sclerotized apex slanting upwards and solitary bristles in marginal row. Styli with rather large, crescent-shaped, pointed apical part and large rectangular subapical step. Connective small, loop-shaped. Penis with straight shaft, at apex with 3 recurrent processes: lateral and ventral ones. Gonopore apical. The genus comprises one species, which may be found in the Far East.

1. Brownish, with brown pattern on light, grayish background. Frontoclypeus with numerous transverse stripes. Vertex with 2 triangular spots at apex and 2 pairs of transverse rectangular spots beyond them. Pronotum anteriorly with spots, on the rest of surface with indistinct longitudinal stripes. Fore wings with light, at places white veins, and cells with brown edging. 2.5-3.5. – NE Yakutia, Transbaik. – NE China, Mongolia. On *Artemisia*, *Filifolium sibiricum*; in Yakutia common on dry southern slopes devoid of forest. Late June to early September. (Figs. 181: 1-6) ... **K. burjata** Kusn.

150. **Hebecephalus** DeL. Moderately slender or moderately sturdy, with moderately obtuse-angled rounded head; gray, dorsally with a brown speckled pattern. Male. Lobes of pygofer with posteroventral tooth directed downwards. Genital valve



Fig. 180. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev, Ribaut, and Vilbaste).

1-7, *Futasujinus amuriensis*: 1, genital block of male, lateral view; 2, apex of stylus; 3, connective; 4, genital valve, genital plates, connective and stylus; 5, pygofer (right half, ventral; left half, dorsal); 6, 7, penis (6, posterior view; 7, lateral view); 8-11, *E. candidus*: 8, genital block of male (right half, ventral; left half, dorsal); 9, apex of stylus; 10, 11, penis (10, posterior view; 11, lateral view); 12-16, *Turrutus socialis*: 12, pygofer, posterior view; 13, pygofer and anal tube, ventral view; 14, genital valve, genital plates, connective and stylus; 15, 16, penis (15, posterior view; 16, lateral view).

triangular; genital plates rather short, closed, with distinct apices and obtuse-angled and convex outer margins, bearing a marginal row of bristles. Styli large, with strongly bent, crescent-shaped apices bearing a row of uneven teeth on the posterior margin. Connective loop-shaped. Penis with a narrow base and arcuate, not wide, often rounded shaft with 2 lateral processes at the apex or before it. Gonopore situated ventrally and subapically. – 1 species (3 in USSR). [p. 259]

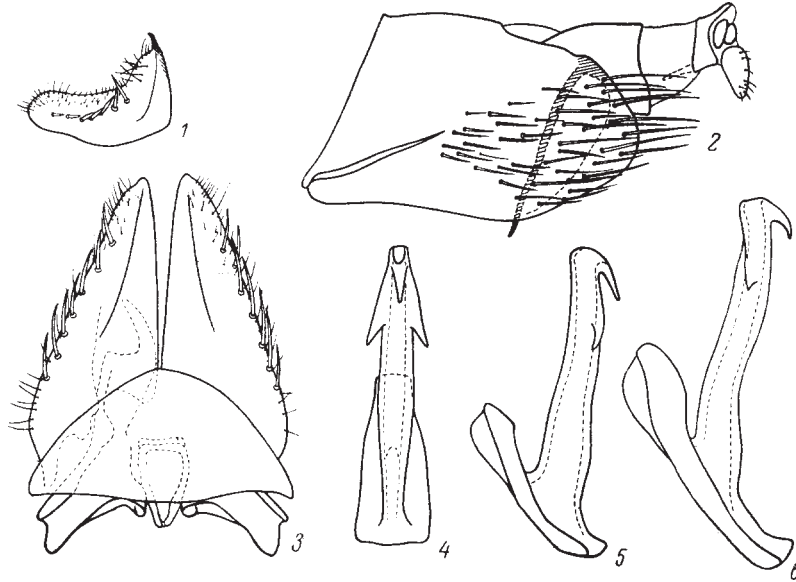


Fig. 181. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (original).

1-6, *Kaszabinus burjata*: 1, genital plate, posterior view (its tooth-shaped apex visible); 2, pygofer and anal tube, lateral view; 3, genital valve, genital plates, connective and stylus, ventral view; 4-6, penis (4, posterior view; 5, lateral view; 6, lateral view, another specimen).

1. Apex of stylus directed aside. Penis apex not flattened laterally. Lateral denticles of penis shaft situated considerably basal to processes. Body gray, dorsally with brown pattern. Vertex with 2 small spots at apex and 2 pairs of transverse rectangular spots beyond them. Face more or less darkened, with transverse flaving pattern on frontoclypeus. Pronotum with indistinct brown pattern. Scutellum with 4 spots at anterior margin and darkened furrow. Elytra with light veins; cells with brown edging in some places [p. 260] fusing into darker spots; the whole color of wings speckled. 2.7-3.2. – Magadan Prov.; C and NE Yakutia, Transbaikalia, Irkutsk Prov., Tuva, Altai. – Mongolia. On saline meadows, on *Leymus chinensis*. Late June to early September. (Figs. 182, 1-8) **H. changai** Dlab.
- Apex of stylus directed aside and frowards. Penis apex flattened laterally. Lateral denticles of penis shaft situated at the level of bases of penis processes. Pattern similar to that of *H. changai*, but brighter and more contrasting. 2.8-3.3. – NE Yakutia. – On dry floodland grass meadows. July. (Figs. 182, 9-11) **H. atralbus** Em.

151. **Pinumius** Rib. Slender, with rectangular or obtuse-angled projecting anterior margin of vertex and more or less narrowly rounded apex. The turn of face into vertex smoothed. Male. Lobes of pygofer with apices narrowed and slanting downwards. Genital plates with convex, obtuse-angled, bent outer margin, at first narrowing

weakly, then, after the bend, sharply, the apices forming together an obtuse angle; bristles in a marginal row. Styli with crescent-shaped apices and rectangular sub-apical projection. Connective loop-shaped. Penis shaft split in sagittal plane along 3/4 of its length; gonopore situated between lobes formed due to splitting of the shaft. 1-2 species may be found in the Far East (3 species in USSR).

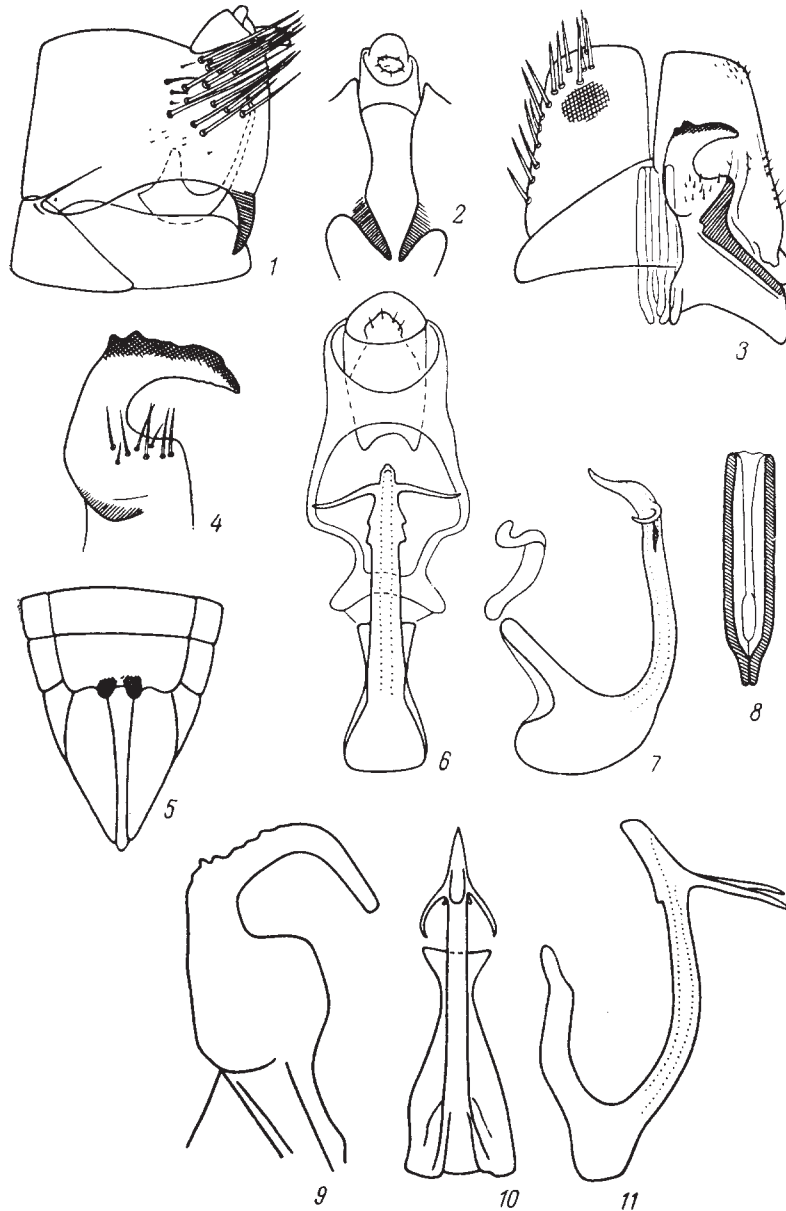


Fig. 182. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Emeljanov and Vilbaste).

1-8, *Hebecephalus changai*: 1, genital block of male, lateral view; 2, pygofer and anal tube, posterior view; 3, genital valve, genital plates and stylus; 4, apex of stylus; 5, apex of female abdomen, ventral view; 6, penis, posterior view, and anal tube, ventral view; 7, penis, lateral view; 8, connective; 9-11, *H. atralbus*: 9, apex of stylus; 10, 11, penis (10, posterior view; 11, lateral view).

1. Body speckled, with dark brown pattern on reddish brownish or gray brownish background; body darker ventrally; face more or less blackened, with a flowing pattern on frontoclypeus. Vertex usually with 3 pairs of spots. Pronotum and scutellum with indistinct spots. Fore wings with brown edged cells and, at places, white veins. 3-3.5. SE Yakutia (Ust'-Maya), Transbaikalia, S Siberia, Kazakhstan, central belt and south of European part of USSR. – Mongolia, Finland, C Europe, N America. – In desert meadows and in steppes. Mid-June to early September. (Figs. 183, 1-5) **P. areatus** Stål. [p. 261]

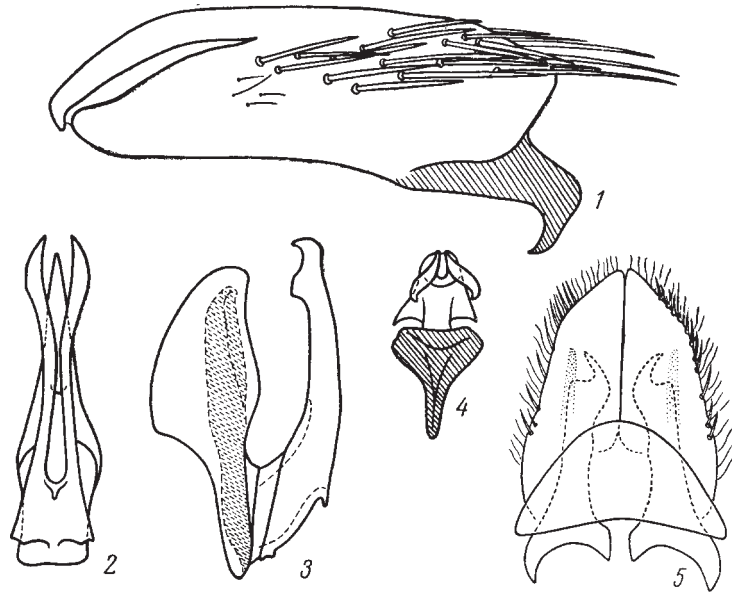


Fig. 183. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Ribaut and original).

1-5, *Pinumius areatus*: 1, pygofer, lateral view; 2-4, penis (2, posterior view; 3, lateral view; 4, dorsal view); 5, genital valve, genital plates and stylus, ventral view.

152. **Rosenus** Oman. Slender or moderately sturdy, with obtuse-angled projecting vertex. Vertex not wide; the turn of face into vertex rounded. Male. Lobes of pygofer with numerous bristles, at the apex ventrally with a crescent-shaped, well sclerotized process slanted inwards. Genital plates more or less widely truncate at apex, with slightly concave lateral margin; bristles in a marginal row. Styli with a weakly developed subapical angle and an apex gradually narrowing towards the end; the inner margin of apices with large or small blunt teeth. Connective with short wide base and long branches more or less fused at apex. Penis with tubular shaft more or less widened, clavate and covered with denticles at apex. Gonopore apical. – 1 species (in USSR 8).

1. Clava at the apex of penis narrow, elongate oval. Genital plates shorter, with approximately straight lateral margins. The lobes of pygofer considerably projecting backwards beyond genital plates. – Body yellowish gray, with brown pattern. Vertex with 2 triangular spots at apex, beyond them 2 transverse rectangular spots with their outer anterior angle projecting forwards and 2 ring-shaped spots often interrupted posteriorly. Pronotum with brown spots posteriorly forming longitudinal stripes. Fore wings with uneven brown edging of cells. 2.3-2.8. – NE Yakutia, Tuva, Altai. – Mongolia. – In mountain steppes. Late June to early August. (Figs. 185: 1-8) **R. severus** Em.

- Clava at the apex of penis wide, rounded or rhomboidal. Genital plates longer, with distinctly concave lateral margins. Lobes of pygofer slightly protruding backwards beyond apices of genital plates..... 2
- 2. The widest part of the process of pygofer lobes situated near the base. Apices of pygofer lobes projecting backwards noticeably farther than processes. Similar to *R. severus*. 2.6-3.2. – NE Yakutia, Transbaikal, Tuva. – Mongolia. [p. 262] – In mountain steppes. Early June to late August. (Figs. 186: 1-8) **R. pantherinus** Kuns.

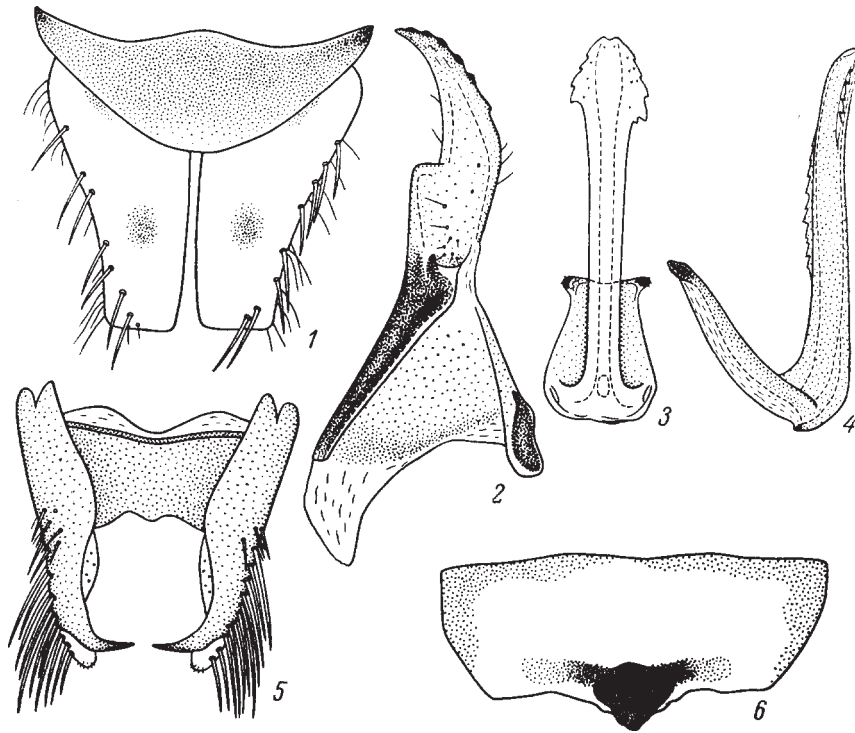


Fig. 184. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Ossiannilsson).

1-6, *Rosenus laciniatus*: 1, genital valve and genital plates, ventral view; 2, stylus; 3, 4, penis (3, posterior view; 4, lateral view); 5, pygofer, ventral view; 6, subgenital plate of female.

- The widest part of the process of pygofer lobes is about 1/3 of its length distant from the base. Apex of pygofer lobe not projecting backwards beyond apex of process, somewhat shorter than the process. Body yellowish gray, with brown, not bright pattern, which may be hardly noticeable and blurred in the anterior part of body, unlike previous species. 2.6-3.2. – Mag., Kamch., Prim.; Transbaikal, E Siberia, Tuva, Altai. – Mongolia, the Arctic, Alps, Alaska, N Canada. – In alpine tundra and tundra meadows. Mid-July to late August. (Figs. 184: 1-6)
..... **R. laciniatus** Then (*abiskoensis* Lindb.)

153. **Ebarrius** Rib. Slender; vertex rectangular or obtuse-angled, projecting, with narrowly rounded apex. The turn of face into vertex rounded. Male. Lobes of pygofer short, with oblique posterior margin and its upper angle projecting in the shape of a tooth. Genital plates wide, slightly narrowed to apices, widely truncate at apex; lateral margins with one row of bristles. Styli widened, with widely obliquely truncate apices and shifted ventral subapical projection. Connective loop-shaped. Penis with asymmetrical, bent, rather short, rounded shaft and short asymmetrical teeth at apex. Gonopore subapical, ventral. – 1 species (in USSR 2-3).

1. Grayish brownish, dorsally lighter, with not contrasting brown pattern. Vertex, pronotum and scutellum with indistinct brown spots; fore wings with light [p. 263] veins and indistinct brown edging of cells. 3.1-3.8. – Mag.; Central Yakutia, Tuva. – Mongolia. – In heath meadows with *Festuca*, etc. July. (Figs. 187: 1-8)

..... **E. vilbastei** Nast

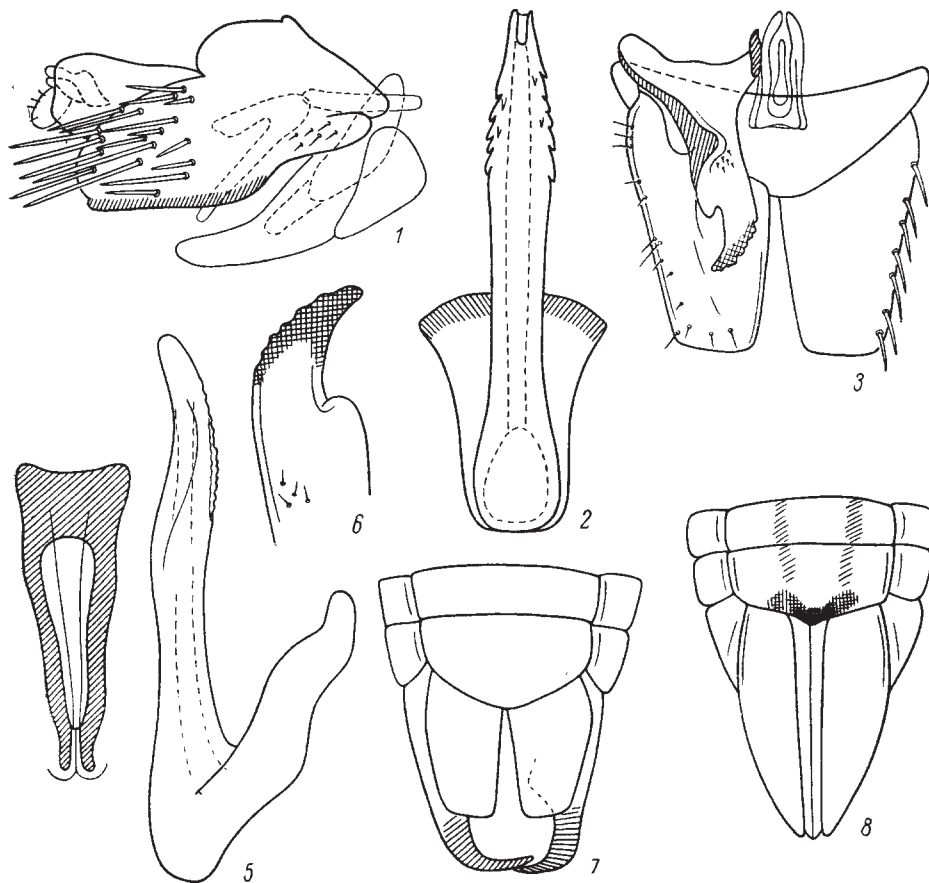


Fig. 185. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Vilbaste).

1-8, *Rosenus severus*: 1, genital block of male, lateral view; 2, penis, posterior view; 3, genital valve, genital plates and stylus; 4, connective; 5, penis, lateral view; 6, apex of stylus; 7, 8, apex of abdomen, ventral view (7, male; 8, female).

154. **Rhoananus** Dlab. Moderately slender; vertex obtuse-angled, projecting, not wide, more or less flat. The turn of face into vertex rounded. In female, fore wings usually a little shorter than abdomen. Male. Lobes of pygofer with 2 well sclerotized processes on lower margin, with long disorderly bristles. Genital plates triangular, with slightly concave lateral margins and separately widely rounded apices. Bristles in a marginal row. Apices of styli with denticulate inner margin. Connective with short wide base and long branches with fused apices. Penis rather sturdy, with widened apical half bearing 2 pairs of robust teeth. Gonopore subapical, ventral. Monotypic genus.

1. Yellow, fore wings yellowish green, slightly shorter than abdomen in female. 3.1-4.5. – Prim.; Tuva, Altai, Kazakhstan, Middle Asia, Caucasus, south of European part of USSR. – Central and S Europe. – In dry meadows, on *Elytrigia* and related grasses. Mid-July to late July. (Figs. 188: 1-6) **Rh. hypochlorus** Fieb.

155. **Acharis** Em. Moderately sturdy; vertex obtuse-angled, projecting forwards, rather narrow, more or less flat; the turn of face into vertex rounded. Male. Lobes of pygofer with projection having a bipartite apex in posterior part of ventral margin and [p. 264] numerous bristles. Genital plates triangular, closed, with a marginal row of bristles. Styli with well expressed subapical angle and small apical part. Connective with short base and long branches with contiguous apices. Penis symmetrical, with a lammelliform widening; gonopore ventral, subapical, situated in the middle of the widening. Monotypic genus.

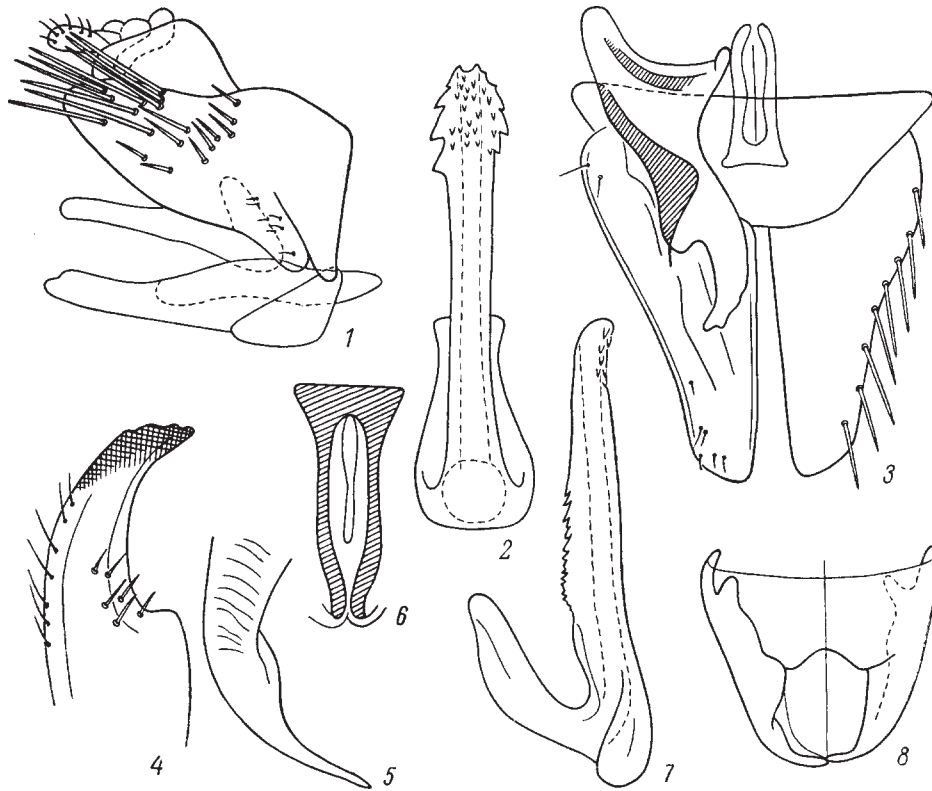


Fig. 186. Cicadines. Family Cicadellidae, subfamily Delticephalinae (after Vilbaste).

1-8, *Rosenus pantherinus*: 1, genital block of male, lateral view; 2, penis, posterior view; 3, genital valve, genital plates, connective and stylus; 4, apex of stylus; 5, process of pygofer; 6, connective; 7, penis, lateral view; 8, pygofer (right half, dorsal; left half, ventral).

1. Greenish yellow, fore wings with brown edged cells. 3.2-3.8. – Prim.; Siberia, Tuva, Altai, E Kazakhstan. – NE China. – In meadows, glades, forest edges, open woodlands on grasses. Mid-June to late September. (Figs. 188: 7-11) **A. ussuriensis** Mel.

156. **Philaia** Dlab. Moderately slender, with obtuse-angled, nearly rectangular projecting forward, not wide, more or less flat vertex. The turn of face into vertex rounded. Male. Lobes of pygofer with 2 widely spaced, small, sclerotized denticles on posterior margin, with numerous disorderly bristles. Genital plates more or less triangular, with outer margin noticeably convex in basal half and concave before somewhat attenuate apex; bristles in a marginal row. Styli with a well expressed subapical angle and thin apex. Connective with very wide, short, weakly sclerotized base and long branches with more or less fused apices; gonopore ventral, subapical. Monotypic genus. [p. 266]

1. Brownish gray; vertex with 4 dark brown small spots near fore wing and 2 indistinct gray longitudinal stripes. Cells of fore wings brown edged. 2.6-3.1. – Prim.; Transbaikal, Tuva, Altai, Kazakhstan, south of European part of USSR. – Mongolia, Czechoslovakia, Bulgaria. – In steppes, dry and steppe meadows, on *Cleistogenes squarrosa*. Late June to early September. (Figs. 188: 12-15)
 **Ph. jassargiforma** Dlab.

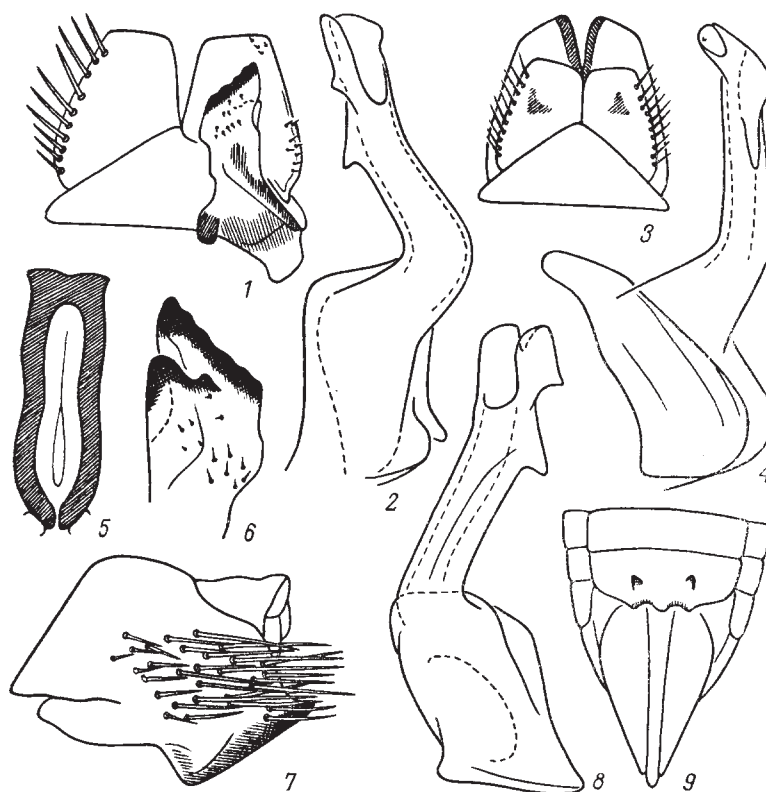


Fig. 187. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Vilbaste).

1-9, *Ebarrius vilbastei*: 1, genital valve, genital plates and stylus; 2, 4, 8, penis (2, posterior view; 4, lateral view; 8, anterior view); 3, genital block of male, ventral view; 5, connective; 6, apex of stylus; 7, pygofer and anal tube, lateral view; 9, apex of female abdomen, ventral view.

157. **Lebradea** Rem. Slender; vertex obtuse-angled and rounded, projecting forwards, relatively wide and short; the turn of face into vertex rounded. Male. Lobes of pygofer with a robust tooth on lower side of posterior margin and numerous bristles. Genital plates closed, with convex outer margins, separately rounded apices and bristles in a marginal row. Connective with short base and long branches with apices close together. Styli with distinct subapical angle and pointed apex, which is drawn out outwards. Penis symmetrical, with ventral subapical gonopore and a pair of processes lateral to it. – In USSR 1 species.

1. Unicolorous green. 4-4.7. – Mag., Kamch., Amur., Prim., Sakh., Kur.; SW Yakutia, Transbaikal, Siberia, Tuva, Leningrad Prov. – N America. – In meadows and herbaceous swamps on *Calamagrostis*. Mid-June to late August. (Figs. 189: 1-7)
 **L. flavovirens** Gill. et Baker



Fig. 188. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev).

1-6, *Rhoananus hypochlorus*: 1, pygofer, lateral view; 2, pygofer and anal tube, ventral view; 3, genital valve, genital plates, connective and stylus, dorsal view; 4, apex of stylus; 5, 6, penis (5, posterior view; 6, lateral view); 7-11, *Acharis ussuriensis*: 7, pygofer and anal tube, ventral view; 8, lobe of pygofer, lateral view; 9, genital valve, genital plates, connective and stylus; 10, 11, penis (10, posterior view; 11, lateral view); 12-15, *Philaia jassargiforma*: 12, lobe of pygofer, lateral view; 13, genital valve, genital plates and stylus; 14, 15, penis (14, posterior view; 15, lateral view).

158. **Yanocephalus** Ish. Sturdy or moderately slender, with acute-angled vertex strongly projecting forwards. Male. Pygofer short, with lobes widely rounded on posterior margin. Genital plates elongate triangular, with 1 marginal row of bristles. Styli with bidentate apex and distinctly expressed [p. 267] subapical angle. Penis with long slightly asymmetrical shaft due to its some bend and to a lobe-shaped triangular projection at the apex from the left. Gonopore ventral, subapical. Connective peculiar, with disconnected base attached to the penis base in two points. Monotypic genus.

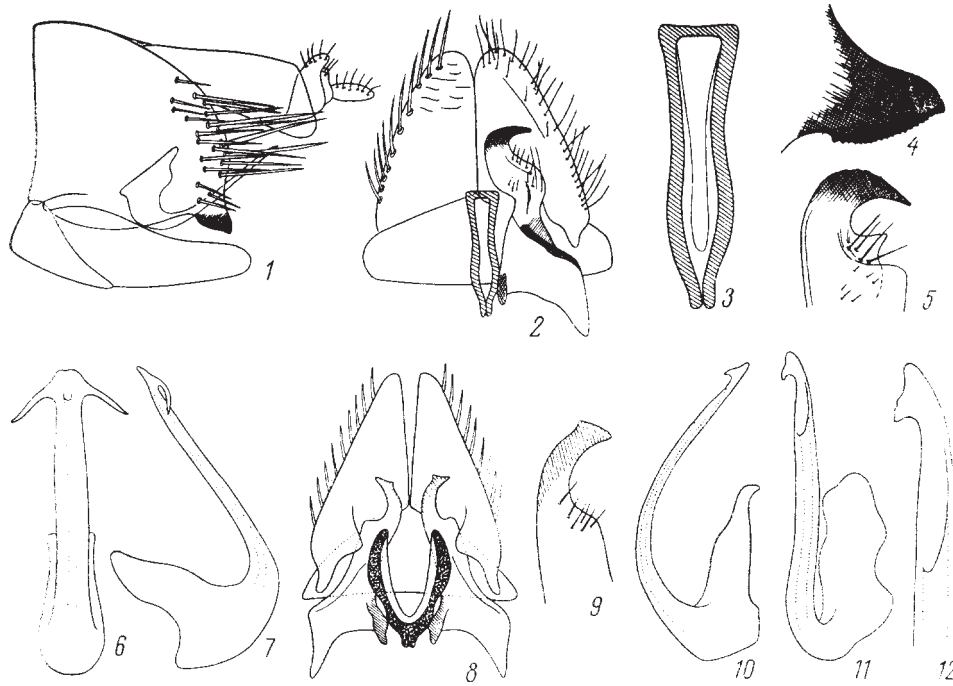


Fig. 189. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev and Vilbaste).

1-7, *Lebradea flavovirens*: 1, genital block of male, lateral view; 2, genital valve, genital plates, connective and stylus; 3, connective; 4, process of pygofer lobe; 5, apex of stylus; 6, 7, penis (6, posterior view; 7, lateral view); 8-12, *Yanocephalus yanonis*: 8, genital valve, genital plates, connective and styli; 9, apex of stylus; 10, 11, penis (10, lateral view; 11, oblique posterior view); 12, apex of penis.

1. Greenish yellow; body, including face, ventrally black. Vertex strongly stretched forwards, with 2 small black triangular spots at apex. Pronotum with slightly noticeable, wide longitudinal stripes. Apical cells of fore wings often with brown edging. Individuals with brown black bands on fore wings occur sometimes. 3.3-3.9. – Prim. – Japan, Korea, China. – In dry and steppe meadows. Late June to early September. (Figs. 189: 8-12)..... **Y. yanonis** Mats.

159. **Mongolojassus** Zachv. Sturdy or moderately slender, with about rectangular, projecting vertex. Male. Pygofer short; the upper angle of posterior margin projecting in the shape of a tooth. Genital plates narrowing to obliquely truncate (swallow tail-shaped) apices; the outer margin slightly concave, with 1 row of bristles. Styli straight, at apex truncate and slightly slanted outwards; the subapical projection not expressed. Penis with band-shaped, not wide shaft slanted at base dorsad and in apical part slightly slanted ventrad, bearing an apical pair of recurring arcuate processes sometimes with bipartite apices. Gonopore subapical, ventral. Connective loop-shaped, fused with base of penis. – 1 species (in USSR up to 10).

1. Speckled, with brown pattern on whitish yellowish background; face brown, with flowing pattern on frontoclypeus. Vertex without pattern or with 3 pairs of blurred brown spots: 2 triangular spots at apex, 2 transverse ones in middle part with anterolateral angle projected forwards, and 2 indistinct [p. 268] spots posteriorly. Pronotum with longitudinal stripes. Fore wings with indistinct, light, transverse bands; cells outside them brown edged; veins usually white on the bands. 2.9-3.3. – Amur. (one female is known from Amur.: Simonovo, 75 km W Svobodny, therefore the identification is a presumable one); E Transbaikal. – E Mongolia. – In steppes and in dry steppe and heath meadows with *Stipa*, *Avenula*, etc. Mid-June to July. (Figs. 190: 1-6) **M. dauricus** Em.

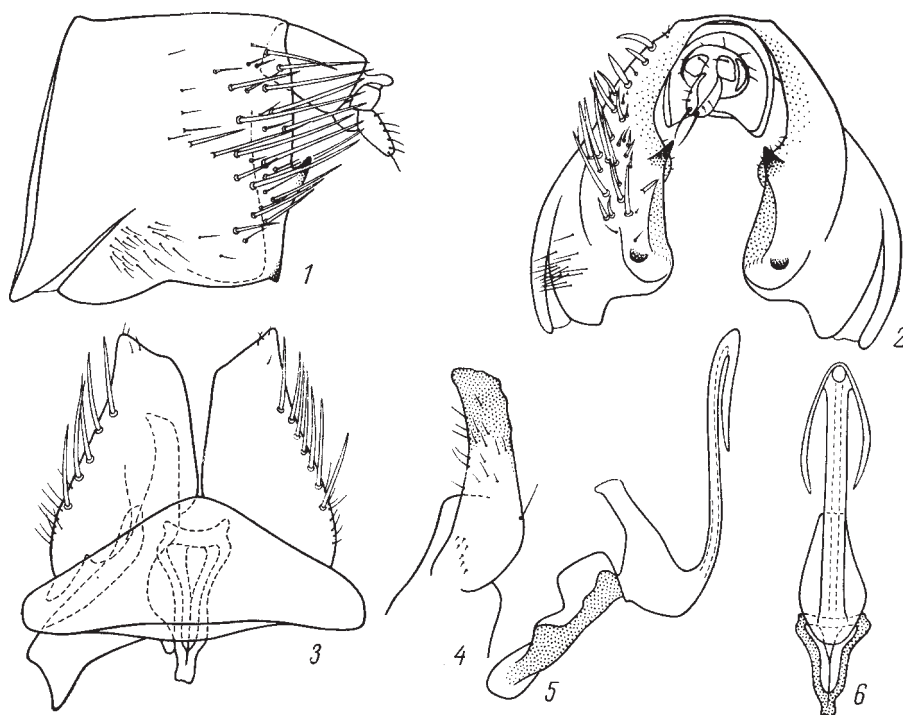


Fig. 190. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (original).

1-6, *Mongolajassus dauricus*: 1, 2, pygofer and anal tube (1, lateral view; 2, posterior view); 3, genital valve, genital plates, connective and stylus, ventral view; 4, apex of stylus; 5, 6, penis and connective (5, posterior view; 6, lateral view).

160. **Jassargus** Zachv. Moderately slender or sturdy, with more or less rectangular and rounded projecting haed. Male. Each of pygofer lobes with 2 teeth on lower margin. Anal tube wide, short. Genital plates more or less closed, tapering towards apices, which are rounded separately or truncate, swallow tail-shaped; bristles in a marginal row. Styli with widened and transversely truncate, tuberculate and denticulate apices; subapical projection not developed or moderately developed. Penis symmetrical. Connective loop-shaped. – 2 species (in USSR up to 20).

1. Teeth on lower margin of pygofer lobes large, situated on the apex of lobe; the anterior tooth forming a long process. Shaft of penis cylindrical, [p. 269] rather short. Gonopore apical, in the shape of a cut continuing somewhat dorsad, sometimes ventrad, so that rounded lobes occur lateral to it. (Subgenus *Arrailus* Rib.). Grayish or brownish, with brown or dark brown pattern. Face more or less dark;

frontoclypeus with narrow transverse stripes. Vertex at apex with 2 small triangular spots, 2 large transverse spots with lateral angle projecting forwards beyond them, and often with 2 indistinct transverse stripes on posterior margin. Pronotum with dark spots in anterior part and longitudinal, not bright stripes beyond them. Fore wings with lighter veins and unevenly brown edged cells. 2.7-3.2. – Mag., Kamch., Prim.; Transbaikal, Tuva, Altai. – Mongolia, N and C Europe. – On grasses in forest herbs. Early July to mid-September. (Figs. 191: 1-4) **J. (A.) alpinus** Then

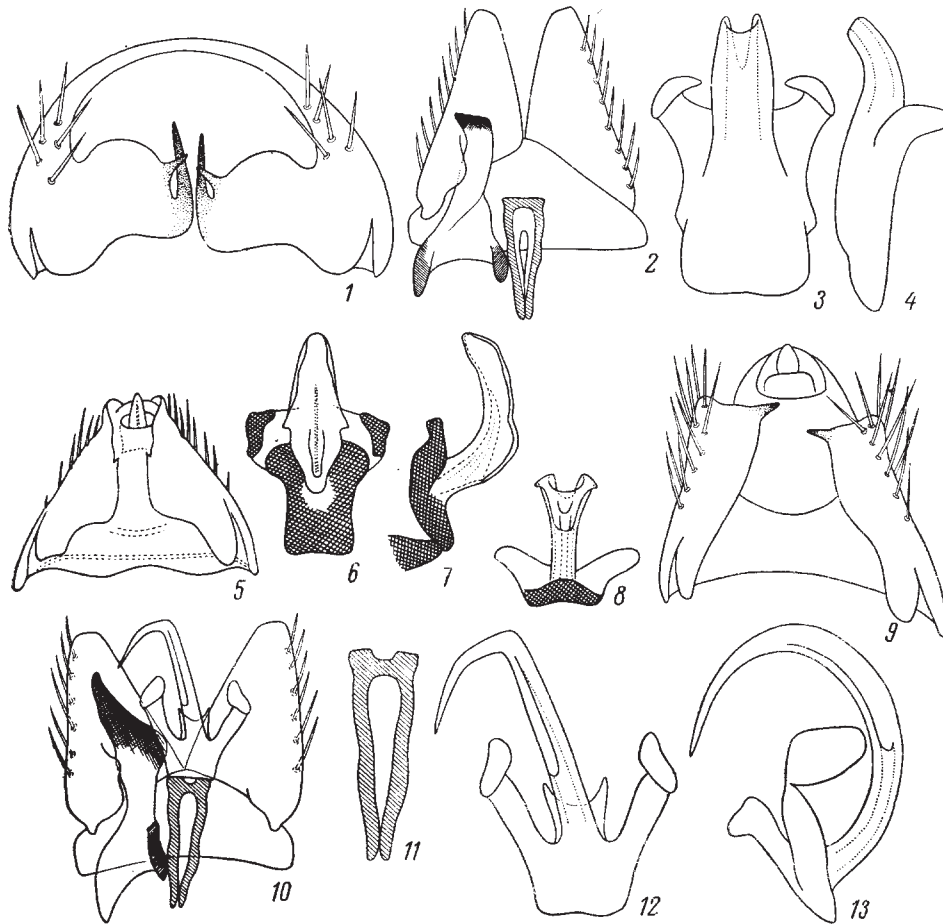


Fig. 191. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev and Ribaut).

1-4, *Jassargus alpinus*: 1, pygofer, posterior view; 2, genital valve, genital plates, connective and stylus; 3, 4, penis (3, posterior view; 4, lateral view); 5-8, *J. repletus*: 5, pygofer and anal tube, ventral view; 6-8, penis (6, posterior view; 7, lateral view; 8, dorsal view); 9-13, *Urganus chosenensis*: 9, pygofer and anal tube, ventral view; 10, genital valve, genital plates, stylus, connective and penis, dorsal view; 11, connective; 12, 13, penis (12, posterior view; 13, lateral view).

- Teeth on lower margin of pygofer lobes small; the posterior tooth situated far from the apex of lobe, before it. Gonopore basal, ventral. The shaft of penis distal to gonopore gutter-shaped, rather long. (Subgenus *Aurkius* Rib.). Similar to *J. alpinus*. 2.7-3.2. – Kamch.; S Siberia, Kazakhstan. – Korea, Mongolia, Europe. – In meadows. Late July to August. (Figs. 191: 5-8) **J. (A.) repletus** Fieb.

161. **Mendraus** Rib. Moderately sturdy; vertex approximately rectangular, projecting forwards, with not widely rounded apex. Male. Lobes of pygofer without teeth and processes. Anal tube short, narrowing backwards. Genital plates closed, at

apex oblique, not wide, truncate, with slightly concave lateral margin, convex, with 1 marginal row of bristles. Styli with widened and transversely truncate tuberculate apices; subapical projection weak. Connective loop-shaped. Penis symmetrical; shaft short, thick; gonopore apical (situated between a pair of pointed processes directed apicad). Shaft arising from the ventral part of base; the base narrow, [p. 270] bend in lateral view. Female. Subgenital plate with large lateral lobes and strong bidentate projection in the middle. Monotypic genus.

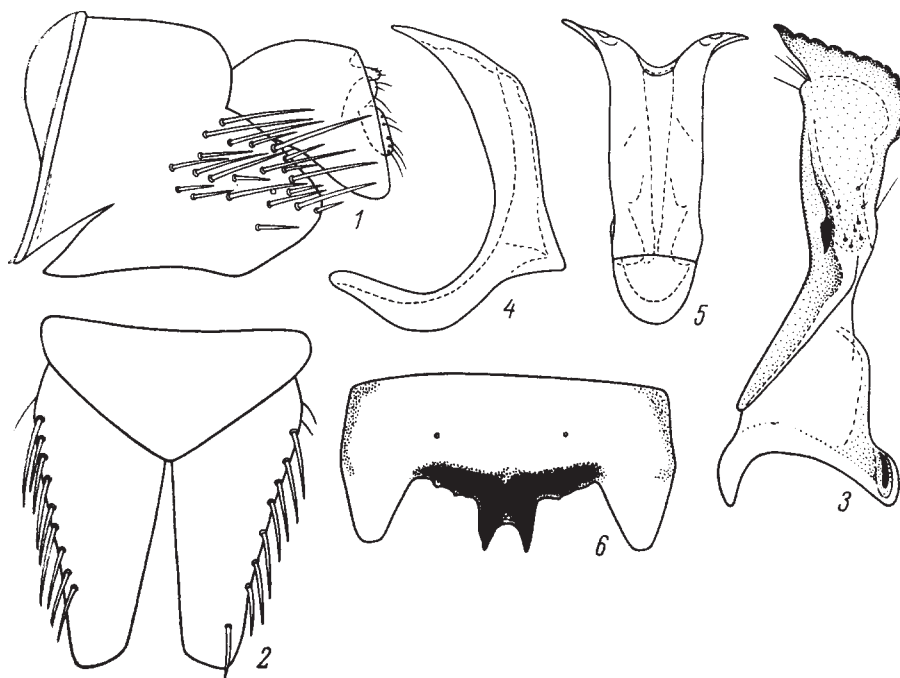


Fig. 192. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Ossiannilsson).

1-6, *Mendrausus pauxillus*: 1, pygofer and anal tube, lateral view; 2, genital valve and genital plates, ventral view; 3, stylus; 4, 5, penis (4, posterior view; 5, lateral view); 6, subgenital plate of female, ventral view.

1. Pale, without pattern, only in male anal tube dorsolaterally blackened. Usually slightly brachypterous, fore wings slightly shorter than abdomen. 1.2-3. – Amur; S Siberia, Tuva, Altai, Kazakhstan, S European part of USSR. – N Mongolia, C Europe. – In steppes on *Festuca valesiaca*. Mid-June to mid-July. (Figs. 192: 1-6) **M. pauxillus** Fieb.

162. **Urganus** Dlab. Moderately slender, with more or less rectangular and rounded, projecting head. Vertex not wide; the turn of face into vertex rounded. Male. Lobes of pygofer with 1 tooth at lower apical angle. Genital plates triangular, with 1 marginal row of bristles, at apex widely rounded or narrowly rounded truncate. Styli with strongly widened apices and strongly denticulate posterior margins, which are bevelled, so that they are facing each other. Penis asymmetrical, with long arcuate shaft convex ventrally; base of penis with bidentate projection situated ventrally at base of shaft. Gonopore situated from the right in basal third of shaft. Connective with wide base and long branches with apices close together. Monotypic genus.

1. Vertex whitish, with 2 triangular brown spots anteriorly, 2 large transverse spots in the middle, and 2 narrow transverse spots along posterior margin. Pronotum with varying pattern of brown spots often forming 4 wide, indistinct longitudinal

stripes separated from each other by light spaces. Veins of fore wings white, cells with brown edging. 2.9-3.5. – Amur., Prim., Sakh.; Transbaikal, Tuva. – Korea, [p. 271] N Mongolia. – In meadows, glades, under forest canopy on grasses. Mid-July to mid-September. (Figs. 191: 9-13; 193: 1) **U. chosenensis** Mats.

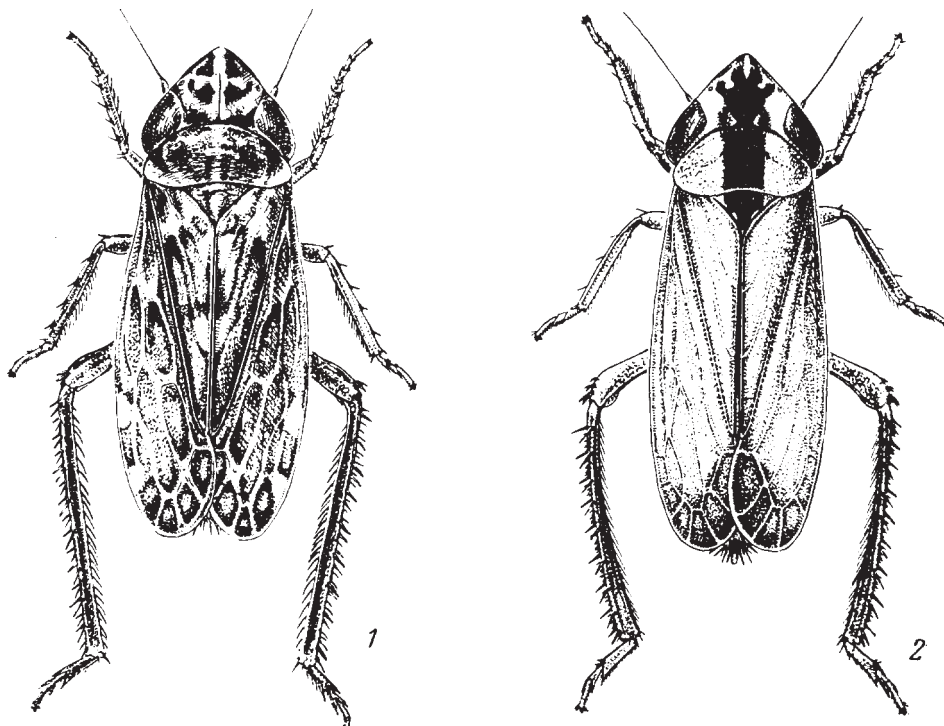


Fig. 193. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (original).

1, *Urganus chosenensis*; 2, *Sorhoanus acarifer*.

163. **Errastunus** Rib. Moderately sturdy. Vertex obtuse-angled, projecting forwards, moderately wide, more or less flat. The turn of face into vertex rounded. Fore wings usually not longer than abdomen. Male. Lobes of pygofer with numerous disorderly bristles along lateral margins; inner margins excised, due to that the plates are not closed. Styli with long apex directed backwards; subapical angle not expressed. Connective with very short base and long converging branches. Penis symmetrical, with processes at apex. In USSR 1 species.

1. Color varying; vertex, pronotum and scutellum more often orange yellow, with indistinct spots; fore wings with dark brown edging of cells and light veins. 2.7-3.4. – Kamch., Prim.; Siberia, Tuva, Altai, Kazakhstan, Middle Asia, Caucasus. – Mongolia, Europe, N Africa, N America. – In forest glades, under forest canopy, in alpine tundra on grasses. Early July to early September. (Figs. 194: 1-6; 195: 1, 2) **E. ocellaris** Fall.

164. **Sorhoanus** Rib. Moderately slender. Vertex arcuate, obtuse-angled or rectangular and rounded, projecting forwards; the turn of face into vertex rounded, but mostly distinct and steep; vertex more or less flat. Male. Lobes of pygofer with sclerotized processes on lower side of posterior margin and numerous long bristles. Genital plates triangular, at apex rounded separately, with a marginal row of bristles.

Styli with well expressed apical part blunt at the end; subapical angle smoothed or well expressed. Connective with short base and long branches with [p. 272] contiguous apices. Penis symmetrical, with subapical ventral gonopore and 1 or 2 pairs of processes near it. – 8 species (in USSR 10).

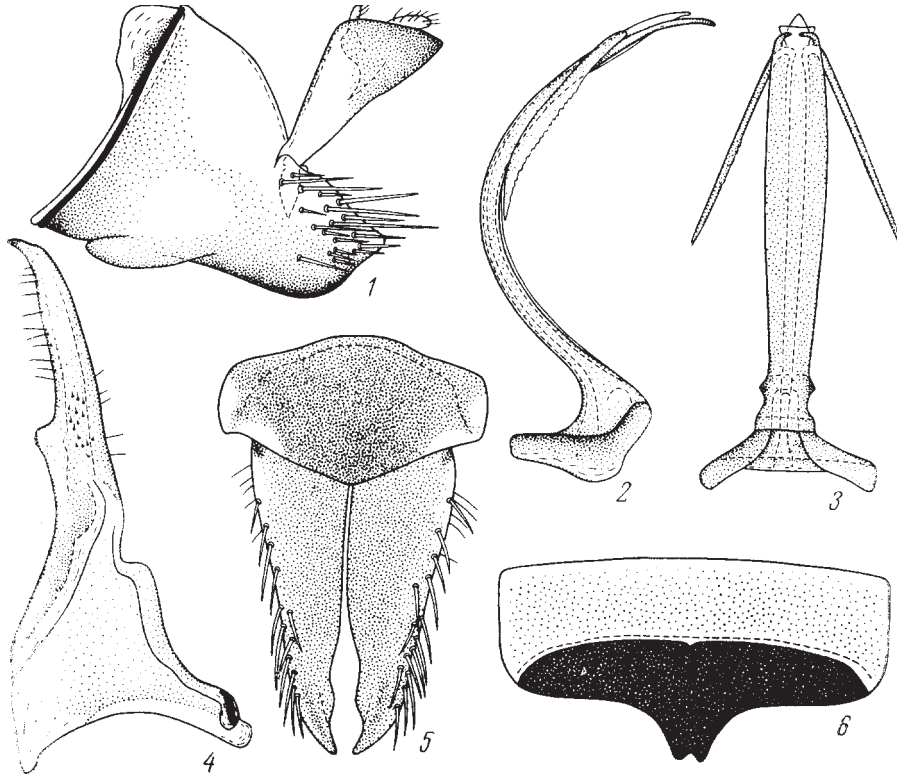


Fig. 194. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Ossiannilsson).

1-6, *Errastunus ocellaris*: 1, pygofer and anal tube, lateral view; 2, 3, penis (2, lateral view; 3, posterior view); 4, stylus; 5, genital valve and genital plates, ventral view; 6, subgenital plate of female, ventral view.

1. Process of pygofer lobe slanting downwards and inwards, rather long and pointed. (Subgenus *Emeljanovianus* Dlab.) 7
- Process of pygofer lobe slanting upwards, rather short, with blunt apex. (Subgenus *Sorhoanus* Rib.) 2
2. Penis with smoothly bent S-shaped shaft with small apical teeth and comparatively long subapical processes. – Greenish yellow or yellowish. 3.7-4.5. – Prim., Sakh.; Siberia. – Korea, Mongolia, Europe. – In meadows and glades, especially swamping ones. Mid-July to mid-September. (Figs. 195: 3-5) **S. assimilis** Fall.
- Penis with more or less straight shaft 3
3. Apical and subapical processes of penis long, of about equal length 4
- Subapical processes of penis considerably longer than apical ones 5 [p. 273]
4. The turn of vertex into frons sharp; anterior margin of vertex obtuse-angled, the angle nearing to a right one. Katepisterna of mesothorax yellow. Subgenital sternite in female with a wide excision and biapical projection in the middle on posterior margin. Greenish yellow or yellowish. 3.7-4.5. – Amur., Prim.; Transbaikal, Kazakhstan. – Mongolia. – In meadows, among them in steppe meadows. Late June to mid-August. (Figs. 195: 6-13) **S. mediocris** Em.

- The turn of vertex into frons more smooth; anterior margin of vertex parabolic. Katepisterna of mesothorax black. Posterior margin of subgenital sternite in female slightly wavy. Similar to *S. mediocris*. 4.8-5.5. – Prim. – In moist meadows. Early August. (Figs. 195: 14-20) ***S. arsenjevi*** Anufr.
- 5. Lobes of pygofer with a large process following their posterior margin. Styli with a well expressed subapical tooth. Branches of connective with contiguous or fused apices 6

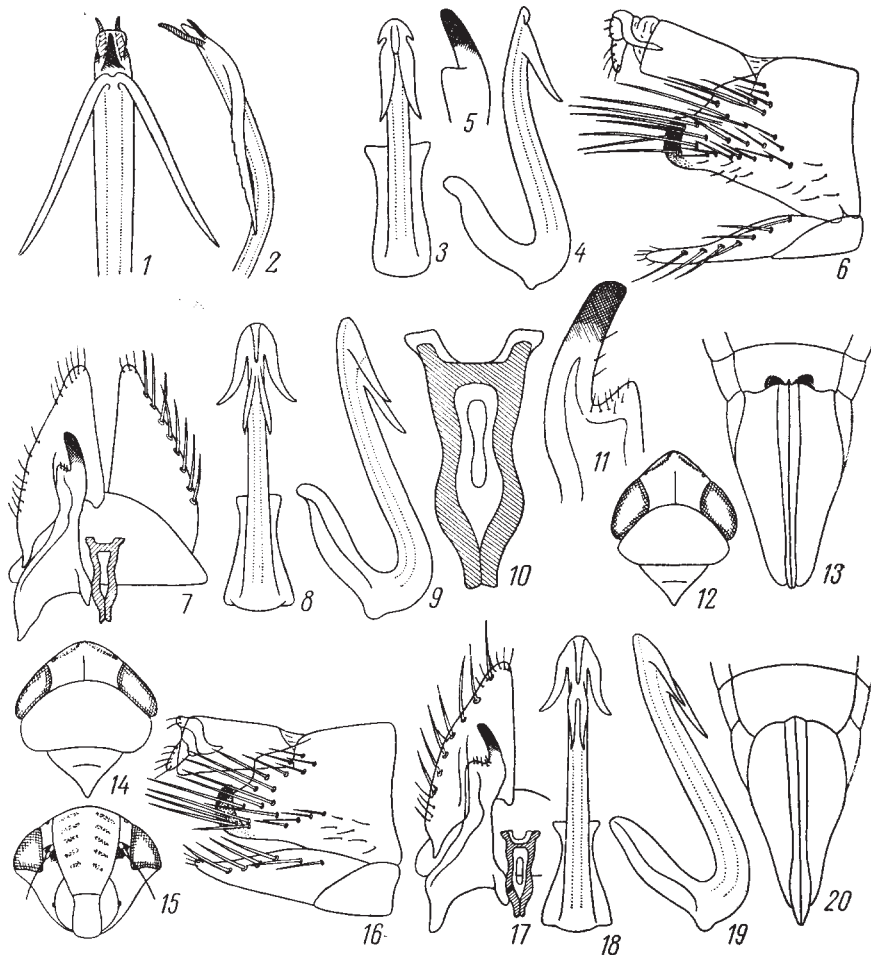


Fig. 195. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev).

1, 2, *Errastunus ocellaris*, apex of penis (1, posterior view; 2, lateral view); 3-5, *Sorhoanus assimilis*: 3, 4, penis (3, posterior view; 4, lateral view); 5, apex of stylus; 6-13, *S. mediocris*: 6, genital block of male, lateral view; 7, genital valve, genital plates, connective and stylus; 8, 9, penis (8, posterior view; 9, lateral view); 10, connective; 11, apex of stylus; 12, anterior part of body; 13, apex of female abdomen, ventral view; 14-20, *S. arsenjevi*: 14, anterior part of body; 15, face; 16, genital block of male, lateral view; 17, genital valve, genital plate, connective and stylus, dorsal view; 18, 19, penis (18, posterior view; 19, lateral view); 20, apex of female abdomen, ventral view.

- Lobes of pygofer with small processes on lower side before apex. Styli with a smoothed subapical angle. Branches of connective diverging. Similar to *S. mediocris*. 3.8-4.2. – Prim. – In meadows. Mid-September to late September. (Figs. 196: 9-16) ***S. hasanus*** Anufr. [p. 274]
- 6. Lateral margins of apex of penis shaft distinctly concave distal to apical processes;

apical processes tooth-shaped, short, with apices directed more or less laterad. Greenish yellow, not rarely with brownish edging of cells of fore wings. 3.2-4.4. – Prim., Kur. – Japan, Korea. – In herbaceous swamps, swamp meadows and glades. Mid-June to early October. (Figs. 196: 1-8) ***S. tritici*** Mats.

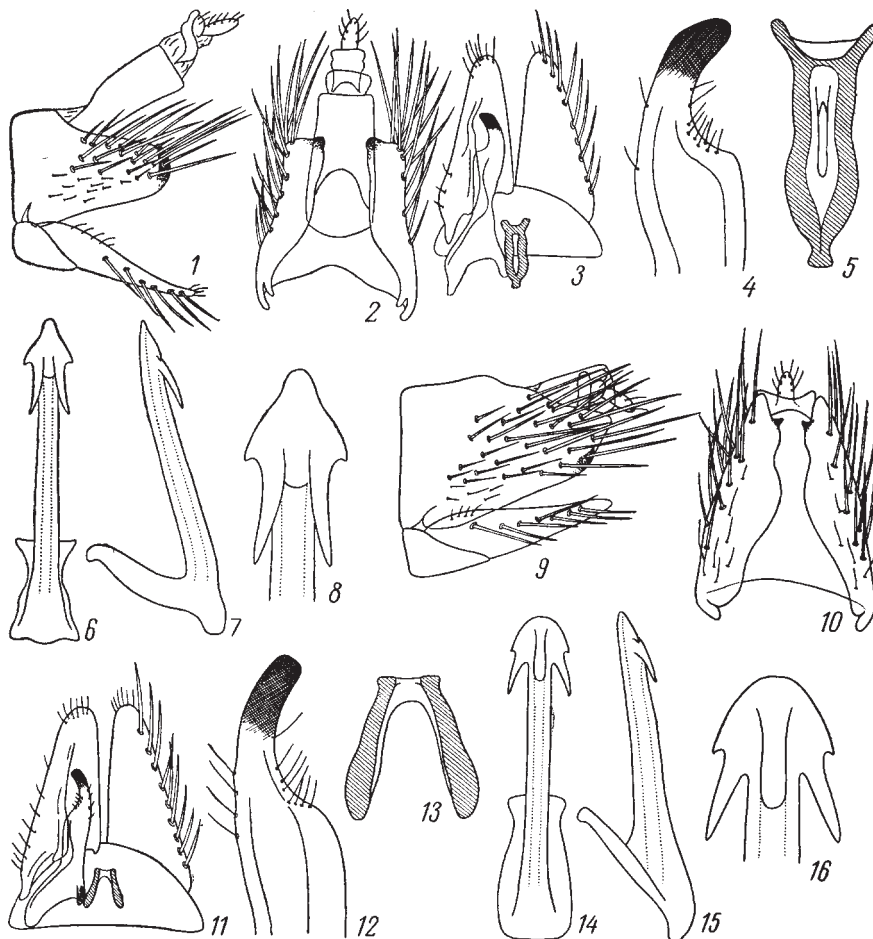


Fig. 196. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev).

1-8, *Sorhoanus tritici*: 1, genital block of male, lateral view; 2, pygofer and anal tube, ventral view; 3, genital valve, genital plates, connective and stylus; 4, apex of stylus; 5, connective; 6, 7, penis (6, posterior view; 7, lateral view); 8, apex of penis; 9-16, *S. hasanus*: 9, genital block of male, lateral view; 10, pygofer and anal tube, ventral view; 11, genital valve, genital plates, connective and stylus; 12, apex of stylus; 13, connective; 14, 15, penis (14, posterior view; 15, lateral view); 16, apex of penis.

- Lateral margins of apex of penis shaft straight or weakly convex distal to apical processes. Apical processes tooth-shaped, distinctly slanted, recurring. Similar to *S. tritici*. 3.5-3.7. – Kamch.; Siberia, Kazakhstan. – Europe, N America. – In sedge marshes, in swamp areas in forests. July to August. (Figs. 197: 1-8) ***S. xanthoneurus*** Fieb.
- 7. Shaft of penis relatively thick and short, with 2 pairs of processes at apex. Yellowish green or yellowish; frontoclypeus with a brownish flowing pattern; vertex at apex with 2 black triangular small spots, and sometimes with traces of brownish spots beyond them. Pronotum often with noticeable longitudinal brownish stripes. 3.7-4.2. – ? Amur.; C Yakutia, Transbaikalia, Irkutsk Prov. – C and E

- Mongolia. – In dry and steppe meadows on *Bromopsis inermis*. Mid-June to late August. (Figs. 198: 8, 9) **S. (E.) hilaris** Mel. (*suncharicus* Dlab.)
- Shaft of penis slender and long, with 1 pair of processes at apex. Orange yellow or yellowish green. Vertex, pronotum and scutellum with a wide dark brown (up to black) stripe and fusing with it 2 triangular spots on apex of vertex and 2 rounded small spots medial to ocelli. 3.5-4.2. – Amur.; Transbaikal, SE Siberia, Altai. – Mongolia. – In meadows on sedges. July to August. (Figs. 193: 2; 198: 1-7) **S. (E.) acarifer** Leth.

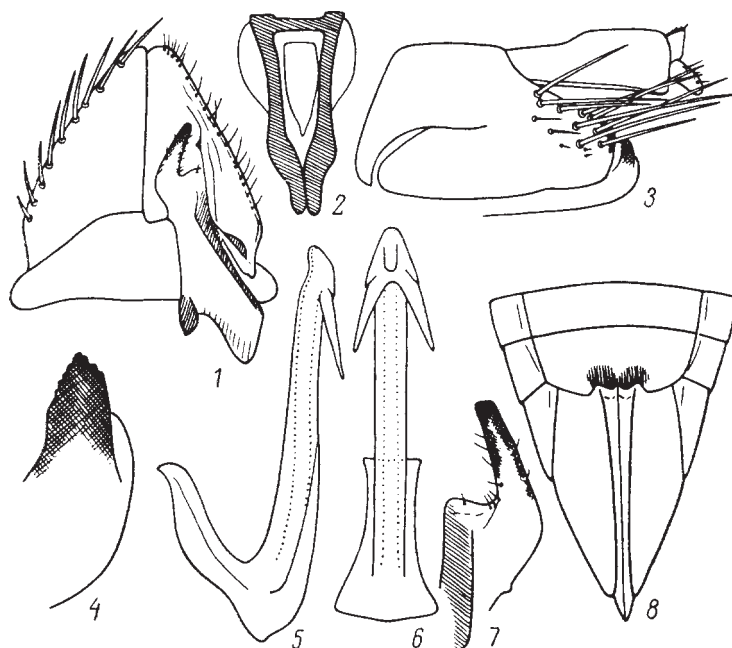


Fig. 197. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Vilbaste).

1-8, *Sorhoanus xanthoneurus*: 1, genital valve, genital plates and stylus; 2, connective; 3, pygofer and anal tube, lateral view; 4, process of pygofer lobe; 5, 6, penis (5, lateral view; 6, posterior view); 7, apex of stylus; 8, apex of female abdomen, ventral view.

165. **Arthaldeus** Rib. Moderately sturdy. Vertex obtuse-angled or acute-angled, projecting forwards; the turn of face into vertex rounded. Fore wings longer than abdomen in male, reaching its apex in female. Male. Lobes of pygofer short, with long [p. 275] narrow processes ventrally at posterior margin, and disorderly bristles. Genital plates stretched, a little narrowed towards straightly truncate apices with tooth-shaped inner angles; outer margins of genital plates bearing bristles in basal half situated disorderly, in distal half in one row. Styli with drawn out apex and weakly developed subapical projection. Connective loop-shaped. Penis narrow, arcuate; gonopore ventral; shaft at apex distal to gonopore with a pair of small lateral projections. – 1-2 species (in USSR 4).

- Processes of pygofer lobes more or less straight, not widened at apex. Body dorsally green; vertex at apex with 2 small oblique dark spots. Face and body ventrally dark brown to black; on frontoclypeus only light transverse lines interrupted in the middle are expressed. 2.9-4.1. – ? N Khab.; W and C Siberia, Transcaucasia, European part of USSR. – N Mongolia, Europe, N Africa. – In moist meadows and pastures. August. (Figs. 199: 5-10) **A. pascuellus** Fall.

- Processes of pygofer lobes at apex widened, lancet-shaped, and bent, arcuate. Face dark brown to black, with light transverse lines and a light longitudinal stripe in the middle narrowing up to anteclypeus and not reaching apex of face. Body ventrally darkened. 3.3-4.1. – Chita Prov. – E Mongolia. – In moist meadows, mainly on river and lake banks on *Calamagrostis*. Late July to mid-August. (Figs. 199: 1-4) **A. dolens** Em.

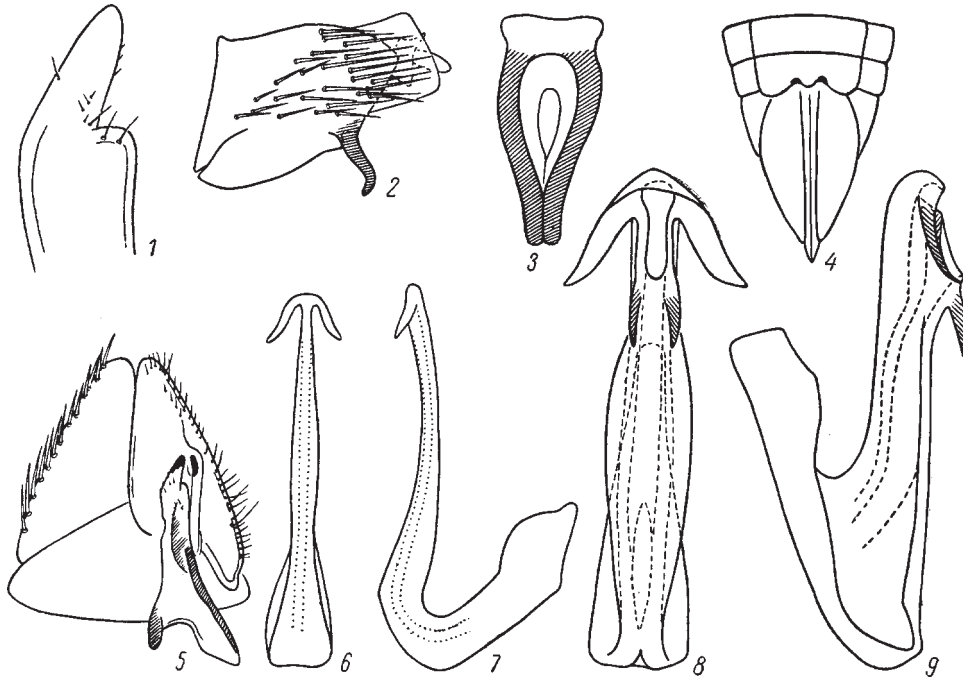


Fig. 198. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Vilbaste and original).

1-7, *Sorhoanus acarifer*: 1, apex of stylus; 2, pygofer and anal tube, lateral view; 3, connective; 4, apex of female abdomen, ventral view; 5, genital valve, genital plates and stylus; 6, 7, penis (6, posterior view; 7, lateral view); 8, 9, *S. hilaris*, penis (8, posterior view; 9, lateral view).

166. **Diplocolenus** Rib. Moderately slender, with obtuse-angled or rectangular projecting head; the turn of face into vertex rounded, but distinct, steep; vertex more or less flat. Male. Lobes of pygofer with a tooth (sometimes indistinct) at apex. Genital plates on outer or posterior margin with a deep cut; opposite to it [p. 277] a sclerotized tooth is often present on dorsal side; bristles disorderly, situated along free margins, often on both sides of the cut. Styli with apical part directed obliquely backwards, long, straight or arcuate and with a distinct subapical projection. Penis at apex with 1-2 pairs of processes; gonopore ventral, usually subapical. – 6 species (in USSR about 25).

1. Shaft of penis in apical part bent dorsad; the apex with 2 approximately parallel processes continuing the shaft. Brown, with dark brown speckled pattern. (Subgenus *Diplocolenus* Rib.) 2
- Shaft of penis in apical part slanting ventrad; apical processes diverging and forming an angle with apex of shaft in lateral view. Venter dark; dorsum green, without pattern or with blurred darkening 3
2. Genital plates comparatively long, their length greater than greatest width. The excision of pygofer lobes under apical tooth obtuse-angled. Grayish brown; vertex with 2 triangular small spots at apex and 2 quadrangular spots beyond them.

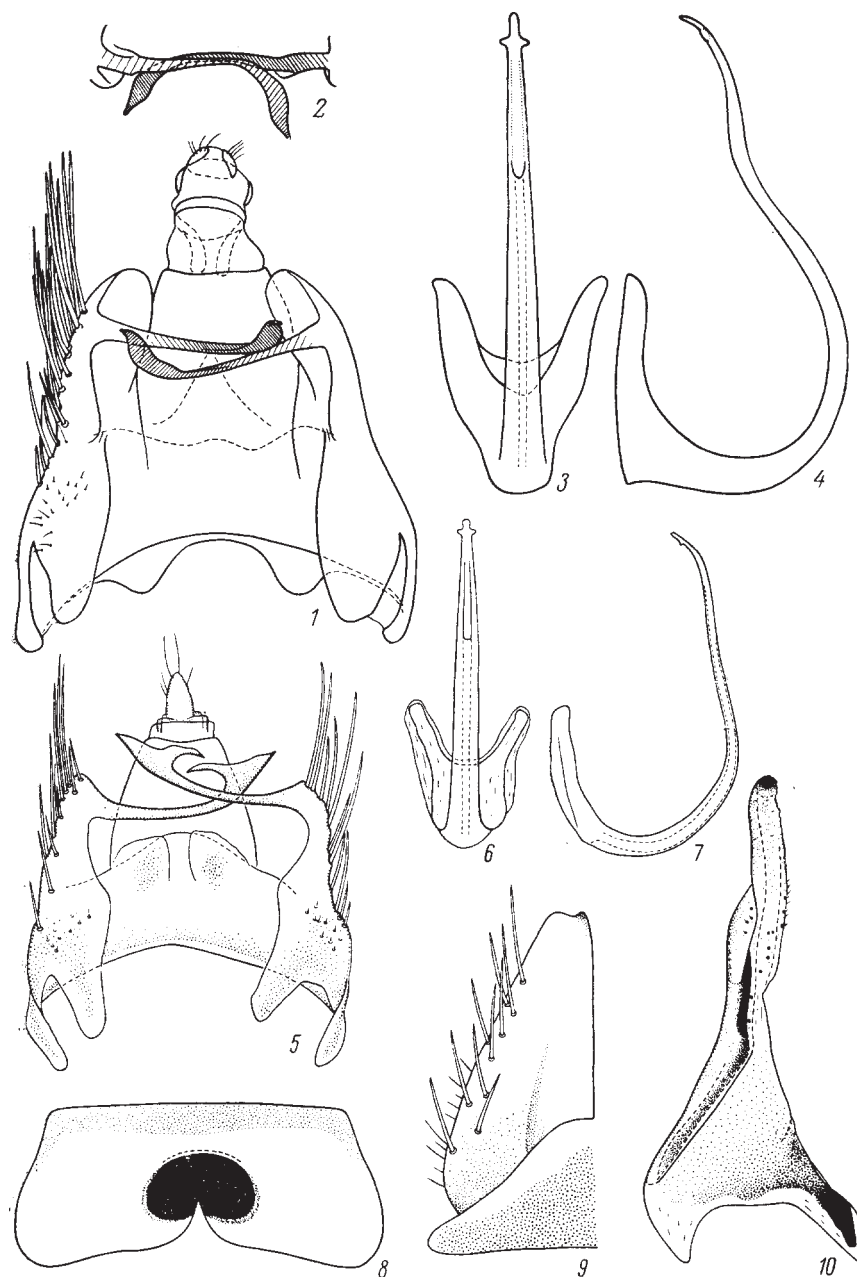


Fig. 199. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Ossiannilsson and original).

1-4, *Arthaldeus dolens*: 1, pygofer and anal tube, ventral view; 2, processes of pygofer lobes, posterior view; 3, 4, penis (3, posterior view; 4, lateral view); 5-10, *A. pascuellus*: 5, pygofer and anal tube, ventral view; 6, 7, penis (6, posterior view; 7, lateral view); 8, subgenital plate of female, ventral view; 9, genital valve and genital plate, ventral view; 10, stylus.

Pronotum with slight, longitudinal, brown stripes. Veins of fore wings light, cells with uneven brown, at places dark brown edging. 3.8-4.5. – Prim. – In meadows and glades, and also in alpine tundra on grasses. Early June to mid-September. (Figs. 200: 1-7) *D. uniformis* Anufr.

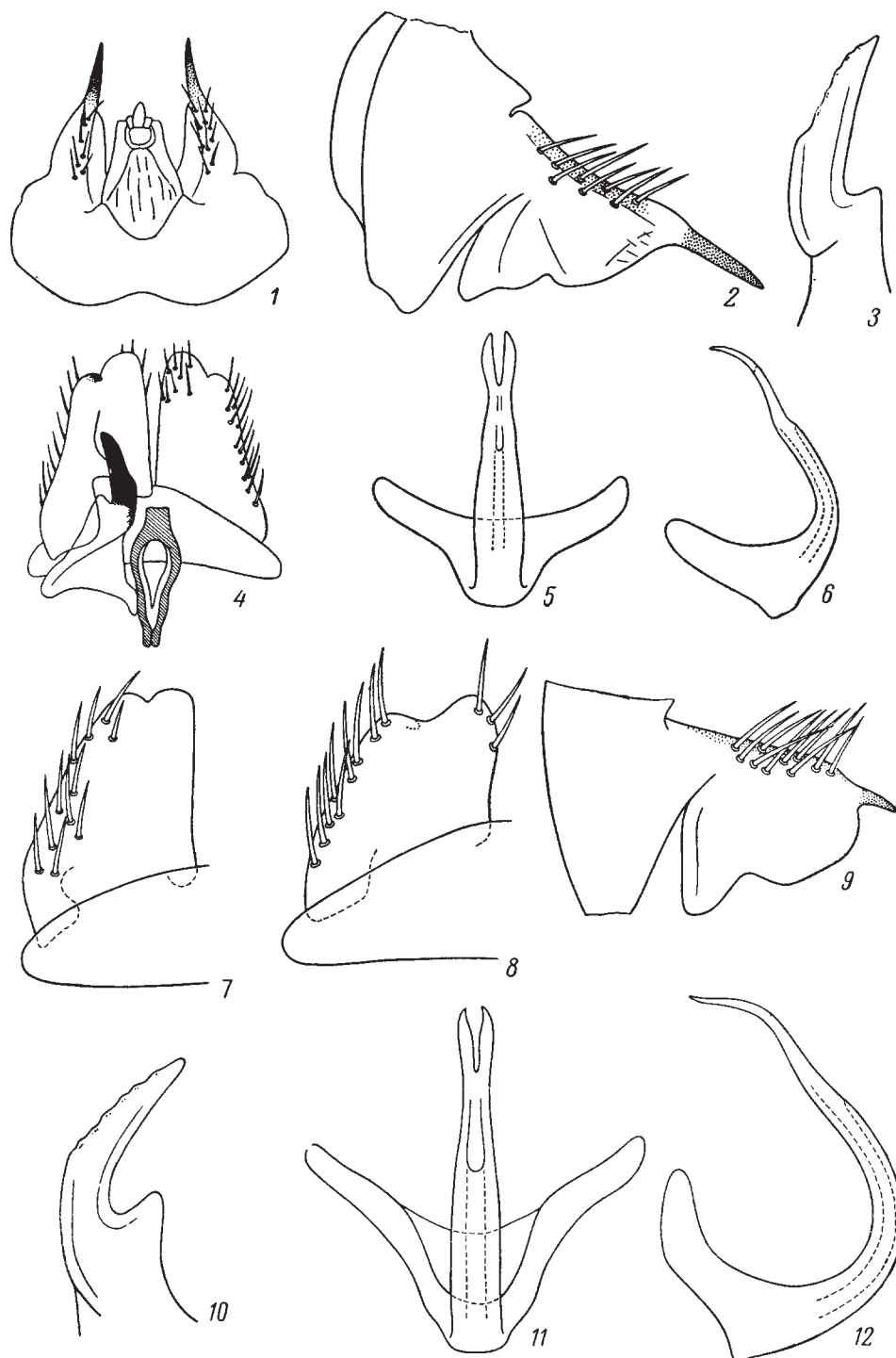


Fig. 200. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev).

1-7, *Diplocolenus uniformis*: 1, pygofer and anal tube, dorsal view; 2, lobe of pygofer, lateral view; 3, stylus; 4, genital valve, genital plates, connective and stylus; 5, 6, penis (5, posterior view; 6, lateral view); 7, genital valve and genital plate, ventral view; 8-12, *D. ikumae*: 8, genital valve and genital plate, ventral view; 9, lobe of pygofer, lateral view; 10, stylus; 11, 12, penis (11, posterior view; 12, lateral view).

- Genital plates comparatively short, their length less than greatest width. The excision of pygofer lobes under apical tooth acute-angled. Similar to *D. uniformis*. 3.4-4.4. – Sakh., S Kur. – In meadows and glades on grasses. Late June to early September. (Figs. 200: 8-12) **D. ikumae** Mats.
- 3. Base of penis arcuate, transverse, short and wide. (Subgenus *Gelidanus* Em.) 4
- Base of penis narrow, elongate. (Subgenus *Verdanus* Oman) 5
- 4. Shaft of penis wide and short; apical excision not deep, reaching to the level of posterior margin of apical processes. An obtuse-angled projection is noticeable on dorsal margin of shaft in lateral view. Venter black; dorsum green; apices of fore wings darkened. 4.1-4.7. – Khab., Prim. – On *Calamagrostis langsdorfii*. Late April to early July. (Figs. 201: 1-4) **D. (G.) sichotanus** Anufr.
- Shaft of penis narrow and long; apical excision reaching subapical processes. Dorsal margin of shaft even in lateral view. Similar to *D. sichotanus*. 3-4.5. – Kamch. – N Scandinavia. – In tundra and mountain meadows. Late July to mid-August. (Figs. 201: 5-10) **D. (G.) limbatellus** Zett.
- 5. Apex of penis with 2 long processes running from their base transversely and in the middle part slightly slanting recurrently. Venter usually black, including face; dorsum yellowish green; apices of fore wings black edged. 3.5-4.5. – Mag., Koryak., Kamch.; NE Yakutia. – Alaska, Canada. – In meadows. Mid-June to late August. (Figs. 201: 11, 12) **D. (V.) evansi** Ashmead
- Apex of penis with 2 short, slightly bent processes. Similar to *D. evansi*. 3.7-4.4. – Mag.; NE Yakutia. – In meadows. Late June to early August. (Figs. 201: 13, 14) ...
..... **D. (V.) exsiliatus** Em.

167. **Tiaratus** Em. Moderately sturdy. Vertex more or less rectangular, projecting forwards; the turn of face into vertex rounded. Fore wings often a little shorter than abdomen. Male. Lobes of pygofer short, without processes, with numerous bristles. Genital plates short, with convex outer margins, closed nearly to the very apex, at apex with a small excision, opposite to which a tooth is situated on dorsal surface of plates; the apex of stylus is set against that tooth. Styli with rather large, straight, obtuse-angled apical part and [p. 280] a distinct subapical projection; bristles few, in a marginal row; apices of genital plates with long hairs. Connective loop-shaped. Penis short, flattened laterally, with subapical ventral tooth; gonopore apical. The genus comprises 1 species, which may be found in the Far East.

1. Greenish yellow, with dark brown to black pattern mainly on vertex and pronotum. Vertex laterally with 2 longitudinal interrupted stripes arising from triangular spots at apex of vertex; pronotum anteriorly with separate black spots; the inner spots continuing the stripes on vertex. Fore wings sometimes with more or less expressed brown edging of cells. 2.6-3.5. – C and NE Yakutia, Transbaikal, Tuva, Altai, Kazakhstan, C Tien Shan. – Mongolia. – In steppe habitats with *Carex duriuscula* and other related undersized sedges. Mid-June to late August. (Figs. 202: 1-4) **T. caricis** Em.

168. **Mogangina** Em. Moderately slender. Vertex approximately rectangular, projecting forwards, with rounded apex; the turn of face into vertex smoothed. Male. Lobes of pygofer without processes, short, rounded truncate posteriorly. Anal tube short, wide. Genital valve trapezoidal, with concave posterior margin. Genital plates elongate, closed, narrowed towards a not wide apex which is obliquely truncate outwards; outer margin gently concave, bearing an even row of bristles. Styli with

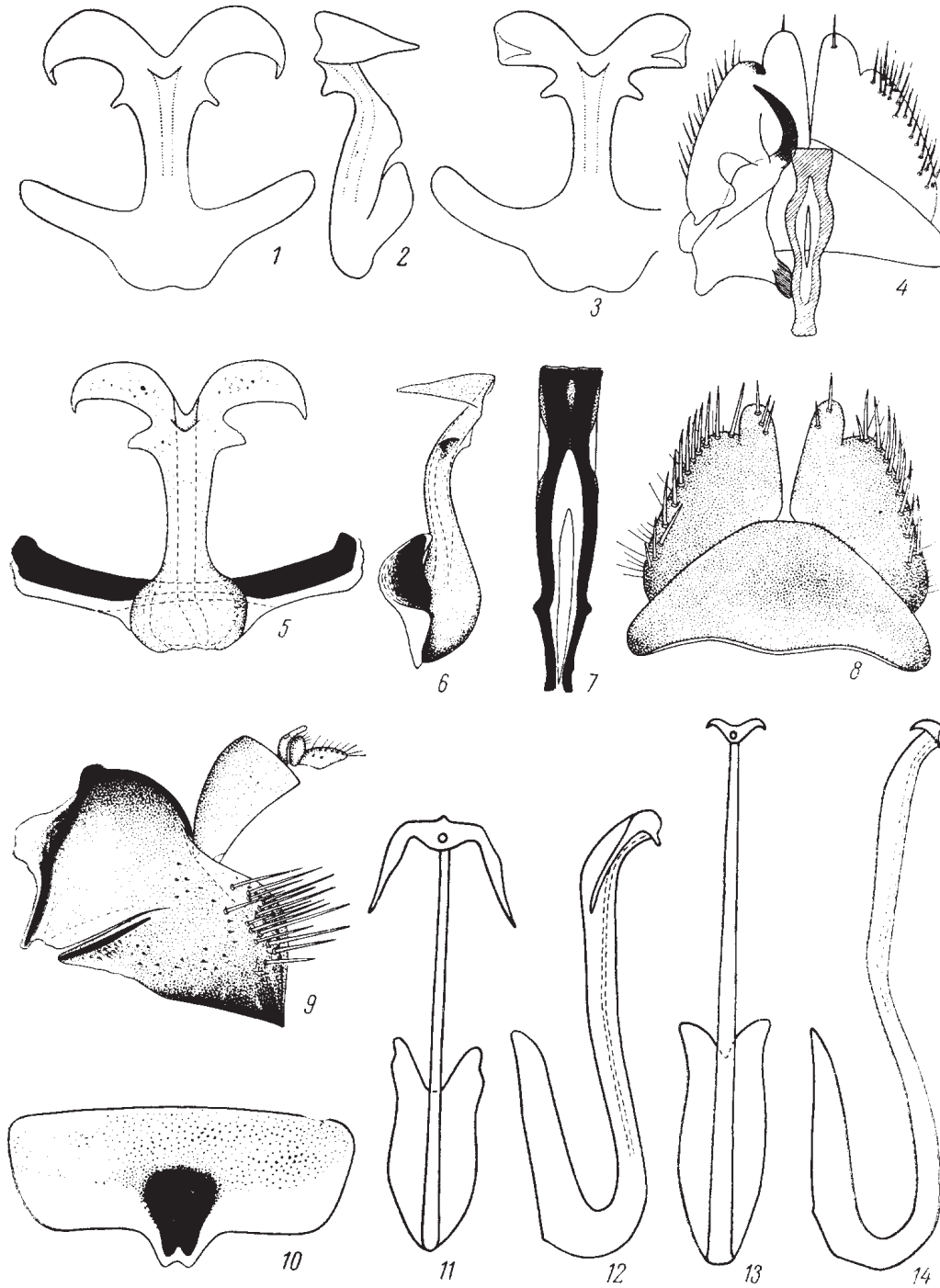


Fig. 201. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev, Emeljanov, and Ossiannilsson).

1-4, *Diplocolenus sichotanus*: 1-3, penis (1, posterior view; 2, lateral view; 3, posterior view, another specimen); 4, genital valve, genital plates, connective and stylus; 5-10, *D. limbatellus*: 5, 6, penis (5, posterior view; 6, lateral view); 7, connective; 8, genital valve and genital plates, ventral view; 9, pygofer and anal tube, lateral view; 10, subgenital plate of female, ventral view; 11, 12, *D. evansi*, penis (11, posterior view; 12, lateral view); 13, 14, *D. exsiliatus*, penis (13, posterior view; 14, lateral view).

small, nearly straight, finger-shaped apex, and well developed subapical projection. Connective elongate, racket-shaped. Penis with wide base and narrow arcuate shaft, without long processes but with lateral subapical projections; gonopore ventral, situated in the middle part of shaft. – 1 species (in USSR 2).

1. Coloration brown, speckled; background lighter, whitish; pattern brown to dark brown. Face with brown indistinct spots and transverse stripes [p. 283] on frontoclypeus. Vertex at apex with 2 triangular small dark spots medial to ocelli and 2 wide longitudinal brown stripes from spots to posterior margin; the stripes posteriorly with a dark brown small spot and a light spot near it. Pronotum with longitudinal brown stripes. Fore wings with light veins and unevenly brown edged cells. 2.6-3. – Mag.; NE Yakutia, Tuva. – N Mongolia. – In herb layer of taiga forests. Mid-July to late July. (Figs. 203: 1-3) **M. chubsugulica** Dlab. [p. 284]

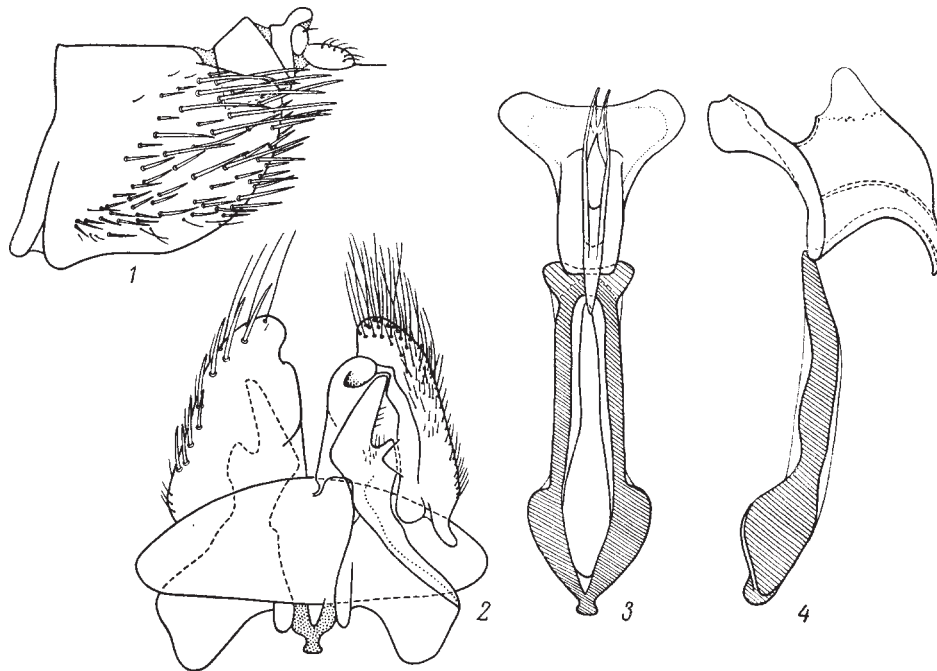


Fig. 202. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (original).

1-4, *Tiaratus caricis*: 1, pygofer and anal tube, lateral view; 2, genital valve, genital plates, connective and stylus; 3, 4, penis and connective (3, posterior view; 4, lateral view).

169. **Pantallus** Em. Sturdy, with triangular and rounded head projecting forwards. The turn of face into vertex rounded. Male. Lobes of pygofer widely rounded, with few bristles in one row. genital valve strongly transverse, with smoothly rounded posterior margin. Genital plates short, with slightly concave lateral margin, rounded at apex; bristles in a marginal row. Styli with small apex slanting outwards. Connective with a long base and long branches united at apices. Penis with undulate shaft; gonopore ventral. Monotypic genus.

1. Sturdy, with bright brown or black pattern on light background. Vertex with 2 small spots at anterior margin and 2 large spots between ocelli; pronotum with indistinct spots often fusing into longitudinal stripes. Fore wings with brown edged cells and 2 uneven oblique white bands. 2.6-3.4. – Prim.; S Siberia, Tuva, Altai,

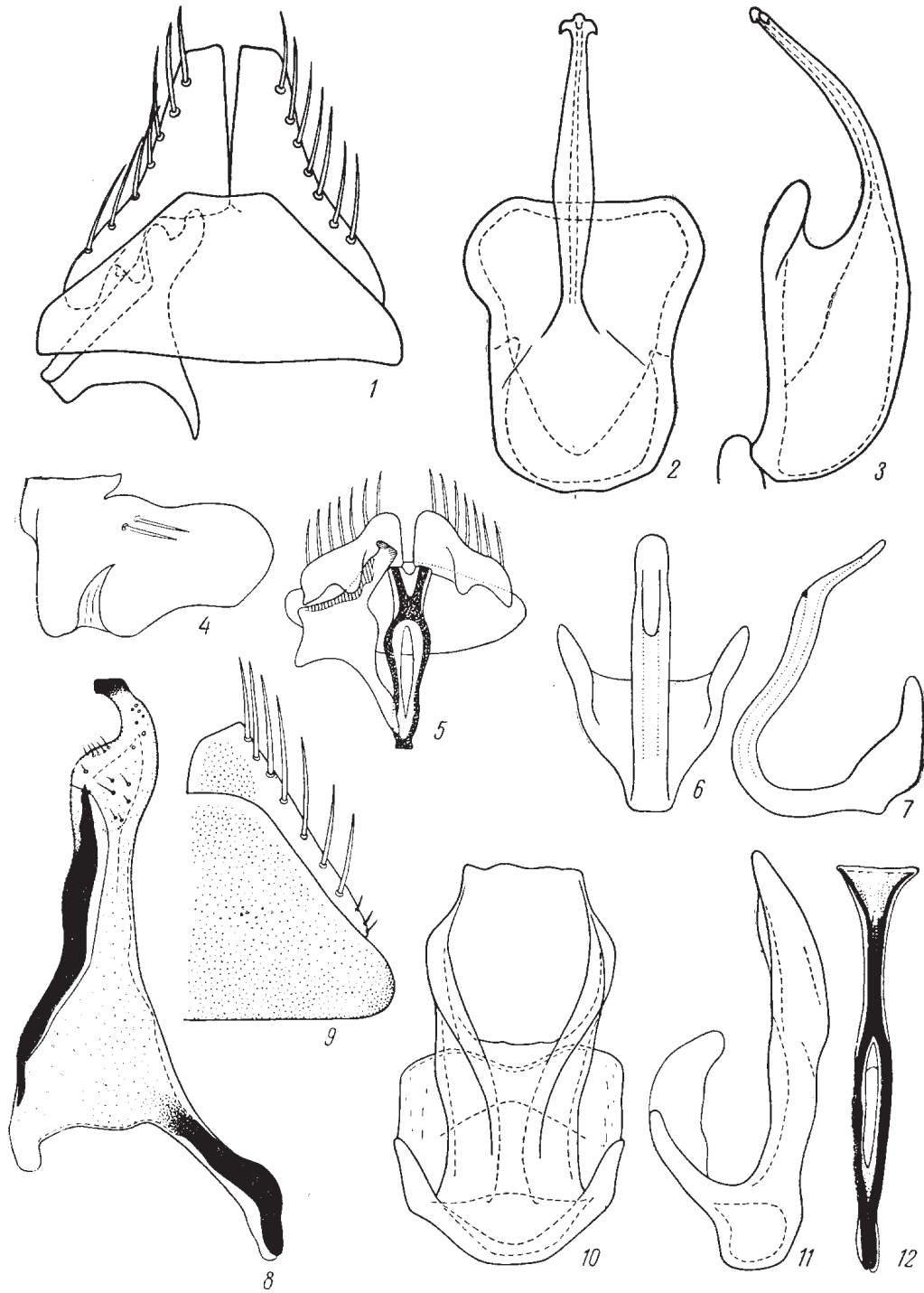


Fig. 203. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev, Ossiannilsson, and original).

1-3, *Mogangina chubsugulica*: 1, genital valve, genital plates and stylus, ventral view; 2, 3, penis (2, posterior view; 3, lateral view); 4-7, *Pantallus alboniger*: 4, lobes of pygofer; 5, genital valve, genital plates, connective and stylus, dorsal view; 6, 7, penis (6, posterior view; 7, lateral view); 8-12, *Psammotettix confinis*: 8, stylus; 9, genital valve and genital plate, ventral view; 10, 11, penis (10, posterior view; 11, lateral view); 12, connective.

Kazakhstan, Middle Asia, S European part of USSR. – NE China, Mongolia, Hungary. – In dry and steppe meadows on grasses. Mid-June to mid-September. (Figs. 203: 4-7) **P. alboniger** Leth.

170. **Psammotettix** Hpt. Slender, moderately slender or sturdy, mostly with head slightly projecting forwards and the turn of face into vertex not sharp. Pygofer with numerous bristles at dorsal margin. Genital valve long. Genital plates short, with more or less straight lateral margin and narrowly obliquely truncate, often nearly rounded apices; bristles in a marginal row. Styli with well expressed subapical angle and blunt apex. Connective with long base; branches of connective also long, with contiguous apices. Penis around gonopore with apical part widened in the shape of a spade or collar. – 7 species (in USSR more than 50).

1. Shaft of penis narrow, more or less cylindrical, not flattened dorsoventrally 2
- Shaft of penis wide and short, flattened dorsoventrally. – Light brown, brownish gray, with not contrasting brown pattern. Vertex with 2-3 pairs of not contrasting spots; pronotum with longitudinal, not bright stripes; elytra with more or less light veins and blurred brown-edged cells. 3.2-4. – Kamch.; NE Yakutia, Transbaikal, Tuva, Altai, Kazakhstan, northern mountains of Middle Asia, Caucasus. – Mongolia, Turkey (Anatolia), Europe, N America. – In moist meadows. Late July to late August. (Figs. 203: 8-12) **P. confinis** Dlab.
2. The widening of shaft around gonopore large and wide, about 3 times as wide as shaft of penis 3
- The widening of shaft around gonopore small 4
3. Elytra with light veins, cells more or less brown-edged. Vertex with separate middle and hind spots, both hind spots divided longitudinally. Similar to *P. confinis*. 3.7-4.2. – S Khab., Prim.; C Siberia, Tuva, Kazakhstan. – Korea, NE China. – In meadows on grasses. Mid-June to mid-September. (Figs. 204: 7-11) **P. koreanus** Mats.
- Vertex with middle and hind spots of each side completely fused. Elytra with light rounded spots on dark brown background; background and spots crossing veins and cells. Clavus with a spot at base and 2 spots (one after another) at suture of elytra; corium with 2 spots. The anterior spot connected with the light costal field; the apical part of membrane (apical cell) also light. 3.2-3.8. – S Kur. – On *Artemisia*. Late June to early September. (Figs. 204: 1-6) **P. kurilensis** Anufr.
4. Lateral margins of widening of penis apex around gonopore elevated ventrad, because of which apex of penis is considerably widened ventrad in lateral view 5
- Lateral margins of widening of penis apex around gonopore not elevated [p. 285] ventrad towards apex, in lateral view at most insignificantly wider than the main part of shaft 6
5. Apex of penis shaft rather widely rounded. Similar to *P. confinis*. 3.1-3.7. – Kamch. – In moist and swamp meadows. Late May to early August. (Figs. 205: 1-8) **P. kamtshaticus** Vilb.
- Apex of penis shaft markedly attenuate. Similar to *P. confinis*. 2.6-3.4. – Amur. – In meadows. Mid-June to mid-July. (Figs. 205: 9-11) **P. amurensis** Anufr.
6. Apex of penis shaft noticeably drawn out. Similar to *P. confinis*. Varying in structure of penis (Figs. 106: 1-4). 3.3-4.3. – Kamch., Prim. – Europe, N Africa, nearly all non-tropical Asia and N America. [p. 286] – Polyphagous, prefers grasses. 1 to 3-4 generations per year (in southern parts of range: Middle Asia, Transcaucasia). Eggs overwintering. Injurious to cereals, especially as vector of viral diseases: winter wheat mosaic, wheat common and pale green dwarf, which are recorded from

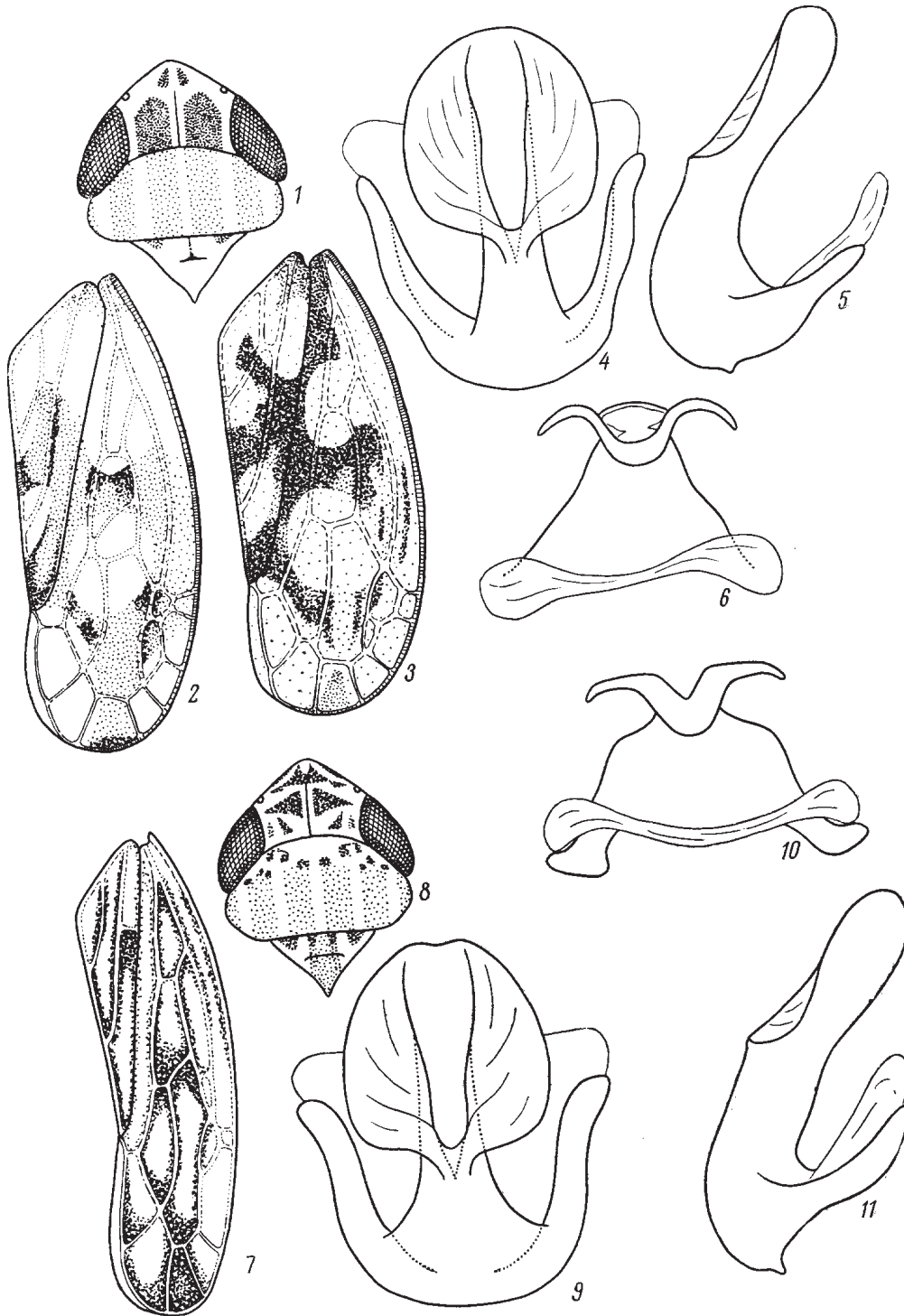


Fig. 204. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev).

1-6, *Psammotettix kurilensis*: 1, anterior part of body; 2, 3, fore wings with various degree of pigmentation; 4-6, penis (4, posterior view; 5, lateral view; 6, dorsal view); 7-11, *P. koreanus*: 7, fore wing; 8, anterior part of body; 9-11, penis (9, posterior view; 10, lateral view; 11, dorsal view).

Siberia and European part of USSR. Late May to late September. (Figs. 206: 1-4)

- **P. striatus* L.
 – Dorsal branches of base of penis shaft practically parallel. Similar to *P. confinis*.
 3-3.8. – Kamch. – Mountain tundra. Early August. (Figs. 206: 5-12)
 *P. alienulus* Vilb.

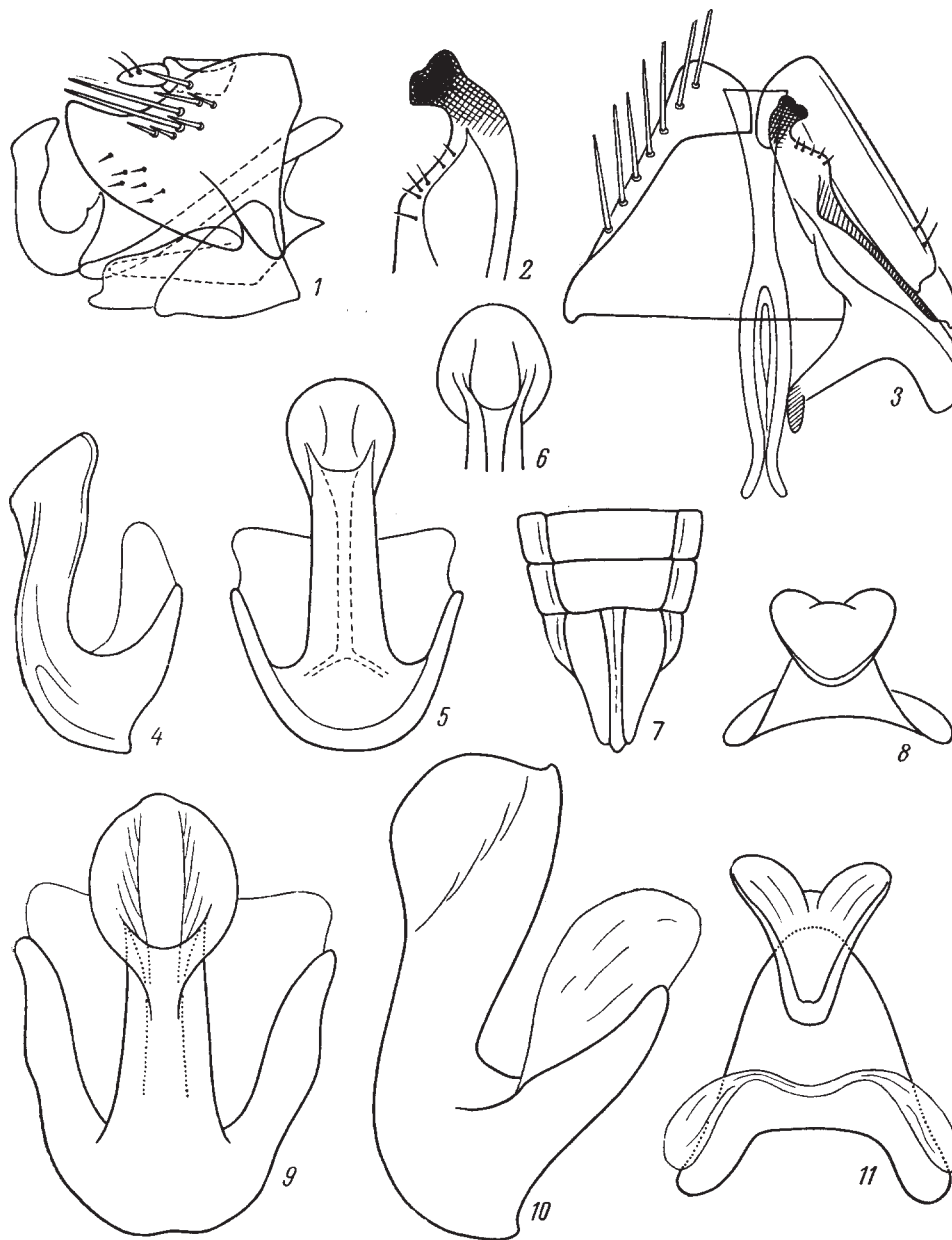


Fig. 205. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Anufriev and Vilbaste).

1-8, *Psammotettix kamtshaticus*: 1, genital block of male, lateral view; 2, apex of stylus; 3, genital valve, genital plate, connective and stylus; 4, 5, 8, penis (4, lateral view; 5, posterior view; 8, dorsal view); 6, apex of penis, posterodorsal view; 7, apex of female abdomen, ventral view; 9-11, *P. amurensis*, penis (9, posterior view; 10, lateral view; 11, dorsal view).

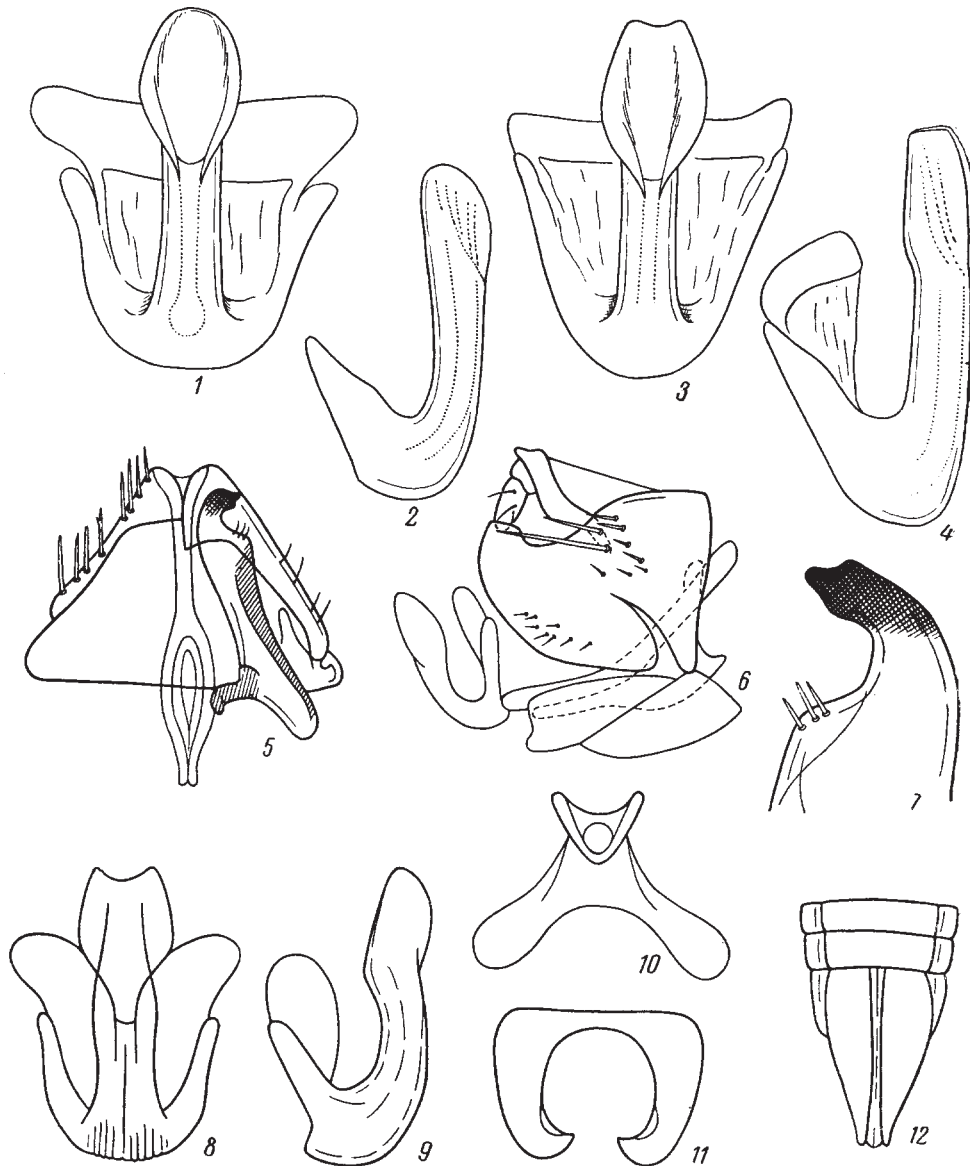


Fig. 206. Cicadines. Family Cicadellidae, subfamily Deltocephalinae (after Vilbaste and Ribaut).

1-4, *Psammotettix striatus*, penis (1, 3, posterior view; 2, 4, lateral view); 5-12, *P. alienulus*: 5, genital valve, genital plates, connective and stylus; 6, genital block of male, lateral view; 7, apex of stylus; 8-10, penis (8, lateral view; 9, posterior view; 10, dorsal view); 11, pygofer, dorsal view; 12, apex of female abdomen, ventral view.

4. Family CERCOPIDAE

Medium-sized or rather large, with solid integument often covered with hairs. Head small, usually with strongly or very strongly developed postclypeus occupying most of head. Pronotum wide, with long, diverging backwards lateral margins of upper part; posterior lobe of pronotum strongly developed and often covering bases of fore wings. Fore wings elytra-like, without distinctly distinguishable veins, gently tectiform, less often steeply tectiform (Fig. 208, 1). Hind wings with separate *Pcu* and *A₁*. (Figs.

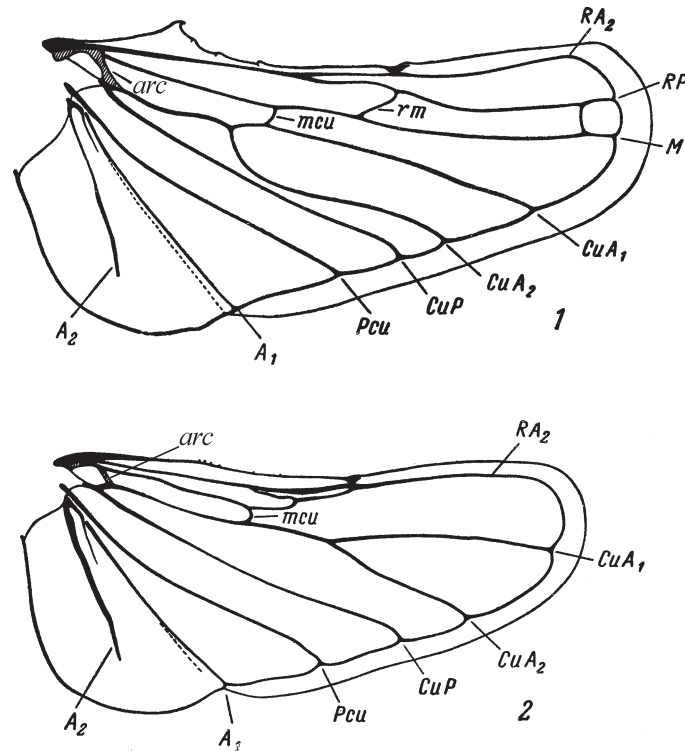


Fig. 207. Cicadines. Family Cercopidae. Hind wings (original).

1, *Paracercopsis seminigra* Mel.; 2, *Eoscartopsis assimilis*. See Fig. 5 for designations.

207: 1, 2). Legs strong, rather short, more rarely slender; hind tibiae with 1-2 lateral teeth. Mostly polyphagous. Larvae in soil crevices, under stones, etc.; at moult to imagines, produce a lump of froth. 1 genus, 1 species (in USSR 2 genera and up to 5 species).

LITERATURE. Metcalf, Z. P., Horton, G. The Cercopoidea (Homoptera) of China. Lingnan Sci J. 1934. Vol. 12. P. 367-429. Pl. 37-43. Kwon, Y. J., Lee, Ch. E. Morphological and phylogenetic studies on the male genitalia of Korean Cercopoidea (Homoptera: Auchenorrhyncha). Nature and Life (Kyungpook J. Biol. Sci.). 1979. Vol. 9. P. 1-31. [p. 287]

KEY TO SPECIES OF THE FAMILY CERCOPIDAE

1. **Eoscartopsis** Mats. Head small. Anterior margin of vertex evenly arcuate; vertical area with a smoothed anterior carina, smoothly turning into superantennal carinae, and a middle longitudinal carina. Postclypeus in upper 2/3 of facial part projecting, with gentle longitudinal depression; lateral margins of depression from below slightly carinate and ending in a blunt small tooth. Fore wings sloping rather steeply roof-like. Hind tibiae with 1 lateral tooth. Male. Genital plates with apices slanting medially, drawn out into a process and crossed. Aedeagus arcuate, flattened laterally, without processes, with subapical ventral gonopore. Styli with thickened club-shaped apices bearing blunt projections. *Eoscartopsis* is often regarded as synonym of *Paracercopsis* Schmidt (C China), from which it differs in the lacking apex of medial vein and sharply diminished interradi cell on hind wing (Fig. 207: 1, 2), and also in more steeply tectiform fore wings at rest. – 1 species.

1. Light brown, with darker anterior part of body or completely dark brown, without pattern. 6.3-8.3. – S Prim., S Kur. – Japan, Korea, NE China, Taiwan. – In moist meadows and among shrubs. Early July to mid-September. (Figs. 207: 2; 208: 1-7)
 *E. assimilis* Uhl.

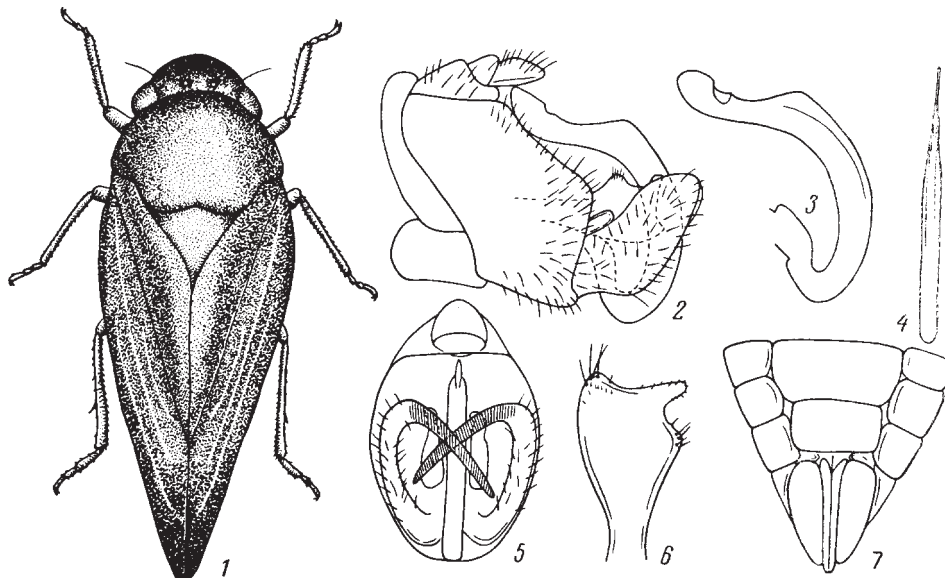


Fig. 208. Cicadines. Family Cercopidae (after Esaki and Vilbaste).

1-7, *Eoscartopsis assimilis*: 1, general appearance; 2, 5, genital block of male (2, lateral view; 5, posterior view); 3, 4, aedeagus (3, lateral view; 4, posterior view); 6, apex of stylus, right lateral view; 7, apex of female abdomen, ventral view.

5. Family APHROPHORIDAE – FROGHOPPERS

Medium-sized, less often rather large, with solid integument sometimes covered with hairs (Figs. 210; 222; 228). Head wide, with more or less flat surface of vertex and vertical area well delimited by a carina. Postclypeus convex, mostly not strongly hypertrophied. Pronotum usually not wider or a little wider than head, with relatively short lateral margins of the upper part; hind lobe well developed but not covering bases of fore wings. [p. 288] Fore wings consolidated, sloping more or less roof-like, sometimes posteriorly more convex, rounded. Hind wings with anastomosis of *Pcu* and *A*₁ (Figs. 209: 1, 2). Legs strong, moderately elongate or short; hind tibiae usually with 2 lateral teeth (Fig. 3: 2). Polyphagous. Larvae in a lump of froth produced by them on plants. – 9 genera, not less than 27 species (in USSR 11 genera).

LITERATURE. See family Cercopidae (p. 286).

KEY TO GENERA

1. Prolongation of pleuronotal suture of pronotum above posterior margin of epimere situated lower than prealar excision of sides of pronotum, opposite to epimeral wing lobe of mesonotum. Superantennal carina nearly always simple; if double, vertical area transverse 2
- Pleuronotal suture of pronotum prolonged by a secondary furrow forming a single straight line with the suture; the furrow reaches to upper margin of prealar exci-

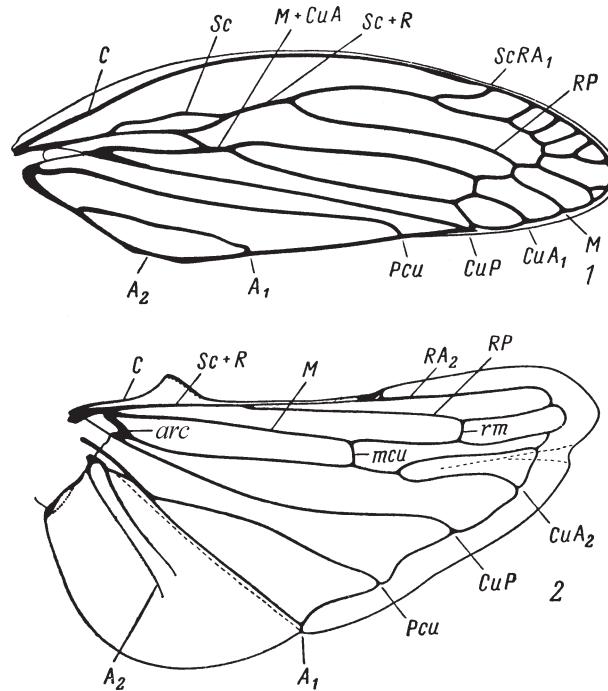


Fig. 209. Cicadines. Family Aphrophoridae (original).

1, 2, *Aphrophora salicina*, wings: 1, fore wing; 2, hind wing. See Fig. 5 for designations.

- sion and ends in posterior end of lateral carina of pronotum. Superantennal carina double. (Tribe Philaenini) 6
2. Vertex between ocelli and pronotum with a median carina. Ocelli spaced considerably narrower than width of vertical area and approximated to posterior margin of vertex. Anterior margin of vertical area delimited by a carina reaches the boundary between frontal and vertical surfaces of postclypeus. (Tribe Aphrophorini) 3
- Vertex between ocelli and pronotum without longitudinal carina. Carinate boundary between frontal and vertical surfaces of postclypeus situated in front of carina limiting the area of vertex. Ocelli spaced on the width of vertical area; if a little less, they are at equal distance from posterior margin of vertical area. (Tribe Lepyroniini) 5
3. Hind tibiae with 4 lateral teeth. Lateral margins of pronotum strongly diverging; pronotum noticeably wider than head across eyes. Length of an eye [p. 289] on lateral margin considerably less (1.5 times) than length of lateral carina of pronotum. Genital plates not separated from pygofer, fused and strongly shortened; styli protruding 1. **Sinophora**
- Hind tibiae with 2 lateral teeth. Lateral margins of pronotum weakly diverging, not longer than eye; pronotum nearly as wide as head. Genital plates longer than styli 4
4. Supraantennal carinae medially ending widely rounded opposite to even surface at upper margin of facial surface of postclypeus; lateral sides of vertical area from ends of supraantennal carinae converging backwards. Genital plates separated from pygofer 2. **Peuceptyclus**

- Supraantennal carinae medially narrowly projecting and entering by the end in a groove on postclypeus delimited above by anterior carina of vertical area, and below by upper carina of facial part of postclypeus; vertical area from ends of supraantennal carinae dilated backwards. Genital plates not separated from pygofer 3. **Aphrophora**
- 5. 2nd segment of hind tarsi ventrally on posterior margin with few teeth, which are considerably smaller and weaker than on 1st segment. Lateral carinae of pronotum longer than lateral margin of eyes and noticeably diverging backwards. Head considerably narrower than pronotum 4. **Cnemidanomia**
- 2nd segment of hind tarsi ventrally on posterior margin with 1 transverse concave row of teeth, which are as strong as on 1st segment. Lateral carinae of pronotum weakly diverging backwards, not longer than lateral margin of eye. Head barely narrower than pronotum 5. **Lepyronia**
- 6. Anal tube (segment X) without teeth 7
- Anal tube with lateroventral teeth on segment X 8
- 7. Apex of aedeagus without long processes, with short teeth only. Sides of pygofer usually with a projection. Genital plates without basal lateral projections 6. **Philaronia**
- Apex of aedeagus with bifurcate processes. Sides of pygofer posteriorly without projections. Genital plates with basal lateral lobes, sometimes rather strongly elongated 7. **Aphilaenus**
- 8. Apex of aedeagus with 3 pairs of processes. Genital plates without a lateral tooth 8. **Philaenus**
- Apex of aedeagus with flat lobes; their margin is lacerated in proximal part or completely. Genital plates with a lateral tooth 9. **Neophilaenus**

KEY TO SPECIES OF THE FAMILY APHROPHORIDAE

Tribe **APHROPHORINI**

1. **Sinophora** Mel. Moderately elongate, with relatively narrow head, pronotum widening backwards and convex costal margins of elytra having relatively narrow rounded apices. Integument shiny. Hind tibiae with 4-6 lateral teeth. Male. Pygofer laterally with a knob on each side on posterior margin, and strongly diminished, not separated from pygofer and partly fused genital plates, which are shorter than styli. Styli with thick angular apices. Penis with a short, unevenly sclerotized aedeagus. In USSR 1 species.

1. Brown, with blurred pattern from light brown to nearly black. Face more or less darkened; postclypeus with dark sides and a wide median light stripe. Vertex and anterior part of pronotum usually lighter than scutellum, elytra and posterior part of pronotum; on light part of pronotum there is usually a dark median stripe. Elytra with blurred dark spots at the base, in middle part of corium and in front of apex of clavus. Venter and legs brownish, at places with darker spots. 10.5-13.5. – S Prim., S Sakh., [p. 290] S Kur. – Japan, Korea, NE and C and S China. – On conifers. Late June to mid-September. (Figs. 210: 1; 211: 1-10) **S. submacula** Metc. et Horton

2. **Peuceptyelus** J. Sahlb. Moderately elongate, with slightly widening backwards pronotum, which is a little wider than head, and elytra with convex costal margins and relatively narrow apices. Integument glossy. Hind tibiae with 2 lateral teeth. Male. Anal

tube cylindrical, rather short; lateral parts of posterior margin of pygofer with well developed knob; genital plates rather short, separated from pygofer, their inner margins concave, not closed; apices pointed and slanting to each other. Styli also short, thick, with bill-shaped apices slanting inwards and a knob on lateral margin. Penis with short, thick, about isodiametrical aedeagus. – Not less than 3 species.

1. Genital plates shorter, with a subapical projection on outer margin. Supraantennal carinae with 2 ridges. In general, brown, with light brown and dark brown, not contrasting spots, sometimes oblique bands from apex of scutellum to the middle of costal margin and a transverse spot beyond apex of clavus may be noticeable. 6.5-7.5. – S Khab., Prim., S Kur. – Japan, Korea. – On *Picea*, *Pinus koraiensis* and other conifers. Late May, early August to early October. (Figs. 210: 2; 213: 1-6)
..... ***P. nigroscutellatus*** Mats.
- Genital plates longer, without projection on outer margin. Supraantennal carina simple. In general, brown, with light brown not contrasting spots; scutellum completely dark brown. 5.5-7.5. – Khab., Prim., Sakh., S Kur.; S Siberia, C Urals, NW and C European part of USSR, Baltia, Byelorussia. – China (Qinghai), N Europe, Poland. – On *Picea*. Mid-May to early September. (Figs. 212: 1-7)
..... ***P. coriaceus*** Fall.

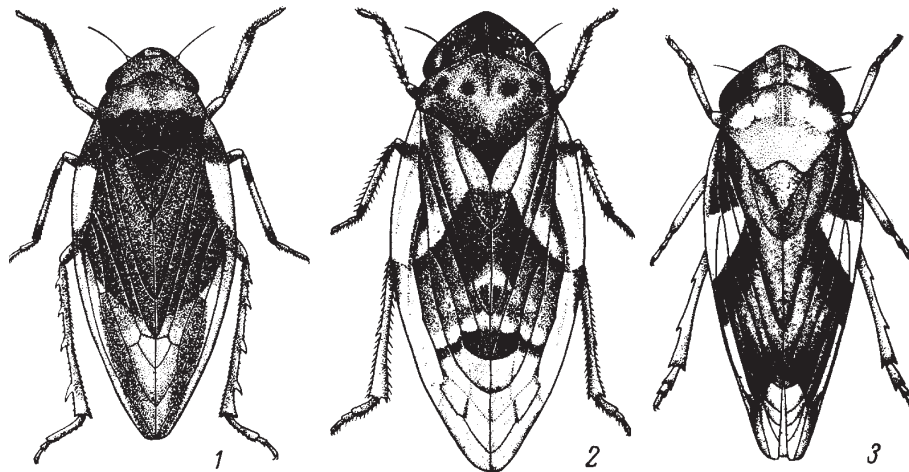


Fig. 210. Cicadines. Family Aphrophoridae (after Esaki and Javorek).

1, *Sinophora submacula*; 2, *Peuceptyelus nigroscutellatus*; 3, *Aphrophora alni*.

3. ***Aphrophora*** Germ. Comparatively large, with slender, coarsely punctate body noticeably narrowing backwards. Vertex and pronotum with a distinct longitudinal carina or with a smooth line devoid of punctation. Vertical area at least twice as wide as long. Distance between ocelli considerably less than width of vertical area and distance from ocelli to eyes. Male. [p. 291] Anal tube cylindrical, large. Lateral parts of posterior margin of pygofer with a large projection narrowing towards apex and often bearing a small subapical dorsal projection. Genital plates not separated from pygofer, rather short, simple or with lateral projection; apices more or less widely rounded, pointed or widely blunt. Styli with thick, irregularly triangular, widened and truncate apex. Penis mostly with thick and short aedeagus. – Not less than 12 species (in USSR about 15).

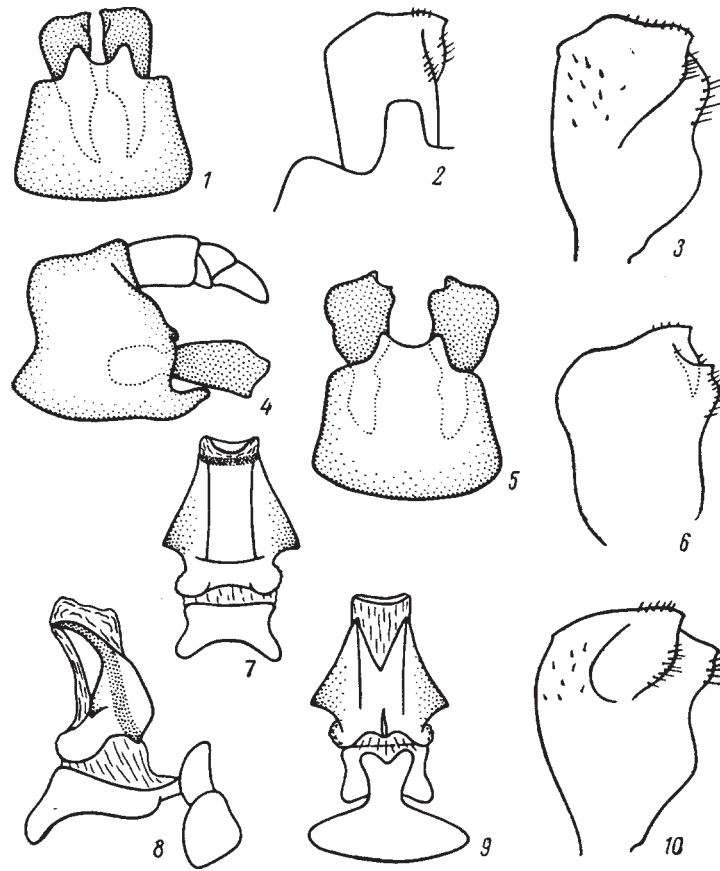


Fig. 211. Cicadines. Family Aphrophoridae (after Anufriev).

1-10, *Sinophora submacula*: 1, 4, 5, genital block of male (1, 5, ventral view; 4, lateral view); 2, visible part of stylus, ventral view; 3, 6, 10, apex of stylus (3, 10, dorsal view; 6, ventral view); 7-9, penis (7, ventral view; 8, lateral view; 9, dorsal view).

1. Inner apical angle of stylus bifurcate. Penis long, at least twice as long as wide. Genital plate approximately triangular, narrowed towards pointed, approximate apical angles. Lateral processes of pygofer with well developed dorsal lobe, look biapical, when viewed from below; their ventral apices strongly slanting inwards. Yellowish gray; elytra usually grayish brown; each elytron outwardly with an oblique, light yellowish spot before middle not continuing on clavus, and with a spot of identical color before apex on costal margin; outer claval vein (*Pcu*) light before oblique light spot. In light specimens, elytra grayish yellow, not rarely at the middle with an indistinct, narrow, oblique band of separate spots. 8-10.6. – Khab., Amur., Prim., Sakh., S Kur.; Siberia, Kazakhstan, Middle Asia, Caucasus, European part of USSR. – Japan (Hokkaido, Honshu), Korea, China (NE, Xinjiang), Mongolia, many European countries, N Africa, introduced to N America. [p. 292] – In meadows, forest glades and edges; larvae develop on lower parts of stems of various herbaceous dicotyledonous plants, shoots of *Salix*, *Betula*, *Alnus*; imagines are common on deciduous trees and shrubs. Early July to mid-September. Eggs overwintering. (Figs. 210: 3; 214: 1-6) **A. alni** Fall.
- Inner apical angle of stylus simple, not bifurcate. Penis short, about as long as wide. Inner angles of posterior margins of genital plates rounded 2 [p. 293]

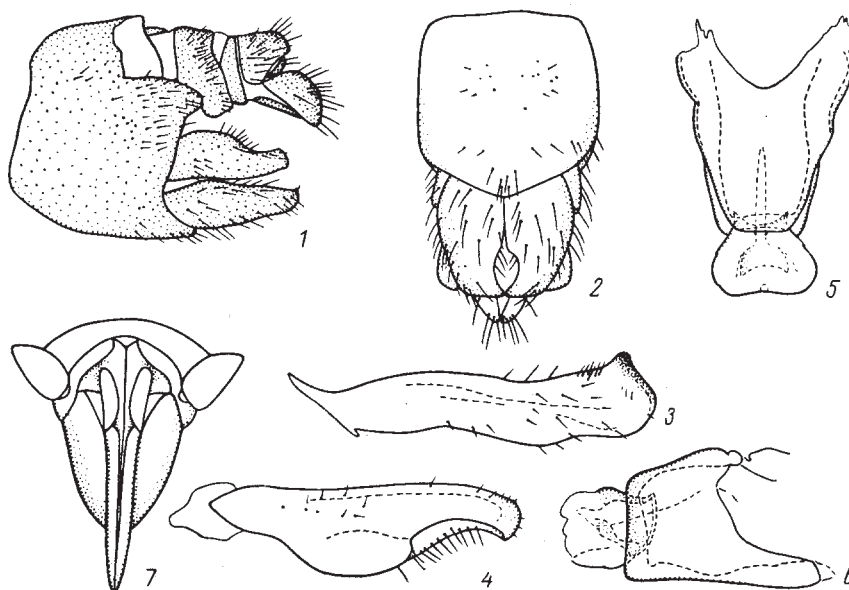


Fig. 212. Cicadines. Family Aphrophoridae (after Ossiannilsson).

1-7, *Peuceptyelus coriaceus*: 1, 2, genital block of male (1, lateral view; 2, ventral view); 3, 4, stylus (3, lateral view; 4, dorsal view); 5, 6, penis (5, dorsal view; 6, lateral view); 7, apex of female abdomen, ventral view.

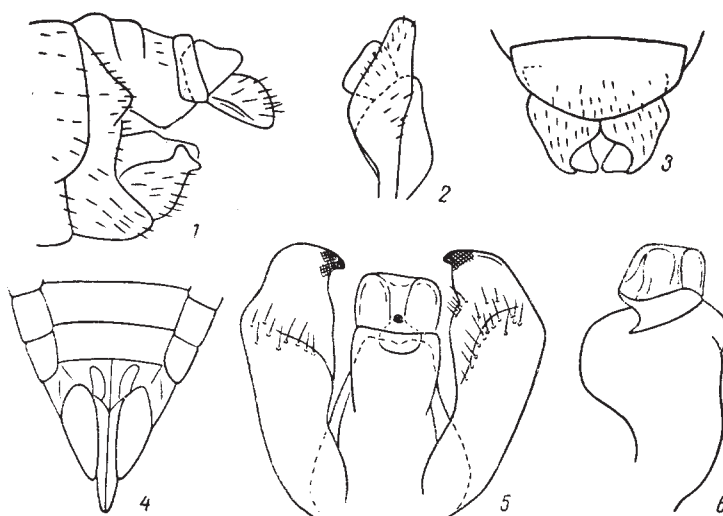


Fig. 213. Cicadines. Family Aphrophoridae (after Vilbaste).

1-6, *Peuceptyelus nigroscutellatus*: 1, 3, genital block of male (1, lateral view; 3, ventral view); 2, 5, stylus and penis (2, right lateral view; 5, ventral view); 4, apex of female abdomen, ventral view; 6, penis, right lateral view.

2. Apex of stylus with strongly attenuate inner part; inner margin of stylus before apex bent at angle near to right angle. Genital plates narrowing towards apices, which are slanting upwards in the shape of small medial tooth. Brown, with slightly noticeable, narrow, oblique dark brown band before middle of elytra and with a light small spot on corium opposite to apex of outer claval vein. 9.5-11. –

S Kur. – Japan (Hokkaido). – Early June to late August. (Figs. 214: 7-12). Holotype – male, N Prim., Sikhote-Alinskiy Reserve, Upper Nantsa, 26.VI.1967 (Anufriev); paratypes – 3 males, 2 females from N Prim. Kept in Zoological Institute, Academy of Sciences of USSR (Leningrad); part of paratypes in Gorkiy State University

..... **A. ainorum** Anufr., sp. n.

- Apex of stylus with moderately attenuate inner part; inner margin of stylus before apex bent on a wide arc, not forming an angle near to right angle. Apices of genital plates not slanting upwards in the shape of small medial tooth 3
- 3. Posterior margins of styli in the middle straight or concave 4

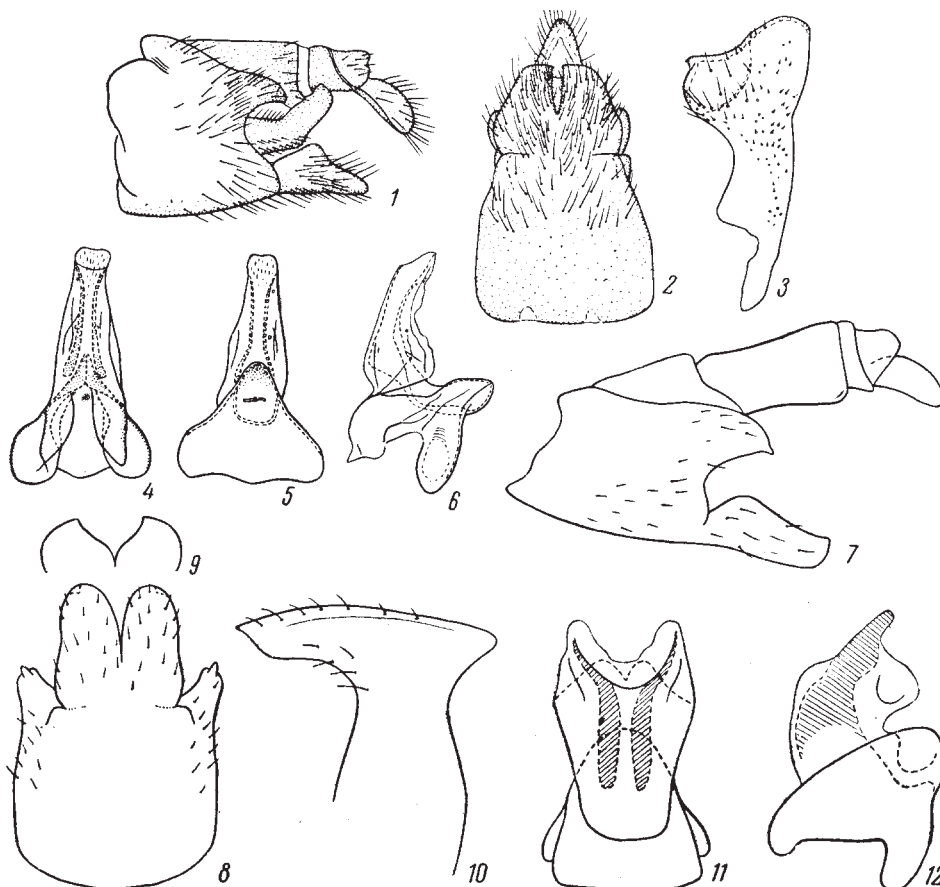


Fig. 214. Cicadines. Family Aphrophoridae (after Ossiannilsson and original).

1-6, *Aphrophoraalni*: 1, 2, genital block of male (1, lateral view; 2, ventral view); 3, stylus; 4-6, penis (phallobase and aedeagus) (4, lateral view; 5, dorsal view; 6, ventral view); 7-12, *A. ainorum*: 7, 8, genital block of male (7, lateral view; 8, ventral view); 9, apex of genital plate, posterior view; 10, apex of stylus; 11, 12, penis (11, lateral view; 12, dorsal view).

- Posterior margins of styli in the middle more or less projecting 8 [p. 294]
- 4. Lateral processes of pygofer without dorsal lobes, with one apex (in ventral view) 5
- Lateral processes of pygofer with dorsal lobes, having two apices (in ventral view) 6
- 5. Grayish; each of elytron before middle with a light, oblique, yellowish band delimited from the rest part by small, contrasting, dark brown stripes. 7.5-9. – Prim. –

Japan (Honshu, Kyushu, Shikoku), [p. 295] Korea, NE China. – In meadows and glades. Mid-July to early October. (Figs. 215: 1-9) *A. obliqua* Uhl.

- From light brown to dark brown, with more or less noticeable band of light spots on corium, at level of apex of clavus, fusing with light spot in apical 1/3 of elytra, which is adjacent to costal margin. 7.9-8.5. – S Kur. – Japan. – In meadows and among shrubs, especially in shoots of *Rosa rugosa* in seaside coastal sands. Early June to early September. (Figs. 215: 10-15) *A. obtusa* Mats.

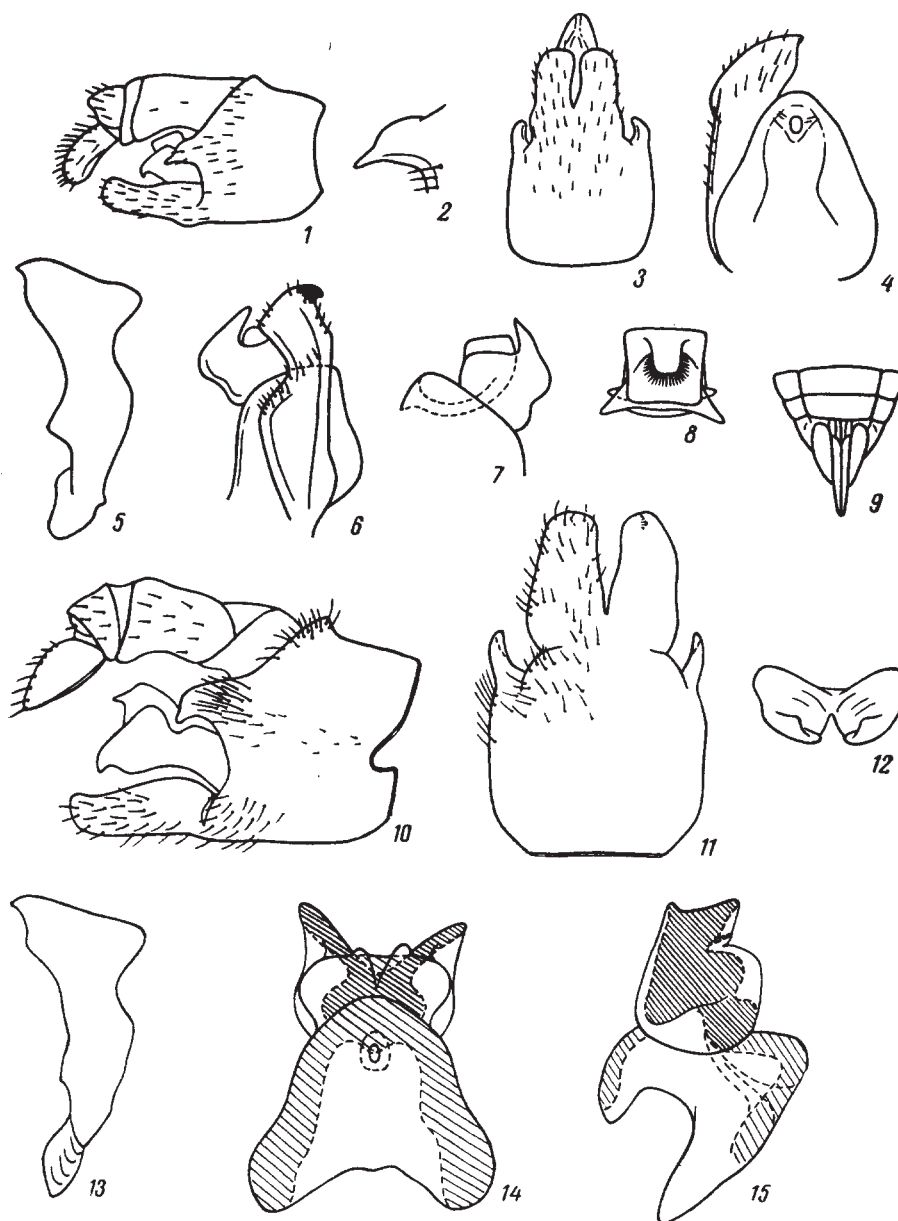


Fig. 215. Cicadines. Family Aphrophoridae (after Vilbaste and original).

1-9, *Aphrophora obliqua*: 1, genital block of male, lateral view; 2, process of lateral margin of pygofer; 3, pygofer, ventral view; 4, stylus and phallobase, ventral view; 5, stylus; 6, stylus and penis, lateral view; 7, penis, lateral view; 8, apex of aedeagus, posterior view; 9, posterior part of female abdomen, ventral view; 10-15, *A. obtusa*: 10, genital block of male, lateral view; 11, pygofer, ventral view; 12, genital plates, posterodorsal view; 13, stylus; 14, 15, penis (14, ventral view; 15, lateral view).

6. Unicolorous yellow. 11-12. – S Prim. – Korea, NE China. – In forest edges and glades. Early August to late September. (Figs. 216: 1-7) *A. straminea* Kato (*flavomaculata* sensu Vilb.)
 – Brown or gray 7
 7. Grayish brown; each elytron before middle with a light oblique band continuing on clavus and with a spot of identical color in subapical part of corium at costal margin; outer claval vein dark before oblique light band. (Nearly always may be reliably distinguished from externally similar *A. alni* by the spot continuing on clavus and dark outer claval vein before it, without examination of male genitalia). 9.1-10.8. – S Khab., Prim., S Sakh., [p. 297] S Kur. – Japan, Korea, NE China, Taiwan. – In meadows and glades, in light forests, polyphagous. Early July to late September. (Figs. 216: 8-13; 217: 1) *A. intermedia* Uhl.

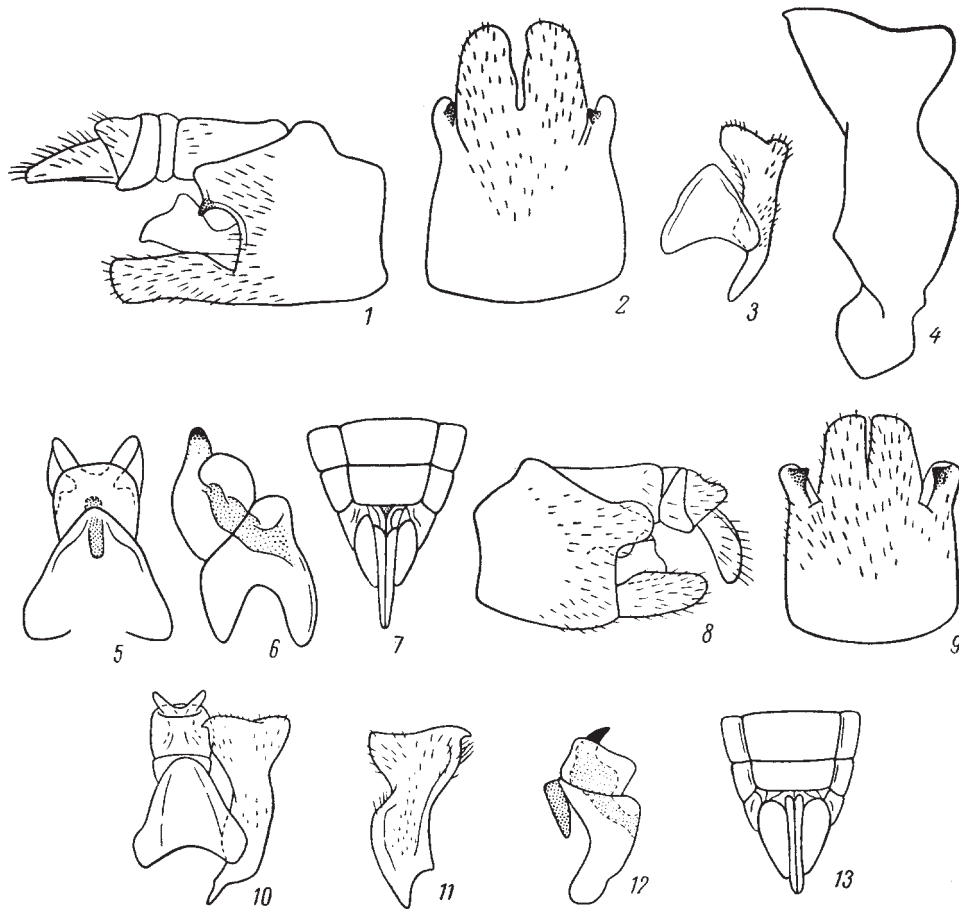


Fig. 216, Cicadines. Family Aphrophoridae (after Vilbaste and original).

1-7, *Aphrophora straminea*: 1, 2, genital block of male (1, lateral view; 2, ventral view); 3, stylus and phallobase; 4, stylus; 5, 6, penis (phallobase and aedeagus) (5, ventral view; 6, lateral view); 7, apex of female abdomen, ventral view; 8-13, *A. intermedia*: 8, 9, genital block of male (8, lateral view; 9, ventral view); 10, stylus and penis, ventral view; 11, stylus; 12, penis, lateral view; 13, posterior part of female abdomen, ventral view.

- Yellowish brown, with indistinct rusty brown pattern; vertex and base of pronotum with dark castaneous spot; elytra with indistinct rusty brown spots and bands. 8.5-9. – S Prim. – Japan, Korea, NE China. – On *Pinus funebris* in forests, open wood-

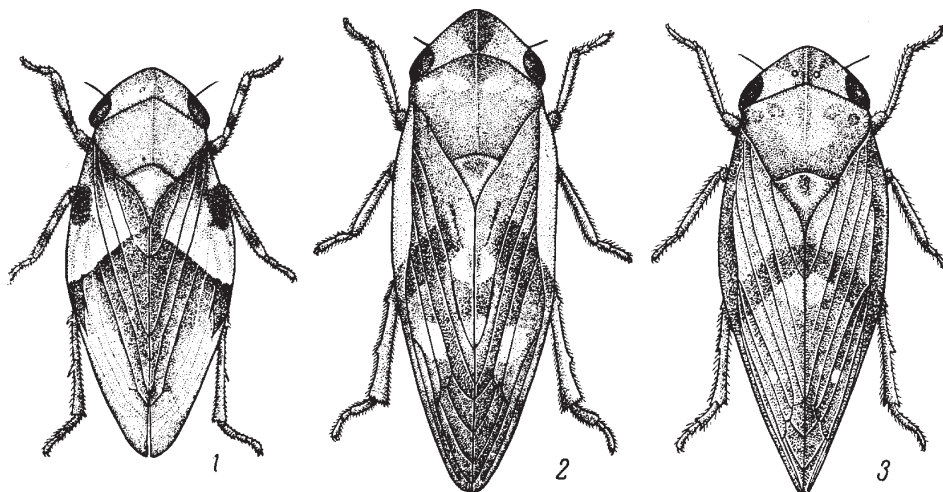


Fig. 217. Cicadines. Family Aphrophoridae (after Esaki).

1, *Aphrophora intermedia*; 2, *A. costalis*; 3, *A. major*.

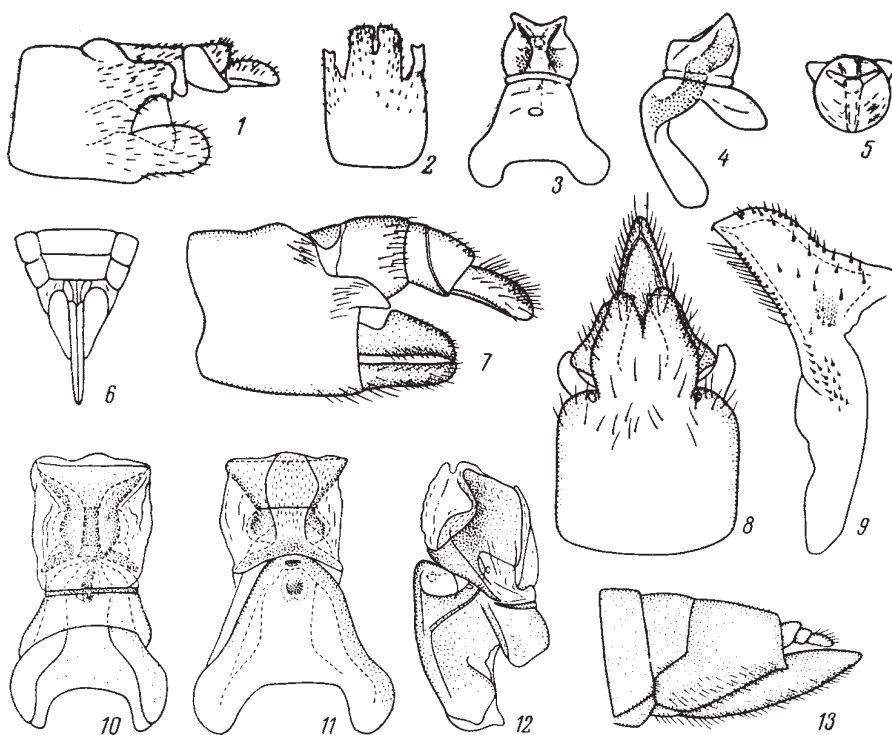


Fig. 218. Cicadines. Family Aphrophoridae (after Vilbaste).

1-6, *Aphrophora flavipes*: 1, 2, genital block of male (1, lateral view; 2, ventral view); 3, 4, penis (phallobase and aedeagus) (3, ventral view; 4, lateral view); 5, apex of aedeagus, posterior view; 6, posterior part of female abdomen, ventral view; 7-13, *A. costalis*: 7, 8, genital block of male (7, lateral view; 8, ventral view); 9, stylus; 10-12, penis (10, dorsal view; 11, ventral view; 12, lateral view); 13, posterior part of female abdomen, lateral view.

lands, maritime and lake-side [p. 298] dunes; outside USSR, also on other species of *Pinus*. Late July to early September. (Figs. 218: 1-6) *A. flavipes* Uhl.

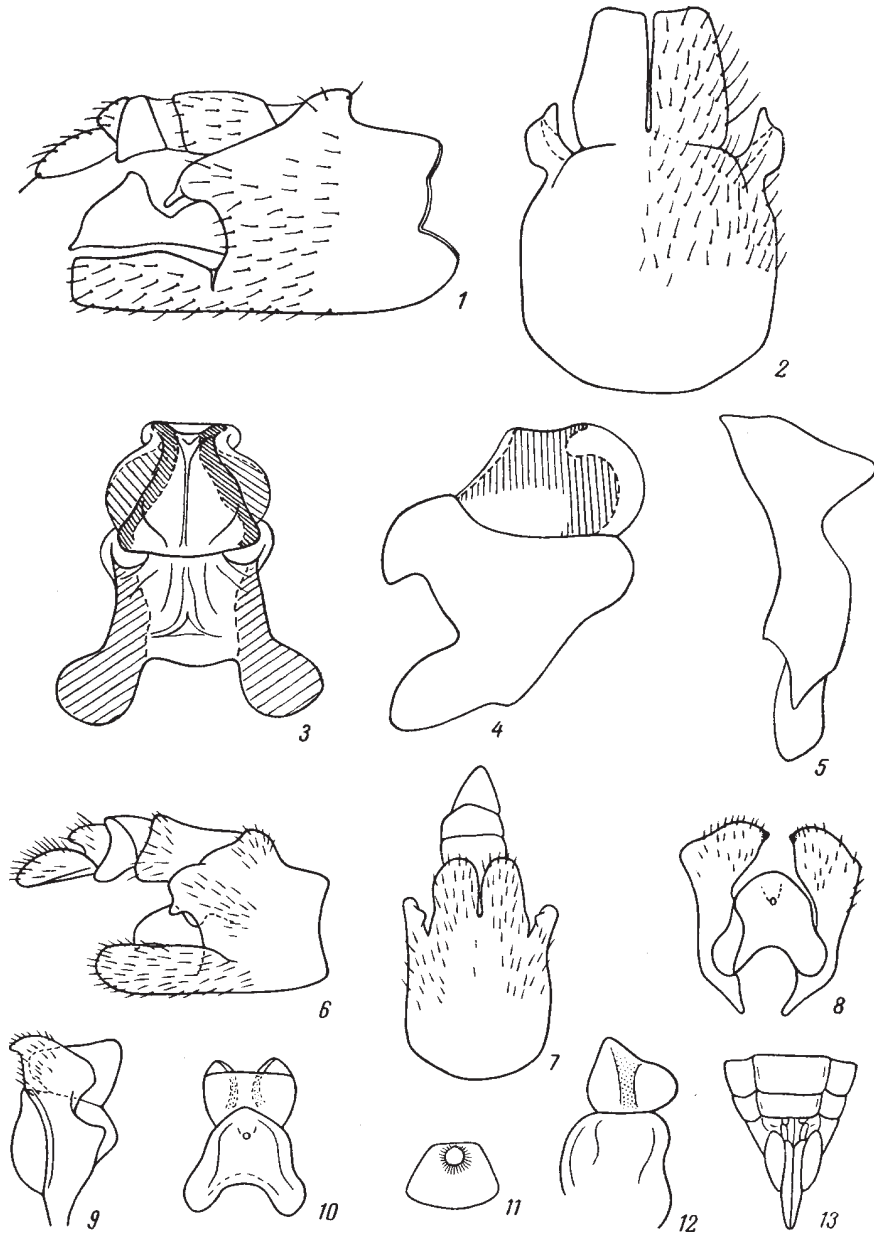


Fig. 219. Cicadines. Family Aphrophoridae (after Vilbaste and original).

1-5, *Aphrophora maritima*: 1, 2, genital block of male (1, lateral view; 2, ventral view); 3, 4, penis (phallobase and aedeagus) (3, dorsal view; 4, lateral view); 5, stylus; 6-13, *A. similis*: 6, 7, genital block of male (6, lateral view; 7, ventral view); 8, styli and phallobase, ventral view; 9, stylus and penis, lateral view; 10, 12, penis (10, ventral view; 12, lateral view); 11, apex of aedeagus, posterior view; 13, posterior part of female abdomen, ventral view.

8. Lateral processes of pygofer without developed dorsal lobe, look like having one apex, when viewed from below. Inner margin of stylus concave along whole length or slightly convex before apical angle 9
- Lateral processes of pygofer with well developed dorsal lobe, look like having two apices, when viewed from below. Inner margin of stylus before apical angle slightly convex 10

9. Inner margin of stylus concave along whole length. Genital plates rounded triangular, with widely spaced apices. Penis (in dorsal or ventral view) more or less parallel-sided. Yellowish brown; elytra at base with yellow or orange costal spot, before middle with indistinct, narrow, oblique band of separate dark spots. 9-11. – Khab., Prim., Sakh.; Siberia, Central belt of European part of USSR, Baltia. – Japan, Korea, NE China, many European countries. – In floodland forests on various species of *Salix*. Mid-July to late August. (Figs. 217: 2; 218: 7-13)
 **A. costalis** Mats. (*consobrina* Jacobi)
- Inner margin of stylus before apical angle slightly convex. genital plates with rounded truncate apex. Penis (in dorsal and ventral view) with widened base and comparatively narrow apex. Unicolorous yellow, on sides of pronotum with a brown stroke continuing on anterior third of elytra. 9.2-9.7. – ? Prim., S. Kur. – Japan, Korea, China. – Early July to early September. (Figs. 219: 1-5)
 **A. maritima** Mats.
10. Inicolorous yellow. Genital plates nearly parallel-sided, with widely separately rounded apices. 8.5-9.5. – S Khab., Amur., Prim., S Kur.; S Irkutsk Prov., S Krasnoyarsk Terr. – NE China, Mongolia, Poland. – In swamp meadows, glades, herbaceous marshes. Early July to late August. (Figs. 219: 6-13)
 **A. similis** Leth. (*paludicola* Vilb.)
- Grayish brown; elytra brown, each with narrow indistinct dark band before middle and often with small light spot at level [p. 299] of apex of outer claval vein. Genital plates parallel-sided, posteriorly rounded truncate. 11-14. – Khab., Amur., Prim., Sakh., S Kur.; Siberia, N and C European part of USSR. – Japan (Hokkaido, Honshu), Mongolia, many European countries. – In meadows, glades, forest edges, open woodlands. Early July to mid-September. (Figs. 217: 3; 220: 1-9)
 **A. major** Uhl. (*flavomaculata* Mats., *alpina* Mel.)

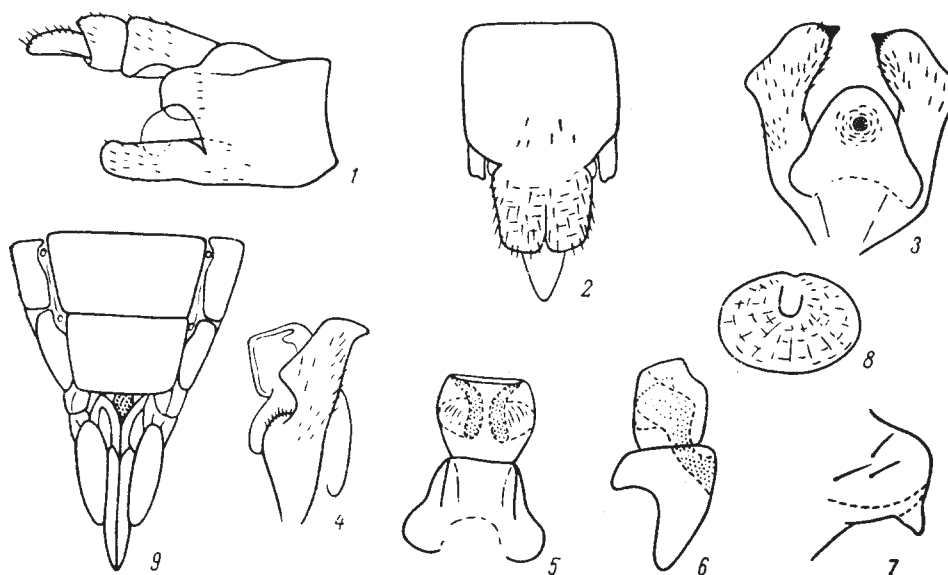


Fig. 220. Cicadines. Family Aphrophoridae (after Vilbaste).

1-9, *Aphrophora major*: 1, 2, genital block of male (1, lateral view; 2, ventral view); 3, styli and phallobase, ventral view; 4, styli and penis, lateral view; 5, 6, penis (5, dorsal view; 6, lateral view); 7, lateral process of pygofer; 8, apex of aedeagus, posterior view; 9, posterior part of female abdomen, ventral view.

4. *Cnemidanomia* Kusn. Large, slender. Vertex somewhat concave. Supraantennal carinae simple. Postclypeus rather flat. Anterior margin of head on postclypeus passes in front of anterior margin of vertical area. Head narrower than pronotum; sides of pronotum distinctly diverging backwards. Fore wings with moderately convex costal margins, their greatest width before middle. Male. Anal tube cylindrical, narrow. Pygofer posteriorly with lateral projection in the shape of a knob. Genital plates not separated from pygofer, narrowing towards rounded apices. Styli with thick, tuberculate distal parts and a narrow apex, slanting downwards and then inwards. Aedeagus slender, at apex with a pair of foliaceous recurring processes each bearing 2 teeth on outer margin. Monotypic genus.

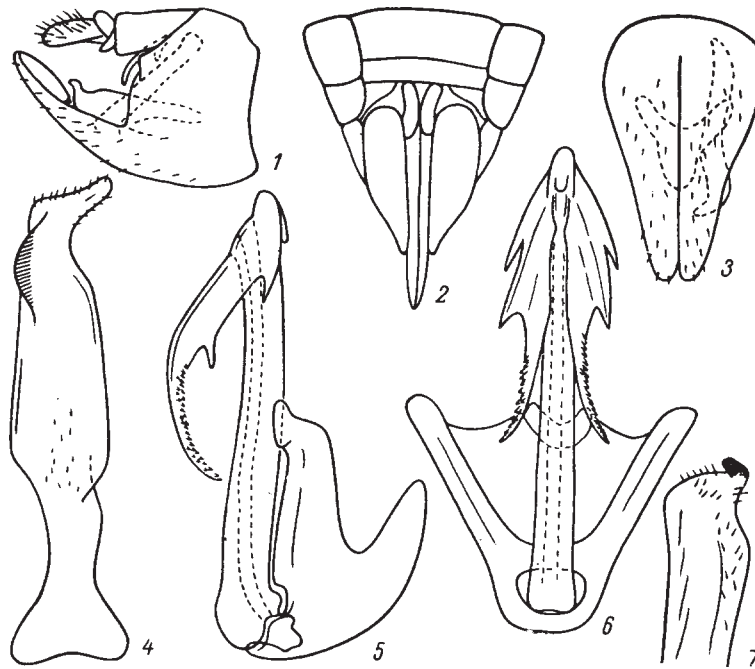


Fig. 221. Cicadines. Family Aphrophoridae (after Vilbaste).

1-7, *Cnemidanomia lugubris*: 1, 3, genital block of male (1, lateral view; 3, ventral view); 2, apex of female abdomen, ventral view; 4, stylus, dorsal view; 5, 6, penis (5, lateral view; 6, posterior view); 7, apex of stylus, right lateral view.

1. Dark brown, with yellowish light spots, mainly on elytra. Supraantennal carinae darkened; anterior margin of head between them with a dark band. Vertex with fusing dark small spots on light background. Postclypeus with a longitudinal dark stripe. Genae under antennae, lora and anteclypeus more or less darkened. Pronotum with light small spots in anterior part. Elytra with light yellowish spots arranged as if in chess-board order: the first in basal part of clavus, the 2nd in middle part of clavus at its suture, the 3rd on corium opposite to posterior part of previous spot, after that an unpaired spot on suture of elytra before apices of clavi, and, besides, a contrasting spot in second fourth [p. 300] of costal field, and, after a space, posteriorly an oblique spot running to the middle of posterior margin of pronotum and disappearing gradually. Venter light, with brown and brownish spots. 10.2-14.8. – Prim. – Korea, NE China. – On *Ulmus* spp. Early June to early August. (Figs. 221: 1-7; 222: 2) *C. lugubris* Leth.

5. *Lepyronia* Am. et Serv. Sturdy, with wide, rounded-convex elytra insignificantly projecting beyond apex of abdomen. Anterior margin of vertex more or less obtuse-angled-rounded or arcuate. Supraantennal carinae simple, with 1 ridge. Ocelli at equal distances from vertical area and posterior margin of vertex. Male. Anal tube cylindrical; segment X ventrally not sclerotized. Pygofer dorsally divided by a transverse secondary suture with blind end under anal tube on anterior and posterior parts. Lateral margins of pygofer without sharp projections. Genital plates not separated from pygofer; slit between genital plates prolonged forwards in the shape of medial suture not reaching anterior margin of pygofer. Styli with flat, widened, oval apices bearing a transverse slit-shaped groove. Penis with slender aedeagus bearing at apex 3 pairs of recurring processes, and at base with a ventral linguiform lobe adjacent to phallobase. In USSR 3 species.

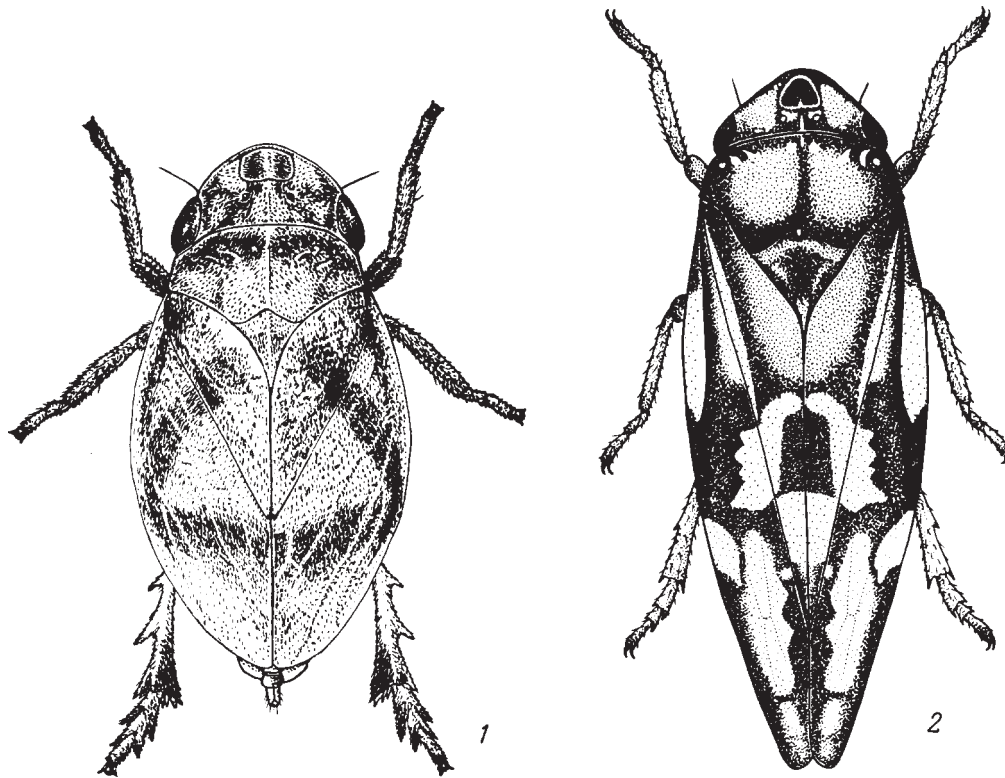


Fig. 222. Cicadines. Family Aphrophoridae (after Kwon & Lee and original).

1, *Lepyronia coleoprata*; 2, *Cnemidanomia lugubris*.

1. Ventrobasal lobe of aedeagus narrowing towards rounded apex. Genital plates laterally in basal part with not weakly developed lobes slightly slanting downwards. – Brown, with light brown and dark brown strongly varying pattern. Light specimens brown, nearly without pattern; dark specimens nearly completely dark brown to black. Specimens with contrasting pattern are common. Face dark brown, with light sutures and stripes on postclypeus. [p. 301] Vertex with blurred brown spots. Pronotum brown, with small light spots in anterior part, light margins and midline. Elytra with light brown costal margin in basal half, a light oblique stripe running from hind end of light spot towards scutellum and prolonged on clavus; posteriorly, this stripe is delimited by dark brown oblique stripe; from its costal ends, another dark brown stripe runs, passing beyond apices of clavi;

posteriorly it is delimited by light brown stripe leaving backwards the brown apex of elytra. The 2 described above dark brown oblique bands broken on suture of elytra form a rhomboidal figure. Legs, venter of thorax and abdomen more or less darkened. 6.2-9.2. – Khab., Amur., Prim., Sakh., S Kur.; C Yakutia, Transbaikal, S Irkutsk Prov., S Krasnoyarsk Terr., Tuva, Altai, SW Siberia, Kazakhstan, Middle Asia, Caucasus. – Japan, Korea, NE China, Mongolia, Afghanistan, Near East, Europe, [p. 302] N Africa. – In meadows. Early June to late August. (Figs. 222: 1; 223: 1-7) *L. coleoptrata* L.

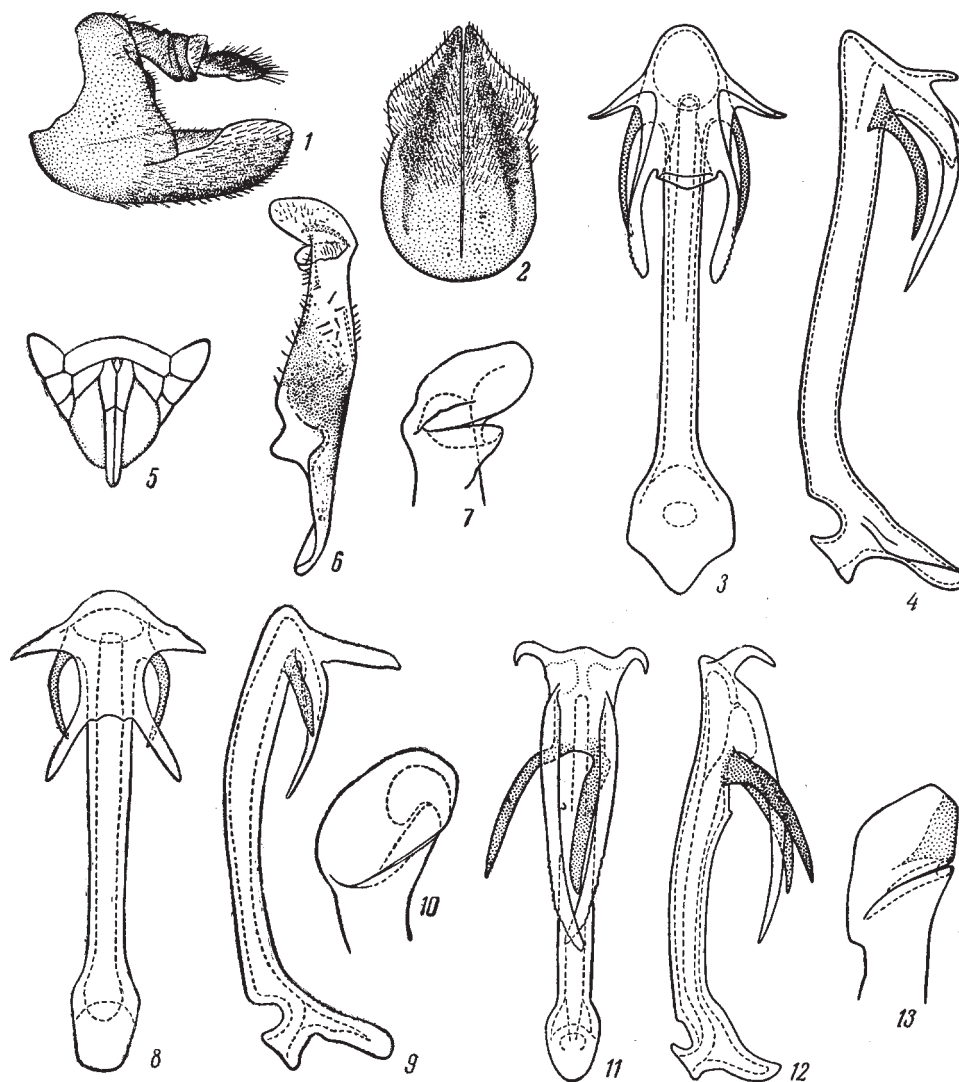


Fig. 223. Cicadines. Family Aphophoridae (after Ossiannilsson and original).

1-7, *Lepyrionia coleoptrata*: 1, 2, genital block of male (1, lateral view; 2, ventral view); 3, 4, aedeagus (3, posterior view; 4, lateral view); 5, apex of female abdomen, ventral view; 6, stylus, dorsal view; 7, apex of stylus, ventral view; 8-10, *L. koreana*: 8, 9, aedeagus (8, posterior view; 9, lateral view); 10, apex of stylus, ventral view; 11-13, *L. okadae*: 11, 12, aedeagus (11, posterior view; 12, lateral view); 13, apex of stylus, ventral view.

- Ventrobasal lobe of aedeagus parallel-sided, with widely rounded apex. Genital plates laterally without lobe-shaped prominences, simple 2

2. Proximal ventral processes of apex of aedeagus with diverging apices. Ventral side of aedeagus shaft without knobs before bases of apical processes. Castaneous brown, speckled, with reddish tint on vertex, pronotum and scutellum. Elytra with dark bands having a common base and running from the middle of costal margin: 1st band runs to the middle of scutellum, 2nd band to the base of posterior margin of membrane; these 2 bands form together a rhomboidal figure; anterior margin of anterior band and posterior margin of posterior band more contrasting and shaded by lightened adjacent areas of elytra; membrane in costal half with oblique blurred spot parallel to posterior band. Venter and legs with dark brown spots. 6.6-8. – S Prim. – Korea, NE and C China. – In moist meadows. Early June to early October. (Figs. 223: 8-10) **L. koreana** Mats.
- Proximal ventral processes of apex of aedeagus with converging apices. Ventral side of aedeagus shaft with 2 knobs before bases of apical processes. Brown, with blurred speckled pattern from light brown to dark brown. Face, venter and legs nearly completely dark brown. Elytra usually with 2 indistinct, broken into spots, not wide dark brown bands; 1st of them running from the middle of costal margin to base of posterior margin of membrane, 2nd band more or less parallel to 1st band, at the very apex of membrane; there is also a blurred spot at the base of corium between stem of *MR* and claval suture, and on corium opposite to middle of clavus. 5.8-6.8. – S Prim. – Japan, Korea, NE China. – In dry meadows. Mid-September. (Figs. 223: 11-13) **L. okadae** Mats.

Tribe *PHILAENINI*

6. **Philaronia** Ball (*Mesoptylus* Mats.). Sturdy. Postclypeus more or less swollen. Vertical area transverse. Supraantennal carinae with more sharp lower ridge. Pronotum parallel-sided or slightly widening backwards, not wider or a little wider than head. Elytra with convex costal margins, widest in the middle part. Male. Anal tube without ventrolateral teeth. Posterior margin of pygofer laterally usually with a distinct projection or blunt tooth. Distal part of aedeagus widened, without processes; short teeth are developed usually on sides at apex and at base of the widening. Apex of stylus mostly simple, without thickenings and teeth. – 1 species (in USSR 2).

1. Light brown, with dark castaneous brown bands and spots. Head reddish brownish; posterior margin of vertex darkened; postclypeus with a narrow band in front of vertical area continuing on lower ridges of supraantennal carinae, and with a wider band under it not reaching to lateral carinae of postclypeus below antennae. Pronotum with 2 narrow bands. Scutellum dark brown; a wide dark band runs through it, passing laterally on elytra, so that their bases lateral to pronotum remain light; a light band runs beyond scutellum widening towards costal margins of elytra; posterior half of elytra dark, with 3 light spots; the smaller middle spot situated at apices of clavi and adjacent membrane; in female, the brown tint in front of middle spot weakened; apices of membrane lightened. Thorax ventrally light, legs and abdomen with dark spots. 5.9-7.5. – S Prim. – Japan, Korea. – Under canopy of valley nemorose forests on mesophytic herbs. Late June to late July. (Figs. 224: 1-6) **Ph. nigrifrons** Mats. [p. 303]

7. **Aphilaenus** Vilb. Slender, with slightly convex lateral margins of body. Postclypeus slightly convex. Vertical area a little wider than long. Pronotum parallel-sided. Elytra with slightly convex costal margins. Male. Anal tube without ventrolateral teeth. Lobes of pygofer posteriorly without lateral projections. Lateral margins of

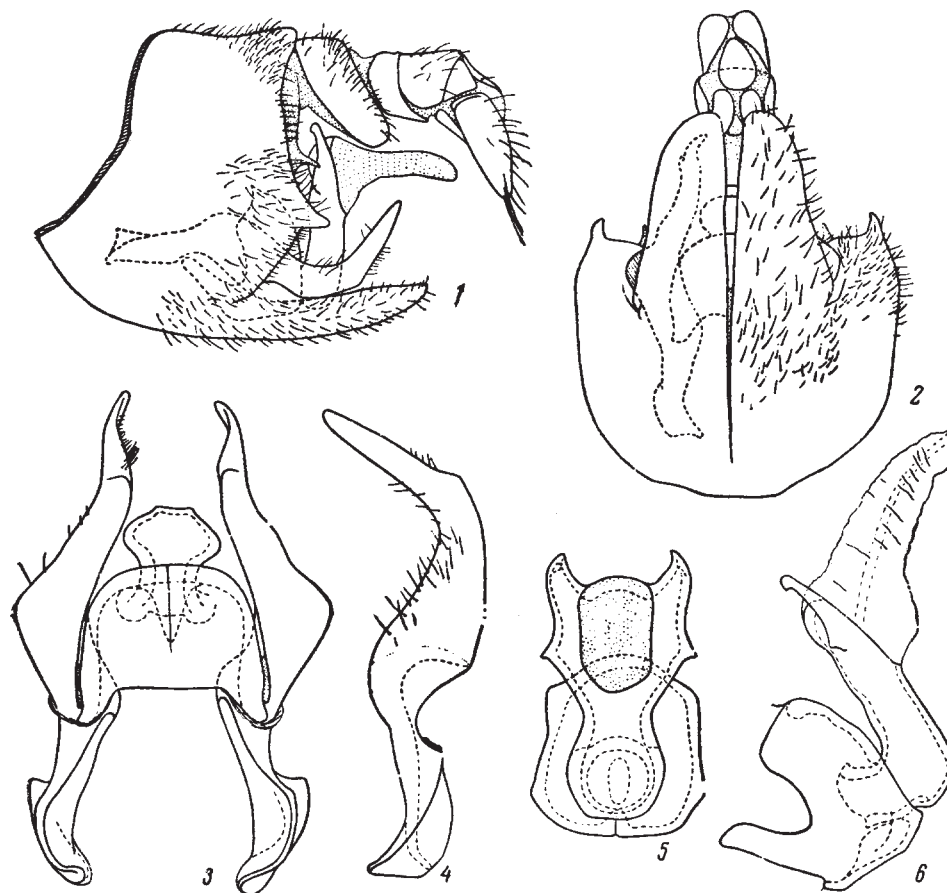


Fig. 224. Cicadines. Family Aphrophoridae (original).

1-6, *Philaronia nigrifrons*: 1, 2, genital block of male (1, lateral view; 2, ventral view); 3, styli and penis, ventral view; 4, stylus, lateral view; 5, 6, penis (5, posterior view; 6, lateral view).

genital plates at base with a lobe. Styli T-shaped or L-shaped. Aedeagus at apex with a pair of bifurcate processes. Most species on trees and shrubs of Rosaceae. In USSR 3 species.

1. Genital plates laterally at base with a long projection. Hind branch of lateral process of aedeagus apex with a large lateral projection. – Castaneous brown, with lighter anterior part of pronotum and 2 oblique bands on elytra formed by light recumbent hairs. 6.9-8.7. – S Prim. – Japan (Hokkaido), Korea, China (Gansu). – Under canopy and in glades of valley broad-leaved forests on trees, shrubs and among herbs; probably develops on apple-trees. Early July to early September. (Figs. 225: 1-9) **A. ferrugineus** Mel.
- Genital plates laterally at base with short lobes. Hind branch of lateral process of aedeagus apex more or less parallel-sided 2
2. Apex of aedeagus without subapical dorsal projection. Apex of stylus more or less T-shaped. Head, pronotum, scutellum and clavus yellow, as well as basal half [p. 304] of costal margin and outer part of membrane; the rest of elytra surface castaneous brown. Venter and legs light. 6.3-7.7. – Prim., Sakh. – Korea, NE China. – In valley broad-leaved and mixed forests, in plantings on apple-trees. In-

jurious to apple-trees in S Prim. Larvae, in late May to late June, rolling tubes of leaves across a leaf and filling them with a froth; in one tube, 1-4 larvae. Late June to early September. (Figs. 226: 1-7) **A. ikumae* Mats.

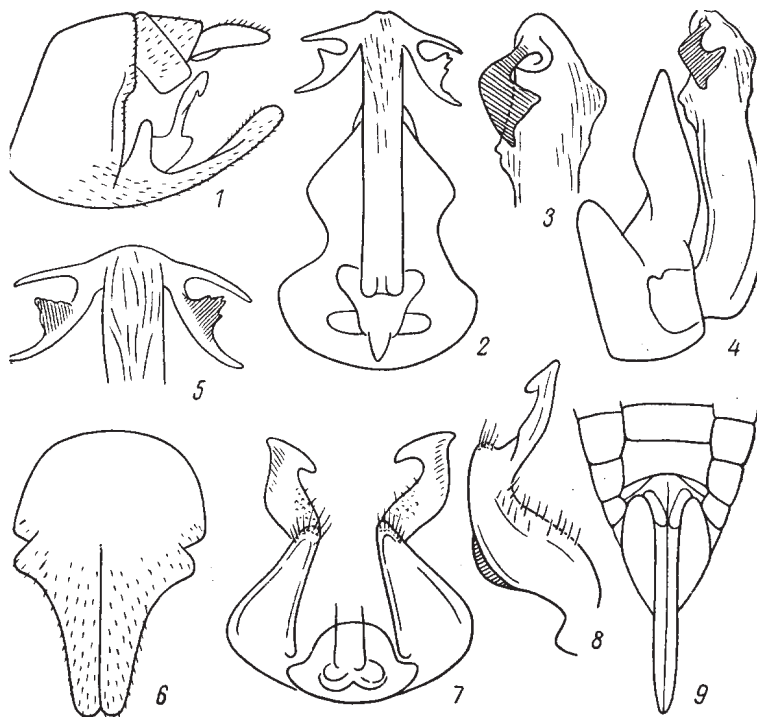


Fig. 225. Cicadines. Family Aphrophoridae (after Vilbaste).

1-9, *Aphilaenus ferrugineus*: 1, 6, genital block of male (1, lateral view; 6, ventral view); 2, 4, penis (2, posterior view; 4, lateral view); 3, 5, apex of aedeagus (3, lateral view; 5, posterior view); 7, styli and phallobase, posterior view; 8, stylus, right lateral view; 9, apex of female abdomen, ventral view.

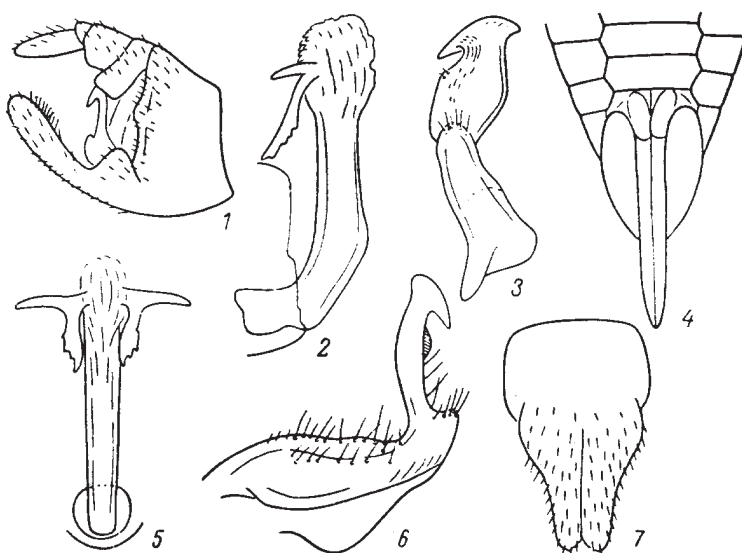


Fig. 226. Cicadines. Family Aphrophoridae (after Vilbaste).

1-7, *Aphilaenus ikumae*: 1, 7, genital block of male (1, lateral view; 7, ventral view); 2, 5, penis (2, lateral view; 5, posterior view); 3, 6, stylus (3, posterior view; 6, left lateral view); 4, apex of female abdomen, ventral view.

- Apex of aedeagus with a subapical dorsal projection. Apex of stylus more or less L-shaped. Dorsum brown; clavus brown, lightened at corium margin. Corium dark brown, with light yellowish costal margin; membrane dark brown in sutural (posterior) half and light in outer (anterior) half. Venter and legs light, yellowish. 7-8.3. - S Prim., S Kur. - Japan, Korea, NE China, Taiwan. - In mixed forests on conifers. Late June to late September. (Figs. 227: 1-8; 228: 2) ... **A. nigripectus** Mats.

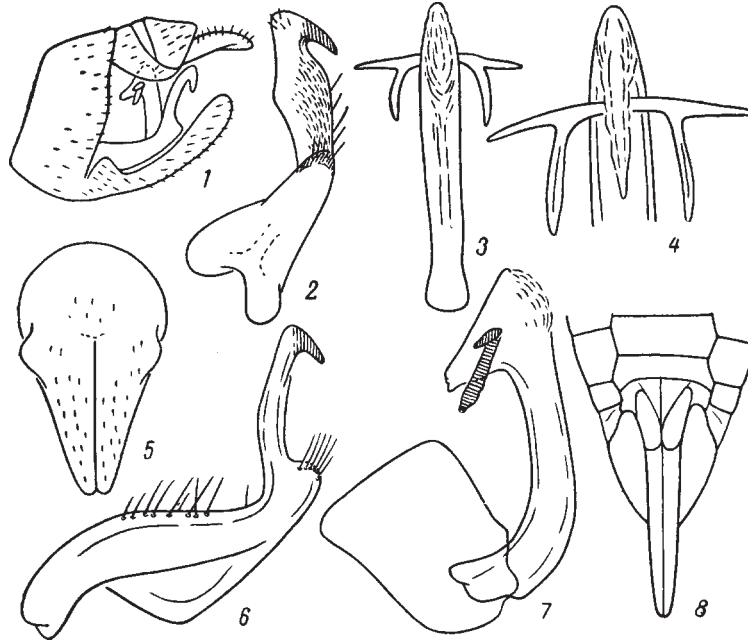


Fig. 227. Cicadines. Family Aphrophoridae (after Vilbaste).

1-8, *Aphilaenus nigripectus*: 1, 5, genital block of male (1, lateral view; 5, ventral view); 2, 6, stylus (2, posterior view; 6, left lateral view); 3, aedeagus, posterior view; 4, apex of aedeagus, anterior view; 7, penis, lateral view; 8, apex of female abdomen, ventral view.

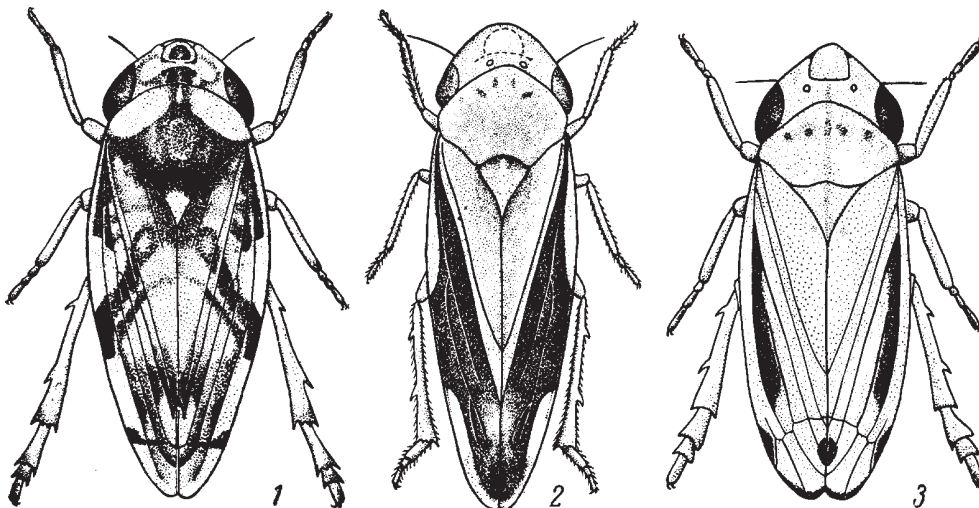


Fig. 228. Cicadines. Family Aphrophoridae (after Esaki and Javorek).

1, *Philaenus spumarius*; 2, *Aphilaenus nigripectus*; 3, *Neophilaenus lineatus*.

8. **Philaenus** Stål. Sturdy. Postclypeus moderately swollen. Vertical area transverse. Supraantennal carina with 2 ridges. Head a little wider than pronotum; sides of pronotum almost parallel. Elytra with moderately convex costal margins and relatively widely rounded apices. Male. Anal tube with ventrolateral teeth. Pygofer posteriorly without teeth on lateral margin. Genital plates elongate, not separated from pygofer medially, laterally separated from pygofer by a cut. Styli narrow, with rounded, slightly slanting dorsad apex and a lateral tooth at the middle of apical part. Shaft of aedeagus thick, slightly flattened dorsoventrally, with 3 pairs of thin processes at apex, the apical pair with closely approximated bases. In USSR 1 species. [p. 305]

1. Coloration various, from completely black to light brown or yellowish; forms occurring with longitudinal stripes, transverse stripes, light spots on dark background, with light anterior part of body and dark posterior part, with combination of stripes and spots, and also with speckled pattern of blurred brown spots forming on elytra a rhomb of 2 angular bands (Fig. 229). 5-6.7. – Kamch., Khab., Amur., Prim., Sakh., Kur. In USSR to north up to Murmansk, Arkhangelsk, Dudinka, Yakutsk. – Nearly all non-tropical Asia, Europe, N Africa, introduced to N America. In herbaceous layer under forest canopy, in moist meadows. Late June to early September. (Figs. 228: 1; 230: 1-8) ***Ph. spumarius** L.

9. **Neophilaenus** Hpt. Moderately sturdy or moderately elongate, with relatively distinctly rectangular rounded head projecting forwards, which is a little wider than pronotum. Vertical area not wider than long. Pronotum with subparallel lateral margins. Elytra with nearly straight, more or less parallel lateral margins and rather widely rounded apices. Male. Anal tube with ventrolateral teeth on segment X. Posterior margin of pygofer laterally without projections. Genital plates rather elongate, not separated from pygofer, with a cut at base and slightly widened laterally, with a lateral tooth nearer to the apex. Styli with wedge-shaped apex bearing teeth. Penis with well developed phallobase and aedeagus more or less rounded in cross-section, short and nearly straight or longer, slender and in basal part arcuate. Apex of aedeagus with lateral lamelliform widenings having a denticulate margin (completely or mainly in proximal part). – Not less than 2 species (in USSR more than 8).

1. Shaft of aedeagus thick, nearly straight, slightly flattened laterally. Foliaceous lobes at apex of aedeagus with completely denticulate outer margin. Styli with a long lateral excision delimited distally by a tooth. (Subgenus *Neophilaenus* Hpt.). [p. 307] Usually anteriorly light brown; elytra lighter, with dark brown stripe along radial stem and in radial field within the boundaries of corium. Membrane with dark spot at base beyond clavus and a dark indistinct stripe from costal margin on transverse veins of bases of apical cells. Costal field and basal half of membrane in outer costal half whitish. Postclypeus with upper dark brown stripe and brown stripe in the middle. Darker specimens with a more or less developed longitudinal stripe from apex of vertex to membrane. Completely dark forms occur rarely. 4.9-7. – Kamch., S Khab., Sakh.; Siberia (up to C Yakutia), Kazakhstan, N Tien Shan, Caucasus. – Mongolia, Turkey (Anatolia), Europe, N Africa, N America. – In swamp meadows. Early July to late August. (Figs. 228: 3; 231: 1-8) **N. lineatus** L. [p. 308]
- Shaft of aedeagus thinner, long and bent at base. Foliaceous lobes at apex of aedeagus denticulate mainly on proximal margin, lateral margin even. Styli with short excision at the very apex. (Subgenus *Neophilaenulus* Em.). Most pigmented specimens dorsally brownish, with elytra up to dark brown, in middle part of co-

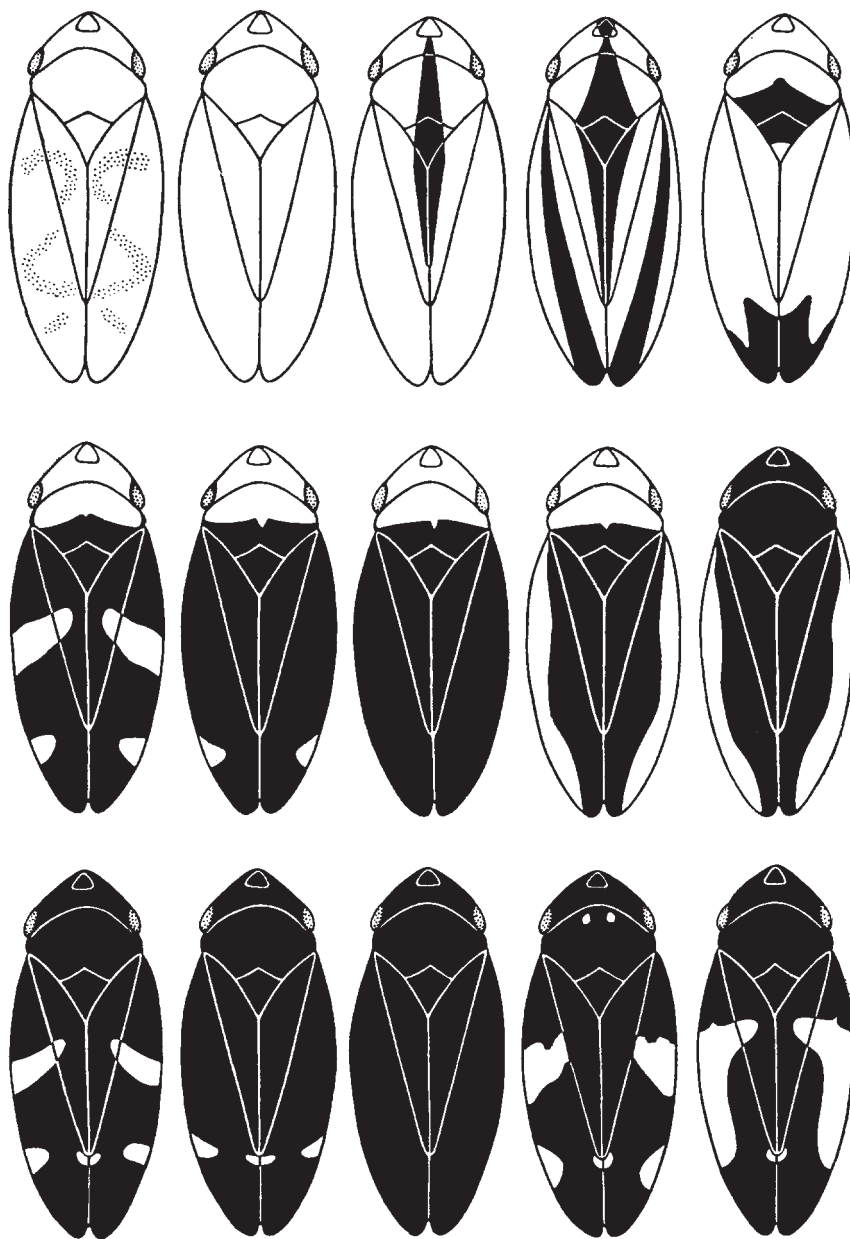


Fig. 229. Cicadines. Family Aphrophoridae. *Philaenus spumarius*, variation of pattern (after Ossiannilsson).

rium with light band weakening at suture, and a large light spot from costal margin at base of membrane; margins of clavi along suture of elytra always blurred lightened (f. *sachalinensis* Mats.) or dark pigmentation weaker: brown, stripe on elytra shortened to 2 spots (interrupted on clavi), pronotum with additional light spot at apex (f. *zuncharicus* Dlab.). 4.3-6.3. – Kamch., Khab., Prim., Sakh., Kur.; C Yakutia, Transbaik., Turukhansk, SE Siberia, Sayan Mts. – Korea, N Mongolia. – In meadows. Early July to late August. (Figs. 232: 1-7)
 N. (N.) *sachalinensis* Mats.

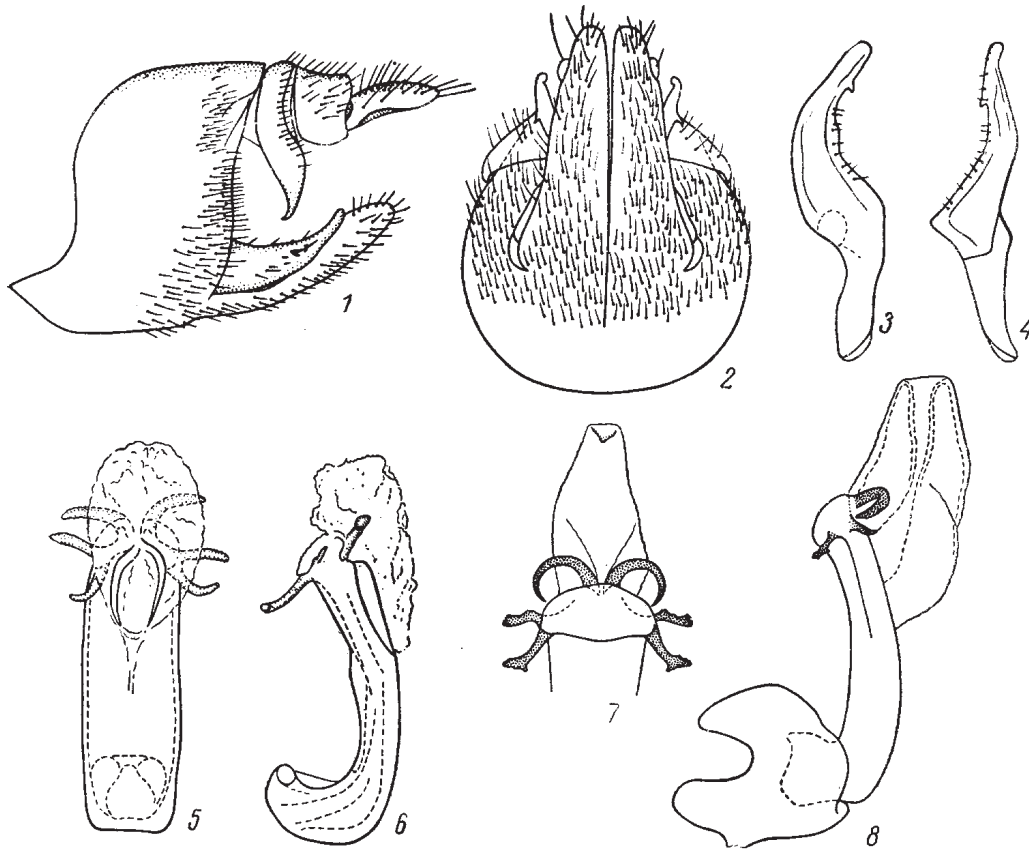


Fig. 230. Cicadines. Family Aphrophoridae (after Ossiannilsson, Vilbaste, and original).

1-8, *Philaenus spumarius*: 1, 2, genital block of male (1, lateral view; 2, ventral view); 3, 4, stylus (3, lateral view; 4, ventral view); 5, 6, aedeagus (5, posterior view; 6, lateral view); 7, apex of aedeagus, anterior view; 8, penis, lateral view (5, 6, specimen from Scandinavia; 7, 8, specimen from S Kur.).

6. Family MACHAEROTIDAE

Medium-sized, compact, with thickened integument. Head small, with strongly developed postclypeus, vertical area of which not delimited anteriorly from facial part. Frons and vertex beyond vertical area shortened. Pronotum wide, with long, diverging backwards lateral margins of dorsum; posterior lobe of pronotum strongly developed and often covering bases of fore wings. Fore wings condensated, tectiform. Hind wings with anastomosis of *Pcu* and *A*₁ [p. 310] (Fig. 233: 3). Scutellum of mesothorax long, with apex drawn out backwards, often with high longitudinal carinae or with robust projection in the middle turning into a long crescent process passing freely above the body, in appearance as in Membracidae. Legs strong, rather short; hind tibiae with 2 lateral teeth. Larvae build on plants funnel-shaped lime cases, which are straight or rolled spirally and filled with liquid. Larva lives in the liquid, sucking the plant at its part which forms the bottom of the tube. In USSR 1 genus, 1 species.

LITERATURE. Maa, T.C. A review of the Machaerotidae (Homoptera, Cercopoidea). Pacific Insects Monogr. 1963. Vol. 5. P. 1-168.

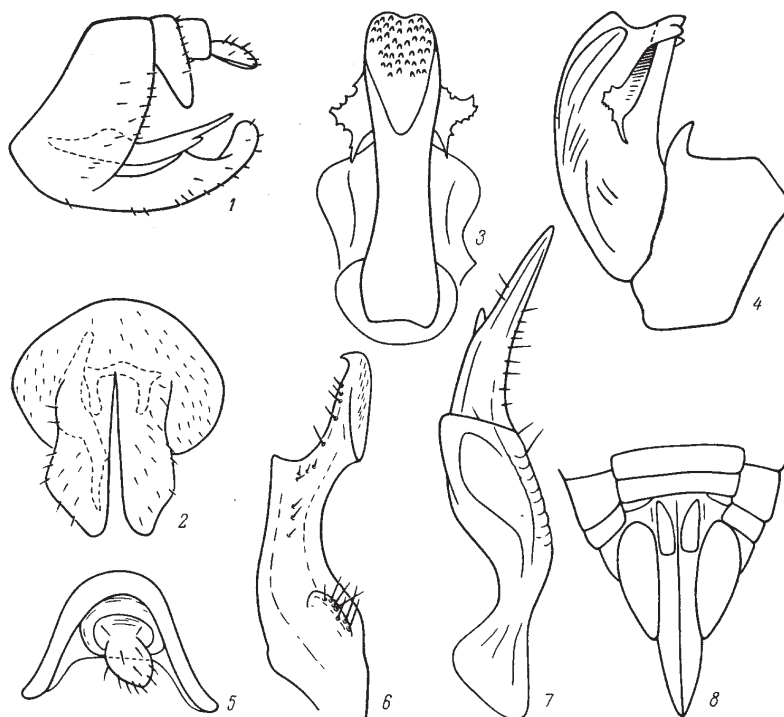


Fig. 231. Cicadines. Family Aphrophoridae (after Vilbaste).

1-8, *Neophilaenus lineatus*: 1, 2, genital block of male (1, lateral view; 2, ventral view); 3, 4, penis (3, posterior view; 4, lateral view); 5, anal tube, posterior view; 6, 7, stylus (6, lateral view; 7, ventral view); 8, apex of female abdomen, ventral view.

KEY TO SPECIES OF THE FAMILY MACHAEROTIDAE

1. **Taihorina** Schumacher. Head small, transverse, with wide, evenly convex clypeus, without any trace of the anterior boundary of vertical area. Supraalar carinae oblique, stretched along vertical part of postclypeus. Pronotum wide, approximately hexagonal, with strongly diverging lateral margins of dorsum and swollen posterior margin. Scutellum elongate, smooth, with longitudinal gentle depression in basal half. Fore wings widening towards apices, widely rounded and obliquely truncate at apex. Legs short, strong. Male. Pygofer dorsally interrupted, laterally under anal tube its sclerotization continued on hind wall, lobe-shaped and bearing bristles; genital plates separated from pygofer and [p. 311] basally fused together. Styli irregularly cone-shaped, dorsally with long, dense bristles. Phallobase weakly sclerotized, small; aedeagus arcuate, with subapical ventral gonopore. Anal tube (segment X) horseshoe-shaped, dorsally closing the gap in pygofer, ventrally bearing finger-shaped projections. Segment XI consists of 2 parts. Anterior part narrow, ventrally disjunct but articulated to a pair of longitudinal sclerites lining the depression of body wall under anal tube where apex of penis comes in; 2 rounded cap-shaped sclerites bearing bristles are situated lateral to the depression. In USSR 1 species.

1. Greenish yellowish; fore wings brownish castaneous, slightly translucent, with indistinct lighter band in the middle part. 5.4-7. [p. 312] – S Prim. – Korea, China (NE, SE, Taiwan). – On *Quercus dentata* and *Q. glauca*. Late July to early September. (Figs. 233: 1-3; 234: 1-7) **T. geisha** Schumacher

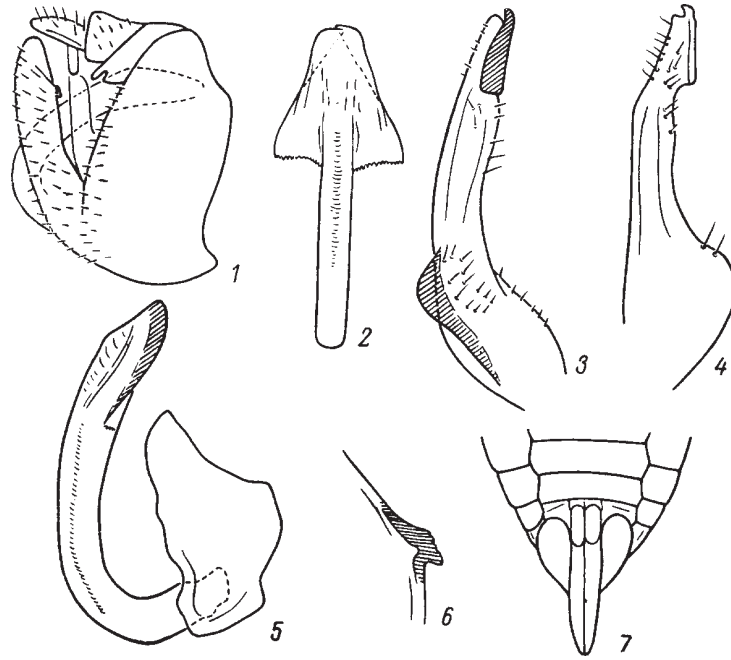


Fig. 232. Cicadines. Family Aphrophoridae (after Vilbaste).

1-7, *Neophilaenus sachalinensis*: 1, genital block of male, lateral view; 2, aedeagus, posterior view; 3, stylus, right lateral view; 4, stylus, ventral view; 5, penis, lateral view; 6, tooth on genital plate; 7, apex of female abdomen, ventral view.

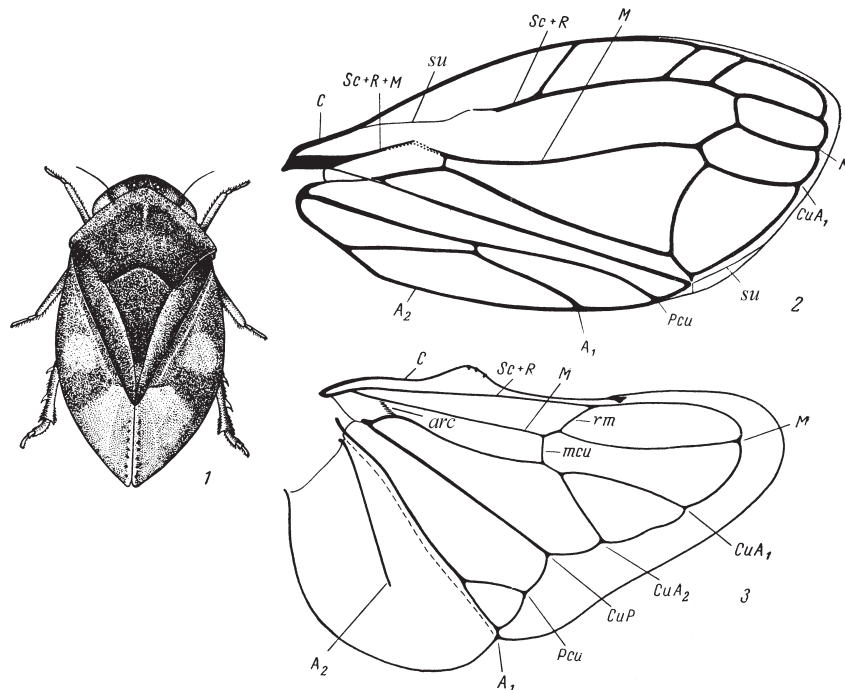


Fig. 233. Cicadines. Family Machaerotidae (after Esaki and original).

1-3, *Taihorina geisha*: 1, general appearance; 2, 3, wings (2, fore wing; 3, hind wing). *su*, suture. See Fig. 5 for remaining designations.



Fig. 234. Cicadines. Family Machaerotidae (original).

1-7, *Taihorina geisha*: 1, 2, 4, genital block of male (1, dorsal view; 2, lateral view; 4, posterior view); 3, aedeagus. Lateral view; 5, anal tube and upper part of pygofer, lateral view; 6, anal tube in stretched position, posteroventral view; 7, genital plate, ventral view.

7. Family CICADIDAE – CICADAS

Large, not jumping, flying well (Fig. 235: 1). Head large, with widely spaced eyes, 3 ocelli and strongly developed postclypeus; basal part of postclypeus reaches dorsally on vertical surface of head and is called there a vertical area. Antennae many segments (6-9), more or less filiform, becoming thinner to apex (Fig. 2: 1). Rostrum 3-segmented. Pronotum with weakly developed posterior lobe; therefore nearly whole mesothorax free, parapsidal furrows visible. Dorsum of pronotum with 2 pairs of oblique, diverging forwards furrows. Fore legs with teeth on ventral surface of thickened femora. Hind legs ambulatorial. Hind tibiae with 2 longitudinal rows of lateral spine-like spurs (Fig. 3: 1). Pretarsus with robust claws, without arolium. Fore wings (Fig. 7: 1) well developed, when

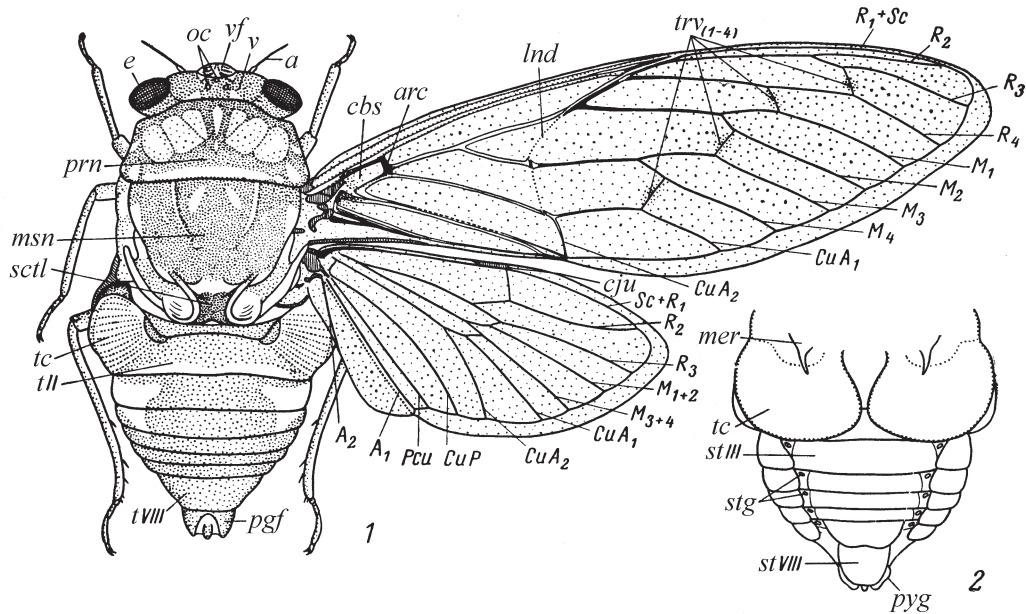


Fig. 235. Cicadines. Family Cicadidae (original).

1, *Oncotympana maculaticollis*, male (left wings not shown); 2, abdomen and tympanal opercula (lobes of metathorax), ventral view. *mer*, meron; *trv₁₋₄*, transverse veins; *pyg*, pygofer; *prn*, pronotum; *sctl*, scutellum; *msn*, mesonotum; *st*, sternite; *stg*, stigmata; *t*, tergite; *op*, tympanal opercula; *tc*, tympanic coverings. Numbers of tergites and sternites designated by Roman numerals. See Figs. 1, 5 for remaining designations.

folded, protruding beyond the apex of abdomen nearly by half of their length; membrane elongate, occupying more than half of wing length, separated from corium by nodal break, on which the wing may a little turn back in flight as on articulation. Base of abdomen bears acoustic organs, in male also strongly developed sound producing apparatus (Fig. 235: 2). In tergal area of abdominal segment I of male, paired acoustic oval membranes are situated laterally; they are strengthened by flat ribs; in sternal area in both sexes, there are also paired acoustic hyaloid tympanic membranes. Acoustic membranes may be covered by lobe-shaped covers formed by tergite II; tympanic membranes are always covered by tympanal covers formed by posterior part of metathorax. Ovipositor of piercing-sawing type. Male genitalia with a single pygofer, without valves and harpagones, but with reduced genital plates (lateral lobes), and also anal tube supplied with lateral [p. 313] hooks and posterior lobe; anal tube usually envelops shaft of penis. Penis usually tubular, bent on ventral side, at apex with teeth and projections often asymmetrical, or penis simple, without special structures.

Eggs are laid in young twigs of trees and shrubs sawn by ovipositor. Emerging larvae fall and bury themselves in soil. One generation every several years, usually 3-5 years. Larvae make burrows in soil moistening it with their intestinal excreta. Fore legs of larvae are fossorial, with various teeth on femora. Feed on sap from plant roots. Some species are injurious to horticulture at larval stage and especially at egg laying, since twigs above incisions made by sawing in dry off. – 4 genera, 6 species (in USSR 12 genera and more than 40 species).

LITERATURE. Kudryashova, I.V. Larvae of Cicadas of the fauna of the USSR. Moscow. 1979. 160 pp. Ishihara, T. Hemiptera Cicadidae. Tokyo. 1961. P. 1-36, 4 pls. (Insecta Japonica; Ser. 1, Pt. 2).

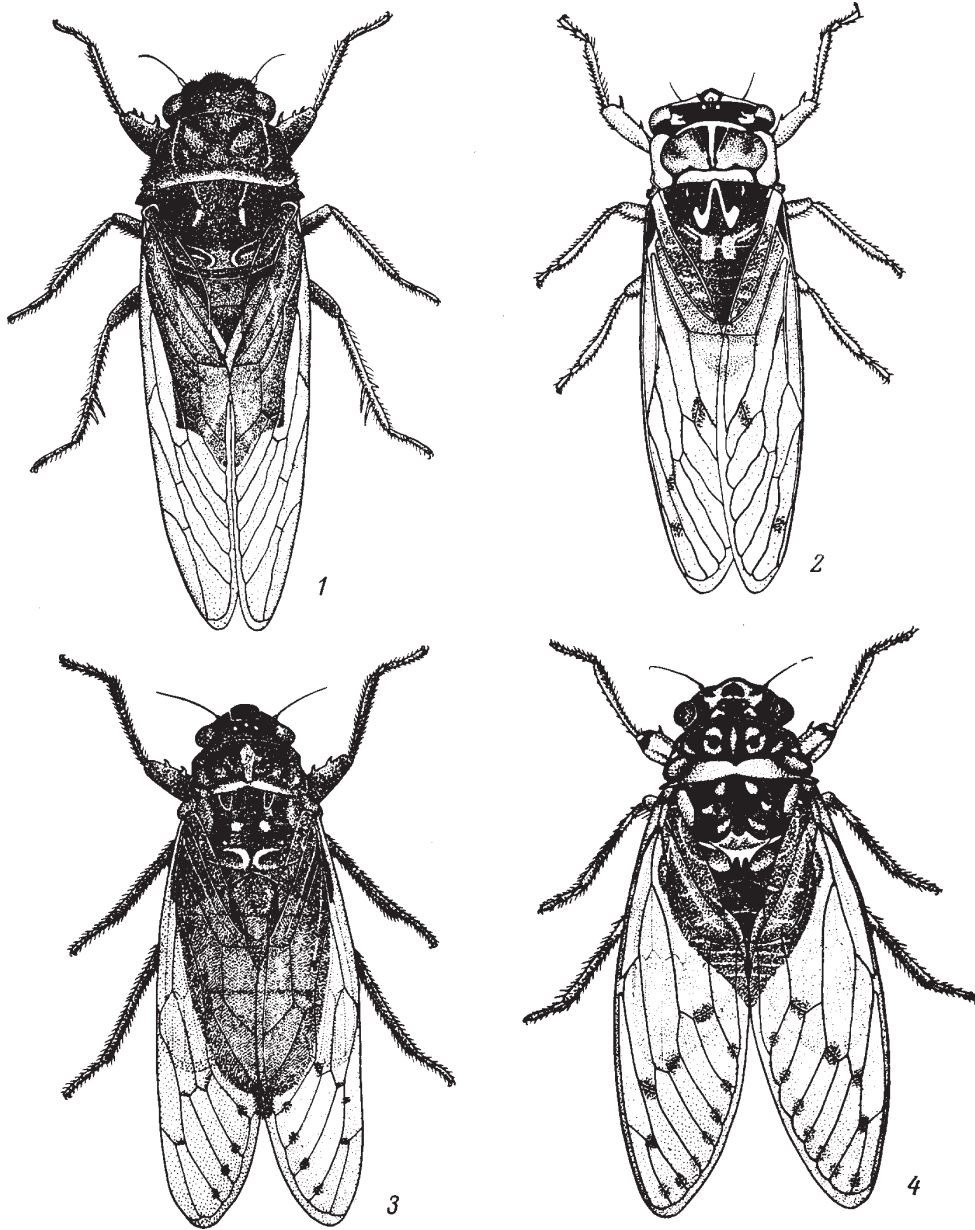


Fig. 236. Cicadines. Family Cicadidae (after Esaki).

1, *Cicadetta yezoensis*; 2, *Tibicen bihamatus*; 3, *Terpnosia nigricosta*; 4, *Oncotympana maculaticollis*.

KEY TO GENERA

1. When wings are folded, the lateral tooth of 2nd axillar plate of fore wing lies above anterior margin of episternal subalar lobe. Rostrum not projecting backwards beyond middle coxae 2
- When wings are folded, the lateral tooth of 2nd axillar plate of fore wing lies above the middle of upper margin of episternal subalar lobe; the lobe here with a weak incision. Rostrum reaching hind coxae 3

2. Postclypeus with longitudinal slit-shaped furrow in middle part. Lateral carina of dorsum of pronotum weakened in front of higher carinate posterior margin. Basal cell quadrangular, as *M* and *CuA* arise from it by a common stalk or separately but close to each other 1. **Cicadetta**
- Postclypeus without longitudinal furrow. Lateral carina of dorsum of pronotum sharply expressed along whole length. Basal cell pentagonal, as *M* and *CuA* arise separately and are separated by a well expressed vein (arculus) 2. **Tibicen**
3. Rostrum reaching only to bases of hind coxae. 3rd segment of antennae shorter than 4th segment 3. **Terpnosia**
- Rostrum extended beyond apices of hind coxae. 3rd segment of antennae longer than 4th segment 4. **Oncotympana**

KEY TO SPECIES OF THE FAMILY CICADIDAE

1. **Cicadetta** Kol. Head noticeably narrower than pronotum; anterior margin of vertical surface of head obtuse-angled, projecting. Supraantennal carinae about as long as width of vertex. Postclypeus with distinct vertical area and slit-shaped longitudinal furrow on facial part. Sides of dorsum of pronotum in middle part parallel, in posterior part convex, rather strongly projecting laterally. Lateral carinae of dorsum of pronotum in posterior part smoothed. Basal cell of fore wings quadrangular, as *M* and *CuA* arise from it by a common stem or from one point. Lateral tooth of 2nd axillar plate of fore wing blunt, rounded. Fore femora with a robust basal tooth and 2 strong distal teeth. Fore tibiae at apex posteriorly (laterally) with pointed bare tooth. In male, lower tympanal covers transverse, small, separated; upper acoustic covers lacking. Subgenital plate of female posteriorly with acute-angled excision. Male. Subgenital plate parabolic. Pygofer with dorsal teeth above anal tube and lateral projections on posterior margin. Anal tube with well developed hooks and posterior lobe. Penis with tubular shaft and 2 basal processes running more or less along the shaft. – 3 species (in USSR more than 12). [p. 315]

1. Shaft of penis long and slender; its lateral processes whip-like, about twice as long as shaft. Ventral lobe of anal tube not shorter than hooks, slightly slanting upwards, nearly completely black. Hooks short, pointed. Wings hyaline, with black veins, except yellowish brown costal veins. Posterior margins of abdominal tergites orange-yellow; venter of abdomen and legs of the same color but with dark spots. Without wings 18-24, with wings 26-32. – S Khab., Prim., Sakh.; Irkutsk Prov., SW and C Siberia, N Kazakhstan, Transcaucasia. – Korea, NE China, Near East, Europe. Early June to early August. (Figs. 237: 1-4) **C. montana** Scop.
- Shaft of penis short, of about the same length as base, its lateral processes a little longer than shaft, with diverging apices. Ventral lobe of anal tube short, shorter than hooks and not slanting upwards 2
2. Basal processes of penis with pointed apices. Yellowish greenish, with black spots. Head more or less blackened, with light sides of postclypeus, and also with light spot on apex of postclypeus, on inner ends of supraantennal carinae and at posterior margin of vertex. Pronotum with a pair of large black spots. Mesothorax with a pair of large spots laterally, an angular spot in the middle and small spots posteriorly. Wings hyaline, with green veins. Abdomen with darkened tergites, their posterior margins light. Without wings 15-18, [p. 316] with wings 23-27. – S Khab., Amur., Prim., Sakh. – Korea, NE, E, C and S China. – In well warmed under-sized (? light) oak forests. Late May to late July. (Figs. 237: 5-8) **C. pellosoma** Uhl.

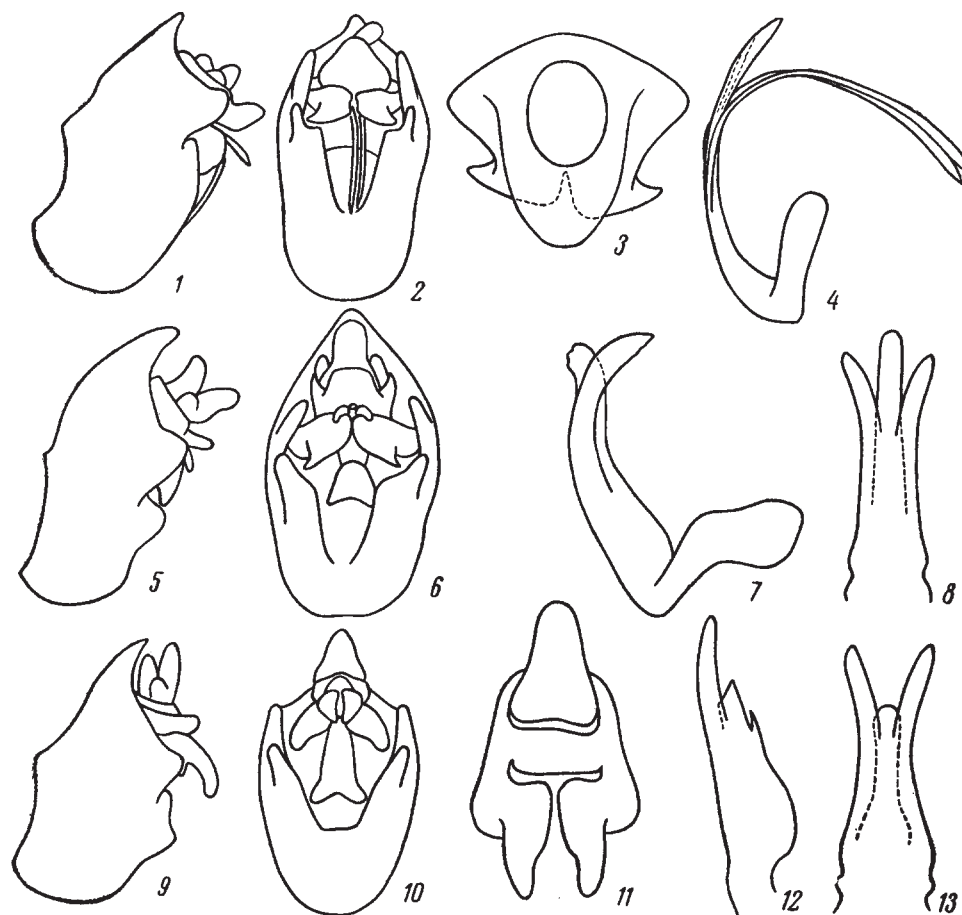


Fig. 237. Cicadines. Family Cicadidae (original).

1-4, *Cicadetta montana*: 1, 2, genital block of male (1, left lateral view; 2, posterior view); 3, anal tube, posterior view; 4, penis, left lateral view; 5-8, *C. pellosooma*: 5, 6, genital block of male (5, left lateral view; 6, posterior view); 7, 8, penis (7, lateral view; 8, dorsal view); 9-13, *C. yezoensis*: 9, 10, genital block of male (9, left lateral view; 10, posterior view); 11, anal tube, posterior view; 12, 13, penis (12, lateral view; 13, dorsal view).

- Basal processes of penis at apex widely blunt, finger-like. Nearly completely black. Head black; sides of postclypeus, as well as spots at apex of postclypeus, at inner margins of supraantennal carinae and in the middle at posterior margin light. Pronotum with longitudinal light stripe, mesonotum with 2 light spots. Wings hyaline, slightly milky smoky, veins dark, on corium with light strips on ridges; costal vein dark brown. Abdomen dorsally darkened, except posterior margins of tergites, ventrally light, with dark spots in the middle parts of sternites. Without wings 22-27, with wings 30-37. - Amur., Prim., S Sakh., S Kur.; Transbaik., Sayan Mts., Altai, N Tien Shan. - Japan, Korea, NE China, N Mongolia. - In broad-leaved and mixed coniferous-broad-leaved forests, especially in forests with *Abies*. Early July to late August. (Figs. 236: 1; 237: 9-13) *C. yezoensis* Mats.

2. **Tibicen** Latr. Head transverse, slightly narrower than pronotum. Postclypeus narrower than supraantennal carinae, completely convex, without separated vertical part. Sides of dorsum of pronotum in the middle part nearly parallel, in posterior part weakly diverging. Basal cell of fore wing pentagonal. Lateral tooth of 2nd axillar plate

of fore wing closed. Fore femora with 1 basal tooth and 2 distal teeth, from which the penultimate one is larger and spine-shaped. In male, tympanal covers elongate longitudinally, at base closed. Subgenital plate in female with acute-angled or rectangular, concave posterior margin. Male. Subgenital plate with widely truncate apex. Pygofer simple, dorsally completely sclerotized, with a shallow excision for the base of anal tube; the excision delimited laterally by projections. Margins of pygofer ventrally with small lateral lamellae. Anal tube with a rectangular posterior lobe slightly convex upwards and strongly reduced lateral hooks, which are approximated on ventral surface of the tube and form a guiding gutter for the shaft of penis. Penis simple, tubular, not thick, without any structures at apex, not far from the base steeply bent on ventral side. – 1 species (in USSR 2).

1. Black, mainly with pale yellow pattern. Postclypeus with light spot at the turn into vertical surface and on vertical area at frontal margin. Vertex with light transverse spots anteriorly above antennae, beyond them at eyes, and small spots lateral to paired ocelli. The main part of pronotum red-castaneous, with narrow black edging. Anterior and lateral margins light, on sides with narrowly blackened outer margin. Posterior margin black, with 2 pairs of transverse spots; middle part of disc blackened [p. 317] and divided by light longitudinal stripe. Scutellum with W-shaped light spot in the middle and 3 pairs of small light spots laterally and posteriorly. Fore wings with hyaline cells and veins in basal half of wing and dark cells and veins in distal part, blurred dark spots on transverse veins. Without wings 33-35, with wings 50-55. – S Prim., S Sakh., S Kur. – Japan, Korea, China. – Late July to early September. (Figs. 236: 2; 238: 1-4) **T. bihamatus** Motsch.

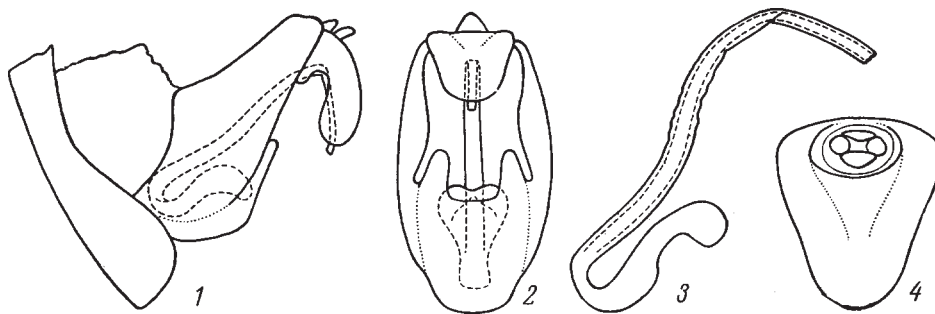


Fig. 238. Cicadines. Family Cicadidae (original).

1-4, *Tibicen bihamatus*: 1, 2, genital block of male (1, left lateral view; 2, posterior view); 3, penis, lateral view; 4, anal tube, posterior view.

3. **Terpnosia** Dist. Head noticeably narrower than pronotum. Anterior margin of vertical surface of head approximately obtuse-angulate rounded. Supraantennal carinae shorter than width of vertical area. Postclypeus completely convex, without delimited vertical part. Sides of dorsum of pronotum in the middle part parallel, in posterior part moderately convex, projecting. Basal cell of fore wings with separate but approximated bases of *M* and *CuA*. Lateral tooth of 2nd axillar plate of fore wings sharp but short, not attenuate. Fore femora with 2 spaced blunt teeth. Fore tibiae at apex posteriorly (ventrally) with a rounded lobe covered with spinules and projecting as a tooth. In male, lower tympanal covers transverse, widely spaced along midline. Subgenital plates in female with a small but rather deep parabolic excision in the middle; lateral parts of margin on its sides weakly concave. Male. Subgenital plate parabolic rounded, ventrally with a longitudinal carina. Pygofer with membranous sinus dorsally before base of anal

tube; margins of pygofer with small lateral lobes ventrally. Anal tube without hooks, with about rectangular posterior projection, which bears on ventral surface a groove enveloping and [p. 318] directing the shaft of penis. Penis with long, fine, flexible shaft at apex widened triangularly, flattened dorsoventrally and mebranized, except lateral narrow walls supporting the membranous part. In USSR 1 species.

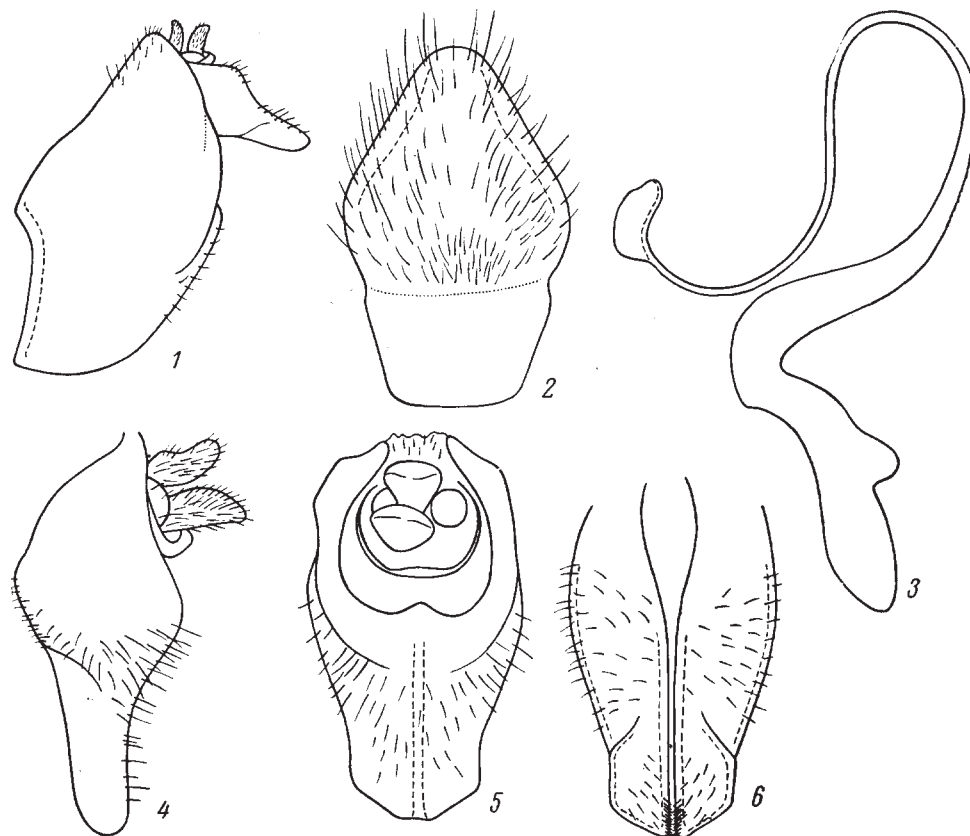


Fig. 239. Cicadines. Family Cicadidae (original).

1-6, *Terpnosia nigricosta*: 1, genital block of male, left lateral view; 2, subgenital valve of male, ventral view; 3, penis, lateral view; 4-6, anal tube (4, lateral view; 5, posterior view; 6, anterior view).

1. Black, with green spotted pattern. Postclypeus with green transverseribs. Vertex with green middle of frontal area and posterior margin. Pronotum green, black-edged on the very margin and on all boundaries of callous prominences of main part, also with 2 irregular black longitudinal stripes near midline. Mesonotum with green sides of scutum and whole scutellum, besides in middle part of scutum with small irregular spots near parapsidal furrows and posterior to them. Fore wings with greenish veins on corium and darkened veins on membrane; cells hyaline; membrane with dark spots on transverse veins and before apices of longitudinal veins. Venter green, with dark indistinct spots. Without wings 31-33, with wings 41-43. – S Kur. – Japan, China. – Late July. (Figs. 236: 1-6) *T. nigricosta* Motsch.

4. *Oncotympana* Stål. Head transverse, noticeably narrower than pronotum. Anterior margin of vertex gently rounded; supraantennal carinae a little shorter than width of postclypeus. Whole postclypeus convex, without delimited vertical part. Sides of dorsum of pronotum in anterior and middle parts diverging, in middle part undulate. Basal cell of fore wings pentagonal. Lateral tooth of 2nd axillar plate of fore



Fig. 240. Cicadines. Family Cicadidae (original).

1-4, *Oncotympana maculaticollis*: 1, genital block of male, left lateral view; 2, anal tube, posterior view; 3, 4, apical part of penis (3, lateral view; 4, dorsal view).

wings spine-like. Fore femora with 2 distinct teeth and an angular lobe at apex in front of distal tooth. Fore tibiae at apex posteriorly (dorsally) with a blunt projection covered with spinules. Subgenital plate in female small, with narrow excision in the middle laterally delimited by small lobes, parabolic rounded. Male. Pygofer with membranous sinus dorsally before base of anal tube; posterolateral margins of pygofer with small lobes directed upwards and backwards along the margin. Anal tube with 4 lobes, because of bifurcate posterior projection; the lobes flattened dorsoventrally and slanting downwards and forwards. Penis arcuate, relatively thick and short, bearing subapically 2 lyriform processes and 2 fleshy mammiform structures between them. In USSR 1 species.

1. Black, with greenish pattern. Postclypeus with greenish ribs. Vertex with 2 pairs of green spots at anterior and posterior margins lateral to ocelli. [p. 319] Pronotum with green longitudinal stripe and on convex parts with uneven greenish brownish lightening. Scutellum with 2 large spots laterally and with more or less developed smaller spots. Wings with yellowish and reddish brown veins, hyaline cells; membrane, transverse veins and longitudinal veins near ends with noticeable, brown, blurred spots. Venter more or less greenish yellow. In male, lower tympanal covers transverse, large, closed posteriorly and rounded from the outside. Without wings 33-36, with wings 56-63. – S Prim. – Japan, Korea, China. – July to August. (Figs. 235: 1; 236: 4; 240: 1-4) **O. maculaticollis** Motsch.

8. Family TETTIGOMETRIDAE

Comparatively small (3-6) beetle-like cicadines with strongly condensate elytra and body flattened dorsoventrally (Fig. 243); head and thorax usually without longitudinal carinae (Figs. 1: 5; 242: 5). Hind tibiae without lateral teeth, but often with strong bristles (Fig. 4: 4). Hemelytra (Fig. 244: 1) with developed [p. 320] hypocostal carina. Hind wings (Fig. 244: 2) without peripheral vein, with closely approximate *C* and *ScR*; cubital branches separated because of reduction of *CuA* from the root to arculum, arculum taking over the role of base of *CuA*; bases of *Pcu* and *A*₁ also strongly approximate. Pygofer of male with small, not separated genital plates (Figs. 245: 1, 6).

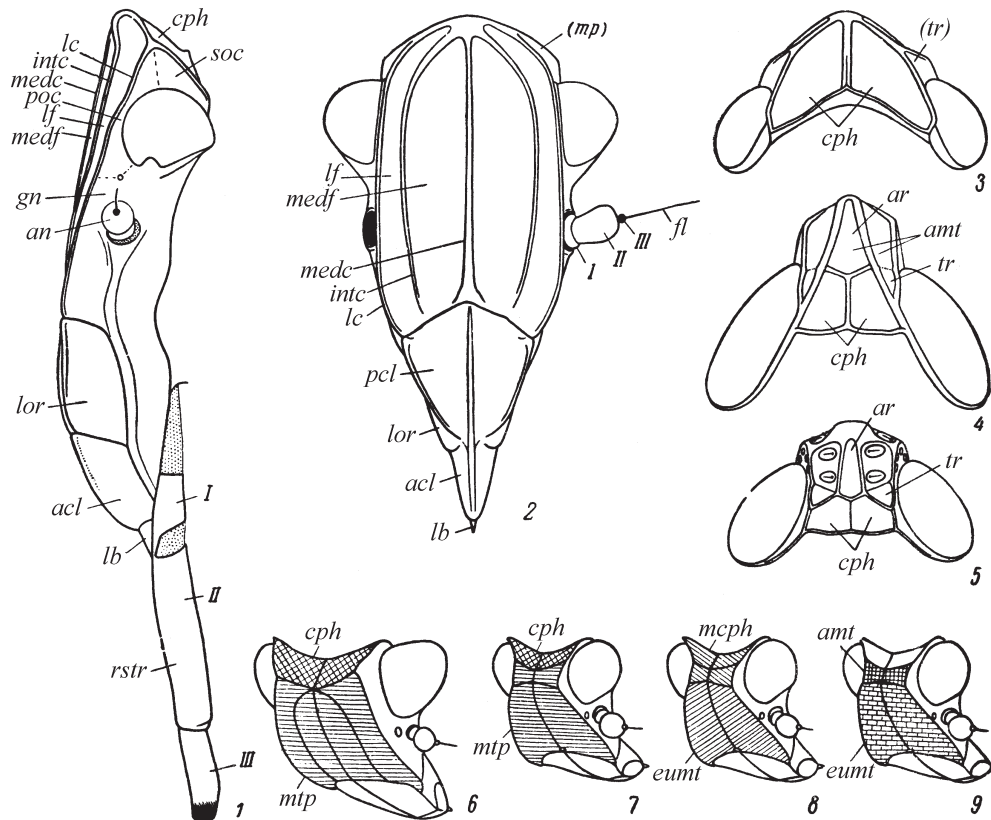


Fig. 241. Cicadines. Superfamily Fulgoroidea. Head structure (original).

1-3, *Cixiopsis punctata* (Tropiduchidae), head: 1, lateral view; 2, anteroventral view (face); 3, dorsal view; 4, 5, head, dorsal view: 4, *Chlorionidea bromi* Em. (Delphacidae); 5, *Achorotile transbaicalica* (Delphacidae); 6-9, head, left anterodorsal view: 6, ground plan of structure in superfamily Fulgoroidea; 7-9, families Cixiidae, Delphacidae. *acl*, anteclypeus; *amt*, acrometope; *ar*, areolet; *fl*, flagellum of antennae; *lc*, lateral carina of metope ("frons"); *lf*, lateral field of metope ("frons"); *lb*, labrum; *cph*, coryphe ("vertex"); *mcph*, macrocoryphe; *mtp*, metope; *pcl*, postclypeus; *poc*, preocular field ("temple"); *intc*, intermedial carina of metope ("frons"); *soc*, subocular field; *medc*, median carina of metope ("frons"); *medf*, median field of metope ("frons"); *tr*, trigon; (*tr*), not distinctly limited trigon; *lor*, lorum; *an*, antenna; *rstr*, rostrum; *gn*, gena; *eumt*, eumetope. In Figs. 6, 7: *oblique checked*, coryphe; *horizontal shading to the left*, macrocoryphe; *horizontal shading to the right*, eumetope; in Fig. 9: *right checked*, acrometope; *shaded by "bricks"*, eumetope. Segments of rostrum and antennae designated by Roman numerals.

Penis in species from the Far East with small phallobase, to which the aedeagus is articulated; aedeagus sclerotized at base (with a projection), further turning into membranous blowing structure. Ovipositor of female completely lost (Fig. 9: 8). Thermophilous and xerophilous, proceed a scarcely mobile way of life. Larvae not jumping, devoid of sensory pits, mostly myrmecophilous, live in ant hills or in axils of lower leaves of herbaceous plants. Imagines among herbaceous vegetation and on conifers. – 1 genus, 2 species (in USSR 1 genus with 8 subgenera, part of them sometimes are regarded as genera: *Macrometrina* Lindb., *Mitricephalus* Sign.).

LITERATURE. Lindberg, H. Materialien zu einer Monographie der Gattung Tettigometra (Hom. Cicad.). Notulae entomol. 1948. Vol. 28. P. 1-40. [p. 321]

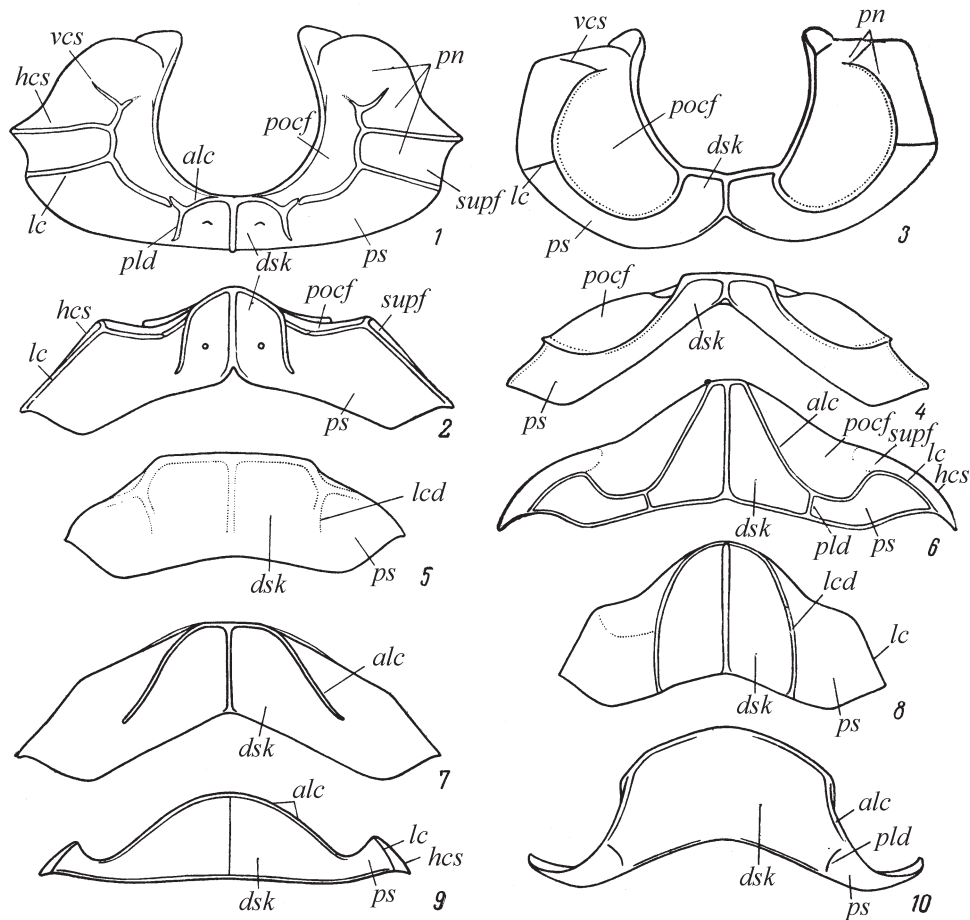


Fig. 242. Cicadines. Superfamily Fulgoroidea. Structure of pronotum (original).

1, 2, *Philotheria* sp. (Dictyopharidae); 3, 4, *Pentastiridius* sp. (Cixiidae); 5, *Tettigometra fusca* (Tettigometridae); 6, *Ugyops* sp. (Delphacidae); 7, *Changeondelphax velitshkovskiyi* (Delphacidae); 8, *Terauchiana sagitta* Kusn. (Delphacidae); 9, *Mycterodus* sp. (Issidae); 10, *Ommatidiotus koreanus* (Issidae). Figs. 1, 3, anterodorsal view; remaining Figs., dorsal view. *ps*, sides of dorsal part of pronotum; *lc*, lateral carina of dorsal part of pronotum; *lcd*, lateral carina of disc of pronotum; *pn*, sides of pronotum (paranota); *vcs*, vertical carina of sides of pronotum; *hcs*, horizontal carina of sides of pronotum; *dsk*, disk of pronotum; *pld*, posterolateral carina of disc of pronotum; *pocf*, postocular field of pronotum; *supf*, supracarinal field of sides of pronotum; *alc*, anterolateral carina of disc of pronotum.

KEY TO SPECIES

1. *Tettigometra* Latr. Head elongate or transverse, angular or rounded, projecting forward, the turn of face into coryphe sharp. Flanges beyond eyes carina-shaped, projecting laterad. Integument smooth or rough, uneven, in last case may bear setae or bristles. – 4 species (in USSR about 30).

1. Projection of aedeagus base finger-like, with blunt, rounded apex 2
- Projection of aedeagus base with truncate apex, at apical margin with distinct transverse ridge 3
2. Halves of anterior margin of coryphe slightly concave; apex of coryphe standing out sharper. Body rather weakly flattened; hemelytra posteriorly strongly convex,

rounded; apical part of hemelytra forming the highest area of body (in lateral view). (Subgenus *Macrometrina* Lindb.). Brown, mat, rough. Face dark brown above, light brown below. Body above brown, with dark small spots and specks, sometimes vertex, pronotum and scutellum lighter than hemelytra. 4.3-5.4. – Amur., Prim.; Transbaikal, S Siberia, Kazakhstan, S Urals. – China (NE, Sichuan), Mongolia. – Dry meadow and meadow steppe habitats. Late May to early October. (Figs. 243: 1; 245: 7) **T. (M.) fusca** Mel.

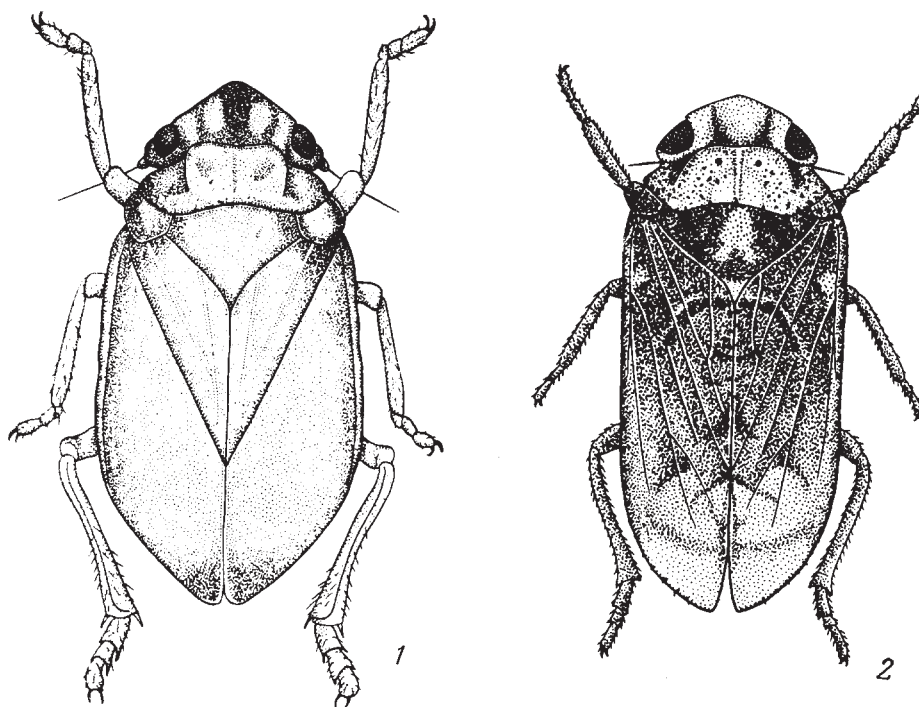


Fig. 243. Cicadines. Family Tettigometridae (after Ishihara and Kwon & Lee).

1, *Tettigometra fusca*; 2, *T. bipunctata*.

- Halves of anterior margin of coryphe more or less convex; apex of coryphe standing out weakly. Body rather strongly flattened; apices of hemelytra weakly convex, rounded, height of body at apices of hemelytra not greater than in thoracic part. (Subgenus *Mitricephalus* Sign.). Brown, mat, rough. Dorsum with dark specks; vertex and pronotum often lighter; hemelytra sometimes with noticeable dim, weak, light spots. 4.2-5.2. – S Khab., Prim.; Transbaikal, S Siberia, Kazakhstan, Middle Asia. – Mongolia, Afghanistan. – Dry [p. 322] meadow habitats. Late July to early September. (Figs. 244: 1, 2; 245: 1-6, 8) **T. (M.) obliqua** Panz.
- 3. Integument more or less smooth and shiny. (Subgenus *Tettigometra* Latr.). Anterior margin of coryphe rounded. Integument finely punctate; punctures on hemelytra denser and larger. Castaneous to black. 3.2-4.6. – S Khab., S Prim.; Transbaikal, S Siberia, Kazakhstan. – China (Gansu), Mongolia. – Steppe habitats. Early June to early September. (Fig. 245: 9) **T. burjata** Kusn.
- Integument roughly rugose, mat. (Subgenus *Mimarada* Em.). Anterior margin of coryphe rounded or indistinctly obtuse-angulate. Brown to dark brown. Face nearly always black. Coryphe usually with light spot. Scutellum usually nearly black even in light specimens. Hemelytra often with spots and bands. 3.1-5. – S Prim. – Japan, Korea, E Mongolia. – Dry meadow habitats. Early May to late June. (Figs. 243: 2; 245: 10) **T. (M.) bipunctata** Mats.

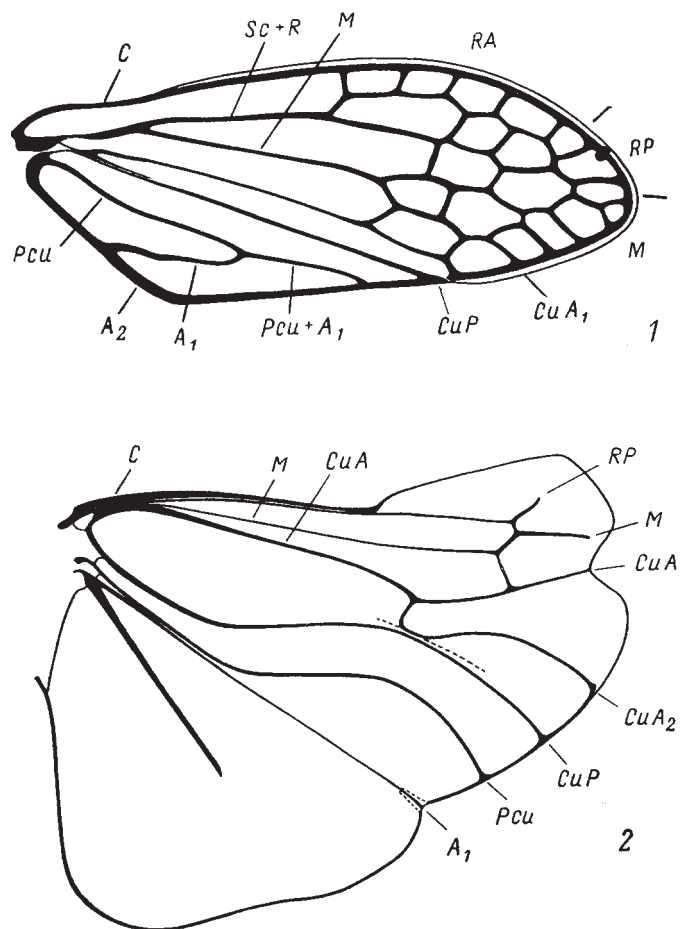


Fig. 244. Cicadines. Family Tettigometridae (original).

1, 2, *Tettigometra obliqua*, wings: 1, fore wing; 2, hind wing. See Fig. 5 for designations of veins.

9. Family DELPHACIDAE

Middle-sized or small cicadines, mostly compact, with short head and not flattened body. Dimorphism in wing structure (at brachyptery of different degree) is widespread. Metope ("frons") mostly with 1 or 2 longitudinal carinae, [p. 324] or middle carina bifurcate, more rarely without carinae. Boundary between facial and vertical surfaces of head marked usually indistinctly, vertical surface in middle part with transverse W-shaped carina separating acrometope from coryphe (Figs. 1: 11, 12; 241: 4, 5, 7-9). Gena under antennae with typical carina running to lower angles of frons. Antennae more or less cylindrical, more or less elongate, sometimes very large, with flattened segments. Apices of hind tibiae with typical posttibial spur (by origin, separated apical tooth of tibia) of conical or flat lanceolate shape, usually with small teeth on medial (main supporting) margin (Figs. 4: 6; 247: 3; 262: 5). On fore wings (Figs. 246: 1-3), stem *RA* bifurcate, *RP* usually simple. *M* branching by nodal line (Stenocraninae, Delphacinae) or only at margin (Asiracinae, Tropidocephalinae, Saccharosydinae). In Delphacinae, *MA* bifurcate at margin. *CuA* with 2 or 3 apices, in Delphacinae, branches of *CuA* fuse distally, forming a pentagonal cell between posterior branch of *CuA*₁ and *CuA*₂; this cell may be open, if posterior end of *CuA*₂ is

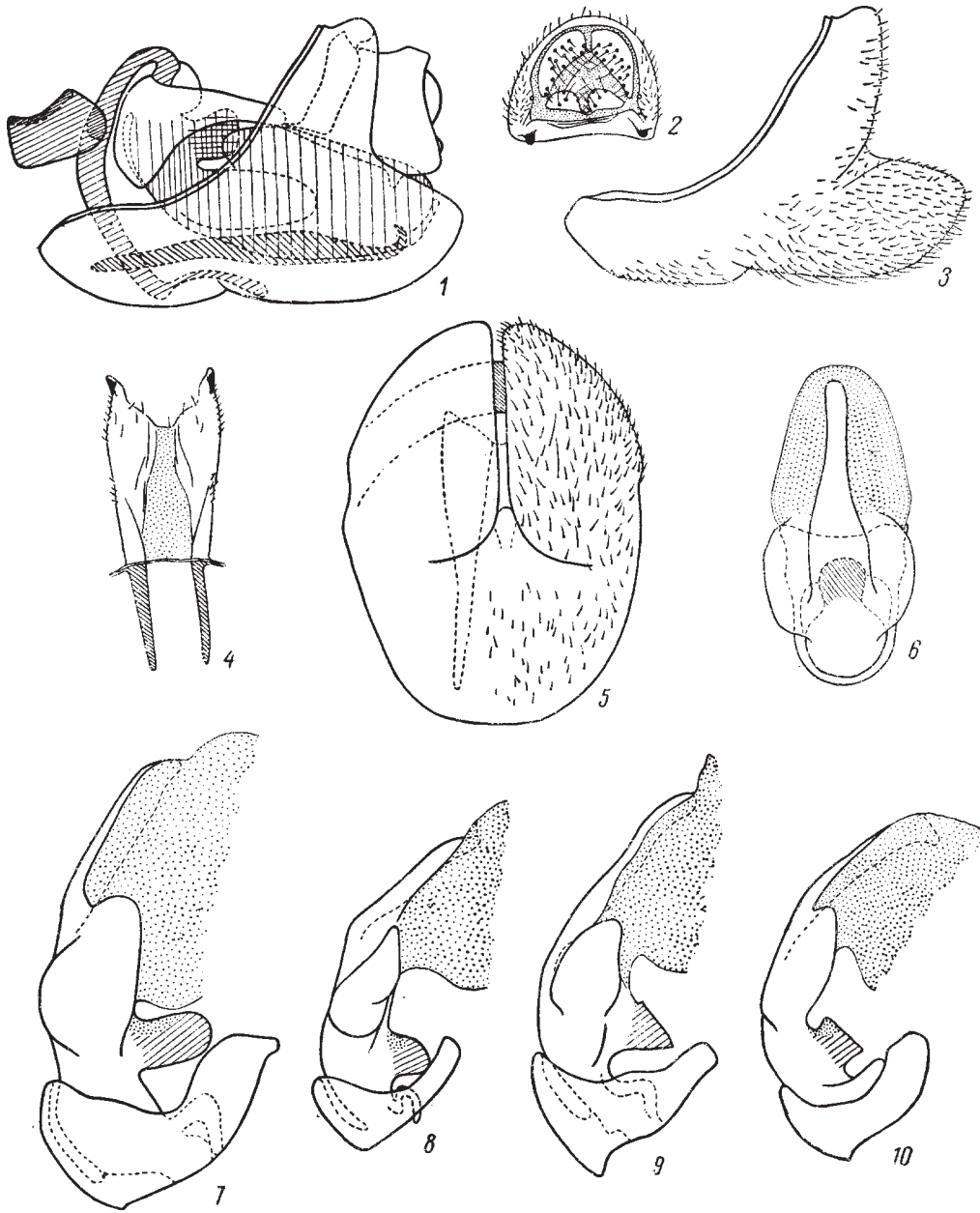


Fig. 245. Cicadines. Family Tettigometridae (original).

1-6, *Tettigometra obliqua* (specimen from Transbaikal): 1, genital block of male, lateral view (shading: oblique to the right, endoconnective; oblique to the left, styli; plumb, aedeagus); 2, anal tube, posterior view; 3, pygofer, lateral view; 4, styli, dorsal view; 5, genital block, ventral view; 6, penis, ventral view (with compressed membranous part of aedeagus); 7-10, penis, lateral view (swollen part of aedeagus not shown):

7, *T. fusca*; 8, *T. obliqua* (specimen from Crimea); 9, *T. burjata*; 10, *T. bipunctata*.

reduced. In Delphacinae, branches of *M* usually anastomosing anteriorly with *RP* and posteriorly with *CuA* by nodal line. On hind wings (Figs. 246: 4-7), *RA* and *RP* always simple, as also usually *M*. *CuA* with one or two branches. *A*₁ simple or with two apices. In subfamily Asiracinae, venation of hind wings without striking specific peculiarities,

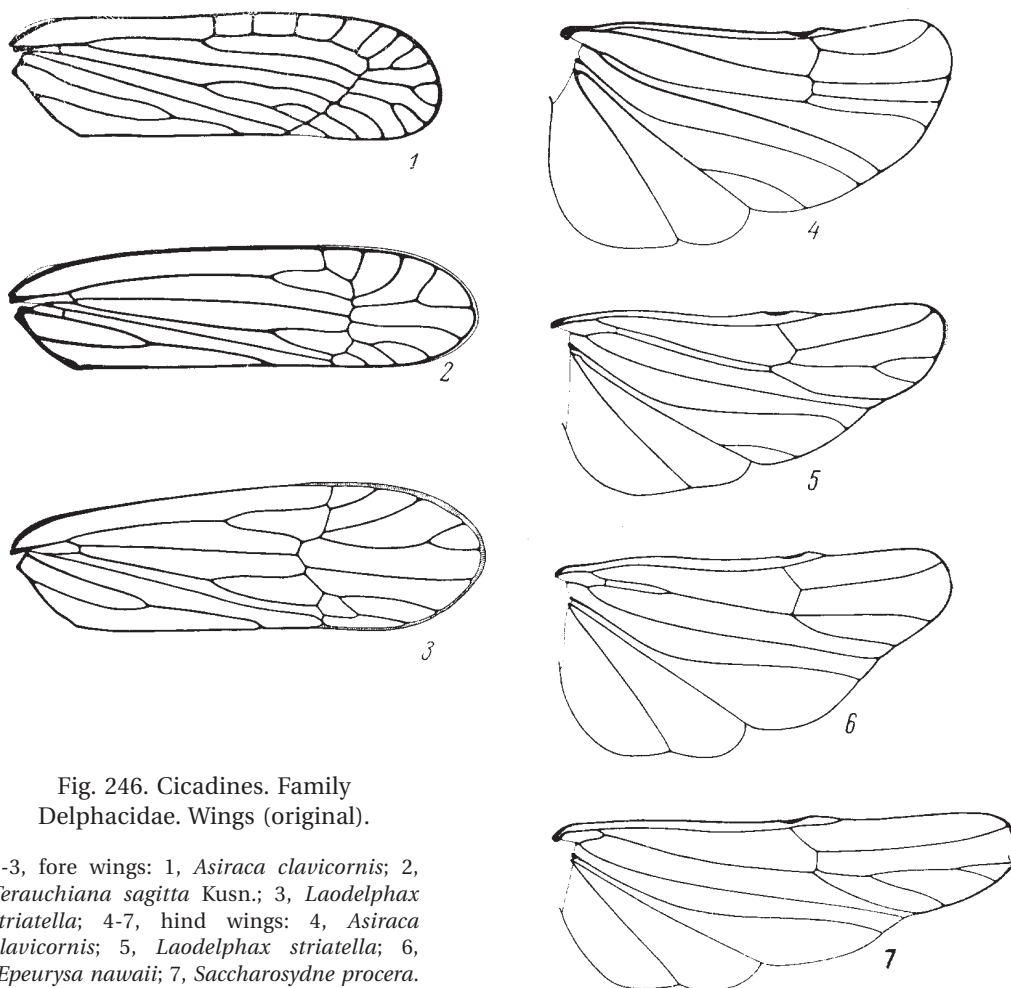


Fig. 246. Cicadines. Family Delphacidae. Wings (original).

1-3, fore wings: 1, *Asiraca clavicornis*; 2, *Terauchiana sagitta* Kusn.; 3, *Laodelphax striatella*; 4-7, hind wings: 4, *Asiraca clavicornis*; 5, *Laodelphax striatella*; 6, *Epeurysa nawaii*; 7, *Saccharosydne procera*.

medial field wide; [p. 325] in others (Stenocraninae, Kelisiinae, Delphacinae), *M* and *CuA* become approximate, fused on area from arcus to nodal line partly (Tropidocephalinae) or completely (Saccharosydniinae). Male. Genitalia (Figs. 10: 10; 247: 4-9) are characterized by considerably reduced phallobase, simple, usually asymmetrical aedeagus, sclerotized bridge on posterior wall of pygofer (bridge of pygofer or genital phragma) between penis and styli (harpagones). Penis is situated in chamber with membranous walls between anal tube and bridge of pygofer; phallobase articulated with base of anal tube. Anal tube mostly with ventrolateral processes of various shape. Female. Ovipositor of piercing-sawing type, at rest situated in groove of pygofer and mostly not projecting backwards beyond it. Most species (except Asiracinae and other rare examples) associated with monocotyledonous plants, especially grasses and sedges, mostly in humid habitats. Eggs deposited in plant tissues. Larvae mobile, with habits similar to those of imagines. – 50 genera, 102 species (in USSR about 80 genera and more than 250 species).

LITERATURE. Ishihara, T. Revision of the Araeopidae of Japan, Ryukyu and Formosa (Hemiptera). Sci. Rep. Matsuyama Agric. College. 1949. N 2. P. 1-102, 17 pl. Asche, M. Zur Phylogenie der Delphacidae Leach, 1815 (Homoptera, Cicadina, Fulgoromorpha). Marburger Ent. Publ. 1985. Bd. 2, H. 1. T. 1-2. 910 S.

1. Hind tibiae with 3 teeth on outer margin. Posttibial spur awl-shaped, rounded or angulate rounded in cross-section, without small teeth on inner margin (Fig. 247: 3). Aedeagus 2-segmented; theca envelops whole basal segment (Figs. 247: 7, 8). (Subfamily Asiracinae) 1. **Asiraca**
- Hind tibiae with 2 teeth on outer margin. Posttibial spur knife-shaped, foliaceous or plate-shaped, not rounded in cross-section (Figs. 4: 6; 262: 5). Aedeagus without distinct division in 2 segments 2
2. Hind tibiae with 5+2 spines at apex. Aedeagus modified into long, twisted in a spiral, weakly sclerotized tube partly located in posterior half of abdomen anterior to genital segments. Hind wings with *M* and *CuA* fused at a considerable distance, nearly from base to membrane (Fig. 246: 7). In larvae, abdominal tergite VII with 2 widely spaced pits bearing a bristle (chaetobothria). Slender, pale green. (Subfamily Saccharosydinae) 7. **Saccharosydne**
- Hind tibiae with 3+2 spines at apex. Aedeagus not twisted in a spiral and well sclerotized. Hind wings with *M* and *CuA* separate or fused only in distal part of corium (Figs. 246: 4-6). In larvae, abdominal tergite VII with 3 setiferous pits 3
3. Posttibial spur of hind legs knife-shaped, strong, always without small teeth on inner margin. Bridge of pygofer not complete, its sclerotization interrupted along midline. Theca of penis well developed, with long process running along shaft. Hind wing with *M* and *CuA* anastomosing in distal part of corium (Fig. 246: 6). (Subfamily Tropidocephalinae) 4
- Posttibial spur of hind legs plate-shaped or foliaceous, with concave lower surface, not rarely with teeth on inner margin. Bridge of pygofer continuous, delimiting dorsal and ventral styler foramina. Theca of penis not as above. Hind wings with not anastomosing *M* and *CuA* (Fig. 246: 5) 5
4. Vertex (coryphe) widened anteriorly and posteriorly; its length much less than width; the turn into face smooth, without carinae (Figs. 262: 1, 2). Veins [p. 326] of fore wings without setiferous granulae, without swellings before subapical cells 5. **Epeurysa**
- Vertex (coryphe) parabolic, narrowed anteriorly; its length much greater than width; the turn into face sharp, delimited by carina. Veins of fore wings with bristle-bearing granules, with swellings before subapical cells 6. **Tropidocephala**
5. First segment of hind tarsi with 5+2 or 6+2 teeth on posterior margin 6
- First segment of hind tarsi with 4+2 teeth on posterior margin. (Subfamily Kelisiinae) 2. **Kelisia**
6. Vertex (macro-coryphe) comparatively long, not less than twice as long as wide. Lateral carinae of pronotum reaching its posterior margin. Theca of penis well developed. (Subfamily Stenocraninae) 7
- Either vertex (macro-coryphe) comparatively short (its length less than width or less than twice greater than width) or lateral carinae of pronotum not reaching its posterior margin, or both characters present. Theca of penis weakly developed, usually ring-shaped. (Subfamily Delphacinae) 8
7. Vertex (macro-coryphe) very long; its part projecting before eyes longer than part situated between them (Figs. 255: 1, 2). Face more or less concave in lateral view. Styli with process on inner margin arising from base (Fig. 255: 11). Valvulae of ovipositor only slightly widened at base (Fig. 255: 13) 3. **Terauchiana**
- Vertex (macro-coryphe) shorter; its part projecting before eyes shorter than part situated between them (Figs. 256: 1, 2; 258: 1, 2). Face straight in lateral view. Styli

- without processes at base (Figs. 256: 10; 257: 6, 7). Valvulae of ovipositor wide, shield-shaped. (Figs. 256: 11; 257: 3) 4. **Stenocranus**
8. First segment of hind tarsi very long, longer than half of hind tibia. First segment of antennae about 3 times as long as its diameter 9
- Either 1st segment of hind tarsi shorter than half of hind tibia, or 1st segment of antennae less than 3 times as long as its diameter, or both characters present ...
..... 13
9. Frons (eumetope) wide, 1.3-1.7. times as long as wide 1st segment of antennae flattened, foliaceous, 2nd segment cylindrical, though carinate, shorter than 1st segment 8. **Delphax**
- Frons (eumetope) comparatively narrow, 2-2.7. times as long as wide 1st segment of antennae cylindrical, shorter than 2nd segment 10
10. Frons (eumetope) with light small spots on brown background – traces of larval sensory pits (chaetobothria). Median carina of frons becoming bifurcate at some distance lower from boundary between frons and vertex (eumetope and macrocoryphe) 11
- Frons (eumetope) without light small spots on brown background. Median carina of frons becoming bifurcate at the turn to vertex (at boundary between eumetope and macrocoryphe) 12
11. Median carina of frons becoming bifurcate near turn to vertex (macrocoryphe). Styli not bifurcate at apex. Aedeagus without long ribbon-shaped processes. Anal tube asymmetrical due to differently developed left and right processes
..... 9. **Euides**
- Median carina of frons becoming bifurcate at considerable distance before the turn to vertex (macrocoryphe), nearly opposite lower margin of eyes. Styli bifurcate at apex, ovenprong-shaped. Aedeagus with a pair of long ribbon-shaped processes near apex. Anal tube symmetrical, without long processes 10. **Garaga**
12. Vertex (macrocoryphe) nearly square. Pronotum with weakly bent, nearly straight lateral carinae of disc reaching closely to its posterior margin. Styli more or less parallel to each other, with apex attenuate and directed inwards. Aedeagus compressed laterally, comparatively short, its length up to theca only 2.5-3 times its greatest width 12. **Kakuna**
- Vertex (macrocoryphe) rectangular, slightly narrowing anteriorly. Pronotum with lateral carinae strongly slanting laterad, not reaching to posterior margin. (Fig. 242: 7). Styli diverging, with apex directed outwards. Aedeagus tubular, long, its length up to theca about 5 times its greatest width
..... 13. **Changeondelphax** [p. 327]
13. Fore wings with dark setiferous granulae on veins; granulae greater than vein thickness. Edging of pygofer with wide projection under stylar foramen. Styli slightly diverging, with rounded external widening before attenuate, beak-shaped apex directed upwards and inwards. Aedeagus wedge-shaped, with obliquely longitudinal, asymmetrical rows of denticles 11. **Euconomelus**
- Veins of fore wings without setiferous granulae, or they are underdeveloped, narrower than vein thickness. Combination of male genitalia characters not as above 14
14. Basal segment of hind tarsi with 3-4 lateral teeth 16. **Nilaparvata**
- Basal segment of hind tarsi without lateral teeth 15
15. Median carina or median carinae of frons (eumetope) distinct, usually high elevated 16
- Median carina or median carinae of frons (eumetope) very low, indistinct, smoothed or quite absent 53

16. Vertex (macrocoryphe) long, distinctly narrowing anteriorly, longer than wide. Males (rarely also females) with fully-developed wings, greenish pronotum and mesonotum; females usually brachypterous, live specimens bright green 15. **Chloriona**
- Vertex (macrocoryphe) not narrowing anteriorly, rarely longer than wide. Not green-colored 17
17. Lateral carinae of pronotum not reaching its posterior margin, weakly diverging; distance between their posterior ends not greater than length of median carina. Vertex (macrocoryphe) considerably projecting forward before eyes 21. **Megamelus**
- Lateral carinae of pronotum strongly diverging, slanting outwards, not reaching its posterior margin; distance between posterior ends of lateral carinae, as a rule, greater than length of median carina. Vertex (macrocoryphe) weakly projecting before eyes 18
18. Frons (eumetope) with 2 median carinae 19
- Frons (eumetope) with 1 median carina rather often bifurcate nearly from base 21
19. Frons (eumetope) with sensory pits (chaetobothria) between median and lateral carinae. Similar sensory pits are present on pronotum beyond lateral carinae of disc and on sides of abdominal tergites IV-IX 38. **Achorotile**
- Frons (eumetope), pronotum and abdomen without sensory pits 20
20. Frons (eumetope) light brown, with darker narrow edging of carinae 37. **Criomorphus**
- Carinae of frons (eumetope) without brown edging, though some areas between carinae may be completely darkened 61
21. Median carina of frons (eumetope) becomes bifurcate at considerable distance from boundary of vertex (macrocoryphe), usually at level of lower margins of eyes; median carinae of vertex (carinae of acrometope) more or less parallel 22
- Median carina of frons (eumetope) becomes bifurcate at boundary of vertex (macrocoryphe); median vertical carinae (carinae of acrometope) diverging backwards 23
22. Predominating coloration of pronotum and mesonotum black or dark brown. Fore wings in brachypterous dark. Posterior surface of male pygofer without teeth 39. **Ditropsis**
- Predominating coloration of pronotum and mesonotum light. Fore wings in brachypterous light. Posterior surface of male pygofer with a pair of lateral teeth directed mediad 40. **Dicranotropis**
23. Anal tube with a pair of ventral processes or teeth 24
- Anal tube without ventral processes or teeth 48
24. Pygofer with long unpaired spine under stylar foramen 32. **Acanthodelphax**
- Pygofer without unpaired spine under stylar foramen, but there may be a small projection or a pair of teeth 25
25. Lateral edging of pygofer uniformly developed, uniformly convex, straight or slightly concave in lateral view 26 [p. 328]
- Lateral edging of pygofer with prominences, thickened or slanting inwards lobes, often with more or less deep, well visible in lateral view excision dividing dorsal and ventral lobes 38
26. Pygofer compressed laterally, oval posteriorly 27
- Pygofer not compressed laterally, rounded posteriorly 28
27. Styli long, running more or less parallel, starting from subbasal projection, parallel-sided, with truncate apex. Aedeagus compressed laterally, smoothly arcuate, bent dorsad, with rows of denticles 27. **Calligypona**

- Styli either very short, or moderately long, diverging, tapering to pointed apex. Teeth of anal tube with approximate bases 59
- 28. Anal tube with short, weakly noticeable ventral small teeth 30. **Muirodelphax**
- Anal tube with well visible; long ventral processes 29
- 29. Bridge between processes of anal tube well developed; processes widely spaced, distance between their bases, as a rule, greater than width of process 30
- Bridge between processes of anal tube underdeveloped; processes closely approximate; distance between their bases, as a rule, less than width of process 36
- 30. Styli together pincers-shaped. Bridge of pygofer with 2 denticles directed laterad 43. **Kusnezoviella**
- Styli not pincers-shaped, their apices not directed to each other. Bridge of pygofer without small teeth directed laterad 31
- 31. Styli smoothly narrowing from wide basal part to pointed apex (see also couplet 58, genus *Pastiroma*) 32
- Styli with a widening in apical or middle part, with truncate or clavate apex 33
- 32. Anterior part of body uniformly reddish brown, carinae not standing out by color. Aedeagus with a pair of long, denticulate, recurrent processes at apex and asymmetrically slanting basal dorsal process 26. **Ceranisa**
- Anterior part of body brown to black, with lighter carinae. Aedeagus without recurrent denticulate processes; basal dorsal projection, if present, then symmetrical, relatively short 41. **Nothodelphax**
- 33. Processes of anal tube of moderate length, only slightly overlie on bridge of pygofer. Bridge of pygofer without carina-shaped projection above stylar foramen. Aedeagus bent dorsad 34
- Processes of anal tube long, considerably overlie on bridge of pygofer. Bridge of pygofer above stylar foramen with thick carina-shaped projection covered with spinules directed downwards. Aedeagus bent ventrad 23. **Elachodelphax**
- 34. Styli with tooth in basal half. Aedeagus with transverse belt of denticles directed distal at the middle 18. **Cotoya**
- Styli without teeth in basal half. Aedeagus with longitudinal rows of denticles directed proximal in apical half 28. **Paradelphacodes**
- 35. Posttibial spur about half as long as tarsus. Processes of anal tube more or less diverging from base. Aedeagus with long recurrent teeth in apical half 49. **Struebingianella**
- Posttibial spur less than half as long as tarsus. Processes of anal tube approximate, more or less parallel. Aedeagus without long recurrent teeth in apical half, only with denticles 36
- 36. Styli with bifurcate apex or with simple apex and with considerable median subapical process. Aedeagus asymmetrical, smoothly bent dorsad at base, with pointed apex and oblique regular [p. 329] longitudinal rows of denticles. Gonopore subapical, situated on right side of shaft 14. **Sogatella**
- Styli with one apex, without considerable median subapical process. Combination of aedeagus characters not as above 37
- 37. The greatest length of pygofer about equal to its height. Processes of anal tube not swollen at base. Aedeagus without ridges, often with dorsal process, approximately symmetrical; theca fused closely with base of aedeagus, forming with it a single structure (most of species) or separated from it 50. **Javesella**
- The greatest length of pygofer equal to half of its height. Processes of anal tube swollen at base. Aedeagus compressed laterally and widened, lanceolate, with denticulate dorsal ridge slanting to the left; theca separated from base of penis. 51. **Movesella**

38. Styli Y-shaped; their ventral part angular, strongly projecting backwards. Aedeagus with long recurrent teeth at apex before gonopore 33. **Hyledelphax**
 – Styli not Y-shaped, without angular ventral part projecting backwards 39
39. Only dorsal lobes of pygofer edging distinctly expressed; they are projecting backwards on sides of anal tube; therefore, pygofer looks bevelled downwards in lateral view 40
 – Edging of pygofer with distinctly expressed dorsal and lateral parts or thickened and widened below 43
40. Anal tube with long; widely spaced at base and approximate apically teeth connected by very narrow sclerotized bridge. Styli without subbasal projection, with slightly widened and straightly truncate apices. Aedeagus straight, with lateral rows of teeth and 2 dorsal teeth before apex 30. **Verriculus**
 – Anal tube with teeth approximate starting with base; sclerotized bridge between them absent. Styli with subbasal projection. Aedeagus not as above 41
41. Processes of anal tube asymmetrical. Styli with tooth on subbasal projection, and with finger-like lateral projection before apex. Aedeagus tubular, steeply bent ventrad in apical half, with only weakly noticeable denticles before apical gonopore 19. **Coracodelphax**
 – Processes of anal tube symmetrical. Styli without tooth on subbasal projection, on apex truncate or with wide lateral lobe. Aedeagus not as above 42
42. Pygofer of moderate length not exceeding its height. Styli shorter, with wide lateral lobe at apex. Aedeagus in the shape of more or less straight tube without projections and teeth 17. **Opiconsiva**
 – Pygofer long, its length exceeding height. Styli shorter, more or less parallel-sided, with truncate apex. Aedeagus bent in apical third, with dorsal spine-like projection and ventral denticles at bend 20. **Trichodelphax**
43. Excision of pygofer edging not deep, smoothed or absent; lower part of edging thickened or widened 44
 – Excision of pygofer edging well expressed, dividing it into distinct lobes, ventral and dorsal one 45
44. Edging of pygofer below from each side strongly widened and angular, bent upwards, rounding apices of strongly elongate processes of anal tube. Bridge of pygofer with swollen, cone-shaped, wide carina evenly covered with spinules. Styli small, with lateral excision before apex. Dorsum of body mainly black or dark brown, without light stripe along median carina of pronotum and mesonotum .
 46. **Unkanodella** [p. 330]
 – Edging of pygofer weakly thickened below. Bridge of pygofer without carina or with narrow carina. Styli, as a rule, of usual size. Dorsum light brown, usually with light stripe along median carina of pronotum and mesonotum
 34. **Megadelphax**
45. Fore wings with black or dark brown spot at commissural margin before apex of claval vein. Carina of pygofer bridge angular, projecting backwards. Aedeagus with high ventral carina in basal half; shaft of aedeagus smooth, without denticles; gonopore ventral 44. **Laodelphax**
 – Fore wings without dark spot at commissural margin before apex of claval vein. Carina of pygofer bridge often ending below by a pair of teeth. Aedeagus with dorsal gonopore and more or less numerous teeth 46
46. Teeth of pygofer bridge slanting upwards. Aedeagus straight, comparatively wide in lateral view 45. **Unkanodes**, part
 – Teeth of pygofer bridge directed downwards or absent. Aedeagus straight or bent, comparatively narrow in lateral view 47

47. Excision of pygofer edging very deep; ventral lobes of edging slanting inwards and upwards, covering partly styli 45. **Unkanodes**, part
- Excision of pygofer edging moderately deep; ventral lobes not slanting inwards and upwards, not covering styli 47. **Ribautodelphax**
48. Pygofer obliquely truncate; its edging deeply excised in lateral view 49
- Pygofer straightly truncate; its edging not excised in lateral view 52
49. Excision of pygofer edging situated above apices of styli (in lateral view). Aedeagus long, tubular, nearly straight, with long, unpaired recurrent process opposite subapical lateral gonopore. Fore wings of brachypters brown, lightened at base and at apex. Frons (metope) black, with light carinae 29. **Terthronella**
- Excision of pygofer edging situated opposite the middle of styli (in lateral view); styli rather often covered partly by lobe-shaped parts of edging slanting inwards .
..... 50
50. Styli wide, with truncate apex. Bridge of pygofer without high longitudinal median carina. Aedeagus elbow-shaped, with 3 long teeth at bend. Fore wings unicolorous brown. Frons (metope) and clypeus with carinae not standing out by color or only weakly lightened; areas between carinae with light small spots – traces of larval sensory pits (chaetobothria) 31. **Muellerianella**
- Styli with gradually or sharply tapering apex. Bridge of pygofer with longitudinal carina becoming higher downwards and usually bearing denticles. Aedeagus more or less straight or bent, without long teeth. Frons (metope) black or brown, with light, contrasting carinae; areas between carinae may be lightened in the middle
..... 51
51. Lower parts of pygofer edging lobe-like slanting inwards, covering partly styli before apex (in posterior view). Styli long, with sharply tapering apex slanting outwards. Aedeagus bent in the middle ventrad at right angle; gonopore dorsal, subapical. Areas between carinae on frons (metope) entirely brown or black. Fore wings of brachypterous males black or brown with light base and apex 45. **Unkanodes**, part
- Lower parts of pygofer edging not forming lobes slanting inwards and covering styli; upper parts of edging stretched, slanting downwards and inwards and covering apices of styli. Aedeagus slightly bent dorsad, with denticulate projection at apex to the left and a long comb of teeth to the right; gonopore ventral, subapical. Areas between carinae on frons (metope) lightened in the middle. Fore wings unicolorous, light brown 48. **Sibirodelphax**
52. Styli widely truncate at apex. Aedeagus short and wide, [p. 331] with large subapical ventral gonopore edged by numerous disorderly denticles. Frons (metope) light; carinae of frons brown-edged in male 42. **Gravesteiniella**
- Styli smoothly narrowing to narrowly rounded apex. Aedeagus moderately long, comparatively narrow, with 2-3 rows of denticles. Frons (metope) dark, with light carinae in male; areas between carinae may be partly lightened in female 35. **Paradelphax**
53. Frons (metope) without carinae 54
- Frons (metope) with 1-3 carinae 57
54. Face bicolorous, contrasting colored 55
- Face unicolorous 56
55. General background of face brownish yellow; apex and lower third of frons (eumetope) and genae beyond subantennal carinae black. Scutellum light, with dark lateral triangles. Fore wings in macropters entirely bluish gray. Teeth of anal tube small, widely spaced. Styli diverging, with angular subapical median projection, smoothly narrowing from this projection to pointed apex. Aedeagus

- smoothly arcuate, bent ventrad, with asymmetrical rows of denticles; gonopore ventral 52. **Stiromoides**
- Frons and genae black, postclypeus brownish yellow. Scutellum entirely dark. Fore wings of brachypters with whitish blurred bands at scutellar margin and in apical third, dark brown in the middle. Anal tube with robust, closely approximate teeth. Styli as in *Stiromoides*, their apices attenuate and slanting downwards. Aedeagus straight, smooth, sharply narrowed and bent ventrad at right angle before apex; the bent part with small denticles; gonopore apical 53. **Cormidius**
56. Vertex (macrocoryphe) angular, projecting forward; its length in the middle noticeably greater than length at eyes. Males black dorsally; females brown or yellowish. Bridge of pygofer often with longitudinal carina or projection on ventral or dorsal margin; edging of pygofer often with tooth-shaped projection under stylar foramen. Aedeagus straight or weakly bent ventrad, with longitudinal rows of denticles in apical half or with denticulate projections at apex..... 56. **Metropis**
- Vertex (macrocoryphe) with more or less parallel anterior and posterior margins, its length in the middle and at eyes nearly equal. Males and females from dark brown to black. Bridge of pygofer without longitudinal carina and projections on ventral and dorsal margins; edging of pygofer without projection under stylar foramen. Aedeagus steeply bent ventrad, with rows of denticles near middle arranged asymmetrically 60. **Eurysula**
57. Frons (metope) with 1 median carina sometimes branching before apex 58
- Frons (metope) with 2-3 carinae 61
58. Face bicolorous, yellowish, with dark brown or black postclypeus. Dorsum of body brownish yellow, with black lateral triangles on scutellum. Pygofer not compressed laterally, round posteriorly. Anal tube with widely spaced teeth. Aedeagus with 7-9 long separate teeth before gonopore 22. **Pastioroma**
- Face unicolorous yellowish. Pygofer compressed laterally, oval posteriorly. Anal tube with approximate bases of teeth. Aedeagus without long separate teeth 59
59. Dorsum of body whitish, with waxen pruinosity and 5 longitudinal brown stripes: 1 in the middle of pronotum, mesonotum and along commissural suture, 2 along claval sutures and 2 along costal margins of fore wings. Pygofer with deep, acutangulate dorsal excision nearly reaching its anterior margin; a triangular sclerite arises from anterior margin of pygofer by its narrow base; the sclerite occupies the above deep excision and bears articulated with it anal tube on its hind margin. Styli small, together ovenprong-shaped 24. **Niphisa** [p. 332]
- Dorsum of body brownish or yellowish, without longitudinal brown stripes. Additional sclerite between anal tube and pygofer absent. Styli divergent 60
60. Scutellum without dark lateral triangles. Anal tube with long, wide, robust processes, apices of which are narrowed and steeply bent forward. Bridge of pygofer without distinctly expressed carina. Styli with subapical projection on inner margin 25. **Oncodelphax**
- Scutellum with dark lateral triangles. Anal tube with short processes, apices of which are bent laterad. Bridge of pygofer with carina. Styli without subapical projection on inner margin 54. **Idiobregma**
61. Dorsum of body whitish or yellowish, with paired longitudinal dark brown stripes: a pair of stripes running on disc of pronotum, scutellum and 2nd claval vein (A_1 and $Pcu+A_1$), a pair of stripes arising beyond eyes and becomes bifurcate on fore wings, running on veins R and Cu ; abdomen with 4 wide longitudinal stripes. Dorsal margin of pygofer bridge with wide projection in the middle 55. **Eurybregma**
- Body without longitudinal stripes; anterior part of body light brown or yellowish, with dark basal triangles on scutellum 62

62. Frons (metope) with 2 median carinae. Pygofer posteriorly more or less round; bridge of pygofer narrow. Aedeagus compressed laterally 63
- Frons (metope) with 3 (sometimes barely noticeable) carinae. Pygofer posteriorly oval; bridge of pygofer wide, with median carina. Styli gradually narrowing from basal part to pointed apex, which may bear a recurrent tooth on inner margin. Aedeagus tubular, not compressed laterally 57. **Stiroma**
63. Edging of pygofer with bifurcate spine under stylar foramen. Styli comparatively short and wide, flat. Aedeagus strongly bent ventrad and bearing robust ventral projection at base 58. **Anachoroma**
- Edging of pygofer without spine under stylar foramen. Styli very long, narrow, more or less parallel-sided, not flattened. Aedeagus bent dorsad 59. **Stiromella**

KEYS TO SPECIES OF FAMILY DELPHACIDAE

Subfamily ASIRACINAE

1. **Asiraca** Latr. (*Manchookonia* Kato). Vertex nearly quadrangular, somewhat widened posteriorly; its carinae low, weakly noticeable. Metope with 2 more or less parallel median carinae uniting on the turn into vertex. First segment of antennae strongly elongate; fore and middle legs flattened, foliaceous. Pronotum about as long as vertex, with 3 carinae reaching posterior margin. Mesonotum about as long as vertex and pronotum combined, with 4 carinae; median carina not developed, its traces only present sometimes. First segment of hind tarsi with 7 small teeth, 2nd segment with 5 small teeth (Fig. 247: 3). Genital segment in male with robust anal tube; pygofer with lobe-shaped projections lateral to styli (Figs. 247: 4, 5). Styli elongate, with apices slightly slanting upwards and inwards (Figs. 247: 4-6). Penis with membranous scalloped distal segment; 3 long processes at place of articulating of basal and distal segments, one of these bifurcate (Figs. 247: 7, 8). Monotypic genus.

1. Dark brown with black, bearing sparse coarse bristles. Face brownish yellow, with black band under antennae. 4.5-5.5. – Kazakhstan, Middle Asia, Caucasus, Transcaucasia, S European part of USSR, Baltia. – Korea, N China, Afghanistan, Iran, Turkey, W and C Europe, N Africa. – Polyphagous, inhabiting moderately humid herbages. Injurious to strawberries in E Kazakhstan, [p. 334] young apple tree plantings in Georgia, occurring on *Medicago falcata*, *Phaseolus vulgaris*, *Vigna radiata*, *Beta vulgaris*, *Daucus carota*, *Solanum melongena* in Fergana Valley. 1-2 generations per year, imagines overwintering. (Figs. 246: 1-4; 247: 1-10)
..... **A. clavicornis** F. (*Manchookonia granulipennis* Kato)

Subfamily KELISIINAE

2. **Kelisia** Fieb. Macrocorphe longer than its width in the middle. Median carina of eumetope disappearing in upper part. Fore wings long and narrow, often with dark longitudinal stripe or elongate spot, at least in macropterous forms. Marginal teeth of posttibial spur of hind legs not numerous (5-10); apical tooth of the same size as marginal teeth (Fig. 240: 11). Theca of penis in the shape of narrow sheath fusing with pivot of basal segment, often with lateral teeth or processes. – 5-6 species (in Palearctic about 30, in USSR more than 10). Separation of some species into genus *Anakelisia* W. Wagn. not well substantiated. [p. 335]

penis comparatively wide; its processes with wide bases; apical part of penis without long needle-shaped process, rather often with small tooth at base. Dirty yellow. Genae with large spot not extending beyond median carina. Pronotum with black lateral spot. Fore wings in brachypters about as long as abdomen, without dark pattern; in macropters, which occur more rarely, fore wings with dark veins and black elongate spot at apex. 2.2-2.6, macropters 3.1-3.3. – S Kur.; C Siberia, Estonia. – Mongolia, W Europe. – On sedges in dry meadows, slopes, more rarely in humid places. Late summer to early autumn. In Central Europe, eggs overwintering. (Figs. 248: 1-11) ***K. perspicillata* Boh.**

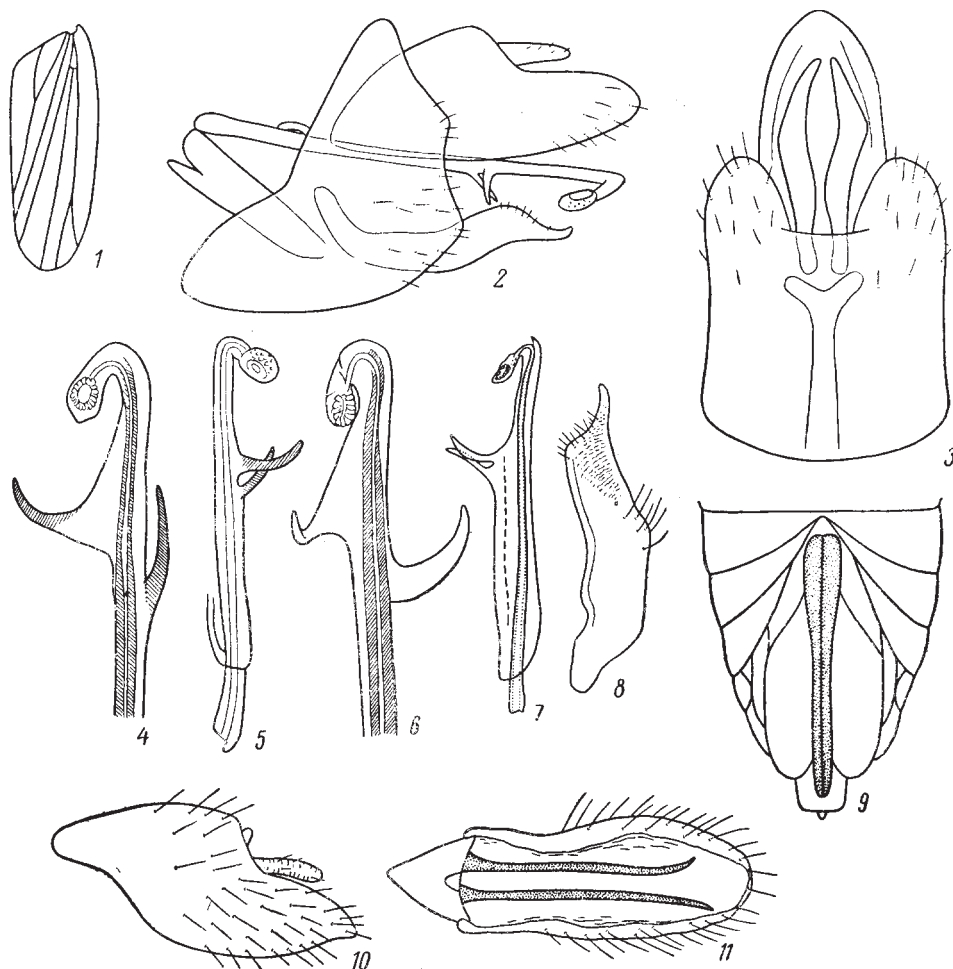


Fig. 248. Cicadines. Family Delphacidae, subfamily Kelisiinae (after Ossiannilsson, Vilbaste, and original).

1-11, *Kelisia perspicillata*: 1, fore wing; 2, 3, genital block of male (2, lateral view; 3, ventral view); 4, 6, apex of penis (4, ventral view; 6, dorsal view); 5, 7, penis (5, left lateral view; 7, right lateral view); 8, stylus; 9, female abdomen, ventral view; 10, 11, anal tube (10, lateral view; 11, ventral view).

- Anal tube strongly excised at base in lateral view, with comparatively short, slanting downwards appendages reaching about its middle. [p. 337] Theca of penis narrow; its processes rather long, without wide bases; apical part of penis with long needle-shaped process. In general appearance similar to *K. perspicillata*, but usually somewhat lighter, ochraceous yellow. Posterior part of vertex, middle of

pronotum and mesonotum slightly brownish. Black spots on genae and sides of pronotum as in *K. perspicillata*. 2.3-2.7, macropters 3.3-3.8. – Prim., S Kur. (Kunashir). – On forest sedges in glades and under forest canopy. Late summer to early autumn. (Figs. 249: 1-12) **K. melanura** Vilb.

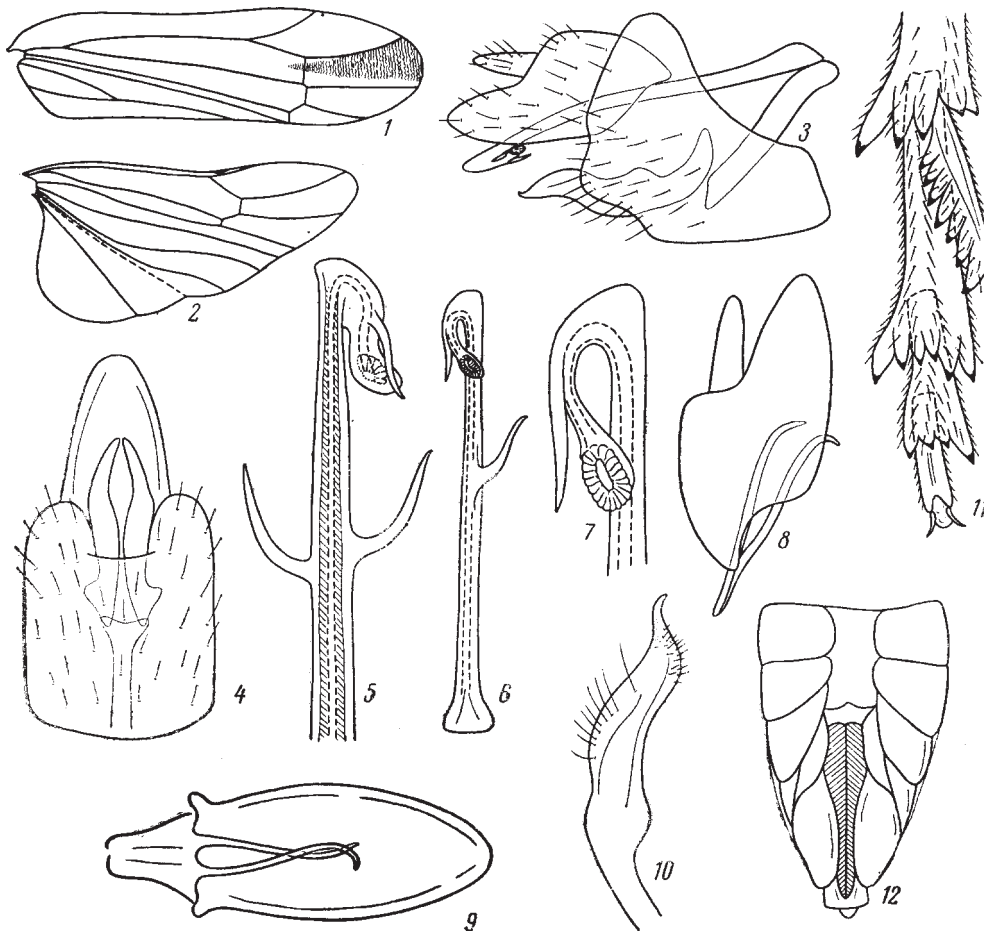


Fig. 249. Cicadines. Family Delphacidae, subfamily Kelisiinae (after Vilbaste and original).

1-12, *Kelisia melanura*: 1, 2, wings (1, fore wing; 2, hind wing); 3, 4, genital block of male (3, right lateral view; 4, ventral view); 5, apical part of penis; 6, penis; 7, apex of penis; 8, 9, anal tube (8, left lateral view; 9, ventral view); 10, stylus; 11, apex of hind leg; 12, female abdomen, ventral view.

3. Gena without black spot or it is small, occupying only half of area between anterior and median carinae. – Brachypters pale yellow, often with darker veins of hemelytra; sometimes there is a small spot on gena and a spot on each side of prothorax. Macropters of the same coloration or with dirty brown pronotum; abdomen darkened dorsally and rather often with elongate, wedge-shaped spot in apical half of hemelytra. Lateral margins of pygofer in male smoothly concave. Appendages of anal tube [p. 338] filiform, long, about twice as long as anal tube itself, bent, irregular loop-shaped. Penis nearly straight; theca with tooth near apex. 2.5-3.2, macropters 3.5-3.9. – Kazakhstan, Middle Asia, European part of USSR from Baltia to Ukraine and Caspian Sea. – Mongolia, W and C Europe. – Among sedges in marshes and wet meadows. One generation per year; eggs overwintering; imagines from 2nd half of summer to autumn. (Figs. 250: 1-11) **K. pallidula** Boh.

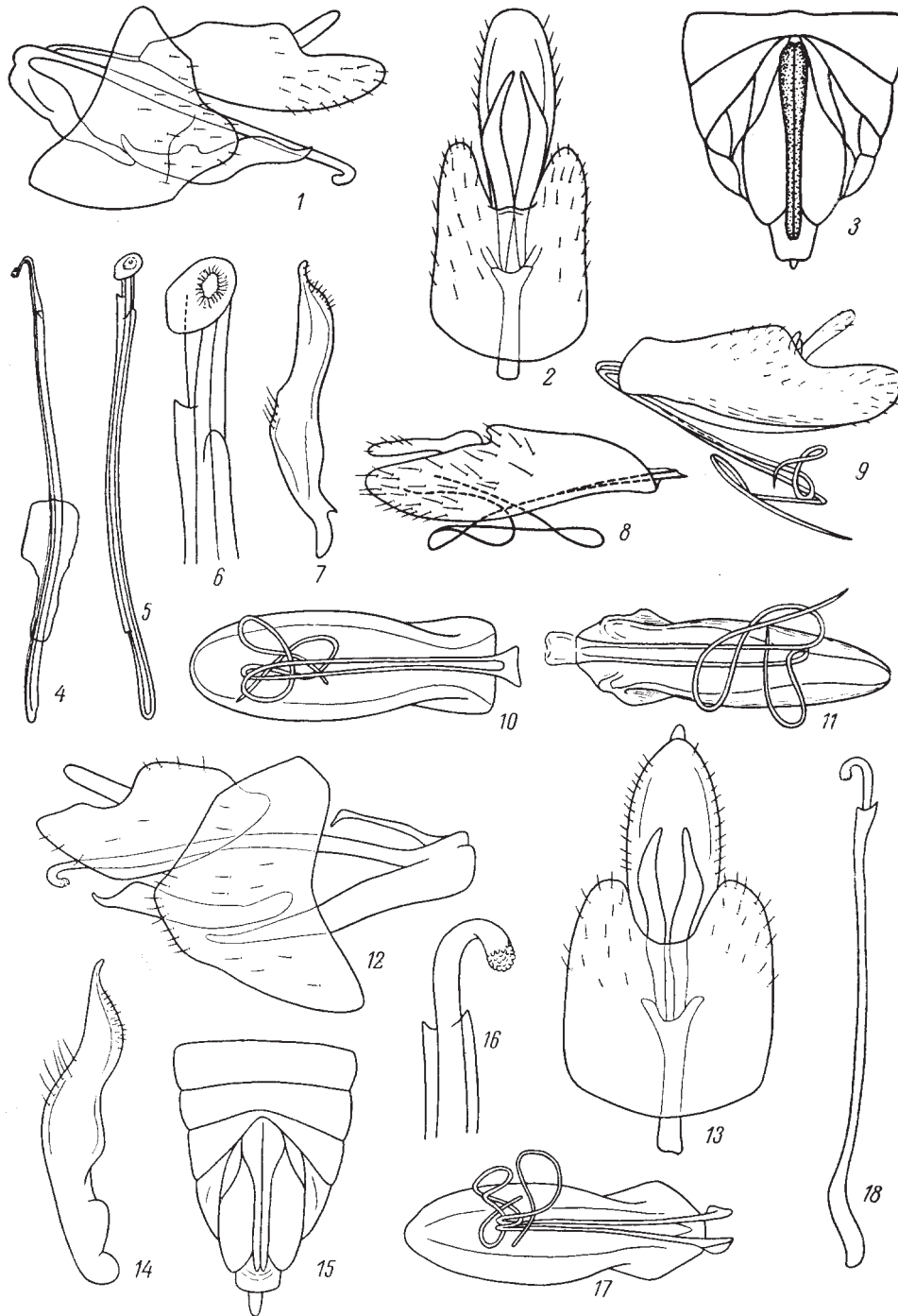


Fig. 250. Cicadines. Family Delphacidae, subfamily Kelisiinae (after Musil, Ossiannilsson, and Vilbaste).

1-11, *Kelisia pallidula*: 1, 2, genital block of male (1, left lateral view; 2, ventral view); 3, female abdomen, ventral view; 4, 5, penis; 6, apex of penis; 7, stylus; 8-11, anal tube (8, right lateral view; 9, left lateral view; 10, 11, ventral view); 12-18, *K. praecox*: 12, 13, genital block of male (12, right lateral view; 13, ventral view); 14, stylus; 15, female abdomen, ventral view; 16, apex of penis; 17, anal tube, ventral view; 18, penis.

- Black spot on gena occupying at least whole area between anterior and median carinae (Figs 251: 2; 253: 1) 4
- 4. Black spot on gena reaching posterior carina (Fig. 251: 2) 5
- Black spot on gena reaching middle carina or (at most) to the middle of area between middle and posterior carina (Fig. 253: 1) 6

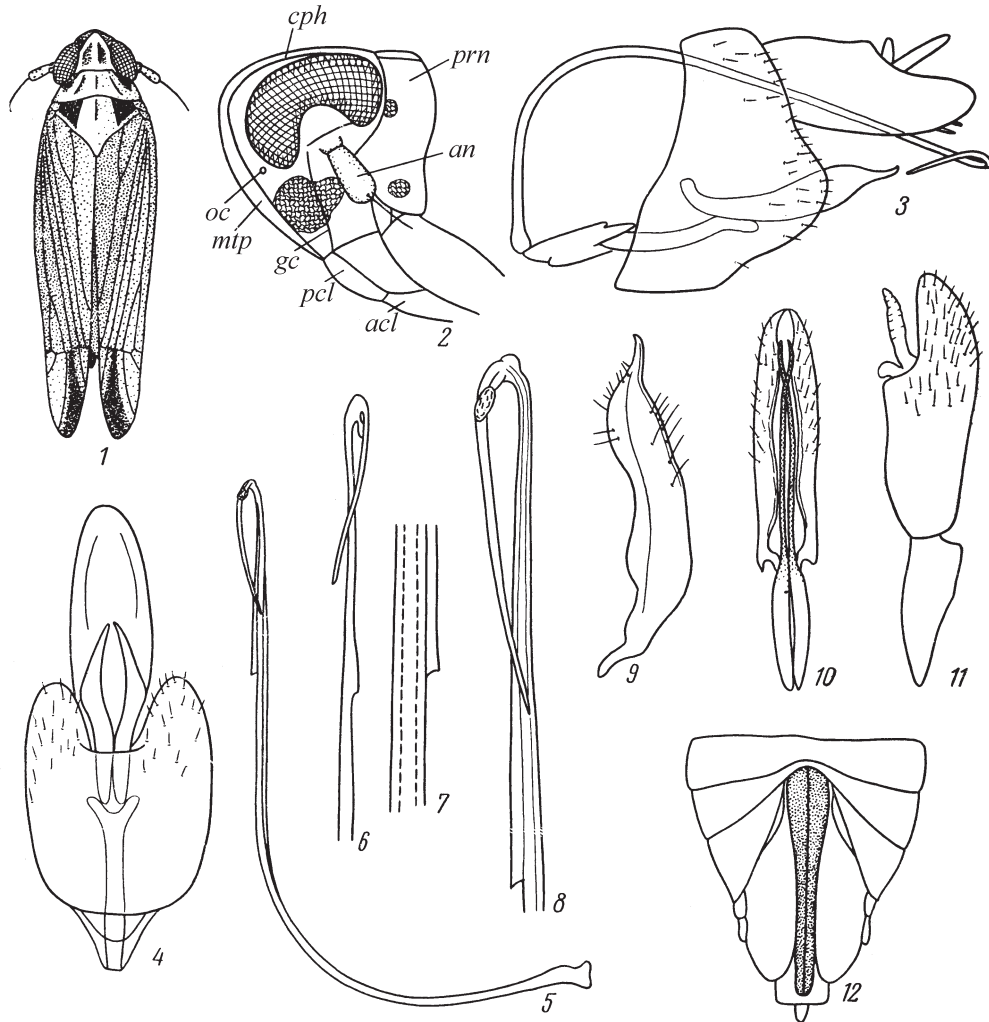


Fig. 251. Cicadines. Family Delphacidae, subfamily Kelisiinae (after Ossiannilsson and Vilbaste).

1-12, *Kelisia guttula*: 1, general appearance; 2, head and prothorax, lateral view; 3, 4, genital block of male (3, lateral view; 4, ventral view); 5, penis, lateral view; 6, 8, apex of penis; 7, middle part of penis; 9, stylus; 10, 11, anal tube (10, ventral view; 11, lateral view); 12, female abdomen, ventral view. *acl*, anteclypeus; *oc*, ocellus; *cph*, coryphe ("vertex"); *mtp*, metope ("frons"); *pcl*, postclypeus; *prn*, pronotum; *an*, antenna; *gc*, genal carina.

5. Appendages of anal tube about as long as anal tube, cord-shaped, straight. Penis very long, semicircularly bent at base, straight distally, [p. 339] with 1 needle-shaped process at apex; a narrow carina (remainder of theca) running along penis and ending by angular projection at the middle. Pale grayish yellow; genae and sides of pronotum with black spot. Brown longitudinal stripe, rather often weakly noticeable or absent, lateral to lateral carinae of pronotum and mesonotum. Ab-

domen dorsally mostly black, ventrally partly black. Fore wings hyaline, with brownish veins and black longitudinal wedge-shaped spot in apical half along medial vein. Fore wing extending beyond apex of abdomen both in brachypters and in macropters, but widely rounded in brachypters, which occur more rarely. 2.4-2.7, macropters 3.4-4. – S Khab.; C Siberia, Middle Asia, Azerbaijan. – Europe, N Africa. – On sedges, in dry and humid habitats. Mid-July to early September. (Figs. 251: 1-12) **K. guttula** Germ.

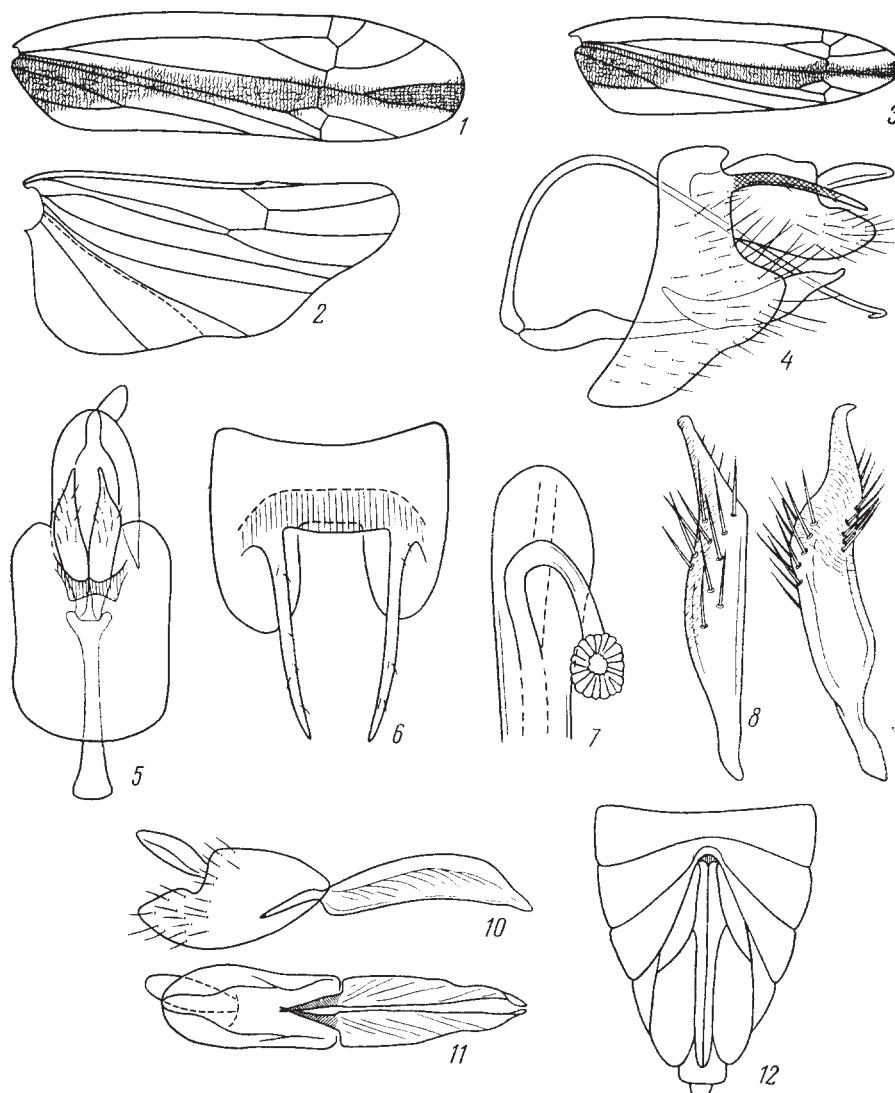


Fig. 252. Cicadines. Family Delphacidae, subfamily Kelisiinae (after Vilbaste and original).

1-12, *Kelisia xiphura*: 1, fore wing of macropterous form; 2, hind wing of macropterous form; 3, fore wing of brachypterous form; 4, 5, genital block of male (4, lateral view; 5, ventral view); 6, pygofer, dorsal view; 7, apex of penis; 8, 9, stylus; 10, 11, anal tube (10, lateral view; 11, ventral view); 12, female abdomen, ventral view.

- Appendages of anal tube much longer than anal tube, filiform, bent, irregularly loop-shaped. Penis shorter, nearly straight, without needle-shaped process at apex; carinae of penis (remainder of theca) nearly reaching its apex, where they come to an angular end. In general appearance similar to *K. guttula*, in structure

- of male genitalia close to *K. pallidula*. 3-3.7. – S Krasnoyarsk [p. 340] Terr., Kazakhstan, Georgia, S European part of USSR, Baltia. – Mongolia, C Europe. (Figs. 250: 12-18) **K. praecox** Hpt.
6. Lateral margin of pygofer in male projecting, angular, or smoothed lateral to anal tube. Distal segment of penis with 1 or several needle-shaped appendages 7

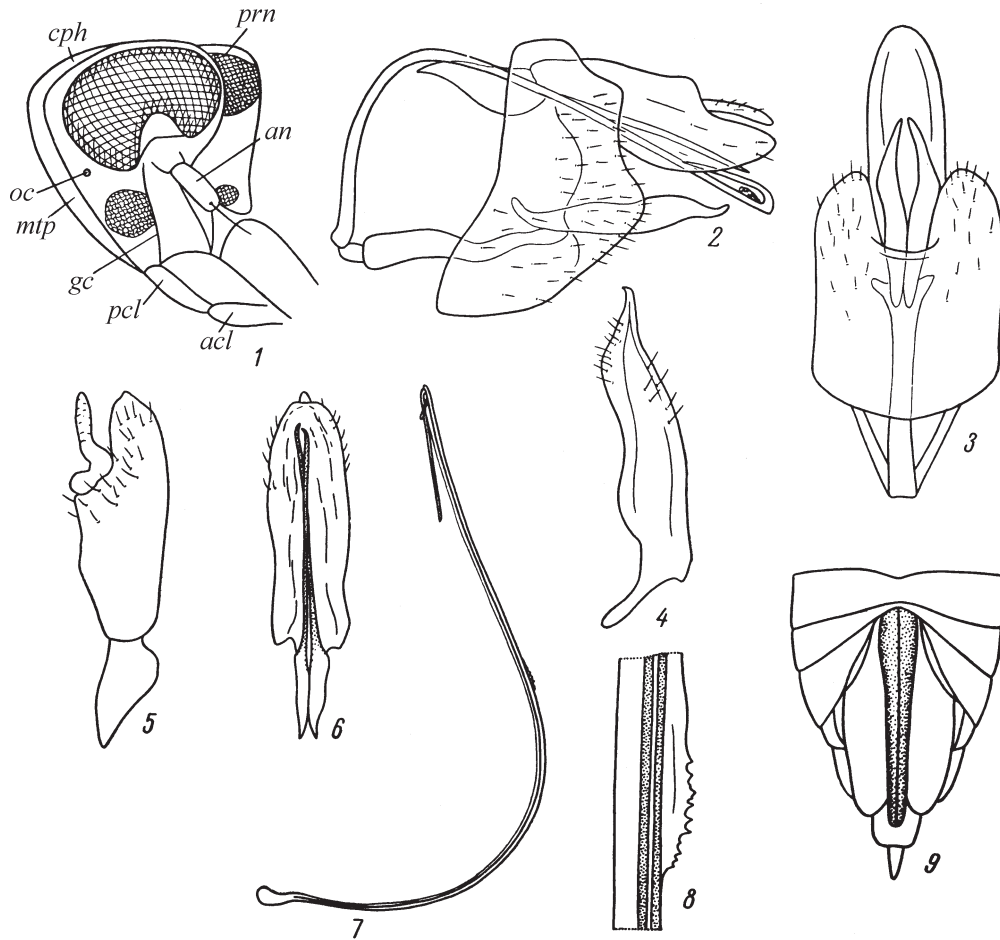


Fig. 253. Cicadines. Family Delphacidae, subfamily Kelisiinae (after Ossiannilsson and Vilbaste).

1-9, *Kelisia vittipennis*: 1, head and prothorax, lateral view; 2, 3, genital block of male (2, lateral view; 3, ventral view); 4, stylus; 5, 6, anal tube (5, lateral view; 6, ventral view); 7, penis, lateral view; 8, middle part of penis; 9, female abdomen, ventral view. See Fig. 251 for designations.

- Lateral margin of male pygofer with long awl-shaped process lateral to anal tube. Distal segment of penis without needle-shaped appendages, very long, semicircularly bent at base, distal to base straight, with carina or without carina. Appendages of anal tube short, if not taking their bases in account, 0.3 times as long as anal tube itself, awl-shaped. – Light ochraceous yellow. A short whitish stripe widely brown-edged on sides running along dorsum from posterior part of vertex to apex of mesonotum. Rounded dark brown spot on genae entirely located between anterior and middle carinae. Pronotum with brown spot beyond eyes and longitudinal elongate spot on lateral lobes. Fore wings hyaline, with wide brownish stripe running from base to apex. 2.4-3.8. – Prim. – On forest sedges. August to early September. (Figs. 252: 1-12) **K. xiphura** Vilb.

7. Lateral margin of male pygofer with angular projection lateral to anal tube. Penis very long, semicircularly bent at base, distal to base straight; [p. 341] its distal segment with 1 needle-shaped process; a narrow carina (remainder of theca) running along penis; it is irregular denticulate at middle, in its widest part. Pale yellow; genae and sides of prothorax with black spot; pronotum and mesonotum usually with wide, brown or black longitudinal stripe lateral to lateral carinae, the stripe prolonging on fore wings. 3.1-4.2. – N Siberia, Baltia. – N Europe, N Africa. – In marshes with *Eriophorum vaginatum* and sedges, and also in dry sedge meadows. Eggs overwintering. Mid-July to September. (Figs. 253: 1-9) **K. vittipennis** J. Sahlb.

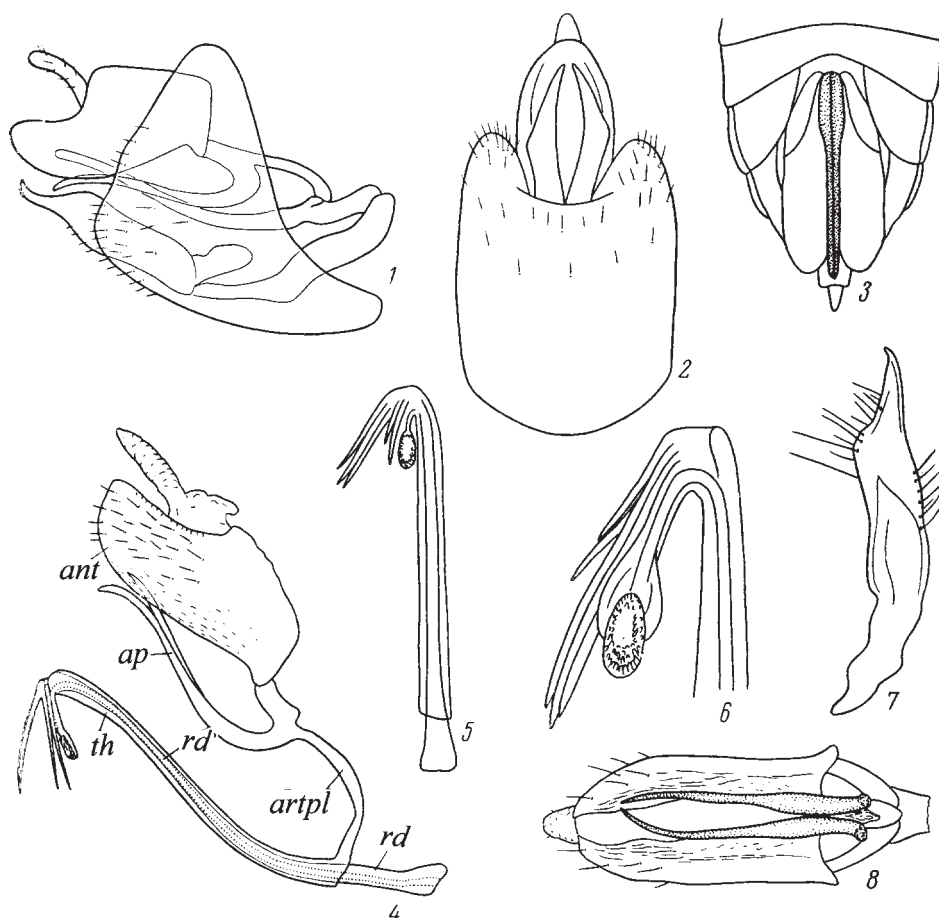


Fig. 254. Cicadines. Family Delphacidae, subfamily Kelisiinae (after Ossiannilsson and Vilbaste).

1-8, *Kelisia ribauti*: 1, 2, genital block of male (1, lateral view; 2, ventral view); 3, female abdomen, ventral view; 4, anal tube and penis, lateral view; 5, penis, dorsal view; 6, apex of penis, dorsal view; 7, stylus; 8, anal tube, ventral view. *ant*, anal tube; *ap*, appendage of anal tube; *rd*, rod of basal segment of penis; *artpl*, articulatory plate of theca; *th*, theca.

- Lateral margin of male pygofer even, without angular projection lateral to anal tube. Penis moderately long, weakly S-shaped; distal segment with several needle-shaped processes; carina of basal segment smooth, not denticulate. Yellowish brown; genae and sides of pronotum with large black spot. Pronotum and mesonotum light yellow in the middle, brown lateral to lateral carinae. Fore wings with brown wedge-shaped spot in apical half. 2.8-4. – N Khab.; Altai, Kazakhstan,

Middle Asia, Georgia, European part of USSR. – Afghanistan, Irak, Turkey, W Europe, N Africa. – In moist meadows, at river and bayou banks on sedges. August; in Europe, July. Eggs overwintering. (Figs. 254: 1-8) **K. ribauti** W. Wagn.

Subfamily STENOCRANINAE

3. **Terauchiana** Mats. Macrocorphe 2-4 times as long as wide, slightly narrowed between eyes and rounded at apex (Fig. 255: 1). Mediolateral carinae approximate or united at the turn into eumetope, completely fused in a median carina in apical third of eumetope. Face more or less concave in lateral view. Styli claw-shaped, with apex attenuate and bent upwards, and more or less long process on inner margin at base (Figs. 255: 7, 8). Anal tube with long, often asymmetrical lateral processes (Fig. 255: 9). Theca of penis with 2 processes. Valvulae of ovipositor slightly widened at base (Fig. 255: 13). – 1 species (in Palearctic 5, in USSR 3).

1. Macrocorphe, pronotum and mesonotum entirely light brown or yellowish. Fore wings semihyaline; veins yellowish, with brown spots; sometimes bases of wings and a spot on apical cells brown. Face strongly concave. Styli with narrow projection on inner margin between basal process and apex. The left process of anal tube long, directed obliquely forward and downwards, the right process short, directed downwards. 4-7. – S Prim. – Japan (Honshu, Kyushu), Korea, China (Anhui, Henan). – On *Phragmites australis*, *Miscanthus sinensis*, *Imperata cylindrica*, *Poa annua*. June to September. (Figs. 255: 1-13) **T. singularia** Mats.

4. **Stenocranus** Fieb. Macrocorphe 1.5-2 times as long as wide, more or less projecting before eyes (Figs. 258: 1; 261: 11). Mediolateral carinae of vertex approximate or united at the turn into eumetope, where they are prolonged in the shape of united median carina or 2 strongly approximate carinae. Face flat in lateral view. Pronotum and mesonotum with 3 carinae. Fore wings with brown longitudinal stripe or wedge-shaped spot in area of apex of *M* (Figs. 259: 3; 261: 10); sometimes stripe and spot completely absent. Styli claw-shaped, without long processes at base (Figs. 256: 4, 10; 258: 5-7; 261: 14-16). Anal tube symmetrical, often with tooth-shaped lateral processes below (Figs. 256: 12, 13; 257: 8, 14-16). Theca of penis with 1 or several processes. Valvulae of ovipositor wide, shield-shaped (Fig. 256: 11). In humid and swampy places on grasses and sedges; late spring to early summer; imagines overwintering. – 6 species (in Palearctic more than 20, in USSR 9). Females of some species are difficult to identify. [p. 342]

1. Veins of fore wings, at least *R*, entirely light 2
- Veins of fore wings, at least their end parts brown 5
2. Metope and coryphe between carinae light, brown, never black, rather often of the same color as carinae. Theca of penis with 1 apical process 3
- Metope and coryphe with black stripe lateral to median carina. Theca of penis with 1 or 2 apical processes 4 [p. 345]
3. Distance between eye and apex of eumetope (in lateral view) (Fig. 256: 2) 0.17-0.23 in male and 0.11-0.13 in female; the last distance from eye to apical carina of metope 0.08-0.13 in male and 0.11-0.13 in female; ratio of above distances 1.6-2.1 in male and 1.5-2 in female. Macrocorphe, pronotum and mesonotum brownish yellow, with white longitudinal stripe along median carina and more or less distinct orange edging lateral to it. Temples with brown stripe at posterior margin. Fore wings light brown, often with dark brown longitudinal stripe of different

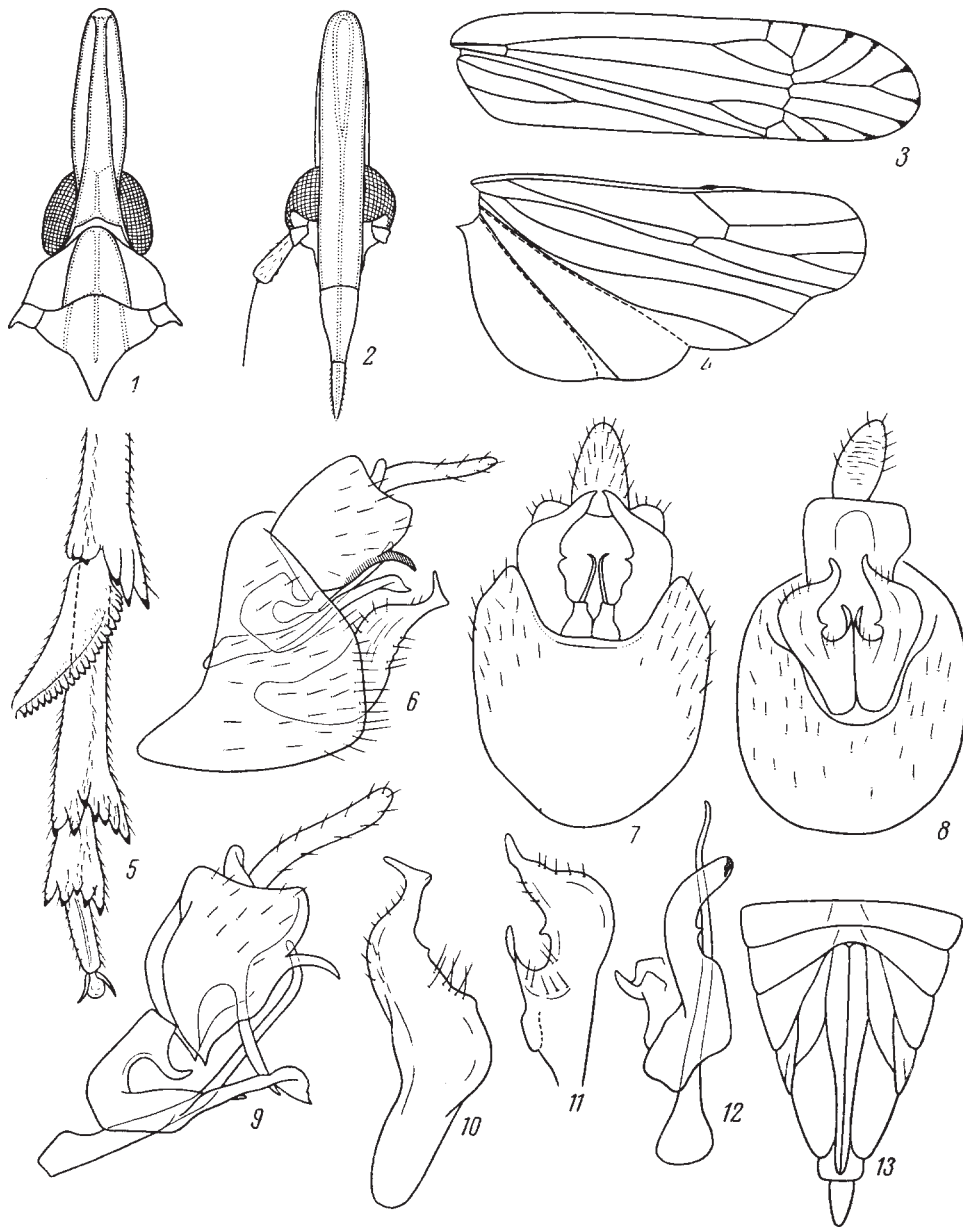


Fig. 255. Cicadines. Family Delphacidae, subfamily Stenocraninae (after Ishihara, Vilbaste, and original).

1-13, *Terauchiana singularis*: 1, anterior part of body; 2, face; 3, 4, wings (3, fore wing; 4, hind wing); 5, apex of left hind leg, ventral view; 6-8, genital block of male (6, lateral view; 7, ventral view; 8, posteroventral view); 9, anal tube and penis, lateral view; 10, stylus, lateral view; 11, free part of stylus, posterior view; 12, penis, lateral view; 13, female abdomen, ventral view.

length and intensity (in most of specimens, developed only in apical part of wing, widening to its apex). Styli with rectangular projection on inner side, with short, crescent-shaped apex. Anal tube ventrally with lateral sclerotized teeth in apical third and weakly sclerotized small teeth before them; [p. 346] the latter may apparently be absent. Shaft of penis undulated in lateral view. 3-5.8. – Erroneously

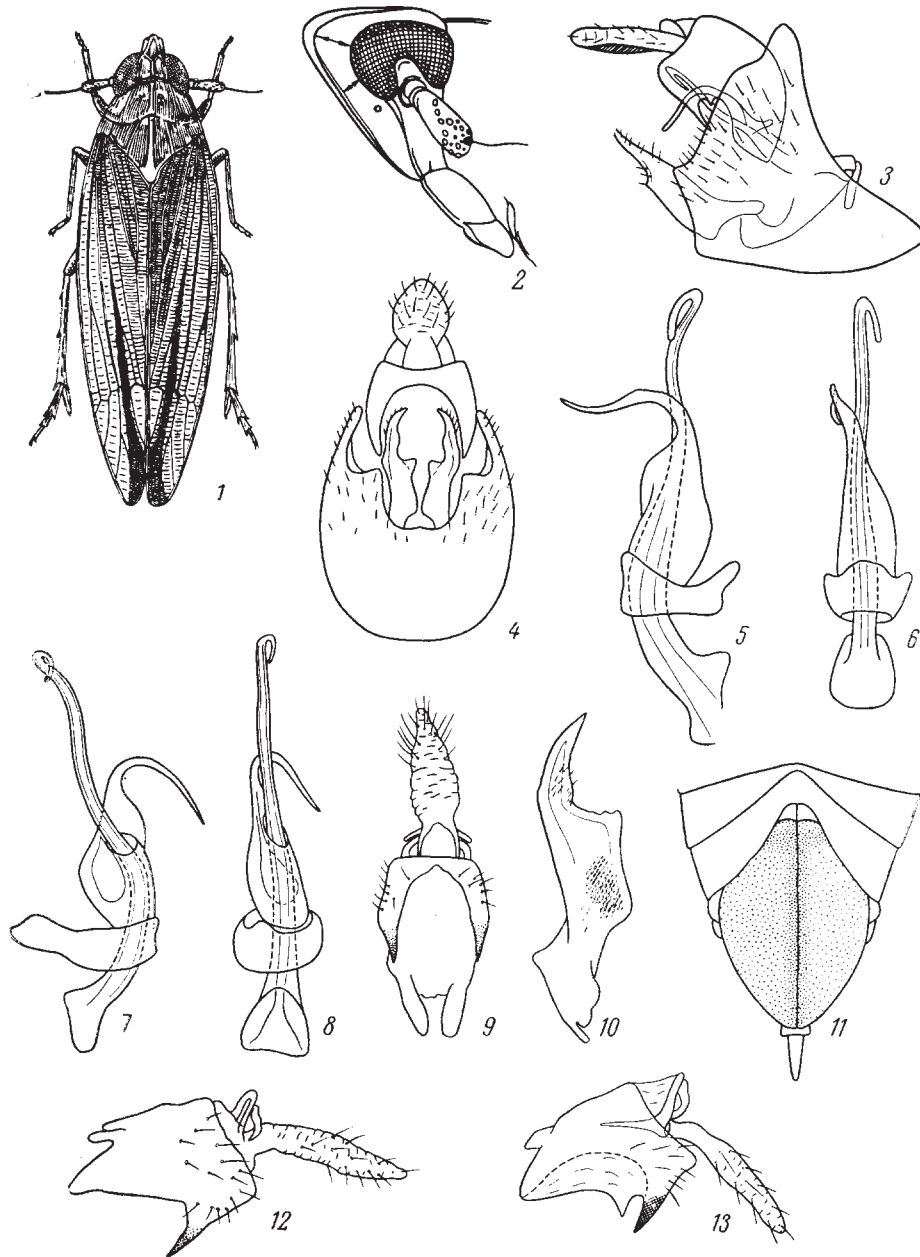


Fig. 256. Cicadines. Family Delphacidae, subfamily Stenocraninae (after Haupt, Ossiannilsson, Vilbaste, and original).

1-13, *Stenocranus minutus*: 1, general appearance; 2, head, lateral view (arrows show distance from eye to apex of head and the least distance from eye to lateral carina of metope); 3, 4, genital block of male (3, lateral view; 4, posteroventral view); 5-8, penis: 5, right lateral view; 6, dorsal view; 7, left lateral view; 8, ventral view); 9, anal tube, ventral view; 10, stylus; 11, female abdomen, ventral view; 12, 13, anal tube, lateral view.

recorded from the Far East. Kazakhstan, Middle Asia, Caucasus, Transcaucasia, European part of USSR. – W and C Europe, N Africa. – On grasses in meadows, marshes, forests and sandy areas. In Europe, feeds on *Dactylis glomerata*. (Figs. 256: 1-13) **S. minutus** F.

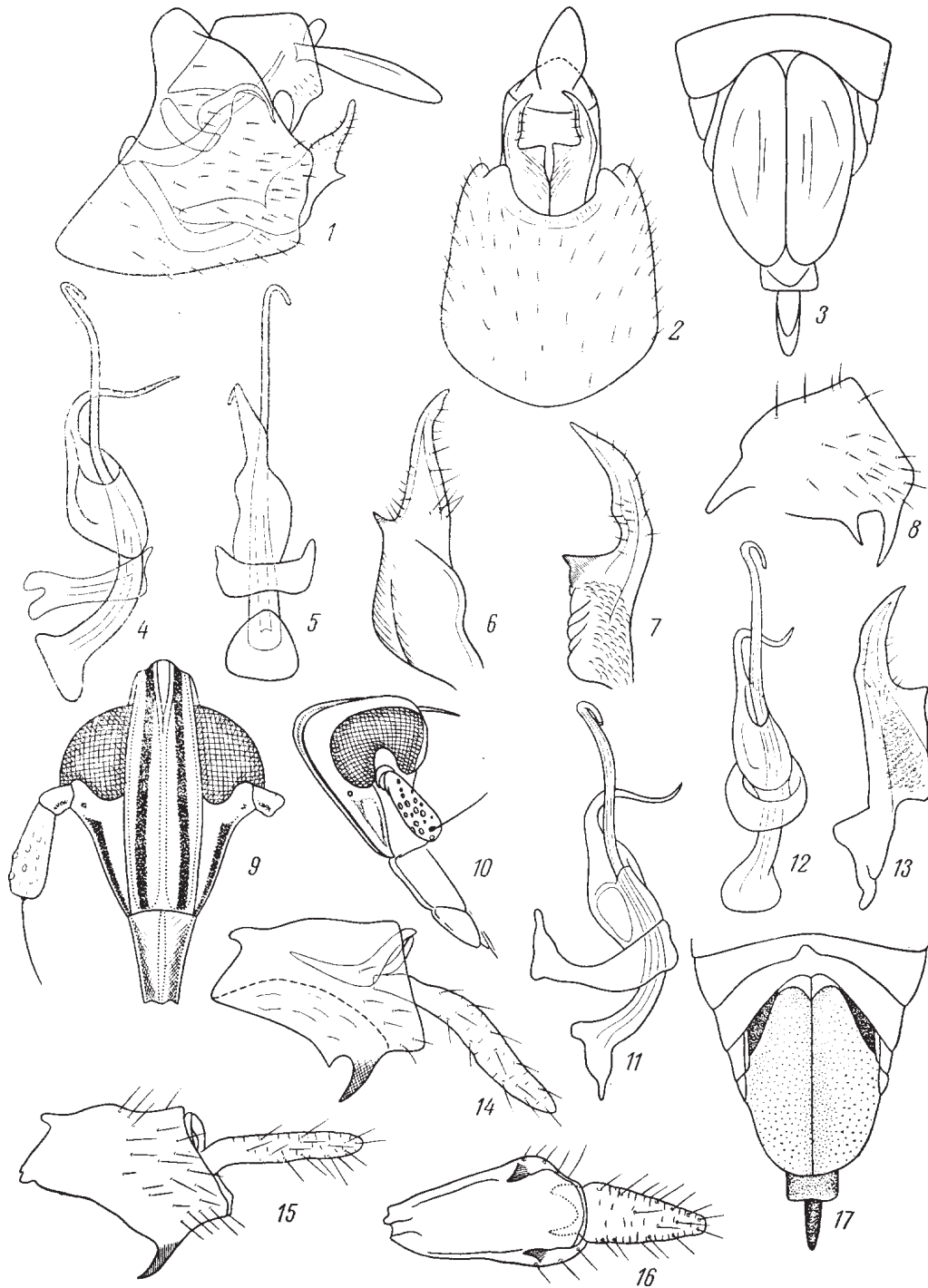


Fig. 257. Cicadines. Family Delphacidae, subfamily Stenocraninae (after Haupt, Ossiannilsson, Vilbaste, and original).

1-8, *Stenocranus hokkaidoensis*: 1, 2, genital block of male (1, lateral view; 2, posteroventral view); 3, female abdomen, ventral view; 4, 5, penis (4, left lateral view (5, dorsal view); 6, 7, stylus; 8, anal tube, lateral view; 9-17, *S. major*: 9, face; 10, head, lateral view; 11, 12, penis (11, left lateral view; 12, ventral view); 13, stylus; 14-16, anal tube (14, 15, lateral view; 16, ventral view); 17, female abdomen, ventral view.

- Distance between eye and apex of eumetope (in lateral view) 0.13-0.14 in male and 0.13-0.16 in female; the least distance from eye to apical carina of metope 0.08-0.10 in male and 0.10-0.11 in female; ratio of above distances 1.3-1.6 in male and 1.2-1.5 in female. In coloration and structure of male genitalia, similar to *S. minutus*. 3.7-6. – S Khab., Prim., S Kur. – Japan, Korea. – Among sedges in marshes, river banks, lake banks. (Figs. 257: 1-8)
 *S. hokkaidoensis* Metc. (Probably *S. hokkaidoensis* is ssp. of *S. minutus*)

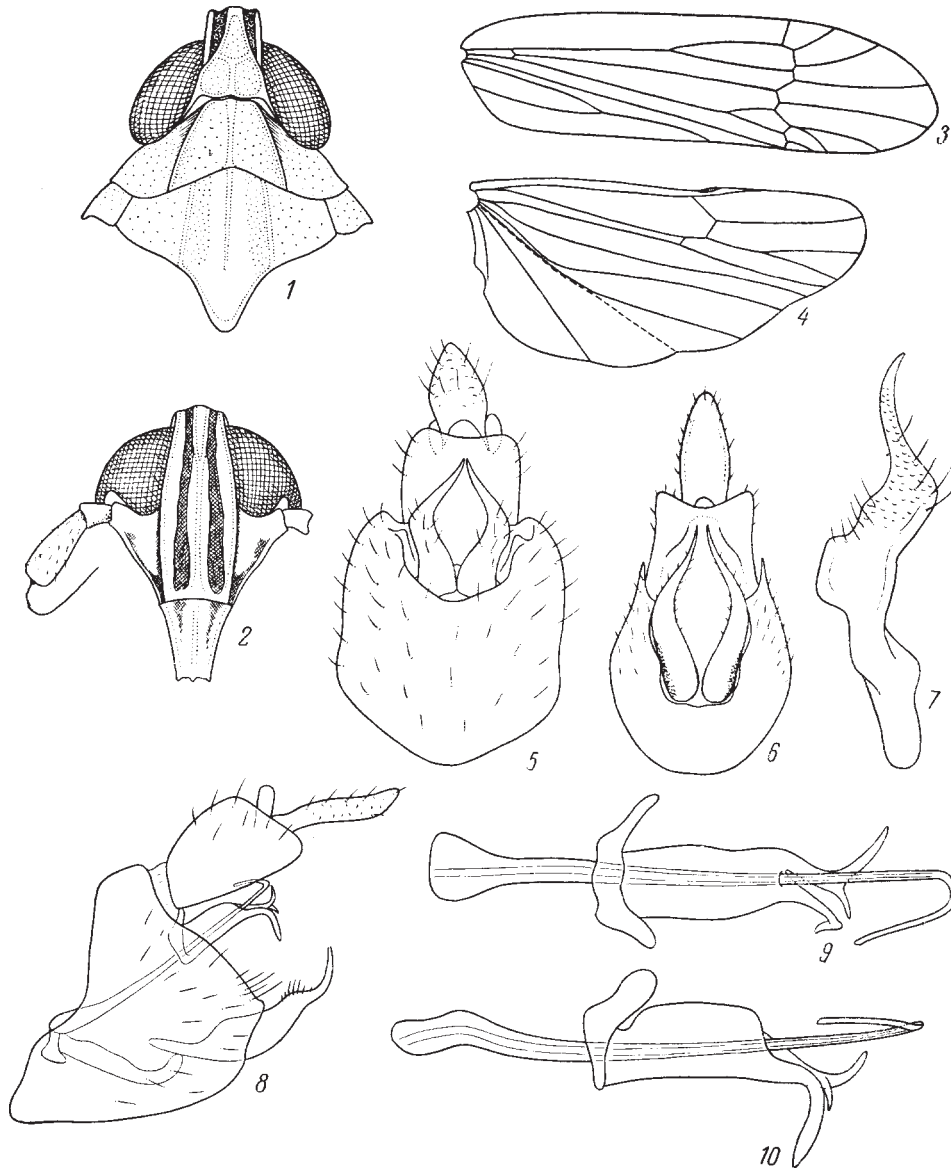


Fig. 258. Cicadines. Family Delphacidae, subfamily Stenocraninae (after Ishihara and original).

1-10, *Stenocranus akashiensis*: 1, anterior part of body; 2, face; 3, 4, wings (3, fore wing; 4, hind wing); 5, 6, 8, genital block of male (5, ventral view; 6, posterior view; 8, lateral view); 7, stylus; 9, 10, penis (9, dorsal view; 10, left lateral view).

4. Theca of penis with 1 apical process. – Distance between eye and apex of eumetope (in lateral view) 0.13-0.17 in male and 0.14-0.18 in female, the least distance from eye to lateral carina of frons 0.10-0.13 in male and 0.11-0.13 in female, ratio of above distances 1.2-1.6 in male and 1.3-1.5 in female. In general appearance similar to *S. minutus*. 3.4-6.7. – W Siberia, Kazakhstan, European part of USSR (Chuvashia, Ukraine). – Iran, Europe. – In swampy places. In Europe, feeds on *Phalaroides arundinacea*. (Figs. 257: 9-17) **S. major** Kbm.

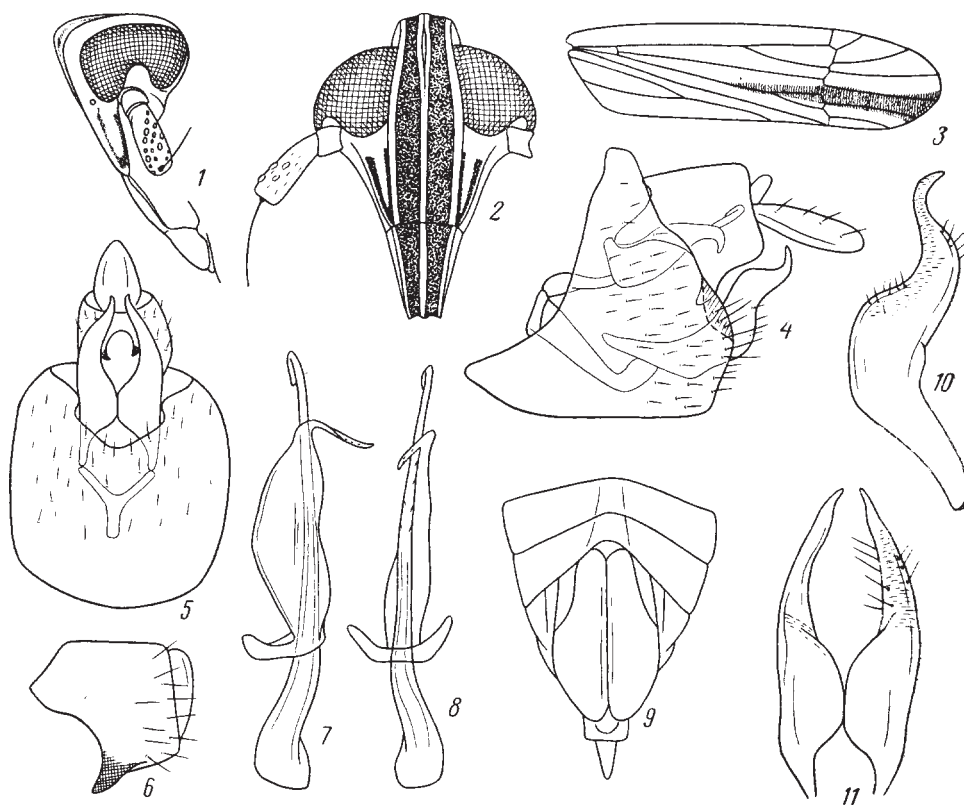


Fig. 259. Cicadines. Family Delphacidae, subfamily Stenocraninae (after Haupt, Vilbaste, and original).

1-11, *Stenocranus fuscovittatus*: 1, head, lateral view; 2, face; 3, fore wing; 4, 5, genital block of male (4, lateral view; 5, posteroventral view); 6, anal tube, lateral view; 7, 8, penis (7, left lateral view; 8, ventral view); 9, female abdomen, ventral view; 10, stylus, left lateral view; 11, styli, ventral view.

- Theca of penis with 2 apical processes, the first of these bifurcate. – Orange yellow. Macrocoryphe, pronotum and mesonotum with longitudinal white stripe. [p. 347] Black stripes on frons narrow, occupying about a third of intercarinal area. Longitudinal stripe or wedge-shaped spot of fore wings not developed. Styli with strongly attenuate apices bent upwards and inwards, slightly slanting outwards; projection on inner margin at base smoothed. Anal tube without ventral teeth on sides or with small teeth. Shaft of penis nearly straight in lateral view. 4.5-5. – S Kur. (Kunashir). – Japan (Honshu, Kyushu). – In sedge meadows in swampy habitats, brook banks, etc. June. (Figs. 258: 1-10) **S. akashiensis** Mats.
- 5. Metope and coryphe black between carinae. Temples with sharp brown stripes at anterior and posterior margins. Theca of penis with 1 long apical process 6

- Eumetope brown or yellowish between carinae, rather often more dark, up to black upwards. Temples with blurred brown stripes at margins or without such stripes. Theca of penis with 2 long apical processes 7
- 6. Median carina of eumetope single at most length. Light brown. Macrocorphe, pronotum and mesonotum with narrow whitish stripe along median carina and orange edging lateral to it. Longitudinal carinae on fore wings uniformly brown at considerable length in apical third, their apices not darker. Styli with moderately attenuate apices slanting upwards and inwards, with smoothed projection on inner margin at base. Anal tube with robust ventral teeth laterally. Shaft of penis straight in lateral view. Theca with 1 long process slanting downwards at apex. 4.4-5.8. – S Khab., Prim.; Chita Prov., C Siberia, Kazakhstan, Georgia, European part of USSR (Baltia). – NE China, Mongolia, W Europe. – In swampy habitats on sedges and grasses. May to June, mid-August to October. (Figs. 259: 1-11)
 *S. fuscovittatus* Stål (*parvulus* Vilb.) [p. 349]

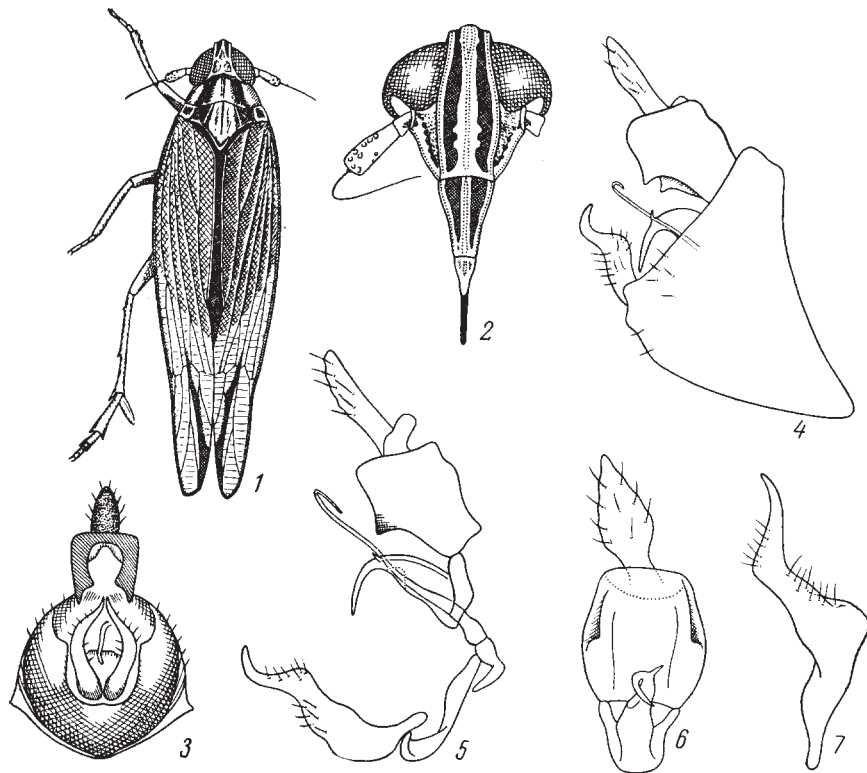


Fig. 260. Cicadines. Family Delphacidae, subfamily Stenocraninae (after Anufriev and Ishihara).

1-7, *Stenocranus ozenumensis*: 1, general appearance; 2, face; 3, 4, genital block of male (3, posterior view; 4, lateral view); 5, anal tube, penis, connective and stylus, lateral view; 6, anal tube and theca of penis, ventral view; 7, stylus, in a plane.

- Median carina of eumetope at most length double, anastomosing at places. Macrocorphe, pronotum and mesonotum with wide white stripe along median carina, without orange edging lateral to it. Longitudinal veins of fore wings sharply darkened at apices. Theca of penis at apex with long process slanting downwards and bearing a short tooth at base. Styli with strongly attenuate and slanting upwards crescent-shaped apices, with smoothed projection on inner margin at base. Anal tube with large ventral teeth laterally. Shaft of penis nearly straight in lateral

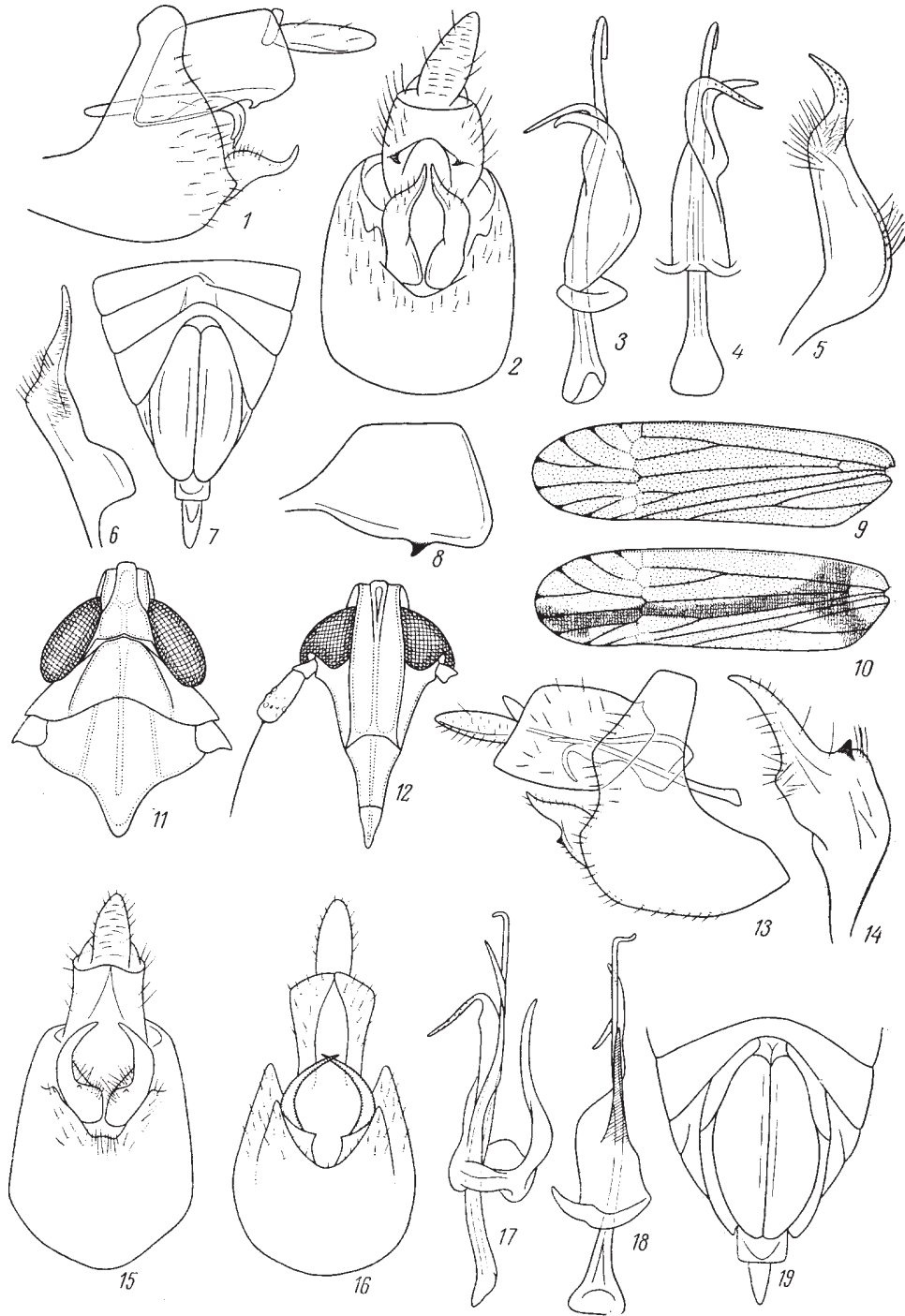


Fig. 261. Cicadines. Family Delphacidae, subfamily Stenocraninae (after Ishihara, Vilbaste, and original).

1-8, *Stenocranus silvicola*: 1, 2, genital block of male (1, lateral view; 2, posteroventral view); 3, 4, penis (3, right lateral view; 4, ventral view); 5, 6, stylus; 7, female abdomen, ventral view; 8, anal tube, lateral view; 9-19, *S. matsumurai*: 9, 10, fore wing, variants of pigmentation; 11, anterior part of body; 12, face; 13, 15, 16, genital block of male (13, lateral view; 15, posterior view; 16, ventral view); 14, stylus; 17, 18, penis (17, left lateral view; 18, dorsal view); 19, female abdomen, ventral view.

- view. 5.1-6. – S Kur. (Kunashir). – Japan (Honshu). – In swampy habitats on under-sized *Scirpus*. August to September. (Figs. 260: 1-7) **S. ozenumensis** Ish.
7. Theca of penis with 2 long processes at apex. Anal tube with a small ventral tooth on each side. Styli without tooth at base. 4.4-5.5. – S Prim. – In moist forests on grasses and sedges. May to early June, September. (Figs. 261: 1-8) **S. silvicola** Villb.
- Theca of penis with 2 long processes at apex and 1 process arising dorsally at base. Anal tube with large ventral tooth on each side or without teeth. Styli with small tooth at base. 4.7-6. – S Prim., S Kur. – Japan, Korea, China (Beijing, Shanxi, Henan, Sichuan). – In swampy habitats, on lake and brook banks in brakes of *Miscanthus sinensis*, *Imperata cylindrica*, etc.; *Phragmites australis*, *Phalaroides arundinacea* and *Equisetum arvense* were also recorded as food plants; the record of *Equisetum arvense* is questionable. June to early July, early August. (Figs. 261: 9-19) **S. matsumurai** Metc.

Subfamily TROPIDOCEPHALINAE

5. **Epeurysa** Mats. Macrocorphe short, somewhat widened anteriorly and posteriorly, with smoothed carinae, much wider than long (Fig. 262: 1). Eumetope very wide, wider than half its length; its median carina distinct, high (Fig. 262: 2). Pronotum longer than vertex and somewhat wider than head and eyes combined, strongly excised posteriorly; lateral carinae of pronotum not reaching its posterior margin (Fig. 262: 1). Fore wings extending usually beyond apex of abdomen. Posttibial spur of hind legs with 1 apical small tooth (Figs. 262: 5, 6). First segment of hind tarsi with 4+2 or 5+2 small teeth, 2nd segment with 4-5 small teeth (Fig. 262: 5). Genital segment in male widened ventrally in lateral view, with directed downwards projection on lower margin (Figs. 262: 7, 8). Anal tube slightly asymmetrical due to different extent of development of the left and right teeth; both teeth with blunt apices (Fig. 262: 7). Styli with truncate apex and large, spinulate projection on inner margin near base (Figs. 262: 7, 9, 12). Aedeagus hook-shaped, with apical gonopore (Figs. 262: 10, 11). The genus comprises 9 species (in USSR 1).

1. Grayish yellow. Fore wings semihyaline, of the same color as body; veins, especially apical, sometimes brownish; brown spots present rather often at apex of claval vein, in 2nd-4th and 7th apical cells. 2.5-5. – S Sakh., S Kur. – Japan, China. – On *Sasa kurilensis*. June to July. (Figs. 246: 6; 262: 1-12) **E. nawaii** Mats.

6. **Tropidocephala** Stål. Coryphe long, narrowed anteriorly, with high, sharp median and lateral carinae. Eumetope of moderate length, about 1.5-2 times as long as its greatest width. Pronotum with 3 carinae reaching posterior margin. Fore wings extending much beyond apex of abdomen. Genital segment in male with sharp angular projections on sides of pygofer. 1-2 species known from Japan and Korea may be found in the Southern Far East (in Palearctic 8 species, in USSR 2). [p. 350]

1. Length of coryphe 1.5 times its greatest width posteriorly. Metope about twice as long as wide; lateral margins of metope convex; metope moderately bevelled downwards, convex at lower margin (in lateral view), forming a turn into nearly horizontal clypeus facing downwards. Lower margins of sides of pronotum distinctly slanting outwards. Veins of fore wings, except marginal veins (C , A_2 , peripheral vein) accompanied by setiferous granules on both sides. Plane of wing curved bubble-like outwards before nodal line: weakly on vein R and strongly on vein M .

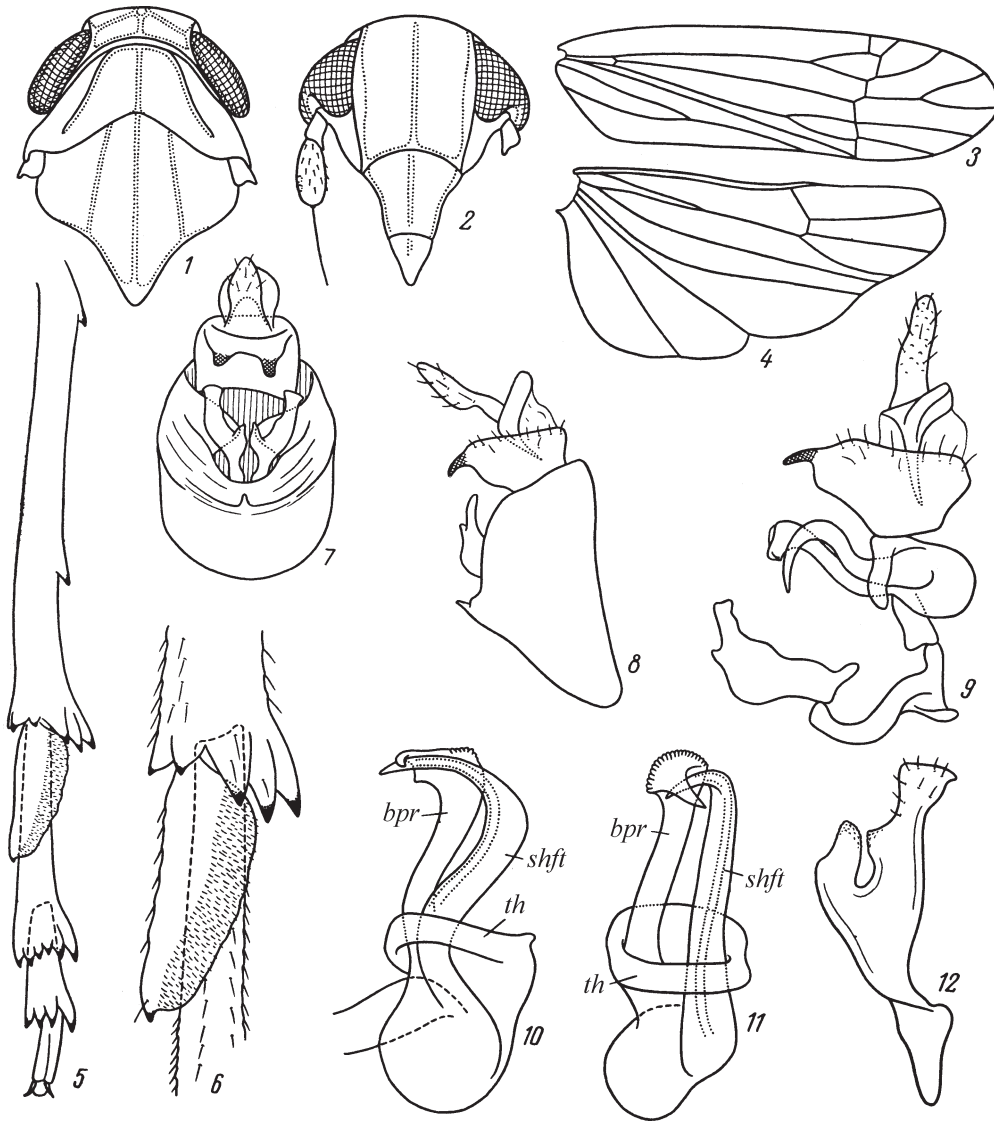


Fig. 262. Cicadines. Family Delphacidae, subfamily Tropidocephalinae (after Anufriev, Ishihara, and original).

1-12, *Epeurysa nawaii*: 1, anterior part of body; 2, face; 3, 4, wings (3, fore wing; 4, hind wing); 5, tibia and tarsus of left hind leg, ventral view; 6, posttibial spur; 7, 8, genital block of male (7, posterior view; 8, lateral view); 9, anal tube, penis, endoconnective and stylus, lateral view; 10, 11, penis (10, lateral view; 11, ventral view); 12, stylus. *bpr*, basal process of theca; *shft*, shaft of penis (aedeagus); *th*, theca.

Dark brown to black, with large yellowish green areas dorsally in anterior part of body. Frons light, with dark spots lateral to median carina. Coryphe, disc of pronotum and mesonotum yellowish green; median carina and also [p. 351] lateral carinae edged by brown lines; lateral parts of mesonotum slightly darkened, the darkening separated from carinae by greenish stripe. Fore wings brown, with hyaline areas in distal half, nearly black in basal half; granules at veins light; swellings black; episcutellar margin greenish; sutural margin light brown. Pygofer somewhat bevelled downwards, round anteriorly, but compressed laterally in pos-

terior part, so that posterior wall of pygofer has an oval shape. Edging with long, wedge-shaped lobes ventrolaterally and with a stub truncate at apex in the middle, under styli. Edging smoothed above lobes. Bridge of pygofer interrupted in the middle, not sclerotized in middle part, formed by 2 lobes directed to each other. Excision of pygofer for anal tube deep. Anal tube without teeth, concave ventrally. Aedeagus long, bent ventrad. Theca (from the right) with a process running more or less parallel to shaft of aedeagus and extending beyond its apex. Gonopore dorsal, subapical. Styli flat, directed obliquely forward and laterad, with teeth at base and in the middle of margin; outer side of each stylus widened subapically into a lobe; apices of styli narrow, attenuate and truncate. 3.4-4. – Japan, Korea, China, S Asia, Africa, Australia. – On various grasses including rice and sugar-cane, in humid and superhumid habitats. (Figs. 263: 1-8)

..... **T. brunnipennis** Sign. [p. 352]

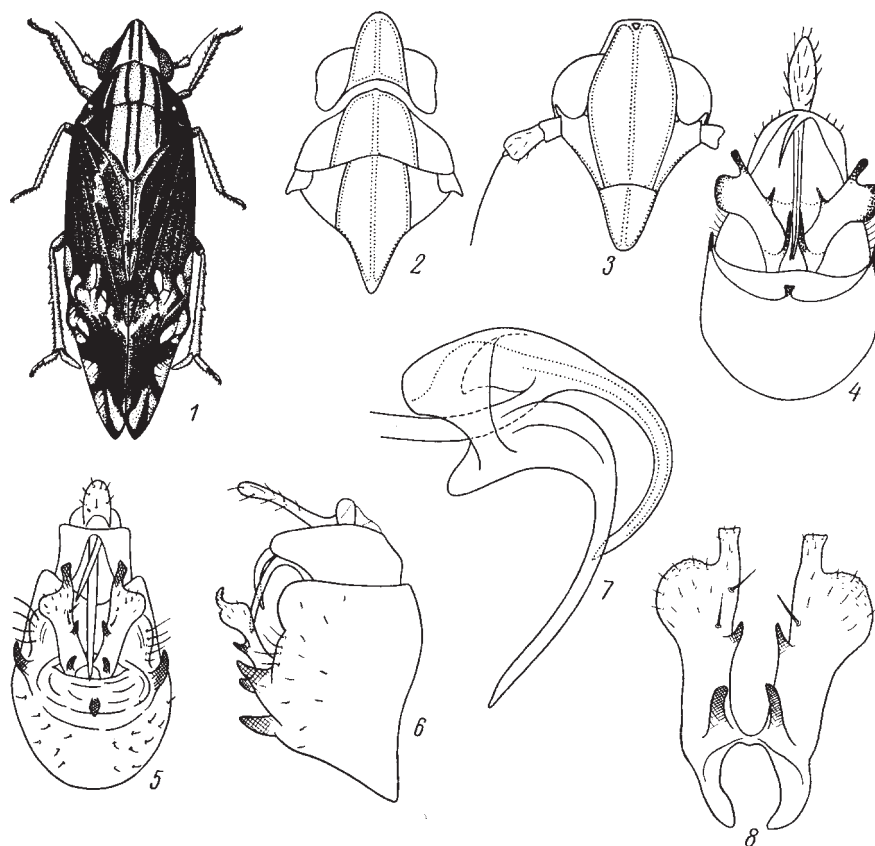


Fig. 263. Cicadines. Family Delphacidae, subfamily Tropidocephalinae (after Esaki, Ishihara, and original).

1-8, *Tropidocephala brunnipennis*: 1, general appearance; 2, anterior part of body; 3, head, ventral view; 4-6, genital block of male (4, 5, posterior view; 6, lateral view); 7, penis, lateral view; 8, styli.

Subfamily SACCHAROSYDNINAE

7. **Saccharosydne** Kirk. Macrocorphe long (more than twice as long as wide), gradually narrowing anteriorly and considerably projecting before eyes (Fig. 264: 2). Vertical pits fused due to underdeveloped median carina of coryphe; carinae edging coryphe anteriorly situated at level of anterior margins of eyes. Eumetope widening from apex to base, with well expressed median carina (Fig. 264: 3). Antennae com-

paratively [p. 353] short, reaching only apex of eumetope, their 2nd segment longer than 1st segment. Pronotum somewhat shorter than macrocoryphe, much wider than head and eyes combined, with 3 carinae reaching posterior margin (Fig. 264: 2). Mesonotum about as long as macrocoryphe and pronotum combined, with 3 carinae; the median carina disappearing to apex. In Palearctic 1 species.

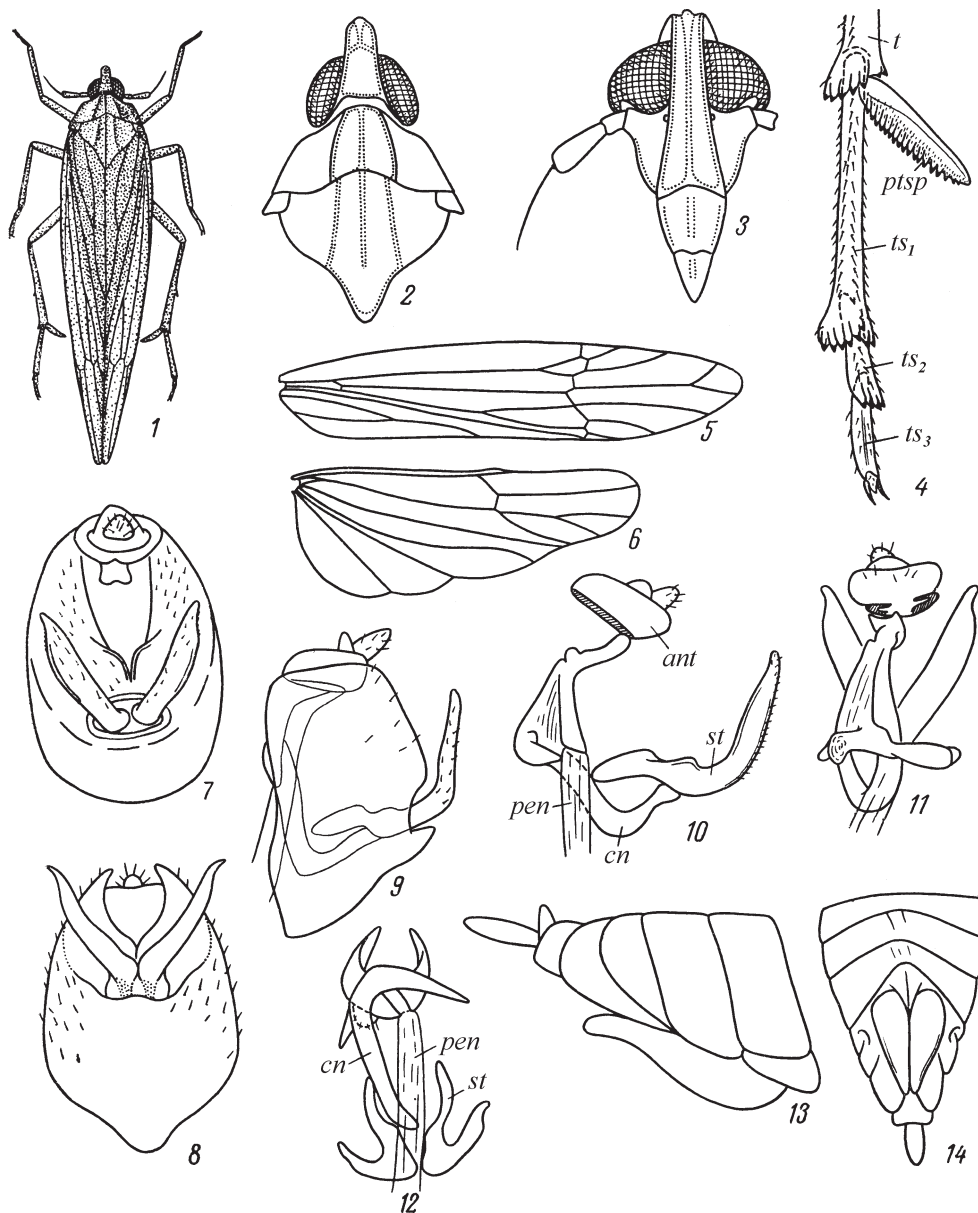


Fig. 264. Cicadines. Family Delphacidae, subfamily Saccharosydinae (after Esaki, Ishihara, Vilbaste, and original).

1-14, *Saccharosydne procera*: 1, general appearance; 2, anterior part of body; 3, face; 4, apex of right hind leg, ventral view; 5, 6, wings (5, fore wing; 6, hind wing); 7-9, genital block of male (7, posterior view; 8, posteroventral view; 9, lateral view); 10-12, anal tube, connective, base of penis and stylus (10, left lateral view; 11, posterior view; 12, anterior view); 13, 14, apex of female abdomen (13, lateral view; 14, ventral view). *ant*, anal tube; *t*, tibia; *cn*, connective; *ts₁-ts₃*, 1st-3rd segments of tarsus; *pen*, penis; *ptsp*, posttibial spur; *st*, stylus.

1. Light green; antennae with longitudinal black stripe. Fore wings semihyaline, light greenish, often more or less darkened at apex; veins light green. 3.2-6.3. – S Khab., S Prim. – Japan, Korea, E China. – On reservoir banks and in long time flooded areas with *Phragmites*, *Typha*, *Carex* in river deltas and bottomlands on *Zizania latifolia* and probably on rice. (Figs. 246: 7; 264: 1-14) **S. procera** Mats.

Subfamily DELPHACINAE

8. **Delphax** F. Macrocorphe wide, transverse, nearly straight anteriorly, barely prominent before eyes. Eumetope with sharp median carina branching on the turn into acrometope, wide (ratio of length to width is 1.3-1.7), the widest part situated at level of lower margin of eyes. Antennae long, their 1st segment longer than 2nd segment, flattened and with carinae. Pronotum about as long as vertex, its lateral carinae bent outwards, not reaching posterior margin. First segment of hind tarsi with 2+5 teeth. Posttibial spur with about 30 denticles. Male. Pygofer more or less perpendicularly truncate posteriorly. Bridge of pygofer elevated in the middle at dorsal margin, with a small tooth on each side of elevation. Styli with attenuate outer and inner angles at apex; apical margin angular, projecting between apical angles. Anal tube with a pair of processes ventrally, which are often (always in species from the Far East) differently developed from the right and from the left. Aedeagus with 3 denticulate carinae, at least in apical half; theca ring-shaped; in part of species, its dorsal side is underdeveloped, and then theca is represented by 2 fragments running from base of aedeagus to anal tube. Macropterous, brachypterous and intermediate forms. On *Phragmites australis*. Imagines in second half of summer, apparently larvae overwintering. – 1 species (in USSR 5, in Palearctic 9).

1. Ventral denticulate carinae of aedeagus nearly parallel, arising before middle of shaft; the right carina double at base (with 2 rows of denticles). – Bridge of pygofer with comparatively narrow process (elevation). Styli with angular apical margin strongly projecting backwards. Brown gray or brown. Eumetope with white band above postclypeus; a narrow whitish transverse band present also at lower margin of eyes, reaching to bases of antennae. Pronotum laterally with wide castaneous-black or dark brown stripe continuing on sides of mesonotum and further on bases of fore wings. Fore wings in macropters with bright, dark, wide zigzag stripe reaching apex, in brachypters, with oblique longitudinal stripe running from base of wing to apical margin. 3.5-5.7, macropters up to 6.7. – Prim., S Kur. – Japan, C and E Mongolia. – Mid-July to late August. (Figs. 266: 1-7) ... **D. maritima** Anufr.
- Ventral denticulate carinae of aedeagus not parallel, single (sometimes only 1-2 denticles present at base of carina), arising beyond middle of carina 2
2. Bridge of pygofer with comparatively wide process. Aedeagus long; its length more than 3 times the dorsoventral width at base, with lobe-shaped denticulate carinae strongly projecting backwards. Styli usually with apical margin strongly projecting backwards. In general appearance, similar to *D. maritima*. 3-5.4. macropters up to 7. – Kazakhstan, Middle Asia, Azerbaijan. – Europe, N Africa; records from Japan refer apparently [p. 355] to *D. maritima*. – July to August. (Figs. 265: 1-16) **D. crassicornis** Panz.
- Bridge of pygofer with narrow process. Aedeagus short, with weakly projecting denticulate carinae; length of aedeagus less than 3 times the dorsoventral width at base. Styli with angular, weakly projecting apical margin. In general appearance, similar to *D. maritima*. 5.5-6.1. – Kazakhstan, Middle Asia. – W Mongolia. – July to August. (Figs. 266: 8-11) **D. orientalis** Lnv.

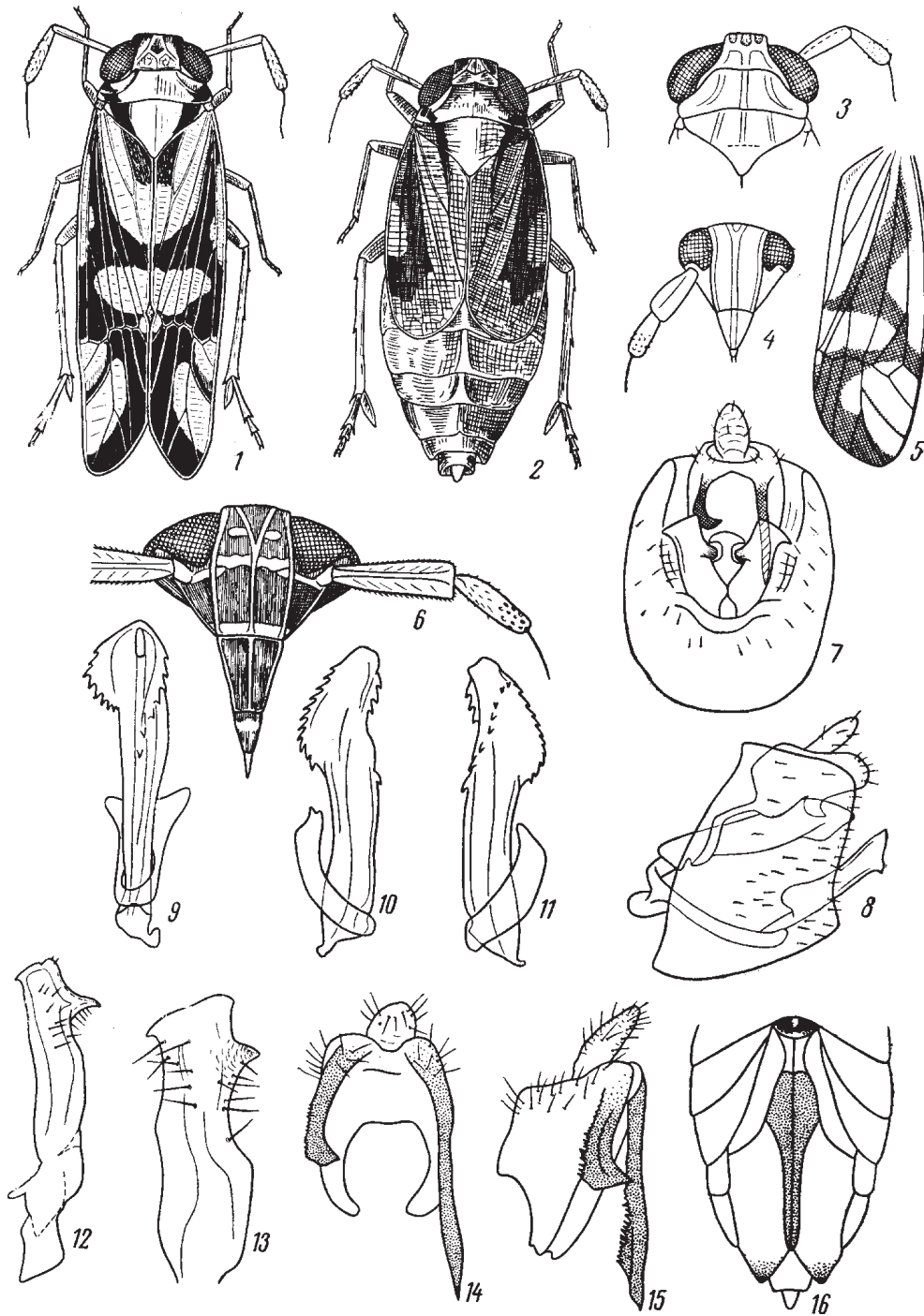


Fig. 265. Cicadines. Family Delphacidae, subfamily Delphacinae (after Haupt, Jensen-Haarup, Ossiannilsson, and Vilbaste).

1-16, *Delphax crassicornis*: 1, male; 2, female; 3, anterior part of body; 4, 6, face; 5, fore wing; 7, 8, genital block of male (7, posterior view; 8, lateral view); 9-11, penis (9, ventral view; 10, left lateral view; 11, right lateral view); 12, stylus; 13, apex of stylus; 14, 15, anal tube (14, posterior view; 15, lateral view); 16, female abdomen, ventral view.

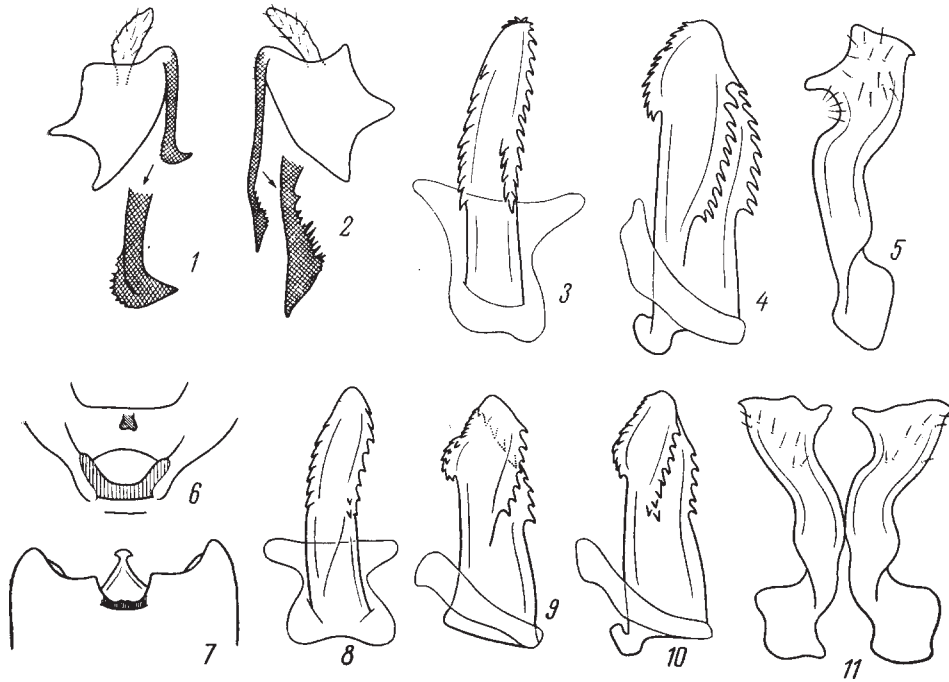


Fig. 266. Cicadines. Family Delphacidae, subfamily Delphacinae (after Anufriev).

1-7, *Delphax maritima*: 1, anal tube and its left process, left lateral view; 2, anal tube and its right process, right lateral view; 3, 4, penis (3, ventral view; 4, lateral view); 5, stylus; 6, bridge of pygofer; 7, posterior margin of pygofer, dorsal view; 8-11, *D. orientalis*: 8-10, penis (8, ventral view; 9-10, lateral view, variants of structure); 11, styli.

9. **Euides** Fieb. Macrocorphe nearly square, projecting forward before eyes on about 2/3 its length. Eumetope with sharp median carina branching before the turn on vertex, comparatively narrow (ratio of length to width is 2-2.3); the widest part of eumetope situated at level of lower margin of eyes or more low; more light small spots (traces of larval sensory pits) noticeable on brown background of eumetope. Antennae long, with cylindrical segments; 2nd segment about 1.5 times as long as 1st segment. Pronotum insignificantly shorter than vertex, with lateral carinae bent outwards, not reaching posterior margin. Mesonotum with 3 carinae. First segment of hind tarsi with 2+5 teeth. Posttibial spur with about 40 denticles. Male. Pygofer more or less perpendicularly truncate posteriorly, with a spine projecting backwards ventrally. Bridge of pygofer with a pair of small teeth on upper margin. Styli with attenuate outer and inner angles at apex; apical margin angular, projecting between apical angles. Anal tube asymmetrical due to differently developed left and right processes arising from its lower margin. Aedeagus somewhat compressed laterally, bent, forming an angle in apical third, with rows of denticles in area of bend. On *Phragmites australis*. Imagines in second half of summer. – One female is found up to now in the Far East, which was not identified (in USSR 4 species). [p. 356]

1. The right process of anal tube finely tuberculate, without large additional tooth. Males always macropterous, brownish gray or brown, with wide white longitudinal stripe on vertex, pronotum and mesonotum, and black abdomen; fore wings semihyaline, with elongate triangular spot on corium running from base of wing along basal half of claval suture, small narrow stripe at apex of clavus and large

crescent-shaped spot in apical half of wing. Macropterous females similar to males, but somewhat lighter, with more or less contrasting dark pattern. Brachypterous females usually entirely brownish yellow; their hemelytra covering only half of abdomen. 3.5-5, macropters up to 6.8. – Kazakhstan, Azerbaijan, European part of USSR (N Baltia, C, Ukraine). – Europe. – Early June to August. (Figs. 267: 1-13) *E. basilinea* Germ. (*speciosus* Boh.)

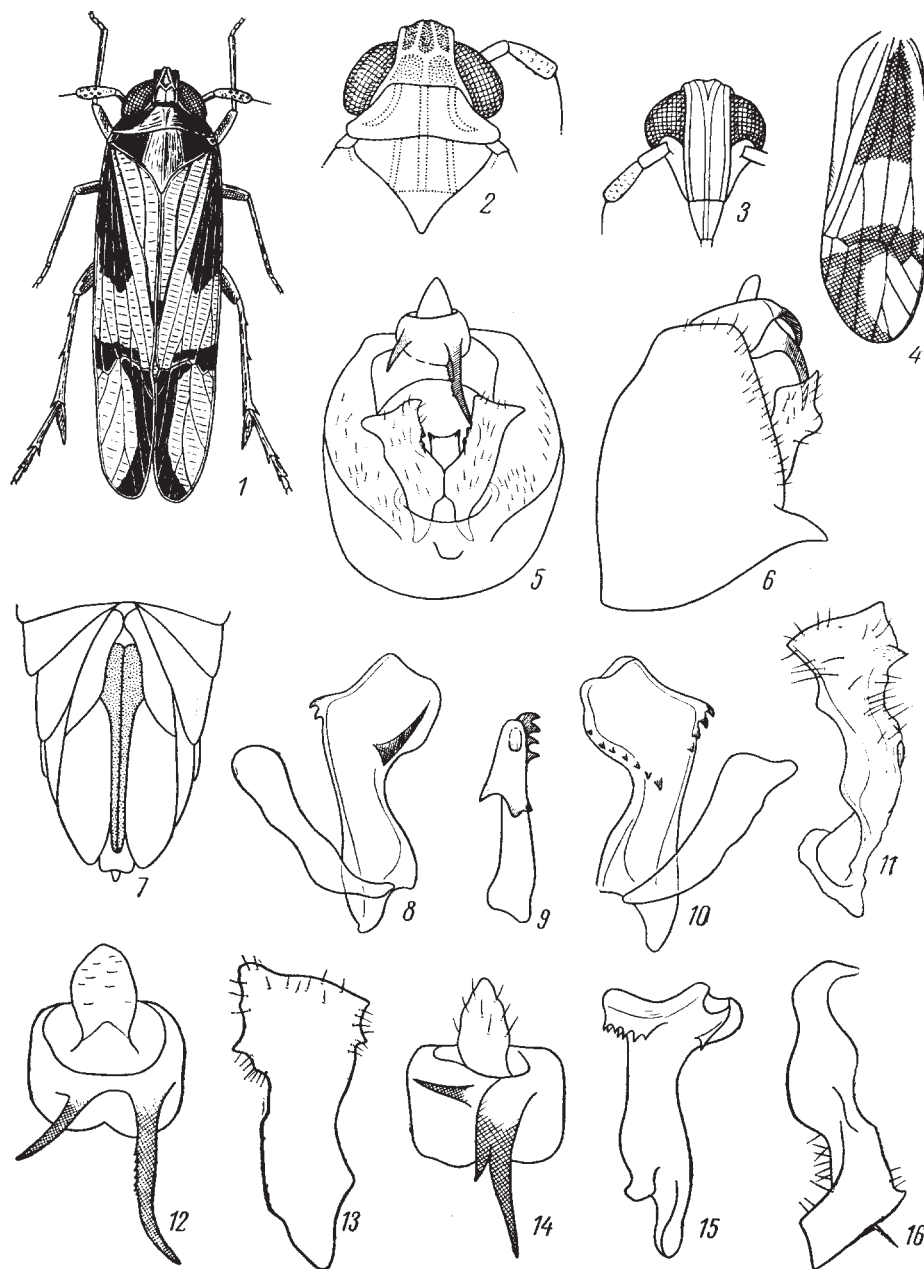


Fig. 267. Cicadines. Family Delphacidae, subfamily Delphacinae (after Haupt, Jensen-Haarup, Logvinenko, Ossiannilsson, and Vilbaste).

1-13, *Euides basilinea*: 1, male; 2, anterior part of body; 3, face; 4, fore wing; 5, 6, genital block of male (5, posterior view; 6, lateral view); 7, female abdomen, ventral view; 8-10, penis (8, left lateral view; 9, ventral view; 10, right lateral view); 11, stylus; 12, anal tube, posterior view; 13, stylus; 14-16, *E. alpinus*: 14, anal tube, posterior view; 15, penis, lateral view; 16, stylus.

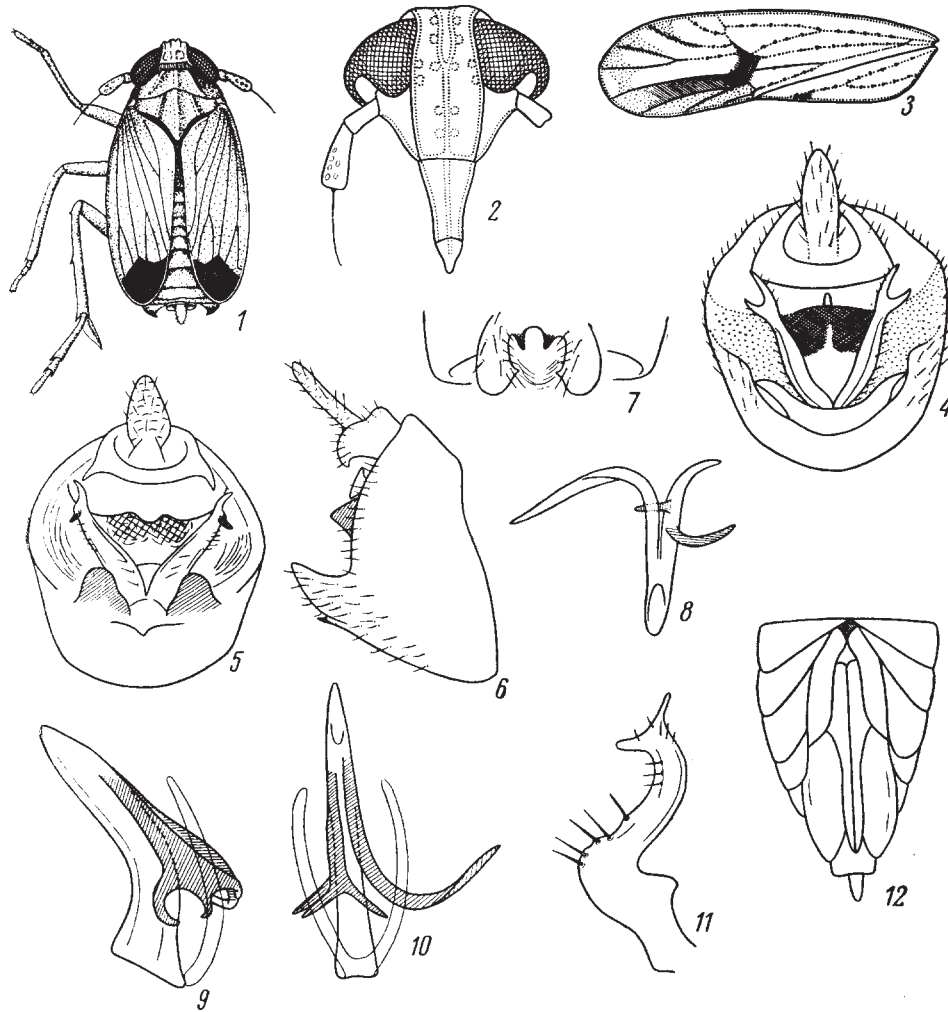


Fig. 268. Cicadines. Family Delphacidae, subfamily Delphacinae (after Ishihara and Vilbaste).

1-12, *Garaga nagaragawana*: 1, brachypterous male; 2, face; 3, fore wing of macropterous form; 4-6, genital block of male (4, posterior view; 5, posteroventral view; 6, lateral view); 7, posterior margin of pygofer, ventral view; 8-10, penis (8, posterior view; 9, lateral view; 10, dorsal view); 11, stylus; 12, female abdomen, ventral view.

- The right process of anal tube with additional tooth on inner margin. In general appearance, similar to *E. basilinea*. 3.6-5.3. – Kazakhstan, Middle Asia, Daghestan, Ukraine. – Austria, Poland. (Figs. 267: 14-16) *E. alpinus* W. Wagn.

10. *Garaga* Anufr. (*Nagara* Vilb.). Macrocorphe nearly square, projecting about by 1/4 before eyes. Eumetope with sharp median carina branching approximately opposite lower margin of eyes; light small spots noticeable on brown background of eumetope are traces of larval sensory pits. Antennae long, with cylindrical segments; 2nd segment about 1.5-2 times as long as 1st segment. Pronotum about as long as vertex; lateral margins of its disc diverging, slanting outwards, not reaching posterior margin. Mesonotum with 3 carinae; median carina well expressed up to apex. First segment of hind tarsi with 2+5 teeth. Posttibial spur with about 35 denticles; apical denticle large. Male. Pygofer straightly truncate posteriorly; its edging without lateral cuts, ventrally turning into 2 staying apart,

flat lobes; 2 teeth present between these lobes. Upper margin of pygofer without expressed excision posteriorly. Bridge of pygofer with 2 angular projections on dorsal margin. Anal tube short, with staying apart, small teeth. Styli diverging, bifurcate, oven prong-shaped at apex. Aedeagus asymmetrical, somewhat compressed laterally, with recurrent processes; the right of these simple, the left process with 3 apices. Gonopore dorsal, subapical. Theca in the shape of 2 sclerotized fragments connected with base of anal tube. In Palearctic 1 species.

1. Light brown; abdomen rather often dark brown, especially on sides. Fore wings in brachypters from entirely black to light with black stripe at apex of clavus and black spot at apex; in macropters, fore wings from entirely black to light with brown stroke at apex of clavus, darkened apical veins and irregular crescent-shaped spot in apical half. Macropters, brachypters and apterous forms occur. 5.9-7.7. – Prim., S Kur. – Japan, China (Jilin, Shandong, Jiangxi, Hunan, Hubei, Jiangsu, Anhui), Philippines. – On *Phragmites australis* and *Miscanthus sinensis*. July to late August. (Figs. 268: 1-12) **G. nagaragawana** Mats.

11. **Euconomelus** Hpt. Macrocorphe comparatively narrow, narrower than transverse diameter of eye, noticeably longer than wide. Eumetope about twice as long as wide, with more or less uniformly, weakly convex lateral margins. All carinae of head sharp, with acute ridges; intervals between them gently groove-shaped. Median carina of eumetope bifurcate on the turn on acrometope. Lateral carinae of disc of pronotum strongly slanting laterad and disappearing beyond eyes, running parallel to posterior margin of pronotum somewhat apart from it. Fore wings bearing dark granules on veins, in brachypters, strongly shortened, reaching only tergite IV, obliquely truncate and widely rounded [p. 357] at apex, with slant directed to costal margin. Posttibial spur with about 10 lateral denticles and somewhat larger apical denticle. Male. Pygofer somewhat compressed laterally and somewhat narrower dorsally; dorsal excision delimited laterally by small lobes; edging becoming more weak under these lobes, turning into large projection under bases of styli; the projection parallel-sided from base, then steeply narrowing to apex bearing 2 teeth. Styli slightly diverging, [p. 358] small, roundish widened before narrow, attenuate, beak-shaped apex directed upwards and inwards. Aedeagus straight, narrowing to apex, bearing obliquely longitudinal, running asymmetrically rows of denticles. Gonopore more or less apical. Monotypic genus.

1. Light brown and brown, pattern dark brown, with reddish castaneous tint. Eumetope brown or dark brown, with light small spots on the places of sensory pits. Macrocorphe, pronotum and scutellum dim brownish, with somewhat lighter carinae. Fore wings in brachypters brown at base, gradually darkening up to dark brown to posterior margin; posterior margin with a pair of white elongate spots along it; veins with dark brown granules less noticeable posteriorly due to dark background. Abdomen brown or dark brown dorsally, with light specks laterally. Venter and legs with dark brown spots. 1.5-2.7, macropters up to 3.9. – Prim., S Kur.; C Yakutia, Transbaikal, Irkutsk Prov., Tuva, Altai, Kazakhstan, Middle Asia, Caucasus. – Mongolia, Europe. – In moist, often slightly saline meadows with sedges and Juncus. Mid-July to early September. (Figs. 269: 1-10) **E. lepidus** Boh. [p. 359]

12. **Kakuna** Mats. Macrocorphe nearly square, projecting forward about by 1/3 of its length before eyes. Eumetope with sharp median carina branching on the turn on vertex, comparatively narrow (ratio of length to width is 2.3-2.5), the widest part situated about at level of lower margin of eyes; frons without light small spots (traces of larval sensory

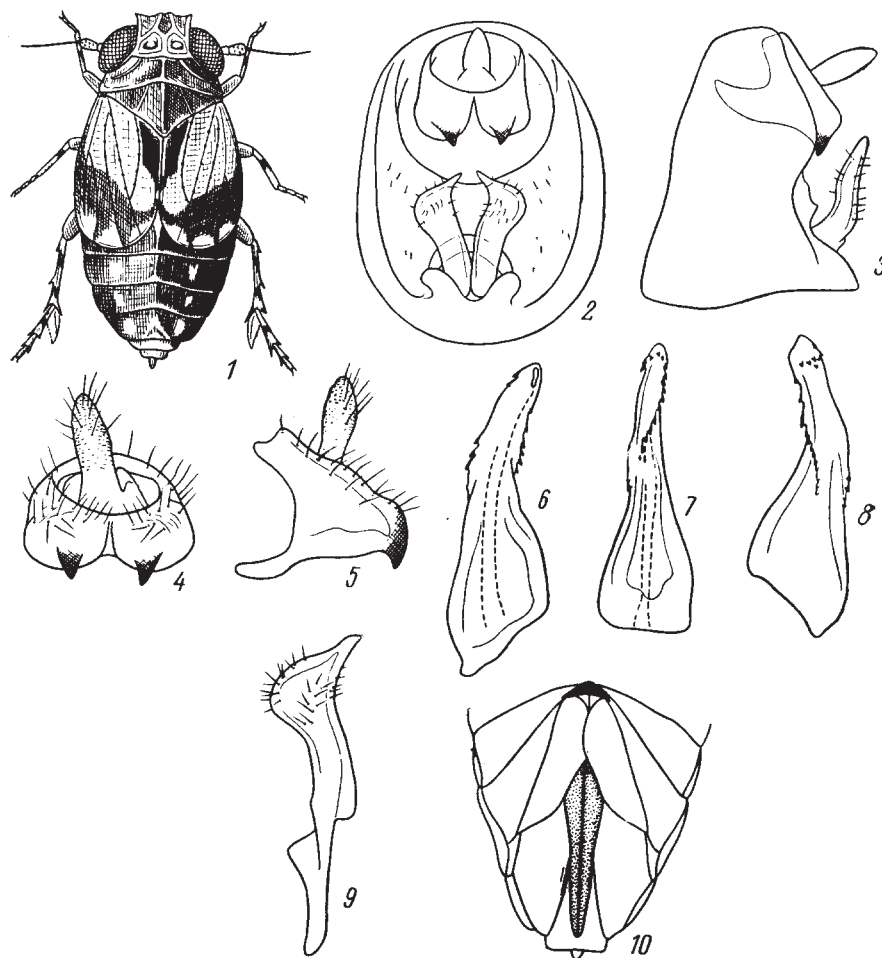


Fig. 269. Cicadines. Family Delphacidae, subfamily Delphacinae (after Haupt, Ossiannilsson, and Vilbaste).

1-10, *Euconomelus lepidus*: 1, female; 2, 3, genital block of male (2, posterior view; 3, lateral view); 4, 5, anal tube (4, posterior view; 5, lateral view); 6-8, penis (6, right lateral view; 7, dorsal view; 8, left lateral view); 9, stylus; 10, female abdomen, ventral view.

pits) on brown background. Antennae long, with cylindrical segments; 2nd segment about 1.5 times as long as 1st segment. Pronotum about as long as vertex; its lateral carinae nearly straight, closely coming up to posterior margin. Mesonotum with 3 smoothed carinae, 1st segment of hind tarsi with 2+6 teeth. Posttibial spur with about 25 denticles. Male. Pygofer with deep excision for anal tube. Bridge of pygofer with median carina becoming higher to dorsal margin. Styli bent upwards and backwards, more or less parallel to each other, with attenuate apical end bent inwards. Aedeagus compressed laterally, comparatively short, its length up to theca only 2.5-3 times the greatest width; ventral side with a folded tubercle; in apical half, 2 semicircular combs of thin long teeth. – 1 species (in Palearctic 2).

1. Brown, with white stripe from median vertical pit to apex of mesonotum. Fore wings dark brown, with light basal half of posterior margin of clavus, more or less developed lightening in area of clavus apex and light semicircular spot

on costal margin in apical third of wings; in light specimens, hemelytra nearly entirely light, except for darkening at posterior margin in apical third. 2.7-4, macropters up to 5.5. – S Kur. (Kunashir). – In edges and under canopy of broad-leaved and mixed forests on *Sasa kurilensis*. Mid-August to mid-September. (Figs. 270: 1-8) **K. pectinata** Anufr.

13. **Changeondelphax** Kwon. Macrocorphe rectangular, slightly narrowing anteriorly, considerably prominent before eyes. Eumetope with sharp median carina branching at boundary with macrocorphe, narrow (ratio of length to width is 2.4-2.7), the widest part situated about at level of lower margin of eyes; light small spots (traces of larval sensory pits) on brown background of frons absent. Antennae long, with cylindrical segments; 2nd segment about 1.5 times as long as 1st segment. Pronotum insignificantly shorter than vertex; its lateral carinae bent [p. 361] outwards, not reaching posterior margin. Mesonotum with 3 smoothed carinae. First segment of hind tarsi with 2+6 teeth. Posttibial spur with more than 40 denticles. Male. Pygofer straightly truncate posteriorly. Bridge of pygofer with median carina becoming higher to dorsal margin. Styli diverging, with attenuate apex slanting outwards. Anal tube ventrally with a pair of parallel, moderately long processes approximate to weakly sclerotized ventral wall. Aedeagus tubular, long; its length up to theca about 5 times the greatest width; gonopore apical, surrounded with small disorderly denticles. Monotypic genus.

1. Yellowish brown or light castaneous. Pleura sometimes darkened. Fore wings semihyaline, sometimes brownish. Females usually lighter than males. 3-4.9. – Prim., S Kur.; Kazakhstan, Daghestan, Ukraine. – Japan, Korea, China (Shaanxi, Liaoning, Anhui, Jiangxi), Mongolia, Afghanistan, Rumania, Bulgaria. – In swampy habitats and near water on *Phragmites australis*. Mid-July to late August. (Figs. 270: 9-16) **Ch. velitshkovskyi** Mel. (*sapporonis* Mats., *oriens* Dlab.)

14. **Sogatella** Fennah. Macrocorphe narrow, about twice as long as wide, narrower than transverse diameter of eye. Eumetope not less than 3 times as long as wide, slightly narrowing upwards. The turn of eumetope into acrometope gradual; bifurcation of median frontal carina occurring in upper part of eumetope or on the turn into acrometope. Lateral carinae of disc of pronotum straight, diverging, far not reaching posterior margin of pronotum. Macropterous. Male. Pygofer with large dorsal excision delimited laterally by angular projections; posterior margin of pygofer bevelled ventrad; edging not interrupted, sharp. Anal tube with a pair of approximate teeth directed forward. Styli with 2 apices or with single apex and a considerable medial subbasal process. Aedeagus asymmetrical, with oblique longitudinal rows of denticles, right, subapical gonopore, and shaft bent dorsad at base; apex of aedeagus pointed. – 2-3 species (in USSR up to 5).

1. Apex of stylus and its subapical medial process subequal in length, but the proper apex noticeably thicker; stylus noticeably narrower before branching. Head uniformly brownish, with light carinae, in male, even black, except posterior part of vertex. Pronotum entirely brownish; scutellum darkened lateral to disc, from brown to dark brown; in female, darkening becoming weaker to lateral angles. Fore wings semihyaline, with light veins and whitish smoky cells; apex of 2nd claval cell and often posterior part of membrane brownish. In female, venter and legs more or less light; in male, abdomen, thorax ventrally and coxae darkened. 4-4.5. – S Khab., S Prim., Sakh., S Kur. – Japan, Korea, C and E China, C and E Mongolia,

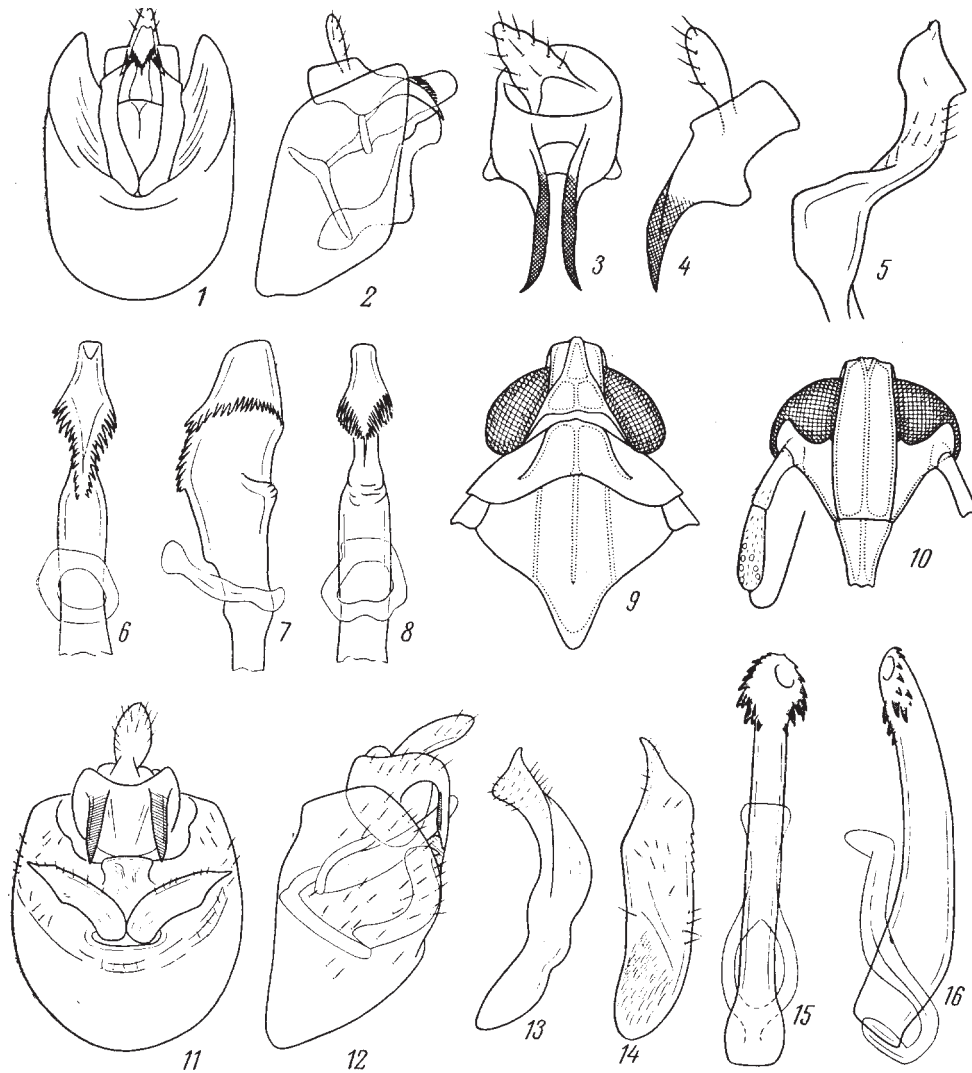


Fig. 270. Cicadines. Family Delphacidae, subfamily Delphacinae (after Anufriev, Ishihara, and Vilbaste).

1-8, *Kakuna pectinata*: 1, 2, genital block of male (1, posterior view; 2, lateral view); 3, 4, anal tube (3, posterior view; 4, lateral view); 5, stylus; 6-8, penis (6, dorsal view; 7, lateral view; 8, ventral view); 9-16, *Changeodelphax velitshkovskyi*: 9, anterior part of body; 10, face; 11, 12, genital block of male (11, posterior view; 12, lateral view); 13, 14, stylus; 15, 16, penis (15, dorsal view; 16, lateral view).

tropical Asia, Micronesia, Australia. – In meadows. Mid-July to early September. (Figs. 271: 1-9) **S. furcifera* Horv.

- Apex of stylus much wider and longer than subapical medial process; stylus barely narrowed before process. Head light brown, with whitish carinae; frons between carinae brown, temples and genae before subantennal carina dark brown. Pronotum white; scutellum yellowish on disc, dark brown on sides, becoming lighter at posterolateral margin. Fore wings whitish, semihyaline, without spots. 3.2-3.9. – S Khab., S Prim. – Japan, Korea, C and E China, C and E Mongolia, Micronesia, Australia. – In meadows. Mid-July to early September. (Figs. 271:10-18) *S. longifurcifera* Esaki et Ish.

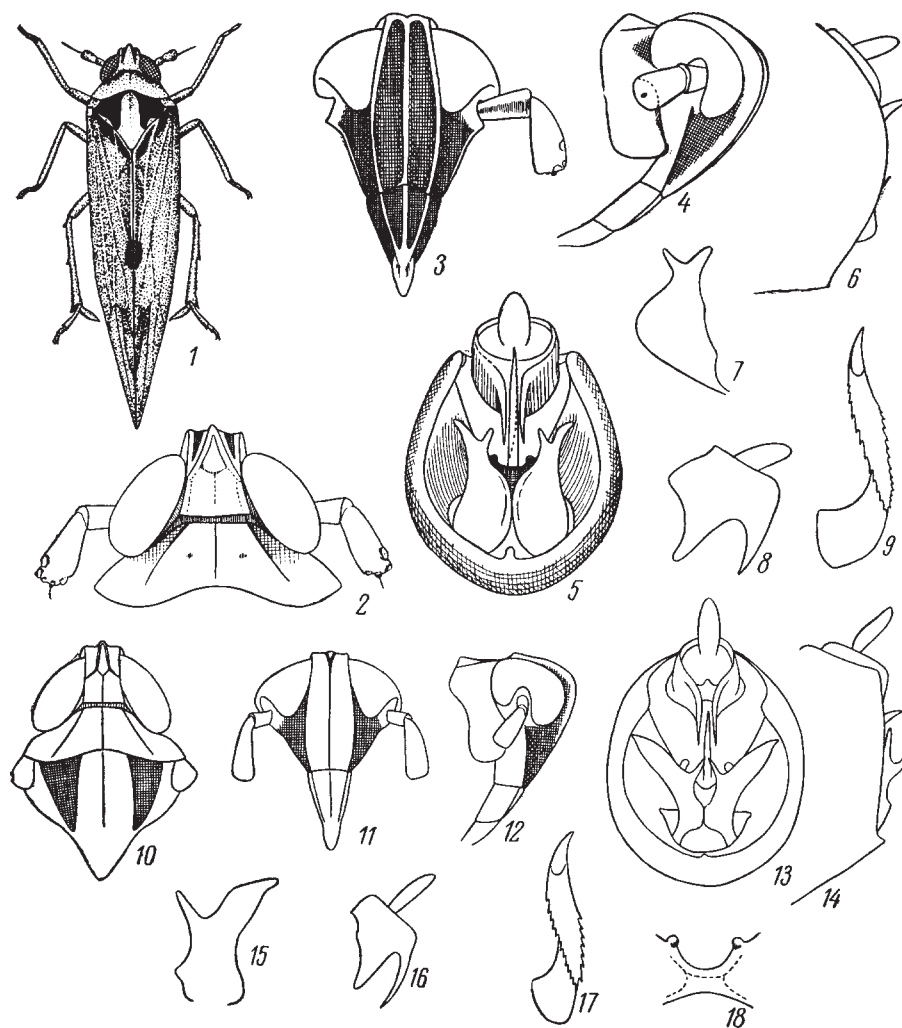


Fig. 271. Cicadines. Family Delphacidae, subfamily Delphacinae (after Esaki and Fennah).

1-9, *Sogatella furcifera*: 1, general appearance; 2, anterior part of body; 3, 4, head (3, ventral view; 4, lateral view); 5, 6, genital block of male (5, posterior view; 6, lateral view); 7, stylus; 8, anal tube, lateral view; 9, penis, lateral view; 10-18, *S. longifurcifera*: 10, anterior part of body; 11, 12, head (11, ventral view; 12, lateral view); 13, 14, genital block of male (13, posterior view; 14, lateral view); 15, stylus; 16, anal tube, lateral view; 17, penis, lateral view; 18, bridge of pygofer.

15. *Chloriona* Fieb. Macrocorphe about 1.5 times as long as wide, narrowing forward. Eumetope about twice as long as its greatest width, widening from clypeus in lower quarter, then, narrowing from about level of antennae to apex; its lower margin noticeably (about 1.5 times) wider [p. 362] than upper margin. All carinae of head sharp; lateral carinae connected by a weak transverse carina on the turn of eumetope into acrometope. Lateral carinae of disc not reaching posterior margin of pronotum. Males macropterous, females macropterous and brachypterous. Posttibial spur with numerous (about 30) distinct lateral denticles. Male. Pygofer usually slanting dorsad, often slightly flattened dorsoventrally. Upper foramen of posterior wall of pygofer large; upper margin of pygofer bridge usually convex; edging of pygofer posterior margin not interrupted, well expressed. Anal tube with variously developed teeth, often 2 pairs of teeth, sometimes they are absent. Styli long, diverging, often slightly widened

and truncate at apex. Aedeagus more or less simple, weakly asymmetrical, tubular, with not numerous denticles, slightly slanting dorsad. Gonopore subapical, dorsal. – 2 species (in USSR up to 15). [p. 363]

1. Styli narrowing to apex, slightly widened and truncate at apex. Aedeagus roundish swollen dorsally at base. Anal tube without processes. Grass green; fore wings in macropters bluish; in male, abdomen dark brown; males with black scutellum occur in western part of range (out of the Far East). 3.5-4.8. – Prim., S Kur.; Altai, Kazakhstan, Middle Asia (in mountains). – On *Phragmites* growing near water and in shallow water. Mid-June to early September. (Figs. 273: 1-17)
..... **Ch. alaica** Dubovsky

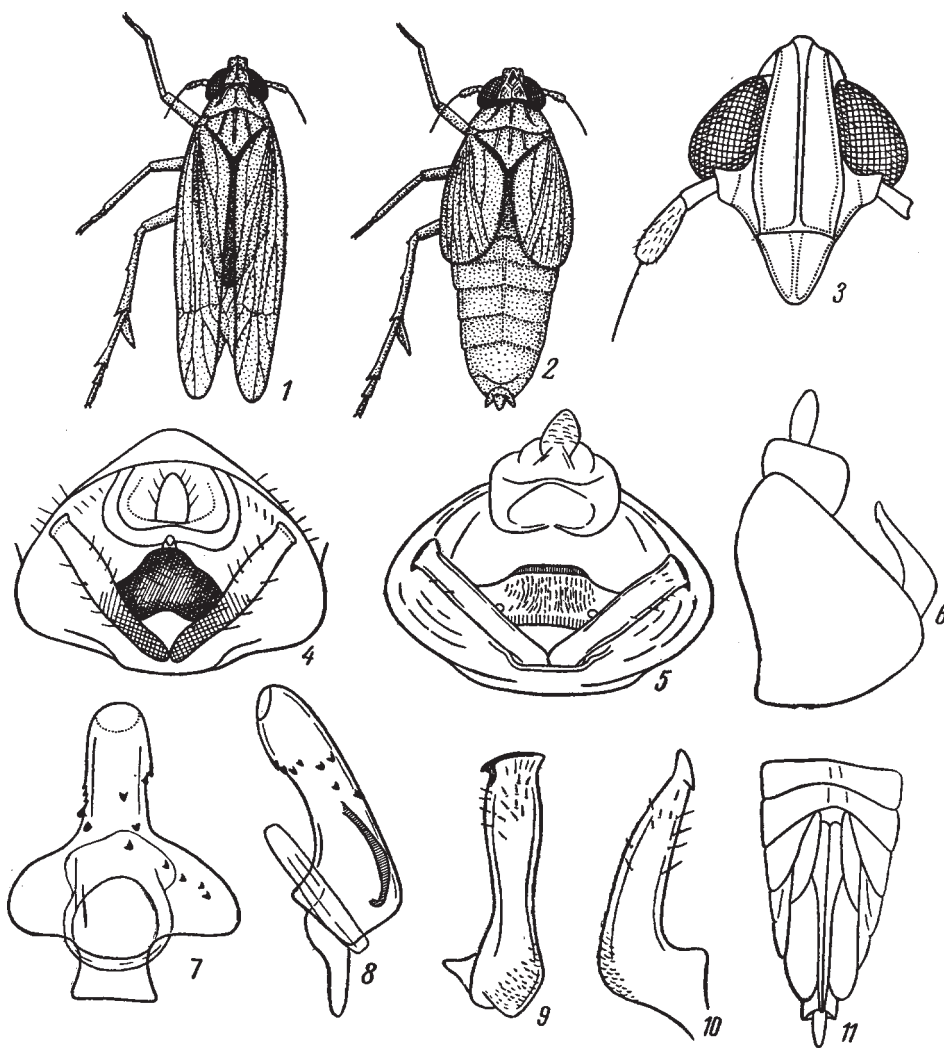


Fig. 272. Cicadines. Family Delphaciodae, subfamily Delphacinae (after Ishihara and Vilbaste).

1-11, *Chloriona tateyamana*: 1, macropterous male; 2, brachypterous female; 3, face; 4-6, genital block of male (4, 5, posterior view; 6, lateral view); 7, 8, penis (7, ventral view; 8, lateral view); 9, 10, stylus (9, posterior view; 10, lateral view); 11, female abdomen, ventral view.

- Styli wide, parallel-sided, slightly widened and truncate at apex. Aedeagus with a pair of wing-shaped lobes on sides of shaft. Anal tube without processes. Grass green; fore wings in macropters bluish. In male, abdomen dark brown; brachypterous females sometimes yellowish green. 4.1-5.2. – Prim., S Kur.; Altai, E Kazakhstan. – Japan, China (Jangsu, Henan), Mongolia. On *Phragmites* in moist and near-water habitats. Early July to late August. (Figs. 272: 1-11)
..... **Ch. tateyamana** Mats. [p. 365]

16. **Nilaparvata** Dist. Head narrower than pronotum. Macrocorphe longer than wide and narrower than transverse diameter of eye. Eumetope about 3 times as long as wide, more or less parallel-sided. Carinae of head rather sharp; the turn of face into macrocorphe gradual, and the carina becomes bifurcate there. Disc of pronotum with strongly diverging lateral carinae disappearing beyond eyes, far from posterior margin of pronotum and running nearly transversely. Scutellum large, its carinae not very sharp, running nearly parallel. Macropterous. Posttibial spur large, with apical and numerous (about 30) small lateral denticles. Basal segment of hind tarsi with 3-4 lateral teeth. Male. Pygofer with deep dorsal excision delimited laterally by lobes of posterior edging and posterior wall bevelled ventrad. Anal tube with 2 relatively thin, spaced teeth slanting more or less forward. Styli directed more or less upwards, bearing a subbasal step on medial margin; the middle part distal to step narrower; apices widened, rhombic and slanting inwards to each other. Aedeagus of relatively simple shape; its apex narrowed, pointed and S-shaped. In USSR 1 species.

1. Light brown and brown, without strongly expressed pattern; carinae somewhat more light than background; area around ocelli distinctly darkened. Pronotum lighter, scutellum darker, with lightened carinae. Fore wings brownish; clavus with dark brown spot at angle between apex of claval vein and posterior margin of clavus. Veins with small granules, light brownish, brown on membrane. 4.4-5.2. – S Prim. – Japan, Korea, C and E China, S and SE Asia, New Guinea, Micronesia, Australia. – On grasses in near-water swampy habitats, among them, on rice, sugarcane, *Zizania longifolia*. Injurious to rice. June to August. (Figs. 274: 1-11)
..... ***N. lugens** Stål

17. **Opiconsiva** Dist. Macrocorphe nearly square. Eumetope about twice as long as wide, parallel-sided below, slightly narrowing above between eyes. Carinae on head sharp; median carina of metope becomes bifurcate on the turn into acrometope. Lateral carinae of pronotum not reaching posteriorly its posterior margin. Posttibial spur with about 20 lateral denticles. Male. Pygofer with deep excision at base of anal tube. Bridge of pygofer with distinct projection directed backwards and upwards. Anal tube with long, approximate processes. Penis with small theca; aedeagus running between processes of anal tube, straight, moderately elongate. Gonopore dorsal, subapical. Styli with subbasal step internally and widened, rounded or truncate apex. – 2 species.

1. Distal excision at apex of stylus shifted to medial margin; upper inner angle of stylus narrow, attenuate; upper outer angle widely rounded; subbasal medial projection well expressed. Light brown; dorsum with longitudinal whitish stripe from vertex along midline. Fore wings semihyaline, slightly brownish, with a dim longitudinal darkening on membrane, nearer to posterior margin. 3-4, macropterous up to 4.3. – Prim., S Kur. – Korea. – Mid-July to early August. (Figs. 275: 1-18)
..... **O. anufrievi** Kwon

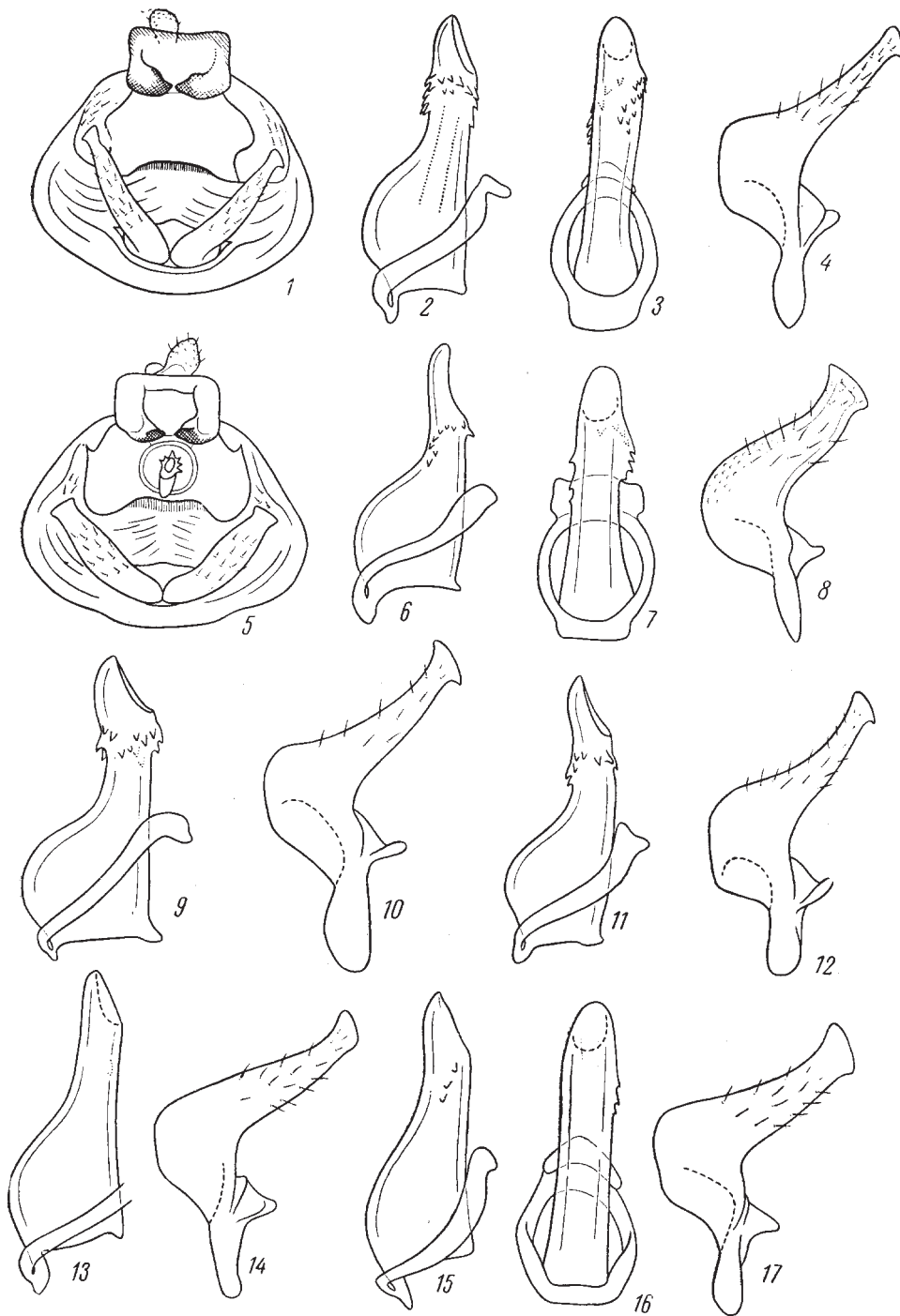


Fig. 273. Cicadines. Family Delphacidae, subfamily Delphacinae (original).

1-17, *Chloriona alaica*: 1, 5, genital block of male, posterior view; 2, 3, 6, 7, 9, 11, 13, 15, 16, penis (2, 6, 9, 11, 13, 15, lateral view; 3, 7, 16, ventral view); 4, 8, 10, 12, 14, 17, stylus. Figs. 1-4, specimen from Kur. (Kunashir, Golovnin volcano; 5-8, specimen from Kazakhstan (66 km W Arkalyk); 9, 10, specimen from Mongolia (Bayan-Khongor Aimak, N bank of Orog-Nur lake); 11, 12, specimen from Mongolia (South Gobi Aimak, Bain Dzag, 30 km NNE Bulgan); 13-17, specimen from Alai Mountains (Daraut-Kurgan).

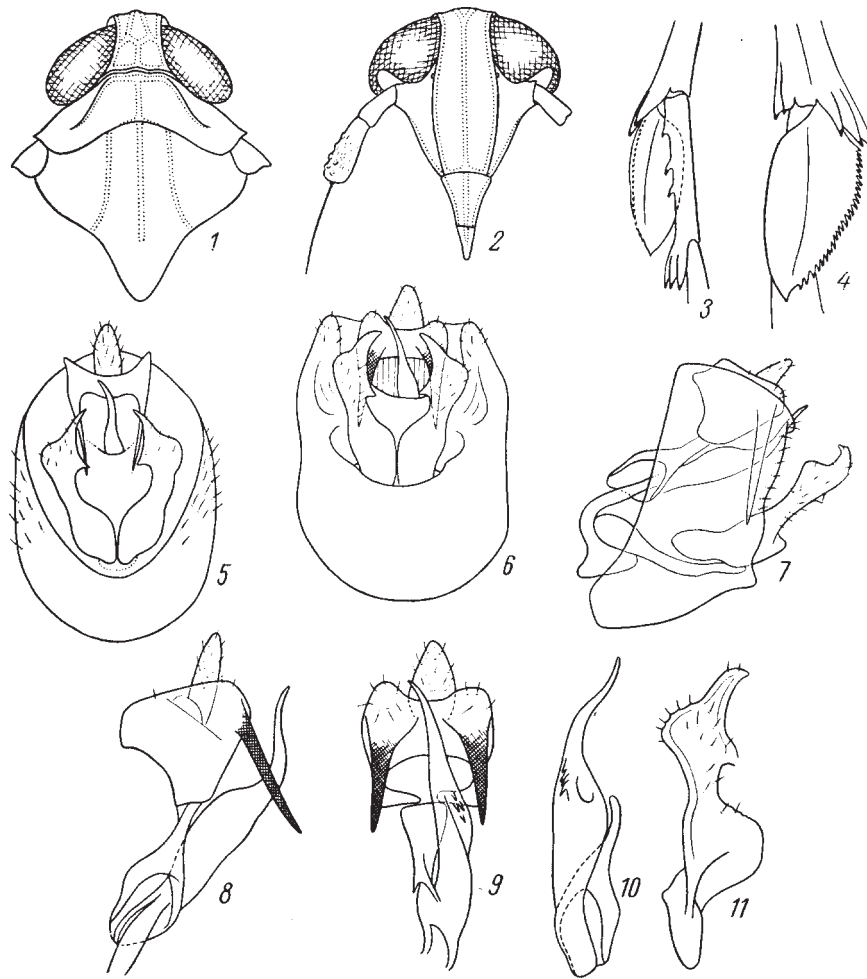


Fig. 274. Cicadines. Family Delphacidae, subfamily Delphacinae (after Ishihara and original).

1-11, *Nilaparvata lugens*: 1, anterior part of body; 2, face; 3, 4, apex of hind tibia with posttibia spur and base of tarsus (3, lateral view; 4, ventral view); 5-7, genital block of male (5, posterior view; 6, posteroventral view; 7, lateral view); 8, 9, anal tube and penis (8, left lateral view; 9, ventral view); 10, penis, right lateral view; 11, stylus.

- Distal excision at apex of stylus situated more or less symmetrically; both apical angles similar, moderately narrowed and not widely rounded at apex; subbasal projection weakly expressed. Scutellum brown in female, dark brown in male. Fore wings semihyaline, with brownish veins. Abdomen brownish with dark spots on sides of tergites in female, and dark brown in male. 2.4-2.7. – S Prim. – Japan, China (Guangdong, Guangxi, Yunnan), SE Asia, Sri Lanka. – Spring herbaceous swamps. Mid-July. (Figs. 276: 1-5) **O. albicollis** Motsch. [p. 366]

18. *Cotoya* Anufr. Head about as wide as pronotum. Macroscoryphe nearly square, with moderately prominent carinae. Eumetope about twice as long as wide, its widest part situated between eyes. Median carina of metope becoming bifurcate on the turn into acrometope. Lateral carinae of pronotum posteriorly semicircularly slanting laterad and not reaching posterior margin. Posttibia spur with about 15 lateral denticles. Male.

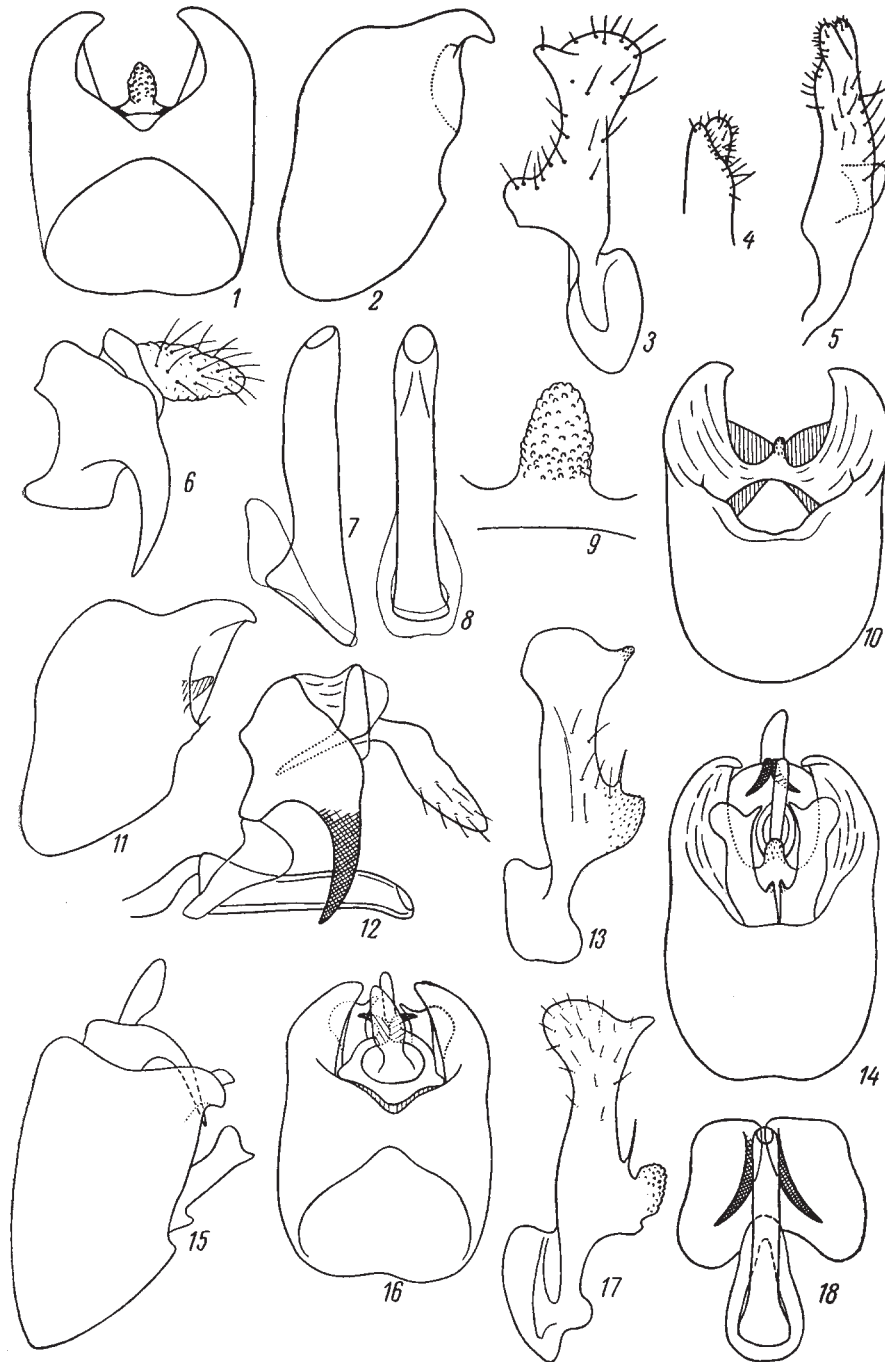


Fig. 275. Cicadines. Family Delphacidae, subfamily Delphacinae (after Anufriev, Kwon, and original).

1-18, *Opiconsiva anufrievi*: 1, 2, pygofer (1, dorsal view; 2, lateral view); 3, 5, stylus (3, posterior view; 5, lateral view); 4, apex of stylus, inner lateral view; 6, anal tube, lateral view; 7, 8, penis (7, lateral view; 8, ventral view); 9, median projection of pygofer bridge; 10, 11, pygofer (10, posterior view; 11, lateral view); 12, anal tube and penis, lateral view; 13, stylus; 14-16, genital block of male (14, posterior view; 15, lateral view; 16, dorsal view); 17, stylus; 18, anal tube and penis, ventral view. Fig. 14-18, specimen from Prim.

Pygofer with not interrupted, even edging and distinctly expressed dorsal excision. Anal tube with widely spaced, nearly parallel, robust lateral processes. Styli with subbasal medial tooth, somewhat narrowed distal to the tooth, but widening to straightly truncate apices. Aedeagus slightly slanting dorsad, girt with crown of teeth in middle part. Gonopore ventral, subapical, slightly shifted on the left side. Monotypic genus.

1. Unicolorous, pale yellow; only ocelli, apices of last segments of tarsi, apices of teeth on legs, apex of rostrum and rather often dorsum of abdomen, except for margins of tergites, brown. Fore wings reaching [p. 368] the middle of abdomen in brachypters. 2-2.9. – S Kur. – Mid-June to mid-July. (Figs. 276: 6-10) **C. galiae** Anufr.

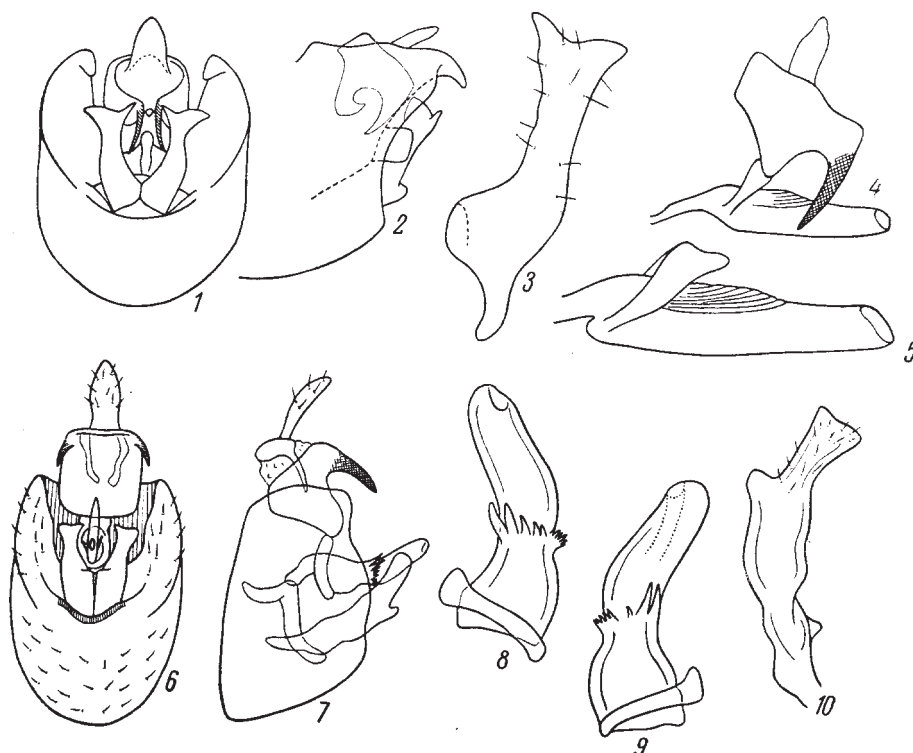


Fig. 276. Cicadines. Family Delphacidae, subfamily Delphacidae (after Anufriev, Fennah, and Wagner).

1-5, *Opiconsiva albicollis*: 1, 2, genital block of male (1, posterior view; 2, lateral view); 3, stylus; 4, anal tube and penis, lateral view; 5, penis, lateral view; 6-10, *Cotoya galiae*: 6, 7, genital block of male (6, posterior view; 7, lateral view); 8, 9, penis (8, left lateral view; 9, right lateral view); 10, stylus.

19. **Coracodelphax** Vilb. Macrocorphe longer than wide, with rounded anterior margin. Carinae of head sharp. Eumetope about twice as long as wide. Lateral carinae of disc of pronotum diverging backwards from anterior margin, becoming longitudinal, parallel near posterior margin, but distinctly not reaching it. Posttibial spur with 13-14 denticles; apical denticle equal to the rest of denticles. Male. Pygofer with deep dorsal excision and 2 large lobes of lateral edging projecting lateral to excision; pygofer obliquely truncate ventrad posteriorly. Anal tube with approximate, asymmetrical processes. Styli with pointed apices directed upwards, lateral finger-shaped projection in middle part and projection at base. Penis simple, moderately elongate, with apex slanting ventrad; only small denticles noticeable at apex. Gonopore apical. Monotypic genus.

1. Dark brown to black with somewhat more light carinae; eumetope and genae somewhat paler below; posterior margin of pronotum lightened. Macropterous; fore wings hyaline; veins with granules. 3-3.3. – Prim. – Korea. – In meadows. Mid-July to early August. (Figs. 277: 1-12) **C. obscura** Vilb.

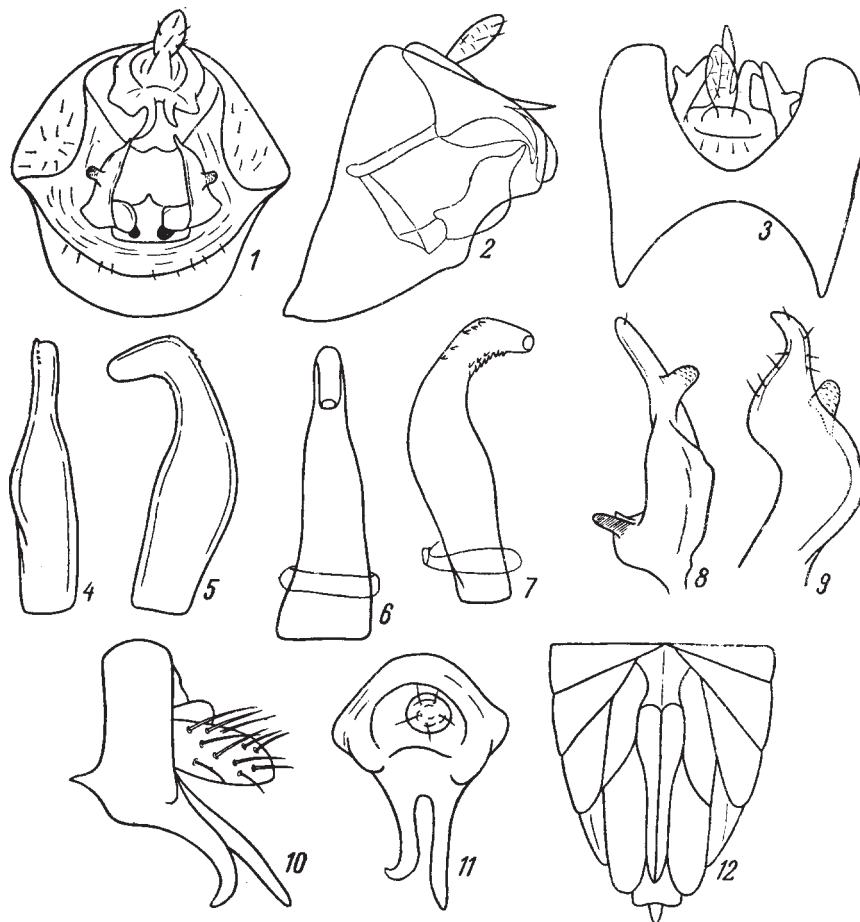


Fig. 277. Cicadines. Family Delphacidae, subfamily Delphacinae (after Kwon and Vilbaste).

1-12, *Coracodelphax obscura*: 1-3, genital block of male (1, posterior view; 2, lateral view; 3, dorsal view); 4-7, penis (4, dorsal view; 5, right lateral view; 6, ventral view; 7, left lateral view); 8, 9, stylus (8, posterior view; 9, lateral view); 10, 11, anal tube (10, lateral view; 11, posterior view); 12, female abdomen, ventral view.

20. **Trichodelphax** Vilb. Body very shiny, covered with sparse long setae. Macroscorpe rectangular, parallel-sided, with arcuate anterior margin. Eumetope nearly parallel-sided, only somewhat [p. 369] widened in the middle, with smoothed median carina. Pronotum elongate, nearly as long as vertex; its lateral carinae diverging, not reaching posterior margin. Pronotum and mesonotum with a pair of small pits. Fore wing shortened, barely covering base of abdomen. Posttibial spur of hind legs foliaceous, flat, with 12-18 lateral denticles; apical denticle smaller than the rest of denticles. Male. Pygofer flattened dorsoventrally, with strongly bevelled and deeply depressed posterior surface, so that anal tube and styli are situated in depth and are barely visible in lateral view. Anal tube with long, approximate processes. Aedeagus bent ventrad in apical third, with a long, recurrent, spine-shaped projection at bend, usually with denticles at bend ventrally. Gonopore ventral. – 2 species (in USSR 3).

1. Bridge of pygofer strongly projecting backwards. Processes of anal tube longer, arcuate and slightly undulated. Apical part of stylus nearly parallel-sided, with truncate apex; outer angle of apex slightly attenuate. Aedeagus smoothly widened to base, usually with 1-2 teeth at bend of shaft ventrally and 1-2 denticles before gonopore. Females unicolorous, light ochraceous yellow. Males variegate, eumetope and genae jet-black; clypeus yellow; macrocoryphe entirely black or posterior pits lightened; pronotum from white or light yellow [p. 371] to black with lightened posterior margin; mesonotum black, with whitish apex; thorax and abdomen from ochraceous yellow to nearly black; pygofer black, with lightened upper and lower parts; anal tube, as a rule, entirely light. 2.5-3.3. – Prim. – E Mongolia. – In moist and swamping meadows. Late May to mid-August. (Figs. 278: 1-15) **T. splendida** Vilb.
- Bridge of pygofer weakly projecting backwards. Processes of anal tube shorter, arcuate. Apical part of stylus not parallel-sided, with angular projection on inner margin and strongly attenuate outer angle. Aedeagus smoothly widening to base, usually, bearing only 1-2 denticles ventrally, before gonopore. In general appearance similar to *T. splendida*, but, as a whole, darker. Males usually black dorsally, with whitish posterior margin of pronotum, apex of mesonotum and anal stub. 2.1-3. – S Prim.; Transbaikal, S Krasnoyarsk Terr., SW Siberia. – Mongolia. – In moist and swamping meadows. Late May. (Figs. 278: 16-20) **T. lukjanovitshi** Kusn.

21. **Megamelus** Fieb. Macrocoryphe slightly narrowing anteriorly, elongate, considerably projecting forward before eyes, about 1.5 times as long as wide. Eumetope long and narrow, with sharply elevated median carina. Pronotum with 3 carinae; lateral carinae of disc insignificantly diverging backwards, reaching posterior margin of pronotum; distance between median and lateral carinae noticeably less than length of median carina. First segment of hind tarsi at least as long as 2nd and 3rd segments combined. Posttibial spur of hind legs with 13-24 lateral denticles, apical denticle absent. Male. Ventral margin of pygofer under stylar foramen forming 2 lobes partly covering styli. Bridge of pygofer with a pair of long pointed processes on dorsal margin. Styli with robust inner basal projection and wide apical part straightly truncate at end. Anal tube with a pair of teeth lateroventrally. Aedeagus with long tubular shaft, which is covered with spinules in middle part, and membranous theca with unpaired, narrow, sclerotized articulatory plate. – 1 species (in USSR 2, in Palearctic 3).

1. Shaft of penis nearly straight in lateral view; its apex slightly slanting ventrad; a process arising from base of shaft and adjacent to theca is present. Sclerotized articulatory plate of theca situated apart from base of shaft. Yellowish brown. Eumetope brown, with small light spots and light band above clypeus or spotted from brown to yellowish white. Carinae of head light. Hemelytra in brachypters with dark longitudinal stripe lateral to claval suture and dark spot at apex on outer margin; sometimes, especially in females, hemelytra without pattern, entirely light or dark; dark pattern of anterior part of body continued in the shape of 2 dark stripes along abdomen, sometimes abdomen entirely dark dorsally. In macropters, mesonotum usually entirely dark, fore wings hyaline, with partly dark veins and longitudinal dark stripe at apex of clavus. 2.4-4.2. – Erroneously recorded from the Far East. – ?Tuva, ?Altai, W Siberia, Kazakhstan, Azerbaijan, N and C European part of USSR. – W Europe, ?Mongolia. – In sedge marshes and reservoir banks; in Europe, on *Carex riparia*. May, July to September. Imagines overwintering. (Figs. 279: 1-13) **M. notula** Germ.

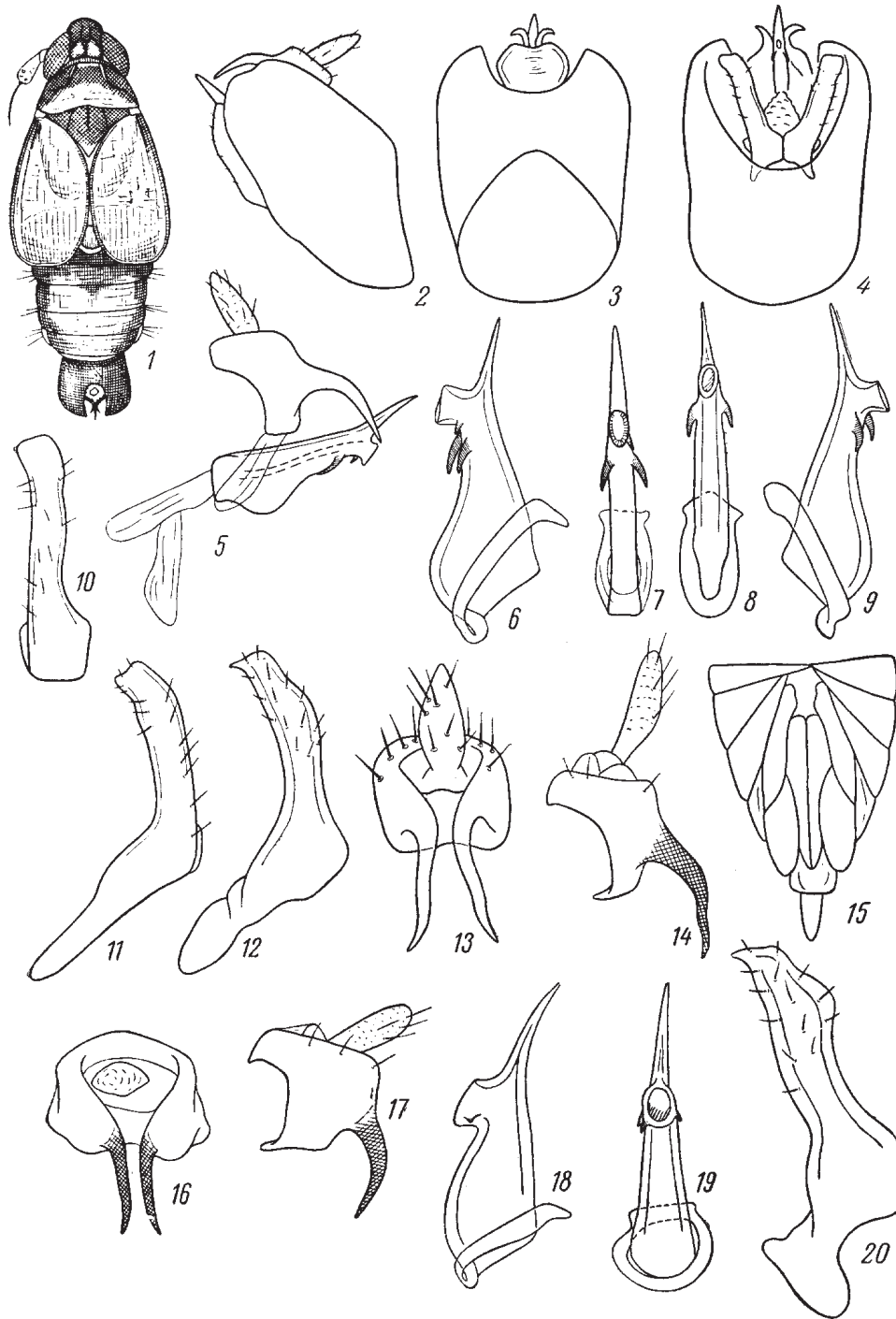


Fig. 278. Cicadines. Family Delphacinae, subfamily Delphacinae (after Vilbaste and original).

1-15, *Trichodelphax splendida*: 1, male; 2-4, genital block of male (2, lateral view; 3, dorsal view; 4, ventral view); 5, anal tube, penis and connective, lateral view; 6-9, penis (6, right lateral view; 7, 8, ventral view; 9, left lateral view); 10-12, stylus (10, ventral view; 11, lateral view; 12, in a plane); 13, 14, anal tube (13, posterior view; 14, lateral view); 15, female abdomen, ventral view; 16-20, *T. lukjanovitshi*: 16, 17, anal tube (16, posterior view; 17, lateral view); 18, 19, penis (18, right lateral view; 19, ventral view); 20, stylus in a plane.

- Shaft of penis noticeably undulated in lateral view; base of shaft without process. Sclerotized articulatory plate of theca adjacent to base of shaft. In general appearance, similar to *M. notula*. 2.8-3.7, macropters up to 4.5. – Kamch., N Khab., Sakh., S Kur.; Yakutia. – ?Japan (Hokkaido, Honshu), Mongolia, Canada, USA (Alaska, Colorado). – On sedges in herbaceous swamps and reservoir banks. Late June to September. Imagines apparently overwintering. (Figs. 279: 14-17)
 ***M. flavus* Crawford [p. 372]**

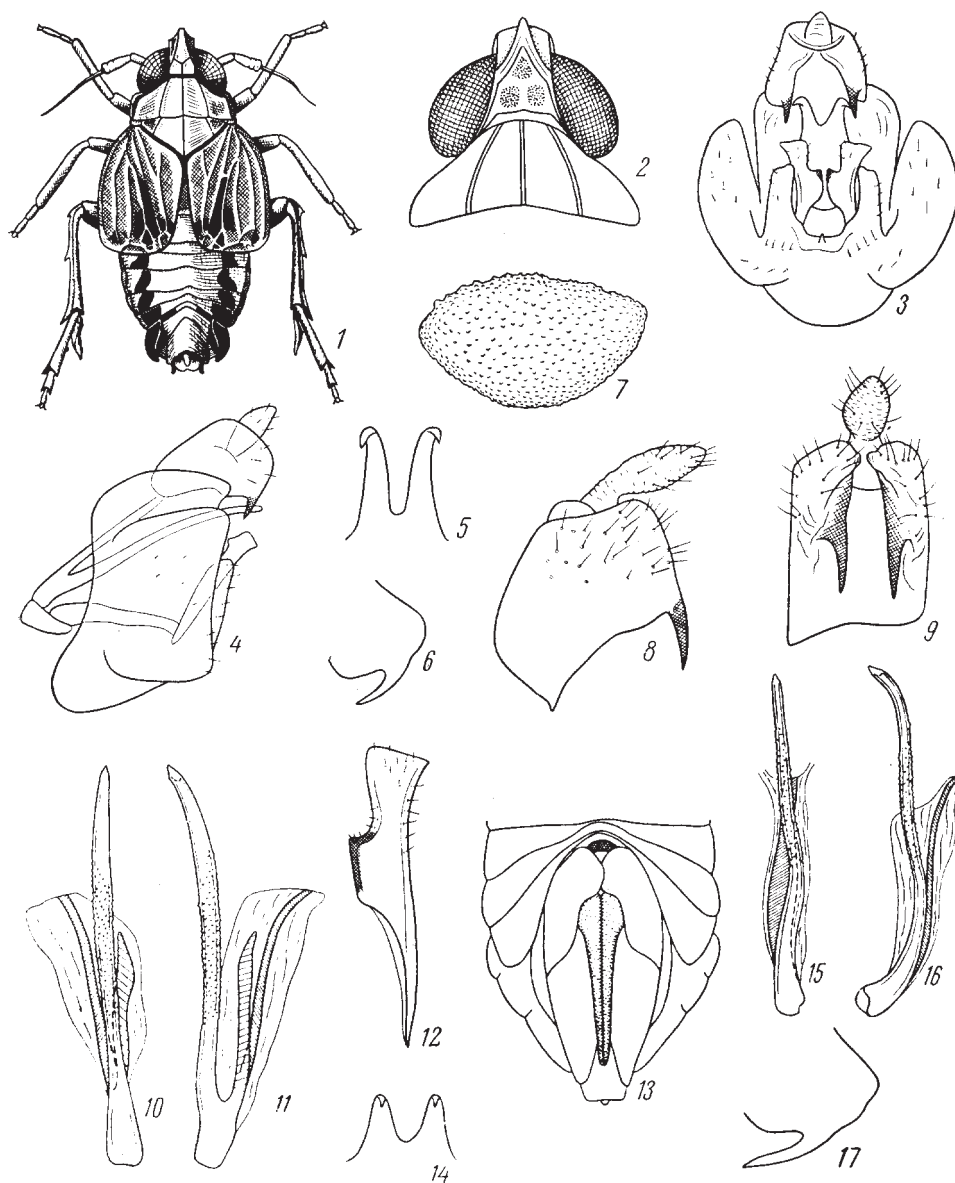


Fig. 279. Cicadines. Family Delphacidae, subfamily Delphacinae (after Anufriev, Ossiannilsson, Scudder, and Vilbaste).

1-13, *Megamelus notula*: 1, male; 2, anterior part of body; 3, 4, genital block of male (3, posterior view; 4, lateral view); 5, process of pygofer bridge; 6, process of anal tube, lateral view; 7, genital scale of female; 8, 9, anal tube (8, lateral view; 9, ventral view); 10, 11, penis (10, ventral view; 11, lateral view); 12, stylus; 13, female abdomen, ventral view; 14-17, *M. flavus*: 14, process of pygofer bridge; 15, 16, penis (15, ventral view; 16, lateral view); 17, process of anal tube, lateral view.

22. **Pastiroma** Dlab. Macrocorphe somewhat longer than wide, wider than transverse diameter of eye; its anterior margin gently convex. Eumetope about twice as long as wide, with somewhat convex lateral margins. Carinae on head slightly prominent; median carina of head completely smoothed on the turn of eumetope into acrometope. Lateral carinae of disc of pronotum diverging backwards, slightly slanting and disappearing posteriorly, not reaching posterior margin of pronotum. In brachypters, fore wings rounded at apex, reaching middle part of abdomen. Posttibial spur with about 10 lateral denticles. Male. Pygofer with deep dorsal [p. 373] excision smoothly turning into lateral lobes of posterior edging and with narrower and less large ventral excision. Anal tube with widely spaced, strong, tooth-shaped processes ventrally. Bridge of pygofer projecting dorsally backwards in the shape of a knob. Styli thickened at base and smoothly narrowing to blunt apex, diverging obliquely upwards. Aedeagus compressed laterally, bearing 7-9 recurrent teeth; gonopore on the right side, subapical. In USSR 3 species. *P. transbaicalica*, which may be found in the Far East, is included in the key.

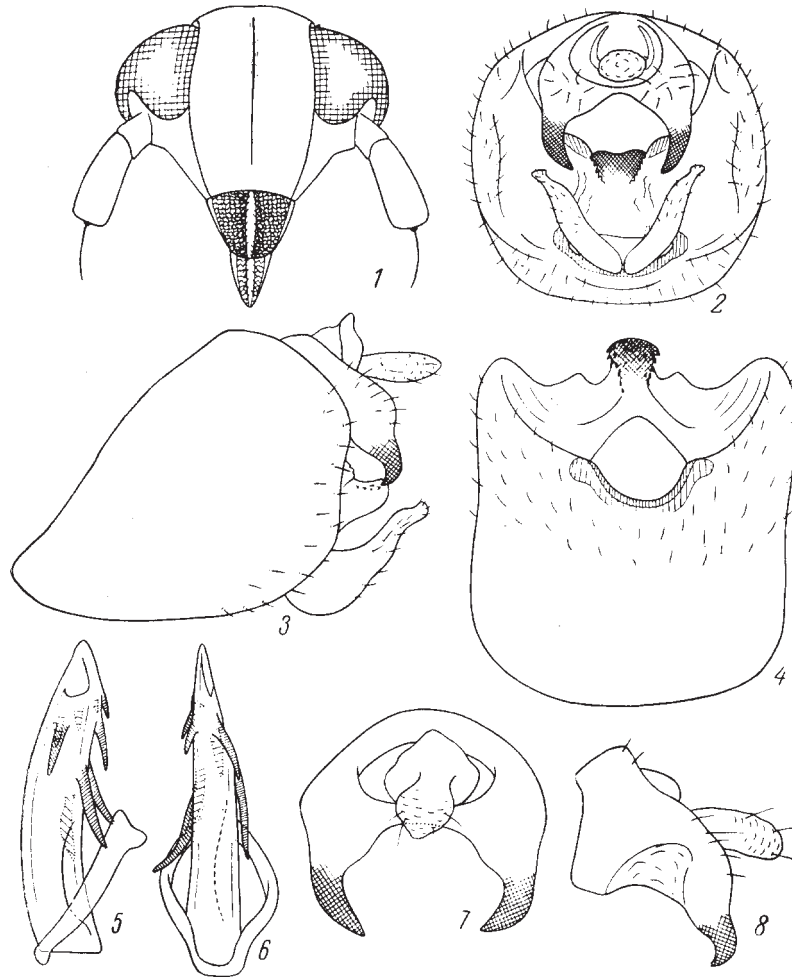


Fig. 280. Cicadines. Family Delphacidae, subfamily Delphacinae (after Anufriev and original).

1-8, *Pastiroma transbaicalica*: 1, face; 2, 3, genital block of male (2, posterior view; 3, lateral view); 4, pygofer, ventral view; 5, 6, penis (5, lateral view; 6, ventral view); 7, 8, anal tube (7, posterior view; 8, lateral view).

1. Anal tube with apices of processes slightly slanting inwards. Aedeagus with 9 teeth. Yellowish brownish. Postclypeus dark brown to black. In male, also basal part of fore and middle coxae, episterna of metathorax and lateral parts of abdomen darkened. 1.6-2.4, macropters up to 3.7. – C Yakutia, Transbaikal. – Mongolia. – In dry meadows. Early June to mid-August. (Figs. 280: 1-8) **P. transbaicalica** Kusn.

23. **Elachodelphax** Vilb. Macrocorphe somewhat longer than wide. Eumetope 2.5 times as long as wide, with slightly convex sides. Carinae distinct on head, but weakened on the turn of eumetope into acrometope; median carina [p. 374] branching already in upper part of eumetope (at the beginning of smooth turn into acrometope). Lateral carinae of disc of pronotum slanting outwards posteriorly and disappearing beyond eyes, running parallel to posterior margin of pronotum. In brachypters, fore wings shorter than abdomen and more or less rounded at apex. Posttibial spur with about 13 lateral denticles and without apical denticle. Male. Pygofer with gentle, weakly expressed dorsal excision and an even edging weakened ventrally. Bridge of pygofer with thick carina-shaped projection covered with small teeth below. Anal tube short, large, with long, widely spaced teeth running downwards and slightly diverging. Styli small, strongly narrowing in middle part due to step on medial margin, somewhat widened before apex and truncate at apex. Penis more or less symmetrical; aedeagus thickened ventrally at base, bearing not numerous small teeth laterally, as a whole, slightly bent ventrad; gonopore ventral, subapical. – 1 species (the genus comprises 2 species, both occurring in USSR).

1. In male, head light brown, with speckled, blurred, brown pattern. Pronotum white; scutellum nearly black, with light edging at apex. Fore wings semihyaline, brownish. Abdomen dark brown, with light posterior margins of tergites. Venter and legs brownish; sides of mesonotum and metanotum dark brown. Females nearly entirely yellowish brownish. 1.9-2.6, macropters up to 3.8. – S Kur.; Transbaikal, Tuva. – C and E Mongolia. – In salt meadows. Early June to late August. (Figs. 281: 1-7) **E. metcalfi** Kusn. [p. 375]

24. **Niphisa** Em. Macrocorphe large, about as long as wide, with slightly convex anterior margin; width of macrocorphe noticeably greater than transverse diameter of eye. Eumetope with convex lateral margins diverging from clypeus to level of lower margins of eyes and less strongly narrowing between eyes; the greatest width of eumetope about 0.7 times its height. Eumetope with one carina disappearing in upper half, as head is more or less swollen there and in anterior half of macrocorphe, and more convex. Lateral carinae of disc of pronotum arcuate, diverging backwards and disappearing beyond eyes, not reaching posterior margin of pronotum. In brachypters, fore wings rounded truncate, reaching posterior half of abdomen. Posttibial spur about half as long as basal segment of hind tarsi; lateral denticles small, about 20 denticles; apical denticle somewhat larger, separated from lateral denticles by interspace. Male. Pygofer somewhat compressed laterally; its lateral edging without a cut, with a shallow smooth excision below. Pygofer broken on midline dorsally before anal tube, and posterior margin of pygofer looks like acutangled excision. A black, well separated, triangular sclerite present between anal tube and pygofer. Anal tube narrow, high, with robust, closely approximate processes ventrally; apices of processes slanting forward. Styli small, combined ovenprong-shaped, with slightly widened and transversely truncate apices. Aedeagus straight, asymmetrical, with an even dorsal ridge in basal part and denticulate ridge at apex, on the left side. Gonopore ventral, subapical. Monotypic genus.

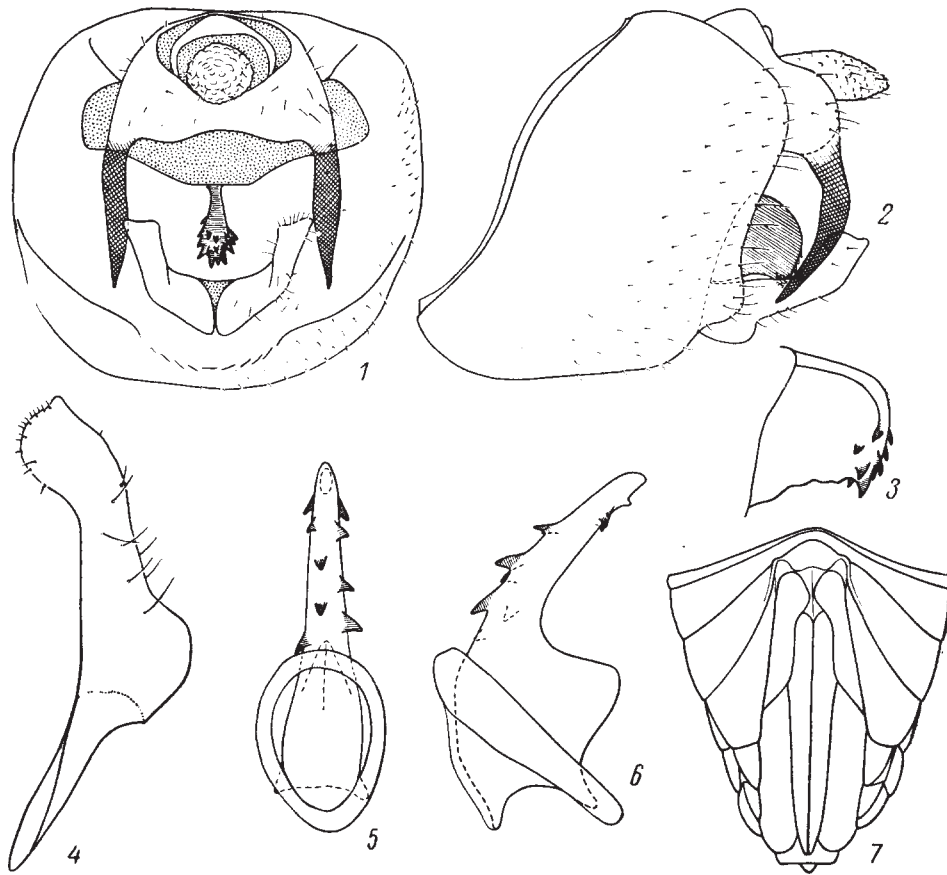


Fig. 281. Cicadines. Family Delphacidae, subfamily Delphacinae (original).

1-7, *Elachodelphax metcalfi*: 1, 2, genital block of male (1, posterior view; 2, lateral view); 3, process of pygofer bridge, lateral view; 4, stylus, lateral view; 5, 6, penis (5, dorsal view; 6, left lateral view); 7, female abdomen, ventral view.

1. White or whitish, with waxy pruinosity and mostly dim brown pattern. Macrocorphe with black round spot in the middle posteriorly; episterna of mesothorax also with distinct black spot. A single brown stripe running on pronotum, scutellum, suture of fore wings and abdomen. Fore wings, in addition, with brown stripes along costal field and along claval suture. Abdomen, in addition, with brown stripes on margins of tergites, ending by a dark brown spot on male pygofer. Anal stub black. In macropters, scutellum reddish brown, with dark triangular small spots in lateral angles. 2.3-3.3, macropters up to 5.1. – ?Mag.; C Yakutia, Transbaikal. – Mongolia. – In herbaceous swamps, in river flood plains and along brooks. Mid-June to early August. (Figs. 282: 1-7) **N. candens** Em.

25. **Oncodelphax** W. Wagn. Macrocorphe about as wide as long. Eumetope less than twice (1.7 times) as long as wide, with somewhat convex lateral margins. Carinae on head sharp, but median carina smoothed on the turn of eumetope into acrometope. Lateral carinae of disc of pronotum slanting outwards posteriorly and not reaching posterior margin of pronotum. Fore wings in brachypters rounded truncate posteriorly. Posttibial spur relatively long, with 12-17 lateral denticles; apical denticle

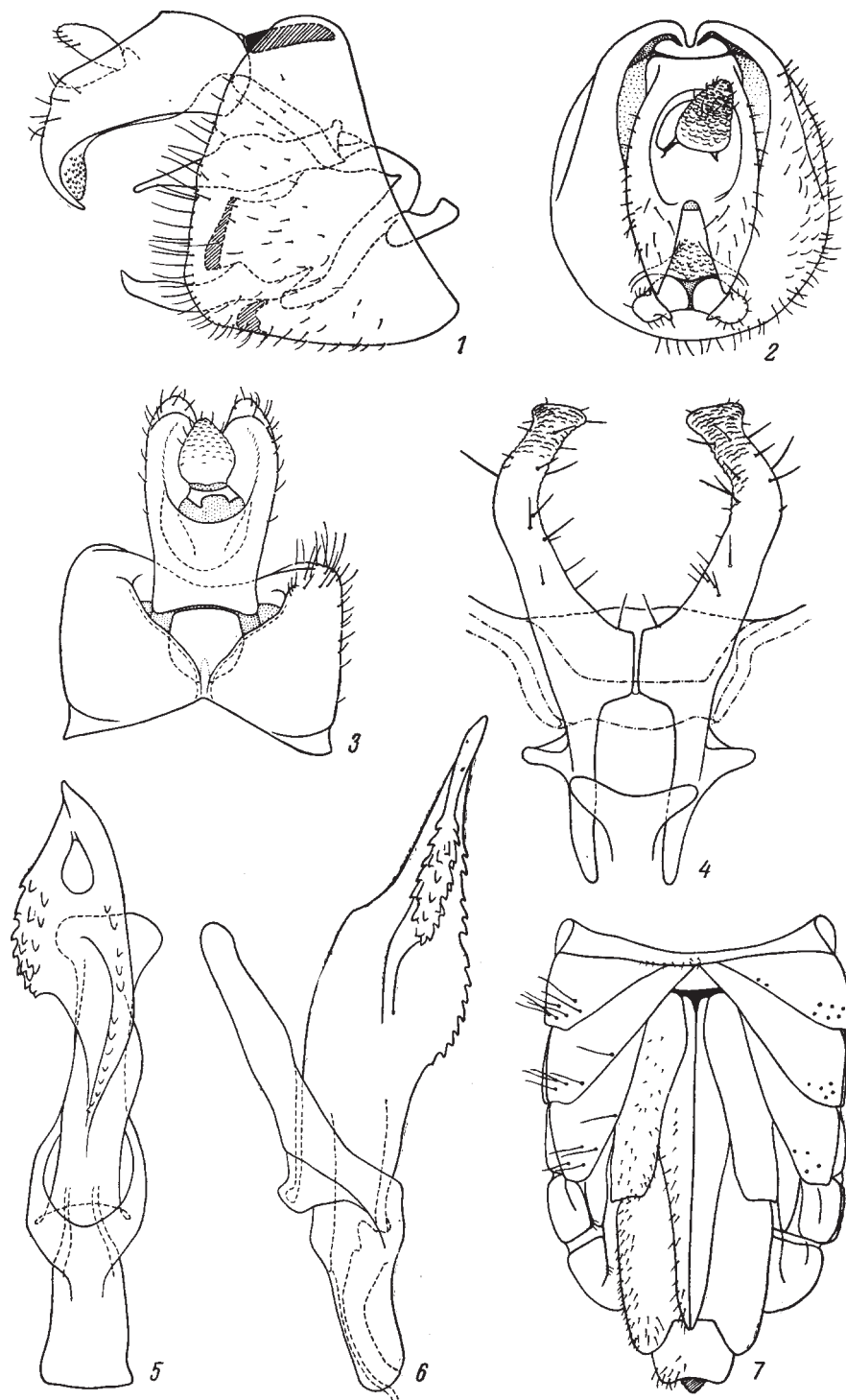


Fig. 282. Cicadines. Family Delphacidae, subfamily Delphacinae (original).

1-7, *Niphisa candens*: 1-3, genital block of male (1, lateral view; 2, posterior view; 3, dorsal view); 4, styli, posterior view; 5, 6, penis (5, ventral view; 6, lateral view); 7, female abdomen, ventral view.

small. Male. Pygofer high, compressed laterally, its lateral edging without a cut. Anal tube with thick, long, approximate teeth, apices of which slanting forward. Styli small, widened and bifurcate at apex. Aedeagus more or less straight, elongate, with ventrobasal thickening and teeth situated asymmetrically in middle and apical parts. Gonopore ventral, subapical. – 1 species (in USSR 2).

1. Upper margin of pygofer bridge with excision. Integument entirely reddish brown, glossy; females without pattern; males with darkened lateral walls of pygofer. 1.6-1.9. – Amur.; Chita Prov. – In peatbogs on sedges. July. (Figs. 283: 7-9) **O. micula** Em.

26. **Ceranisa** Em. Macrocorphe about as wide as long. Eumetope less than twice (about 1.7 times) as long as wide, with somewhat convex lateral margins. Carinae on head sharp, but median carina smoothed on the turn of eumetope into acrometope. Lateral carinae of disc of pronotum slanting outwards posteriorly and not reaching posterior margin of pronotum. Fore wings in brachypters rounded truncate posteriorly. [p. 377] Posttibial spur relatively large, with 10-12 lateral denticles; apical denticle not large. Male. Pygofer rounded posteriorly; its lateral edging without a cut. Anal tube with spaced thick teeth; apices of teeth somewhat slanting forward. Styli long, diverging from bases and then running upwards, narrowing to apices; apices slightly slanting outwards. Theca T-shaped dorsally. Aedeagus with a pair of subapical recurrent denticulate processes and a robust dorsal process running parallel to shaft. Monotypic genus.

1. The whole integument reddish brown, glossy; in male, abdomen dark brown; in female, sides of tergites and median dorsal carina of abdomen slightly darkened. 1.5-2.2. – C Yakutia. – N Mongolia. – Early July. (Figs. 283: 1-6) **C. improvisa** Em.

27. **Calligypona** J. Sahlb. Large. Macrocorphe somewhat longer than wide. Eumetope more than twice as long as wide; its sides slightly [p. 378] convex; lower part somewhat wider than upper part. Median frontal carina becomes bifurcate on the turn of eumetope into acrometope. Lateral carinae of disc of pronotum diverging backwards but mostly straight, slanting outwards and disappearing posteriorly, not reaching posterior margin of pronotum. Fore wings in brachypters obliquely rounded truncate posteriorly, reaching about the middle of abdomen in females and about anterior margin of pygofer in males. Posttibial spur as long as basal segment of hind tarsi, bearing about 25 lateral denticles arranged in 2-3 not quite regular rows. Male. Pygofer compressed laterally. Anal tube with spaced lateral teeth. Styli long, parallel-sided, with truncate apices, running upwards more or less parallel to each other. Aedeagus moderately arcuate, bent dorsad, slightly asymmetrical, with right and dorsal rows of denticles. Monotypic genus.

1. Head dark brown to black; coryphe brown; carinae mostly of the same color as adjacent parts, but lateral carinae of eumetope in lower part and median carina entirely light. In male, pronotum dorsally white, in female, brown, lateral lobes blackened. Scutellum black in male and brown in female. Fore wings brownish, semihyaline. Abdomen brown, with dark brown posterior margins of tergites in female; in male, abdomen dark brown to black, posterior margins of tergites light, tergites I-II entirely yellowish whitish, visible through fore wings. 2.9-4. – Prim; Middle Asia (Tien Shan). – Europe, Mongolia. – In near-water habitats, with *Phragmites*, *Scirpus*, *Typha*. Early July to late August. (Figs. 284: 1-8) **C. reyi** Fieb.

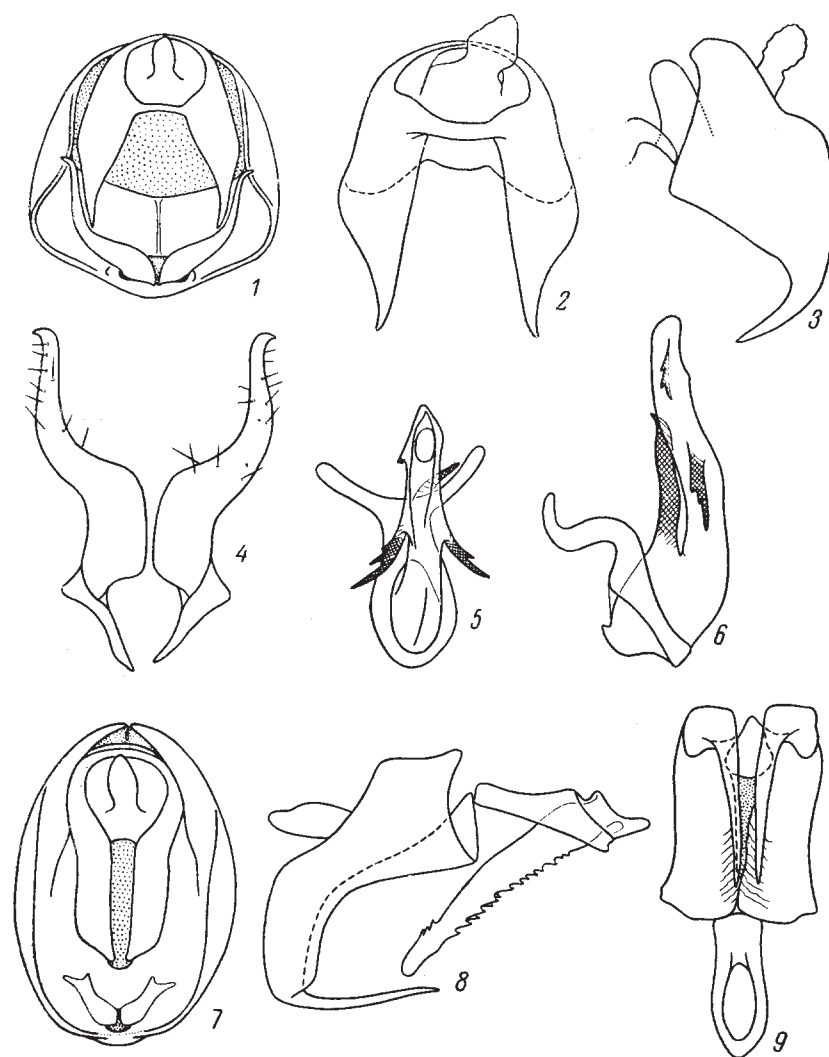


Fig. 283. Cicadines. Family Delphacidae, subfamily Delphacinae (after Emeljanov and original).

1-6, *Ceranisa improvisa*: 1, genital block of male, posterior view; 2, 3, anal tube (2, posterior view; 3, lateral view); 4, styli, posterior view; 5, 6, penis (5, posterior view; 6, left lateral view); 7-9, *Oncodelphax micula*: 7, genital block of male, posterior view; 8, anal tube and penis, lateral view; 9, anal tube and phallosome, ventral view.

28. **Paradelphacodes** W. Wagn. Relatively slender; macrocoryphe noticeably longer than wide, narrower than transverse diameter of eye. Eumetope more than twice as long as wide. Carinae sharp, but more or less smoothed on the turn of eumetope into acrometope. Pronotum wider than head; its disc with diverging backwards and bent outwards carinae not reaching its posterior margin. In brachypters, fore wings reaching apex of abdomen or somewhat shorter. Posttibial spur with 19-28 lateral denticles and, somewhat [p. 379] apart of them, apical denticle. Male. Pygofer cylindrical, with well developed, not interrupted edging; lower margin of pygofer with projection posteriorly in the middle. Anal tube with a pair of processes ventrally approximate, nearly close to each other, or widely spaced. Bridge of pygofer without teeth. Styli weakly diverging, with a widening in apical or middle part. Aedeagus asymmetrical, weakly bent dorsad. Gonopore ventral, subapical. The genus comprises 4 species.

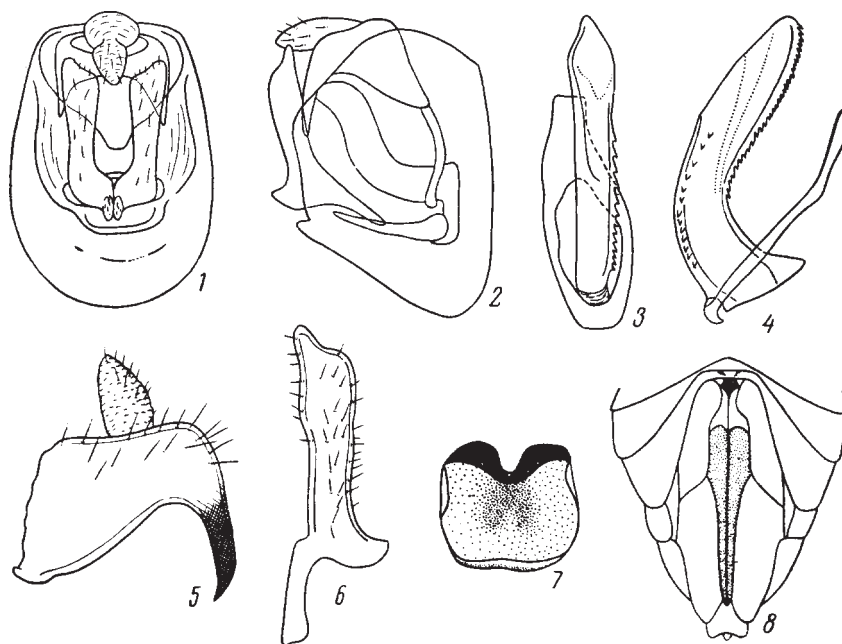


Fig. 284. Cicadines. Family Delphacidae, subfamily Delphacinae (after Ossiannilsson and Vilbaste).

1-8, *Calligypona reyi*: 1, 2, genital block of male (1, posterior view; 2, lateral view); 3, 4, penis (3, ventral view; 4, right lateral view); 5, anal tube, lateral view; 6, stylus; 7, genital scale of female; 8, female abdomen, ventral view.

1. Styli with wide, broken truncate apex 2
- Styli with narrow, attenuate apex, which is thickened, clavate at end. – Brown, more or less without distinct pattern; face somewhat darker than other parts; scutellum black in macropters; females lighter; in males, abdomen dark brown, with light stripe dorsally along middle part. Fore wings reaching the middle of abdomen in macropterous females and base of pygofer in males. 2.3-2.6, macropters 2.7. – Kamch., S Khab., Prim., S Kur. – E Mongolia. – Herbaceous swamps, swamping river flood plains. Mid-June to mid-August. (Figs. 286: 1-5) ..
..... **P. orientalis** Anufr.
2. Bases of processes of anal tube approximate. Apex of aedeagus rounded. Brown, without expressed pattern; abdomen in male darkened stronger, except blurred stripe along midline dorsally. Fore wings somewhat shorter than abdomen in brachypters. 1.9-3, macropters up to 4. – Kamch., S Khab., Amur., Prim., S Sakh., S Kur.; Transbaikal, Altai, Middle Asia (in mountains). – Japan, Korea, China (Jilin, Shandong, Hubei, Anhui, Jangsu, Jiangxi), Mongolia, Afghanistan, Europe. – In marshes. Early June to mid-August. (Figs. 286: 6-14) **P. paludosus** Fl.
- Bases of processes of anal tube widely spaced. Apex of aedeagus pointed in the shape of separate tooth, under which a comb of denticles (typical of other species of genus also) is situated 3
3. Excision of middle part of upper margin of pygofer bridge more or less parabolic. Apices of styli moderately widened. Tooth at apex of aedeagus small; row of denticles on the right side of aedeagus long, nearly reaching theca. Light brown; venter and abdomen brown to dark brown in male. Metope darkened between carinae, from brown to nearly dark brown. Pronotum somewhat lighter, with dark

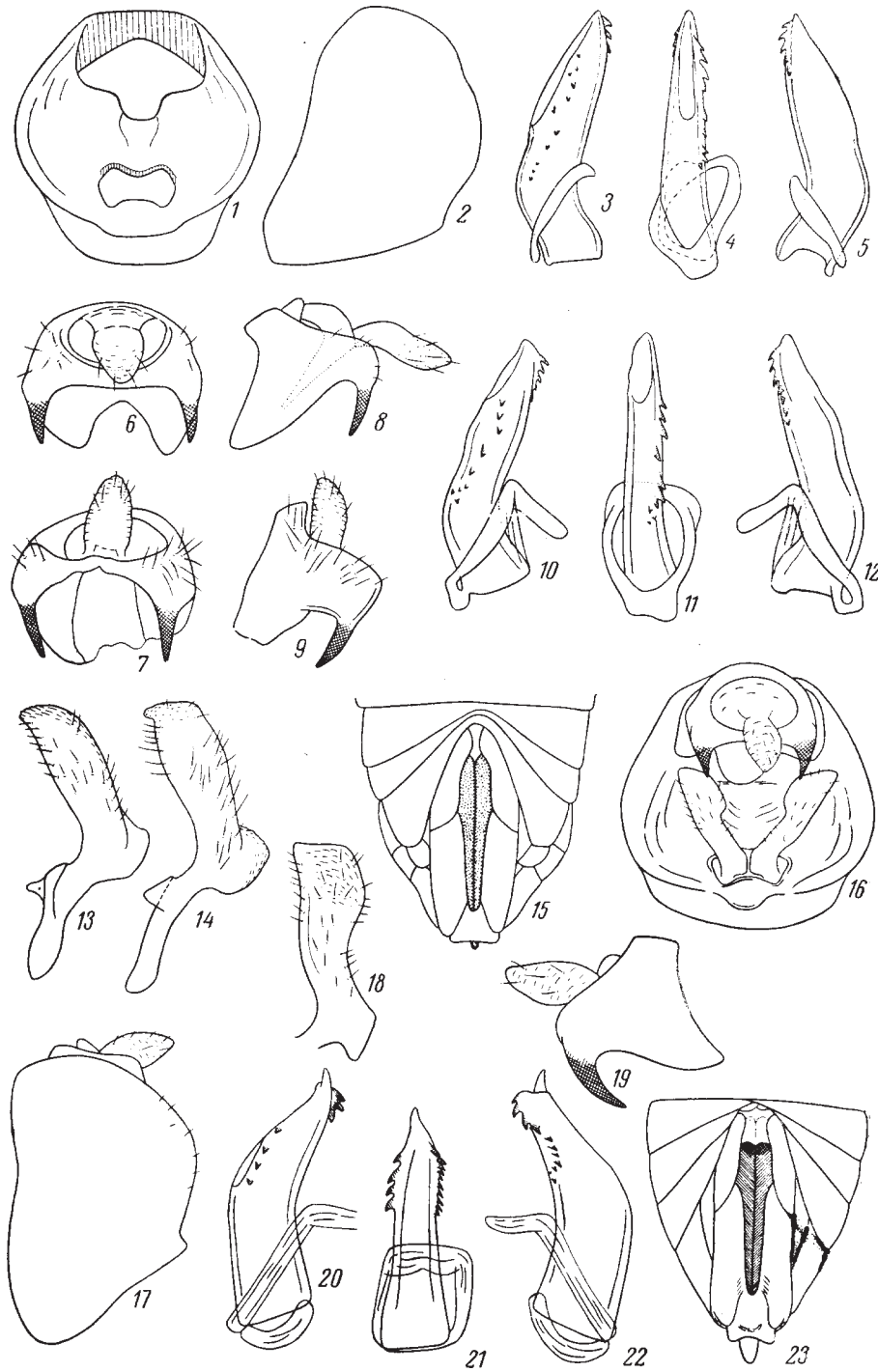


Fig. 285. Cicadines. Family Delphacidae, subfamily Delphacinae (after Anufriev, Ossiannilsson, and Vilbaste).

1-15, *Paradelphacodes litoralis*: 1, 2, pygofer (1, posterior view; 2, lateral view); 3-5, 10-12, penis (3, 10, right lateral view; 4, 11, ventral view; 5, 12, left lateral view); 6-9, anal tube (6, 7, posterior view; 8, 9, lateral view); 13, 14, stylus; 15, female abdomen, ventral view; 16-23, *P. tengaicus*: 16, 17, genital block of male (16, posterior view; 17, lateral view); 18, free part of stylus; 19, anal tube, lateral view; 20-22, penis (20, right lateral view; 21, dorsal view; 22, left lateral view); 23, female abdomen, ventral view.

spot on sides. In macropterous males, scutellum darkened, fore wings semihyaline; in females, vertex, pronotum and scutellum dark brown, fore wings brownish, with darker veins. 2.1-3.2, macropters 3.5-4.3. – NE Yakutia (Verkhoyansk), Buryatia. – N Europe (Scotland, S Finland). – In marshes, in particular in hillock bogs. Mid-June to late July. (Figs. 285: 1-15) **P. litoralis** Reut.

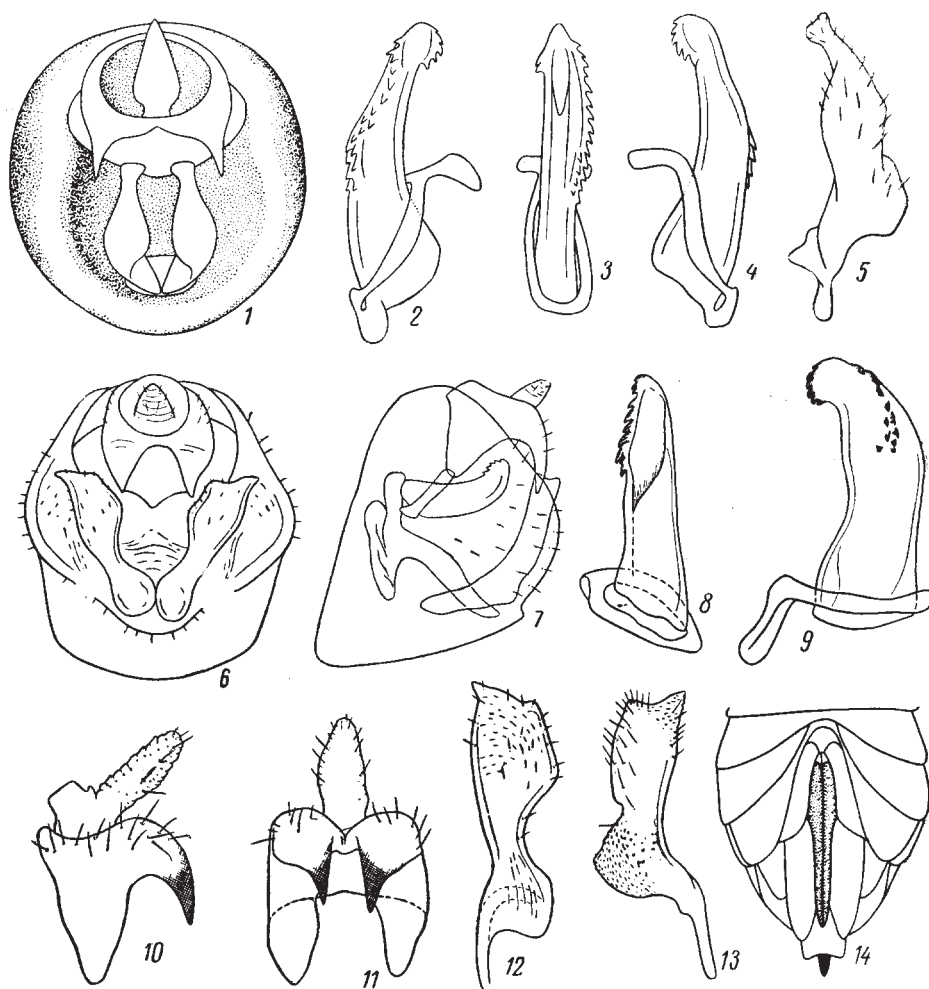


Fig. 286. Cicadines. Family Delphacidae, subfamily Delphacinae (after Anufriev, Ossiannilsson, and Vilbaste).

1-5, *Paradelphacodes orientalis*: 1, genital block of male, posterior view; 2-4, penis (2, right lateral view; 3, ventral view; 4, left lateral view); 5, stylus; 6-14, *P. paludosus*: 6, 7, genital block of male (6, posterior view; 7, lateral view); 8, 9, penis (8, ventral view; 9, left lateral view); 10, 11, anal tube (10, lateral view; 11, posterior view); 12, 13, stylus; 14, female abdomen, ventral view.

- Excision of middle part of upper margin of pygofer bridge more or less rectangular. Apices of styli considerably widened. Tooth at apex of aedeagus large; row of denticles on the right side of aedeagus short, situated only opposite gonopore. Dark brown, with light carinae on head; disc of pronotum whitish. Fore wings semihyaline in brachypters, in males, dark brown, darkened between veins *R* and *A*₁ on clavus; in females, fore wings with a spot or band, which is distinct at apex of clavus and blurring to costal margin, and also with darkened stripe along claval suture. Macropters with semihyaline cells, dark brown veins and spot between

posterior margin of wing and apex of claval vein. Abdomen dark brown, lighter in female than in male. 3-3.9, macropters up to 4.3. – Prim., S Kur.; Transbaikal, Altai. – Mongolia. – Swamping river and lake flood plains. Early June to late August. (Figs. 285: 16-23) **P. tengaicus** Vilb.

29. **Terthronella** Vilb. Macrocorphe noticeably longer than wide. Carinae of head thick, distinct along the whole length; median carina of eumetope becoming bifurcate on the turn into acrometope. Eumetope more than twice as long as wide; its sides situated lower than eyes, parallel, somewhat narrowing upwards between eyes. Carinae of disc of pronotum not reaching its posterior margin. In brachypters, fore wings [p. 381] rounded at apex and reaching the middle of abdomen in female and about anterior margin of pygofer in male. Posttibial spur with about 17 denticles, including the apical denticle. Male. Pygofer strongly bevelled ventrad posteriorly; lateral margins of its edging ending dorsally by blunt, lobe-shaped projections lateral to anal tube and somewhat convex, projecting in the middle part of pygofer sides. Anal tube without processes, with a pair of sclerotized longitudinal ribs. Styli running nearly parallel, straight, with apices somewhat widened to each other, L-shaped and straightly truncate. Aedeagus slender, nearly straight, with large recurrent ventral process slightly slanting to the right. Gonopore subapical, on the right side of shaft. Monotypic genus.

1. Males dark brown to black, with light to white pattern. Head and pronotum with white carinae; anteclypeus light brown; disc of pronotum entirely white or with white posterior margin. Fore wings nearly hyaline, with oblique brown band in distal half of corium; anterior margin of the band parallel [p. 382] to scutellum, posterior margin transverse. White metanotum and dark abdomen visible through wings. Abdomen with light specks on sides of tergites and light posterior margins of segments. Females paler, brown, without sharply expressed pattern, but pattern of fore wings only somewhat paler than in males. 2.4-2.8, macropters up to 3.6. – Khab., Prim., S Sakh., S Kur.; Chita Prov., S Krasnoyarsk Terr., N Kazakhstan. – Korea, Mongolia. – In swamp meadows and herbaceous swamps in river flood plains. Mid-June to early September. (Figs. 287: 1-9) **T. basalis** Mats.

30. **Verriculus** Em. Head, pronotum and scutellum with distinct carinae, which are smoothed only on the turn of eumetope into acrometope. Macrocorphe slightly longer than wide. Eumetope about twice as long as wide in the middle, slightly narrowing upwards and downwards. Lateral carinae of disc of pronotum slightly slanting outwards and disappearing before posterior margin. In brachypters, fore wings rounded at apices, reaching abdominal tergites IV-V. Posttibial spur with 5-7 denticles, including apical denticle. Male. Pygofer cylindrical; its posterior wall bevelled downwards; dorsal excision for anal tube wide and deep; edging of pygofer ending by small lobes lateral to dorsal excision. Anal tube with teeth spaced at bases, approximate apically, connected by sclerotized narrow bridge. Styli slightly diverging, with slightly widened and straightly truncate apices. Aedeagus straight, approximately symmetrical, with lateral rows of teeth in the middle part and 2 teeth, one after the other, dorsally before apex. Gonopore ventral, subapical. Monotypic genus.

1. Light brown; in males, abdomen and pleura of metathorax darkened. 1.9-2.4. – Mag.; C and NE Yakutia. – N Mongolia. – In herb layer under canopy of taiga [p. 383] forests, in their edges and glades. Late June to early July. (Figs. 288: 1-5) **V. molestus** Em.

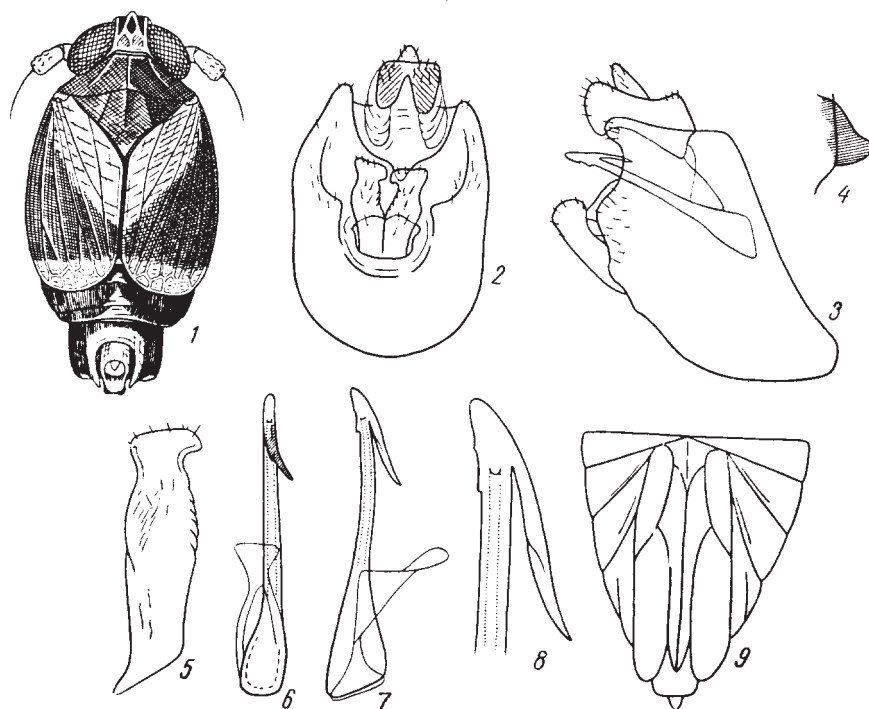


Fig. 287. Cicadines. Family Delphacidae, subfamily Delphacinae (after Vilbaste and original).

1-9, *Terthronella basalis*: 1, male; 2, 3, genital block of male (2, posterior view; 3, lateral view); 4, projection of pygofer bridge, lateral view; 5, stylus; 6, 7, penis (6, dorsal view; 7, right lateral view); 8, apex of penis, right lateral view; 9, female abdomen, ventral view.

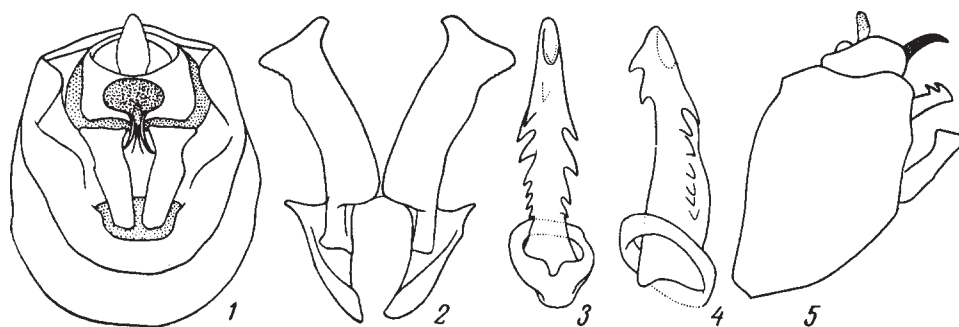


Fig. 288. Cicadines. Family Delphacidae, subfamily Delphacinae (after Emeljanov and original).

1-5, *Verriculus molestus*: 1, genital block of male, posterior view; 2, styli; 3, 4, penis (3, ventral view; 4, lateral view); 5, genital block of male, lateral view.

31. *Muellerianella* W. Wagn. Macrocorphe about square. Eumetope about 3 times as long as wide; its lateral margins slightly convex; median carina becoming bifurcate in upper part before the turn into acrometope. Lateral carinae of disc of pronotum slanting outwards posteriorly and not reaching posterior margin. In brachypters, fore wings rounded at apices. Posttibial spur with 15-20 lateral denticles. Male. Posterior wall of pygofer strongly bevelled ventrad, dorsal excision of posterior margin deep; lateral edging projecting dorsally in the shape of acutangular wedge-shaped lobes; lateral edging widely and deeply arcuate between these lobes; the excision also

delimited by small projection below. Anal tube without processes. Styli flat, wide, truncate at apices, running more or less together obliquely backwards and upwards. Aedeagus L-shaped, bent ventrad; its very apex slanting dorsad; a long process running along shaft from bend; 2 short processes distal to the long process. Gonopore ventral, subapical. – 1 species (the genus comprises 4 species, in USSR 3 species).

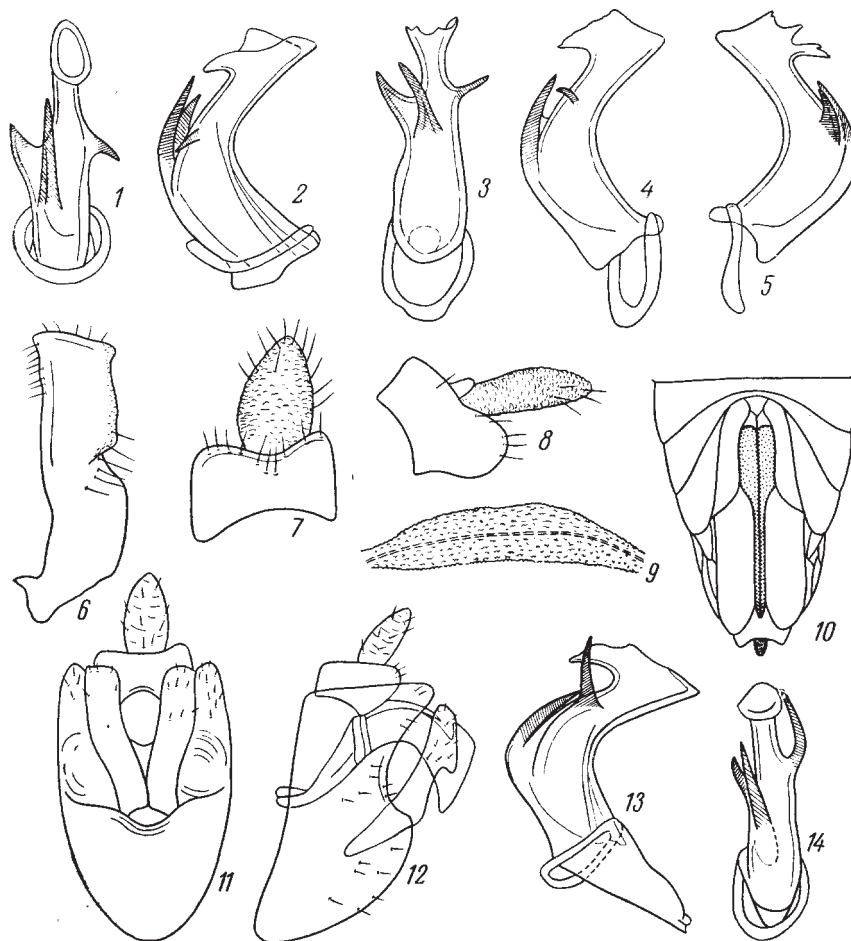


Fig. 289. Cicadines. Family Delphacidae, subfamily Delphacinae (after Ossiannilsson and Vilbaste).

1-10, *Muellerianella fairmairei*: 1-5, penis (1, 3, dorsal view; 2, 4, left lateral view; 5, right lateral view); 6, stylus; 7, 8, anal tube (7, posterior view; 8, lateral view); 9, reduced genital scale of female, ventral view; 10, female abdomen, ventral view; 11-14, *M. extrusa*: 11, 12, genital block of male (11, posterior view; 12, lateral view); 13, 14, penis (13, left lateral view; 14, dorsal view).

1. The left process of aedeagus directed to its base. Ratio of width of head across eyes to length of hind tibia is 0.65-0.77 in females. Light brown, nearly without pattern. Eumetope sometimes slightly darkened in males, with light small spots; sides of pronotum, sides of scutellum, fore wings and sides of abdominal tergites darkened. In addition, typically darkened are: anal stub, styli and sides of posterior wall of pygofer in the middle part. 2.2-3.3, macropters 3.6-4.8. – W Europe. – Was recorded from E Asia (Prim., S Kur., Japan, NE China) apparently as a result of confusing with *M. extrusa*. In Europe, on *Holcus mollis* and *H. lanatus* in moist meadows, glades, in shrubberies, near roads. June to September. (Figs. 289: 1-10)

..... *M. fairmairei* Perris

- The left process of aedeagus directed to its apex. Ratio of width of head across eyes to length of hind tibia is 0.75-0.89 in females. Similar to *M. fairmairei*. 2.1-2.8, macropters 3.5-4.2. – Prim., S Kur. – ?Japan, ?NE China, Europe. – In marshes and in herb layer of moist forests on poor acid soil. In Europe, on *Molinia caerulea*. July to September. (Figs. 289: 11-14) **M. extrusa** Perris

32. **Acanthodelphax** LeQuesne. Macrocorphe noticeably shorter than wide, with rounded anterior margin. Eumetope about twice as long as wide; its lateral margins slightly convex; median carina becomes bifurcate on the turn into acrometope and strongly smoothed there. Lateral carinae of disc of pronotum rather strongly diverging backwards, bending outwards and disappearing before posterior margin. In brachypters, fore wings strongly shortened and straightly rounded truncate posteriorly. [p. 384] Posttibial spur not more than with 5-6 denticles on lateral margin; apical denticle more weakly developed than the rest of denticles or absent. Male. Pygofer with not interrupted lateral edging forming small projections lateral to anal tube, and bearing a strong projection below, which is delimited on sides by small excisions. Anal tube more often with spaced, short, knob-shaped projections. Styli small, narrowing to widened capitate apices, diverging, forming an acute angle. Upper margin of pygofer bridge with a pair of lobe-shaped projections. Aedeagus moderately arcuate, bent ventrad, with a pair of not quite symmetrical recurrent processes. Gonopore apical, slightly bevelled to the left side. – 1 species (in USSR 3).

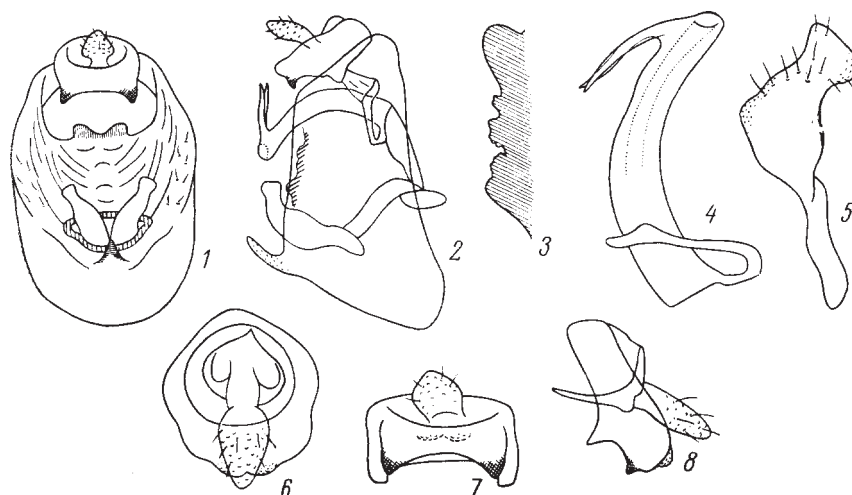


Fig. 290. Cicadines. Family Delphacidae, subfamily Delphacinae (after Anufriev and Vilbaste).

1-8, *Acanthodelphax transuralica*: 1, 2, genital block of male (1, posterior view; 2, lateral view); 3, bridge of pygofer, lateral view; 4, penis, left lateral view; 5, stylus; 6-8, anal tube (6, dorsal view; 7, posterior view; 8, lateral view).

1. Head, pronotum, scutellum and fore wings light, brownish; abdomen dark brown to black; fore wings translucent; females often entirely light brown or yellowish brown. 1.9-2.3. – Mag.; Yakutia, Tuva, Perm Prov. – Mongolia. – Marshes, swamping forest habitats. Mid-June to mid-July. (Figs. 290: 1-8) **A. transuralica** Anufr. [p. 385]

33. **Hyledelphax** Vilb. Macrocorphe somewhat longer than wide. Eumetope about twice as long as wide, with somewhat convex margins. Carinae of head distinct; median carina of metope becoming bifurcate on the turn of eumetope into acro-

metope. Lateral carinae of disc of pronotum not reaching posterior margin of pronotum, slanting outwards posteriorly. In brachypters, fore wings short, truncate posteriorly. Posttibial spur relatively small, with about 14 lateral denticles. Male. Lateral edging of pygofer with wide and deep excision on sides. Anal tube with separate, robust processes. Styli with obliquely truncate, wide apices and robust basal projections protruding backwards. Aedeagus more or less straight, with asymmetrically situated, recurrent processes in apical half. Monotypic genus.

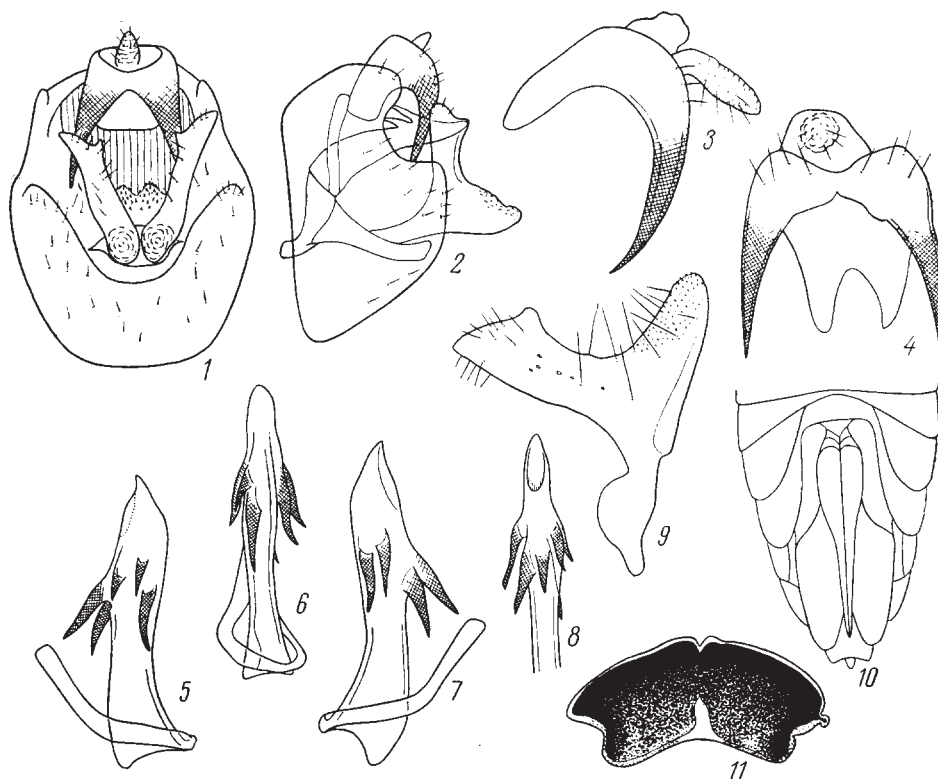


Fig. 291. Cicadines. Family Delphacidae, subfamily Delphacinae (after Ossiannilsson and Vilbaste).

1-11, *Hyledelphax elegantula*: 1, 2, genital block of male (1, posterior view; 2, lateral view); 3, 4, anal tube (3, lateral view; 4, posterior view); 5-7, penis (5, left lateral view; 6, ventral view; 7, right lateral view); 8, apex of penis, dorsal view; 9, stylus; 10, female abdomen, ventral view; 11, genital scale of female.

1. Head black, with light carinae, posterior part of genae and lora. Pronotum white, with a darkening beyond eyes. Scutellum black. Fore wings nearly hyaline, grayish. Abdomen dark brown to black, with brown small spots dorsally and a lightening on midline posteriorly. Females nearly without pattern, brown and light brown, with traces of blackening on head. 2-3.4, macropters up to 4. – Mag., Kamch, Khab.; Yakutia, Transbaikal, Kazakhstan. – Mongolia, Europe, N Africa. – In herb layer of light forests. Late June to August. (Figs. 291: 1-11) **H. elegantula** Boh.

34. **Megadelphax** W. Wagn. Head comparatively small; macrocoryphe noticeably longer than wide. Eumetope 2.5-3 times as long as wide; its sides more or less straight, parallel or slightly convex. Carinae on head sharp; median carina of eumetope becoming bifurcate on the turn into acrometope; lateral carinae of head slightly obtuse-angular concave on the turn into acrometope. Carinae of disc of pronotum not

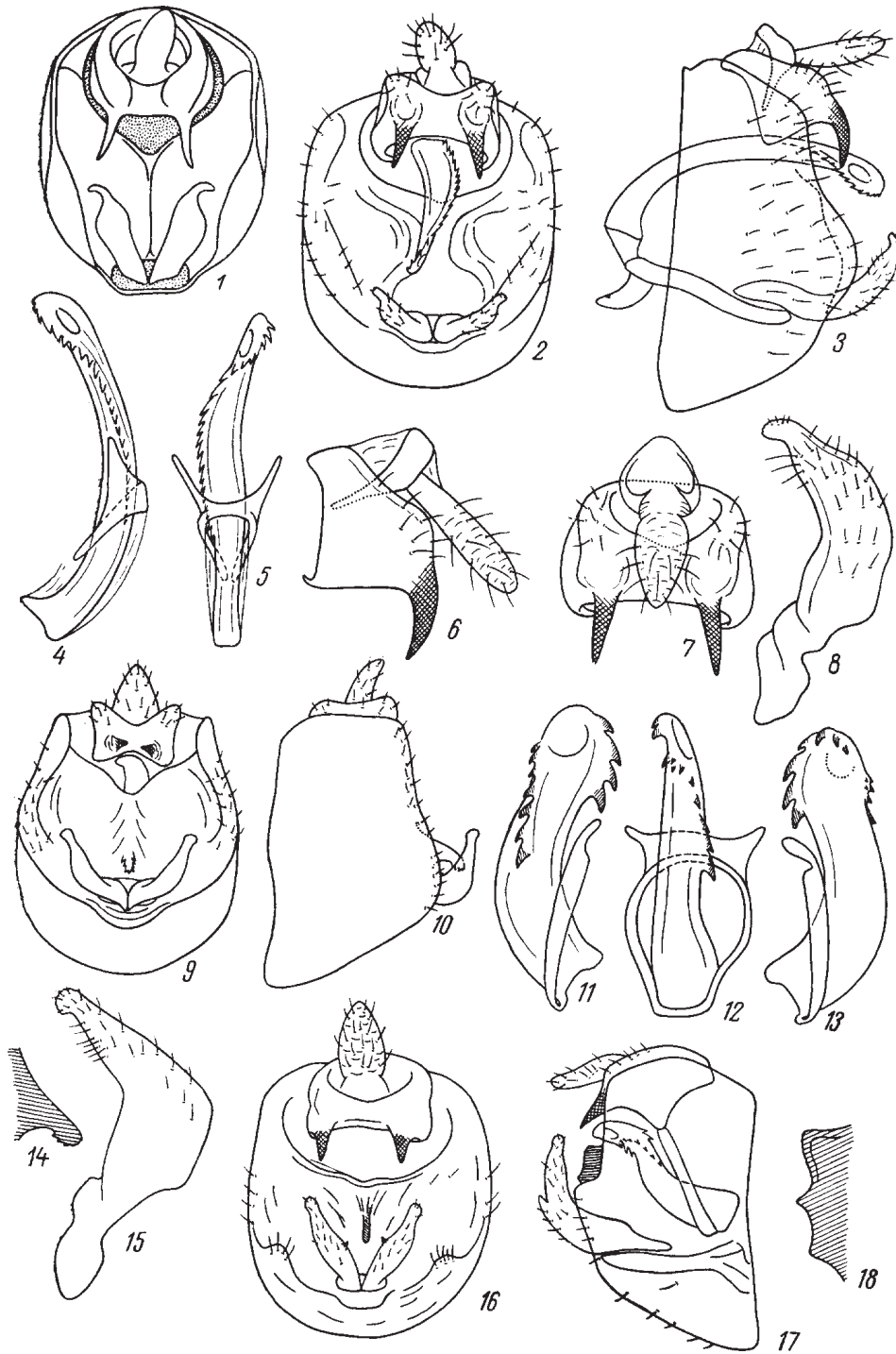


Fig. 292. Cicadines. Family Delphacidae, subfamily Delphacinae (after Anufriev, Emeljanov, Vilbaste, and original).

1-8, *Megadelphax vilbastei*: 1-3, genital block of male (1, 2, posterior view; 3, lateral view); 4, 5, penis (4, lateral view; 5, dorsal view); 6, 7, anal tube (6, lateral view; 7, posterior view); 8, stylus; 9-15, *M. kangauzi*: 9, 10, genital block of male (9, posterior view; 10, lateral view); 11-13, penis (11, right lateral view; 12, ventral view; 13, left lateral view); 14, median process of pygofer bridge, lateral view; 15, stylus; 16-18, *M. sordidula*: 16, 17, genital block of male (16, posterior view; 17, lateral view); 18, bridge of pygofer, lateral view.

reaching its posterior margin. In brachypters, fore wings usually rounded at apex and reaching the middle of abdomen. Postibial spur small, with 14-21 lateral denticles. Male. Pigofer slightly compressed laterally; dorsal excision distinct; lateral edging without a cut, but thicker in lower part than in upper part. Anal tube with a pair of separate teeth ventrally, which usually are parallel to each other. Bridge of pygofer often with median ridge, and with a projection on it in lower part. Styli becoming thinner to apex, with apices slightly thickened or (more rarely) narrowed and slanting laterad. Aedeagus moderately elongate, weakly bent dorsad, sometimes in that case apex slightly slanting ventrad; aedeagus with asymmetrical [p. 386] arrangement of combs of teeth and gonopore. Gonopore more or less ventral, subapical, sometimes noticeably shifted to the right. – 4 species (the genus comprises not less than 5 species).

1. Styli gradually narrowing to slightly thickened, capitate apex. (Subgenus *Megadelphax* W. Wagn.) 2
 - Styli more or less parallel-sided, but sharply narrowing before apex; the thin apex slanting laterad, forming a kind of excision between apex and thick part of shaft. (Subgenus *Polytropa* Em.). – Pale, whitish yellowish. Head with dark brown areas between carinae, except coryphe. Fore wings with contrasting dark brown spot at apex of clavus. In male, venter, legs and whole abdomen dark brown, middle parts of all abdominal tergites and posterior margins of posterior tergites light. 2.8-3.2. – S Prim.; E Chita Prov. – In herb layer of light birch forests. Mid-July. (Figs. 292: 1-8) **M. (P.) vilbastei** Em.
2. Processes of anal tube long, directed more or less downwards, parallel to each other 3
 - Processes of anal tube short, directed more or less transversely, to each other. – Carinae of head whitish, areas between them dark brown, only posterior pits of macrocoryphe light; in male, discs of pronotum and scutellum light, lateral parts brown, sides of pronotum whitish, fore wings light, semihyaline. In male, thoracic pleura, coxae and most part of abdomen dark brown, legs brown, middle parts of tergites with an uneven red-brown stripe widening backwards. In female, whole body, except head, without pattern, only black punctures noticeable on abdominal tergites. 2.9-3.4, macropters up to 4.9. – Amur., Prim.; [p. 388] Transbaikal. – Mongolia. – In moist meadows in river flood plains and near brooks. Late June to early August. (Figs. 292: 9-15) **M. kangauzi** Anufr.
3. Styli without subbasal medial small tooth 4
 - Styli with well developed subbasal medial small tooth. – Carinae on head light, interspaces brown; in male, carinae often edged by dark brown dim stripes. Thorax light brown dorsally. A whitish, not contrasting stripe running from posterior part of vertex through middles of discs of pronotum and mesonotum. Fore wings semihyaline, grayish or yellowish. In female, abdomen nearly always light, without pattern; in male, abdomen nearly black, with light small spots on midline of tergites and also between them on posterior segments. 3.2-4.4. Macropters up to 5.1. – Mag., Kamch.; C Yakutia, Transbaikal, Tuva, S Siberia, Kazakhstan, C Tien Shan. – Mongolia, Europe, N Africa. – In meadows with grasses. Late June to August. (Figs. 292: 16-18; 293: 1-8) **M. sordidula** Stål
4. Bridge of pygofer with median carina from upper to lower margin; carina projecting in lower part in the shape of a tooth. Dark brown, with light and white pattern, as dappled. Carinae on head and posterior pits of macrocoryphe light; areas between carinae dark brown; on midline of eumetope lobes, pigment weakened to reddish brown. Carinae of pronotum and scutellum light; [p. 389] sides of

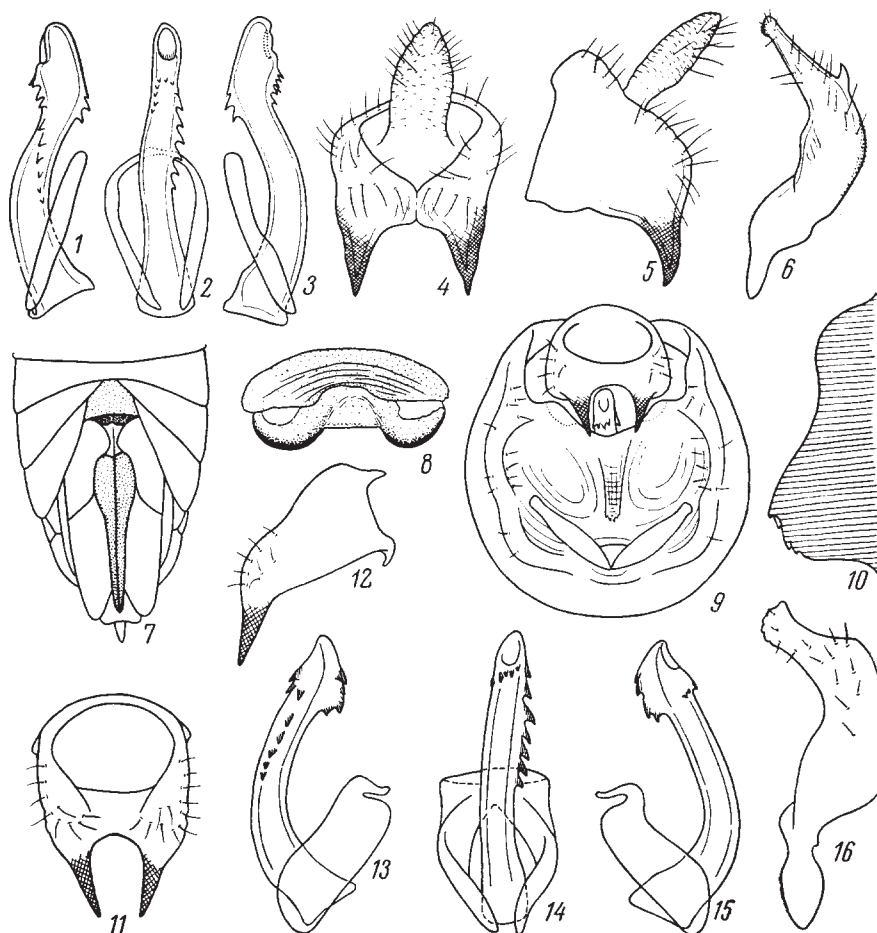


Fig. 293. Cicadines. Family Delphacidae, subfamily Delphacinae (after Ossiannilsson and original).

1-8, *Megadelphax sordidula*: 1-3, penis (1, right lateral view; 2, ventral view; 3, left lateral view); 4, 5, anal tube (4, posterior view; 5, lateral view); 6, stylus; 7, female abdomen, ventral view; 8, genital scale of female; 9-16, *M. cornigera*: 9, genital block of male, posterior view; 10, bridge of pygofer, lateral view; 11, 12, anal tube (11, posterior view; 12, right lateral view); 13-15, penis (13, right lateral view; 14, ventral view; 15, left lateral view); 16, stylus.

pronotum white; a white stripe running on midline from vertex to pronotum and scutellum. Fore wings semihyaline, grayish, with brownish stripe along furcate vein of clavus; marginal vein whitish, but apex of clavus slightly darkened. Abdomen dark brown, with light spots on midline, on sides, and also between these lines in female. Venter and legs dark brown, but pleura of mesothorax light. 2.1-3, macropters up to 4.1. – Amur; C Yakutia, Transbaikal, Tuva. – Mongolia. – In dry, mostly steppe meadows, in dry and sandy areas in light forests, woodless slopes of southern exposure, etc. Early June to late July. (Figs. 293: 9-16)

..... ***M. cornigera* Kusn.**

- Bridge of pygofer without carina in upper part, also projecting in the shape of carina in lower part. Lighter. In male, areas between carinae on metope brown, coryphe, pronotum and scutellum light brown with white carinae, sides of pronotum also white in upper part; fore wings light, semihyaline; abdomen dark

brown with light brown small spots. In female, pattern is developed only on head, the rest of body pale straw-yellow. 2.2-3, macropters up to 3.8. – ?Amur. – N Mongolia (Khangai, Khentei Mts.), S Sweden, Czechoslovakia. – In moist meadows. Mid-June to mid-July. (Figs. 294: 1-11) **M. haglundi** J. Sahlb.

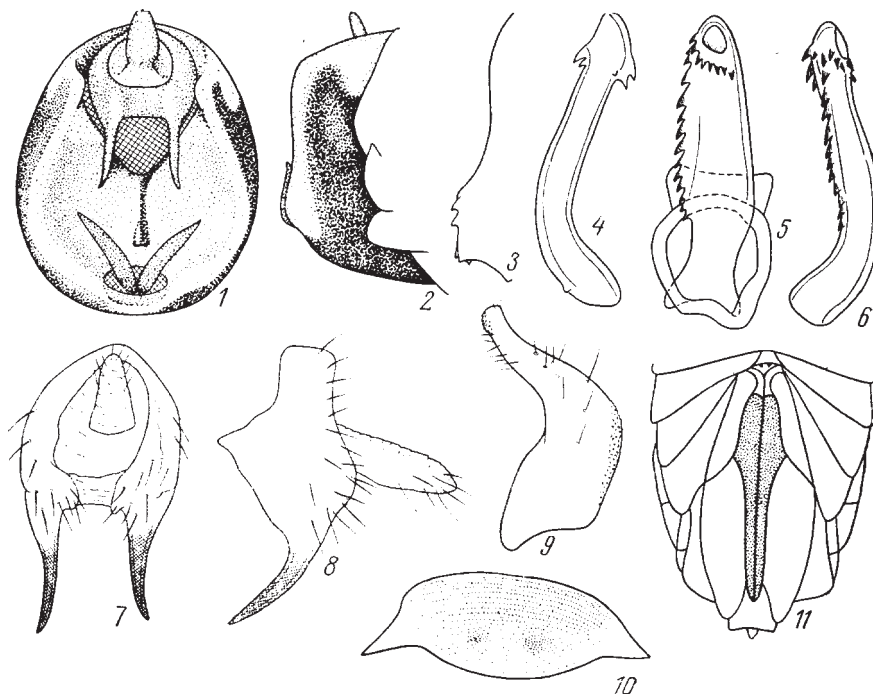


Fig. 294. Family Delphacidae, subfamily Delphacinae (after Ossiannilsson).

1-11, *Megadelphax haglundi*: 1, 2, genital block of male (1, posterior view; 2, lateral view); 3, bridge of pygofer, lateral view; 4-6, penis (4, right lateral view; 5, ventral view; 6, left lateral view); 7, 8, anal tube (7, posterior view; 8, lateral view); 9, stylus; 10, genital scale of female; 11, female abdomen, ventral view.

35. **Paradelphax** Vilb. Macrocorphe noticeably longer than wide. The turn of eumetope into acrometope indistinct, but median carina not smoothed on it. Eumetope about twice as long as wide, with somewhat convex lateral margins. Lateral carinae of disc of pronotum not reaching posterior margin of pronotum. In brachypters, fore wings rather strongly shortened, but rather smoothly rounded at apices. Posttibial spur with 6-15 denticles on lateral margin, including weakly developed apical denticle. Male. Pygofer with well expressed lateral edging weakly projecting lateral to anal tube and excised and smoothed from below. Anal tube [p. 391] without teeth, with gently concave lower margin. Styli small, more or less narrowing to apices and rather strongly diverging. Aedeagus relatively short, gently arcuate, bent dorsad, asymmetrical due to arrangement of 2-3 longitudinal rows of denticles: the right row longer, with greater number of denticles, the left row shorter or indistinct. The genus comprises 2 species.

1. Carinae on head light, and areas between them dark to black. Left row of denticles on aedeagus weakly expressed. Anterior part of body brownish, with light carinae, except face and acrometope, where areas between carinae nearly black; in darker specimens, the darkening lateral to carinae of pronotum and scutellum becoming dark brown. Fore wings nearly hyaline, light, darkened at apex of clavus. In male,

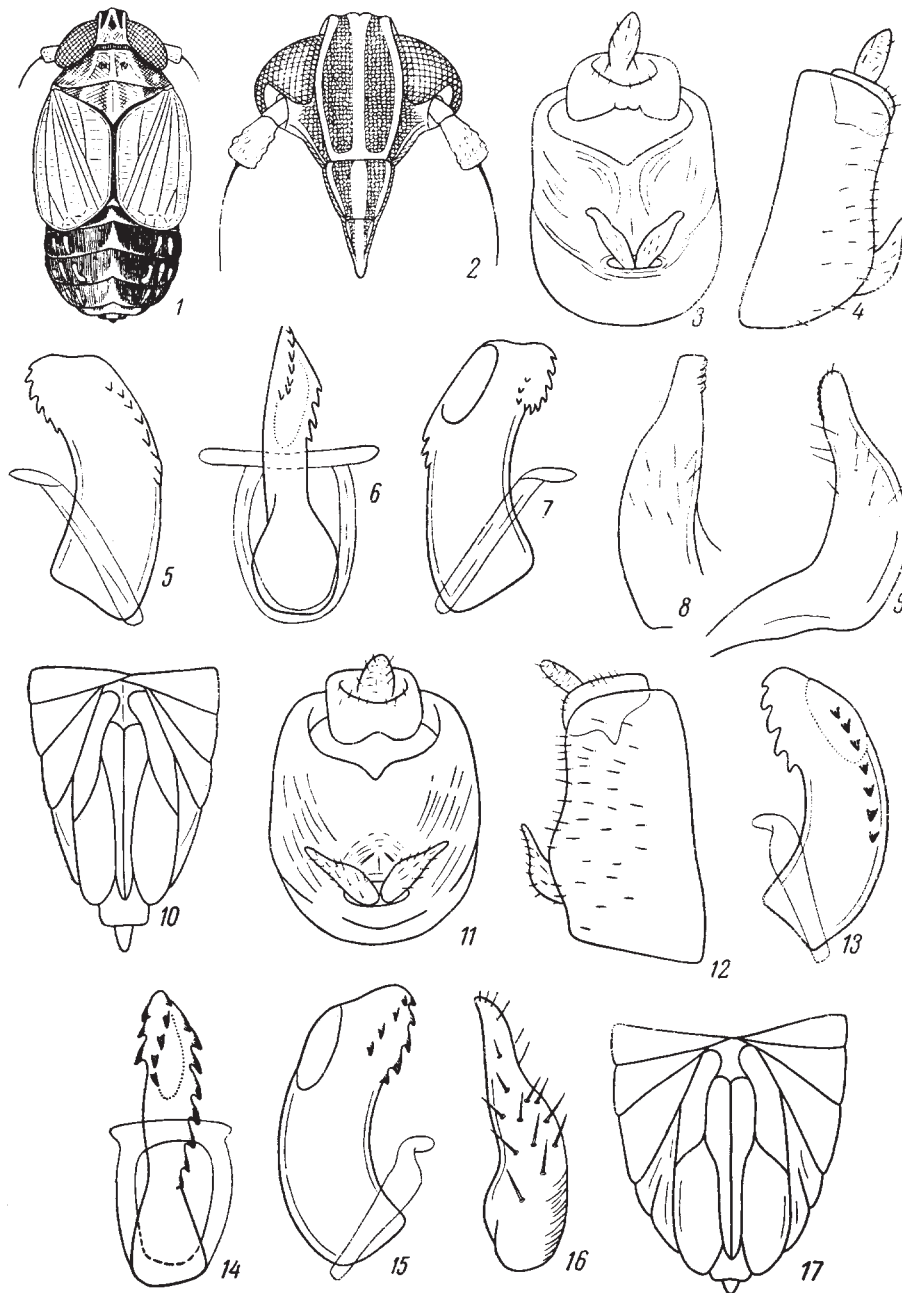


Fig. 295. Cicadines. Family Delphacidae, subfamily Delphacinae (after Vilbaste and original).

1-10, *Paradelphax nigrostriata*: 1, male; 2, face; 3, 4, genital block of male (3, posterior view; 4, lateral view); 5-7, penis (5, left lateral view; 6, ventral view; 7, right lateral view); 8, 9, stylus; 10, female abdomen, ventral view; 11-17, *P. atrata*: 11, 12, genital block of male (11, posterior view; 12, lateral view); 13-15, penis (13, left lateral view; 14, dorsal view; 15, right lateral view); 16, stylus; 17, female abdomen, ventral view.

abdomen dark brown, dorsally with light spots on midline and at sides, mostly on posterior segments. 2.3-2.5. – Khab., Amur., Prim., S Kur.; C and NE Yakutia, Transbaikal, Tuva. – Mongolia. – Dry meadows. Mid-May to early August. (Figs. 295: 1-10) ***P. nigrostriata* Kusn.**

- Carinae on head barely lighter than background. Left row of denticles on aedeagus well expressed. Whole body, except legs, dark brown to black; dorsal integument glossy, especially fore wing in brachypters. Fore and middle legs light brown; hind legs brown. 2.2-2.8. – S Prim. – Korea. – In moist meadows. Late May to late August. (Figs. 295: 11-17) **P. atrata** Vilb.

36. **Muirodelphax** W. Wagn. Macrocorphe somewhat longer than wide; its anterior margin gently rounded or gently obtuse-angulate, projecting. Eumetope about twice as long as wide or somewhat more than twice as long as wide, approximately parallel-sided or somewhat widening to vertex. The turn of eumetope into acrometope somewhat swollen, and median carina smoothed on it. Lateral carinae of disc of pronotum not reaching posterior margin of pronotum. In brachypters, fore wings rounded truncate, reaching about abdominal tergite IV. Posttibial spur with about 16 lateral denticles. Male. Pygofer with deep dorsal excision for anal tube. Anal tube with a pair of separate small teeth on lower margin. Styli diverging, forming an acute angle, narrowing to apex; apices somewhat attenuate. Aedeagus rather short, tubular; gonopore not very distinctly dorsal, subapical, shifted to the left side. – 1 species (in USSR 2).

1. Pale, whitish yellowish. Fore wings semihyaline. In male, abdomen brown to dark brown, with light small spots. 2.4-2.8, macropters up to 4.1. – ?Amur.; Transbaikal, Tuva, Altai. – Mongolia. – In dry and steppe meadows, often in salt meadows. Early July to late August. (Figs. 296: 2-8) **M. altaica** Vilb.

37. **Criomorphus** Curt. Microcorphe about as long as wide, noticeably wider than transverse diameter of eye. Eumetope about twice as long as wide; its sides more or less evenly convex or, between eyes, slightly concave; lower and upper margins about equal. Metope with 2 carinae below approximate or converging to one point. Disc of pronotum wide, with carinae diverging backwards and not reaching posterior margin of pronotum. In brachypters, fore wings more or less transversely truncate posteriorly, reaching middle abdominal tergites. Posttibial spur with a small, varying number of denticles; apical denticle rudimentary or absent. Male. Pygofer with not interrupted edging. Anal tube with a pair of variously developed and differently spaced teeth. Styli also various, diverging. Aedeagus more or less straight or weakly bent dorsad, weakly asymmetrical due to arrangement of denticles. Gonopore ventral, subapical. – 4 species (in USSR 8).

1. Anal tube in male with long processes reaching nearly the level of upper margin of stylar foramen 2 [p. 392]
- Anal tube with moderately long processes reaching only dorsal margin of pygofer bridge or slightly extending beyond the bridge 3
2. Anal tube very wide, with very widely spaced processes. Aedeagus gradually narrowing in lateral view, with narrowly rounded apex. Projection on medial margin of stylus situated nearer to basal projection than to apex. Males dark brown, with white pattern; head with whitish carinae; pronotum and scutellum white, both slightly darkened on anterior margin. Fore wings dark brown, with castaneous tint, with white posterior margin; abdomen black, with white edging of pygofer. In female, the same pattern, but darkenings weaker, not darker than brown. 2.3-3.5, macropters up to 4.2. – Amur. – Mongolia. – In moist grass meadows and herb and grass meadows. Late June to late July. (Figs. 297: 14-17) **C. firmatus** Em.
- Anal tube moderately wide, with narrowly spaced, slightly diverging processes. Aedeagus nearly parallel-sided in lateral view, with widely rounded apex. Projec-

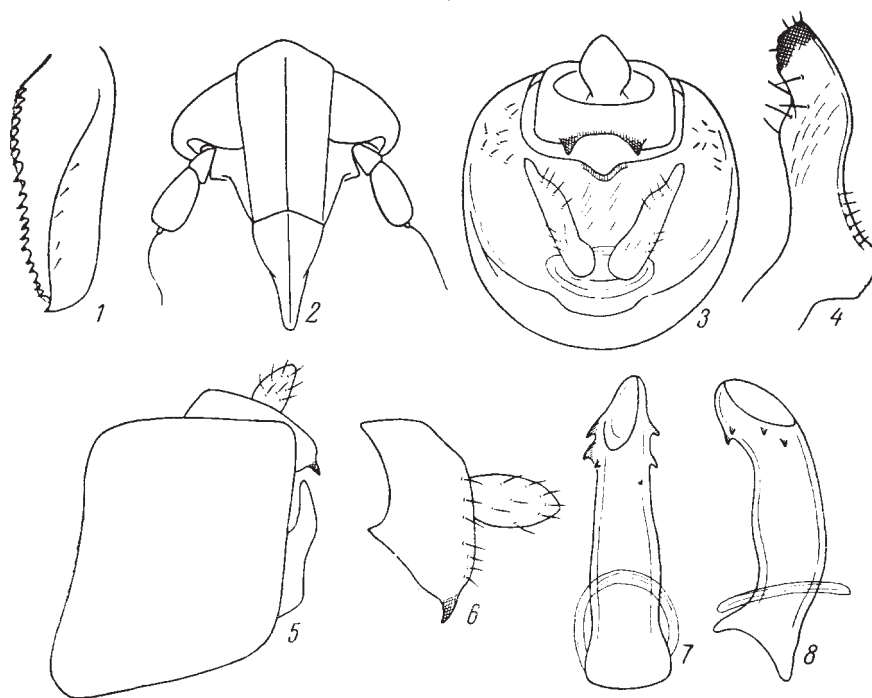


Fig. 296. Cicadines. Family Delphacidae, subfamily Delphacinae (after Vilbaste).

1, *Megadelphax haglundi*, posttibia spur; 2-8, *Muirodelphax altaica*: 2, head, ventral view; 3, genital block of male, posterior view; 4, stylus; 5, genital block of male, lateral view; 6, anal tube, lateral view; 7, 8, penis (7, dorsal view; 8, right lateral view).

- tion on medial margin of stylus situated nearer to apex than to base. Head, pronotum and scutellum yellowish brown; head with lighter carinae, areas between them speckled and darkened. Fore wings yellowish brown, semihyaline. Abdomen dark brown; posterior tergites lightened on posterior margin; dorsal surface of pygofer also lightened. In female, pattern expressed only on head, the rest of integument more or less light brown. 2.1-2.7. – Mag.; Chita Prov. – Mongolia. – In wet and damping meadows and forests. Mid-June to late July. (Figs. 297: 8-13) **C. agnus** Anufr. et Averkin
3. Styli with projection on medial margin. – In general appearance similar to *C. firmatus*. In male, tergites VII-VIII, edging of pygofer and its dorsal surface lightened; as a whole, male more weakly pigmented. 2-2.7, macropters up to 4.1. – C Yakutia, Chita Prov. – Wet habitats with sedges and herbage near forest brooks. Late July to early August. (Figs. 297: 1-7) **C. ovis** Anufr. et Averkin
- Styli without projection on inner margin 4 [p. 394]
4. Dorsal margin of pygofer bridge without projection in the middle. Anal tube comparatively wide, with separate bases of processes. Aedeagus comparatively long, its length more than 3 times its greatest width. In general appearance, similar to *C. firmatus*. 2.2-2.8., macropters up to 4.5. – Kamch., Khab., Prim.; Chita Prov., Buryatia, S Krasnoyarsk Terr. – N and C Europe. – In meadows with *Calamagrostis*. Early June to early August. (Figs. 298: 1-11) **C. borealis** J. Sahlb.
- Dorsal margin of pygofer bridge with small projection in the middle. Anal tube very narrow; bases of its processes closely approximate. Aedeagus comparatively short, less than 3 times as long as wide. In general appearance, cannot be distin-

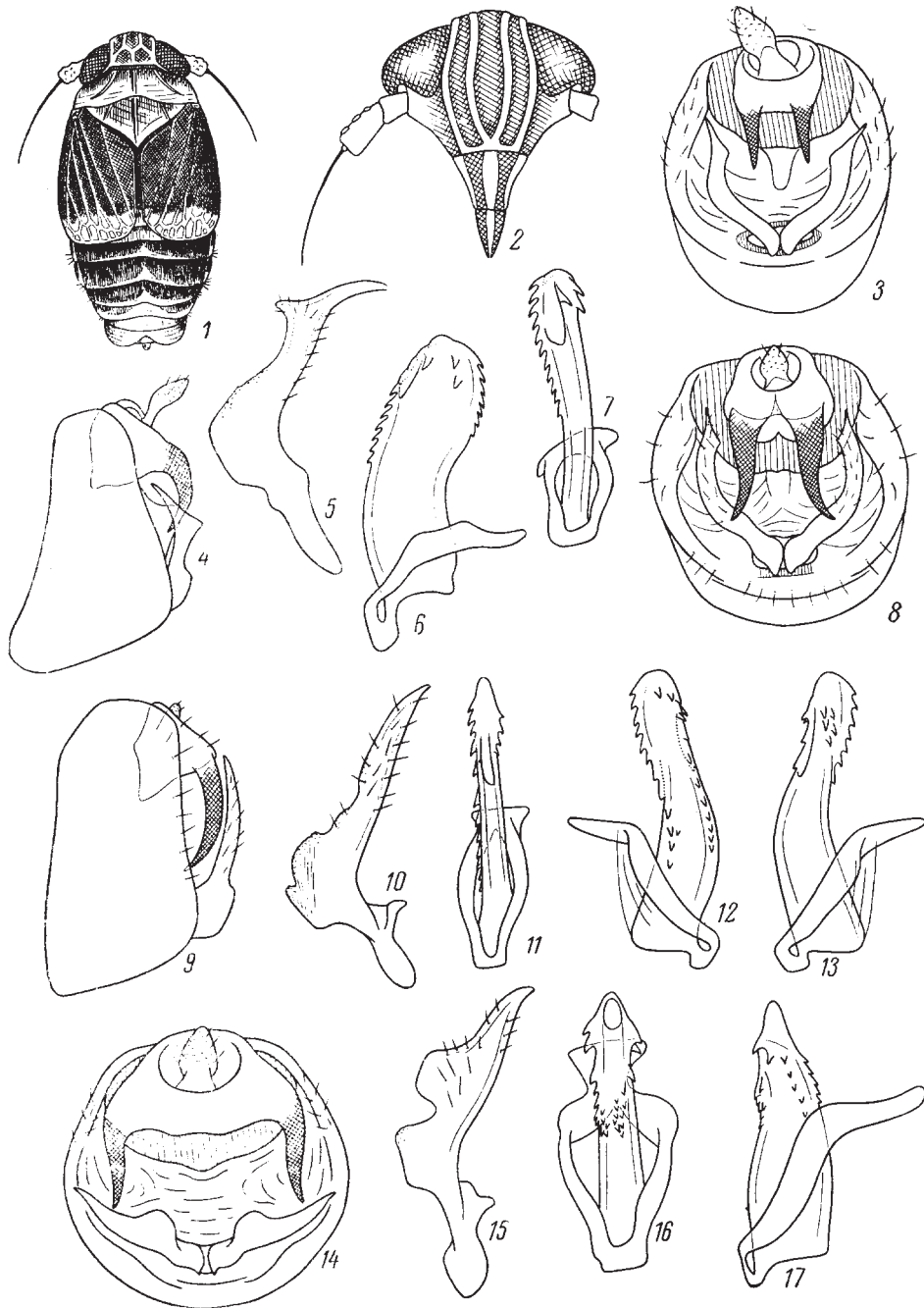


Fig. 297. Cicadines. Family Delphacidae, subfamily Delphacinae (after Anufriev, Averkin, and original).

1-7, *Criomorphus ovis*: 1, male; 2, face; 3, 4, genital block of male (3, posterior view; 4, lateral view); 5, stylus; 6, 7, penis (6, right lateral view; 7, ventral view); 8-13, *C. agnus*: 8, 9, genital block of male (8, posterior view; 9, lateral view); 10, stylus; 11-13, penis (11, ventral view; 12, left lateral view; 13, right lateral view); 14-17, *C. firmatus*: 14, genital block of male, posterior view; 15, stylus; 16, 17, penis (16, ventral view; 17, right lateral view).

guished from *C. borealis*. 2.6-4, macropters up to 5. – Mag., Kamch., Khab., Prim., Sakh., S Kur.; C and SE Yakutia, Transbaik. – Mongolia. – In meadows with *Calamagrostis*. Early June to early August. (Figs. 298: 12-14)

..... *C. wilhelmi* Anufr. et Averkin [p. 395]

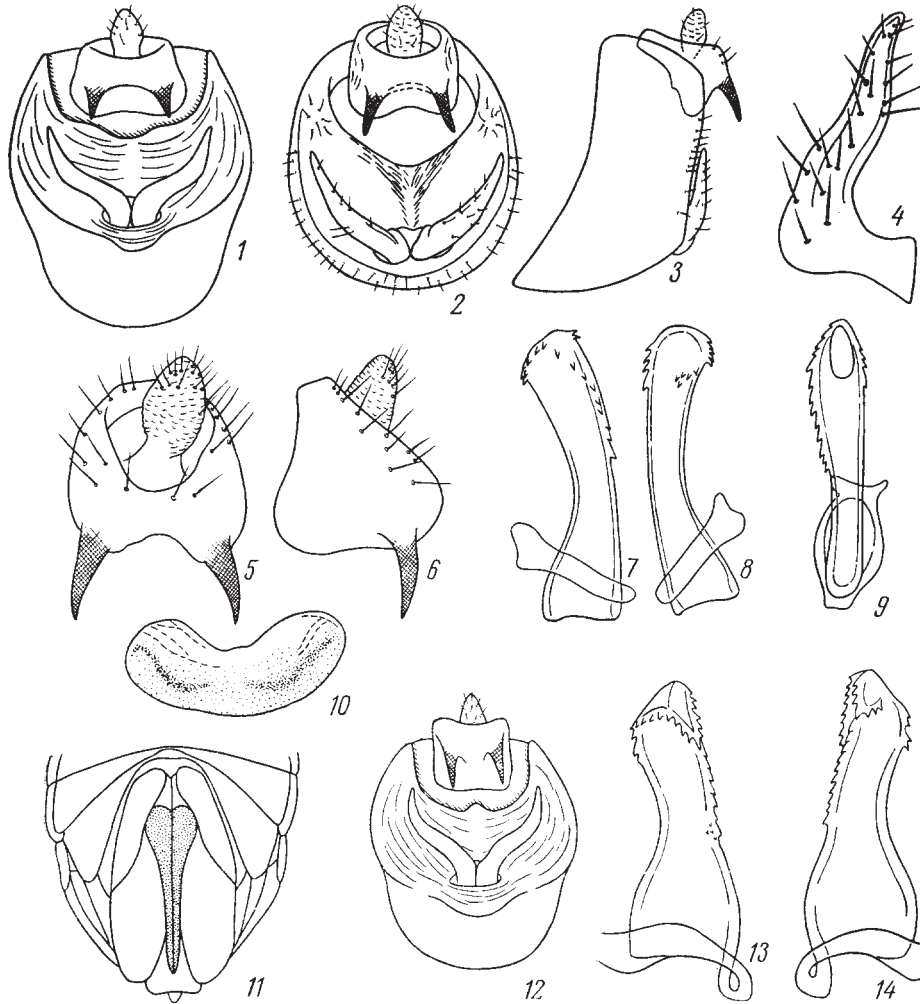


Fig. 298. Cicadines. Family Delphacidae, subfamily Delphacinae (after Anufriev, Ossiannilsson, and Vilbaste).

1-11, *Criomorphus borealis*: 1-3, genital block of male (1, posteroventral view; 2, posterior view; 3, lateral view); 4, stylus; 5, 6, anal tube (5, posterior view; 6, lateral view); 7-9, penis (7, left lateral view; 8, right lateral view; 9, ventral view); 10, genital scale of female; 11, female abdomen, ventral view; 12-14, *C. wilhelmi*: 12, genital block of male, posteroventral view; 13, 14, penis (13, left lateral view; 14, right lateral view).

38. **Achorotile** Fieb. Metope and tergal parts of thorax and abdomen bearing sensory pits in imagines, which are usually developed only in larvae of most Fulgoroidea. Macroscoryphe about square, from slightly longitudinal to slightly transverse. Eumetope about twice as long as wide, with 2 not connecting carinae and moderately convex lateral margins. Lateral areas of metope bearing sensory pits (trichobothria) in 2 rows; if pits are present in inner row, the pits in outer row opposite them are absent and vice versa; eumetope with 2 inner pits below, 2 outer pits above them (in middle part), then again 2 inner pits, outer pits on the turn of eumetope into

acrometope, and 2 inner pits on acrometope. Disc of pronotum wide, with oblique, diverging backwards and slanting transversely lateral carinae; these carinae are replaced by row of pits running along posterior margin of pronotum up to the very bottom of paranotal lobes (sides of pronotum). On scutellum, pits are situated lateral to posterior ends of lateral carinae of disc, 2 pits near each carina. In brachypters, fore wings usually strongly shortened and straightly truncate posteriorly at level of abdominal tergite III. Abdominal tergites IV-IX also with sensory pits laterally. Posttibial spur with reduced lateral denticles and without apical denticle. Male. Pygofer with shallow, wide, dorsal excision and lateral edging without cuts; edging may be smoothed in lower half of pygofer sides. Sides of pygofer with sensory pits dorsally; bridge of pygofer mostly with vertical carina, which is projecting in the shape of a knob. Anal tube with a pair of large teeth; crosspiece between bases of teeth sclerotized or not sclerotized. Styli becoming more or less thinner to apex, diverging upwards, short or long. Aedeagus weakly asymmetrical, straight or arcuate, bent ventrad, widened at base and even projecting in the shape of a knob on ventral side. Gonopore apical or ventral, subapical. – 3 species (in USSR 5).

1. *Macrocorphe* about as long as wide. Lower margin of pygofer with well expressed projection under styli. Coloration more or less black; vertex, pronotum and scutellum usually lightened 2
- *Macrocorphe* about 1.5 times as long as wide. Lower margin of pygofer without any projections. Aedeagus distinctly asymmetrical, with weakly widened base and distinctly subapical, ventrolateral gonopore. (Subgenus *Laccoscyta* Anufr. et Em.). Shiny. Coloration dark, castaneous or nearly black; vertex, pronotum and scutellum not lightened; abdominal tergites I-IV whitish. Females lighter than males; in females, often fore wings darker than the rest of integument. 2.1-3.1 – Chuk., Mag., Kamch., Khab., N Prim., Sakh., S Kur. (Shikotan); C and NE Yakutia, Transbaikal, S Krasnoyarsk Terr. – Mongolia. – On grasses in taiga forests. Late May to late July. (Figs. 299: 1-6) **A. (L.) transbaicalica** Kusn.
2. Anal tube ventrally without sclerotized crosspiece between bases of processes. Bridge of pygofer without vertical carina. Lower margin of pygofer with projection in the shape of a stub, apex of which with 2 teeth. Styli comparatively long. (Subgenus *Criochora* Anufr. et Em.). Black; white marks only on carinae of coryphe and on sides of median carina and pronotum; middle parts of posterior margins of abdominal tergites III-IV and median carina of abdomen also lightened. 2-2.5. – Chuk., Wrangel Isl. – Mongolia (Hangai). – In tundra meadows and mountain heath meadows. Late June to early July. (Figs. 299: 7-14) **A. (C.) caecianta** Em.
- Anal tube ventrally with sclerotized crosspiece between bases of processes. Bridge of pygofer with vertical, above furcate carina. Lower margin of pygofer with wide projection, straightly truncate or bearing 3 teeth, flattened dorsoventrally. Styli very short. Aedeagus with strongly widened angular base and apical gonopore, which is slightly shifted to ventral side. (Subgenus *Achorotile* Fieb.) 3
3. Processes of anal tube nearly parallel, shorter, with apices directed towards bases of styli. Projection on lower margin of pygofer with 3 teeth; its median tooth spinulate. Dark brown [p. 396] to black; males nearly always black dorsally; coryphe, disc of pronotum and stripe on scutellum along median carina lightened; abdomen with lightened posterior margins of tergites III-IV in middle part and median carina along the whole length. 2.2-2.9, macropters up to 4.4. – Chuk., Mag., Khab.; C and NE Yakutia, Chita Prov., Buryatia, Taimyr Peninsula. – Mongolia (Hangai, Hentei), Alaska, Canada. – On grasses in light taiga forests. Mid-June to mid-August. (Figs. 300: 1-8) **A. subarctica** Scudd.

- Processes of anal tube widely spaced, overlie on edging of pygofer. Projection on lower margin of pygofer straightly truncate, smooth. In general appearance, similar to *A. subarctica*, substituting it west of Yenisei River. 2.2-3.3, macropters up to 4.2. – Altai. – Mongolia (Mongolian Altai), N and C Europe, N Italy (Alps). – In W Europe, on *Agrostis canina* and other grasses in stony habitats. June to July. (Figs. 300: 9-15) *A. albosignata* Dahlb.

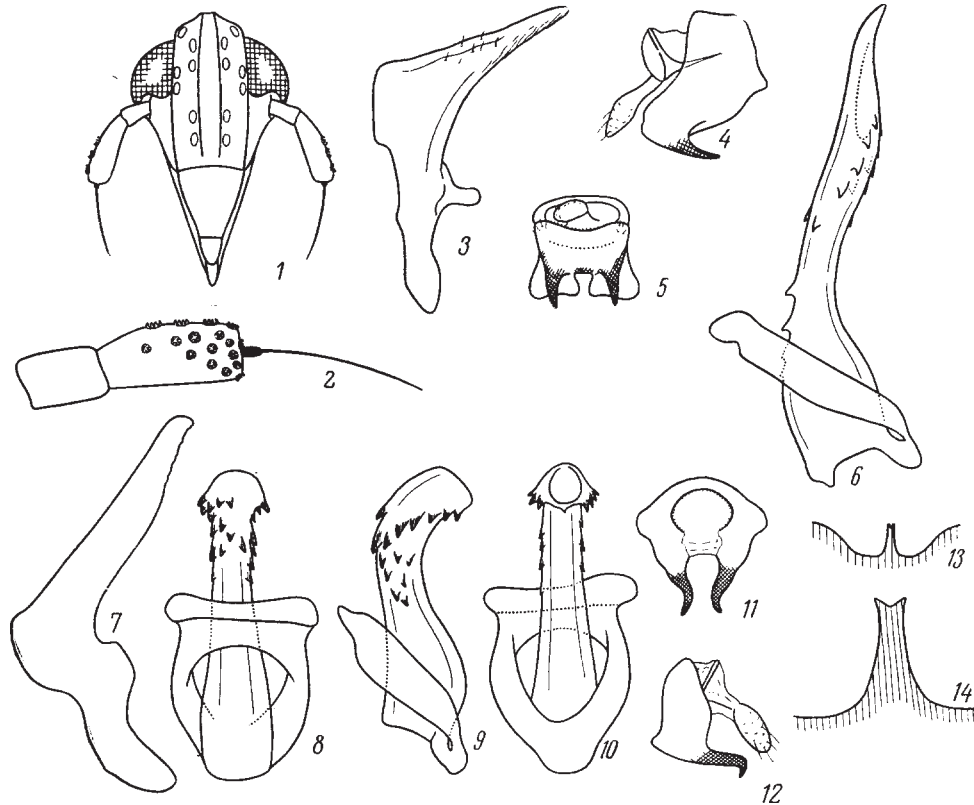


Fig. 299. Cicadines. Family Delphacidae, subfamily Delphacinae (after Anufriev and Emeljanov).

1-6, *Achorotile transbaicalica*: 1, face; 2, antenna; 3, stylus; 4, 5, anal tube (4, lateral view; 5, ventral view); 6, penis, lateral view; 7-14, *A. caecianta*: 7, stylus; 8-10, penis (8, dorsal view; 9, lateral view; 10, ventral view); 11, 12, anal tube (11, posterior view; 12, lateral view); 13, 14, projection of lower margin of pygofer.

39. **Ditropsis** W. Wagn. Macrocorphe about square; its width somewhat less than transverse diameter of eye. Eumetope about 3 times as long as wide; its lateral margins slightly bent, obtuse-angulate, convex, and usually slightly concave in upper part between eyes. Carinae of head sharp; median carina becomes bifurcate about at level of lower margins of eyes. Lateral carinae of disc of pronotum noticeably diverging backwards, weakly slanting outwards and not reaching posterior margin. Fore wings shortened, rounded truncate at apices, reaching abdominal tergites VI-VII. Posttibial spur with 18-20 lateral denticles. Male. Pygofer bevelled ventrad posteriorly, with wide [p. 397] dorsal excision and edging smoothed in the middle ventrally. Anal tube with strong, separate teeth ventrally. Styli arcuate, with converging pointed apices, narrowing to apex by a step in middle part on inner margin. Aedeagus more or less straight, somewhat slanting ventrad before apex, with teeth situated asymmetrically, bearing a knob with teeth on the left. Gonopore apical. Monotypic genus.

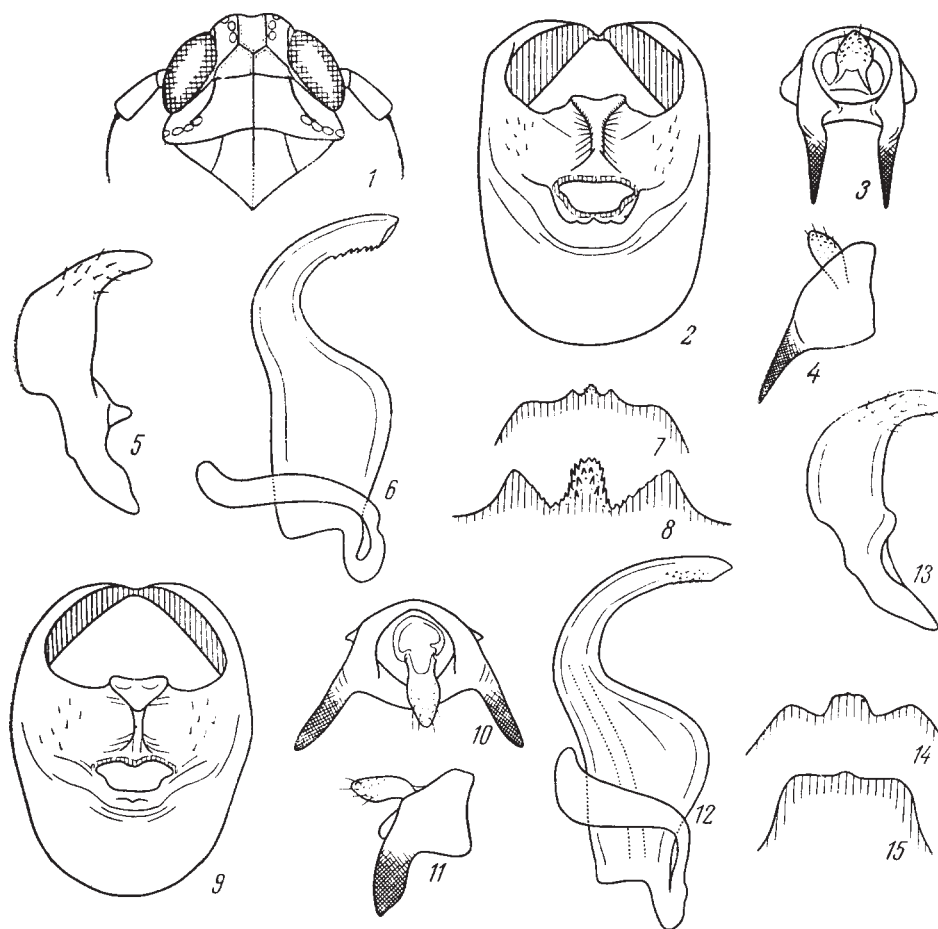


Fig. 300. Cicadines. Family Delphacidae, subfamily Delphacinae (after Anufriev and Emeljanov).

1-8, *Achorotile subarctica*: 1, anterior part of body; 2, pygofer, posterior view; 3, 4, anal tube (3, posterior view; 4, lateral view); 5, stylus; 6, penis, lateral view; 7, 8, projection of lower margin of pygofer; 9-15, *A. albosignata*: 9, pygofer, posterior view; 10, 11, anal tube (10, posterior view; 11, lateral view); 12, penis, lateral view; 13, stylus; 14, projection of lower margin of pygofer; 15, middle part of projection of lower margin of pygofer.

1. Glossy, dark brown, with light carinae on head and lighter brown legs. 2.1-3.2, macropters up to 4.2. – Chita Prov., Tuva, Altai, Kazakhstan, N Tien Shan, S of area E of Volga River, Ukraine. – Mongolia, Turkey (Anatolia), S and C Europe. – In meadows, light forests, among *Calamagrostis* and other grasses. Late June to early August. (Figs. 301: 1-9) **D. flavipes** Sign.

40. **Dicranotropis** Fieb. Macrocorphe about as long as wide, its width subequal to transverse diameter of eye. Eumetope about 2.5 times as long as wide, slightly widening in lower half, slightly narrowing in upper part, with its margins somewhat concave there. Median carina of metope becoming bifurcate at level of lower margins of eyes or slightly higher; more rarely, bifurcation may be shifted to margins of eumetope, both lower and upper ones. [p. 398] Carinae of disc of pronotum not reaching posterior margin of pronotum. In brachypters, fore wings rounded truncate at apex, shorter than abdomen. Posttibial spur small, with small number of denticles. Male. Pygofer with not interrupted edging and large dorsal excision; sometimes

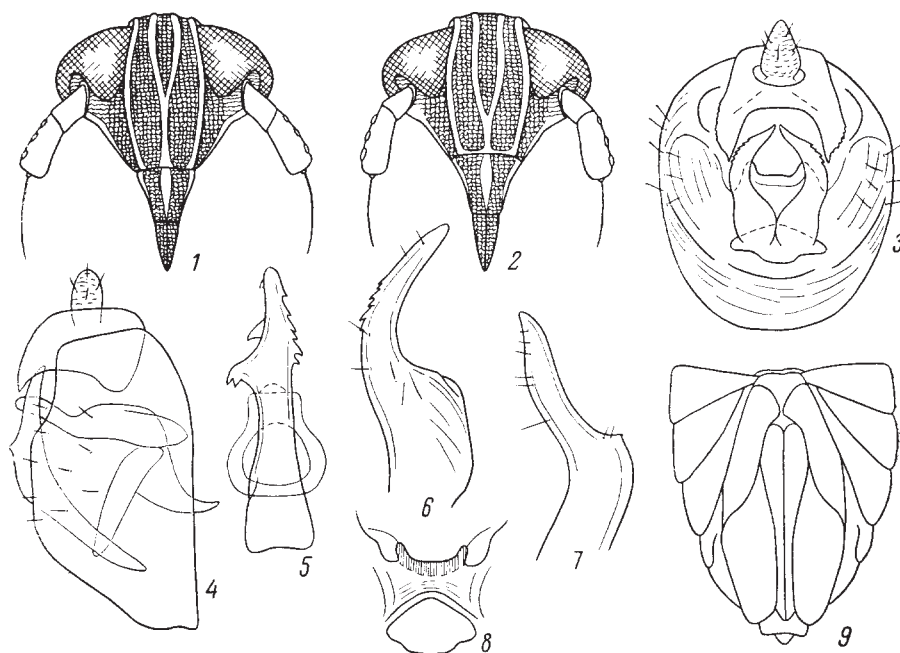


Fig. 301. Cicadines. Family Delphacidae, subfamily Delphacinae (after Vilbaste and original).

1-9, *Ditropsis flavipes*: 1, 2, face; 3, 4, genital block of male (3, posterior view; 4, lateral view); 5, penis, ventral view; 6, 7, apex of stylus (6, posterior view; 7, lateral view); 8, bridge of pygofer, posterior view; 9, female abdomen, ventral view.

projections of edging lateral to excision enlarged and elongate, in the shape of processes. Anal tube short, with a pair of teeth ventrally, sometimes without teeth. Styli usually long, rather narrow, diverging, forming an acute angle, sometimes weakened and diminished, as though rudimentary. Aedeagus short; its thick apex usually slanting downwards, bearing rows of denticles. Gonopore dorsal, subapical. – 1 species (in USSR 5-7 species).

1. Two large teeth with apices facing each other at lower lateral angles of upper foramen of pygofer. Lobes of pygofer margin lateral to anal tube triangular, weakly expressed. Teeth of anal tube well expressed, widely spaced. Carinae of head white, metope between them white; coryphe brownish. Pronotum and scutellum whitish, sometimes with blurred brown spots. Fore wings nearly hyaline, with whitish marginal vein. In male, abdomen more or less blackened, only midline and posterior margins of tergites VII-VIII lightened; in female, abdomen without pattern or with dark spots on sides of tergites; in male, also thoracic pleura and legs, especially coxae, darkened. 2-2.9, macropters up to 3.9. – Mag., Kamch.; NE Yakutia, Tuva. – C and E Mongolia. – In forest moist meadows. Mid-June to mid-July. (Figs. 303: 1-10) **D. tenellula** Dlab.
- Teeth at lower lateral angles of upper foramen of pygofer absent. Lobes of pygofer margin lateral to anal tube strongly elongate and slightly slanting downwards. Teeth of anal tube very weak. In general appearance, similar to *D. tenellula*, but apex of clavus with dark spot in male. 2.8-4, macropters up to 4.9. – C Yakutia, Irkutsk Prov., Tuva, Altai, Kazakhstan, Caucasus. – N Mongolia, Europe, N Africa. – In moist forest meadows. Late June to early August. (Figs. 302: 1-12) **D. hamata** Boh. [p. 399]

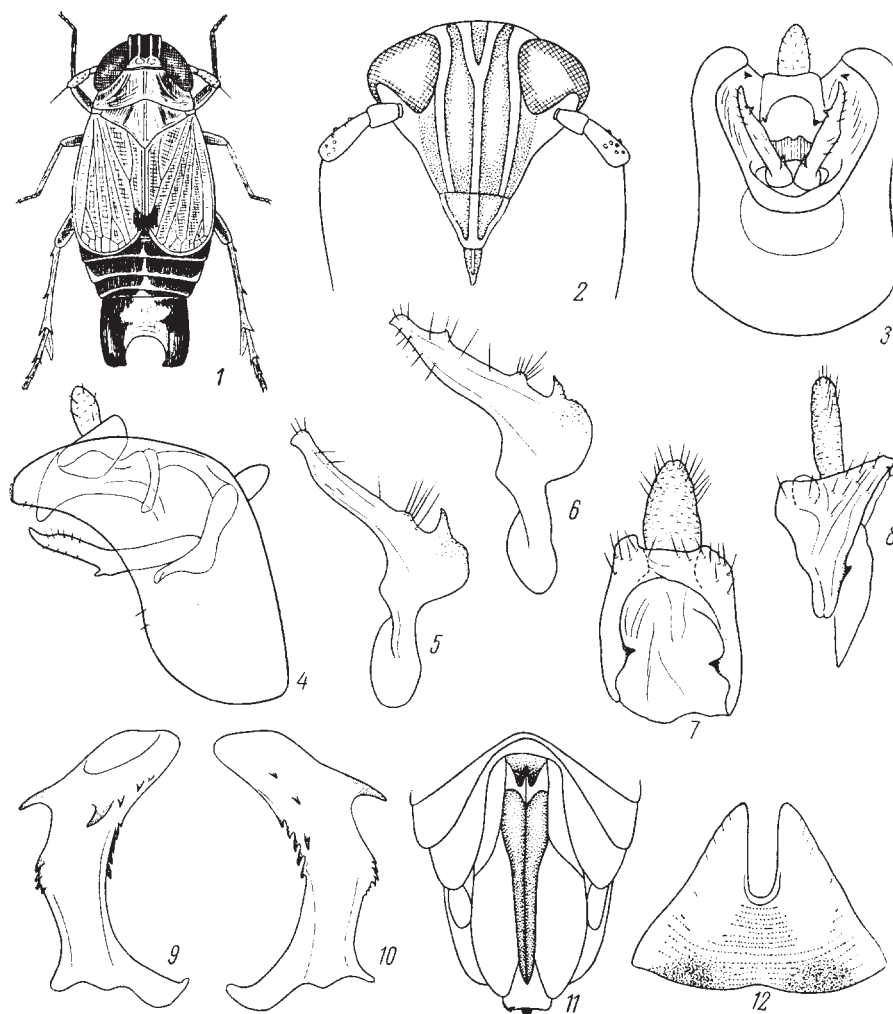


Fig. 302. Cicadines. Family Delphacidae, subfamily Delphacinae (after Haupt, Ossiannilsson, and Vilbaste).

1-12, *Dicranotropis hamata*: 1, male; 2, face; 3, 4, genital block of male (3, posteroventral view; 4, lateral view); 5, 6, stylus; 7, 8, anal tube (7, ventral view; 8, lateral view); 9, 10, penis (9, left lateral view; 10, right lateral view); 11, female abdomen, ventral view; 12, genital scale of female.

41. **Nothodelphax** Fennah. Macrocorphe about as long as wide. Eumetope with slightly convex lateral margins, twice or somewhat more longer than wide, mat, finely shagreened. Carinae on head, pronotum and scutellum distinct. Lateral carinae of disc of pronotum not reaching posterior margin of pronotum, slanting outwards posteriorly and disappearing. In brachypters, fore wings shorter (sometimes much shorter) than abdomen, rounded or rather sharply truncate posteriorly. Posttibial spur without lateral denticles. Male. Anal tube with well developed teeth. Pygofer with well expressed edging laterally and deep excisions dorsally and ventrally. Styli becoming thinner to apex, with a knob at base of free part; degree of their divergence varying; their location in live specimens also not fixed strictly; their apices may converge or diverge in certain limits. Bridge of pygofer with vertical carina. Shaft of aedeagus nearly straight, with asymmetrical arrangement of denticles; gonopore ventral, subapical, also not quite symmetrical. – 4 species (in USSR 6-7). [p. 400]

1. Base of aedeagus with dorsal swelling or tooth; denticles on shaft of aedeagus short, relatively numerous 2
- Base of aedeagus without swelling or any other special structures 3

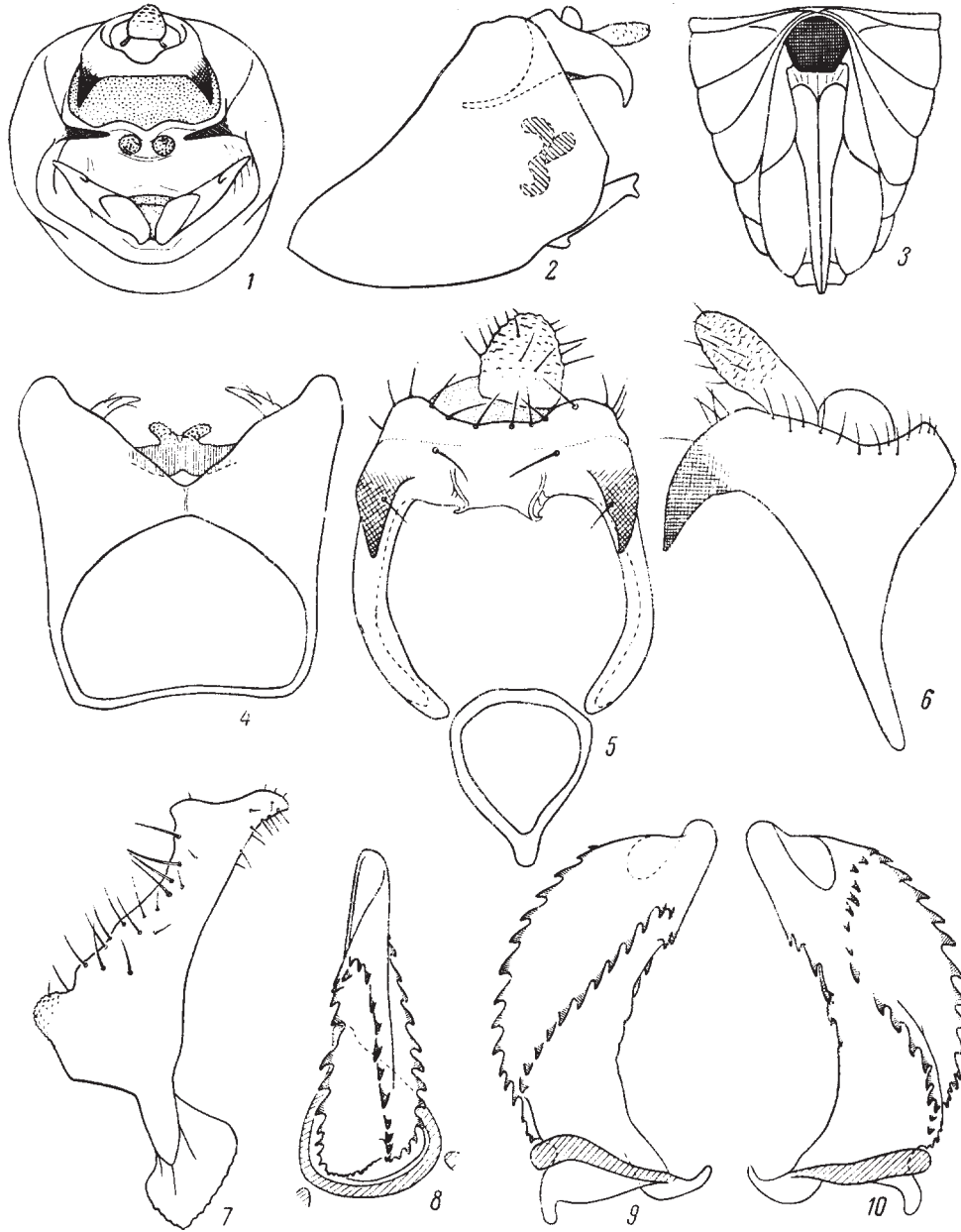


Fig. 303. Cicadines. Family Delphacidae, subfamily Delphacinae (original).

1-10, *Dicranotropis tenellula*: 1, 2, genital block of male (1, posterior view; 2, lateral view); 3, female abdomen, ventral view; 4, pygofer of male, dorsal view; 5, anal tube and phallosome, ventral view; 6, anal tube, lateral view; 7, stylus, lateral view; 8-10, penis (8, dorsal view; 9, left lateral view; 10, right lateral view).

2. Aedeagus with large pointed projection at base dorsally. Head black, with yellowish white carinae and ochraceous brown posterior pits of macrocoryphe. Pronotum and scutellum with widely lightened carinae and ochraceous stripes or spots between them. Fore wings ochraceous, with lightish, weakly [p. 403] stand-

- ing out veins and wide, sharp white edging of margin, except subscutellar margin. Abdomen dorsally black, with whitish spots on midline and margins, and also with ochraceous spots in middle parts of both sides on posterior tergites. Legs light, with brown stripes; thorax with brown spots ventrally; abdomen more or less black ventrally. 2.2-3.7. – Chuk., Mag., Kamch., Amur., Prim.; C Yakutia, Chita Prov., Irkutsk Prov., Tuva. – N Mongolia. – In marshes with hillock-forming sedges. Mid-May to late July. (Figs. 304: 1-6) **N. eburneocarinata** Anufr.
- Aedeagus with rounded denticulate knob at base dorsally. Head black, with white carinae and brown posterior pits of macrocoryphe. Pronotum and scutellum white, with brown blurred darkening at places between carinae. Fore wings brownish, semihyaline; costal vein somewhat lightened. Abdomen more or less darkened, with dorsal light line in the middle; in female, abdomen darkened dorsally only at lateral margins. 2.1-2.9. – Amur.; C and NE Yakutia. – Mongolia, Europe. – In marshes with sedges. Late May to late July. (Figs. 304: 7-16) **N. albocarinata** Stål
3. Apex of aedeagus with 2 groups of rather long processes: 2 from below, and 2 on the right; 2 small denticles on the left. – Macrocoryphe black, with light carinae and brown posterior pits. Face black, with yellow carinae. Pronotum and scutellum yellow; pronotum with brown darkening beyond eyes and stripes between carinae of disc. Legs yellowish, with dark stripes. 1.7-2.6. – Chuk., Mag. – In icing and alpine tundra marshes. Late June to mid-July. (Figs. 304: 17-21) **N. tshaunica** Anufr.
- Apex of aedeagus with 3 rows of denticles, which are mostly short 4
4. Rows of denticles on aedeagus short, nearly all limited by area of distal half of gonopore. Brown. On head, areas between carinae black. In male, pronotum whitish; in female, light brown with a pair of dim dark spots on disc and darkening beyond eyes on sides. Scutellum brown, with lighter carinae in female, and whitish, with a pair of black stripes lateral to median carina in male. Fore wings brown, semihyaline; abdomen brown with dark brown spots or dark brown in female, and dark brown in male. Venter and legs brown, in male up to dark brown with light carinae. 1.6-1.9. – Taimyr Peninsula, SE Altai. – N Mongolia. – In sedge marshes. Mid-June to late August. (Figs. 305: 1-8) **N. guentheri** Dlab.
- Rows of denticles on aedeagus long, running from apex basal to margin of gonopore. Shaft somewhat bent dorsad at base and somewhat ventrad at apex. Head dark brown to black, with light, often brownish carinae; lightening of median carina of eumetope with uneven margins. Pronotum and scutellum light brown, with vague darkening between carinae; in male, scutellum nearly entirely dark brown. Fore wings mat, dark brown to black in males, dark brown to ochraceous brown in females. Abdomen dark brown; in females, often lightened to brown in middle parts of tergites. Venter and legs from brown to dark brown, with light carinae and margins of sclerites. 1.8-2.9. – Mag., Kamch.; NE Yakutia. – Mongolia. – In sedge and brook marshes. Early June to late July. (Figs. 305: 9-15) **N. umbrata** Em.

42. **Gravesteiniella** W. Wagn. Macrocoryphe longer than wide; eumetope somewhat more than twice longer than wide; its lateral margins slightly convex, greatest width slightly above the middle. Carinae of head distinct; median carina of metope becomes bifurcate on the turn of eumetope into acrometope. Lateral carinae of disc of pronotum slanting outwards posteriorly and not reaching posterior margin. In brachypters, fore wings obliquely transversely rounded truncate, reaching about the middle of abdomen. Posttibial spur with 15-22 lateral denticles; apical denticle small. Male. Pygofer small, with not interrupted lateral edging, which forms small lobes dorsally lateral to anal tube. Anal tube without teeth, ventrally with a pair of knobs

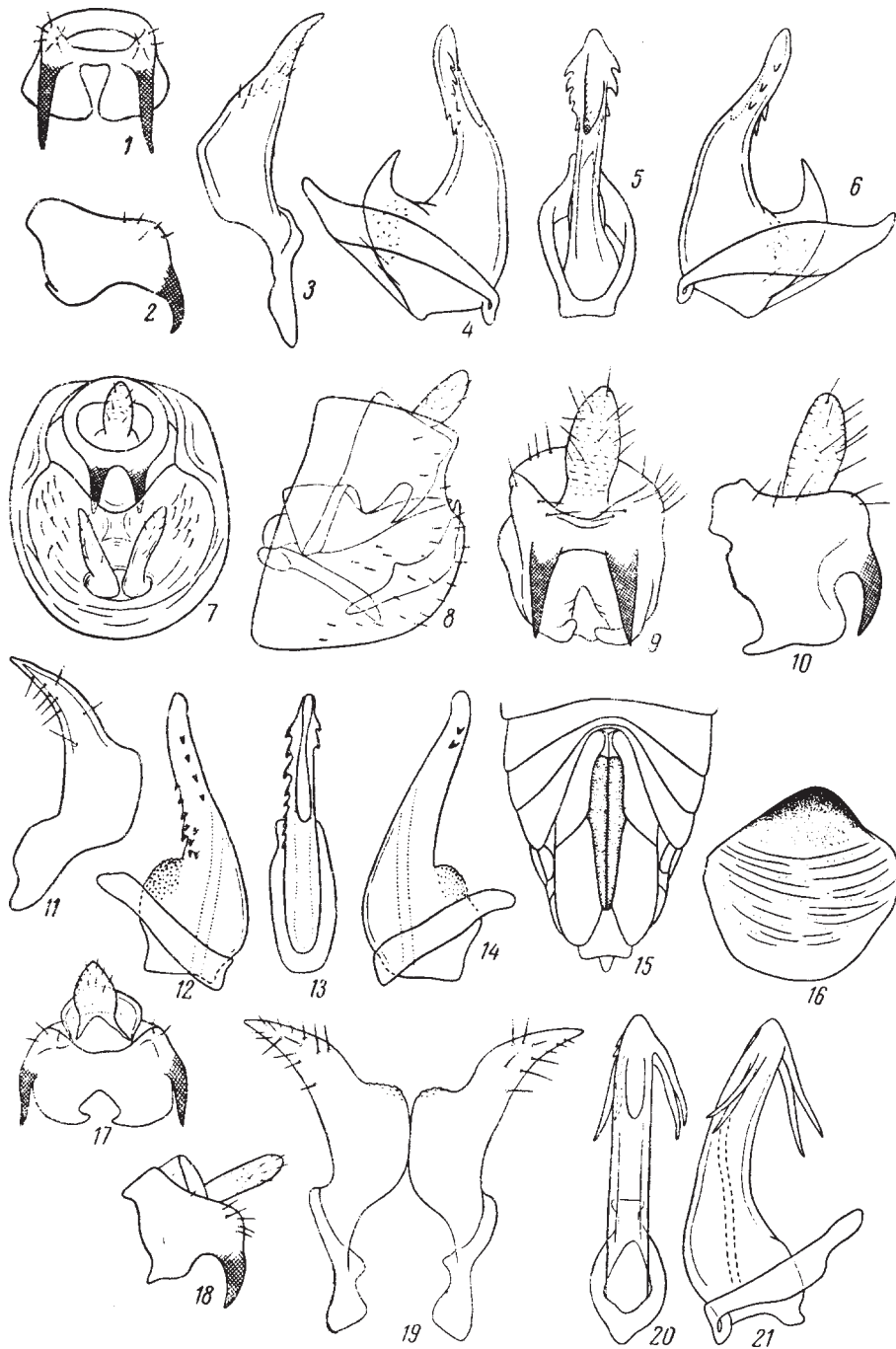


Fig. 304. Cicadines. Family Delphacidae, subfamily Delphacinae (after Anufriev, Ossiannilsson, and Vilbaste).

1-6, *Nothodelphax eburneocarinata*: 1, 2, anal tube (1, posterior view; 2, lateral view); 3, stylus; 4-6, penis (4, left lateral view; 5, ventral view; 6, right lateral view); 7-16, *N. albocarinata*: 7, 8, genital block of male (7, posterior view; 8, lateral view); 9, 10, anal tube (9, posterior view; 10, lateral view); 11, stylus; 12-14, penis (12, left lateral view; 13, ventral view; 14, right lateral view); 15, female abdomen, ventral view; 16, genital scale of female; 17-21, *N. tshaunica*: 17, 18, anal tube (17, posterior view; 18, lateral view); 19, styli; 20, 21, penis (20, ventral view; 21, right lateral view).

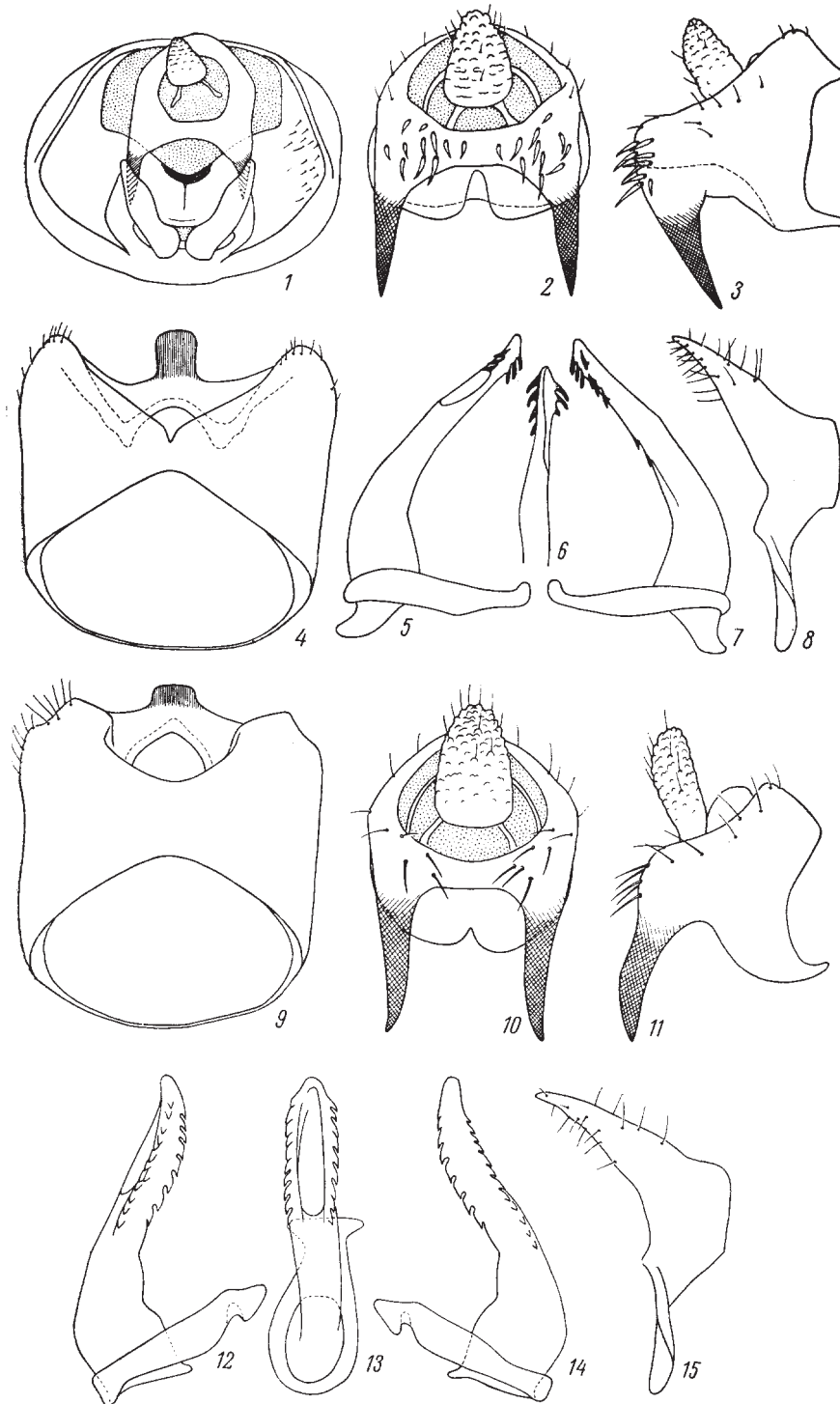


Fig. 305. Cicadines. Family Delphacidae, subfamily Delphacinae (after Emeljanov and original).

1-8, *Nothodelphax guentheri*: 1, genital block of male, posterior view; 2, 3, anal tube (2, posterior view; 3, lateral view); 4, pygofer, dorsal view; 5-7, penis (5, right lateral view; 6, posterior view; 7, left lateral view); 8, stylus; 9-15, *N. umbrata*: 9, pygofer, dorsal view; 10, 11, anal tube (10, posterior view; 11, lateral view); 12-14, penis (12, right lateral view; 13, posterior view; 14, left lateral view; 15, stylus).

divided by gentle excision. Styli [p. 404] small, slightly widening to apex, where irregularly transversely truncate, running upwards and weakly diverging. Aedeagus very short, compressed laterally, with wide apex obliquely cut by gonopore, slightly asymmetrical. – 1 species (in USSR 3).

1. Brown to dark brown. Carinae on head lighter and outlined dark brown everywhere, except posterior pits of macrocoryphe. Pronotum and scutellum brownish, with lighter carinae. Fore wings semihyaline, grayish. Abdomen brown in female, dark brown, often with reddish carinae in male. 1.8-3.5. – Prim.; Transbaikal, Tuva, S Siberia, Altai, Kazakhstan. – Mongolia, Europe, Cyprus. – On certain grasses in relatively dry habitats; in Europe, in seaside sands on *Ammophila arenaria*; in steppe zone, common on *Achnatherum*. June to August. (Figs. 306: 1-12) **G. boldi** Scott

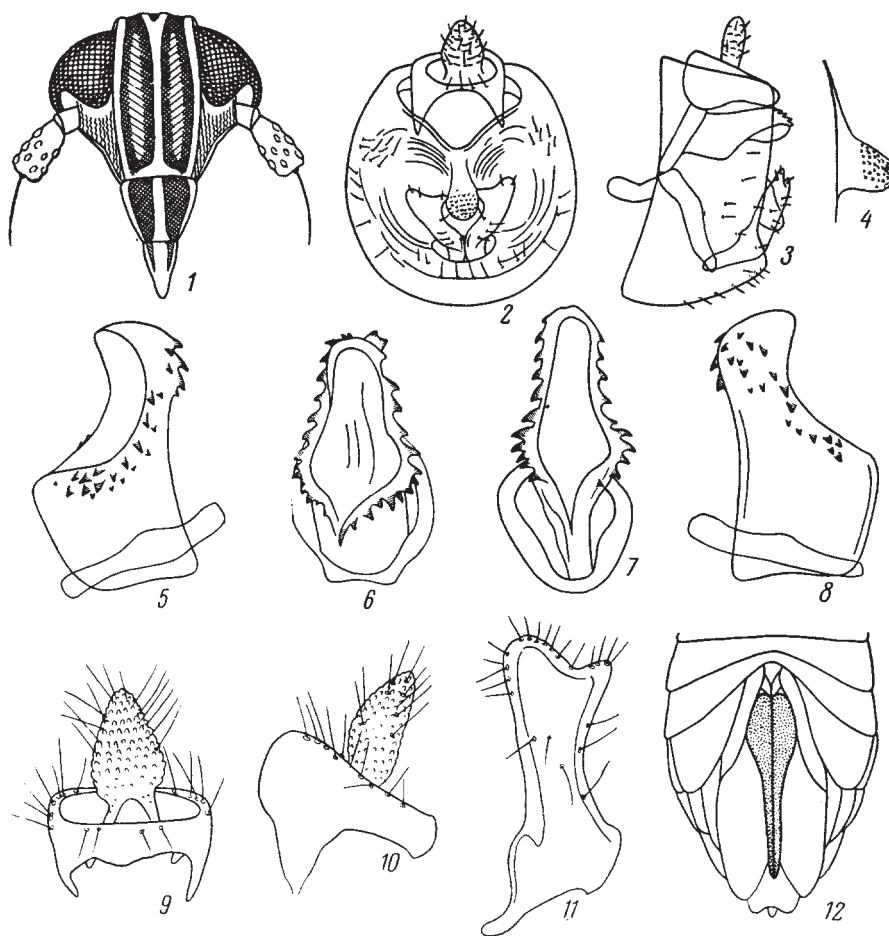


Fig. 306. Cicadines. Family Delphacidae, subfamily Delphacinae (after Ossiannilsson, Vilbaste, and original).

1-12, *Gravestiniella boldi*: 1, face; 2, 3, genital block of male (2, posterior view; 3, lateral view); 4, projection of pygofer bridge, lateral view; 5-8, penis (5, right lateral view; 6, 7, ventral view; 8, left lateral view); 9, 10, anal tube (9, posterior view; 10, lateral view); 11, stylus; 12, apex of female abdomen, ventral view.

43. *Kusnezoviella* Vilb. Macroscoryphe somewhat longer than wide. Eumetope about 2.5 times as long as wide. Carinae on head sharp; median carina sometimes smoothed and bifurcate on the turn of eumetope into acrometope. Pronotum with strongly diverging lateral carinae of disc [p. 405] not reaching posterior margin of

pronotum. In brachypters, fore wings rounded at apex, reaching the middle of abdomen in female and nearly its apex in male. Posttibial spur with about 18 lateral denticles gradually increasing in size to apex of spur; apical denticle very small. Male. Pygofer with well developed, not interrupted edging, which forms distinct lobes lateral to well developed dorsal excision. Anal tube with parallel, separate teeth. Styli with a step on inner margin, narrowing in basal third and obtuse-angulate, bent in distal third, with apex directed inwards. Bridge of pygofer bearing T-shaped projection ventrally. Aedeagus rather short, more or less symmetrical, with denticles in apical part. Gonopore ventral, subapical. – 2 species (in USSR 3).

1. Shaft of penis with dorsal row of denticles in distal half. Carinae on head light; areas between them uneven brown; upper half of eumetope and macrocoryphe between carinae black; clypeus, lora and antennae dark brown. In male, pronotum white, narrowly darkened behind eyes. Scutellum dark brown. Fore wings hyaline, with dark brown veins, only costal and peripheral veins of membrane whitish. Abdomen black. Venter and legs dark brown, with light carinae. In female, pattern on head as in male, but antennae and posterior part of vertex between carinae lightened. The rest of integument light, whitish yellowish, only sides of tergites with dark spots. 1.9-3.1, macropters 4.3. – Transbaikal, Tuva, Khakassia, Altai, C and E Kazakhstan, C Tien Shan. – Mongolia. – In dry and steppe [p. 406] meadows, salt meadows on *Leymus chinensis* and related grasses. Mid-June to early September. (Figs. 307: 1-12) **K. dimidiatifrons** Kusn.
- Shaft of penis without row of denticles on dorsal surface 2
2. Bridge of pygofer in the middle at dorsal margin with a pair of teeth directed laterad. Penis comparatively wide, with lateral rows of subequal denticles. Head light brown; carinae lighter, dark brown or black edged; clypeus dark brown, with light median carina; pits of coryphe (pits of vertex) light brown. Pronotum light, darkened behind eyes; scutellum with light disc and brown lateral areas. In brachypters, fore wings yellowish, with dim darkening along claval suture becoming stronger to apex of clavus. Abdomen dark brown or black; in male, margins of tergites and genital segment dorsally lightened; in female, median zone of tergites widely lightened. 2.4-2.9.- Mag., N Khab. – July. (Figs. 308: 11-18). Holotype – male, N Khab., Okhotsk Distr., Khetapa River, tributary of Amga River, 16.VII.85 (Zherikhin and others); paratypes – 1 male, 1 female, with identical label, kept in Zoological Institute, Academy of Sciences of USSR, 1 paratype (male) in Gorki State University **K. matisi** Anufr. et Em., sp. n.
- Bridge of pygofer in the middle with a pair of teeth directed laterad and equidistant from dorsal and ventral margin. Penis comparatively narrow, with lateral row of denticles of different sizes. Head dark brown or brown, with light carinae and weakly darkened posterior pits of macrocoryphe. Pronotum light, with darkening behind eyes, sometimes disc also darkened. Scutellum brown with lighter carinae or nearly entirely dark brown with lightened margin at apex. In brachypters, fore wings semihyaline, grayish, with indistinct darkening at apex of clavus; in macropters, darkening noticeable between suture of wings and apex of claval vein. Abdomen more or less darkened, but in male, margins of tergites and edging of pygofer light, light spots on midline dorsally also noticeable; females lighter, often without darkening dorsally, except lateral parts of abdominal tergites. 2-2.3, macropters to 4.1. – Mag. – Mongolia. – In salt meadows and apparently in dry not salted meadows with *Hordeum* sp. Late June to late July. (Figs. 308: 1-10) **K. chalcica** Em.

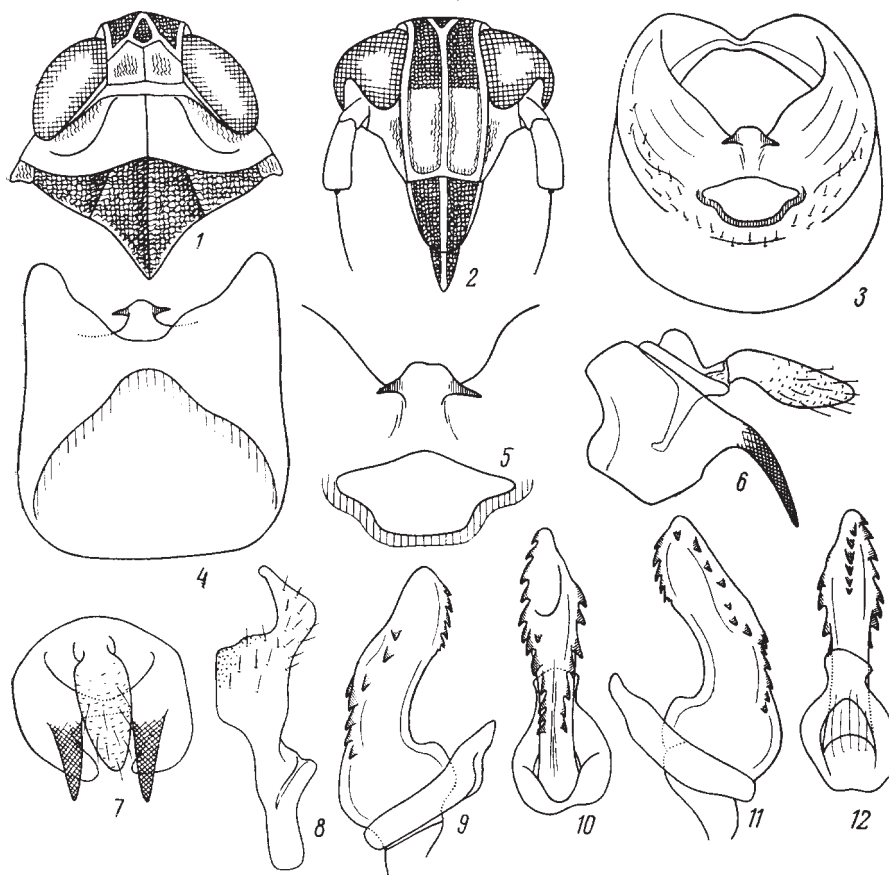


Fig. 307. Cicadines. Family Delphacidae, subfamily Delphacinae (original).

1-12, *Kusnezoviella dimidiatifrons*: 1, anterior part of body; 2, face; 3, 4, pygofer (3, posterior view; 4, dorsal view); 5, bridge of pygofer, posterior view; 6, 7, anal tube (6, lateral view; 7, posterior view); 8, stylus; 9-12, penis (9, right lateral view; 10, ventral view; 11, left lateral view; 12, dorsal view).

44. **Laodelphax** Fennah. Macrocorphe about as long as wide. Eumetope more or less parallel-sided, more than twice as long as wide. Carinae of head sharp, not smoothed on the turn of eumetope into acrometope; median carina becomes bifurcate there. Lateral carinae of disc of pronotum slightly slanting outwards, not reaching posterior margin of pronotum. Posttibial spur with 10-15 denticles. Male. Pygofer slightly narrowing to posterior margin, i.e. to lateral edging; edging with a cut in the middle part of pygofer sides; a rounded swelling directed upwards is developed under the cut. Anal tube with 2 small separate teeth ventrally. Styli small, with small separated constriction and slightly thickened apex. Aedeagus without denticles; phallobase broken ventrally; aedeagus thick in basal half and thin, cylindrical in distal half, continuing dorsal margin of base, while ventral margin narrowing by step. Apex of aedeagus pointed; gonopore ventral, subapical. Apparently, monotypic genus.

1. Black; carinae of head white; posterior pits of macrocorphe brownish. Pronotum white. Scutellum black. Macropters common. Fore wings semihyaline, whitish, with dark veins and dark brown spot along suture opposite apex of claval vein. Females paler. 3-4.8. – Prim., S Kur. – Whole non-tropical Eurasia, Micronesia. – In meadows and crops of cereals. May to September. (Figs. 246: 3, 5; 309: 1-11) ***L. striatella** Fall.

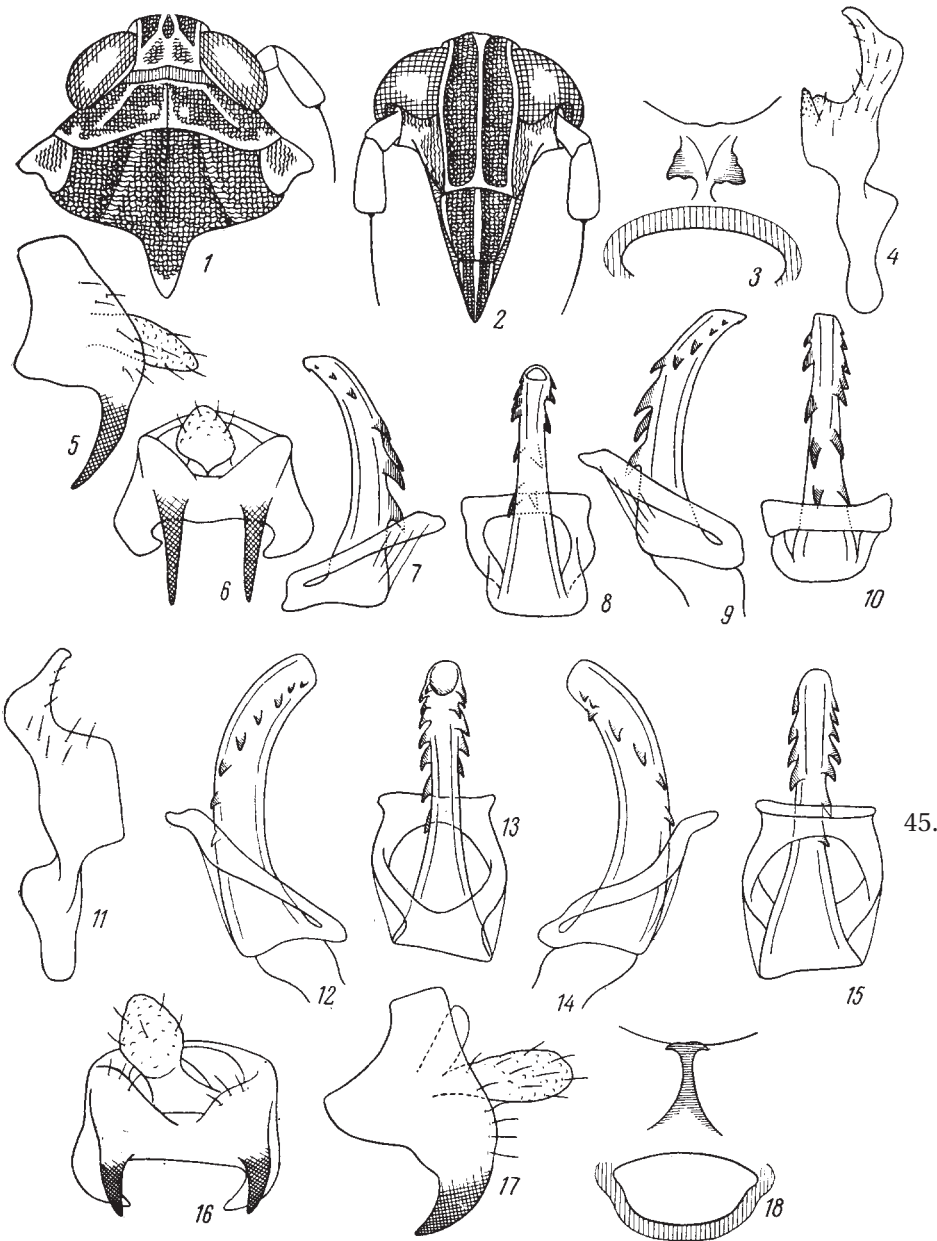


Fig. 308. Cicadines. Family Delphacidae, subfamily Delphacinae (original).

1-10, *Kusnezoviella chalcica*: 1, anterior part of body; 2, face; 3, bridge of pygofer, posterior view; 4, stylus; 5, 6, anal tube (5, lateral view; 6, posterior view); 7-10, penis (7, right lateral view; 8, ventral view; 9, left lateral view; 10, dorsal view); 11-18, *K. matisi*: 11, stylus; 12-15, penis (12, left lateral view; 13, ventral view; 14, right lateral view; 15, dorsal view); 16, 17, anal tube (16, posterior view; 17, lateral view); 18, bridge of pygofer, posterior view.

Unkanodes Fennah. Body relatively slender. Head somewhat narrower than pronotum. Macrocorphe longer than wide (its width not exceeding [p. 407] transverse diameter of eye), slightly arcuate rounded anteriorly. Carinae of head distinct. Eumetope narrow, about 2-2.5 times as long as wide, parallel-sided under eyes, noticeably narrowing upwards between eyes. Median carina of eumetope becoming bifurcate on the turn into acrometope. Lateral carinae of disc of pronotum not

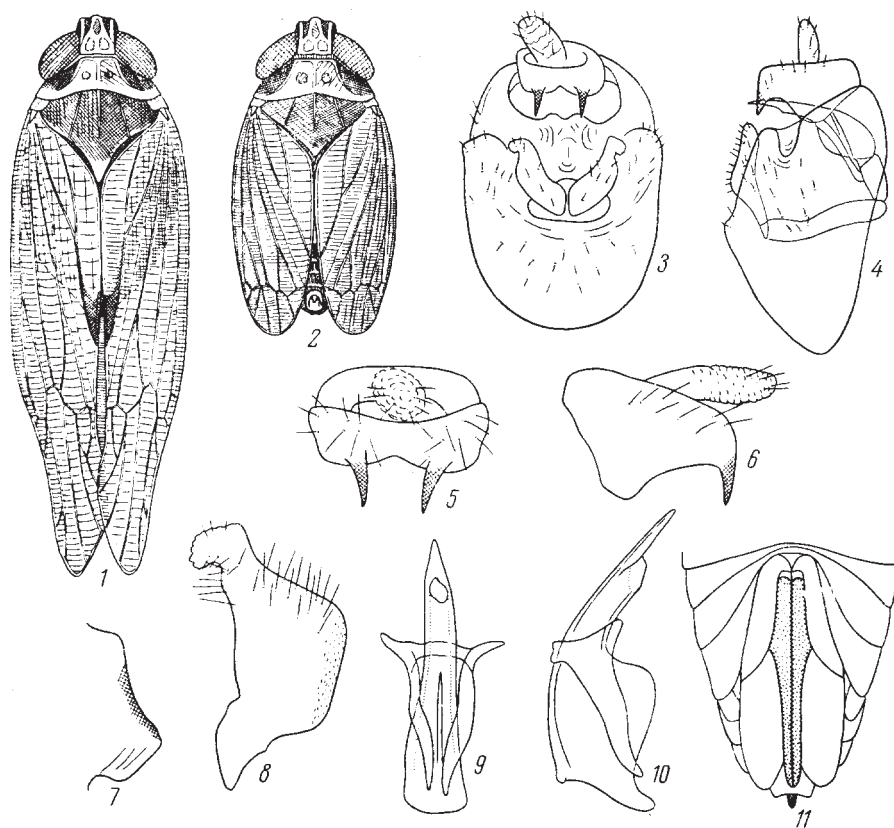


Fig. 309. Cicadines. Family Delphacidae, subfamily Delphacinae (after Ossiannilsson, Vilbaste, and original).

1-11, *Laodelphax striatella*: 1, macropterous male; 2, brachypterous male; 3, 4, genital block of male (3, posterior view; 4, lateral view); 5, 6, anal tube (5, posterior view; 6, lateral view); 7, bridge of pygofer, lateral view; 8, stylus; 9, 10, penis (9, ventral view; 10, left lateral view); 11, female abdomen, ventral view.

reaching posterior margin of pronotum. Posttibial spur with 10-20 well developed denticles; apical denticle separate from the rest teeth. Male. Posterior edging of pygofer with a cut on sides. Anal tube with 2 teeth; sclerotization between bases [p. 408] of teeth often weakened, or teeth absent. Styli flattened, diverging or more or less parallel beyond middle, with complex apices, zigzag-shaped bent and wide or narrowed and slanting outwards. Bridge of pygofer bearing ventrally 2 closely approximate, slanting upwards teeth or a projection with 2 apices. Aedeagus more or less straight, or bent ventrad, elbow-shaped, slightly asymmetrical due to location of gonopore and arrangement of teeth on shaft. Gonopore dorsal, subapical. – 6 species (in USSR 9).

1. Bridge of pygofer with a pair of approximate processes slanting upwards. Styli more or less parallel-sided, with relatively wide apices. Anal tube with large, widely spaced teeth. Aedeagus more or less straight in lateral view. (Subgenus *Unkanodes* Fennah) 2
- Bridge of pygofer without teeth or with a tooth bifurcate only at the very apex. Styli with narrowed apices slanting outwards. Anal tube with or without teeth. Shaft of aedeagus bent ventrad near the middle 3

2. Processes of anal tube spaced more widely, weakly diverging. Apex of stylus wider; medial step of stylus sharper. Aedeagus slenderer. Brownish yellow, with lighter carinae. Carinae on head whitish; median carina of eumetope white, with running on it white stripe, which is wider than carina itself. Posterior part of vertex, middle parts of discs of pronotum and scutellum, sutural margin of fore wings white. 2.8-4.6. – Khab., Prim., Sakh., S Kur. – Japan, [p. 410] China (Zhejiang, Shaanxi), India. – In dry meadows. Late May to early September. (Figs. 310: 13-17) **U. sapporonus** Mats.
- Processes of anal tube spaced less widely, more or less parallel. Apex of stylus narrower, medial step of stylus less sharp. Aedeagus more sturdy. In general appearance, similar to *U. sapporonus*, but darker, eumetope usually darkened between carinae. 2.2-3.5, macropters up to 4.7. – S Kur.; C Yakutia. – Baltic Sea shore. – In dry salt meadows, seaside bars and terraces on *Leymus*. Late June to mid-August. (Figs. 310: 1-12) **U. excisus** Mel.
3. Dorsal and posterior margin of pygofer forming obtuse angle in lateral view. Anal tube with large, widely spaced teeth. Apical half of aedeagus straight. (Subgenus *Chilodelphax* Vilb.). Carinae on head and coryphe white; acrometope and whole face dark brown, with light specks. Pronotum white, with a pair of dark spots behind eyes. Scutellum light brown, with white longitudinal stripe in the middle. Fore wings shortened, [p. 411] rounded at apex, brown, lightened near scutellum and at apex. Legs light; thorax and abdomen ventrally dark brown. 2.5-2.7. – S Prim. – Korea. – In herb layer of forests. August. (Figs. 311: 1-15) **U. (Ch.) silvaticus** Vilb.
- Dorsal and posterior margin of pygofer forming an acute angle in lateral view. Anal tube without teeth. Apical half of aedeagus slanting dorsad. (Subgenus *Kwonianella* Anufr., subgen. n.; type species *Liburnia albifascia* Mats.) 4
4. Process of pygofer bridge very short, directed downwards, sometimes bifurcate at apex. Styli comparatively short, with wide sbapical lobe 5
- Process of pygofer bridge comparatively long, bifurcate and directed backwards at apex. Styli longer, with narrow subapical lobe. Dark brown to black, with white carinae. Pits of coryphe light brown. Pronotum whitish along carinae and on sides. Fore wings with widely lightened scutellar margin and narrower lightened apex. Abdomen dark, with light spots laterally; ventral lobes of edging of male pygofer whitish; females lighter than males. 2.1-2.7. – S Kur. (Kunashir). – In meadows. Mid-June to mid-September. (Figs. 312: 12-16). Holotype – male, S Kur., Kunashir, Alekhino, 15.VI.1973 (Kerzhner); paratypes – 1 male, 2 females from Kunashir, kept in Zoological Institute, Academy of Sciences of USSR (Leningrad), 1 paratype in Gorki State University **U. (K.) insularis** Anufr., sp. n.
5. Aedeagus near bent with a pair of long teeth perpendicular to shaft, the length of which matches with thickness of shaft. In general appearance, similar to *U. insularis*. 2.1-2.7. – Prim. In meadows. Late June. (Figs. 312: 17-19). Holotype – male, Prim., Suchan Distr., Novitskoe, 23.V.1966 (Anufriev; paratype – 1 female with identical label. Kept in Zoological Institute, Academy of Sciences of USSR (Leningrad) **U. (K.) sympatricus** Anufr., sp. n.
- Aedeagus near bent without long teeth the length of which matches with thickness of shaft. In general appearance, similar to *U. insularis*, but usually lighter. Pronotum and scutellum light brown, with wide whitish stripe along median carina edged by dark brown pigment. 1.7-2, macropters up to 3.4. – S Prim. – Japan, Korea. – In swamp meadows. Mid-June to late August. (Figs. 312: 1-11) **U. (K.) albifascia** Mats.

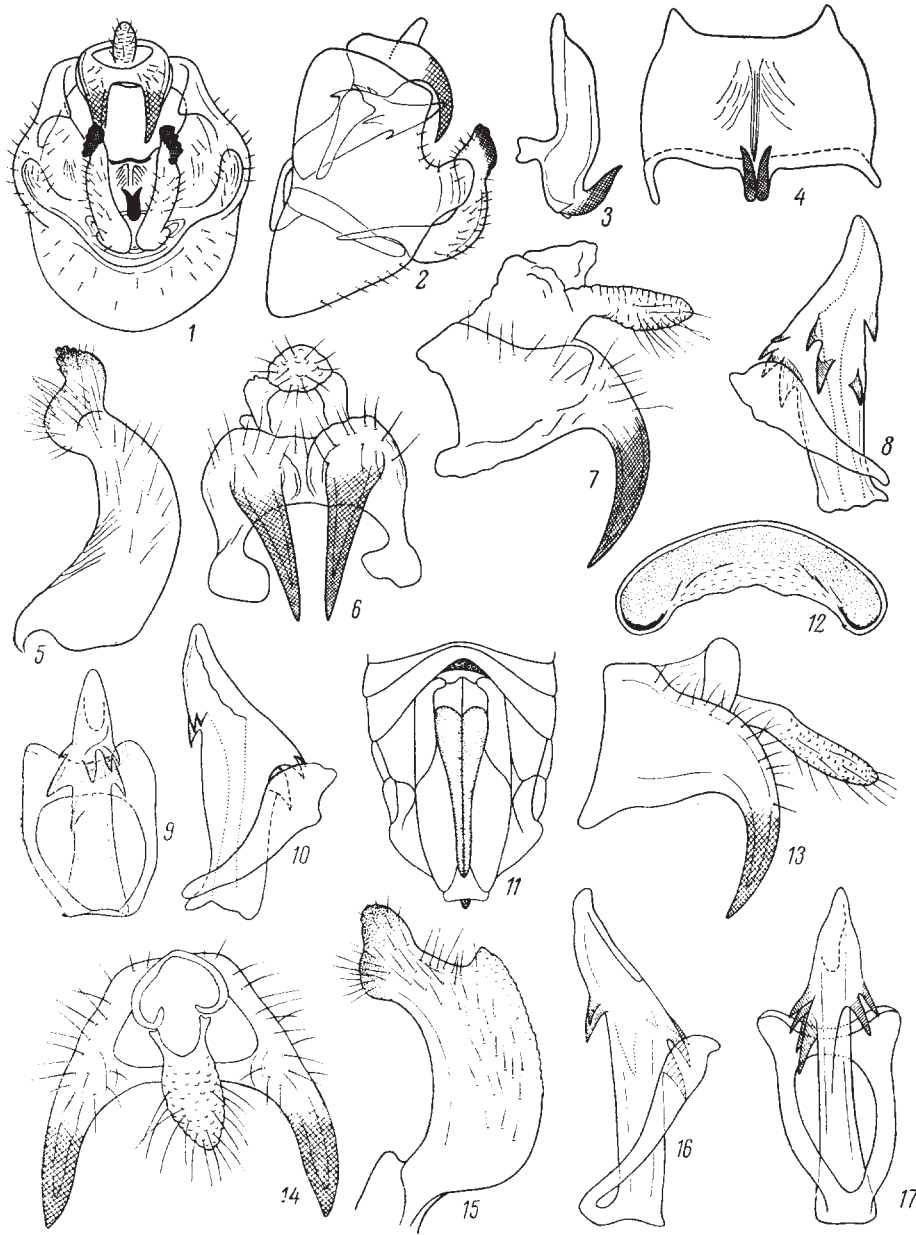


Fig. 310. Cicadines. Family Delphacidae, subfamily Delphacinae (after Ossiannilsson, Vilbaste, and original).

1-12, *Unkanodes excisus*: 1, 2, genital block of male (1, posterior view; 2, lateral view); 3, process of pygofer bridge, lateral view; 4, bridge of pygofer; posterior view; 5, stylus; 6, 7, anal tube (6, posterior view; 7, lateral view); 8-10, penis (8, left lateral view; 9, ventral view; 10, right lateral view); 11, female abdomen, ventral view; 12, genital scale of female, ventral view; 13-17, *U. sapporonus*: 13, 14, anal tube (13, lateral view; 14, posterior view); 15, stylus; 16, 17, penis (16, right lateral view; 17, ventral view).

46. **Unkanodella** Vilb. Body relatively slender. Head somewhat narrower than pronotum. Macrocorphe longer than wide and narrower than transverse diameter of eye. Eumetope more than twice as long as wide. Lateral carinae of disc of pronotum diverging backwards, slanting outwards and disappearing before posterior margin of

pronotum. Posttibial spur with numerous (more than 20) denticles; apical denticle developed. Male. The cut of lateral edging of pygofer not expressed, but lobes situated below it well developed and shifted downwards compared with location of those in the genus *Unkanodes*. Anal tube with slightly diverging, very long processes. Styli small, with lateral excision before apex. Bridge of pygofer ventrally with large cone-shaped projection covered with denticles. Aedeagus more or less straight, with oblique crown of teeth on sides around gonopore. Gonopore dorsal, subapical. Monotypic genus.

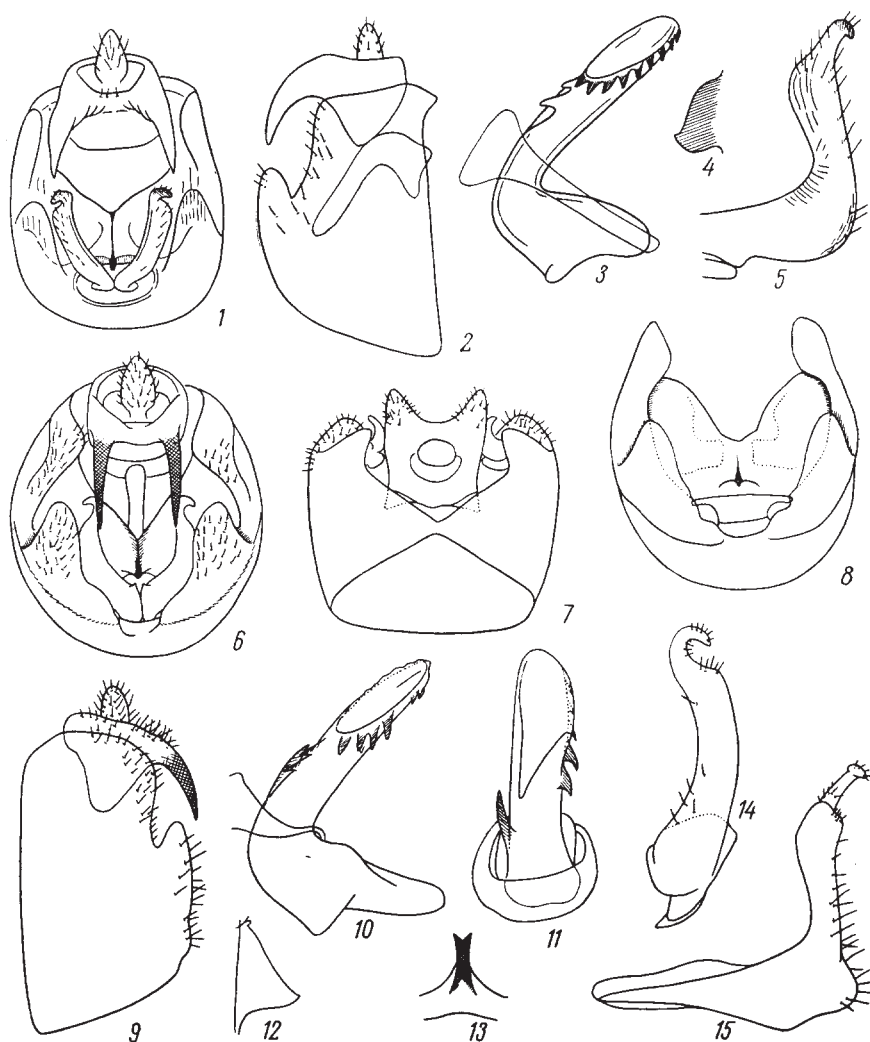


Fig. 311. Cicadines. Family Delphacidae, subfamily Delphacinae (after Kwon and Vilbaste).

1-15, *Unkanodes silvaticus*: 1, 2, 6, 7, 9, genital block of male (1, 6, posterior view; 2, 9, lateral view; 7, dorsal view); 3, 10, 11, penis (3, 10, left lateral view; 11, ventral view); 4, 12, 13, median projection of pygofer bridge (4, 12, lateral view; 13, ventral view); 5, 14, 15, stylus (5, left lateral view; 14, posterior view; 15, lateral view); 8, pygofer, posterior view.

1. Integument glossy. Head brown, carinae light, areas between them speckled and darkened; pronotum brown, disc darker. Scutellum, hemelytra and abdomen dark brown to black. Venter, legs, dorsal part of pygofer and of anal tube light. 2.2-3.3, macropters up to 3.8. – Amur., Prim. – Korea. – In meadows. Late July to early September. (Figs. 313: 1-9) **U. ussuriensis** Vilb. [p. 413]

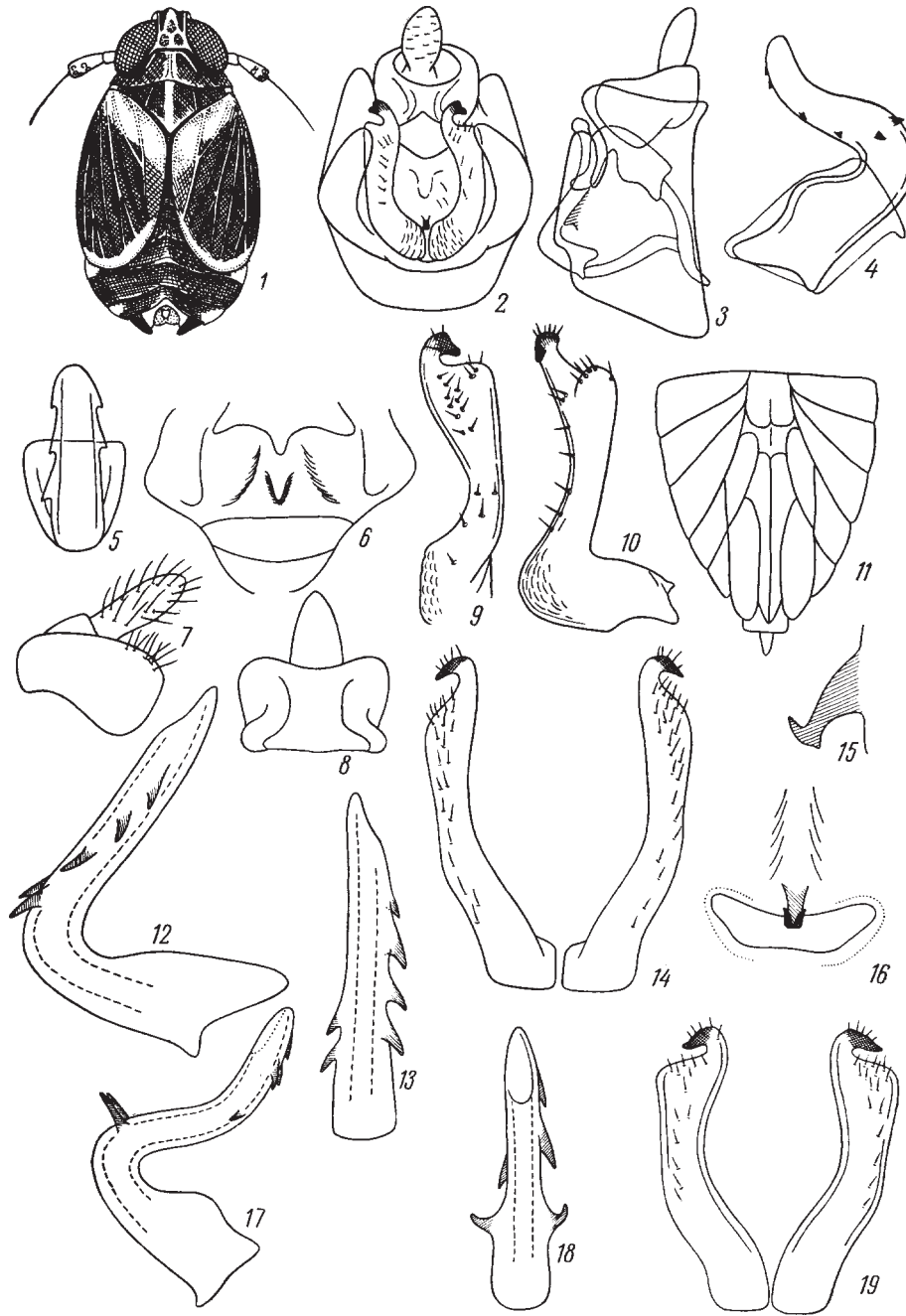


Fig. 312. Cicadines. Family Delphacidae, subfamily Delphacinae (after Ishihara, Kwon, Vilbaste, and original).

1-11, *Unkanodes albifascia*: 1, male; 2, 3, genital block of male (2, posterior view; 3, lateral view); 4, 5, penis (4, lateral view; 5, posterior view); 6, bridge of pygofer; 7, 8, anal tube (7, lateral view; 8, posterior view); 9, 10, stylus (9, posterior view; 10, right lateral view); 11, female abdomen, ventral view; 12-16, *U. insularis*: 12, 13, penis (12, lateral view; 13, posterior view); 14, styli, posterior view; 15, 16, process of pygofer bridge (15, lateral view; 16, posterior view); 17-19, *U. sympatricus*: 17, 18, penis (17, lateral view; 18, posterior view); 19, styli.

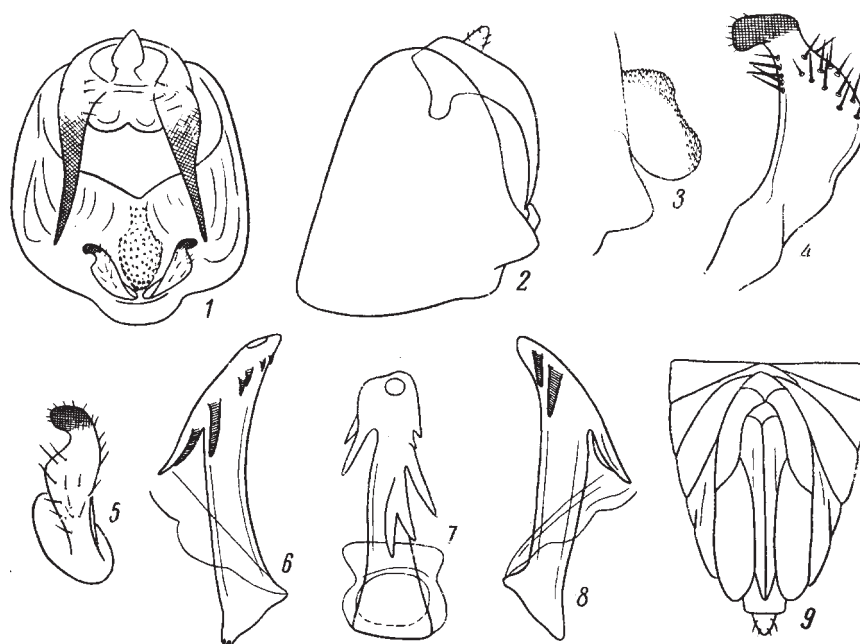


Fig. 313. Cicadines. Family Delphacidae, subfamily Delphacinae (after Vilbaste).

1-9, *Unkanodella ussuriensis*: 1, 2, genital block of male (1, posterior view; 2, lateral view); 3, median projection of pygofer bridge, lateral view; 4, 5, stylus (4, left lateral view; 5, posterior view); 6-8, penis (6, left lateral view; 7, dorsal view; 8, right lateral view); 9, female abdomen, ventral view.

47. **Ribautodelphax** W. Wagn. Macrocorphe about as long as wide. Carinae on head distinct everywhere. Eumetope about twice as long as wide; its widest part situated at level of lower parts of eyes. Lateral carinae of pronotum with posterior ends only slightly bent outwards but not reaching posterior margin of pronotum. In brachypters, fore wings rounded at apex. Posttibial spurs with 10-20 denticles. Male. Posterior edging of pygofer with a cut on sides. Anal tube with 2 ventral teeth crossed in most species; bases of processes connected by not interrupted sclerotization. Bridge of pygofer bearing usually 2 approximate teeth. Styli usually flattened, more or less widened in distal part, with lateral subapical excision. Aedeagus slightly bent ventrad, slightly asymmetrical due to arrangement of teeth and dorsal subapical gonopore shifted sideways. – 8 species (in USSR up to 15).

1. Stylus noticeably narrowed before subapical excision; apex of stylus distinctly pointed. Anterior projection of subgenital lobes in female pointed, awl-shaped. (Subgenus *Altostana* Em.) 2
- Stylus widening from base to the very subapical excision; apex of stylus rather widely blunt. Anterior projection of subgenital lobes in female rounded, without a tooth. (Subgenus *Ribautodelphax* W. Wagn.) 4
2. Aedeagus strongly compressed laterally, bearing only 2 large teeth dorsally before apex 3
- Aedeagus not compressed laterally; teeth smaller and situated in greater number on both sides lateral to gonopore. – Brown and light brown, with dim pattern; males brighter colored, females nearly entirely light brown. Carinae on head light, slightly brownish; pits of coryphe slightly brownish darkened; area between carinae on acrometope and on face brown; carinae dark brown edged. Genae and



Fig. 314. Cicadines. Family Delphacidae, subfamily Delphacinae (after Anufriev and original).

1-13, *Ribautodelphax pusilla*: 1, 2, genital block of male (1, posterior view; 2, lateral view); 3, median process of pygofer bridge, dorsal view; 4, apex of penis, posterior view; 5-10, penis (5, left lateral view; 6-9, right lateral view; 10, posterior view); 11, 12, stylus (11, left lateral view, in a plane; 12, posterior view); 13, anal tube, posterior view; 14-18, *R. bogdul*: 14, 15, genital block of male (14, posterior view; 15, lateral view); 16, projection of pygofer bridge, lateral view; 17, penis, right lateral view; 18, stylus, lateral view, in a plane; 19, 20, *R. bidentata*, genital block of male (19, posterior view; 20, lateral view).

- sides of clypeus nearly without brown pattern. Pronotum and scutellum brownish, with whitish carinae, [p. 414] a wider stripe running along median carina of scutellum. Fore wings reaching abdominal tergite V, semihyaline, with mat veins. Abdomen dark brown, with regular row of reddish brown spots along midline dorsally; sides of tergites also brownish, light. Thorax ventrally and legs brownish yellow, light, only hind coxae somewhat darkened. 1.8-2.3. – Khab.; NE Yakutia, Chita Prov., Altai. – Mongolia. – Mountain meadows of heath type. Mid-June to late August. (Figs. 314: 1-13) **R. (A.) pusilla** Em.
3. Teeth of anal tube crossed. Dorsal subapical teeth of aedeagus of about equal size. Light brown or yellowish brown. Dorsum straw-yellow, with whitish longitudinal stripe along midline. Pits of coryphe orange yellow or brownish. Face with light carinae and more or less brown darkened areas between them. Carinae of pronotum and scutellum not standing out in color. Fore wings yellowish, semihyaline. Abdomen usually dark in male; in female, light or with brown, more or less developed, small spots. 2.1-3.2. – Mag.; Chita Prov., Tuva, S of C Siberia. – Mongolia. – In swamp and moist meadows. Mid-June to late July. (Figs. 314: 14-18) **R. (A.) bogdul** Dlab.
- Teeth of anal tube not crossed, distinctly standing apart. The left dorsal tooth of aedeagus noticeably larger than the right tooth. In general appearance, similar to *R. bogdul*. 2.2-2.7, macropters up to 4.6. – Mag., Kamch., Khab., Prim., S Kur.; C Yakutia, Transbaikal, Irkutsk Prov., Tuva, Perm Prov. – Mongolia. – In swamp and moist meadows. Mid-June to late July. (Figs. 314: 19, 20; 315: 1-5) **R. (A.) bidentata** Anufr.
4. Styli slender, with well expressed subapical excision. The cut of lateral edging of pygofer situated in its upper part. Bridge of pygofer ventrally with a large tooth bifurcate at apex..... 5
- Styli shortened, as though underdeveloped, with weak subapical excision. The cut of lateral edging of pygofer situated in its lower part. Bridge of pygofer without teeth. Brownish gray, with light and dark to black pattern. Carinae on head, pronotum and scutellum whitish; median carina of pronotum and scutellum more widely lightened. Pits of coryphe ochraceous; metope between carinae dark brown to black; pigmentation stronger near carinae. Fore wings semihyaline, grayish; marginal vein whitish. In male, abdomen entirely dark brown, with noticeable light small spots on sides and dorsally; in female, abdomen brown, with light midline dorsally and darkening on sides with visible white small spots on it. 2.4-3, macropters up to 4.3. – Mag.; C and NE Yakutia, Siberia, Kazakhstan, Caucasus. – Mongolia, Europe, N Africa. – In dry and steppe meadows. Late June to mid-August. (Figs. 315: 6-14) **R. albostriata** Fieb.
5. Anal tube with processes slanting inwards towards each other and often overlying 6
- Anal tube with processes more or less directed downwards and crossed. – Dirty ochraceous yellow. Carinae on head, pronotum and scutellum lighter, with narrow black-brown edging. Fore wings brownish; marginal vein lightened. 2.5-3.3, macropters up to 4. – Mag.; Transbaikal, S Krasnoyarsk Terr., Altai, Kazakhstan, C and S European part of USSR. – Mongolia, Rumania. – In dry and steppe meadows. Mid-June to mid-July. (Figs. 316: 1-6) **R. ochreata** Vilb.
6. Styli comparatively long. Aedeagus longer, bent in the middle at obtuse angle. – Nearly entirely light ochraceous-yellow. Eumetope somewhat darker and its whitish carinae dark brown edged above, the edging becoming weaker and then disappearing downwards. Carinae of pronotum and scutellum whitish. Fore wings semihyaline, ochraceous-yellow, with whitish veins, and especially distinctly marked

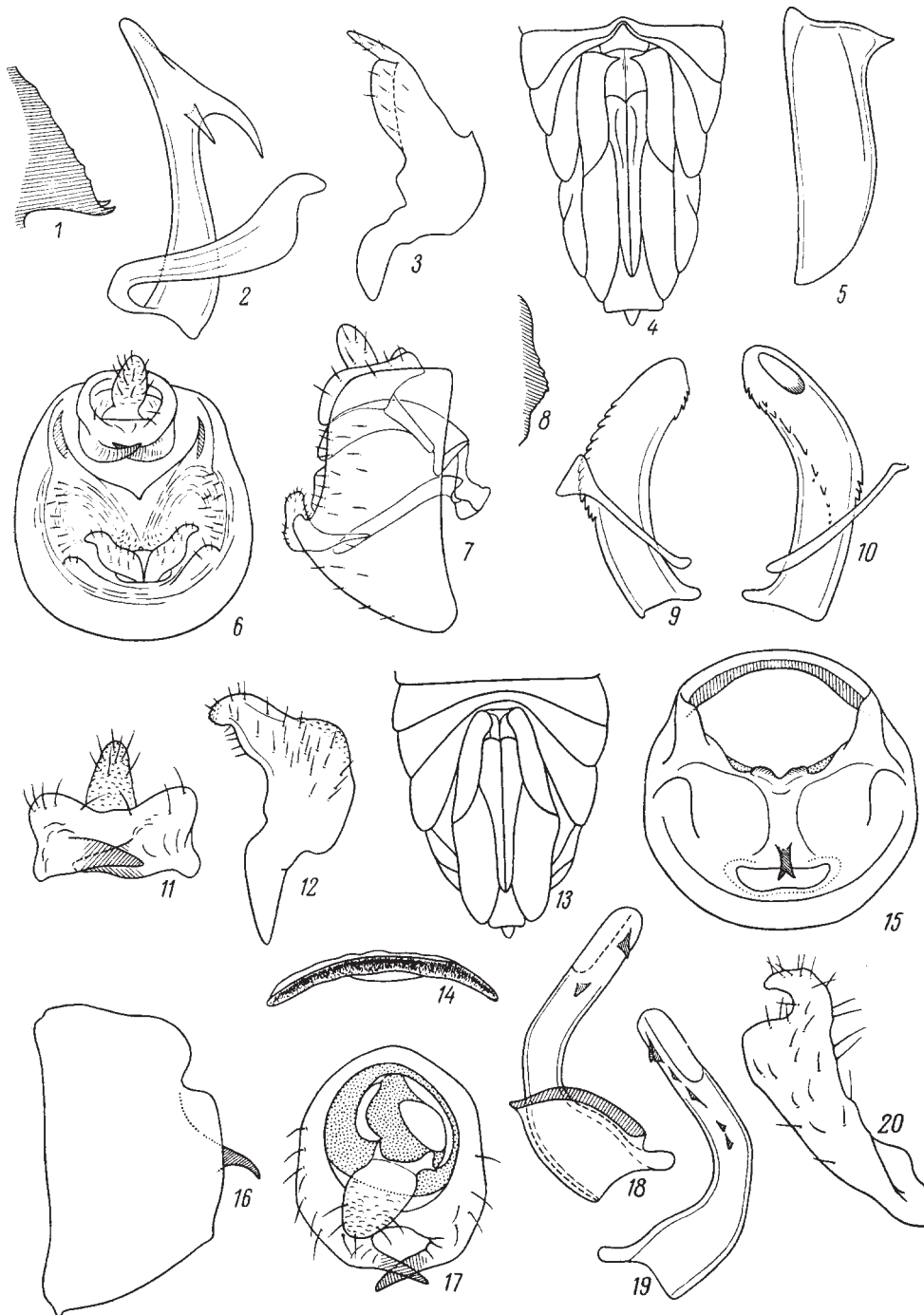


Fig. 315. Cicadines. Family Delphacidae, subfamily Delphacinae (after Anufriev, Ossiannilsson, and original).

1-5, *Ribautodelphax bidentata*: 1, projection of pygofer bridge, lateral view; 2, penis, right lateral view; 3, stylus, lateral view, in a plane; 4, female abdomen, ventral view; 5, subgenital lateral lobe of ovipositor (valvifer I); 6-14, *R. albostrigata*: 6, 7, genital block of male (6, posterior view; 7, lateral view); 8, projection of pygofer bridge, lateral view; 9, 10, penis (9, left lateral view; 10, right lateral view); 11, anal tube, ventral view; 12, stylus, lateral view, in a plane; 13, female abdomen, ventral view; 14, genital scale of female; 15-20, *R. pumila*: 15, 16, pygofer (15, posterior view; 16, lateral view); 17, anal tube, posterior view; 18, penis, left lateral view; 19, aedeagus, right lateral view; 20, stylus, posterior view.

- marginal vein. Abdomen orange yellow. 2.3-3.3, macropters up to 4.9. – S Khab., Prim., S Kur.; Chita Prov., S Krasnoyarsk Terr., Altai. – Mongolia. – In dry and steppe meadows. Late June to late August. (Figs. 316: 7-12) **R. flavicans** Vilb. [p. 417]
- Styli comparatively short. Aedeagus shorter, bent in the middle at right angle 7
7. Processes of anal tube running strictly transversely (in posterior view). Anal tube about as wide as high; lateral margins of anal tube somewhat converging downwards. Aedeagus with large dorsal tooth to the left of posterior margin of gonopore and an equal lateral tooth near dorsal tooth. Bright ochraceous-yellow. Eumetope somewhat darker, with whitish, brown edged carinae. Carinae of pronotum whitish. Fore wings semihyaline, ochraceous-yellow, with whitish veins. Abdomen yellow-orange. 2-3. – Prim.; Chita Prov., S Krasnoyarsk Terr., Altai, Kazakhstan. – Mongolia. – In meadows. Early June to late July. (Figs. 316: 13-20) **R. altaica** Vilb.
- Processes of anal tube somewhat slanting downwards and distinctly crossed (in posterior view), not running parallel to each other. Anal tube noticeably higher than wide, with more or less parallel lateral margins. Aedeagus without dorsal tooth, only with 1 lateral tooth to the left of posterior margin of gonopore. Anterior part of body ochraceous-brown, with whitish carinae. Carinae of face dark brown edged; areas of acrometope between carinae blackened. Fore wings semihyaline, with whitish margin. In male, abdomen dark brown to black, in female, from brown with dark brown edging of tergites to entirely dark brown. Legs brown. 2-2.7, macropters up to 3.8. – Kamch. – On meadow grasses in juniper scrubs. Late July. (Figs. 315: 15-20) **R. pumila** Em.

48. **Sibirodelphax** Vilb. Macrocorphe about as long as wide, with weakly projecting obtuse-angulate anterior margin. Eumetope about 2.5 times as long as wide; its lateral margins slightly convex; median carina branching on the turn to acrometope. All carinae of head distinct; the turn of eumetope into acrometope marked by more or less distinct projections on inner margins of lateral carinae of head. Disc of pronotum with lateral carinae strongly slanting laterad posteriorly and not reaching posterior margin of pronotum. In brachypters, fore wings rounded at apices and somewhat not reaching apex of abdomen. Posttibial spur not more than with 13 small lateral denticles. Male. Pygofer with deep dorsal excision delimited on sides by large, obtuse, wedge-shaped lobes, under which the edging bears a deep cut from below delimited by finger-shaped projection of its margin, as in *Unkanodes* and *Ribautodelphax*. Styli more or less straight, diverging, slightly widened in middle part, somewhat narrowing to blunt apex. Bridge of pygofer with projection, apex of which directed downwards. Anal tube without teeth ventrally. Aedeagus asymmetrical, elongate, slightly bent dorsad, with denticulate projection on the left at apex, with a long row of teeth on the right. Gonopore ventral, subapical. Monotypic genus.

1. Whitish gray, with dark brown pattern. Carinae on head light; areas between them mostly dark brown, but on eumetope light, only carinae with uneven dark brown lines and pits of coryphe only slightly brownish. Pronotum and scutellum light, often with dark spots on sides. Fore wings grayish, semihyaline. Abdomen in male dark brown dorsally, with light midline and sides of tegites. Venter and legs dark, only sides of mesonotum with wide light edging on margins and pleural suture. 2.3-3.4, macropters up to 4. – Transbaikal (up to E Chita Prov.), Tuva, Altai. – Mongolia. – In dry and steppe meadows. Early June to mid-August. (Figs. 317: 1-6) **S. sibirica** Kusn.



Fig. 316. Cicadines. Family Delphacidae, subfamily Delphacinae (after Vilbaste and original).

1-6, *Ribautodelphax ochreata*: 1, 2, genital block of male (1, posterior view; 2, lateral view); 3-5, penis (3, left lateral view; 4, dorsal view; 5, right lateral view); 6, stylus; 7-12, *R. flavicans*: 7, 8, genital block of male (7, posterior view; 8, lateral view); 9, 10, penis (9, left lateral view; 10, right lateral view); 11, 12, stylus; 13-20, *R. altaica*: 13, 14, genital block of male (13, posterior view; 14, lateral view); 15-17, penis (15, left lateral view; 16, dorsal view; 17, right lateral view); 18, stylus; 19, female abdomen, ventral view; 20, subgenital lateral lobe of ovipositor (valvifer I).

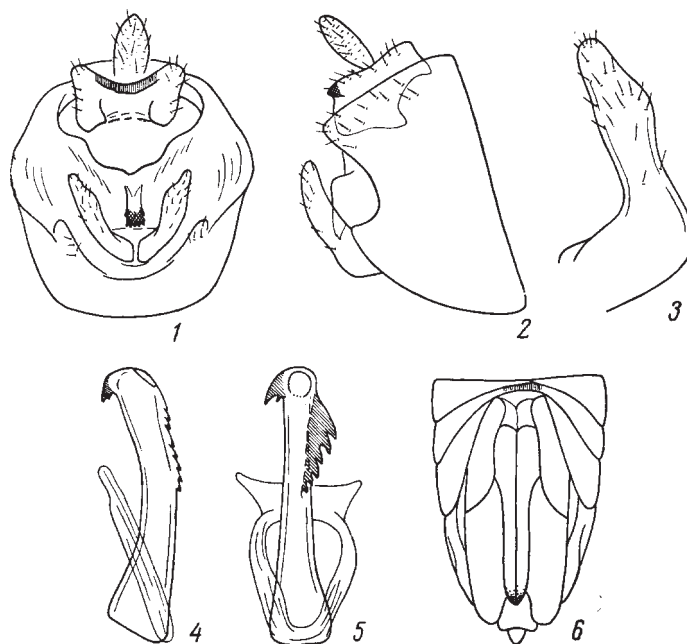


Fig. 317. Cicadines. Family Delphacidae, subfamily Delphacinae (after Vilbaste).

1-6, *Sibirodelphax sibirica*: 1, 2, genital block of male (1, posterior view; 2, lateral view); 3, stylus, lateral view; 4, 5, penis (4, left lateral view; 5, ventral view); 6, apex of female abdomen, ventral view.

49. **Struebingianella** W. Wagn. Macrocorphe shorter than wide, with rounded anterior margin. Eumetope about twice as long as wide, with slightly convex lateral margins. Median carina of metope not expressed on the turn of eumetope into acrometope. Lateral carinae of disc of pronotum with posterior ends slanting outwards, not reaching posterior margin of pronotum. In brachypters, fore wings rounded at apices. Posttibial spur long and slender, with 15-23 lateral denticles; [p. 419] apical denticle weak or absent. Male. Lateral edging of pygofer without a cut, not interrupted. Anal tube with teeth not connected at their bases by sclerotization. Styli becoming thinner to apex, with thickening at base of outer part. Aedeagus slightly bent dorsad, in apical part bearing on sides elongate, recurrent teeth-processes arranged in asymmetrical rows. Gonopore ventral, subapical. – 2 species (in USSR 3).

1. Processes of anal tube comparatively narrow at base, weakly diverging downwards. Small denticles situated in apical part of penis shaft, on its sides; a pair of practically symmetrical recurrent processes basal to gonopore. Brown, with light pattern. Carinae barely lighter than background. Genae stronger darkened. Disc of pronotum and its carinae lightened. Fore wings dark brown; clavus and all margins whitish. Abdomen dorsally with noticeable light spots on midline and sides. Females much lighter than males, light brown, nearly without pattern, only sides of tergites darkened. 2.4-2.6, macropters up to 4.6. – Khab., Prim.; C Yakutia, Irkutsk Prov. – Mongolia. – In herbaceous swamps and swamp meadows. Late May to late August. (Figs. 318: 10-17) **S. detecta** Lnv.
- Processes of anal tube very wide at base, strongly diverging. Shaft of penis with 2 processes on the right side of shaft and 1 process on the left side. Males with light brown and dark brown, more or less contrasting pattern. Head with more or less darkened genae under eyes; pronotum with darkened middle parts of lateral

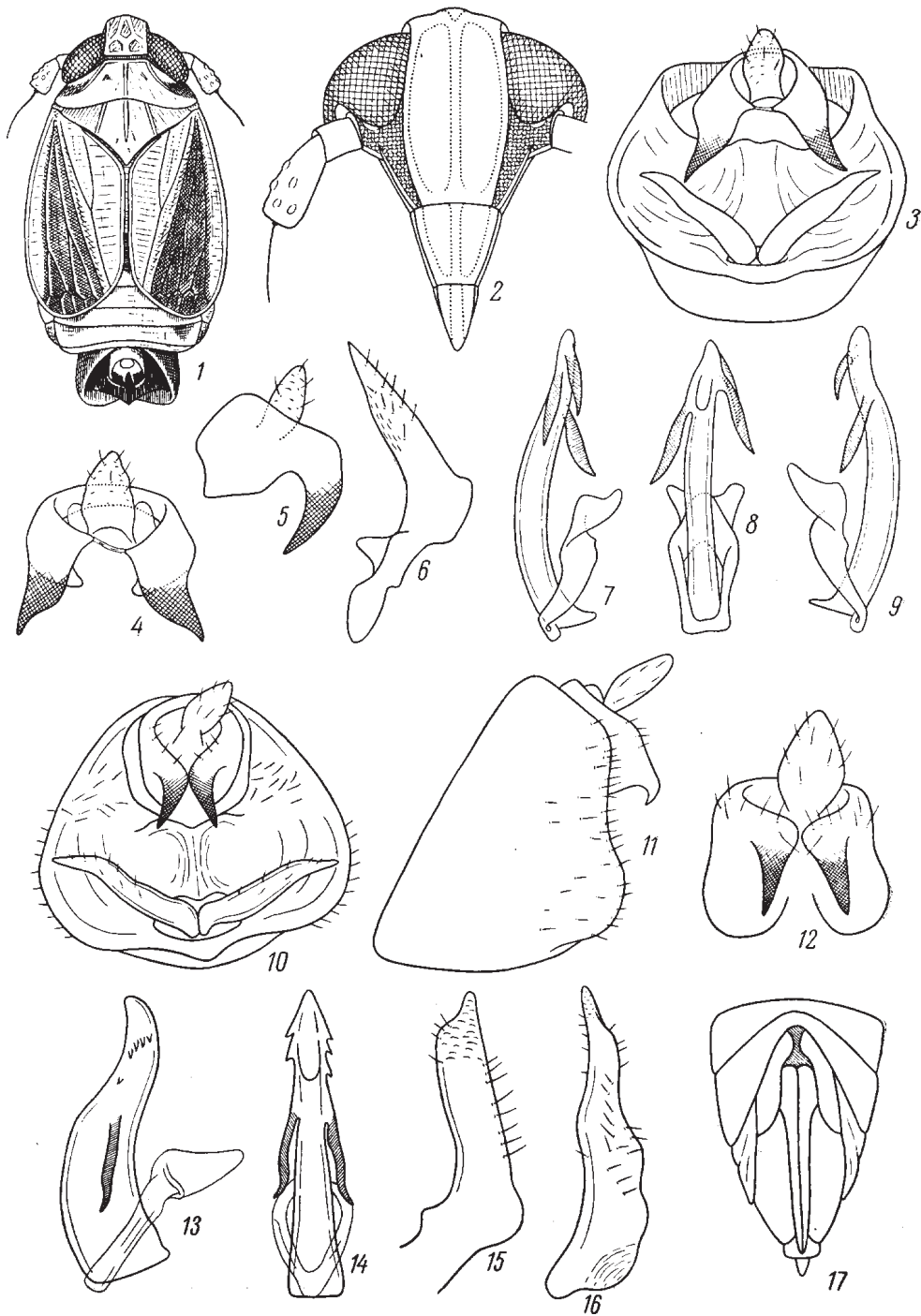


Fig. 318. Cicadines. Family Delphacinae, subfamily Delphacidae (after Anufriev, Vilbaste, and original).

1-9, *Struebingianella rasnitsyni*: 1, general appearance; 2, face; 3, genital block of male, posterior view; 4, 5, anal tube (4, posterior view; 5, lateral view); 6, stylus; 7-9, penis (7, right lateral view; 8, ventral view; 9, left lateral view); 10-17, *S. detecta*: 10, 11, genital block of male (10, posterior view; 11, lateral view); 12, anal tube, posterior view; 13, 14, penis (13, right lateral view; 14, ventral view); 15, 16, stylus; 17, female abdomen, ventral view.

lobes; hemelytra with lightened margins and clavus. Abdomen dorsally with light middle part. Legs more or less brown. Females nearly without pattern, only sides of tergites usually darkened. 2.5-4.1. – Amur.; Chita Prov., Irkutsk Prov. – Mongolia. – In herbaceous swamps and swamp meadows. Mid-July to late August. (Figs. 318: 1-9) **S. rasnitsyni** Anufr.

50. **Javesella** Fennah. Of medium proportions. Macrocorphe square, parallel-sided, its anterior third situated before eyes. Eumetope about twice [p. 421] as long as wide. Lateral carinae of disc of pronotum not reaching posterior margin of pronotum. Posttibial spur with 10-21 denticles on lateral margin. Male. Pygofer rather long, with greatest length subequal to height, excised, arcuate posteroventrally; lateral edging of pygofer not interrupted, without cut. Bridge of pygofer devoid of processes and teeth. Styli simple, arcuate, narrowing to apex and strongly diverging. Processes of anal tube long, adjacent to each other; their bases separated by membranous stripe. Shaft of aedeagus more or less simple, often with ventral tooth or process, more rarely more or less arcuate and approximately symmetrical. Gonopore apical or subapical, ventral or dorsal. – 10 species (in USSR 11-12).

1. Styli with thinned apical part and often with slightly thickened apex separated by a weak constriction. Denticles on sides of penis shaft more or less irregular, not arranged distinctly in one row on each side. Theca completely fused with base of aedeagus, forming with it a single structure. (Subgenus *Javesella* Fennah) 2
- Styli with relatively widely, obliquely truncate apex. Shaft of penis evenly bent ventrad, with regular row of denticles laterally. Theca freely articulated with base of aedeagus. (Subgenus *Haffnerianella* W. Wagn). Carinae on head distinct. Head, thorax and scutellum dirty yellow or brownish; in brachypters, fore wings dark brown, with light margins, rounded truncate at apices, reaching abdominal tergites IV-V. In males, abdomen dark brown, with light lateral margins of tergites and often with light spots on midline posteriorly; in females, abdomen yellowish brown. Thorax ventrally and legs light. 3.2-4.5. – Mag., Kamch., Amur.; C Yakutia, Tuva, Kazakhstan. – Mongolia, Europe. – In moist meadows. June. (Figs. 319: 1-10) **J. stali** Metc.
2. Dorsal excision of pygofer narrowing from the middle to apex (in dorsal view). Dorsal margin of pygofer bridge straight or with projection in the middle. Aedeagus more or less straight, without processes or large projections 3
- Dorsal excision of pygofer widening from base to the very apex. Dorsal margin of pygofer bridge with parabolic excision 5
3. Styli without knob before apex. Aedeagus bearing denticles on dorsal side only at apex. – Basic color of head and thorax light; in brachypters, fore wings light, grayish yellowish, abdomen brownish black. 2.1-3, macropters up to 3.5. – Kamch.; Taimir Peninsula, Kanin Peninsula, Kola Peninsula. – Mongolia (Hangai, Hentei Mts.), Fennoscandia. – Under canopy of northern taiga and mountain taiga forests, apparently also in subarctic meadows. July (in Europe, June to August). (Figs. 320: 10-15). Differs from related species *J. forcipata* Boh. (Figs. 320: 1-9) not found yet in the Far East in lighter coloration and details of genitalia structure **J. alpina** J. Sahlb.
- Styli with knob before apex on anterior surface (in oblique dorsal view). Aedeagus bearing denticles dorsally only in basal half 4
4. Whole basal half of dorsal surface of aedeagus occupied by a long row of denticles. Brown and dark brown, with dirty gray tint; females may be light brown. On face, carinae lighter, areas between them dark brown, macrocorphe brown. Pronotum

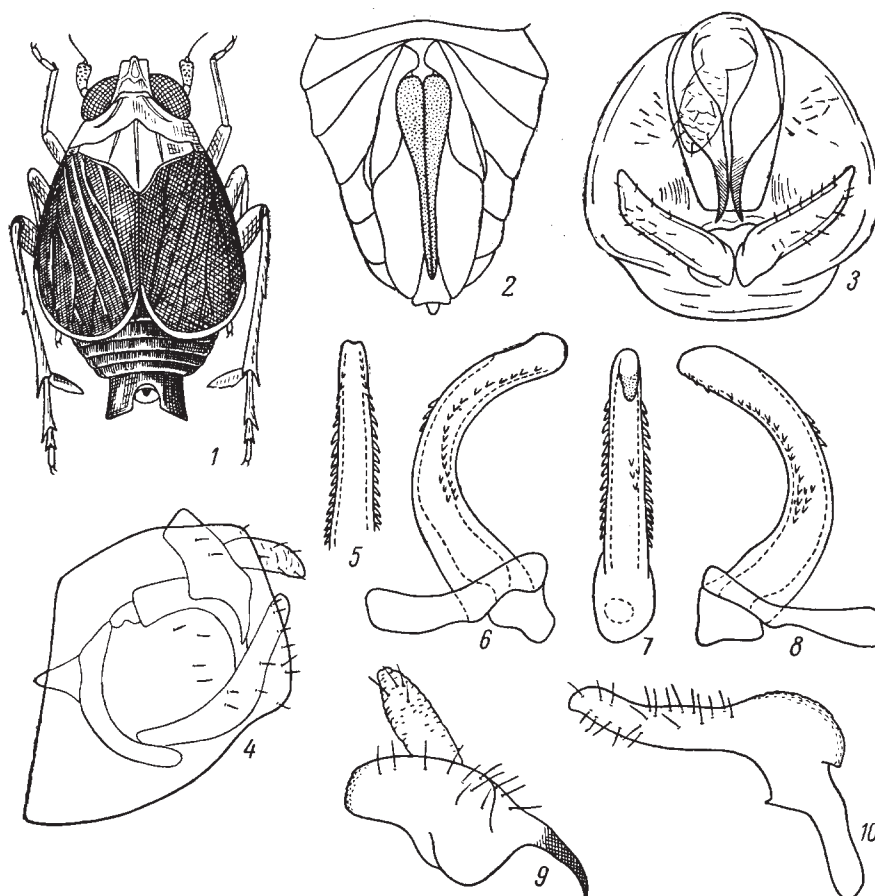


Fig. 319. Cicadines. Family Delphacidae, subfamily Delhacinae (after Haupt, Ossianilsson, and Vilbaste).

1-10, *Javesella stali*: 1, male; 2, female abdomen, ventral view; 3, 4, genital block of male (3, posterior view; 4, lateral view); 5, apex of penis, dorsal view; 6-8, penis (6, left lateral view; 7, ventral view; 8, right lateral view); 9, anal tube, lateral view; 10, stylus.

and mesonotum brown to dark brown, often pronotum lighter than mesonotum. In brachypters, fore wings grayish brown, in males, often dark brown in distal part. Abdomen nearly black in males, brown or dark brown in females. Legs brown. 2.5-3.4. – Mag., Kamch., Sakh. – In meadows. June to July. (Figs. 321: 9-13)

..... **J. beringiaca** Em.

- Dorsal surface of aedeagus with denticles only at its base. Anterior part of body brown, with dim dark brown spots; eumetope darkened near carinae or entirely, carinae remaining lighter, brown. In brachypters, fore wing dark, castaneous brown up to nearly black, as well as abdomen, but abdomen usually lighter near midline dorsally in females. Legs [p. 422] brown. 2.6-3.3. – N Prim. – In mountain meadows. Late June to early July. (Figs. 321: 1-8). Holotype – male, Prim., Sikhote Alin Reserve, Upper Nantsa, 26.VI.1967 (Anufriev); paratypes – 2 males from the same locality and date; 1 male, 1 female – from the same locality, 25.VI.1967, and 1 female – Sikhote Alin Reserve, Ust-Shandui, 27.VI.1967 (Anufriev). Holotype and part of paratypes kept in collection of Zoological Institute, Academy of Sciences of USSR (Leningrad), other part of paratypes in Gorki State University **J. badia** Anufr., sp. n.

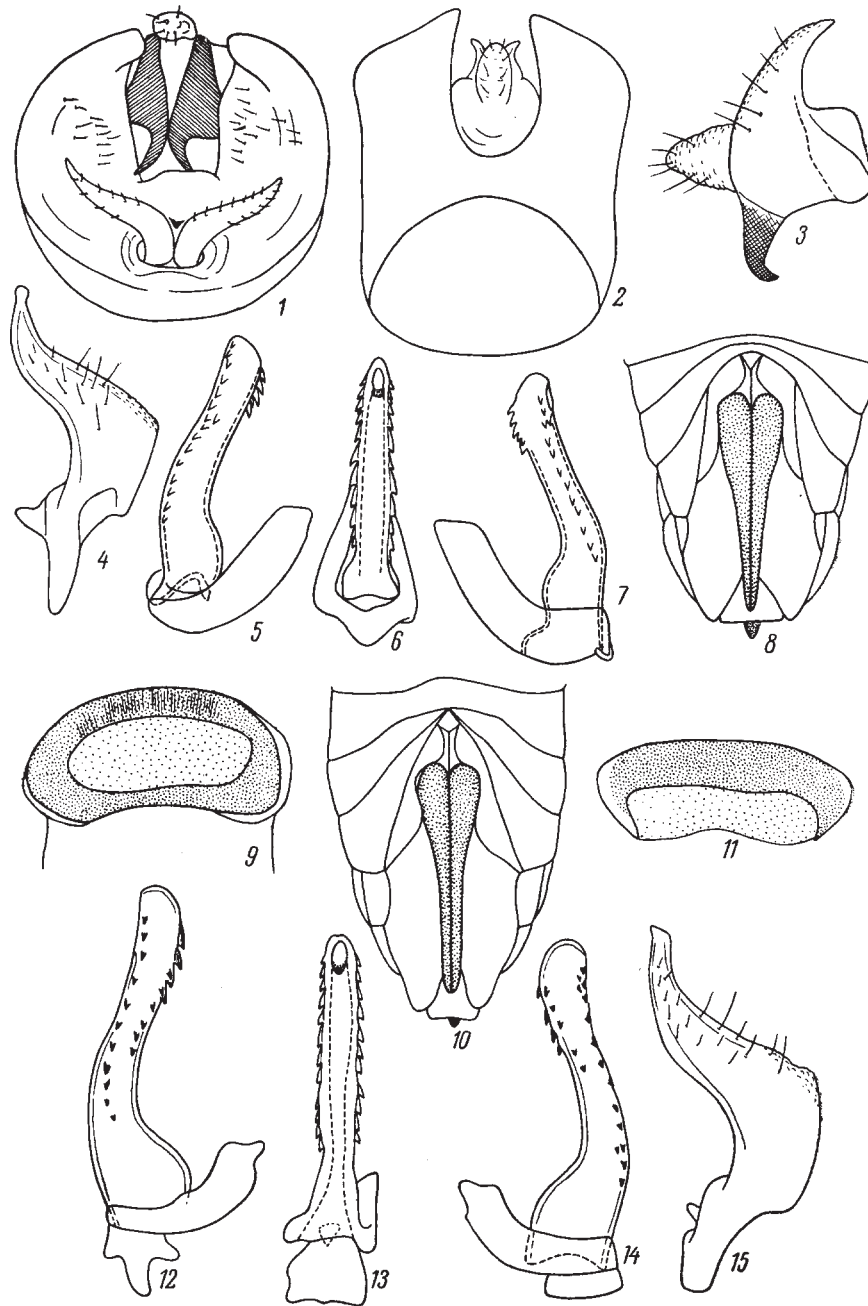


Fig. 320. Cicadines. Family Delphacidae, subfamily Delphacinae (after Ossiannilsson and Vilbaste).

1-9, *Javesella forcipata*: 1, 2, genital block of male (1, posterior view; 2, dorsal view); 3, anal tube, lateral view; 4, stylus; 5-7, penis (5, right lateral view; 6, ventral view; 7, left lateral view); 8, female abdomen, ventral view; 9, genital scale of female, ventral view; 10-15, *J. alpina*: 10, female abdomen, ventral view; 11, genital scale of female, ventral view; 12-14, penis (12, right lateral view; 13, ventral view; 14, left lateral view); 15, stylus.

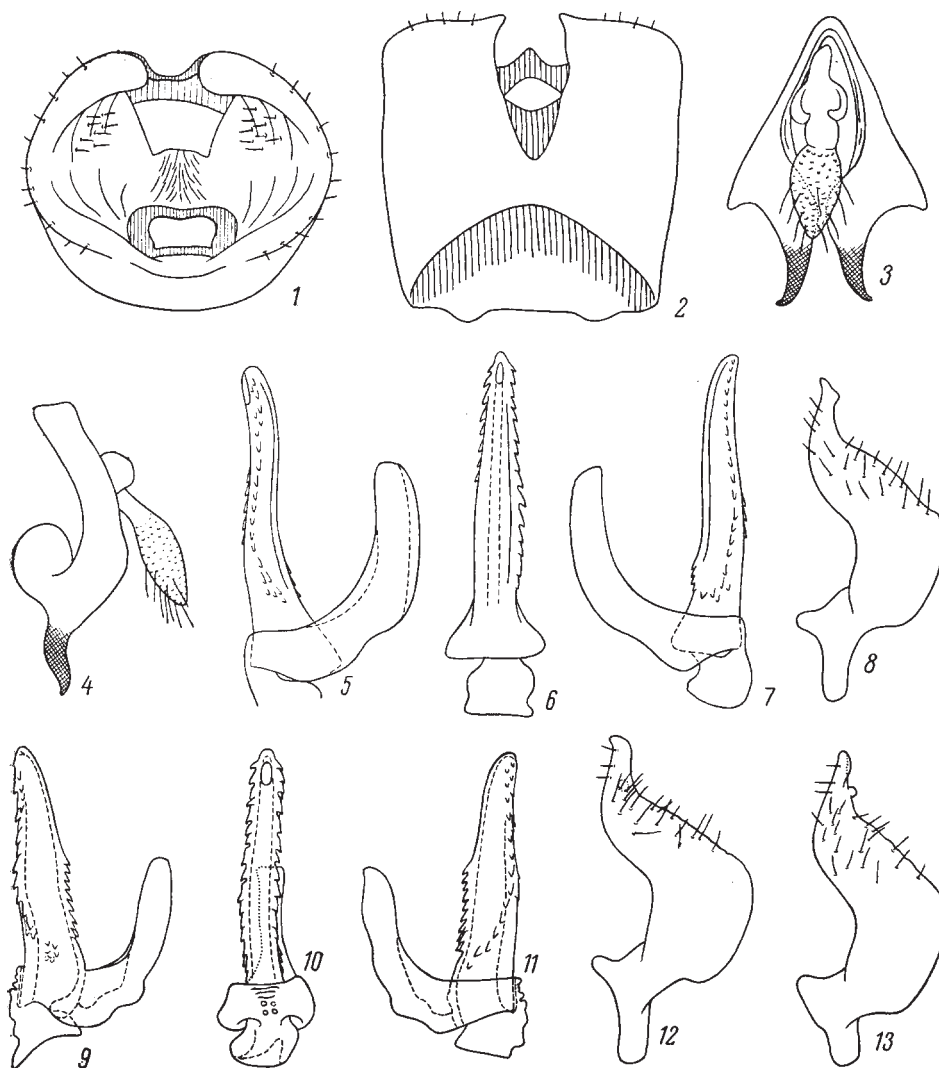


Fig. 321. Cicadines. Family Delphacidae, subfamily Delphacinae (original).

1-8, *Javesella badia*: 1, 2, pygofer (1, posterior view; 2, dorsal view); 3, 4, anal tube (3, posterior view; 4, lateral view); 5-7, penis (5, right lateral view; 6, ventral view; 7, left lateral view); 8, stylus, in a plane; 9-13, *J. beringiaca*: 9-11, penis (9, right lateral view; 10, ventral view; 11, left lateral view); 12, 13, left stylus (12, posterior view; 13, posterodorsal view).

5. Shaft of aedeagus without processes, strongly bent ventrad; gonopore dorsal, sub-apical. – Males black, with white spots on head, pronotum and scutellum, and also with white disc and posterior margin of pronotum and semihyaline brownish fore wings. Females brownish; head with brownish carinae and brown to dark brown areas between them. In brachypters, fore wings somewhat longer than abdomen, rounded at apices. 2.1-3.4, macropters up to 5. – Mag., Kamch., Khab., Prim., S Sakh., S Kur.; S Sib., Kazakhstan, Middle Asia. – Mongolia, Asia Minor, Europe, N Africa. – On grasses in moist habitats, on cereals. Early June to late July. (Figs. 322: 1-12) ***J. pellucida** F.
- Shaft of aedeagus with dorsal process, which is sometimes longer than short shaft; gonopore ventral, subapical 6

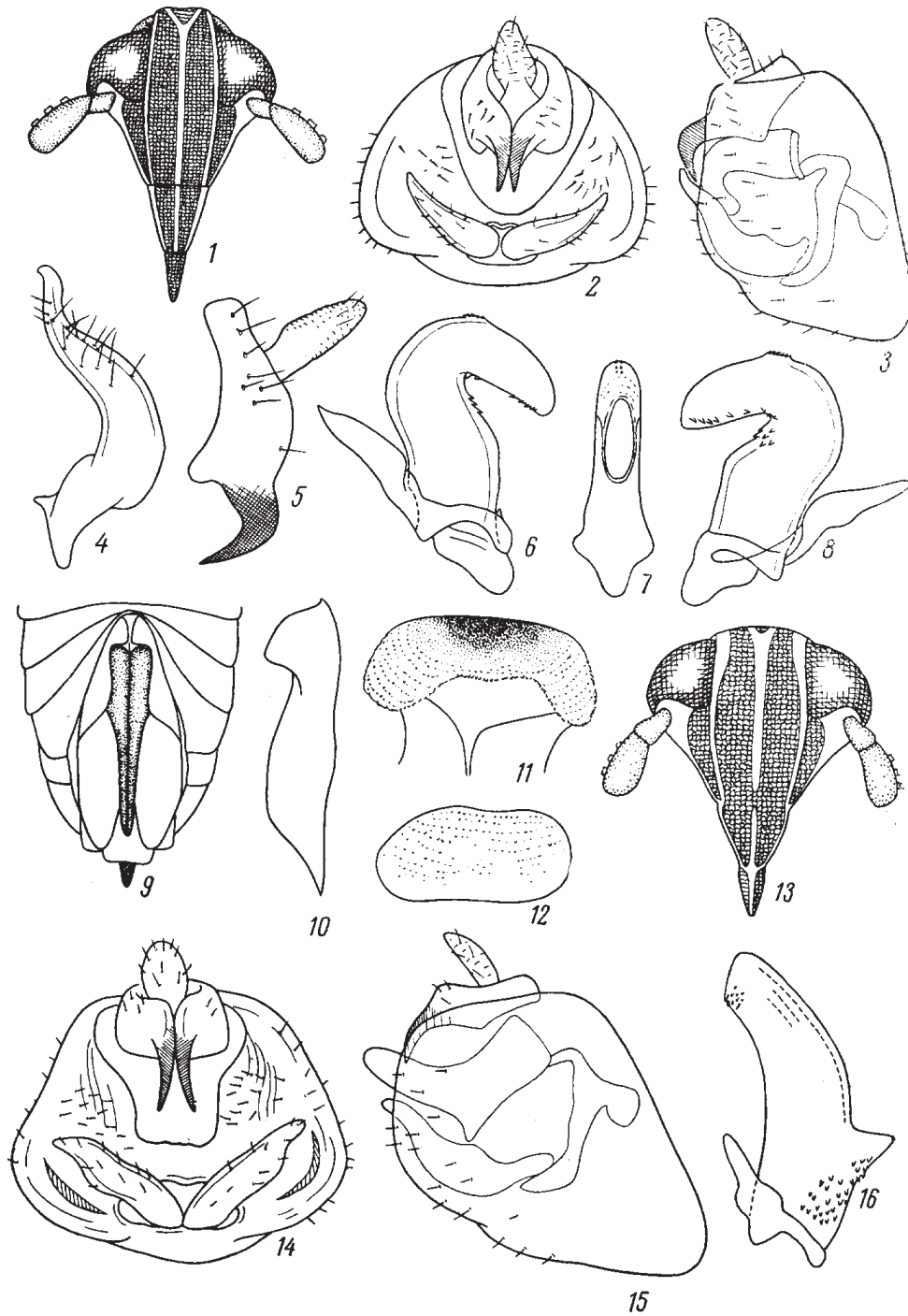


Fig. 322. Cicadines. Family Delphacidae, subfamily Delphacinae (after Ossiannilsson and Vilbaste).

1-12. *Javesella pellucida*: 1, face; 2, 3, genital block of male (2, posterior view; 3, lateral view); 4, stylus; 5, anal tube, lateral view; 6-8, penis (6, left lateral view; 7, posterior view; 8, right lateral view); 9, female abdomen, ventral view; 10, left lateral lobe of ovipositor of female, ventral view; 11, 12, genital scale of female (11, ventral view; 12, in a plane); 13-16, *J. discolor*: 13, face; 14, 15, genital block of male (14, posterior view; 15, lateral view); 16, penis, left lateral view.

6. Dorsal process of aedeagus shaft robust; shaft looking as a small projection on ventral side of the process at its middle 7 [p. 424]
- Dorsal process of aedeagus shaft long, arising from basal or middle part of shaft and running parallel to it 8
7. Dorsal margin of aedeagus uniformly concave; apex of process blunt or rounded. Males mostly black; carinae of head, posterior margin of pronotum and apex of scutellum brownish yellow; in brachypters, fore wings colorless, rarely brownish, in last case with narrowly lightened terminal margin; females often lighter. 2.2-3.3, macropters 4-4.5. – Mag., Kamch., Prim. (Sikhote Alin Mts.); Siberia. – Mongolia, Europe, N Africa. – In moist forests, moss bogs, swamp meadows; vectors of sterile dwarf disease of cereals. Late June to mid-July; in Europe, May to September. (Figs. 322: 13-16; 323: 1-7) ***J. discolor** Boh.
- Dorsal margin of aedeagus convex in the middle; apex of process rounded; a weak incision noticeable before apex (in lateral view). Dark brown to black; carinae light brown on eumetope, brown on macrocoryphe; posterior margin of pronotum [p. 427] lightened up to white. Fore wings semihyaline, weakly darkened, slightly shorter than abdomen in brachypters, rounded at apices. 1.5-2.1. – Chuk., Mag., Khab.; Taimyr Peninsula, Estonia. – Fennoscandia, E Germany. – On *Eriophorum* and sedges in moist habitats. Early June to mid-July. (Figs. 323: 8-19) **J. simillima** Lnv.
8. Dorsal process of penis shaft extending considerably beyond apex of the shaft. – Brown. In males, disc of pronotum and carinae light brown, eumetope dark brown between carinae; in brachypters, fore wings somewhat shorter than abdomen, dark brown, clavus lighter, brownish; apices of wings lightened and white-edged along vein.; abdomen dark brown to black. In females, nearly whole integument light brown, fore wings noticeably shorter than abdomen. In macropters, fore wings whitish, semihyaline, with light brown veins. 1.9-2.6. macropters up to 3.4. – Amur., S Prim.; Chita Prov., Tuva, Altai. – Mongolia, Asia Minor, N and C Europe. – On sedges in moist, often slightly saline habitats. Mid-July to late August. (Figs. 324: 1-8) **J. salina** Hpt.
- Dorsal process of penis shaft reaching only apex of shaft 9
9. Process of penis shaft arising from base of shaft about as long as shaft. Males from brown with light brown carinae of anterior part of body and light brown disc of pronotum to dark brown with brown carinae. In brachypters, fore wings nearly hyaline, reaching apex of abdomen and rounded at apices. Females mostly brown or light brown, or darker, as males. 2.1-3.4, macropters up to 4.3. – Kamch., Prim., S Kur.; Buryatia, Tuva, Altai, Kazakhstan, Middle Asia (in mountains). – Mongolia, Europe, N Africa. – In swamps and swampy forests. Late May to mid-August. (Figs. 324: 9-18) **J. dubia** Kbm.
- Process of penis shaft arising from about middle of shaft, much shorter than shaft. Males dark brown to black; carinae on anterior part of body light brown. Shortened fore wings extending beyond apex of abdomen, rounded truncate at apices, brownish, semihyaline. Females from brown to nearly black, similar to males in coloration. 1.9-3.2, macropters up to 4.3. – Chuk., Khab., Prim.; C Yakutia, Siberia, Asia Minor. – Europe, Canada, USA. – In swamps and swamp meadows. Mid-June to late August. (Figs. 325: 1-8) **J. obscurella** Boh.

51. **Movesella** Em. Macrocoryphe nearly square, insignificantly projecting before eyes, with slightly convex anterior margin. Eumetope about twice as long as wide; its lateral margins slightly convex. Inner carinae completely smoothed on the turn of eumetope into acrometope. Lateral carinae of disc of pronotum slanting outwards

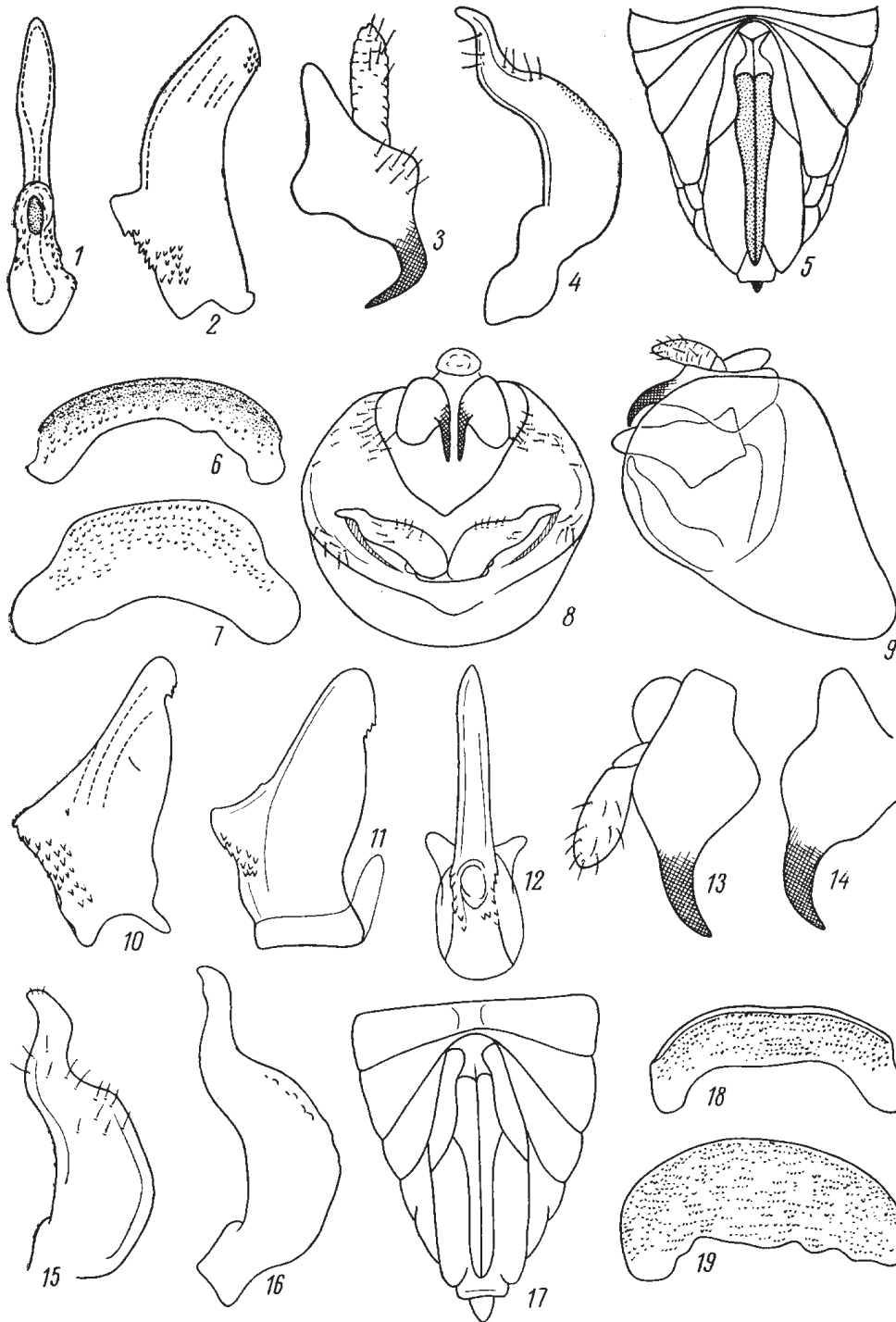


Fig. 323. Cicadines. Family Delphacidae, subfamily Delphacinae (after Ossiannilsson and Vilbaste).

1-7, *Javesella discolor*: 1, 2, penis (1, ventral view; 2, right lateral view); 3, anal tube, lateral view; 4, stylus; 5, female abdomen, ventral view; 6, 7, genital scale of female (6, ventral view; 7, in a plane); 8-19, *J. simillima*: 8, 9, genital block of male (8, posterior view; 9, lateral view); 10-12, penis (10, 11, right lateral view; 12, ventral view); 13, 14, anal tube, lateral view; 15, 16, stylus; 17, female abdomen, ventral view; 18, 19, genital scale of female (18, ventral view; 19, in a plane).

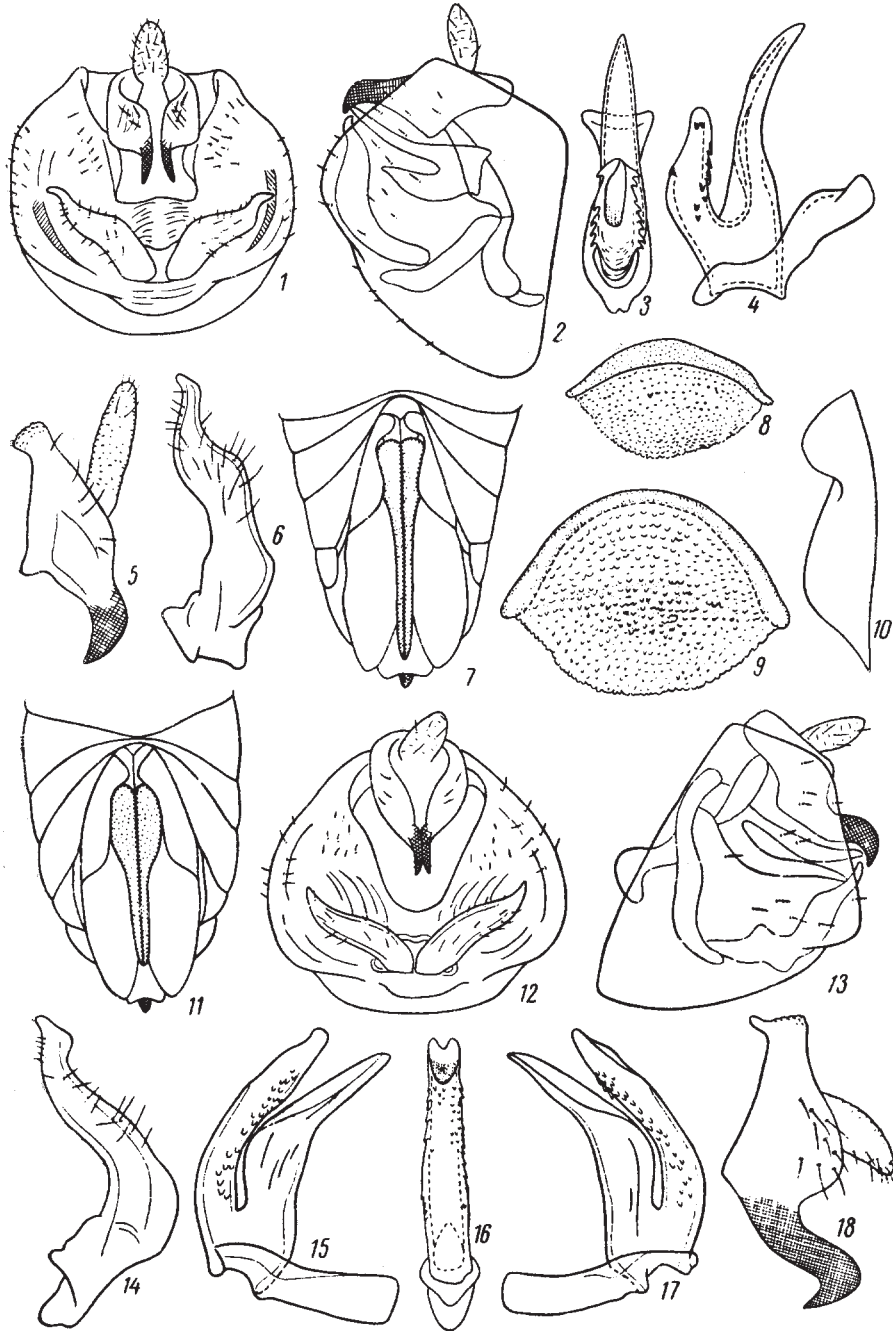


Fig. 324. Cicadines. Family Delphacidae, subfamily Delphacinae (after Ossiannilsson and Vilbaste).

1-8, *Javesella salina*: 1, 2, genital block of male (1, posterior view; 2, lateral view); 3, 4, penis (3, ventral view; 4, right lateral view); 5, anal tube, lateral view; 6, stylus; 7, female abdomen, ventral view; 8, genital scale of female, ventral view; 9-18, *J. dubia*: 9, genital scale of female, ventral view; 10, left lateral lobe of ovipositor; 11, female abdomen, ventral view; 12, 13, genital block of male (12, posterior view; 13, lateral view); 14, stylus; 15-17, penis (15, right lateral view; 16, ventral view; 17, left lateral view); 18, anal tube, lateral view.

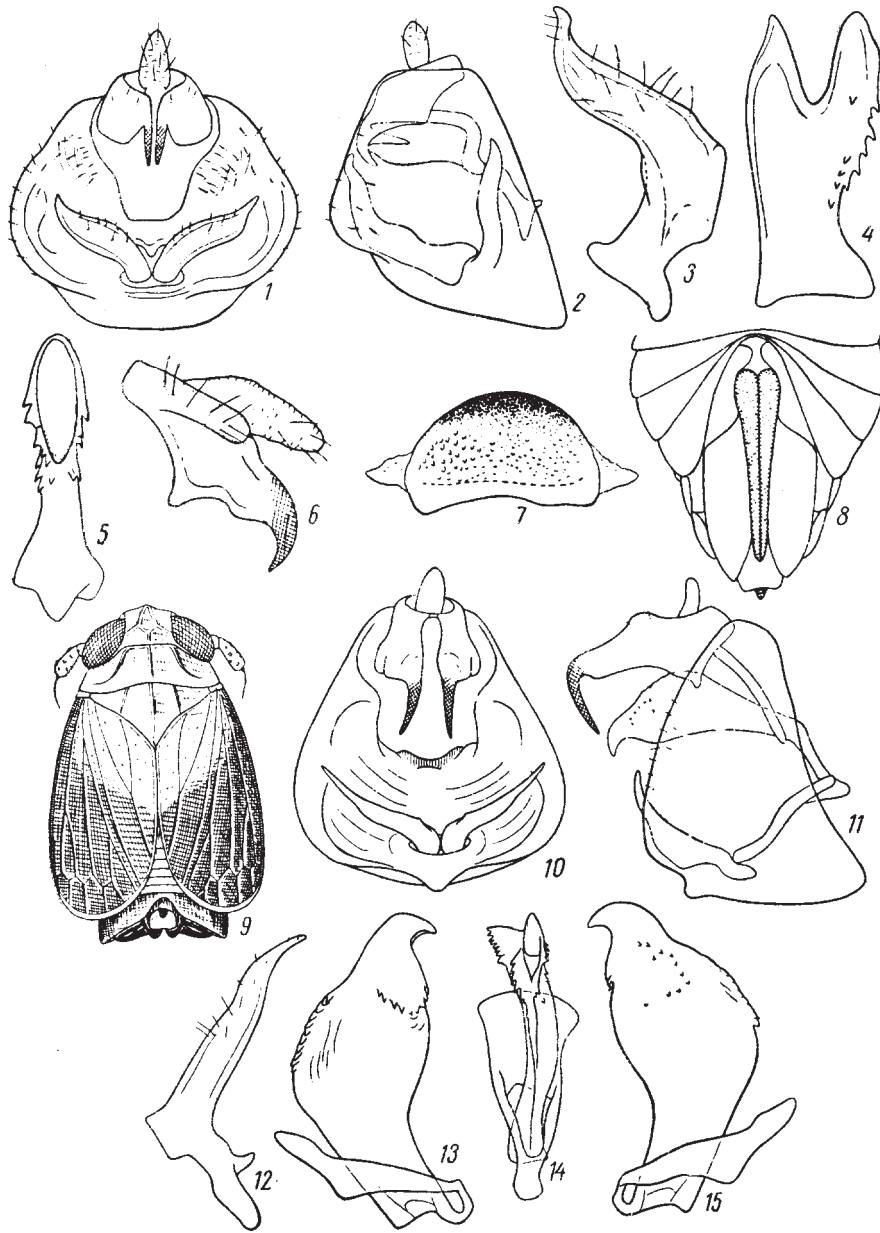


Fig. 325, Cicadines. Family Delphacidae, subfamily Delphacinae (after Emeljanov, Ossiannilsson, Vilbaste, and original).

1-8, *Javesella obscurella*: 1, 2, genital block of male (1, posterior view; 2, lateral view); 3, stylus; 4, 5, penis (4, left lateral view; 5, ventral view); 6, anal tube, lateral view; 7, genital scale of female, ventral view; 8, female abdomen, ventral view; 9-15, *Movesella nuchtica*: 9, male; 10, 11, genital block of male (10, posterior view; 11, lateral view); 12, stylus; 13-15, penis (13, left lateral view; 14, ventral view; 15, right lateral view).

posteriorly up to transverse position and disappearing. Posttibial spur with about 16 denticles on lateral margin. Male. Pygofer comparatively short, half as long as high; edging of pygofer not interrupted; posterior wall of pygofer strongly bevelled upwards; excision near base of anal tube not expressed. Upper margin of pygofer bridge straight; upper excision occupies about one third of pygofer width; its lateral margins on the whole vertical, but slightly convex, projecting towards each other. Anal tube ventrally

with robust processes swollen at base, closely approximate and separated from each other by membranous stripe. Styli becoming thinner to apex, slightly arcuate, strongly diverging, as in the genus *Javesella*. Aedeagus compressed laterally and widened, lanceolate, with apex slanting downwards, asymmetrical due to arrangement of denticles and dorsal denticulate ridge shifted to the left; theca distinctly separated from base of aedeagus. Gonopore ventral, subapical. Monotypic genus.

1. In brachypters, fore wings rounded truncate, reaching the middle of abdomen in female and anterior margin of pygofer in male. Brown; in male, pleura of mesothorax and metathorax dark brown; fore wings dark brown, semihyaline, with light margins and [p. 430] lightened to brown or light brown clavus. 4.4-6.5, macropters up to 8.7. – Amur.; C Yakutia, Transbaikal. – Mongolia. – In meadows in river flood plains and drying up streams (the last in steppes). Late June to late August. (Figs. 325: 9-15) **M. nuchtica** Dlab.

52. **Stiromoides** Vilb. Head rather wide; macrocoryphe noticeably wider than transverse diameter of eye. Carinae on head nearly completely smoothed, only 1 carina noticeable in lower part of eumetope and posterior pits of macrocoryphe edged by carinae. The turn of eumetope into acrometope somewhat swollen and strongly smoothed. Eumetope nearly twice as long as wide, parallel-sided between eyes, narrowing lower. Lateral carinae of disc of pronotum nearly straight, diverging backwards, not reaching posterior margin. Scutellum with distinct carinae. In brachypters, fore wings reaching apex of abdomen in males and about tergite V in females, obliquely truncate and rounded posteriorly. In macropters, fore wings with CuA_1 and CuA_2 approaching to wing margin separately. Posttibial spur without apical denticle and with barely noticeable lateral denticles. Male. Pygofer more or less cylindrical, straightly truncate posteriorly; dorsal excision weakly expressed; posterior edging with small projections lateral to gentle lower excision. Anal tube short, with 2 widely spaced teeth ventrally. Styli with subbasal medial projection, narrowing to pointed apices, rather strongly diverging. Aedeagus bent ventrad, with asymmetrical rows of denticles. Gonopore ventral, shifted to the right. Monotypic genus.

1. Light brown. Head with black rounded spot on the turn of eumetope into acrometope; lower third of eumetope blackened; genae blackened behind subantennal carinae. Pronotum often white or whitish, narrowly blackened behind eyes. Scutellum with black triangles in lateral corners; episterna of mesothorax also blackened. Fore wings bluish, weakly transparent. In males, abdomen brown, in females, light brown with a pair of dark brown spots on sides of tergite VIII extending on adjacent parts of pygofer. 1.9-2.8, macropters up to 3.8. – Amur., Prim.; C Yakutia, Chita Prov., Altai, Kazakhstan, Estonia, C European part of USSR, Ukraine. – Mongolia, S Finland, Hungary. – In dry meadows, forest edges, dry pine forests, etc. Early June to late July. (Figs. 326: 1-9) **S. maculiceps** Horv.

53. **Cormidius** Em. Head relatively wide. Macrocoryphe somewhat shorter than wide, with gently convex anterior margin. Eumetope less than 1.5 times as long as wide; its lateral margins noticeably convex, upper and lower margin of subequal width. Metope absolutely smooth, convex, without carinae. Carinae on macrocoryphe strongly smoothed, only 2 pits posteriorly and 1 pit anteriorly well expressed. Pronotum shorter than vertex; lateral carinae of its disc strongly diverging backwards and not reaching posterior margin. Scutellum smooth, glossy, without any traces of carinae. Fore wings strongly shortened, reaching about abdominal tergite III, straightly

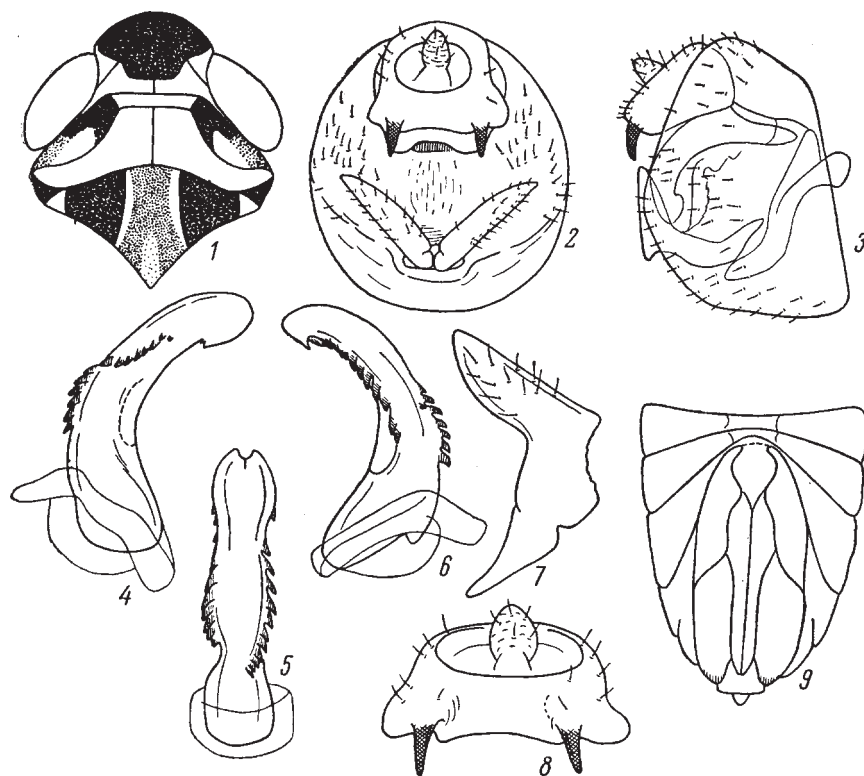


Fig. 326. Family Delphacidae, subfamily Delphacinae (after Linnavuori and Vilbaste).

1-9, *Stiomoides maculiceps*: 1, anterior part of body; 2, 3, genital block of male (2, posterior view; 3, lateral view); 4-6, penis (4, left lateral view; 5, dorsal view; 6, right lateral view); 7, stylus; 8, anal tube, posterior view; 9, female abdomen, ventral view.

truncate posteriorly. In macropters, fore wings with veins CuA_1 and CuA_2 ending in wing margin separately. Posttibial spur without apical denticle and with about 10 lateral, weakly pigmented and barely noticeable denticles. Male. Posterior wall of pygofer strongly bevelled dorsad and with deep excision below, so that lateral parts of edging are projecting on sides in the shape of large rounded lobes. Anal tube with a pair of closely approximate teeth not connected at base by sclerotization. Bases of teeth thick, apices narrowed and slanting forward. Styli bent, obtuse-angulate subbasally, after bend thickened and diverging; medial angles of bend tooth-shaped; apices attenuate and slanting downwards. Aedeagus straight, with ventral asymmetrical process at apex. Gonopore apical. Monotypic genus.

1. Reddish brown to black, with light brown and whitish pattern. Head with blackened eumetope, macrocoryphe and genae before subantennal carinae. [p. 431] Pronotum white, narrowly darkened only behind eyes. Scutellum entirely dark. Shortened fore wings with whitish blurred band along scutellar margin and similar band along posterior margin; the middle part dark brown. Abdomen nearly entirely blackened in male; in female, abdomen light brown, tergites III-IV blackened dorsally, tergite V entirely light, tergites VI-VIII with transverse spots on sides. Venter and legs brown. 1.8-2.9, macropters up to 3.8. – C Yakutia, Transbaikal, Tuva, S Krasnoyarsk Terr., SE Altai, Khakasia. – Mongolia. – In dry meadows with *Leymus chinensis*. Early June to late July. (Figs. 327: 1-8) **C. nigrifrons** Kusn.

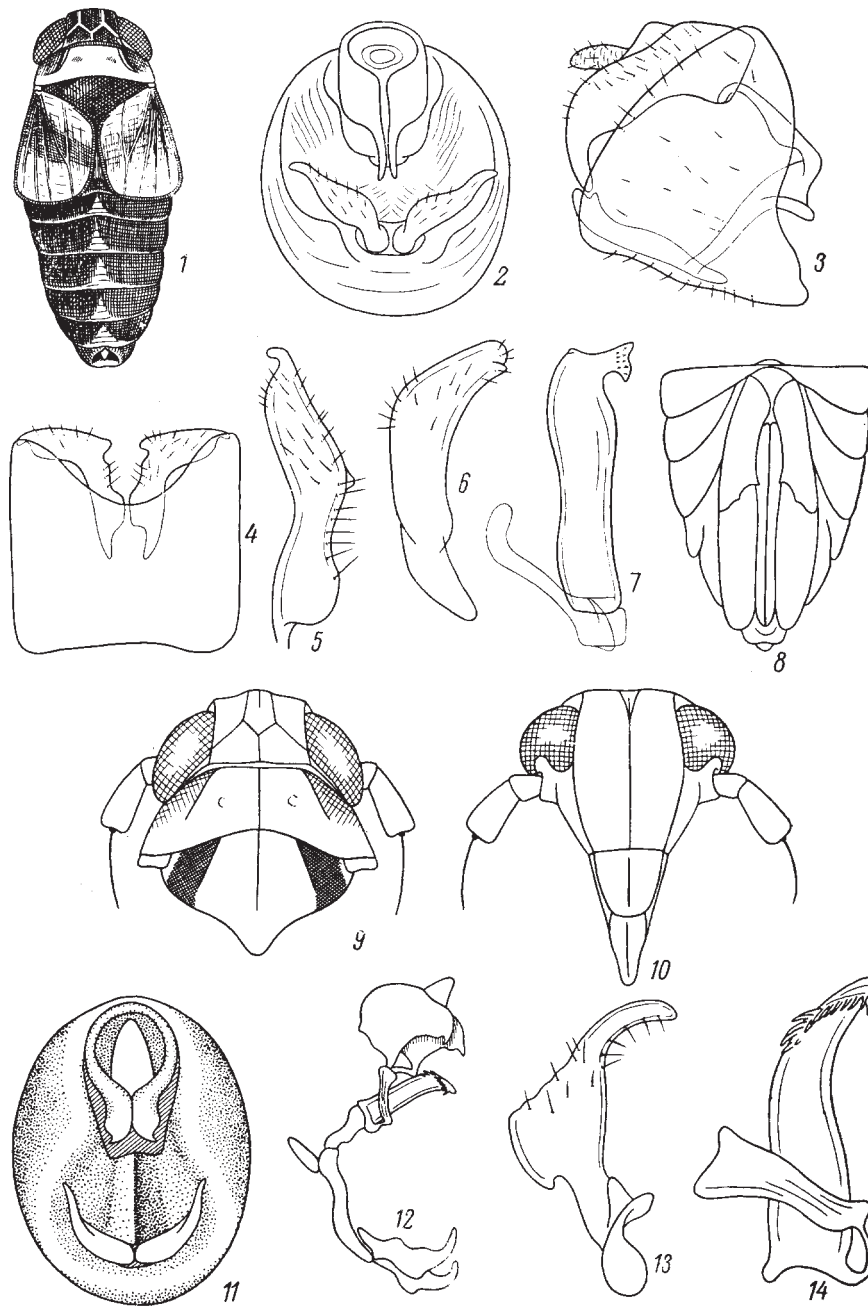


Fig. 327. Cicadines. Family Delphacidae, subfamily Delphacinae (after Anufriev, Vilbaste, and original).

1-8, *Cormidius nigrifrons*: 1, female; 2-4, genital block of male (2, posterior view; 3, lateral view; 4, ventral view); 5, 6, stylus (5, ventral view; 6, lateral view); 7, penis, lateral view; 8, female abdomen, ventral view; 9-14, *Idiobregma unicarinata*: 9, anterior part of body; 10, face; 11, genital block of male, posterior view; 12, anal tube, penis, connective and styli, lateral view; 13, stylus, in a plane; 14, penis, left lateral view.

54. **Idiobregma** Anufr. Head short; macrocoryphe somewhat shorter than wide, with widely rounded anterior margin. Carinae of macrocoryphe smoothed. Eumetope about 1.5 times as long as wide, its sides slightly convex, the greatest width at lower margin of eyes. Median carina of metope low, branching in 3 weakly noticeable carinae before turn on acrometope. Median carina of disc of pronotum not reaching posterior margin of pronotum. Fore wings of brachypters strongly shortened, straightly truncate posteriorly. Posttibial spur without distinctly expressed lateral denticles, only with small apical denticle. Male. Pygofer slightly compressed laterally, with not sharp, not interrupted edging. Anal tube ventrally with a pair of thick closely approximate teeth, narrow apices of which slightly attenuate. Styli becoming thinner to apex, diverging. Aedeagus straight, with apex obliquely truncate dorsad and bearing gonopore, which is surrounded by dense crown of narrow teeth. Monotypic genus.

1. Yellowish, with dark eyes and black sides of scutellum. Pronotum yellowish, lighter anteriorly. Fore wings semihyaline, yellowish. [p. 433] A large black spot on pleura of mesothorax. Last segments of tarsi and claws brown. 3.8-4. – N Prim. – Late June. (Figs. 327: 9-14) **I. unicarinata** Anufr.

55. **Eurybregma** Scott. Macroscoryphe short and wide, noticeably wider than long and wider than transverse diameter of eye. Eumetope widening from clypeus to eyes, parallel-sided between eyes, not more than 1.5 times as long as wide. Carinae of eumetope smoothed; usually 2 parallel carinae standing out, sometimes they are weakly noticeable or disappear; a median carina is noticeable between less distinct paired carinae in some cases. Carinae disappear completely on the turn of eumetope into acrometope; the turn is smoothed. Lateral carinae of disc of pronotum diverging backwards, slanting outwards and disappearing, not reaching posterior margin. In brachypters, fore wings rounded truncate at apices, reaching abdominal tergites II-III in females and tergites IV-V in males. Posttibial spur about half as long as basal segment of hind tarsus, bearing usually less than 10 large lateral denticles, blunt and without denticle at apex. Male. Pygofer with not interrupted posterior edging; bridge of pygofer often with wide dorsal projection in the middle. Anal tube with a pair of differently developed teeth ventrally. Styli becoming thinner to apex, diverging. Aedeagus variously developed, more or less elongate, sometimes compressed laterally. – 2-3 species (in USSR 4-5).

1. Processes of anal tube long; the body of anal tube about as wide as high. Aedeagus compressed laterally and with great number of denticles; articulatory plate of theca long, divided into two parts. Subgenital plate protruding outwards, large; lateral lobes of simple shape, without steps and excisions. (Subgenus *Bregmodes* Em.). Light, brown or whitish, with dark brown, mostly longitudinal pattern. Head brown with light carinae; macroscoryphe with whitish spot posteriorly. A paired dark stripe running on disc of pronotum, scutellum and second claval vein (A_1 and $Pcu + A_1$); another stripe arising behind eyes bifurcates on fore wings running along veins *R* and *Cu*. In male, abdomen with lightened dorsally midline, sides and indistinctly midlines between them; in female, paired intermediate light stripes strongly widened, and dark stripes narrowed accordingly. Venter mostly light. 2.4-3.5. – Transbaikalia, Tuva, Altai. – Mongolia. – On *Leymus chinensis* in meadow steppe habitats. Mid-June to late July. (Figs. 328: 1-9) **E. (B.) pseudagropyri** Em.
- Processes of anal tube short or anal tube very high. Aedeagus with 2-3 teeth; its shaft not wide, not compressed laterally; articulatory plate of theca short, simple. Subgenital plate not protruding; lateral lobes with step or smooth excision 2

2. Anal tube as wide as high, with small teeth. Bridge of pygofer bearing a spine directed upwards. Lateral lobes of female with smooth excision. (Subgenus *Eurybregma* Scott). Macrocorphe with 2 rounded, dark brown spots posteriorly and 1 spot anteriorly. Eumetope brown, with light lateral margins and dark brown stripes along them, so that there remains an equivalent light stripe between intermedial carinae. The rest of pattern as in *E. pseudagropyri*, but inner dark stripes of abdomen often strongly weakened in female. 3.1-4.5, macropters up to 5.4. – Amur.; C Yakutia, Transbaikal, Tuva, Altai, S Siberia, Kazakhstan, Middle Asia (in mountains). – China (Xinjiang), Mongolia, C and S Europe. – In quackgrass meadows (but neither in ruderal habitats nor in fields). Late May to mid-July. (Figs. 329: 1-9) ***E. nigrolineata* Scott**

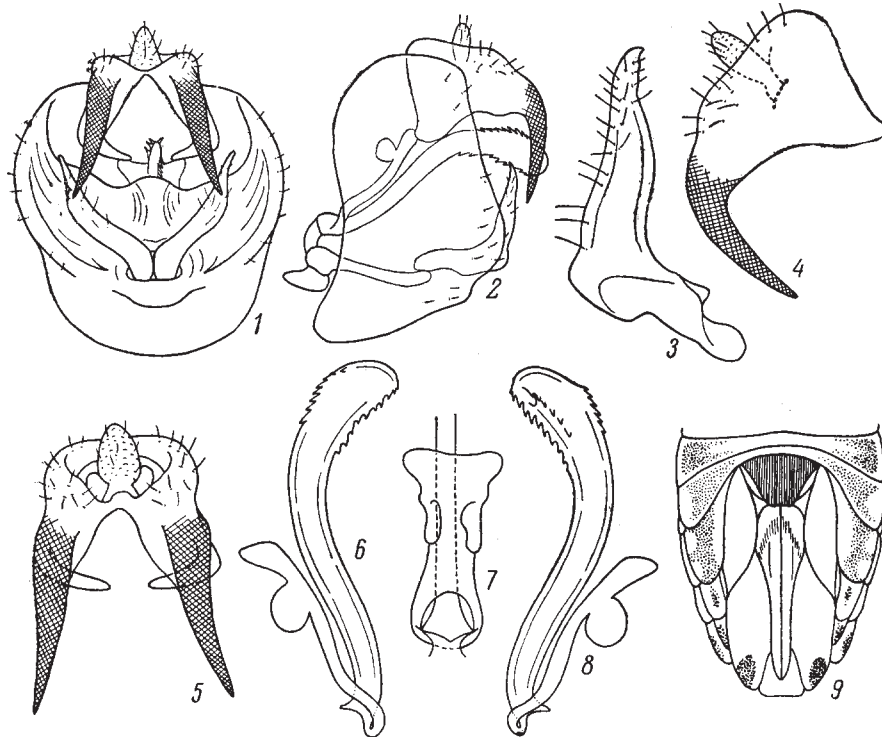


Fig. 328. Cicadines. Family Delphacidae, subfamily Delphacinae (original).

1-9, *Eurybregma pseudagropyri*: 1, 2, genital block of male (1, posterior view; 2, lateral view); 3, stylus; 4, 5, anal tube (4, lateral view; 5, posterior view); 6, 8, penis (6, left lateral view; 8, right lateral view); 7, base of penis, dorsal view; 9, female abdomen, ventral view.

- Anal tube very high, with strong claw-shaped teeth. Bridge of pygofer without tooth, with sagittal carina ending by a knob above. Lateral lobes of female with step. (Subgenus *Priapyx* Em.). Similar to *E. nigrolineata* in pattern, but if eumetope has a pattern, its middle field darkened. In male, pygofer large, high, compressed laterally. 2.8-4.1, macropters up to 4.4. – Mag.; C Yakutia, Altai. [p. 434] – Mongolia. – In grass meadows of river and brook flood plains, in glades. Mid-June to late July. (Figs. 329: 10-16) ***E. (P.) pygalis* Em.**

56. **Metropis** Fieb. Head wide, with wide macrocorphe and eumetope. Macrocorphe wider than long and much wider than transverse diameter of eye, pentagonal, with obtuse-angulate, sharply projecting anterior margin. Eumetope somewhat longer

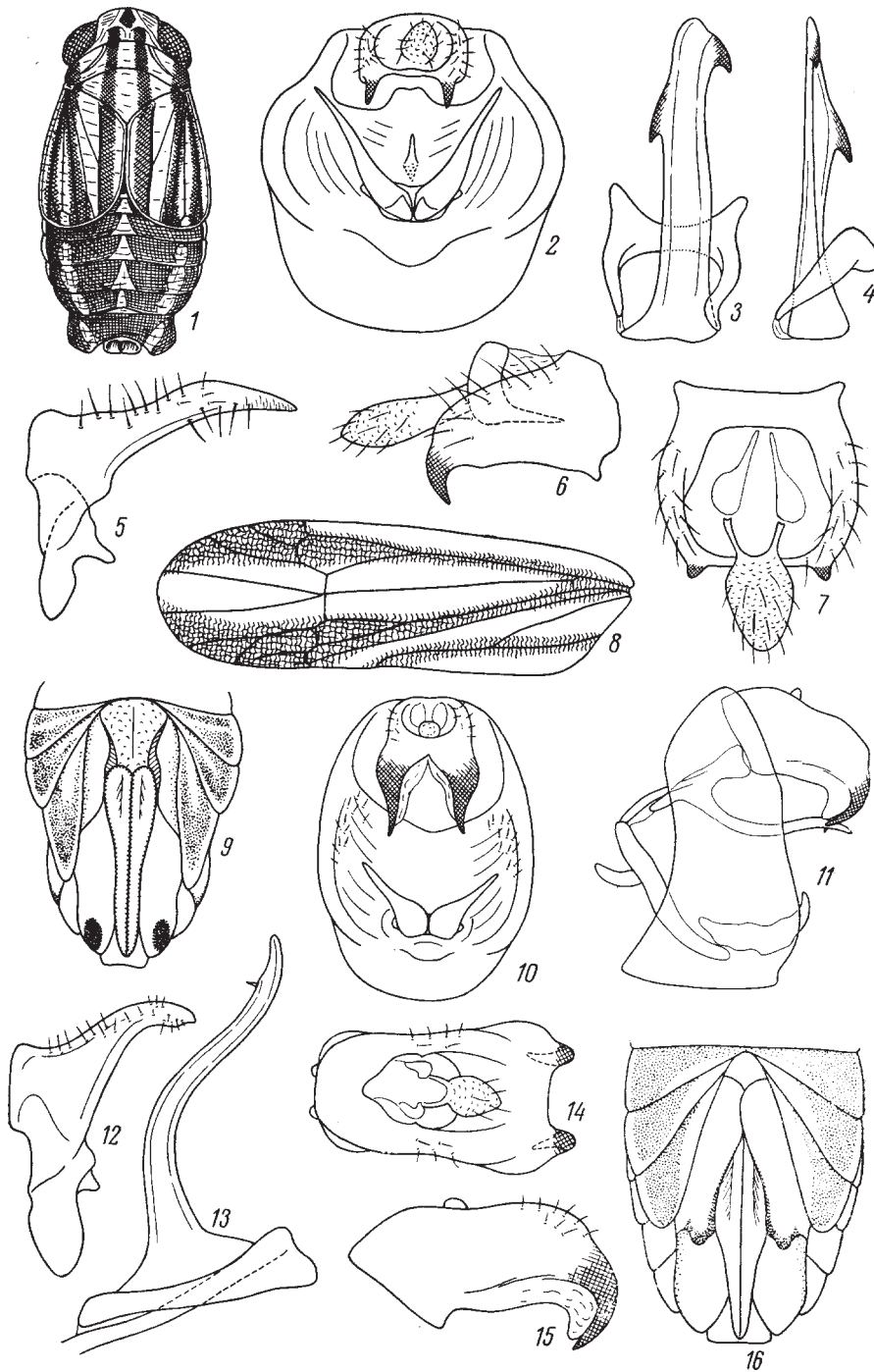


Fig. 329. Cicadines. Family Delphacidae, subfamily Delphacinae (original).

1-9, *Eurybregma nigrolineata*: 1, male; 2, genital block of male, posterior view; 3, 4, penis (3, ventral view; 4, lateral view); 5, stylus; 6, 7, anal tube (6, lateral view; 7, dorsal view); 8, wing of macropterous specimen; 9, female abdomen, ventral view; 10-16, *E. pygalis*: 10, 11, genital block of male (10, posterior view; 11, lateral view); 12, stylus; 13, penis, lateral view; 14, 15, anal tube (14, dorsal view; 15, lateral view); 16, female abdomen, ventral view.

than wide, widening from clypeus to eyes about twice, more or less parallel-sided between eyes, without distinctly expressed median carinae; carinae of macrocoryphe barely noticeable, only 3 pits of vertical cells often noticeable. Disc of pronotum wide; its lateral carinae more or less straight, moderately diverging backwards and not reaching posterior margin. Carinae of scutellum weak. In brachypters, fore wings strongly shortened and straightly truncate posteriorly. Posttibial spur with barely noticeable lateral denticles, without apical denticle. Male. Pygofer with distinct dorsal excision delimited on sides by well expressed obtuse-angulate lobes, under which edging is weakened and represented by small lobe-shaped projections situated at boundary of lateral and lower margins; the edging may have a tooth-shaped projection ventrally between these lobe-shaped projections. Anal tube with 2 teeth directed together downwards and not connected at base by sclerotized cross-piece; sometimes teeth reduced (species from S Europe). Bridge of pygofer with median carina. Styli narrowing to apices, diverging. Aedeagus usually more or less elongate, with longitudinal rows of denticles or shortened and bearing denticulate projections at apex. – 1 species (in USSR up to 6-7).

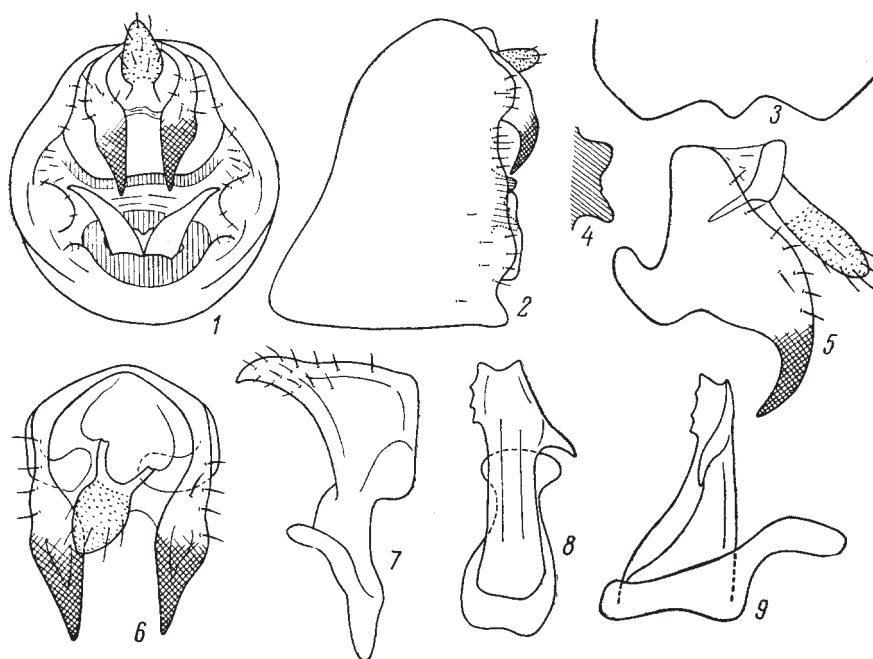


Fig. 330. Cicadines. Family Delphacidae, subfamily Delphacinae (original).

1-9, *Metropis tolerans*: 1, 2, genital block of male (1, posterior view; 2, lateral view); 3, lower margin of edging of pygofer, ventral view; 4, bridge of pygofer, lateral view; 5, 6, anal tube (5, lateral view; 6, posterior view); 7, stylus; 8, 9, penis (8, ventral view; 9, lateral view).

1. Males entirely black, only legs from trochanters onwards pale orange yellow; females entirely yellowish brownish. 4.6-5.5. – Amur; Transbaik. – C and E Mongolia. – In herb-grass and meadow steppes with *Festuca valesiaca*. Early June to mid-July. (Figs. 330: 1-9) ***M. tolerans* Em. [p. 436]**

57. ***Stiroma* Fieb.** Macrocoryphe large, wider than long and wider than transverse diameter of eye. Eumetope less than 1.5 times as long as wide, with convex lateral margins, bearing 2 not very sharp carinae divided all the way and converging only

sometimes at lower margin. The turn of face into macrocoryphe smoothed and not sharp. Lateral carinae of disc of pronotum not reaching posterior margin. In brachypters, fore wings strongly shortened and rounded truncate posteriorly. Lateral denticles on posttibial spur weak, reduced. Male. Pygofer somewhat compressed laterally, dorsally narrower than ventrally; its lateral edging without cuts, with shallow excision above for anal tube, with smooth concavity under bases of styli below; bridge of pygofer wide, with median carina. Anal tube with a pair of teeth closely approximate or widely spaced. Styli medium-sized, narrowing to apices; diverging apices simple or with subapical tooth on inner margin. Aedeagus elongate, with asymmetrical arrangement of denticles, bent ventrad or straight. Gonopore dorsal, subapical. The genus comprises 3 species.

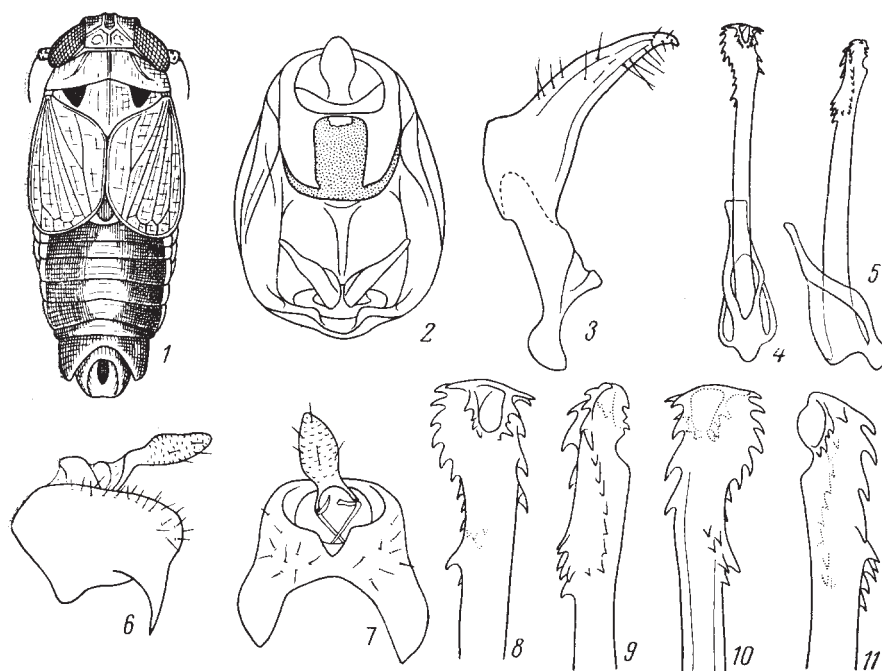


Fig. 331. Cicadines. Family Delphacidae, subfamily Delphacinae (after Emeljanov and original).

1-11, *Stiroma lenensis*: 1, male; 2, genital block of male, posterior view; 3, stylus; 4, 5, penis (4, ventral view; 5, left lateral view); 6, 7, anal tube (6, lateral view; 7, posterior view); 8-11, apex of penis (8, ventral view; 9, left lateral view; 10, dorsal view; 11, right lateral view).

1. Teeth of anal tube widely spaced; their apices straight, not attenuate. Aedeagus more or less straight, slender. (Subgenus *Amorista* Anufr.). Pale, brownish; male with entirely dark abdomen; females with darkened lateral margins of tergites. Face without pattern. Scutellum with black triangles in lateral corners. Fore wings semihyaline; in females, lateral dark stripes of abdomen running forward and on dorsal parts of covered tergites are visible through fore wings. Legs light; pleura of mesothorax and metathorax darkened. 2.8-3.5. – Mag., Khab., Prim.; C Yakutia, Chita Prov. – N Mongolia. – Forest meadows with *Calamagrostis*. Late June to early August. (Figs. 331: 1-11) **S. (A.) *lenensis* Em.**
- Teeth of anal tube more or less approximate, with thin apices slanting outwards. Aedeagus bent ventrad, relatively short. (Subgenus *Stiroma* Fieb.) 2 [p. 437]

2. Apex of stylus simple, pointed. Light brown; frons with a pair of black spots below on lateral parts. Scutellum with dark triangles in lateral corners. Dark spots, in addition to eumetope and scutellum, are present below on posterior part of genae, outer parts (preepisterna) of mesothorax, pleura of mesothorax and episterna of metathorax. Fore wings semihyaline, light, grayish. Abdomen dark brown, lightened dorsally on midline, usually entirely light in female. 3-4, macropters up to 5. – Amur.; Kazakhstan. – Mongolia, Europe, N Africa. – In herb layer of forests. June to August. (Figs. 332: 1-8) *S. bicarinata* H.-S.

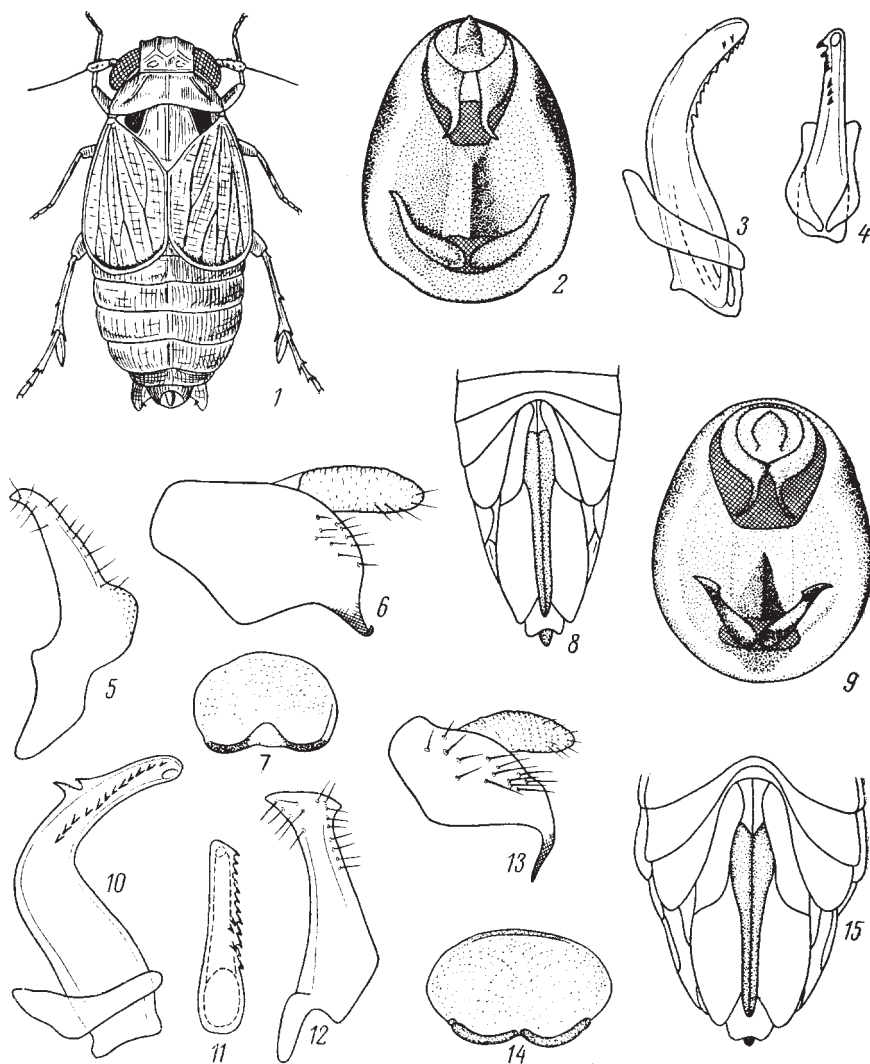


Fig. 332. Cicadines. Family Delphacidae, subfamily Delphacinae (after Haupt and Ossiannilsson).

1-8, *Stiroma bicarinata*: 1, male; 2, genital block of male, posterior view; 3, 4, penis (3, lateral view; 4, ventral view); 5, stylus; 6, anal tube, lateral view; 7, genital scale of female, ventral view; 8, female abdomen, ventral view; 9-15, *S. affinis*: 9, genital block of male, posterior view; 10, 11, penis (10, lateral view; 11, posterior view); 12, stylus; 13, anal tube, lateral view; 14, genital scale of female, ventral view; 15, female abdomen, ventral view.

- Stylus with somewhat thickened apex bearing medial subapical tooth-step. In general appearance, similar to *S. bicarinata*. 2.5-3, macropters up to 5. – ?Amur.; C Yakutia, Tuva, S Krasnoyarsk Terr., Altai, Kazakhstan. – Mongolia, Europe. – In herb layer of forests. June to August. (Figs. 332: 9-15) *S. affinis* Fieb.

58. **Anachoroma** Em. In general appearance, similar to the genus *Stiroma*. Macro-coryphe somewhat shorter than wide, wider than transverse diameter of eye. Eumetope wide, with 2 separate carinae. Posttibial spur with apical denticle and 1-2 lateral denticles at apex. Male. Pygofer rounded triangular posteriorly, with not interrupted lateral edging, which forms small rounded projections lateral to anal tube. The edging is interrupted by gentle excision below; in the middle part of excision there is a projection with a bifurcate tooth at apex. Anal tube with not large, crossed teeth, bases of which are drawn apart and area between them not sclerotized. Bridge of pygofer with 2 obtuse-angulate projections separated by wide excision with margins slanting somewhat backwards. Styli wide, with pointed apices and medial tooth at base, diverging at acute angle close to 90°. Aedeagus [p. 438] with robust ventral projection at base and abruptly bent shaft running about parallel to projection and reaching its apex. Monotypic genus.

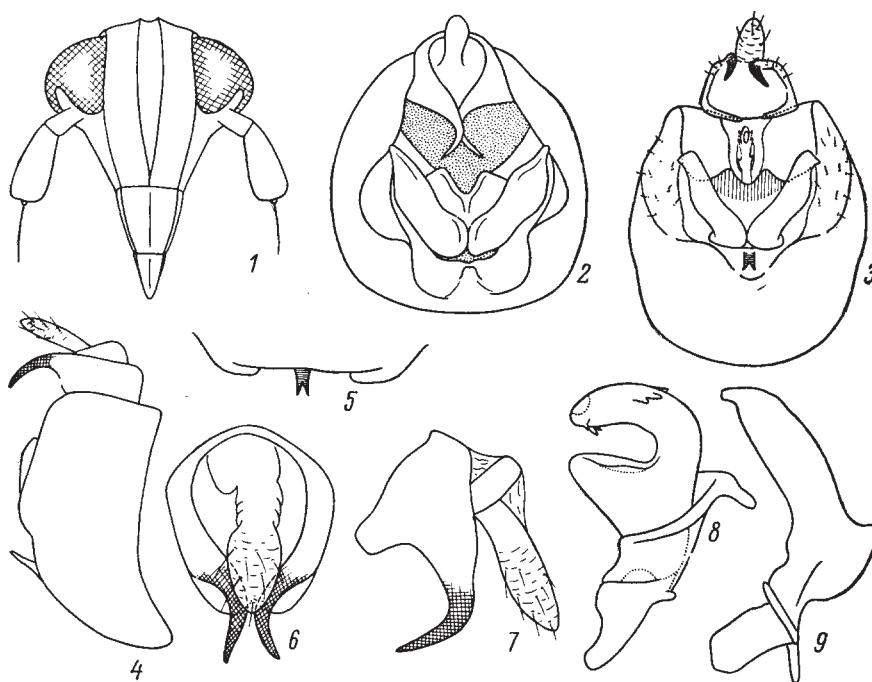


Fig. 333. Cicadines. Family Delphacidae, subfamily Delphacinae (after Emeljanov and original).

1-9, *Anachoroma staminata*: 1, face; 2-4, genital block of male (2, 3, posterior view; 4, lateral view); 5, process of lower edging of pygofer, ventral view; 6, 7, anal tube (6, posterior view; 7, lateral view); 8, penis, lateral view; 9, stylus.

1. Light brown to brown, without distinct pattern. Carinae on head somewhat lighter than areas between them; vertex often with 3 small brown spots: 2 spots posteriorly and 1 spot anteriorly. Abdomen nearly entirely dark brown in male and usually with darkened lateral margins of tergites in female. 2.4-3.1. – Mag., N Khab. – Late June. (Figs. 333: 1-9) **A. staminata** Em.

59. **Stiromella** W. Wagn. Macro-coryphe wide, noticeably wider than transverse diameter of eye and shorter than long, with arcuate, convex anterior margin. Eumetope wide, not more than 1.5 times as long as wide, [p. 439] more or less parallel-sided above, noticeably narrowing below eyes to clypeus. Carinae of head strongly smoothed, not noticeable on the turn of eumetope into acrometope. Two completely

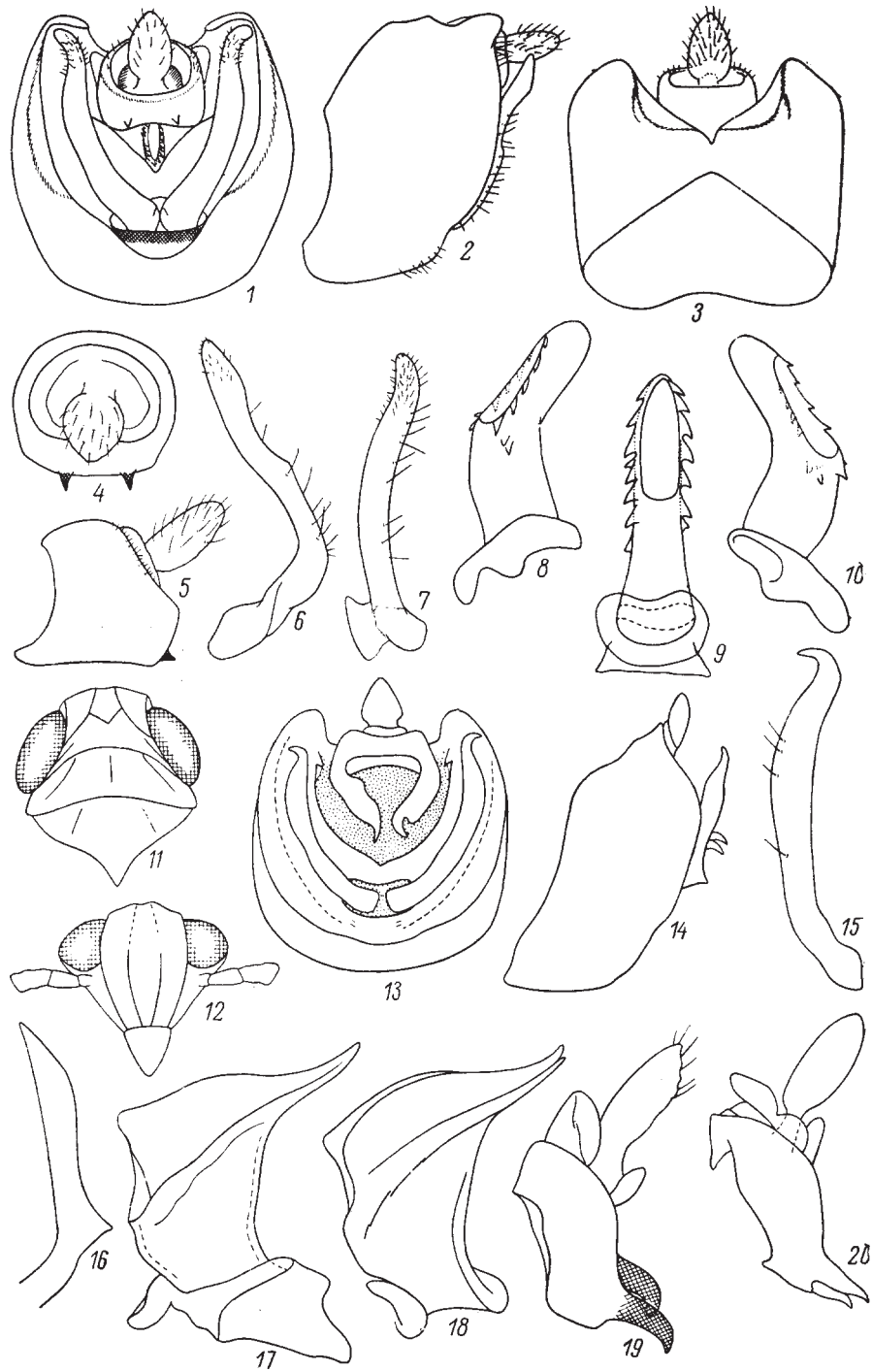


Fig. 334. Cicadines. Family Delphacidae, subfamily Delphacinae (after Kwon, Nast, and Wagner).

1-10, *Stiromella fusca*: 1-3, genital block of male (1, posterior view; 2, lateral view; 3, dorsal view); 4, 5, anal tube (4, posterior view; 5, lateral view); 6, 7, stylus (6, lateral view; 7, posterior view); 8-10, penis (8, left lateral view; 9, dorsal view; 10, right lateral view); 11-20, *S. obliqua*: 11, anterior part of body; 12, face; 13, 14, genital block of male (13, posterior view; 14, lateral view); 15, 16, stylus (15, posterior view; 16, lateral view); 17, 18, penis, lateral view; 19, 20, anal tube, oblique lateral view.

separate carinae distinguishable on eumetope. Disc of pronotum short, wide, with lateral carinae slightly slanting outwards and far not reaching posterior margin. Fore wings straightly truncate posteriorly and reaching only abdominal tergite IV. Posttibial spur with 10-12 large lateral denticles and well developed apical denticle. Male. Posterior margin of pygofer bevelled ventrad, with sharply delimited dorsal excision. Anal tube ventrally with a pair of teeth not connected by sclerotized cross-piece at base and sometimes asymmetrical. Styli long, rather narrow, running from inside parallel to edging nearly to anal tube. Aedeagus not long, compressed laterally, widened and slanting ventrad in apical part. – 1 species (in USSR 9).

1. Apices of styli attenuate and slanting outwards, hook-shaped. Apex of aedeagus pointed. Dark brown, nearly black; head somewhat lighter, abdomen entirely black (lighter specimens in western part of the range). 2-2.7. – C Yakutia, Kazakhstan, Daghestan, Crimea, Estonia. – Mongolia, Austria. – In dry steppe meadows. Late June to mid-July. (Figs. 334: 11-20) **S. obliqua** W. Wagn.
- Apices of styli widely rounded. Apex of aedeagus wide, blunt. Brown, genae blackened behind subantennal carina; in male, abdomen dark brown; often with rows of brown spots on midlines of halves of tergites and on midline of abdomen dorsally; in female, usually only sides of tergites blackened. 2.6-3.8. – S Khab., Amur., Prim., S Kur.; Chita Prov. – Korea, E Mongolia. – In meadows. Late May to late July. (Figs. 334: 1-10) **S. fusca** Lnv.

60. **Eurysula** Vilb. Head rather wide; macrocoryphe somewhat wider than transverse diameter of eye, somewhat shorter than wide, with arcuate, projecting anterior margin. [p. 441] Eumetope about twice as long as wide, with convex lateral margins. Head smooth; carinae on eumetope usually absent, a median carina is outlined sometimes; the turn of face into macrocoryphe smooth, carinae on macrocoryphe are outlined only in posterior part. Median carina on postclypeus also not developed. On pronotum, median carina not expressed and lateral carinae on disc noticeable only at the very anterior margin medial to eyes. Carinae of scutellum also well noticeable only in anterior part. Fore wings strongly shortened, reaching only abdominal tergite IV and straightly truncate posteriorly. Posttibial spur with about 12 lateral denticles. Male. Pygofer bevelled ventrad. Dorsal excision of pygofer deep; edging on lateral margins not sharply undulated in height. Anal tube with a pair of long processes directed downwards and closely approximate. Styli long, diverging, with pointed apices and acute medial subbasal tooth. Aedeagus abruptly bent ventrad, arcuate, asymmetrical due to arrangement of rows of denticles; gonopore dorsal, in the middle of shaft. Monotypic genus.

1. Glossy; females reddish brown, with darker fore wings and abdomen. Males with reddish brown anterior part of body, darker scutellum and dark brown to black fore wings and abdomen. 2.2-3, macropters up to 4.1. – Kazakhstan, Estonia, Latvia, Leningrad Prov., C and S European part of USSR. – E Mongolia, Europe. – In dry grass meadows. Mid-June (in W Palearctic, late May to late July). (Figs. 335: 1-8) **E. lurida** Fieb.

10. Family CIXIIDAE

Medium-sized, usually slightly flattened dorsoventrally. Head (Fig. 336) with anterior carina of coryphe often projecting forward, angulate, in the middle approximate to anterior margin of acrometope or fused with it. Eumetope always without intermediate carinae; median carina usually bifurcate above. Fore wings

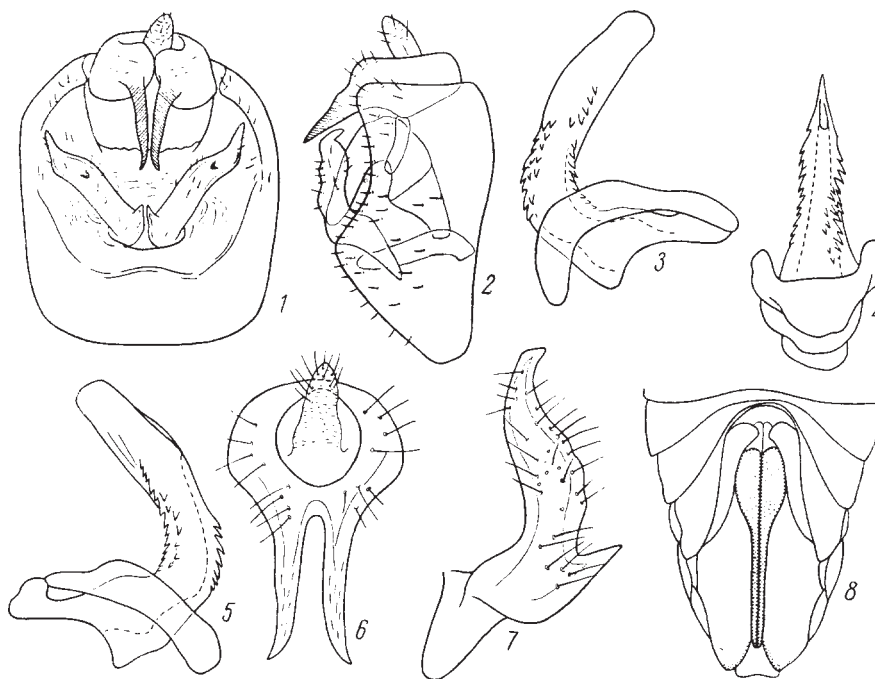


Fig. 335. Cicadines. Family Delphacidae, subfamily Delphacinae (after Ossiannilsson).

1-8, *Eurysula lurida*: 1, 2, genital block of male (1, posterior view; 2, lateral view); 3-5, penis (3, left lateral view; 4, dorsal view; 5, right lateral view); 6, anal tube, posterior view; 7, stylus; 8, female abdomen, ventral view.

always well developed (Figs. 339, 340). [p. 442] Pterostigma formed by widening of marginal field – as though by flattened marginal vein. Ovipositor of females of piercing-sawing type; a wide field of waxen glands usually situated above ovipositor upwards to anal tube. Male genitalia with well developed phallotheca and two-segmented aedeagus. Distal segment of aedeagus free and usually slanting upwards and forward over theca. Larvae live in soil crevices, under stones, etc., jump well; tergites VI-VIII bearing paired fields of waxen glands, approaching medially midline of abdomen. Imagines usually on trees and shrubs or in grass. – 7 genera, 23 species (in USSR 16 genera, more than 70 species).

KEY TO GENERA

1. Mesonotum with 3 carinae (Fig. 336: 1). Ovipositor well developed (Fig. 338: 3) .
..... 2
- Mesonotum with 5 carinae (Fig. 336: 2). Ovipositor reduced, short (Figs. 338: 4, 5).
(Tribe Pentastirini) 5
2. Posterior margin of fore wings bearing undulated projection behind apex of clavus; peripheral vein sharply widening behind the projection (Fig. 339: 1). Fore wings with *R* and *M* arising from basal cell separately. (Tribe Pintaliini). Macro-coryphe narrow anteriorly and its anterior cell not wider than long (Fig. 336: 7)
..... 1. **Andes**
- Margin of fore wings behind apex of clavus straight or evenly convex, [p. 444] with peripheral vein of uniform width. Fore wings with *R* and *M* arising from basal cell by common stem. (Tribe Cixiini) 3

3. Median carina of eumetope disappearing in upper part; eumetope there convex, and anterior carina of acrometope indistinct (Fig. 336: 4). – Pronotum angulate concave posteriorly. Hemelytra with M_{1+2} branching proximal to subapical transverse vein (M has 3 branches before this vein). Anal tube with rounded posterior margin 2. **Kuvera**
- Median carina of eumetope sharp all the way; upper part of eumetope flattened concave, as whole eumetope (Fig. 336: 3) 4
4. Terminal margin of fore wings without granules between ends of longitudinal veins (Fig. 338: 1). In females, a large field of waxen glands edged on margins by carina situated above ovipositor 3. **Cixius**

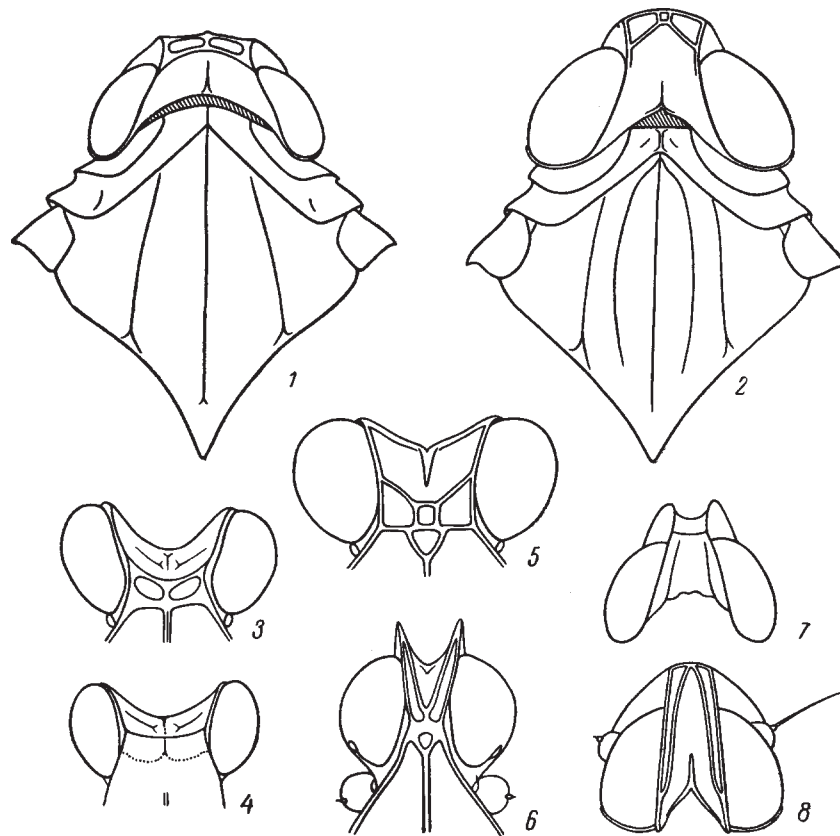


Fig. 336. Cicadines. Family Cixiidae (original).

1, 2, anterior part of body: 1, *Cixius nervosus*; 2, *Pentastiridius leporinus*; 3, 4, upper part of head, anterodorsal view: 3, *C. remmi*; 4, *Kuvera* sp.; 5, 8, head, dorsal view: 5, *Reptalus melanochaetus* Fieb.; 8, *Oecleopsis artemisiae*; 6, 7, upper part of head, anterodorsal view: 6, *O. artemisiae*; 7, *Andes marmoratus*.

- Terminal margin of fore wings with granules between ends of longitudinal veins (Fig. 338: 2). In females, pygofer (between anal tube and ovipositor) without area of waxen glands edged by carina 4. **Trirhacus**
5. Areolar carinae of vertex (halves of anterior carina of coryphe) converging at distinct acute angle (longitudinal) (Fig. 336: 8). Distal teeth of 1st and 2nd segments of hind tarsi without subapical bristles (Fig. 337: 1). Macrocorphe in the shape of deep groove, V-shaped in cross-section, with foliaceous lateral margins. Disc of pronotum sharply roof-shaped 5. **Oecleopsis** [p. 445]

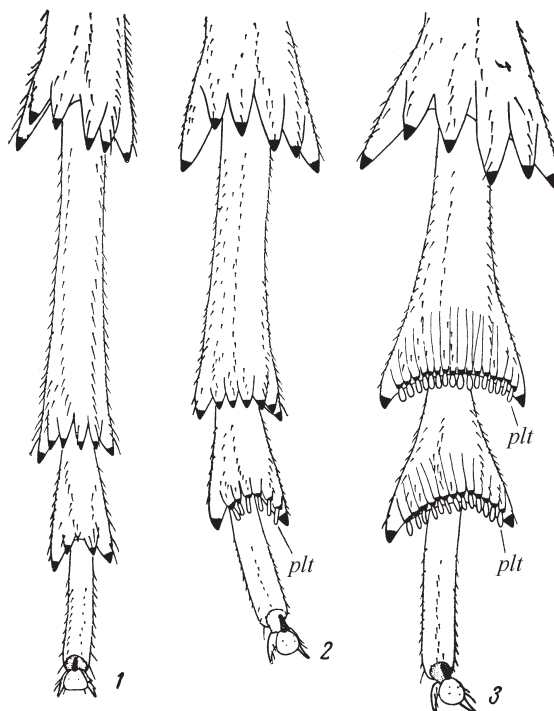


Fig. 337. Cicadines. Family Cixiidae (original)

1-3, hind tarsi (tarsus and apex of tibia, right leg, ventral view): 1, *Oecleopsis artemisiae*; 2, *Reptalus melanochaetus*; 3, *Pentastiridius* sp. plt, platella.

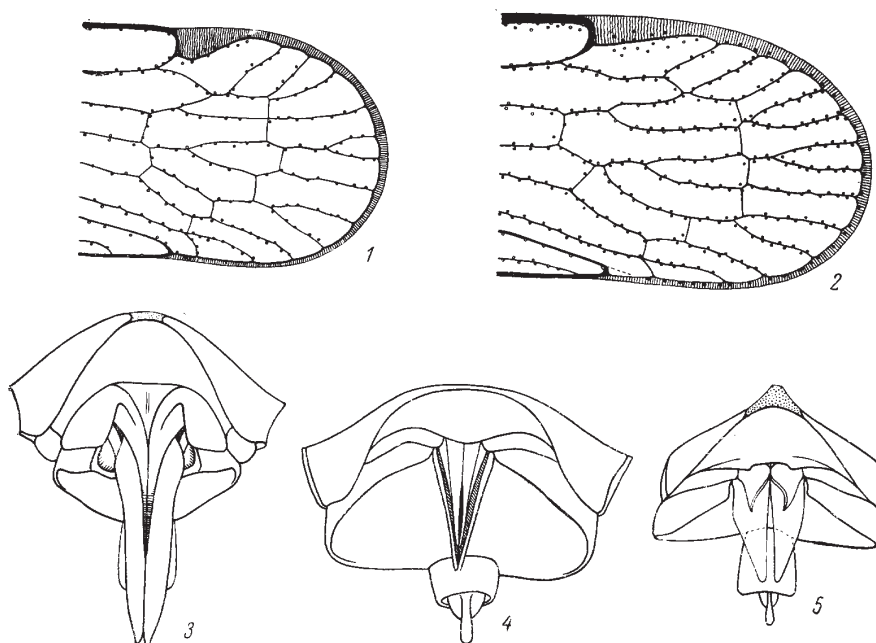


Fig. 338. Cicadines. Family Cixiidae (original).

1, 2, apex of wing: 1, *Cixius nervosus*; 2, *Trirhacus nawae*; 3-5, ovipositor: 3, *Cixius* sp. (well developed); 4, *Pentastiridius* sp. (reduced); 5, *Oecleopsis artemisiae* (reduced).

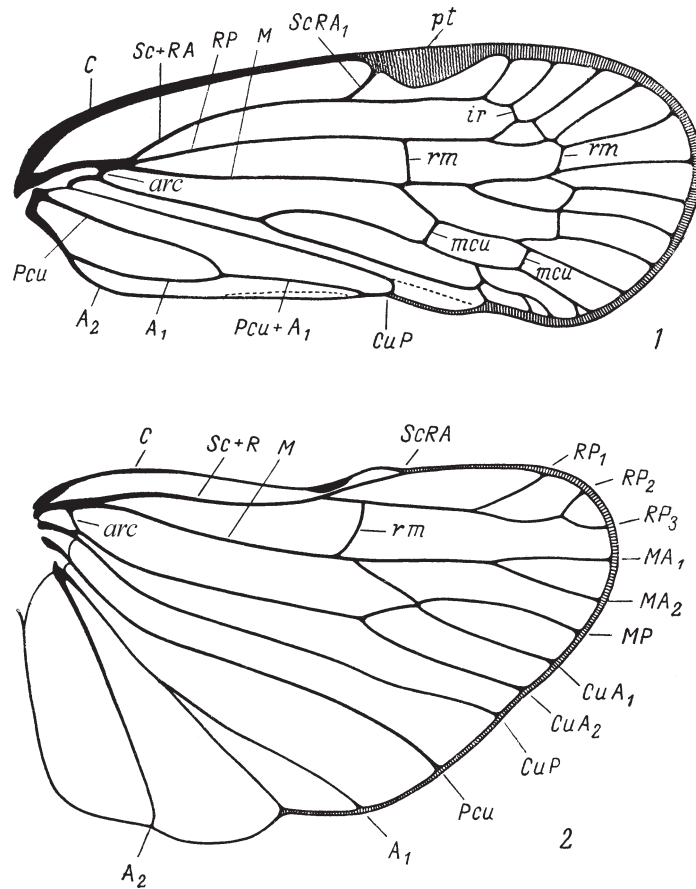


Fig. 339. Cicadines. Family Cixiidae (original).

1, 2, *Andes marmoratus*, wings: 1, fore wing; 2, hind wing. See Fig. 5 for designations.

- Areolar carinae of vertex converging at obtuse angle (obliquely transverse) (Fig. 336: 5). Distal teeth bearing subapical bristles (platellae) at least on 2nd segment of hind tarsi. Macrocorphe not groove-shaped, flat or moderately concave. Disc of pronotum more or less gently roof-shaped 6
- 6. Not more than 6 teeth at apices of each 1st and 2nd segments of hind tarsi (Fig. 337: 2). Styli (harpagones) with medial recurrent process, symmetrical or asymmetrical 7. **Reptalus**
- More than 10 teeth at apices of each 1st and 2nd segments of hind tarsi (Fig. 337: 3). Styli without medial recurrent process, symmetrical 6. **Pentastiridius**

KEY TO SPECIES OF FAMILY CIXIIDAE

Tribe *PINTALIINI*

1. *Andes* Stål. Moderately flattened laterally, with tectiform folded fore wings. Head narrow; postclypeus and eumetope groove-shaped due to high foliaceous lateral carinae slanting forward; median carina weak. Lateral carinae of macrocorphe also foliaceous, slanting upwards; macrocorphe groove-shaped, not wide, widening backwards. Pronotum short dorsally, acutangulate excised posteriorly; lateral carinae

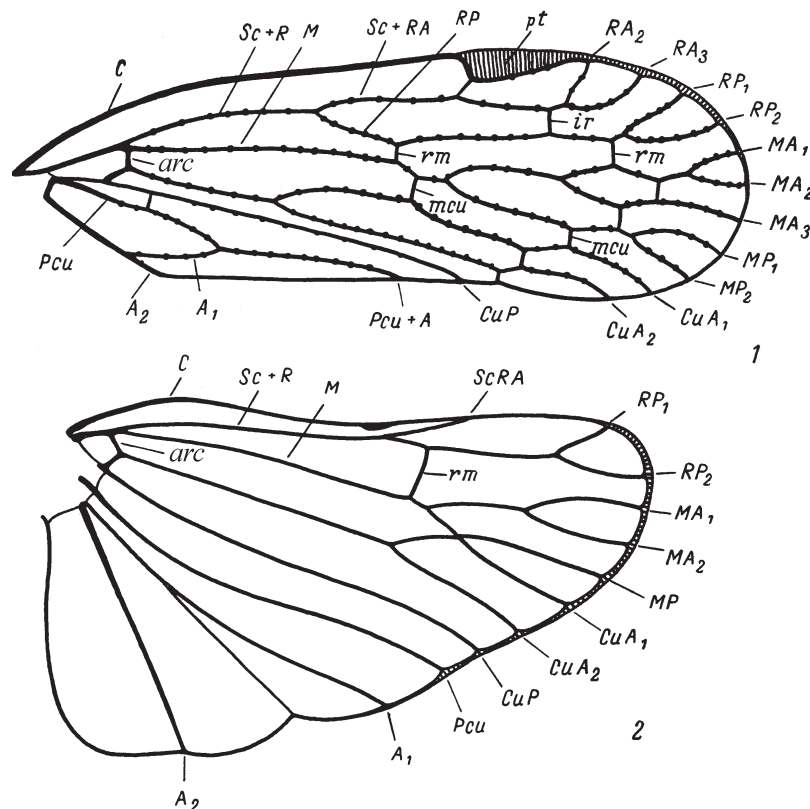


Fig. 340. Cicadines. Family Cixiidae (after Emeljanov).

1, 2, *Pentastiridius leporinus*, wings: 1, fore wing; 2, hind wing. See Fig. 5 for designations.

of disc sharp, diverging backwards. Scutellum with 3 carinae; lateral part of scutellum abruptly inclined. Hind tibiae with 3 lateral teeth. In females, pygofer with large field of waxen glands above ovipositor. Male. Pygofer slightly compressed laterally; its lateral margins [p. 446] with 2 weak projections posteriorly. Anal tube narrow, with excision at apex ventrally. Styli more or less flat, slanting obliquely upwards before apices, with somewhat widened apices. Theca on the right with three-lobed complex process slanting to base and downwards and bearing on the right dorsally a high lobe-shaped carina, which bears an additional process on inner side. Distal part of penis with long rod-shaped process. In USSR 2 species.

1. Upper lobe of the light process of theca large, widened, with narrowed base; lower lobes nearly equal, both with widened apices. The left lobe of theca slanting laterad. Whitish and brownish, with dark brown spots forming marmorate speckled pattern. Head dark brown; lateral carinae of eumetope with light transverse stripes. Pronotum with dark spots; scutellum entirely dark brown. Fore wings with marble pattern. Venter, legs, abdomen brownish. 7-8.3. – S Kur. – Japan, Korea. – Mid-July to August. (Figs. 343: 4, 5) **A. marmoratiformis** Ish.
- Upper lobe of the right process of theca of moderate size, with wide base; the left lower lobe noticeably smaller than the right lobe, narrow, not widened at apex. The left lobe of theca slanting dorsad. In general appearance, similar to *A. marmoratiformis*. 7-8.9. – S Prim. – Japan, Korea. – Late July to early August. (Figs. 339: 1, 2; 341; 343: 1-3) **A. marmoratus** Uhl.

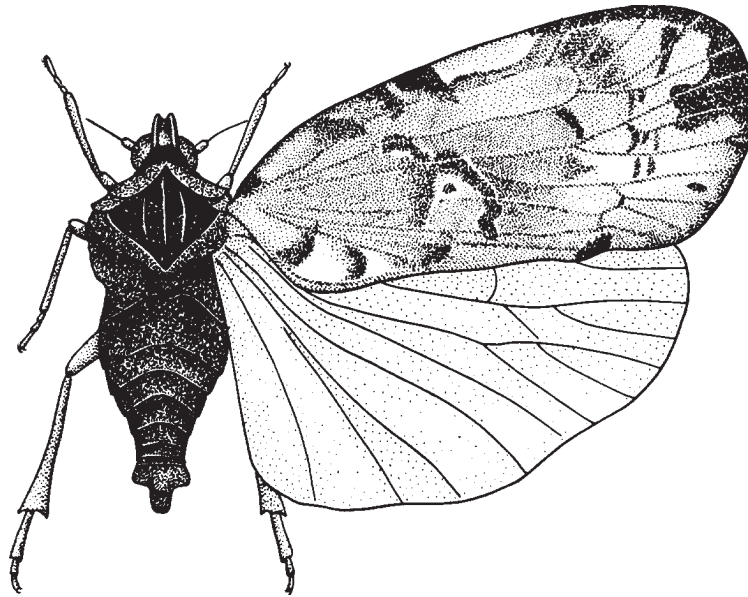


Fig. 341. Cicadines. Family Cixiidae (after Esaki).

Andes marmoratus (right wings spread).

Tribe *CIXIINI*

2. **Kuvera** Dist. Moderately flattened dorsoventrally, with more or less flatly folded hemelytra. Macrocorphe short, about half as long as wide, widening forward and backwards, its narrowest part situated at connection of a lateral and transverse carinae; anterior and posterior margins widely [p. 447] parabolic, nearly parallel. Carina on the turn of eumetope into acrometope not developed. Median carina of eumetope smoothed, disappearing to apex; postclypeus with distinct median carina. Pronotum with angular excision posteriorly, with weakly expressed median carina; postocular carinae sharp, arcuate, extending beyond lateral carina and nearly approaching to bases of antennae. Mesonotum with 3 carinae distinct all the way. Hemelytra semihyaline; *R* and *M* arising from basal cell [p. 448] by common stem or at the same point; M_{1+2} branching basal to subapical transverse veins; *M* with 5 branches, *CuA* with 3 branches. Hind wings with *CuA* having 3 branches. Male. Pygofer without sharp projections on sides posteriorly, with finger-shaped projection ventrally in the middle. Anal tube with rounded posterior margin. Styli with flat, widened apices. Theca more or less flattened dorsoventrally considerably widened at base, with 2 teeth near articulation with distal segment. Distal segment with 1-2 teeth. – 5 species.

1. Basal processes of distal segment of aedeagus distinctly differ in length; length of greatest process running across basal segment greater than greatest width of base 2
- Basal processes of distal segment of aedeagus of about equal length, if of different length, base of penis (theca) strongly asymmetrically widened and length of greatest process not exceeding greatest width of base 3
2. Anal tube symmetrical. Smaller. Postclypeus black, becoming somewhat lighter to margin of vertex and sides; subvertical part of postclypeus and lateral carinae of

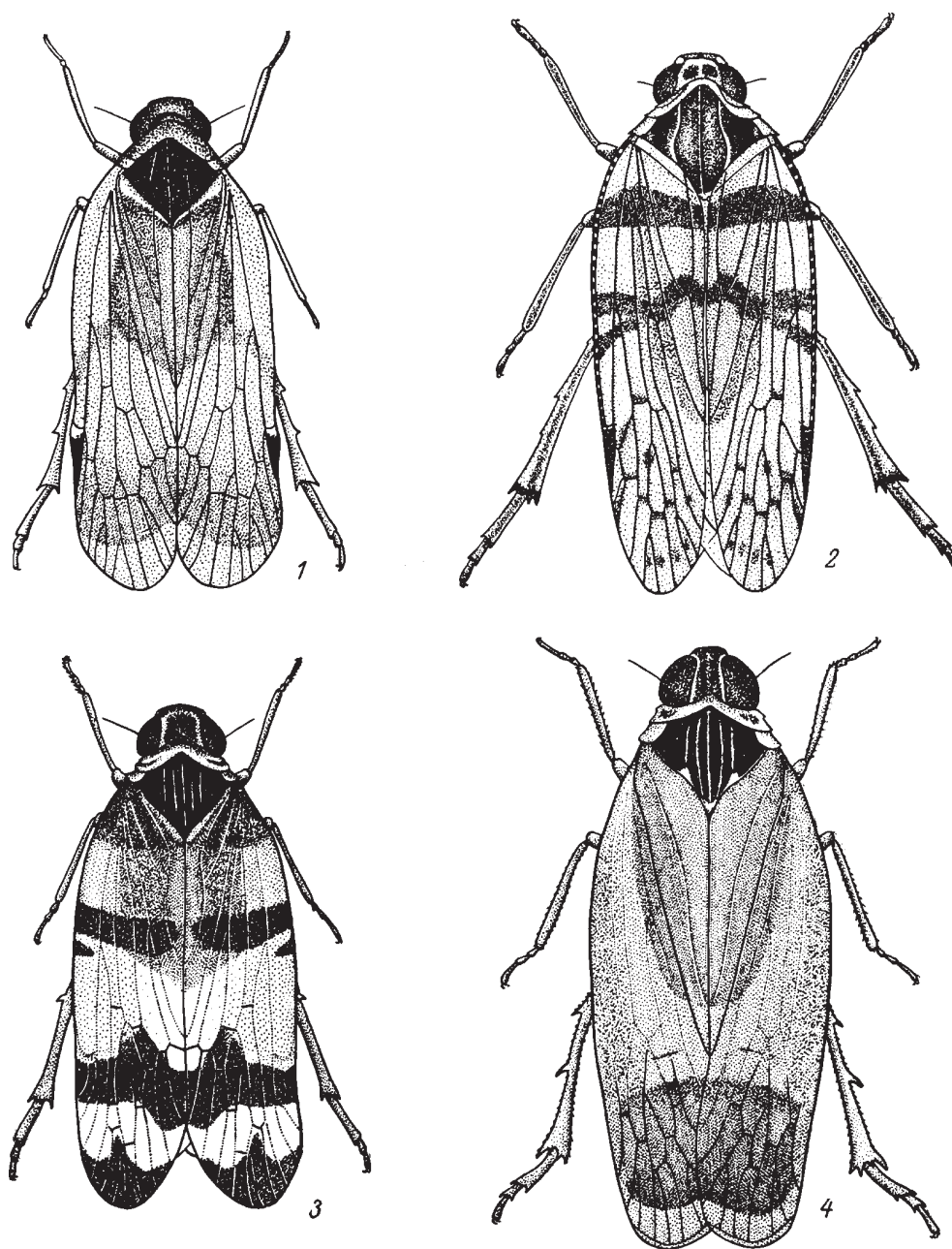


Fig. 342. Cicadines. Family Cixiidae (after Esaki and Javorek).

1, *Kuvera flaviceps*; 2, *Cixius nervosus*; 3, *Reptalus quadricinctus*; 4, *Pentastiridius apicalis*.

- eumetope dark brown. 4.6-6. – Prim., Kur. – Japan. – July to September. (Figs. 344: 1-8) **K. pallidula** Mats.
- Anal tube asymmetrical due to greater development of the right apical lobe compared with the left lobe. One basal process of distal segment of aedeagus S-shaped, another process arcuate. Greater. Postclypeus dark brown to black, with widely lightened carinae and subvertical part, which are always brownish yellow. 5.7-7. – Prim. – Mid-April to late July. (Figs. 345: 1-6) **K. vilbastei** Anufr. [p. 449]

3. Apices of both basal processes of distal segment of penis directed inwards 4
 – Apex of the left basal process of distal segment of penis slanting outwards. 4.5-6.3. – S Khab., Prim. – Japan, China (Sichuan). – June to August. (Figs. 346: 1-6) .
 **K. ussuriensis** Vilb.

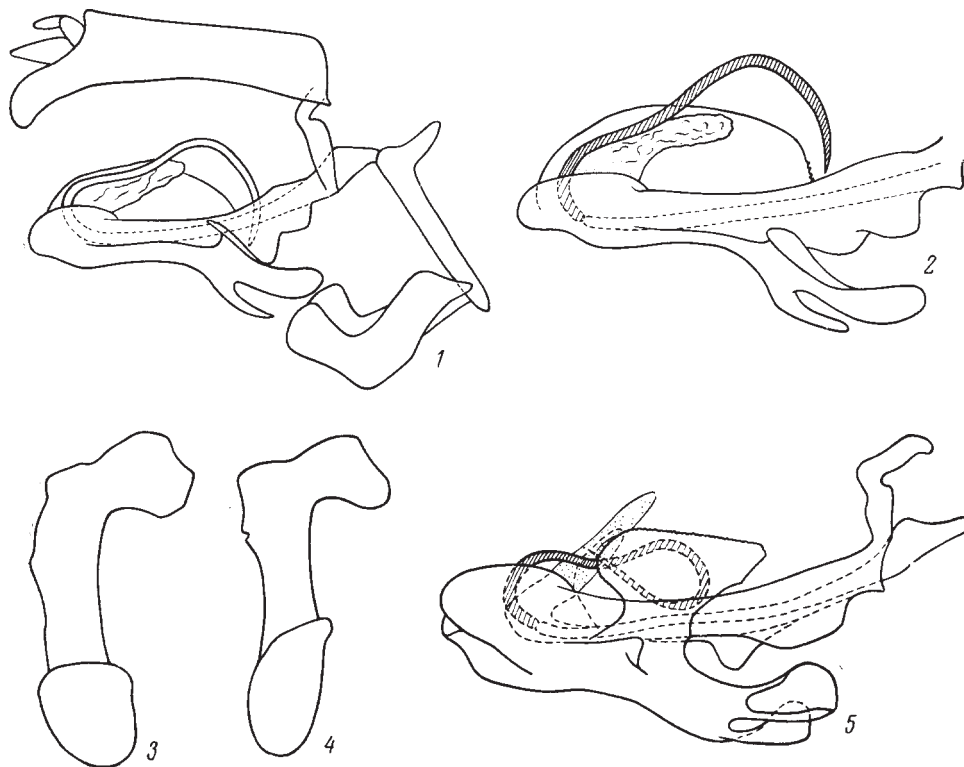


Fig. 343. Cicadines. Family Cixiidae (original).

- 1-3, *Andes marmoratus*: 1, anal tube, penis and styli, right lateral view; 2, penis, right lateral view; 3, stylus;
 4, 5, *A. marmoratiformis*: 4, stylus; 5, penis, right lateral view.

4. Anal tube widened in the middle. Base of theca very strongly asymmetrically widened. Basal processes of distal segment of aedeagus of different length; the left process directed more or less across basal segment. Subvertical part of postclypeus brownish yellow, shiny at considerable length. 5.7-6.8. – S Prim., S Kur. – Japan. – Mid-June to August. (Fig. 342: 1) **K. flaviceps** Mats.
 – Anal tube more or less parallel-sided. Base of theca without large asymmetrical widening. Basal processes of distal segment of aedeagus of about equal length. Only the very apex of postclypeus brown. 4.8-6.2. – S Kur. – Mid-July to early September. (Figs. 347: 1-7) **K. kurilensis** Anufr.

3. **Cixius** Latr. Moderately flattened dorsoventrally, with more or less flatly folded fore wings. Head small, short. Eumetope more or less flat, wider below, with convex lateral margins, narrower above, with straight narrowing margins. Macrocorpye with transverse carina [p. 450] between acrometope and corpye. Median ocellus small, smaller than lateral ocelli. Lateral carinae of disc of pronotum turning into postocular carinae posteriorly, there is a carina between top of pronotum and its lateral lobes. Scutellum with 3 carinae. Hind tibiae with 3 lateral teeth. Female with field of waxen glands above ovipositor. Male. Pygofer without sharp projections on sides posteriorly.

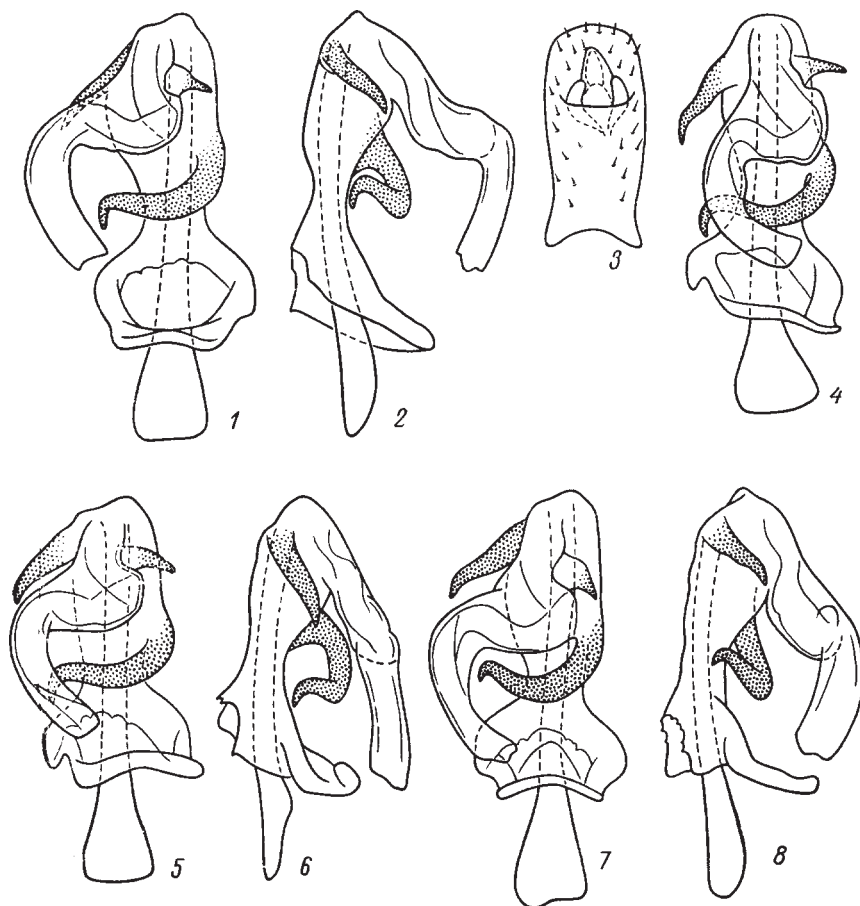


Fig. 344. Cicadines. Family Cixiidae (after Anufriev).

1-8, *Kuvera pallidula*: 1, 2, 4-8, penis (1, 4, 5, 7, dorsal view; 2, 6, 8, right lateral view); 3, anal tube, dorsal view.

Anal tube narrow, often with angular projections and teeth posteriorly. Styli with more or less flat, widened apices. Theca more or less compressed laterally, usually with carina and teeth below, with variously developed carinae above, margin of which may project as an angle or tooth. Distal segment of penis with several teeth at base near distal margin of theca. – 9 species (in USSR more than 20). [p. 451]

1. Anal tube symmetrical. Apex of penis not sclerotized; distal segment of penis without lateral teeth 2
- Anal tube asymmetrical, with stronger developed left apical angle. Apex of distal segment of penis strongly sclerotized, bearing an additional tooth in the middle part. (Subgenus *Ussuricixius* Vilb.) 9
2. Penis with 2 movable teeth at base of distal segment of aedeagus 3
- Penis with 3 movable teeth. – Anal tube without lateral lobes at apex. (Subgenus *Sciocixius* W. Wagn.) 5
3. Lobes of anal tube long, strongly slanting downwards and forward. (Subgenus *Cixius* Latr.). Head, pronotum and scutellum from reddish brown to dark brown; carinae on head and pronotum, and also often anteclypeus noticeably lighter. Fore wings semihyaline, with brown granules on whitish veins, with brown base and brown

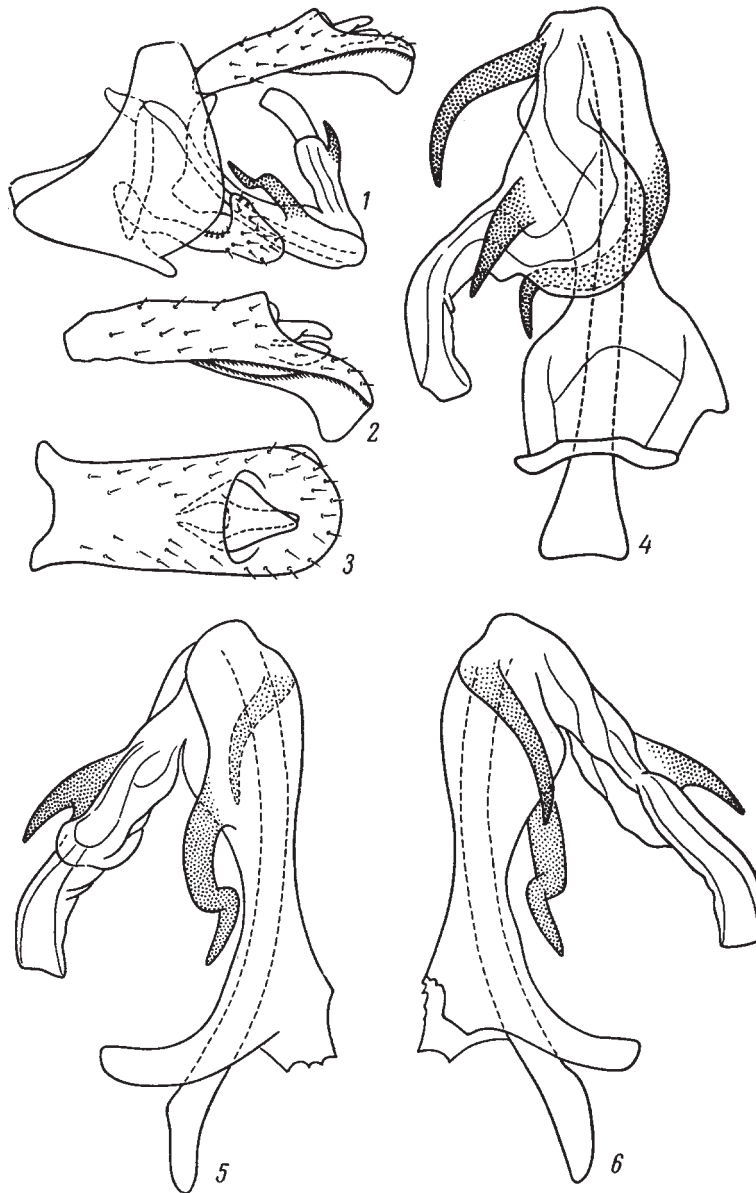


Fig. 345. Cicadines. Family Cixiidae (after Anufriev).

1-6, *Kuvera vilbastei*: 1, genital block of male, left lateral view; 2, 3, anal tube (2, left lateral view; 3, dorsal view); 4-6, penis (4, dorsal view; 5, left lateral view; 6, right lateral view).

band in middle part of corium, and rather often with small spots at places on the rest part of wings. 6-8.5. – ?Sakh., ?Kur.; W Siberia, Kazakhstan, Transcaucasia. – Japan (Hokkaido), Europe, N Africa, N America. – In forests on hardwood trees and shrubs. June to August. (Figs. 342: 2; 348: 1-10) **C. nervosus** L.

- Lobes of anal tube short, directed downwards or downwards and backwards. (Sub-genus *Ceratocixius* W. Wagn.) 4
- 4. The left movable tooth of penis bent about on 3/4 of circle, so that its apex is directed backwards. Head, pronotum and scutellum dark brown, with light carinae. Fore wings semihyaline, with dark brown granules near veins, darkened stigma and trans-

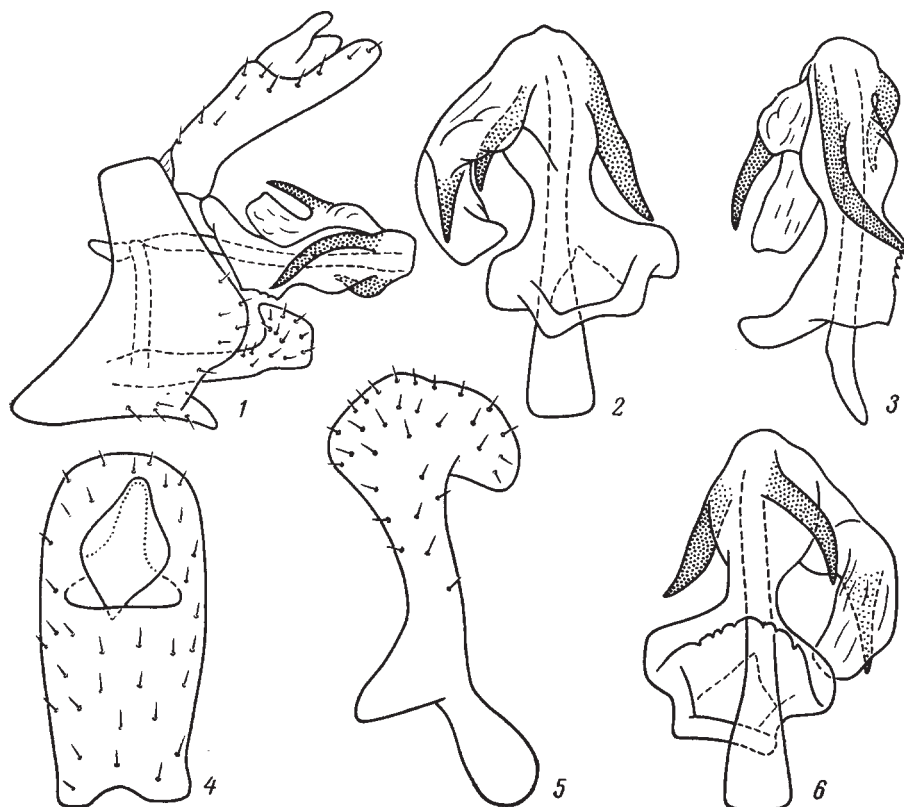


Fig. 346. Cicadines. Family Cixiidae (after Anufriev).

1-6, *Kuvera ussuriensis*: 1, genital block of male, left lateral view; 2, 3, 6, penis (2, dorsal view; 3, left lateral view; 6, ventral view); 4, anal tube, dorsal view; 5, stylus.

verse vein on membrane, sometimes with noticeable dark transverse bands at base, [p. 452] in the middle part and on membrane. 5.2. – Prim. – Mongolia. – Mid-August to mid-September. (Figs. 349: 1-9) **C. (C.) subsimplex** Villb.

- The left movable tooth of penis bent not more than on 1/4 of circle, its apex directed downwards, laterad or forward. Head, pronotum and scutellum from brown to dark brown, with lighter carinae and usually also anteclypeus. Fore wings semihyaline, with brown granules on whitish veins, usually with brown transverse spots on corium and bracket-shaped band running on base of membrane and continuing backwards on costal margins; more rarely, either membrane, or corium and clavus darkened almost entirely, or fore wings entirely darkened. 6-8. – S Khab.; S Siberia, N Kazakhstan, Transcaucasia. – NE China, Europe, N Africa. – In forests on hardwood trees and shrubs. June to July. (Figs. 350: 1-12)

..... **C. (C.) cunicularis** L.

- 5. Both upper ridges of theca high, semicircular or angular, projecting upwards; upper teeth of theca situated lateral to ridges. Lower ridge of theca deeply excised before base 6 [p. 455]
- Upper ridges of theca low, with straight or concave margin in lateral view; upper teeth of theca of penis, especially distinctly the right tooth, bent over ridges, with apices lying above theca. Lower ridge of theca usually without distinct excision before base. – Head black, with light brown carinae; pronotum brownish, with light brown carinae; scutellum entirely dark brown. Fore wings semihyaline, whit-

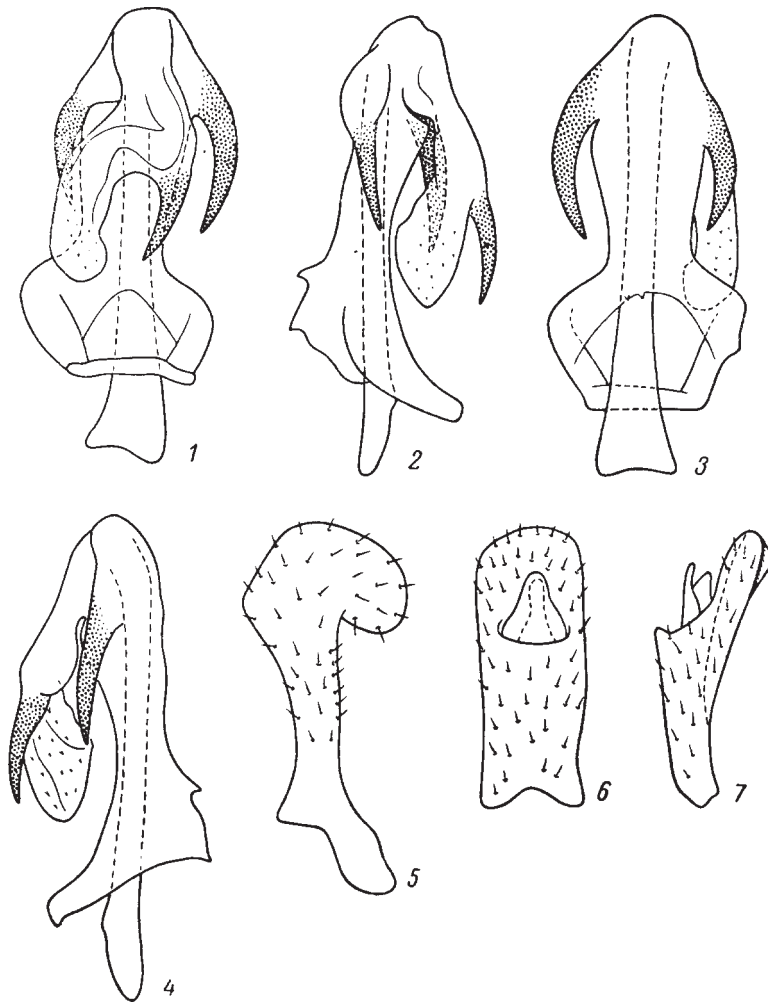


Fig. 347. Cicadines. Family Cixiidae (after Anufriev).

1-7, *Kuvera kurilensis*: 1-4, penis (1, dorsal view; 2, right lateral view; 3, ventral view; 4, left lateral view); 5, stylus; 6, 7, anal tube (6, dorsal view; 7, left lateral view).

ish, with dark granules along veins, with dark band in the middle part and with spots at places; spots are more abundant on membrane, where they also form uneven bands. 4.9-5.9. – Mag., Amur; NE Yakutia, Transbaikalia, Altai. – Mongolia. – In mountain meadows with *Bergenia*, etc. Early July to late August. (Figs. 351: 1-7) **C. (S.) bergeniae** Vilb.

6. The right upper tooth of theca with deep excision in basal half; the left tooth unbroken, without excision. – Black brown, with light brown carinae of head, pronotum and tegulae. Fore wings whitish hyaline, with dark band [p. 456] before middle becoming bifurcate to costal margin, and disorderly brown spots on membrane; veins partly light, partly dark, with black granules. 6-7. – Prim. – W Europe. – In herbage under canopy of mountain spruce forests of Sikhote Alin Mts. June to July. (Figs. 352: 1-3) **C. (S.) heydenii** Kbm.
- The right and left upper ridges of theca more or less equal in size and shape 7
7. Lower margin of lower ridge of penis theca convex in lateral view, with moderately deep excision before base; upper teeth of theca smoothly bent upwards 8

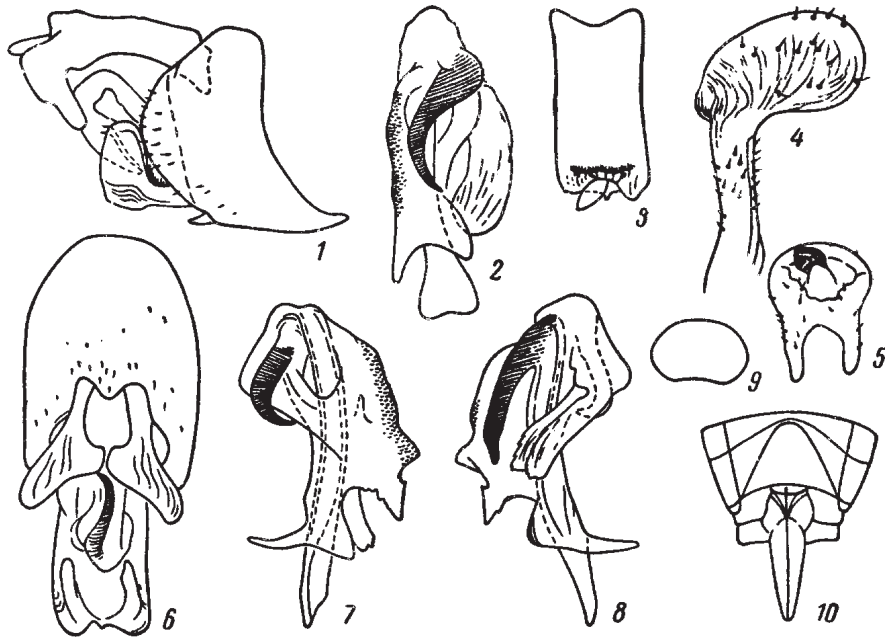


Fig. 348. Cicadines. Family Cixiidae (after Vilbaste).

1-10, *Cixius nervosus*: 1, 6, genital block of male (1, right lateral view; 6, ventral view); 2, 7, 8, penis (2, ventral view; 7, left lateral view; 8, right lateral view); 3, 5, anal tube (3, dorsal view; 5, posterior view); 4, right stylus, ventral view; 9, contour of wax area on pygofer of female; 10, apex of female abdomen, ventral view.

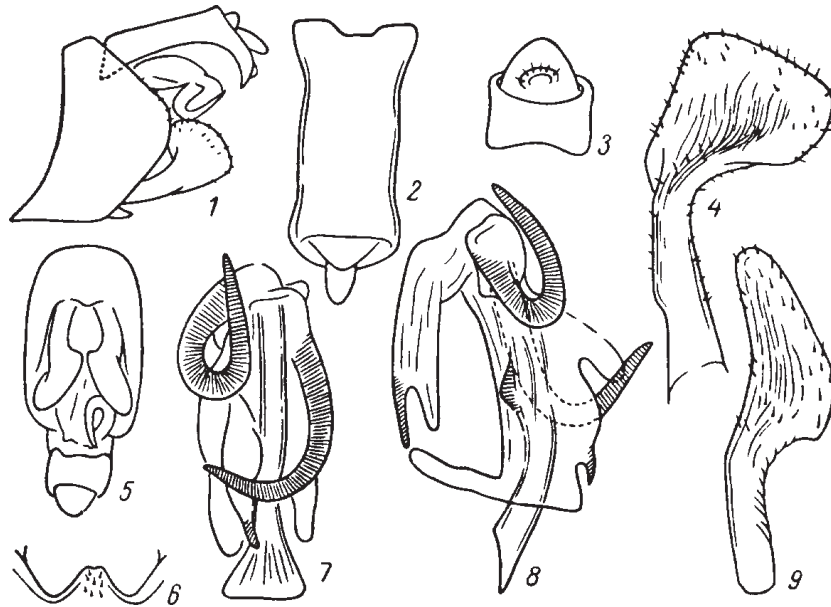


Fig. 349. Cicadines. Family Cixiidae (after Vilbaste).

1-9, *Cixius subsimplex*: 1, 5, genital block of male (1, left lateral view; 5, ventral view); 2, 3, anal tube (2, dorsal view; 3, posterior view); 4, right stylus, ventral view; 6, lower posterior projection of pygofer, ventral view; 7, 8, penis (7, ventral view; 8, left lateral view); 9, stylus, lateral view.

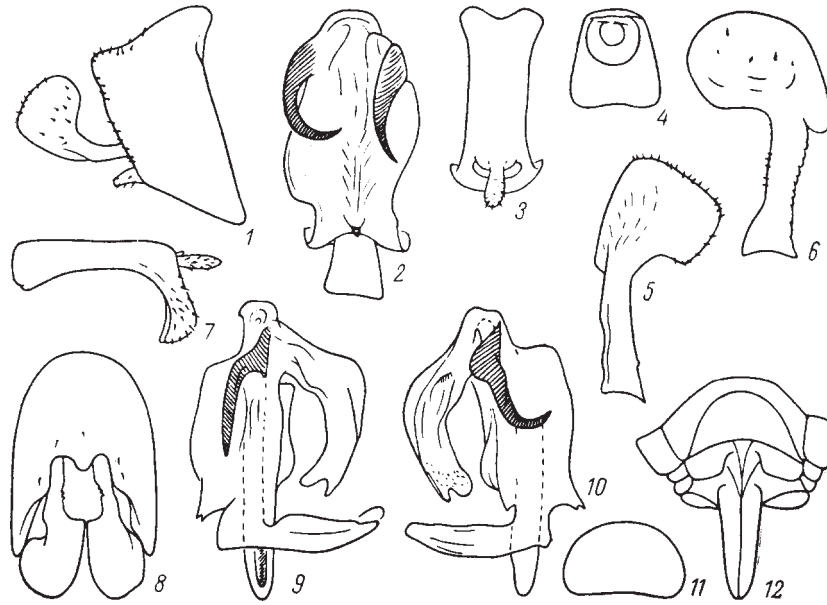


Fig. 350. Cicadines. Family Cixiidae (after Vilbaste).

1-12, *Cixius cunicularis*: 1, pygofer and stylus, right lateral view; 2, 9, 10, penis (2, ventral view; 9, right lateral view; 10, left lateral view); 3, 4, anal tube (3, dorsal view; 4, posterior view); 5, stylus, lateral view; 6, left stylus, ventral view; 7, anal tube, lateral view; 8, genital block of male, ventral view; 11, contour of wax area on pygofer of female; 12, apex of female abdomen, ventral view.

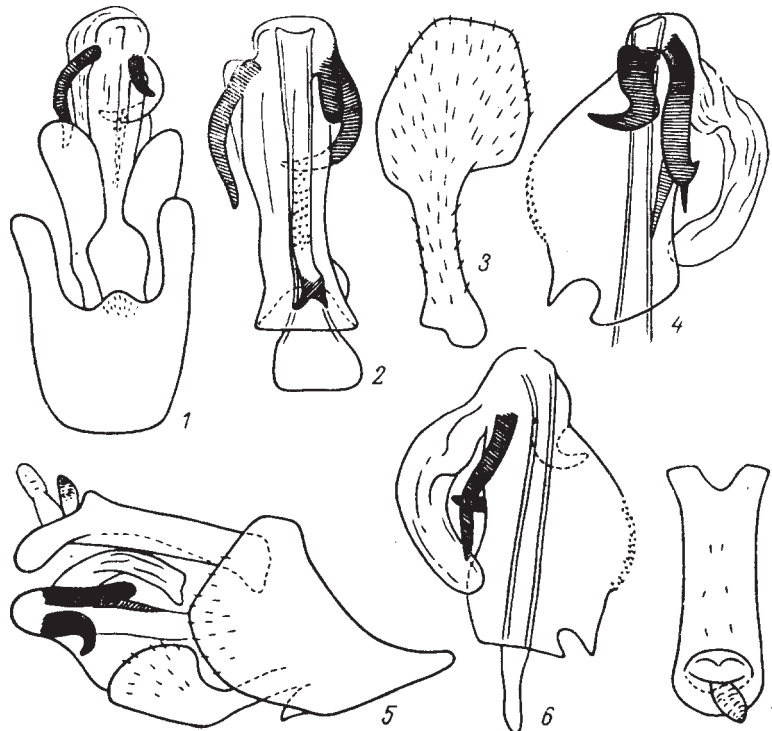


Fig. 351. Cicadines. Family Cixiidae (after Vilbaste).

1-7, *Cixius bergeniae*: 1, 5, genital block of male (1, ventral view; 5, left lateral view); 2, 4, 6, penis (2, ventral view; 4, right lateral view; 6, left lateral view); 3, right stylus, ventral view; 7, anal tube, dorsal view.

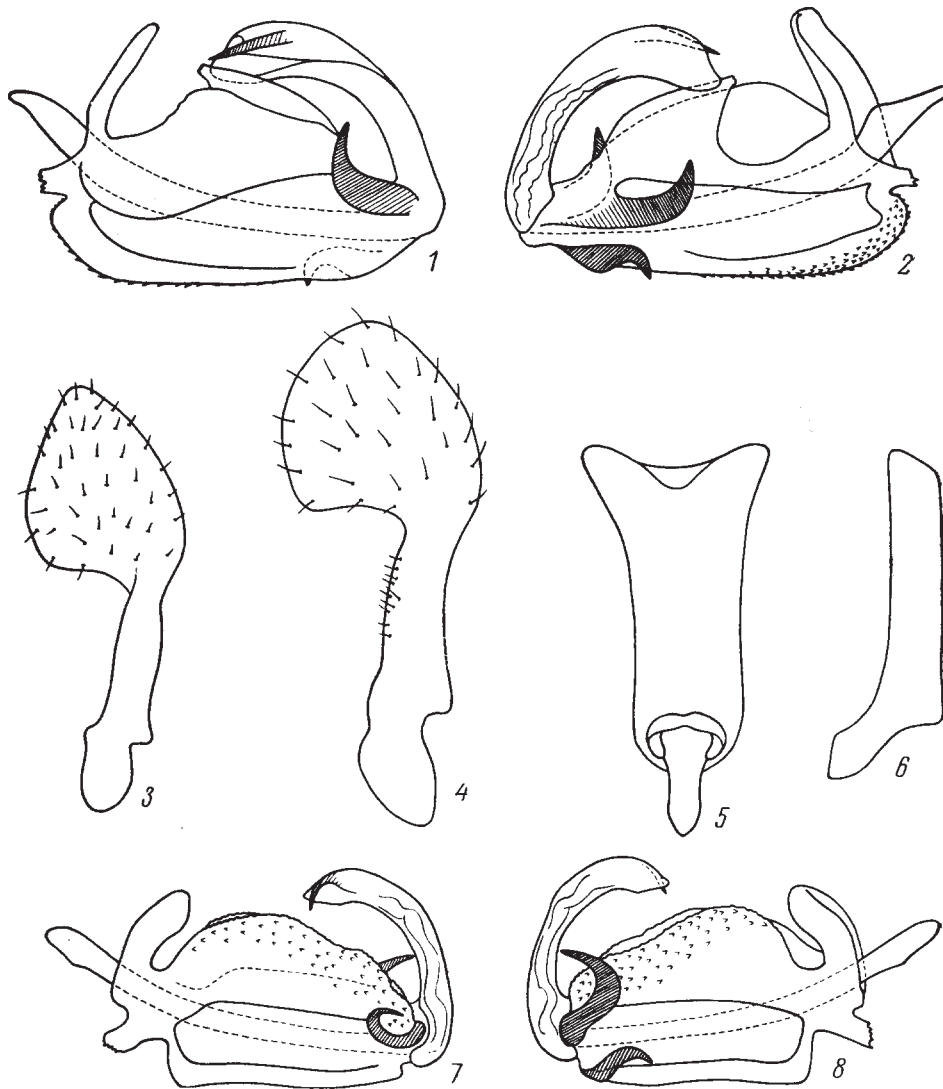


Fig. 352. Cicadines. Family Cixiidae (after Anufriev and original).

1-3, *Cixius heydenii*: 1, 2, penis (1, left lateral view; 2, right lateral view); 3, left stylus, ventral view; 4-8, *C. (S.) pidani*: 4, left stylus, ventral view; 5, 6, anal tube (5, dorsal view; 6, lateral view); 7, 8, penis (7, left lateral view; 8, right lateral view).

- Lower margin of lower ridge of penis theca straight or slightly concave in lateral view, with very deep excision before base; upper teeth of theca hook-shaped, recurrent. - Black; head with yellowish brown carinae and whitish postocular lobes. Fore wings dark brown, with light stigma and dark veins with black granules. 5.2-5.4. Prim. - July. (Figs. 352: 4-8). Holotype - male, Prim., Khualaza (Pidan) mountain near station Kangauz, 18-19.VII.1967 (Anufriev); paratype - male with identical label. Holotype kept in Zoological Institute, Academy of Sciences of USSR (Leningrad), paratype in Gorky State University ***C. (S.) pidani*** Anufr., sp. n.
- 8. Upper teeth of theca comparatively short and wide, usually irregularly but more or less uniformly largely denticulate at apex (sometimes one of processes not denticulate). Black. Eumetope and clypeus with reddish yellow carinae. Fore wings from colorless or whitish with scattered, small brownish spots to dark brown with

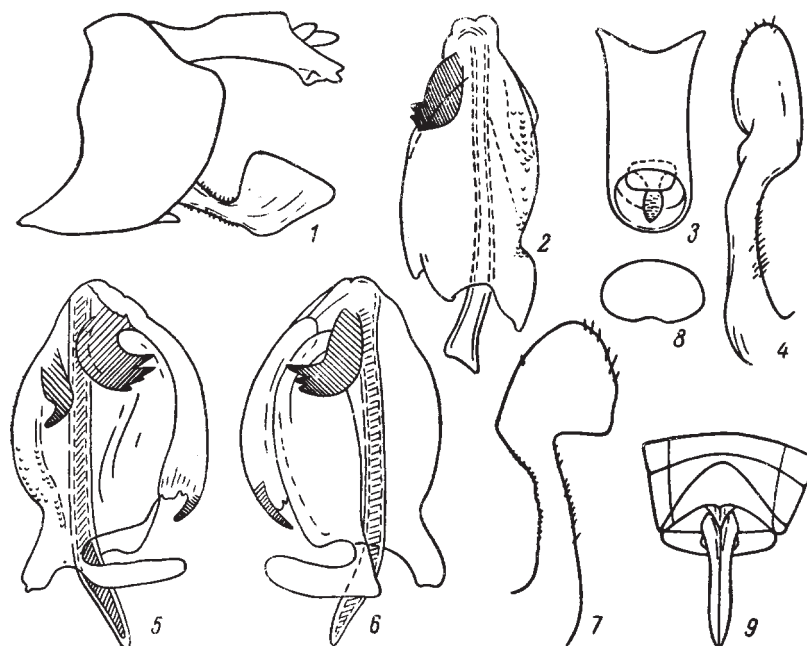


Fig. 353. Cicadines. Family Cixiidae (after Vilbaste).

1-9, *Cixius similis*: 1, genital block of male, left lateral view; 2, 5, 6, penis (2, ventral view; 5, right lateral view; 6, left lateral view); 3, anal tube, dorsal view; 4, stylus, lateral view; 7, right stylus, ventral view; 8, contour of wax area on pygofer of female; 9, apex of female abdomen, ventral view.

- light pterostigma. 5-6.5. – Transbaikal, Kazakhstan, Georgia. N European part of USSR. – W Europe. – All summer. In marshes among birches, willows, *Ledum*, *Myrica*, etc. (Figs. 353: 1-9; 354: 5-8) **C. (S.) similis** Kbm. [p. 457]
- Upper teeth of theca longer and narrower, not denticulate or with large, unequal and not numerous denticles. Head black, with light brown carinae; pronotum brownish, darkened on sides. Scutellum black. Fore wings semihyaline, with dark granules along veins and numerous brown spots in middle part of wings forming an irregular band. 5-6. – S Kur. – In marshes among *Myrica tomentosa*. June to July. (Figs. 354: 1-4) **C. (S.) simillimus** Anufr.
9. The left angle at apex of anal tube lengthened into large pointed tooth. – Head dark brown, reddish; carinae and adjacent areas reddish brown. Pronotum brown, blurred darkened at places. Scutellum dark brown. Fore wings semihyaline, grayish, with dark granules along veins, dark band in the middle and spots at base and on membrane. 6.6-7.9. – S Prim. – On *Acer pseudosieboldianum*. Mid-August to early September. (Figs. 355: 1-11) **C. (U.) remmi** Vilb. [p. 459]
- The left angle at apex of anal tube with obtuse apex, moderately projecting 10
10. Distal segment of aedeagus abruptly bent, arcuate. Lower carina of theca high. Head and pronotum blurred dark brown to black; carinae light brown. Scutellum more or less black. Fore wings nearly hyaline, with dark brown spots and bands; bands running at wing base, near scutellum and in the middle part of corium; spots on membrane fusing into irregular bands. 6-7.5. – S Kur. – Mid-July to late August. (Fig. 354: 9) **C. (U.) acceptus** Anufr.
- Distal segment of aedeagus weakly bent. Lower carina of theca not high. Head dark brown, with lighter carinae. Pronotum light brown. Scutellum dark brown to

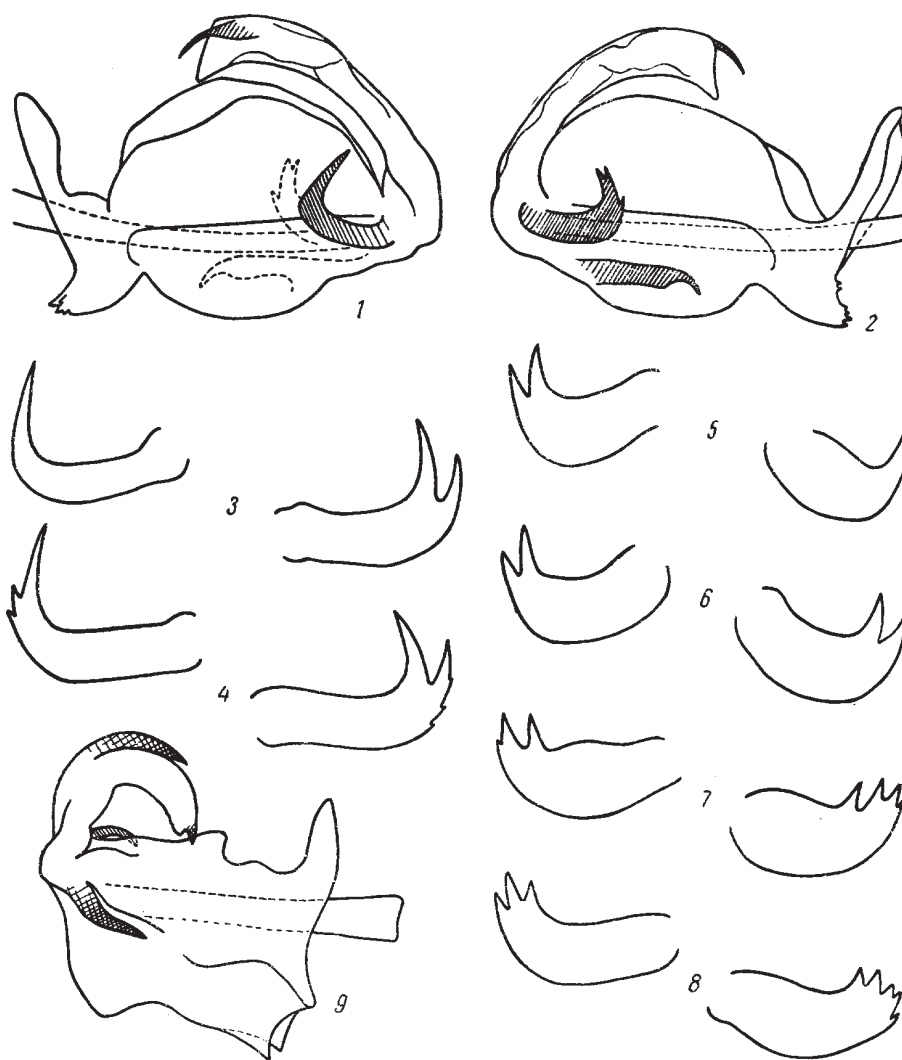


Fig. 354. Cicadines. Family Cixiidae (after Anufriev and original).

1-4, *Cixius simillimus*: 1, 2, penis (1, left lateral view; 2, right lateral view); 3, 4, hooks of penis, variants of structure; 5-8, *C. similes*, hooks of penis, variants of structure; 9, *C. acceptus*, penis, right lateral view.

black. Fore wings whitish, with dark granules along veins. In male, fore wings with band of spots in middle part, membrane with dark spots on transverse veins. 4.8-5.9. – Kamch. – July. (Figs. 357: 1-12) **C. (U.) elbergi** Vilb.

4. **Trirhacus** Fieb. In general appearance and structure of genitalia similar to the genus *Cixius*. Main differences are given in the key. In USSR 1 species. [p. 460]

1. Unicolorous pale ochraceous brown; scutellum somewhat brighter; granules on fore wings of the same pale brown color as veins and cells. Anal tube with posterior margin slanting downwards and backwards. Theca with lower carina becoming higher to base and bearing 2 teeth there; upper carinae not developed. Base of distal segment of aedeagus with 3 teeth. 4.5-6.3. – S Prim. – Japan. – Early July to late August. (Figs. 356: 1-9) **T. nawae** Mats.

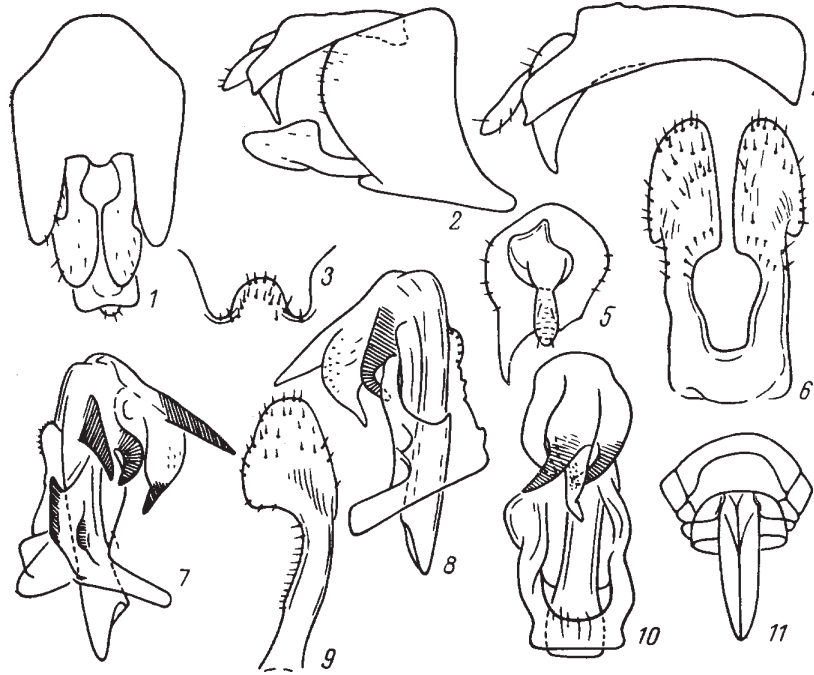


Fig. 355. Cicadines. Family Cixiidae (after Vilbaste).

1-11, *Cixius remmi*: 1, 2, genital block of male (1, ventral view; 2, right lateral view); 3, lower posterior projection of pygofer, ventral view; 4, 5, anal tube (4, right lateral view; 5, posterior view); 6, styli, ventral view; 7, 8, 10, penis (7, right lateral view; 8, left lateral view; 10, ventral view); 9, stylus, lateral view; 11, apex of female abdomen, ventral view.

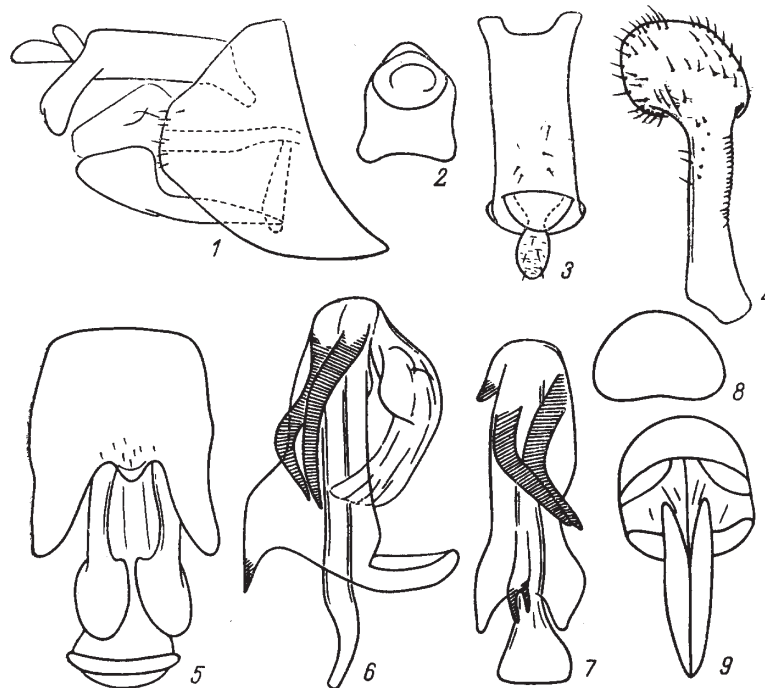


Fig. 356. Cicadines. Family Cixiidae (after Vilbaste).

1-9, *Trirhacus nawae*: 1, 5, genital block of male (1, right lateral view; 5, ventral view); 2, 3, anal tube (2, posterior view; 3, dorsal view); 4, left stylus, ventral view; 6, 7, penis (6, right lateral view; 7, ventral view); 8, contour of wax area on pygofer of female; 9, apex of female abdomen, ventral view.

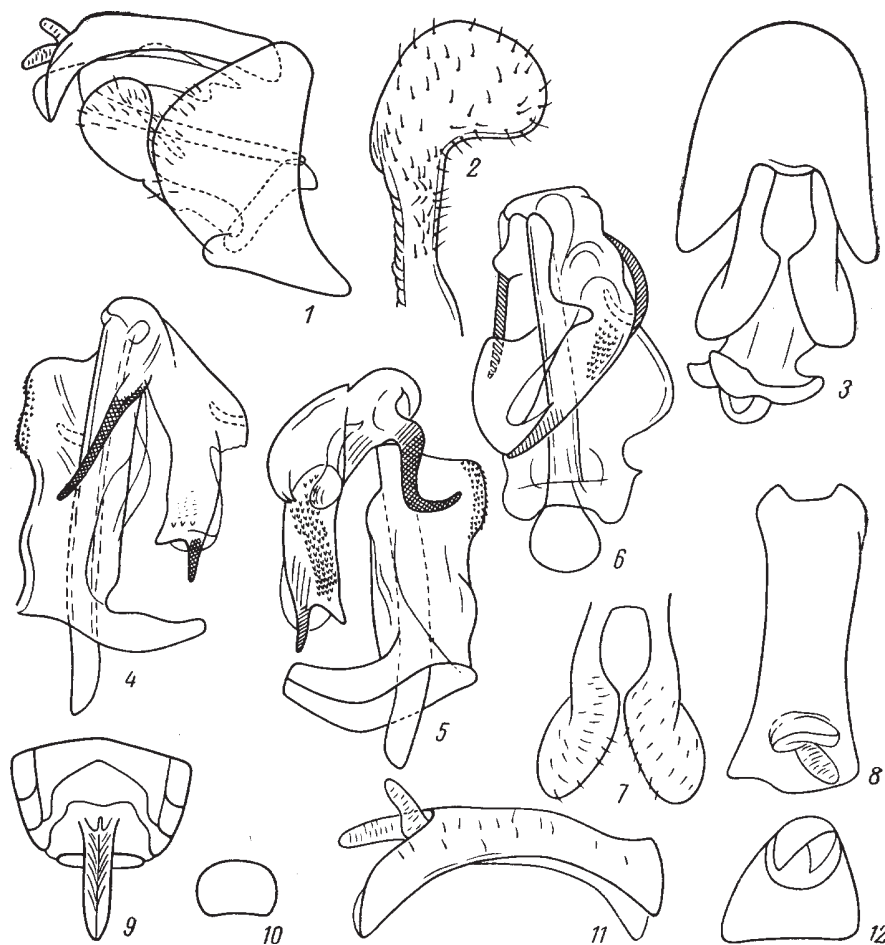


Fig. 357. Cicadines. Family Cixiidae (after Vilbaste).

1-12, *Cixius elbergi*: 1, 3, genital block of male (1, right lateral view; 3, ventral view); 2, stylus, lateral view; 4-6, penis (4, right lateral view; 5, left lateral view; 6, dorsal view); 7, styli, ventral view; 8, 11, 12, anal tube (8, dorsal view; 11, right lateral view; 12, posterior view); 9, apex of female abdomen, ventral view; 10, contour of wax area on pygofer of female.

Tribe *PENTASTIRINI*

5. **Oecleopsis** Em. Moderately flattened dorsoventrally, with more or less flatly folded fore wings. Head small, moderately elongate. Eumetope and postclypeus flat, combined forming elongate rhomboid figure; median carina of eumetope bifurcate above. Macrocorphe narrow, groove-shaped; its lateral carinae double in anterior half. Pronotum with carina separating lateral lobes from top. Scutellum with 5 carinae; intermediate carinae not reaching its anterior [p. 461] and posterior margin. Fore wings with 1 row of setiferous granules on veins. Ovipositor reduced; waxen field above it well developed, large. Male. Pygofer with rounded, projecting lateral parts of posterior margin. Anal tube asymmetrical, with rounded posterior margin slanting downwards and excised right margin. Styli elongate, with complex, transverse, denticulate apices, situated in narrow lower excision of pygofer. Theca narrow, simple, with 1 tooth on the right at apex; distal segment of aedeagus with 3 teeth; 2 left teeth smaller, simple, and the right tooth larger, with two apices. Monotypic genus.

1. Head dark brown, with light carinae of face and temples. Pronotum also dark, with lightened carinae. Scutellum dark brown, with weakly lightened carinae. Fore wings semihyaline, slightly whitish, with brown pterostigma and transverse veins on membrane. 4.8-6.8. – S Kur. (Kunashir). – Japan, Korea, C China (Sichuan). – On *Artemisia*; in USSR, near thermal springs. (Figs. 336: 6, 8; 337: 1; 338: 5; 358: 1-8)

..... **Oe. artemisiae** Mats.

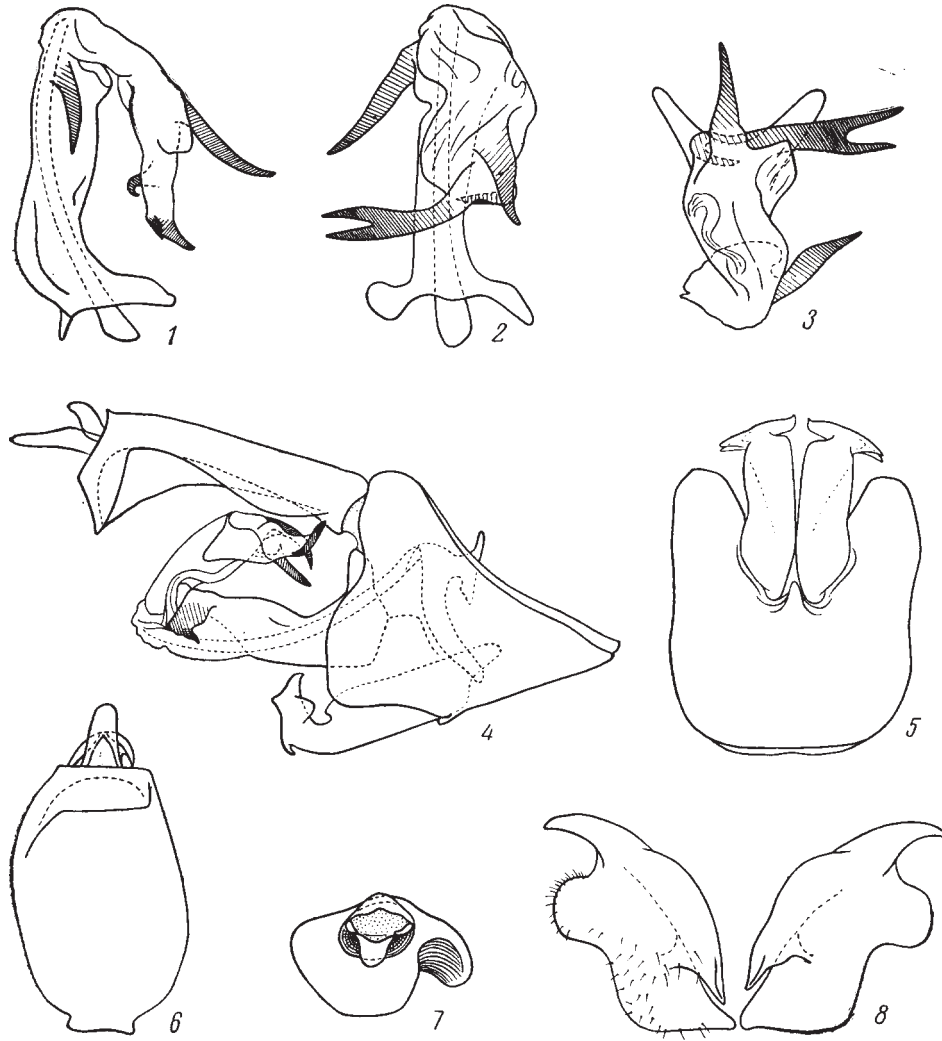


Fig. 358. Cicadines. Family Cixiidae (original).

1-8, *Oecleopsis artemisiae*: 1-3, penis (1, right lateral view; 2, dorsal view; 3, posterior view); 4, genital block of male, right lateral view; 5, pygofer and styli, ventral view; 6, 7, anal tube (6, ventral view; 7, posterior view); 8, styli, posterior view. 1-3, holotype; 4-7, specimen from N Korea; 8, specimen from Kunashir.

6. **Pentastiridius** Kbm. Moderately flattened dorsoventrally, with more or less flatly folded fore wings. Head small, weakly elongate. Eumetope and postclypeus forming more or less flat, elongate hexagonal figure; median carina of eumetope bifurcate near apex. Macrocoryphe moderately elongate, moderately groove-shaped, with arcuate transverse carina in anterior part; this carina (anterior carina of coryphe) connected by longitudinal carinae approximate in the middle with fork of median frontal carina. Pronotum narrow from above; its anterior carinae there nearly parallel to obtuse-

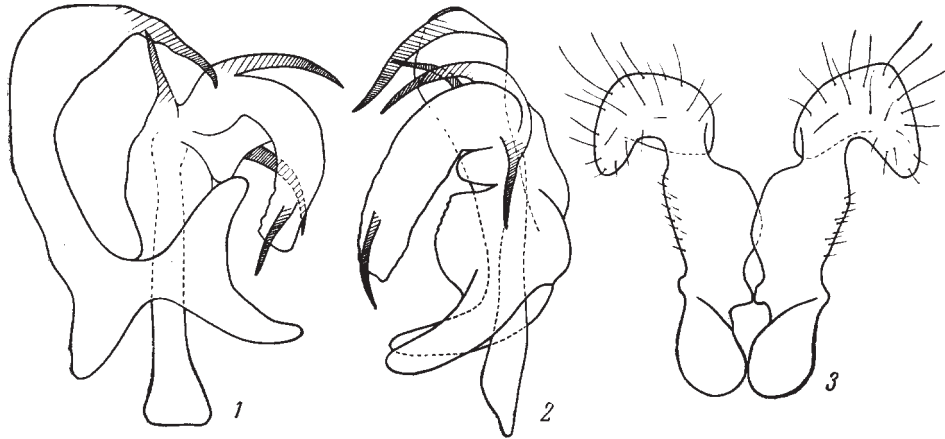


Fig. 359. Cicadines. Family Cixiidae (original).

1-3, *Pentastiridius kaszabianus*: 1, 2, penis (1, dorsal view; 2, left lateral view); 3, styli, ventral view.

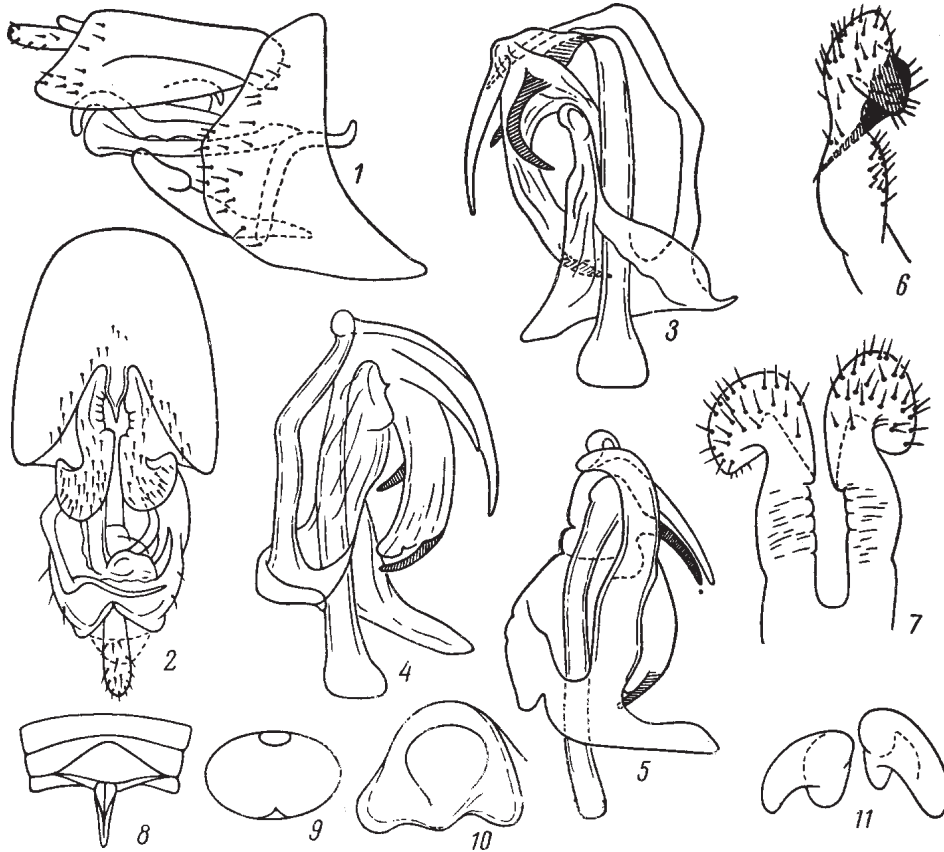


Fig. 360. Cicadines. Family Cixiidae (after Vilbaste).

1-11, *Pentastiridius leporinus*: 1, 2, genital block of male (1, right lateral view; 2, ventral view); 3-5, penis (3, ventral view; 4, dorsal view; 5, right lateral view); 6, stylus, lateral view; 7, 11, styli (7, ventral view; 11, posterior view); 8, apex of female abdomen, ventral view; 9, contour of wax area on pygofer of female; 10, anal tube, posterior view.

angulate, concave posterior margin. Scutellum with 5 carinae. Hind tibiae with 3 lateral teeth. Ovipositor reduced; waxen field above it well developed. Male. Anal tube flattened and slightly widened, more or less symmetrical, without processes and sharp projections. Styli with hook-shaped, more or less flatly widened apices bearing an oblique lobe-shaped carina dorsally at base. Theca slightly flattened dorsoventrally, with robust basal process on the right. Distal part of aedeagus slanting to left side; its basal part usually bearing 2-3 processes on the right and 1 process on the left. – 3 species (in USSR more than 20).

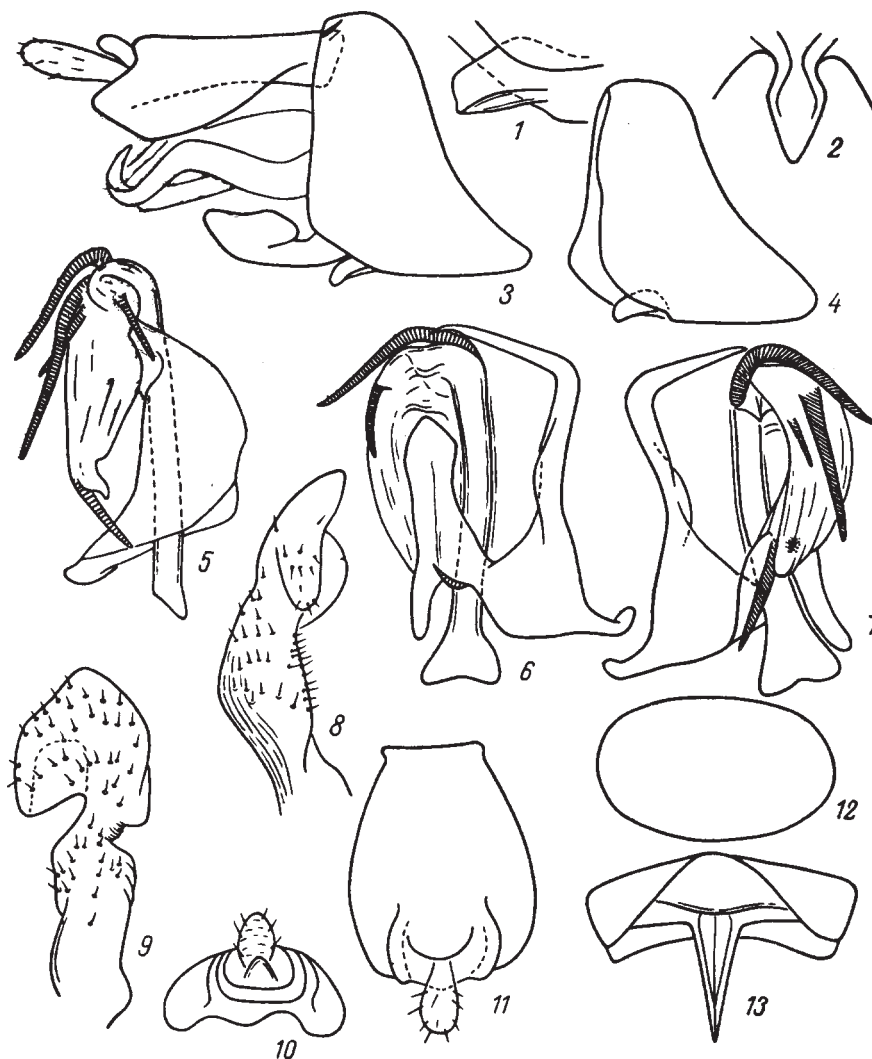


Fig. 361. Cicadines. Family Cixiidae (after Vilbaste).

1-13, *Pentastiridius apicalis*: 1, 2, posterior lower process of pygofer (1, right lateral view; 2, ventral view); 3, genital block of male, right lateral view; 4, pygofer, right lateral view; 5-7, penis (5, left lateral view; 6, ventral view; 7, dorsal view); 8, stylus, lateral view; 9, left stylus, ventral view; 10, 11, anal tube (10, posterior view; 11, dorsal view); 12, contour of wax area on pygofer of female; 13, apex of female abdomen, ventral view.

1. The right basal process of theca much widened in slanting transversely apical part. Base of distal segment of aedeagus with 2 processes on the right. – Dark brown to black; carinae on head and pronotum may be somewhat lighter. Fore wings from light brown to black, usually dark brown. [p. 462] 5.2-8. – Mag., Khab.,

Amur., Prim.; Yakutia, Transbaikal. – C China (Sichuan), Mongolia. – Dry meadow steppe habitats with shrubs. Mid-June to late July. (Figs. 359: 1-3)

..... **P. kaszabianus** Dlab.

- The whole right basal process of theca narrow, without widenings. Base of distal segment of aedeagus with 3 processes on the right 2

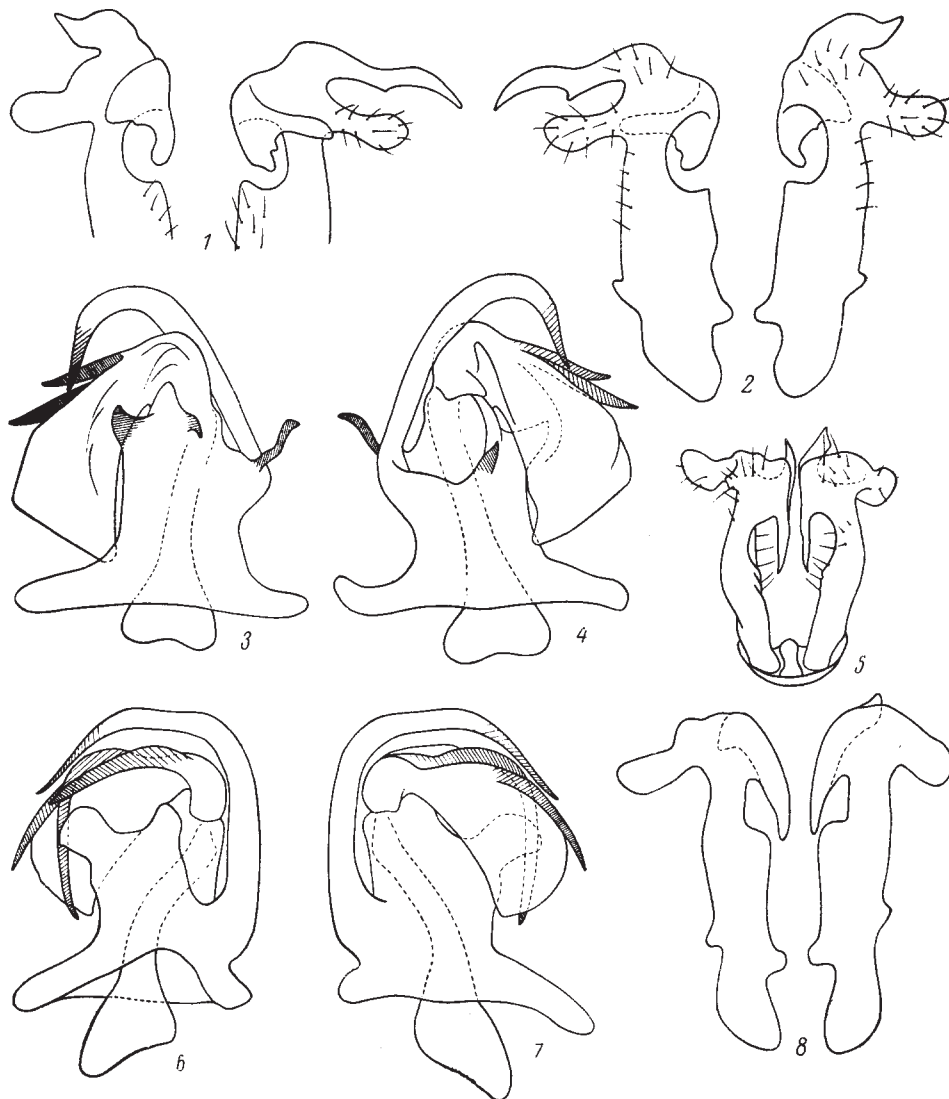


Fig. 362. Cicadines. Family Cixiidae (original).

1-4, *Reptalus quadricinctus*: 1, apices of styli, dorsal view; 2, styli, ventral view; 3, 4, penis (3, ventral view; 4, dorsal view); 5-8, *R. arcobogdulus*: 5, 8, styli (5, posteroventral view; 8, ventral view); 6, 7, penis (6, ventral view; 7, dorsal view).

2. The right basal process of theca very long, running around theca with aedeagus and with apex directed forward from the left. Head nearly black, with light, nearly white carinae; pronotum light, with darkening only on lateral lobes. Scutellum brown or black. Fore wings whitish, mat, semihyaline. 5-9. – Kamch.; S Siberia, Kazakhstan, Middle Asia. – Mongolia, Afghanistan, Iran, Near East, Europe, N Africa. – In moist habitats at banks of reservoirs, etc., common on *Phragmites*. July to August. (Figs. 340: 1, 2; 360: 1-11) **P. leporinus** L.

- The right basal process of theca shorter, its apical part slanting transversely and not surrounding theca from the left. Head dark brown; lateral carinae of head light; median carina of postclypeus also light. Pronotum whitish, with lateral lobes darkened between carinae and darkened lateral parts of dorsum near lateral carinae. Scutellum black. Fore wings whitish, semihyaline; membranes may be brownish darkened. 4.9-6.5. – S Khab., Prim. – Japan. Korea. – July. (Figs. 342: 4; 361: 1-13) **P. apicalis** Uhl. [p. 463]

7. **Reptalus** Em. Moderately flattened dorsoventrally, with more or less flatly folded fore wings. In outer morphology, similar to the genus *Pentastiridius*. Male. Anal tube flattened and slightly widened, with asymmetrical projections and processes at posterior margin. Styli with complex apical parts, rather often asymmetrical, i.e. the right stylus is not mirror image of the left stylus; a typical, large, recurrent process at medial margin is characteristic of stylus. Theca with larger right basal tooth, which is usually double or with additional tooth at base, and with shorter left tooth. – 2 species (in USSR about 10).

1. Outer lobe of stylus apex bifurcate, pincer-shaped. Large right basal process of theca with additional projection near base. Distal segment of aedeagus with 2 teeth. Dark brown to black, with light carinae of face and macrocoryphe and lightened carinae of pronotum. Fore wings semihyaline, sometimes slightly whitish, with brown pterostigma and often [p. 464] with dark transverse bands before middle and beyond apex of clavus, and with darkened apex of membrane, more rarely without distinctly expressed pattern, only with dark veins, especially transverse veins on membrane. 5-7.2. – S Prim. – Japan (Honshu, Shikoku), Korea. – July. (Figs. 342: 3; 362: 1-4) **R. quadricinctus** Mats.
- Outer lobe of stylus apex simple. Basal process of theca without additional projection at base. Distal segment of aedeagus with 3 teeth. Head, pronotum, venter and scutellum black; carinae on head and pronotum reddish brown, not standing out in color on scutellum. Fore wings semihyaline, slightly whitish; veins brownish darkened, bearing dark granules in one row; on membrane, veins, especially transverse veins darkened up to dark brown. 5.2-6.4. – Amur., S Prim.; Transbaikal, Altai. – Mongolia. – Dry steppe habitats with *Artemisia*. Early June to early August. (Figs. 362: 5-8) **R. archbogdulus** Dlab. [p. 465]

11. Family MEENOPLIDAE

Small cicadines with delicate wings and integument, covered with noticeable waxen coating. Head with reduced coryphe often interrupted in the middle; metope extending from above to surface of vertex, and in case of interrupted coryphe is contiguous directly to occiput (Figs. 363: 1-3). Metope with 1 row of sensory pits at lateral margins. Wings tectiform. Fore wings (Figs. 363: 4, 5) at base with costal and subcostal stems closely approximate. Cubital area of fore wings with an insular cell, as a result of anastomosis of branches CuA_1 and CuA_2 . Clavus with vein Pcu , and often also vein A_1 bearing sensory pits. Females with fields of waxen glands on abdominal tergites VI-VIII. Ovipositor simplified, strongly shortened. Male. Penis represented by nearly only phallosome fused laterally to pygofer. Aedeagus strongly reduced. Live in moist habitats on grasses and Fabaceae. In the Far East, only subfamily Kermesiinae. – 1 genus, 2 species (in USSR 3 genera, 4 species).

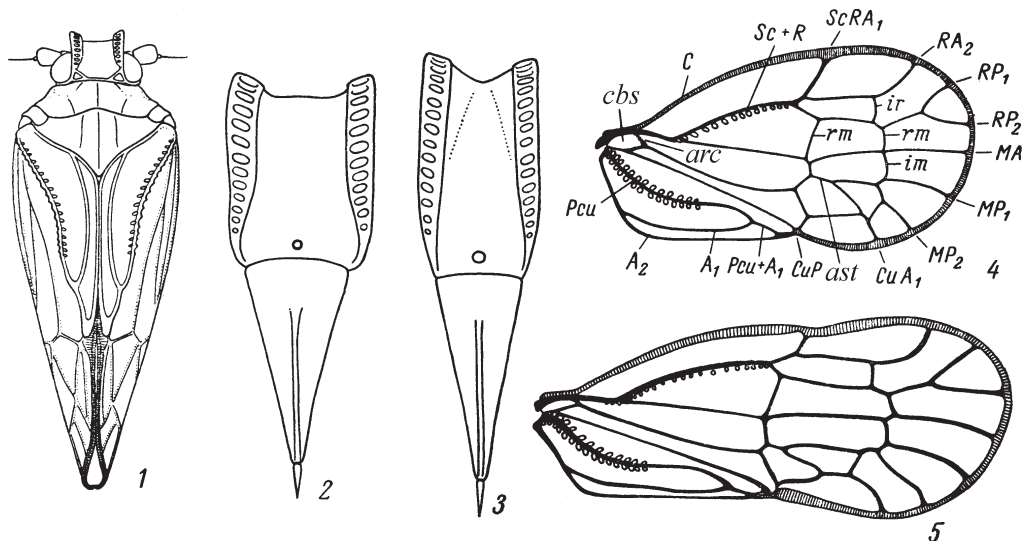


Fig. 363. Cicadines. Family Meenoplidae (after Emeljanov and original).

1, 4, *Eponisiella paludicola*: 1, general appearance; 4, fore wing; 2, *E. casta*, metope ("frons") and clypeus, anteroventral view; 3, 5, *Nisia nervosa*: 3, metope; 5, fore wing. See Fig. 5 for designations.

KEY TO GENERA

1. Metope with straight parallel sides, margins of which below abruptly slanting inwards to narrower postclypeus (Fig. 363: 2). Lateral carinae of disc of pronotum weak but noticeable. Veins *R* and *Pcu* of fore wings always white in area of sensory pits 1. *Eponisiella*
- Metope slightly narrowing to postclypeus in lower part; lateral margins of metope and postclypeus forming single, more or less straight line (Fig. 363: 3). Lateral carinae of disc of pronotum absent. Veins *R* and *Pcu* blackened in area of sensory pits 2. *Nisia*

KEY TO SPECIES OF FAMILY MEENOPLIDAE

1. ***Eponisiella*** Em. Relatively sturdy. Surface of vertex (mainly upper part of metope) about as long as wide or somewhat longer than wide. Metope contiguous in the middle to occiput; coryphe broken into 2 separated triangular areas. Postclypeus without lateral carinae. Pronotum with not sharp lateral carinae of disc. Scutellum with median carina only. Fore wings short and wide. Vein *MA* not branching; *CuA* [p. 466] considerably distant from common subcostal-radiomedial stem in area of indistinctly distinguishable arculus. Male. Pygofer with blunt projections on sides of posterior margin. Anal tube with excision on posterior margin delimited on sides by short blunt projections. Styli with weakly developed upper and medial projections. Penis of simple shape. In USSR 2 species.

1. Dark pattern on fore wings occupying longitudinal veins and adjacent parts of membrane. Whitish, with blurred brown pattern. Metope outside sensory pits brownish. Scutellum with 3 longitudinal stripes; lateral stripes extending also on pronotum. Fore wings semihyaline, with brown longitudinal veins and interrupted

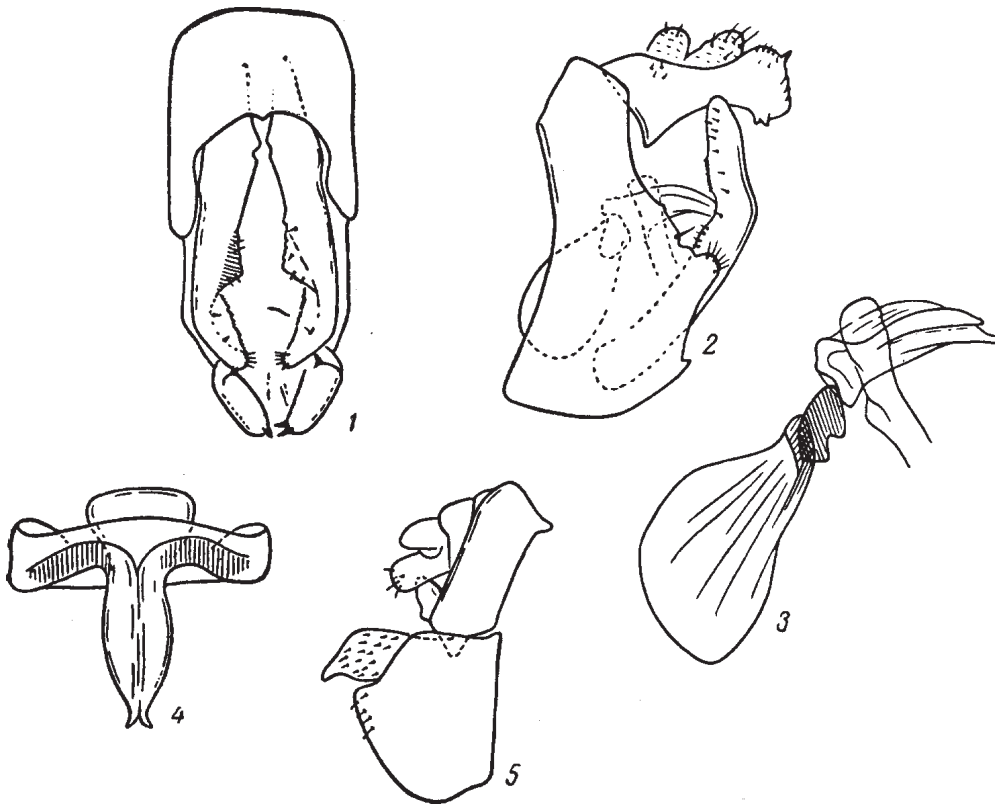


Fig. 364. Cicadines. Family Meenoplidae (after Vilbaste).

1-5, *Eponisiella paludicola*: 1, 2, genital block of male (1, ventral view; 2, left lateral view); 3, 4, penis (3, lateral view; 4, dorsal view); 5, genital block of female, right lateral view.

at places brown edging of cells; transverse veins mostly white. 3-3.6. – S Prim., S Kur. – Korea. – Marsh habitats, on *Eleocharis wichurae*. Late July to late August. (Figs. 363: 1, 4; 364: 1-5) ***E. paludicola*** Vilb.

- Corium of fore wings with only longitudinal veins darkened, cells always light. Whitish. Metope and clypeus with blurred longitudinal stripe; pronotum and scutellum with 3 stripes; lateral stripes extending on postcubital cell of clavus. Fore wings with not darkened *C* and parts of veins bearing sensory pits; darkening of *M* interrupted at connectings with transverse veins (on nodal level and in the middle of membrane); *RA* and basal half of *RP* also remain white as transverse veins. Postcubital cell darkened at some distance off sensory pits running along *A*₁. Legs and abdomen slightly darkened. 3.1-3.5. – S Prim. – Marsh habitats. August. (Fig. 363: 2) ***E. casta*** Em. [p. 467]

2. ***Nisia*** Mel. Relatively slender. Coryphe broken in the middle into 2 separated cells. Metope gradually narrowing in lower part to clypeus; postclypeus without lateral carinae. Pronotum without lateral carinae of disc. Scutellum with distinctly expressed median carina only. Fore wings slenderer; membrane longer than wide. Male. Penis with funnel-shaped structure interrupted ventrally around shaft. Styli with developed upper and medial projections. 1 species may be found in S Prim.



Fig. 365. Cicadines. Family Derbidae (after Esaki).

1, *Epotiocerus flexuosus*; 2, *Mysidioides sapporoensis*; 3, *Pamendanga matsumurai*; 4, *Zoraida horishana*.

1. Whitish. Lateral carinae of metope darkened. Scutellum reddish brownish. Longitudinal veins of fore wings and peripheral vein of membrane blackened. 3.2-3.7. – Japan, Korea, E China, S Asia, Near East, Africa, Australia. – In moist habitats on Cyperaceae. August. (Figs. 363: 3, 5) **N. nervosa** Motsch.

12. Family DERBIDAE

Head usually small, strongly compressed laterally. Coryphe and metope usually very narrow, up to complete approximation of corresponding lateral carinae. Compressed head often strongly protruding before eyes. [p. 470] Eyes very large, often occupying most of head. First segment of antennae small, 2nd segment large. Pronotum short; mesonotum nearly always large, without distinct carinae. Wings various (Figs. 366, 367): from normally developed, slightly projecting beyond apex of abdomen to strongly dipterized, with long and narrow fore wings and diminished hind wings. Venation various. At straightened wings, clavus diminished and membrane strongly lengthened and more or less widened. Veins *RA*, *RP* and especially *M* with

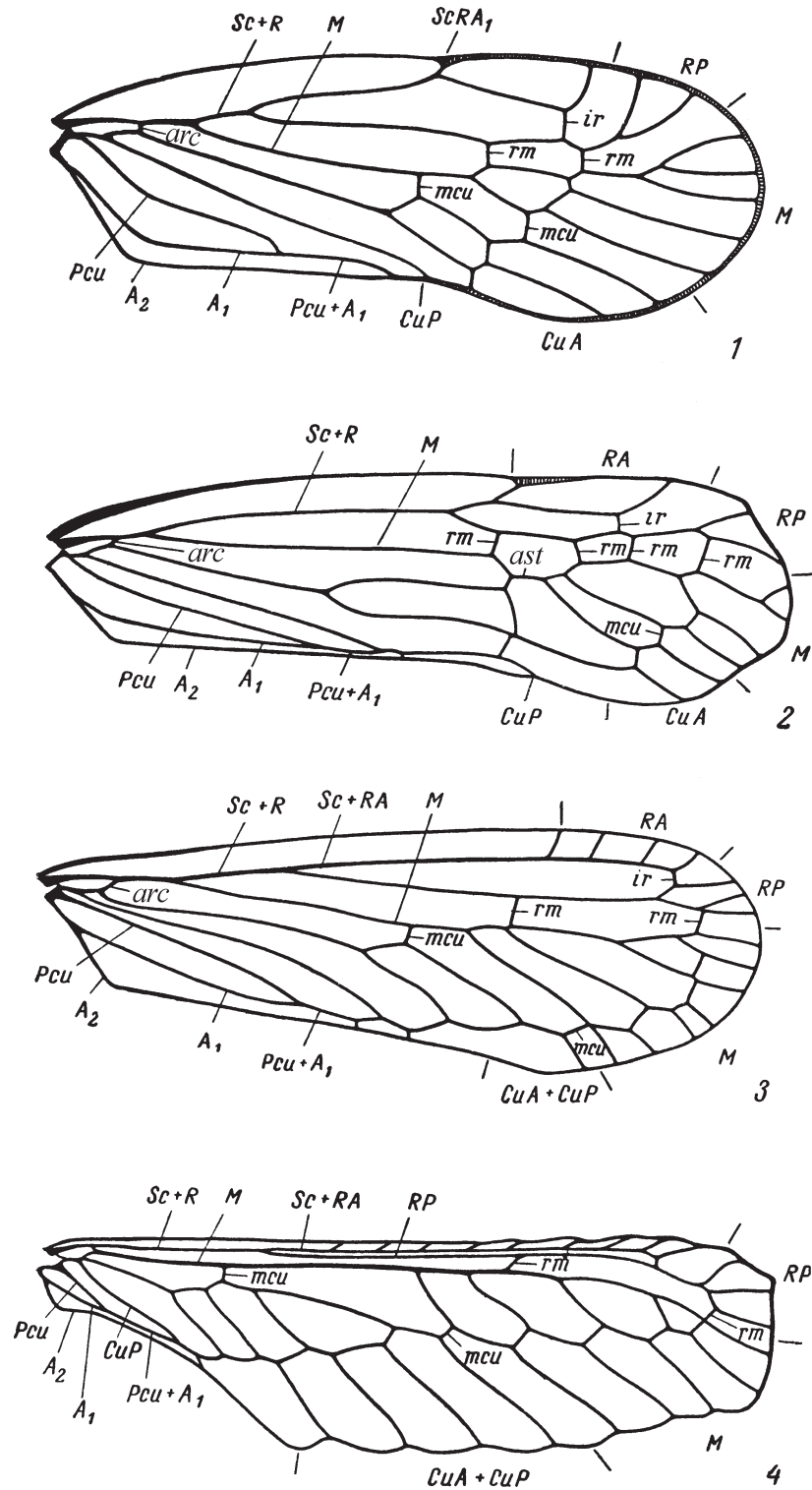


Fig. 366. Cicadines. Family Derbidae. Fore wings (original).

1, *Cedusa* sp.; 2, *Epotiocerus flexuosus*; 3, *Interamma septentrionalis*; 4, *Nomuraida hibarensis*. See Fig. 5 for designations.

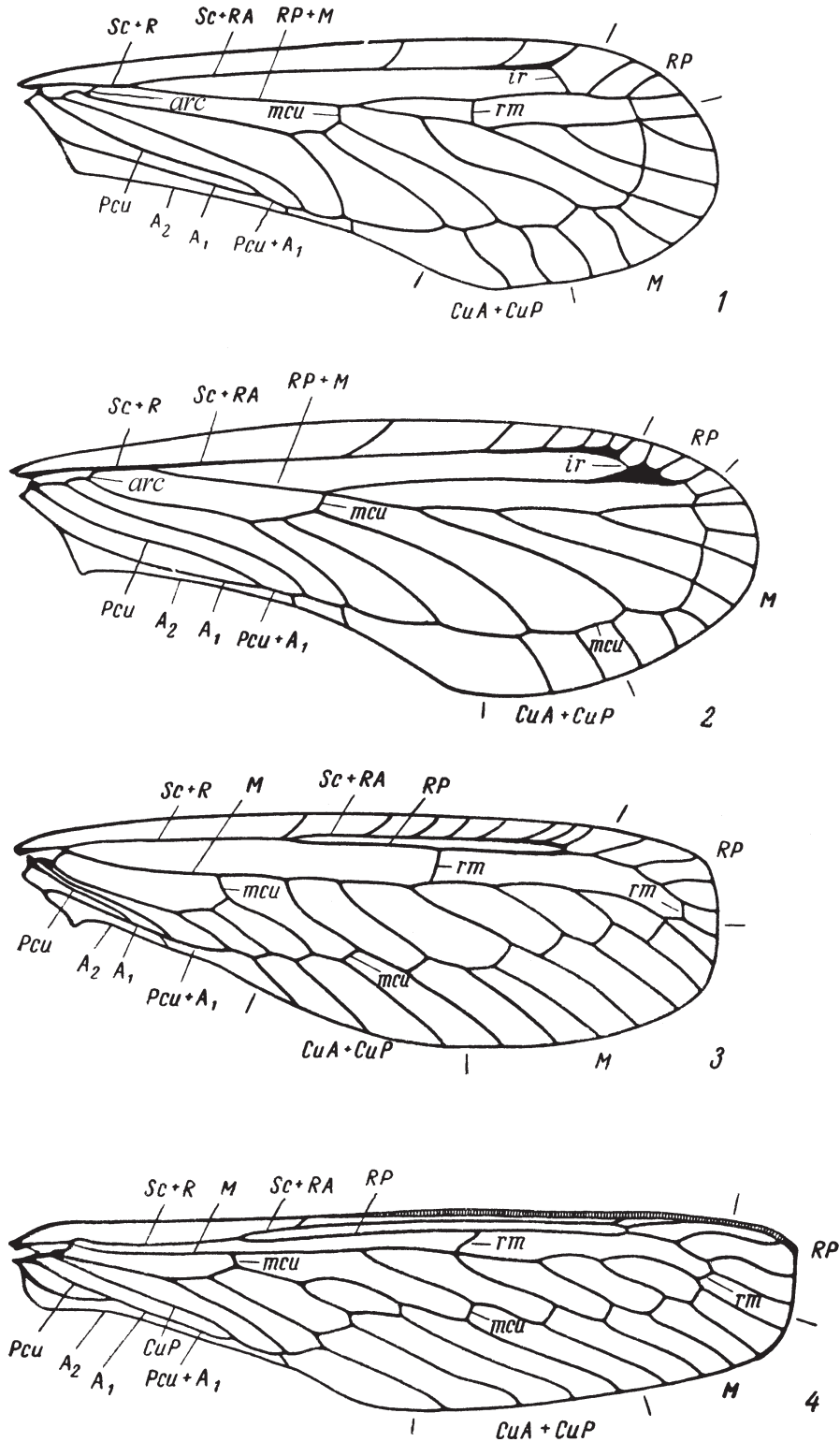


Fig. 367. Cicadines. Family Derbidae. Fore wings (original).

1, *Mysidioides sapporoensis*; 2, *Heronax candidus*; 3, *Pamendanga matsumurai*; 4, *Zoraida horishana*. See Fig. 5 for designations.

many branches. There may be a basal anastomosis of *RP* and *M* (*Mysidioides*, *Heronax*) and intermedial anastomosis of *M* and *CuA* (*Epotiocerus*, *Interamma*). Formation of so called open clavus is very characteristic of some groups, when (secondary) apex of claval vein (*Pcu* + *A*₁) is ending in *CuP*, and there occurs a more or less continuous turn of anal field into peripheral field of membrane formed by more or less regular row of submarginal transverse veins. Posterior angle of clavus often attenuate and modified into stridulatory apparatus. Abdomen usually small, which is apparently related to imaginal aphagia. Larvae without waxen fields on abdominal tergites, in few studied cases mycetophagous, occur on tree fungi, in hollows of rotten and dead trees. Female. Ovipositor of raking up-kneading type. Male. Pygofer simple, usually with long projection ventrally between bases of harpagones (styli). Anal tube of various shape, often narrowing to apex or with constriction, sometimes bearing processes. Harpagones spoon-shaped, with variously developed teeth and processes, usually 2 teeth or a tooth with 2 apices from above; apex of harpagone often tooth-shaped, distinctly separated from medial or caudomedial lobe. Penis symmetrical or asymmetrical, with well developed phallosome and small free part of aedeagus slanting upwards and forward and bearing various teeth and processes. – 8 genera, 9 species (in USSR 8 genera, 13 species).

LITERATURE. Anufriev, G.A. Cicadines of the family Derbidae (Homoptera, Auchenorrhyncha) in fauna of USSR. Entomol. Obozrenie. 1968. T. 47. P. 133-146.

KEY TO GENERA

1. Fore wings not long and not narrow (Figs. 366: 1-3; 367: 1, 2). Hind wings always longer than half of fore wings; anal cell of fore wings large; posterocubital and postcubital cells normally developed. (Subfamily Derbinae) 2
- Fore wings long and narrow (Figs. 366: 4; 367: 3, 4). Posterocubital and postcubital cells strongly reduced or absent. Posterior basal cell large, goffered, serves as stridulatory organ. (Subfamily Zoraidinae). – Eyes not reaching anteriorly base of clypeus. Costal cell of fore wings long, often very narrow. (Tribe Zoraidini) 6
2. Posterior cubital vein (*CuP*) of fore wings reaching posterior margin (Fig. 366: 1). Clavus closed at apex or narrowly open, but in that case claval vein not extending beyond limits of last cubital vein. (Tribe Cenchreini). Genae with lobe-shaped, projecting carinae under antennae 1. **Cedusa**
- Clavus open at apex (Figs. 366: 2; 367: 1, 2). Posterior cubital vein of fore wings not reaching posterior margin and, fusing with claval vein, form submarginal vein running on membrane parallel to wing margin. (Tribe Otiocerini) 3
3. Medial vein of fore wings arising from radial vein before branching of stem *ScR* (Figs. 366: 2, 3) 4
- Medial vein of fore wings arising from radial vein (*ScR*) after branching of stem *ScR* into anterior and posterior branches *ScRA* and *RP* (Figs. 366: 4; 367: 1) 5
4. Fore wings (Fig. 366: 2) with short stigmal cell (cell between *RA* and *RP*); first branching of stem *ScR* situated at level of apex of clavus. Antennae large 2. **Epotiocerus**
- Fore wings (Fig. 366: 3) with long stigmal cell; first branching of stem *ScR* nearer to base of wing than apex of clavus 3. **Interamma**
5. Subantennal lobe present 4. **Mysidioides** [p. 471]
- Subantennal lobe absent or very small. Antennae not shorter than face, their 2nd segment cylindrical 5. **Heronax**
6. Antennae shorter than face, without process; flagellum of antennae apical 6. **Pamendanga**

- Antennae as long as face or longer; their 2nd segment cylindrical or flattened, flagellum of antennae subapical 7
- 7. Basal cell of fore wings comparatively short; medial cells short, their length and width about equal (Fig. 366: 4). Hind wings very short 7. **Nomuraida**
- Basal cell of fore wings long; medial cells elongate, much longer than wide (Fig. 367: 4). Hind wings long 8. **Zoraida**

KEY TO SPECIES OF FAMILY DERBIDAE

Subfamily DERBINAЕ

Tribe *CENCHREINI*

1. **Cedusa** Fowler. (Malenia Hpt.). Head narrow, with short coryphe and long, narrow face. Carinae of metope strongly projecting forward, foliaceous. Genae with projecting ear-shaped carinae under antennae. Pronotum short, strongly transverse; mesonotum convex, with traces of 3 longitudinal carinae. Wings (Fig. 366: 1) tectiform. – 1 species (in USSR 5).

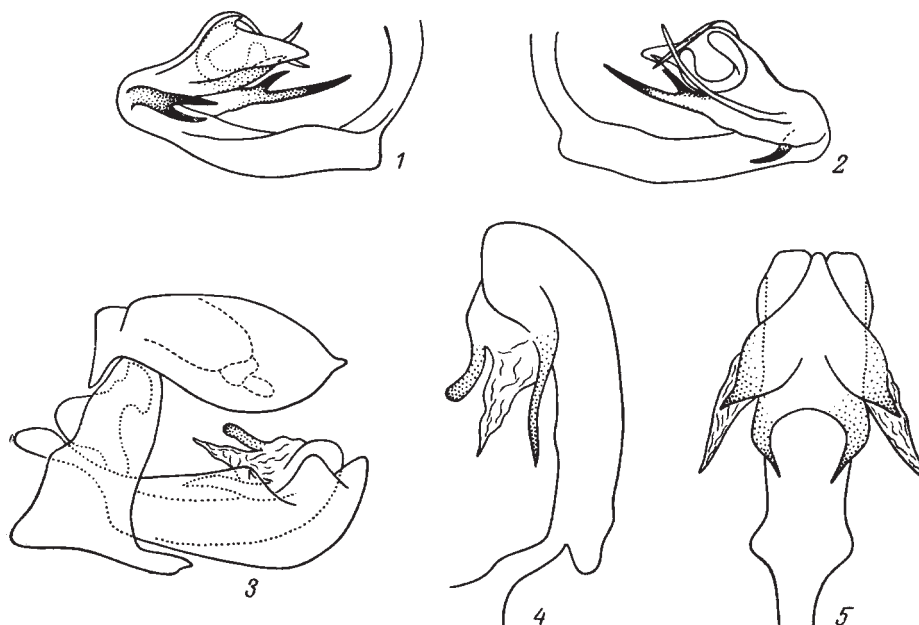


Fig. 368. Cicadines. Family Derbidae (after Anufriev).

1, 2, *Cedusa ussurica*, penis (1, left lateral view; 2, right lateral view); 3-5, *Eptiocerus flexuosus*: 3, genital block of male, lateral view; 4, 5, penis (4, lateral view; 5, dorsal view).

1. Dark brown to black, often with bluish tint due to waxy powdering. Carinae of head lighter, whitish. 4-5.5. – Prim. – On *Populus italica*. Late July. (Figs. 368: 1, 2) **C. ussurica** Anufr.

Tribe *OTIOCERINI*

2. **Eptiocerus** Mats. Head narrow, with eyes strongly projecting laterad. Coryphe narrow, groove-shaped. Metope slit-shaped, with nearly contiguous lateral carinae. Antennae long, somewhat shorter than wide temples, with 2nd segment [p. 472]

obliquely truncate at apex. Pronotum short, with spread and slanting upwards lateral lobes (paranota). Mesonotum rounded, without carinae. In USSR 1 species.

1. Basic coloration yellowish. Fore wings with red zigzag interrupted stripe extending forward on thorax and head. Without wings 4.5-4.8, with wings 9-10.5. – S Kur. (Kunashir). – Japan, Korea, China (Taiwan). – Under canopy of mixed and broad-leaved forests and in glades on *Sasa kurilensis*. Late July to late August. (Figs. 365: 1; 366: 2; 368: 3-5; 369: 6) **E. flexuosus** Uhl.

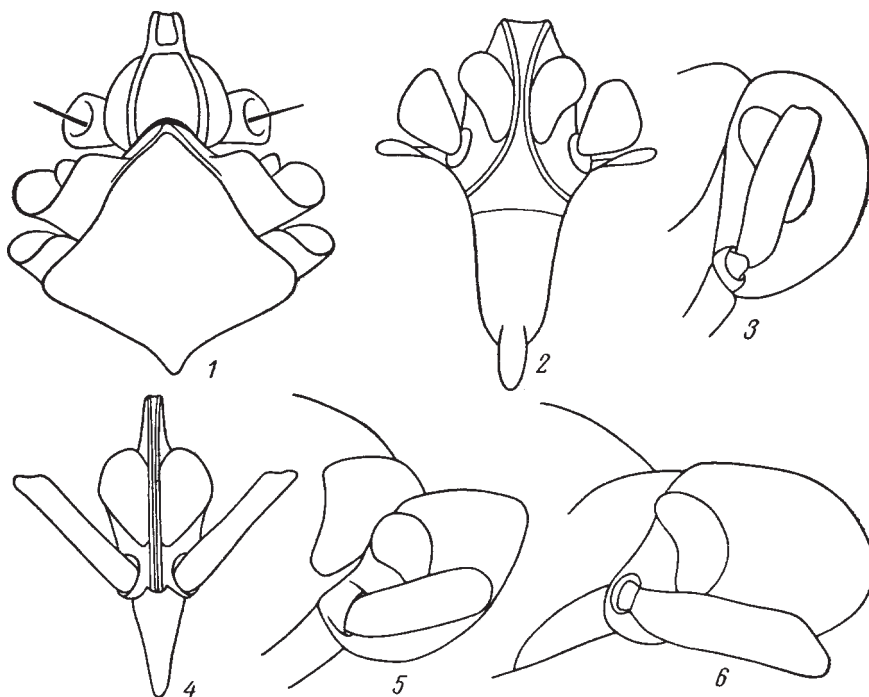


Fig. 369. Cicadines. Family Derbidae (after Anufriev).

1, 2, *Mysidioides sapporoensis*: 1, anterior part of body; 2, head, anterior view; 3, *Heronax candidus*, head, lateral view; 4, 5, *Interamma septentrionalis*: 4, head, anterior view; 5, head and pronotum, lateral view; 6, *Epotiocerus flexuosus*, head, lateral view.

3. **Interamma** Walk. Head black, angular in lateral view, strongly projecting forward. Coryphe triangular, narrow, groove-shaped. Metope slit-shaped. Antennae long, nearly reaching apex of vertex; 2nd segment flattened, obliquely truncate at apex. Pronotum in the middle narrower than at sides; its lateral lobes not slanting. In USSR 1 species.

1. Basic coloration yellowish. A castaneous stripe running along each side of body from temples to eyes, sides of pronotum and mesonotum. Antennae and abdomen ventrally brown-castaneous. Fore wings with blurred brown and whitish spots; veins at costal margin and on membrane reddish. Without wings 4.5-5, with wings 8-9.5. – Prim. – Late July to mid-September. (Figs. 366: 3; 369: 4, 5) **I. septentrionalis** Anufr.

4. **Mysidioides** Mats. Coryphe longitudinally trapeziform, not deeply depressed. Metope slit-shaped; its lateral carinae diverging to coryphe and clypeus. Subantennal lobes present. Pronotum shortened along midline up to contact of anterior and

posterior margin. Lateral lobes of pronotum slanting upwards and forward, separated from dorsal part of pronotum by foliaceous carina. 2nd segment of antennae inversely conical. In USSR 1 species. [p. 473]

1. Basic coloration whitish. Mesonotum yellow, with brown stripes lateral to median carina. Fore wings whitish, with brown, fused at places spots. Without wings 4.5-5, with wings 8-10. – Amur., Prim. – S Kur. (Kunashir). – Japan, China (Taiwan). – Under canopy of broad-leaved and mixed forests among shrubs and herbs. Late July to early September. (Figs. 305: 2; 367: 1; 369: 1, 2; 370: 1, 2)
..... **M. sapporoensis** Mats.

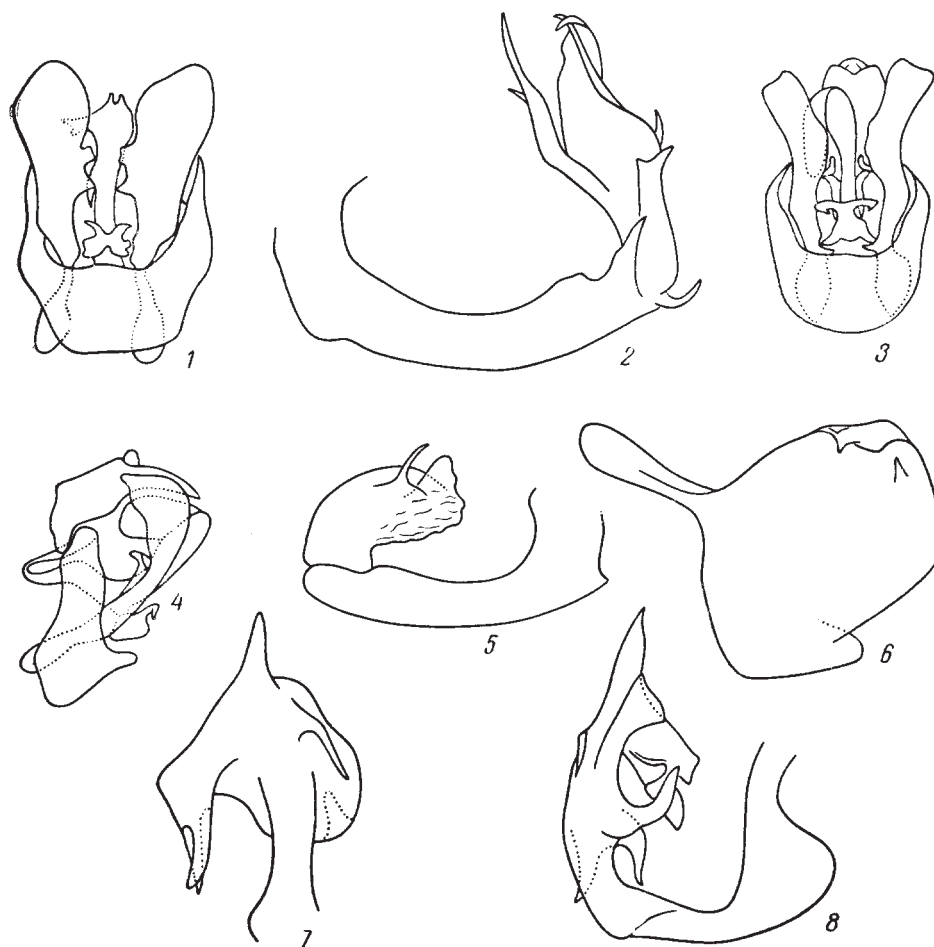


Fig. 370. Cicadines. Family Derbidae (after Anufriev).

1, 2, *Mysidioides sapporoensis*: 1, genital block of male, ventral view; 2, penis, left lateral view; 3-5, *Heronax candidus*: 3, 4, genital block of male (3, ventral view; 4, lateral view); 5, penis, right lateral view; 6-8, *Pamendanga matsumurai*: 6, stylus; 7, 8, penis (7, dorsal view; 8, right lateral view).

5. **Heronax** Kirk. Coryphe longitudinally trapeziform, not deeply depressed. Metope slit-shaped; its lateral carinae diverging to vertex and clypeus. Pronotum shortened along midline up to contact of anterior and posterior margin. Lateral lobes of pronotum not slanting and not separated from dorsal part by distinct carina. 2nd segment of antennae cylindrical, large. In USSR 1 species.

1. White, temples, eyes, lateral part of pronotum and mesonotum brownish. Without wings 5-5.5, with wings 8-12. – Amur., Prim. – Under canopy of mixed and coniferous forests on shrubs and herbs. Late July to mid-September. (Figs. 367: 2; 369: 3; 370: 3-5) **H. candidus** Anufr. [p. 474]

Subfamily ZORAIDINAE

Tribe ZORAIDINI

6. **Pamendanga** Dist. Coryphe obtuse-angulate, strongly depressed. Temples wide. Metope, as such, expressed in the shape of a double carina, as this area of head is compressed laterally up to leaf-shaped condition. Antennae with long, cylindrical 2nd segment; flagellum arising apically. Clypeus with 3 carinae. Pronotum narrow, widening laterally; carinae absent, except the median carina. Mesonotum with 3 carinae. In USSR 1 species.

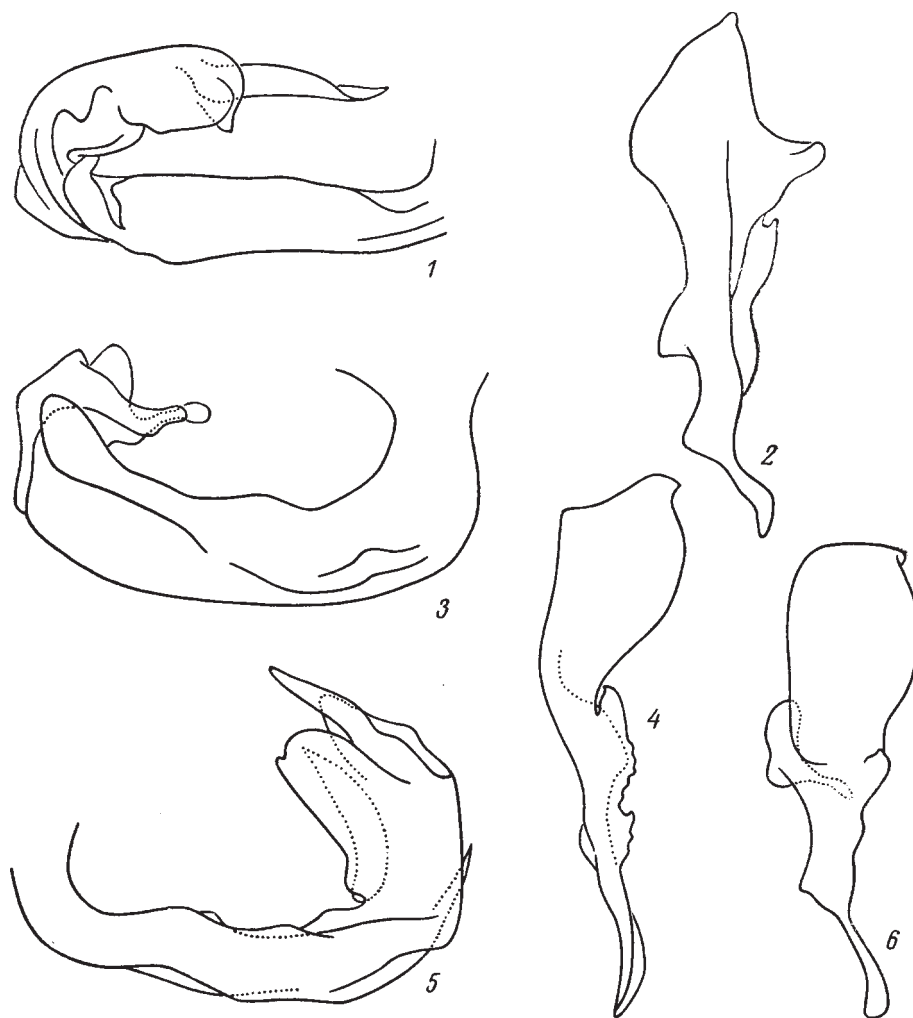


Fig. 371. Cicadines. Family Derbidae (after Anufriev).

- 1, 2, *Nomuraida hibarensis*: 1, penis, right lateral view; 2, stylus; 3, 4, *Zoraida albicans*: 3, penis, right lateral view; 4, stylus; 5, 6, *Z. horishana*: 5, penis, left lateral view; 6, stylus.

1. Basic coloration yellow or, in live individuals, greenish. Fore wings semihyaline, with numerous, scattered, brown, small spots forming 2 dim bands; veins of distal part with reddish small spots at anterior margin. Without wings 3-4, with wings 8-13. – Prim. – Japan, Korea, China (Taiwan). – Under canopy of broad-leaved and mixed forests. Mid-August to early September. (Figs. 365: 3; 367: 3; 370: 6-8)

..... **P. matsumurai** Muir [p. 475]

7. **Nomuraida** Mats. Coryphe small, flat, trapeziform, strongly narrowing forward. Temples narrow. Metope linear. Antennae with long, cylindrical 2nd segment; flagellum attached apically. Postclypeus with sharp median carina and weak lateral carinae. Mesonotum swollen, with 3 carinae. In USSR 1 species.

1. Basic coloration reddish brownish, margins of abdominal segments carmine-red. Fore wings hyaline, with castaneous stripe along anterior margin; posterior margin of the stripe projecting backwards in the shape of 3 teeth; veins partly red, partly brown. Without wings 4-5.5, with wings 13-15. – S Prim. – Japan, Korea. – Under canopy of broad-leaved and mixed forests. Mid- to late August. (Figs. 366: 4; 371: 1, 2)

..... **N. hibarensis** Mats.

8. **Zoraida** Kirk. Coryphe small, narrowing forward, with concave, angulate anterior margin and distinguishable median carina. Temples narrow; metopal area of head nearly not projecting forward before eyes. Metope linear. Antennae with long, cylindrical 2nd segment; flagellum attached subapically. Postclypeus with 3 sharp carinae. Pronotum inclined forward, only slightly shorter in the middle than laterally; median carina distinct. Mesonotum swollen, with 3 carinae. In USSR 2 species.

1. Antennae about as long as frons, cylindrical. Apical part of fore wings without spots. Light brown. Fore wings hyaline, with dark veins and castaneous longitudinal stripe along anterior margin occupying whole subcostal cell; posterior margin of the stripe slightly undulated, running behind anterior medial vein. Without wings 5.5-6.5, with wings 15-20. – Prim. – Japan, Korea, China (Taiwan). – Under canopy of broad-leaved and mixed forests. Early to late August. (Figs. 365: 4; 367: 4; 371: 5, 6)
- Antennae about twice as long as frons, distinctly compressed laterally. Apex of fore wings with row of V-shaped dark small spots on veins distant from terminal margin. In general appearance, similar to *Z. horishana*, but paler, fore wings with whitish powdering and narrower and less bright brown stripe occupying only anterior part of subcostal cell. Without wings 5-5.5, with wings 15-17. – S Prim. – Japan, Korea. In broad-leaved and mixed forests. Early to late August. (Figs. 371: 3, 4)

..... **Z. albicans** Anufr.

13. Family ACHILIDAE

Usually flattened dorsoventrally. Head strongly or moderately projecting forward. Metope without intermedial carinae, only lateral and median carinae present. 2 ocelli. Rostrum with long distal segment. Hind tibiae often with 1 lateral tooth, but there may be 3 teeth or 6-7 teeth. Fore wings with wide membrane projecting backwards; at rest, membranes of both wings strongly overlying each other. Ovipositor of female of raking up-kneading type. Male. Pygofer usually with projection from below between bases of harpagones. Anal tube simple, flattened dorsoventrally. Harpagones spoon-shaped, bearing from above a process with 2 apices. penis with well developed phallosome and

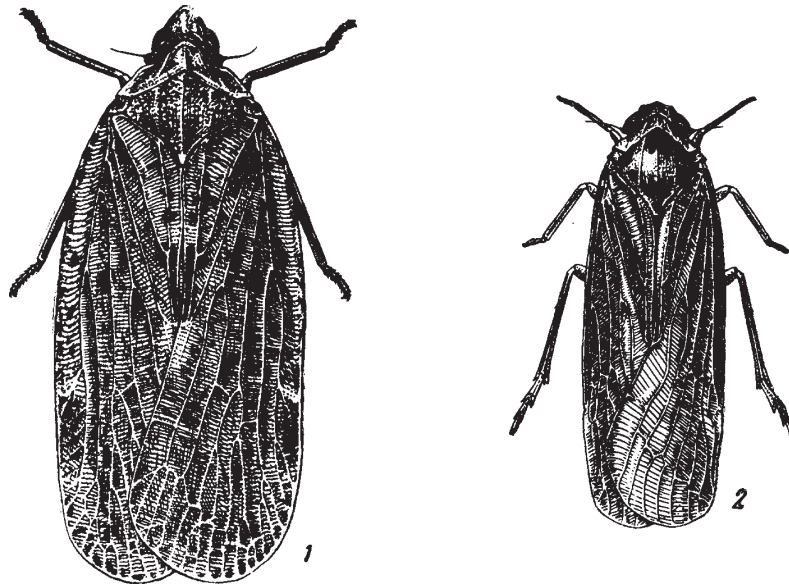


Fig. 372. Cicadines. Family Achilidae (original).

1, *Cixidia ussuriensis*; 2, *Kosalya flavostrigata*.

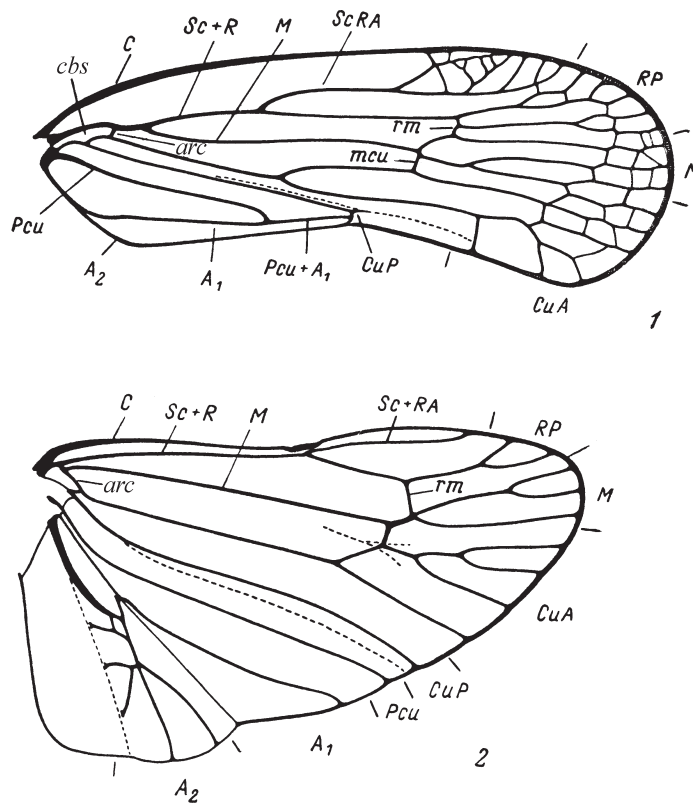


Fig. 373. Cicadines. Family Achilidae (original).

1, 2, *Cixidia lapponica*, wings: 1, fore wing; 2, hind wing. See Fig. 5 for designations.

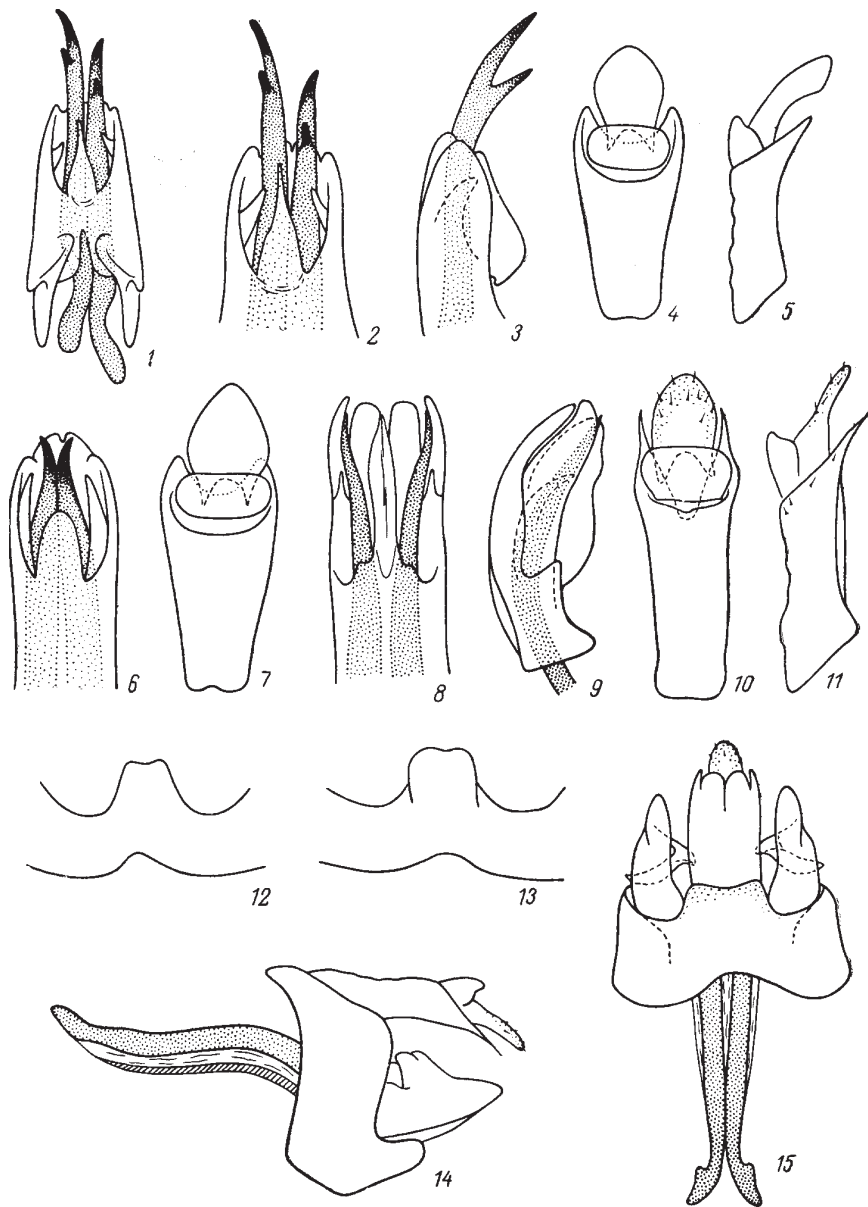


Fig. 374. Cicadines. Family Achilidae (after Anufriev).

1-5, *Cixidia lapponica*: 1, penis, dorsal view; 2, 3, apical part of penis (2, dorsal view; 3, lateral view); 4, 5, anal tube (4, dorsal view; 5, lateral view); 6, 7, *C. ussurica*: 6, apex of penis, dorsal view; 7, anal tube, dorsal view; 8-11, *C. kasparyani*: 8, apex of penis, dorsal view; 9, penis, lateral view; 10, 11, anal tube (10, dorsal view; 11, lateral view); 12, 13, posteroventral projection of pygofer: 12, *C. lapponica*; 13, *C. ussurica*; 14, 15, *C. kasparyani*, genital block of male (14, left lateral view; 15, ventral view).

reduced aedeagus, only so called hooks protruding from phallosome remaining from aedeagus. Larvae mycetophagous, occurring on dead rotten wood of tree stumps and felt trunks. – 2 genera, 4 species (in USSR 4 genera, 7 species).

LITERATURE. Anufriev, G.A. Studies on some Palearctic Achilidae (Homoptera, Auchenorrhyncha). Bull. Acad. Pol. Sci. 1969. Vol. 17. P. 173-178. – Ishihara, T. Homopterous notes. Sci. Rept. Matsuyama Agr. Coll. 1954. No. 4. P. 1-28.

1. Fore wings with posterior branch of *CuA* branching distal to postclaval transverse vein (Fig. 373: 1). Hind wings with anastomosing veins A_1 and A_2 , A_2 having blind branches in that case (Fig. 373: 2). [p. 478] Hind tibiae with lateral tooth situated nearer to apex of tibia. (Tribe Achilini). Apical teeth of 1st and 2nd segments of hind tarsi with subapical bristles 1. **Cixidia**
- Posterior branch of *CuA* not branching on fore wings (Fig. 376: 1). On hind wings, veins A_1 and A_2 free, A_2 not branching in that case (Fig. 376: 2). Hind tibiae with lateral tooth situated nearer to base of the tibia. (Tribe Plectoderini). Apical teeth of 1st and 2nd segments of hind tarsi without subapical bristles 2. **Kosalya**

KEY TO SPECIES OF FAMILY ACHILIDAE

1. **Cixidia** Fieb. Coryphe moderately concave, trapeziform, narrowing forward, with convex anterior margin and concave posterior margin. Metope and coryphe converging at acute or right angle in lateral view. Metope widening to clypeus. Pronotum usually with 1 upper lateral carina. Mesonotum flat. Membrane with 2-3 rows of transverse veins. – 3 species (in USSR 5).

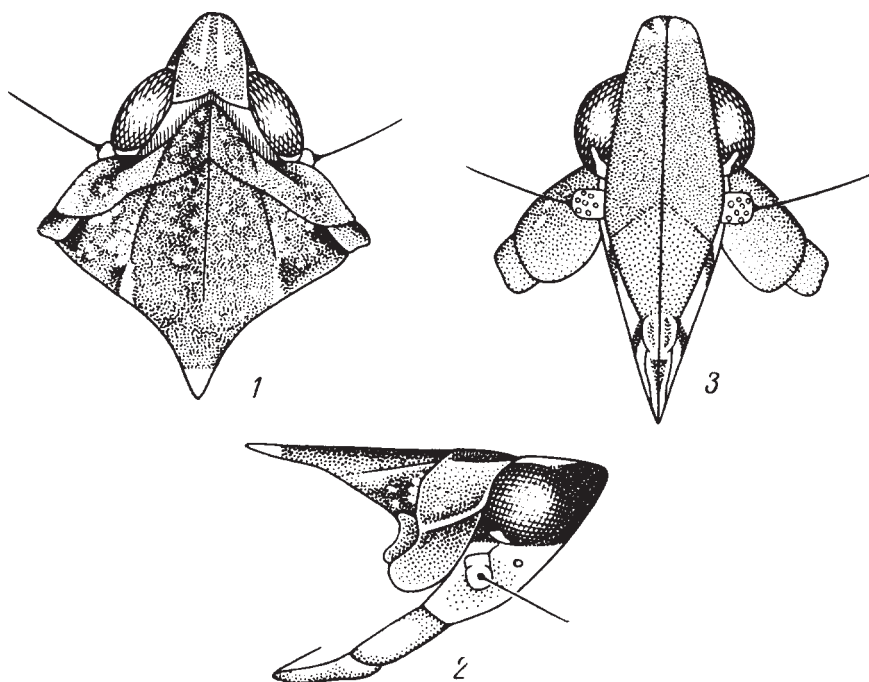


Fig. 375. Cicadines. Family Achilidae (after Anufriev).

1-3, *Cixidia kasparyani*: 1, 2, anterior part of body (1, dorsal view; 2, lateral view); 3, head and pronotum, anteroventral view.

1. Hooks of penis bifurcate at apex. Upper third of metope dark brown, lower 2/3 yellowish white. – Dorsal part of body brown, with small light specks. Venter brown; lower margins of sides of pronotum white. 7.4-9.7. – S Mag., Amur., Prim.; taiga forest zone of USSR. – Mongolia, Finland, Sweden. – Larvae on fallen trunks and stumps of decaying coniferous trees. Early May to mid-September. (Figs. 373: 1, 2; 374: 1-5, 12) **C. lapponica** Zett.

- Hooks of penis simple at apex. Metope without sharply outlined black upper part 2
- 2. Metope yellowish white; inner margins of lateral carinae blurred brownish or brown only in upper third. Postclypeus brown. As a whole, [p. 479] similar to *C. lapponica*. 9.6-11.7. – Prim. – Under canopy of mixed and coniferous forests. Early May to late August. (Figs. 372: 1; 374: 6, 7, 13) ***C. ussuriensis*** Kusn.
- Whole metope brown, with light specks, slightly lightened only at upper margin. Postclypeus of the same color as metope. Brown, with a pair of bifurcate, light, longitudinal stripes on vertex. Pronotum and scutellum with light specks; sides of pronotum yellowish. Fore wings brown, with small light specks. 5.9-7.1. – S Prim. – Early September. (Figs. 374: 8-11, 14, 15; 375: 1-3) ***C. kaspariyani*** Anufr.

2. **Kosalya** Dist. Coryphe transverse, with median carina as sharp as lateral carinae. Metope convex in upper part, slanting to vertical surface. Boundary between metope and coryphe marked by obtuse-angulate carina parallel to posterior margin of vertex. Mesonotum convex, with lateral parts bevelled downwards. Membrane with 1 row of transverse veins only. Monotypic genus.

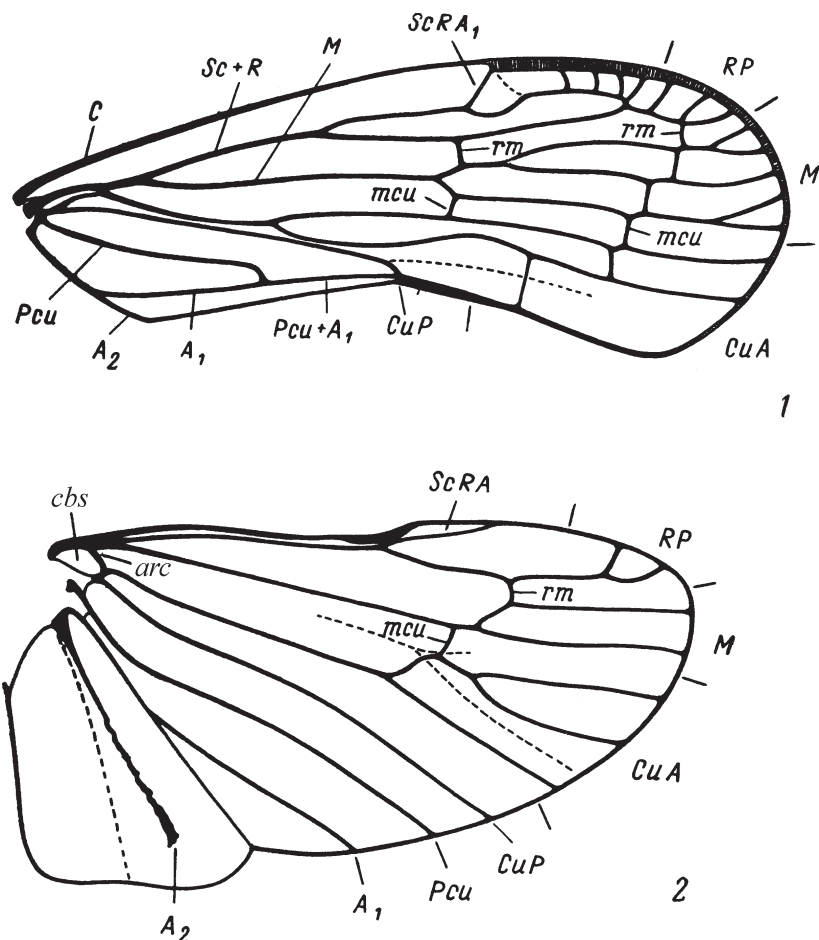


Fig. 376. Cicadines. Family Achilidae (original).

1, 2, *Kosalya flavostrigata*, wings: 1, fore wing; 2, hind wing. See Fig. 5 for designations.

1. Head, thorax and legs orange; mesonotum with dark spots: rounded spot on disc anteriorly, transverse large spots posteriorly, 2 small spots, one after another on lateral parts. Fore wings dark brown to black. Tegulae orange, with dark outer margin. 6.9-8.2. – Prim. [p. 480] – Korea, China (Taiwan), – India. – Under canopy of mixed and broad-leaved forests. Late July to early September. (Figs. 372: 2; 376: 1, 2; 377: 1-4) **K. flavostrigata** Dist.

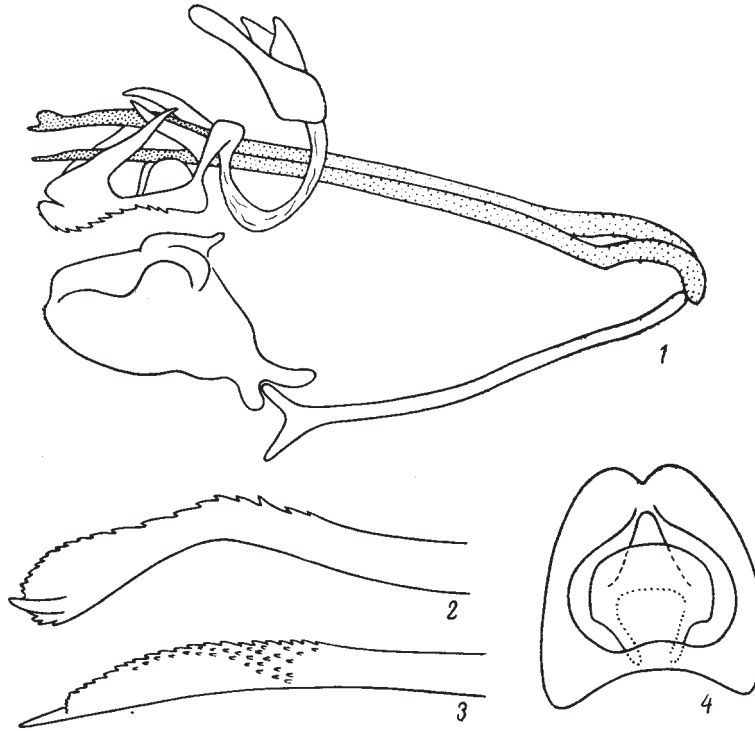


Fig. 377. Cicadines. Family Achilidae (after Anufriev).

1-4, *Kosalya flavostrigata*: 1, anal tube, penis, endoconnective and stylus, lateral view; 2, apex of the right hook of penis; 3, apex of the left hook of penis; 4, anal tube, posterior view.

14. Family DICTYOPHARIDAE

Medium-sized, movable, well jumping cicadines, flying (with well developed wings) or not flying, brachypterous (absent in the Far East). Head often considerably lengthened into so called head process. Metope with 5 carinae – intermediate carinae developed. Venation of membrane (Fig. 379) relatively rich. An additional tucking in of distal part of anal lobe folded as usually developed on hind wing. Pronotum relatively long and large, with posterior margin obtuse-angulate or arcuate, concave. Legs strong and relatively long; hind tibiae usually with 5-7 (more rarely 3-4) lateral teeth. Second segment of hind tarsi with row of teeth (not less than 6) at apex. Ovipositor of female of typical raking up-kneading type. Genitalia of male with spoon-shaped harpagones without medial processes, with 2 teeth at dorsal margin nearer to the middle, – upper marginal tooth and outer lateral tooth. Penis with rudimentary aedeagus, with a pair of processes remaining from it only (so called hooks), and with well developed phallobase bearing membranous, bubble-like, swelling areas. Larvae highly similar to imagines, but bearing sensory pits and distinctly separated fields of wax glands in lateral parts of abdominal segments VI-VIII. Imagines and larvae walk raising the

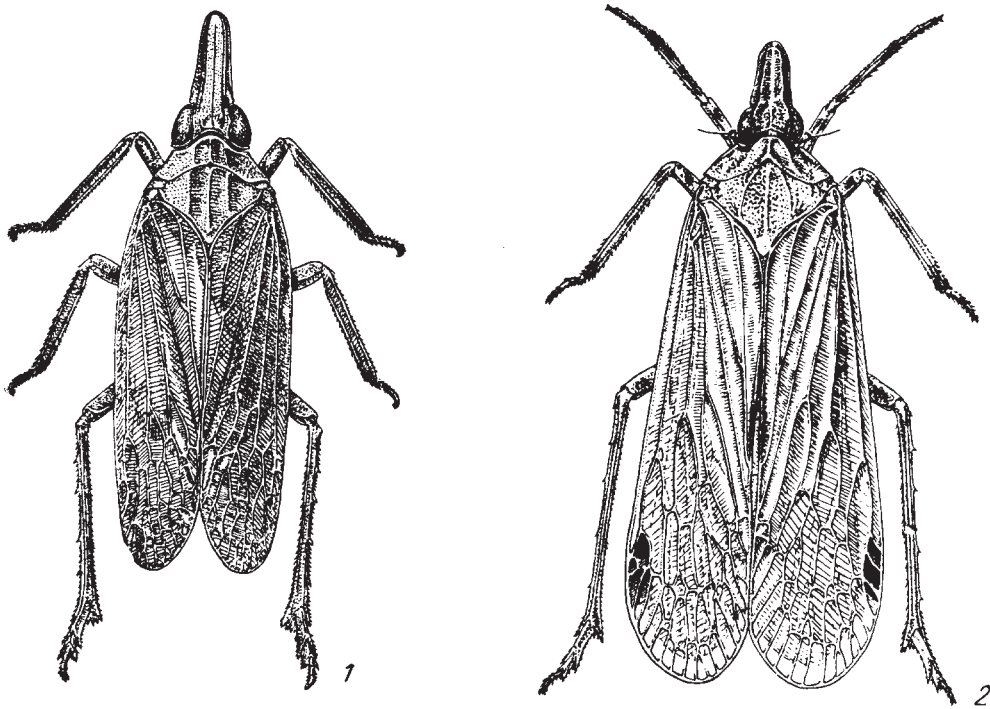


Fig. 378. Cicadines. Family Dictyopharidae (original).

1, *Dictyophara kaszabi*; 2, *Saigona ussuriensis*.

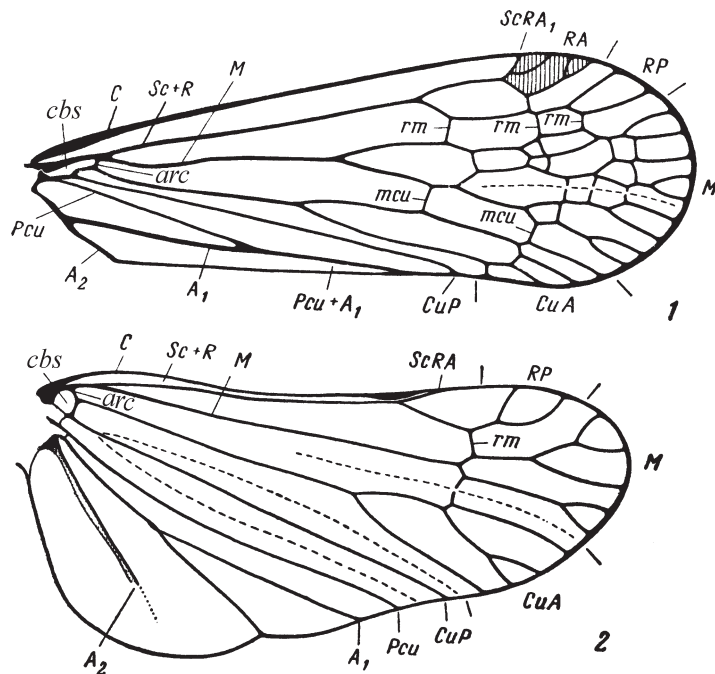


Fig. 379. Cicadines. Family Dictyopharidae (original).

1, 2, *Saigona ussuriensis*, wings: 1, fore wing; 2, hind wing. See Fig. 5 for designations.

anterior part of body. Coloration green, with spotty pattern of green and brown color in different combinations. Inhabit mostly herb habitats (open and in forests). Polyphagous. One generation per year. Eggs overwintering. – 2 genera, 2 species (in USSR about 20 genera and not less than 80 species). [p. 482]

KEY TO GENERA

1. Fore femora ventrally with not wide foliaceous widening ending by a sharp step under apex. Sides of pronotum without oblique longitudinal carina. Mesonotum with carinae converging anteriorly. Bubbles of penis theca without teeth. (Tribe Orthopagini). – Lateral carina of pronotum developed in posterior half only.....
..... 1. **Saigona**
- Fore femora not widened, without step. Sides of pronotum with oblique longitudinal carina. Mesonotum with approximately parallel carinae. Bubbles of penis theca with teeth. (Tribe Dictyopharini) 2. **Dictyophara**

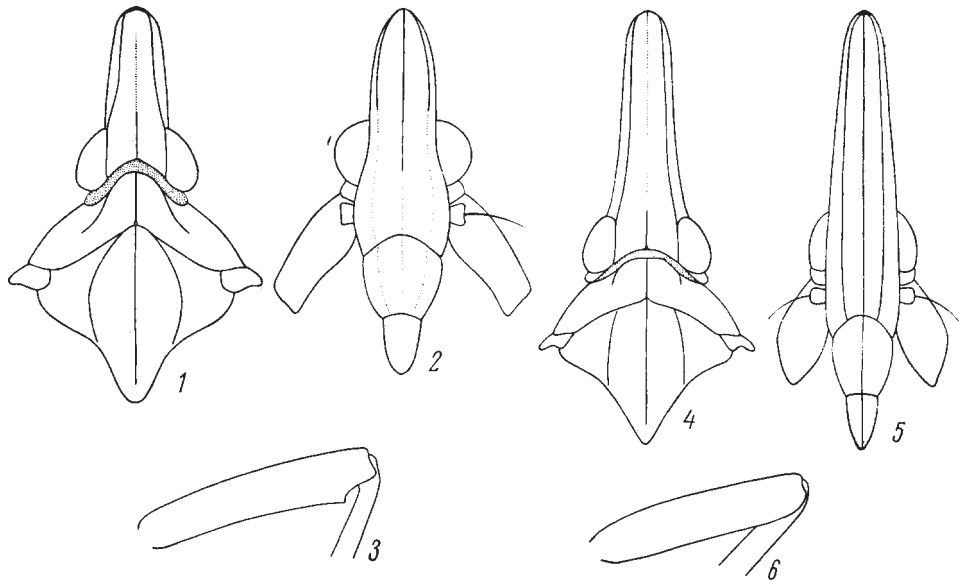


Fig. 380. Cicadines. Family Dictyopharidae (original).

1-3, *Saigona ussuriensis*: 1, 2, anterior part of body (1, dorsal view; 2, anteroventral view); 3, fore femur and base of tibia, ventral view; 4-6, *Dictyophara kaszabi*: 4, 5, anterior part of body (4, dorsal view; 5, anteroventral view); 6, fore femur and base of tibia, ventral view.

KEY TO SPECIES OF FAMILY DICTYOPHARIDAE

1. **Saigona** Mats. Head process somewhat but rather abruptly narrowed and slanting upwards before eyes. Narrowed anterior part of coryphe situated before eyes more than twice as long as its wider posterior part. Metope widened below eyes and there devoid of intermediate carinae. In USSR 1 species.

1. Basic coloration of integument dark brown, with light specks and carinae. Metope, postclypeus, genae, stripe on sides of pronotum and pleura of metathorax pale green. Fore wings hyaline, with dark brown veins. 12.8-15.2. – Amur., Prim. – NE China. – On tall herbaceous vegetation in forest edges, roads, glades. Early June to late August. (Figs. 378: 2; 379: 1, 2; 380: 1-3; 381: 1-4) **S. ussuriensis** Leth.

2. **Dictyophara** Germ. Head process of various length, long, thick, with blunt apex in subgenus *Chanithus* Kol., to which *D. kaszabi* belongs. Intermediate carinae of metope developed all the way. Lateral carinae of disc of pronotum reaching its posterior margin. Fore femora ventrally with small teeth ventrally at apex. Integument green, more rarely orange or pinkish. 1 species (in USSR 7-8). [p. 483]

1. Head process somewhat narrowing to apex, slightly gently arcuate, slanting upwards; its length before eyes more than twice the longitudinal diameter of eye. Grass green, including veins of anterior margin; cells of wings semihyaline, greenish. Orange and pinkish forms occur. 9.3-12.5. – Amur., Prim.; S Transbaikal. – Korea, NE China, Mongolia. – Dry herb and grass, mostly steppe meadows. Early July to early September. (Figs. 378: 1; 380: 4-6; 381: 5-8)
..... **D. (Ch.) kaszabi** Dlab.

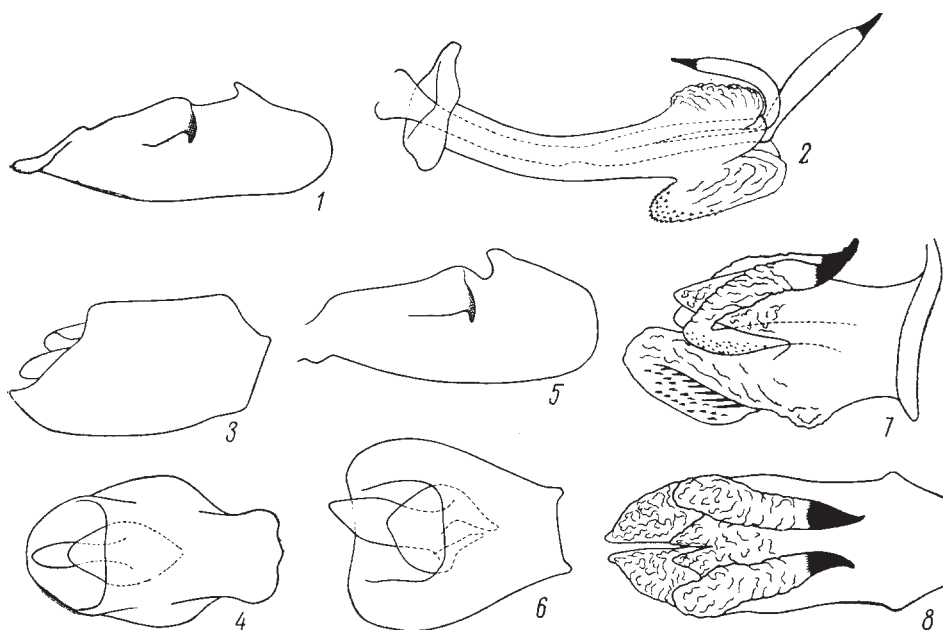


Fig. 381. Cicadines. Family Dictyopharidae (original).

1-4, *Saigona ussuriensis* : 1, stylus; 2, penis, lateral view; 3, 4, anal tube (3, lateral view; 4, dorsal view); 5-8, *Dictyophara kaszabi*: 5, stylus; 6, anal tube, dorsal view; 7, 8, penis (7, lateral view; 8, dorsal view).

15. Family FULGORIDAE

Large, mostly bright-colored cicadines. Head often with elongate long process or the process diminished and thrown back above coryphe. Metope with intermediate carinae (5 carinae together with lateral and median ones). Pronotum usually with median carina, but without delimited disc and with straight posterior margin. Fore wings with rich venation (Fig. 383); many longitudinal and transverse veins, especially on membrane and clavus. Medial vein branching nearly from its base and branching most plentiful. Clavus usually open at apex, sometimes closed as in *Limois*. Legs strong. Fore coxae projecting beyond apex of clypeus. Hind tibiae with numerous lateral teeth. Ovipositor of raking up-kneading type. Eggs are glued on bark of twigs and trunks of trees. Larvae lead an open life on trees. – 1 genus (in USSR 2 genera, 2 species). [p. 485]

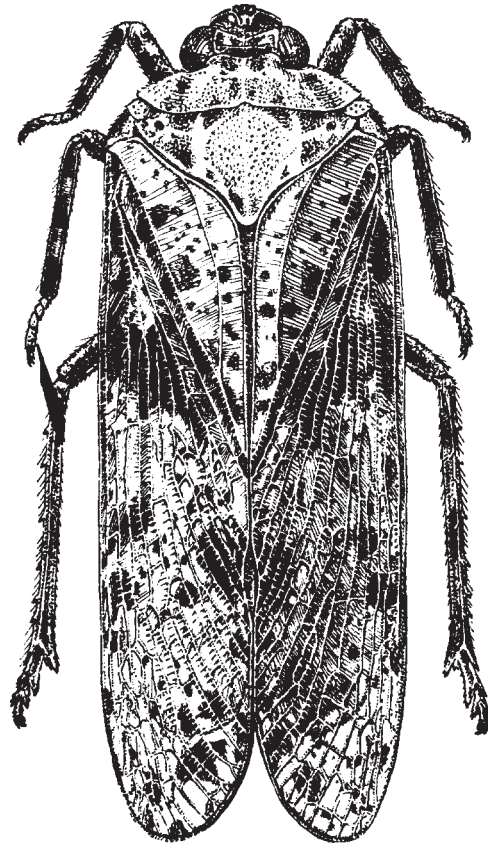


Fig. 382. Cicadines. Family Fulgoridae.

Limois emelianovi (original).

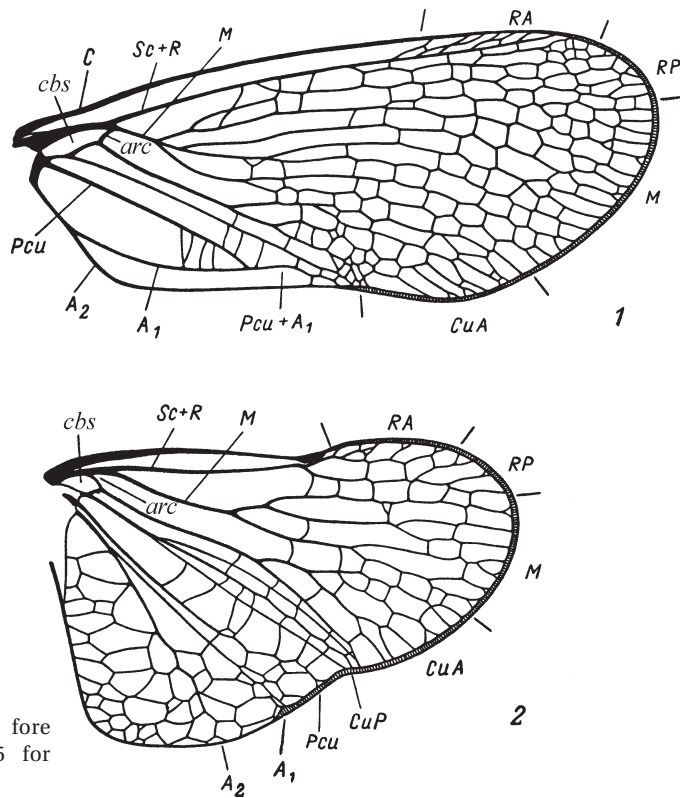


Fig. 383. Cicadines. Family Fulgoridae (original).

1, 2, *Limois emelianovi*, wings: 1, fore wing; 2, hind wing. See Fig. 5 for designations.

1. **Limois** Stål. Head short. Head process narrow and short, slanting upwards and backwards and nearly pressed to coryphe (i.e. coryphe folded in two at acute angle). Metope wide, widening to clypeus. Pronotum much wider than head. Mesonotum with 3 carinae. Lateral carinae arcuate, converging anteriorly. Fore wings with closed clavus, widening to obliquely rounded truncate apex, which is shortening to clavus. In USSR 1 species.

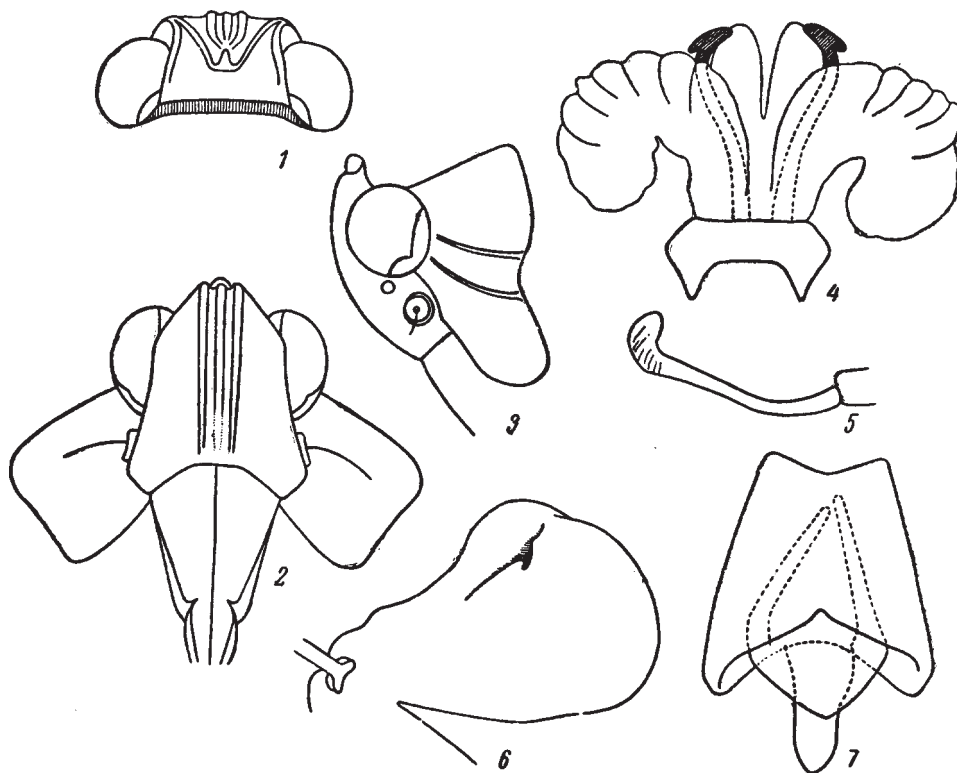


Fig. 384. Cicadines. Family Fulgoridae (original).

1-7, *Limois emelianovi*: 1, head, dorsal view; 2, 3, head and prothorax (2, anteroventral view; 3, lateral view); 4, penis, dorsal view; 5, hook of penis, lateral view; 6, stylus, lateral view; 7, anal tube, dorsal view.

1. Basic coloration yellowish brownish, with dark brown spots and specks. Metope dark. Hemelytra with condensate, not hyaline corium, on which a large dark spot and uneven band before membrane are present; clavus less consolidated, weakly translucent, with dark spots of different sizes; membrane hyaline, with small and large dark spots. Venter with uneven brown darkening. Hind wings not hyaline, orange in basal half and hyaline, with dark veins in distal half. Legs with dark irregular small spots and bands. 15-20. – S Prim. – Korea, China. – Early August to late September. (Figs. 382; 383; 384: 1-7) **L. emelianovi** Osh.

16. Family TROPIDUCHIDAE

Large family comprising cicadines of various general appearance. Medium-sized and small representatives, more or less flattened dorsoventrally, macropterous and with wing dimorphism predominate. Head short, more rarely lengthened into

process. Metope with 5 carinae. Postclypeus usually without lateral carinae, rarely with carinae (the genus *Cixiopsis*). Pronotum with elevated, arcuate disc. Scutellum usually with sharply expressed scuto-scutellar boundary in the shape of a step. Fore wings often consolidated; precostal vein and precostal field with transverse veins may be developed. Ovipositor of raking up-kneading type, compressed laterally, and with teeth on margin of lower lobes of third valvulae. Hind tarsi with 2 teeth at apex of 2nd segment. Larvae [p. 486] have mode of life similar to that of imagines. Polyphagous and oligophagous on monocotyledonous plants, such as grasses, palms, etc. The family is abundantly represented in tropics. – 1 genus, 1 species, another genus and species may be found (in USSR 2 genera, 4 species).

LITERATURE. Ishihara, T. Homopterous notes. Sci. Rept. Matsuyama Agr. Coll. 1954. No. 14. P. 1-28.

KEY TO GENERA

1. Scuto-scutellar step on scutellum of mesonotum not expressed. Shortened hemelytra consolidated, with relatively dense net of accessory veins. (Tribe Cixiopsini). – Postclypeus with lateral carinae separating it from lora 1. *Cixiopsis*

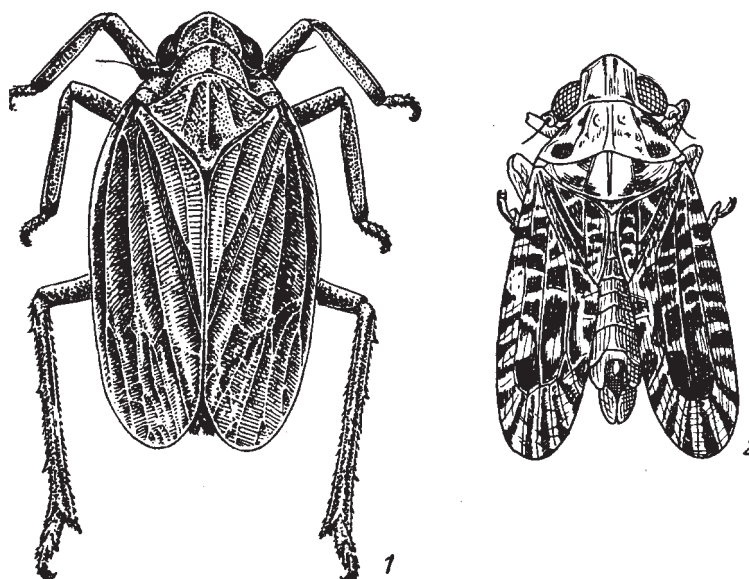


Fig. 385. Cicadines. Family Tropiduchidae (after Haupt and original).

1, *Cixiopsis punctata*; 2, *Trypetimorpha fenestrata*.

- Scuto-scutellar step on scutellum of mesonotum well expressed. Shortened hemelytra not consolidated or consolidated and with highly elevated veins and deeply depressed irregular cells; in macropters, a nodal group of transverse veins distinct. Anteclypeus with knob or protruding sclerotized projection. (Tribe Trypetimorphini). – In brachypters, hemelytra with sparse net of veins, cells between veins concave, depressed; membrane occupying 2/3 of wing length. In macropters, nodal line strongly bevelled 2. *Trypetimorpha*

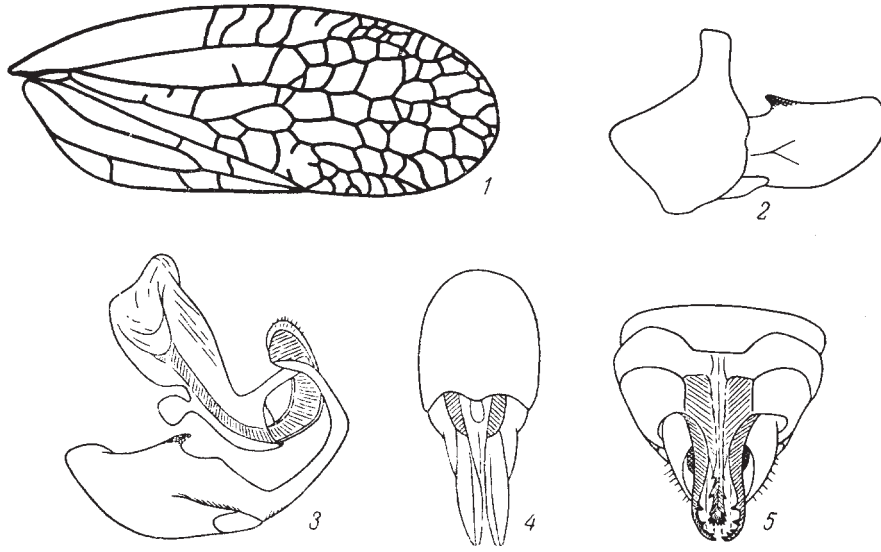


Fig. 386. Cicadines. Family Tropiduchidae (after Vilbaste and original).

1-5, *Cixiopsis punctata*: 1, fore wing, macropterous form; 2, pygofer and styli, left lateral view; 3, penis and styli, lateral view; 4, 5, genital block, ventral view (4, male; 5, female).

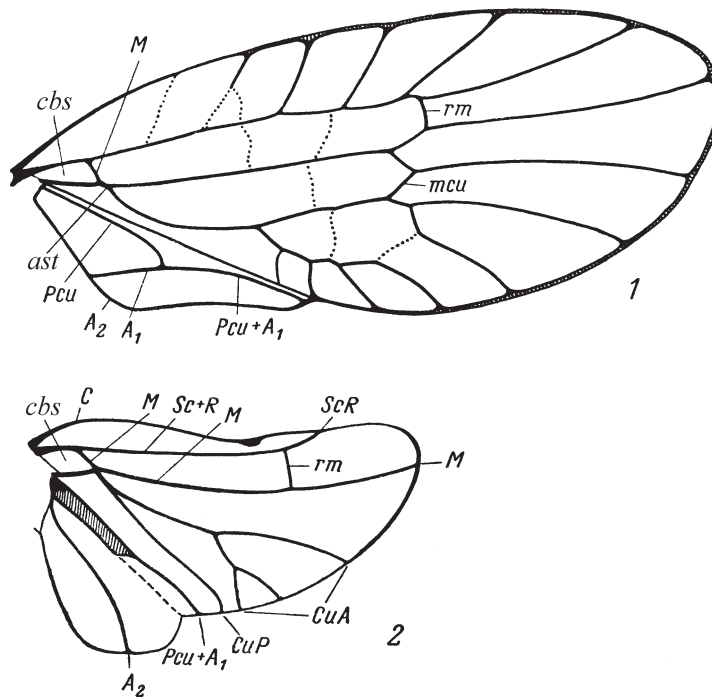


Fig. 387. Cicadines. Family Tropiduchidae (original).

1, 2, *Trypetimorpha fenestrata* Costa, wings (macropterous form): 1, fore wing; 2, hind wing. See Fig. 5 for designations.

KEY TO SPECIES OF FAMILY TROPIDUCHIDAE

1. **Cixiopsis** Mats. Compact, slightly flattened dorsoventrally. Coryphe transverse, crescent-shaped. Metope with intermediate carinae approximate to lateral carinae. (Figs. 241: 1-3). Disc of pronotum semicircular, wide, noticeably elevated above not wide lateral parts. Mesonotum with 3 longitudinal carinae approximated anteriorly. Hemelytra usually shortened up to apex of abdomen, convex, consolidated, bearing additional veins. Macropters rare (Fig. 386: 1). Legs strong, rather short. Ovipositor with teeth on margins of third valvulae. Monotypic genus. [p. 488]

1. Brown, without pattern. In strongly pigmented dark brown specimens, an oblique, light, outside metope nearly white band is noticeable; the band runs from apex of vertex through oblique upper part of lateral parts of metope, temples on ocellus, antennae to lower margin of lateral lobes of pronotum; antennae also light. 6.5-8.4. – S Khab., Prim., S Kur. (Kunashir). – Japan, Vietnam, India, Sri Lanka. – On *Pteridium aquilinum* in forest glades and sea shores. Early July to early September. (Figs. 385: 1; 386: 1-5)
..... **C. punctata** Mats. (*Padanda atkinsoni* Dist., *Olontheus obscurus* Jacobi)

2. **Trypetimorpha** Costa. (Figs. 385: 2; 387: 1, 2). Body shortened, hemelytra not adjacent to body closely and protruding beyond abdomen even in brachypters. Coryphe pentagonal; frons short, without intermediate carinae and with convex lateral margins. Postclypeus and metope situated at distinct obtuse angle in lateral view. Disc of pronotum more or less trapeziform, but with obtuse-angulate concave posterior margin; lateral parts of dorsum of pronotum lowered and slanting downwards. Scutellum with 3 carinae; median carina reaching posteriorly only scuto-scutellar step. Fore wings usually shortened and deformed (see key). Legs strong, rather short. Ovipositor without teeth on third valvulae. Live on grasses. – 1-2 species may be found in Prim. (in USSR 1-2). [p. 489]

1. Integument pale, whitish or yellowish. Brownish spots noticeable on face, pronotum, scutellum and legs. In brachypters, fore wings glossy, dark brown to black, with light whitish veins and white spots on all peripheral transverse veins of corium and membrane; 3 light rounded spots standing out in middle part of wings. In macropters, fore and hind wings hyaline, without pattern. 3-4.2. – Japan (Honshu), Korea. – Late August to late October. (Figs. 388: 1-8) **T. japonica** Ish.

17. Family ISSIDAE

Medium-sized cicadines. Compact, often with short and wide head; metope with intermediate carinae, sometimes barely noticeable. Pronotum with large disc and narrow lateral parts of dorsal part (Figs. 242: 9, 10), so that eyes nearly contiguous to bases of fore wings. Legs usually short, strong. Hemelytra consolidated, short or strongly shortened; hind wings often not developed. One subfamily, Caliscelinae, is represented in the Far East; dimorphism in wing structure is typical for its representatives; macropterous form is rare; in brachypters, fore wings usually strongly shortened, more rarely (the genus *Ommatidiotus*) shortened only up to apex of abdomen. Ovipositor of raking up-kneading type. Male genitalia more or less symmetrical, with well developed theca, from which only hooks and processes of aedeagus protrude. On shrub and grass vegetation. Larvae together with imagines, moderately movable, but jumping well. Eggs deposited on plants, covered with wax. – 2 genera, not less than 3 species (in USSR up to 20 genera and about 80 species, most of them in southern arid regions).

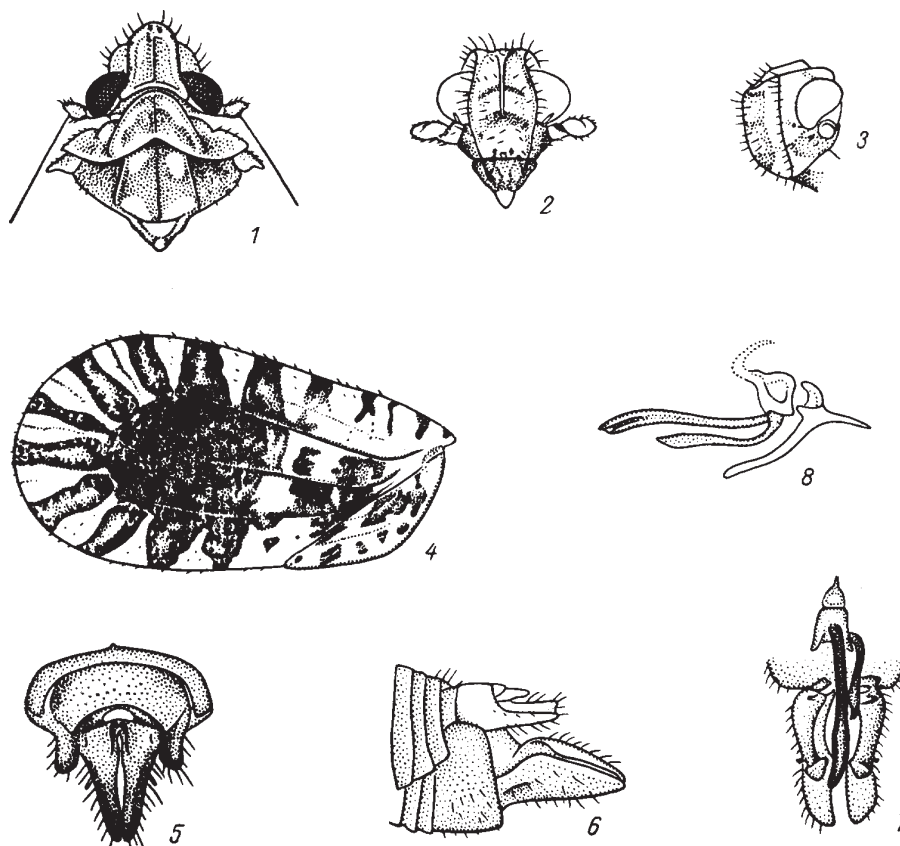


Fig. 388. Cicadines. Family Tropiduchidae (after Ishihara).

1-8, *Trypetimorpha japonica*: 1, anterior part of body; 2, head, anterior view; 3, head, lateral view; 4, fore wing of brachypterous form; 5, 6, apex of male abdomen (5, ventral view; 6, lateral view); 7, penis and styli, dorsal view; 8, penis and endoconnective, lateral view.

KEY TO GENERA

1. Fore legs simple, with linear tibiae and femora. Second segment of antennae with simple apex, without projections 2
- Fore femora and tibiae widened, foliaceous and flattened. Second segment of antennae with distinct lateral projection at apex 3. **Caliscelis**
2. Pronotum, scutellum and abdomen without sensory pits (small pits may be present on frons). Hemelytra reaching apex of abdomen 1. **Ommatidiotus**
- Pronotum, scutellum, abdominal tergites and metope with sensory pits. Hemelytra strongly shortened, straightly truncate posteriorly, at costal margin not extending backwards farther than abdominal tergite III 2. **Aphelonema**

KEY TO SPECIES OF FAMILY ISSIDAE

1. **Ommatidiotus** Spin. Elongate, rather narrow; fore wings of brachypters reaching apex of abdomen. Metope and coryphe converging at acute angle. Metope convex. Coryphe more or less elongate, parabolic, projecting anteriorly or obtuse-angulate rounded. Disc of pronotum rounded trapeziform, slightly concave posteriorly.

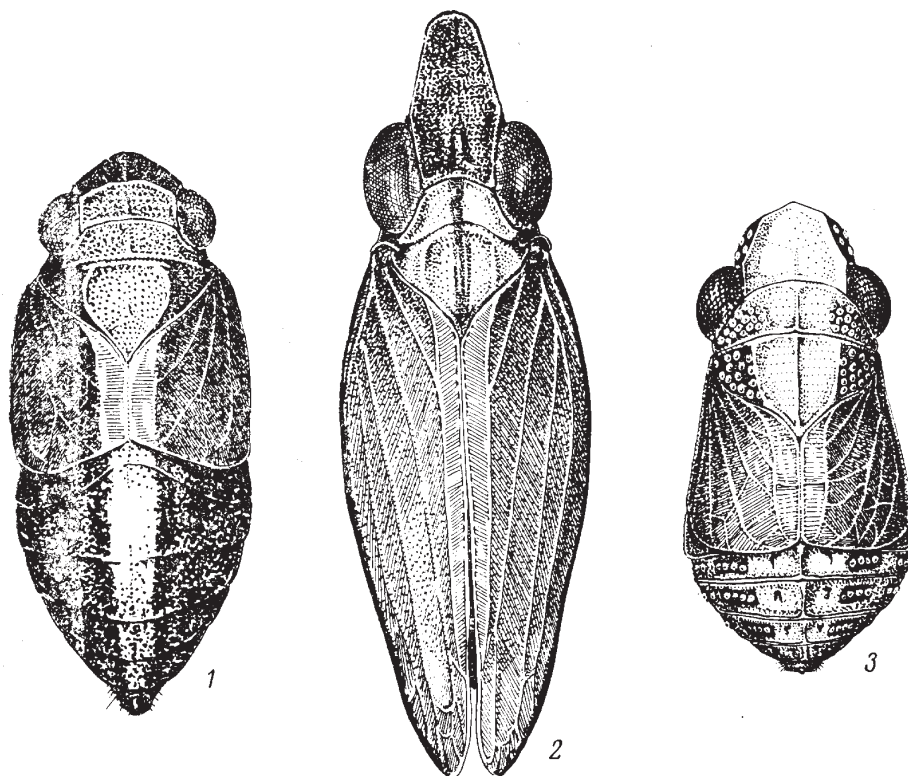


Fig. 389. Cicadines. Family Issidae. General appearance (legs not figured) (original).

1, *Caliscelis chinensis*, female; 2, *Ommatidiotus acutus*, male; 3, *Aphelonema scurrile*.

Coryphe, dorsal part of thorax and fore wings (in lateral view) situated in one line. Male. Lateral margins of pygofer dorsally under anal tube on each side bearing a large projection with 3 blunt apices. Penis represented by phallosome only, at base with 2 lateral processes following shaft, at apex near wide dorsal subapical gonopore with 2 lateral processes and an unpaired recurrent process at proximal margin; apex of theca with a pair of similar processes ventrally: the first process slanting downwards and second process slanting forward, there are right and left forms; lower wall of theca projecting backwards in the shape of membranous bubble covered with spinules. In moist and dry habitats on sedges. – 2-3 species (in USSR not less than 4).

1. Head short; part of coryphe projecting before eyes not longer than the part situated between eyes; lateral parts of metope from below [p. 490] visible all the way to margin of vertex. Basal processes of theca pointed at apex 2
- Head long; part of coryphe projecting before eyes at least twice as long as the part situated between eyes; lateral parts of metope from below not visible at margin of coryphe as they are completely facing laterad. Basal processes of theca blunt at apices and finely spinulate and serrate 4
2. Apices of processes of theca situated lateral to gonopore slanting downwards (in posterior view) 3
- Apices of processes of theca situated lateral to gonopore slanting upwards. – In females, face and venter darkened, dorsal part of body light brown; coryphe, pronotum and scutellum with reddish median stripe, sometimes weak one; fore



Fig. 390. Cicadines. Family Issidae (original).

1, *Ommatidiotus dissimilis*, genital block of male, left lateral view; 2-5, pygofer, left lateral view: 2, *O. sylvaticus*; 3, *O. nigrinus*; 4, *O. acutus*; 5, *O. koreanus*.

wings with more or less ochraceous stripes between longitudinal veins. In males, venter and face more or less black, fore wings blackened from costal margin in the shape of a stripe to radial, medial and even claval veins; middle part light brown, with ochraceous longitudinal stripes between main veins. 3.5-5. – Mag., Khab., Amur., Prim., Sakh., S Kur.; Yakutia, Transbaikal. – Mongolia. – Sedge marshes and swamp meadows. Late July to early September. (Figs. 390: 3; 392: 1-4)

..... ***O. nigrinus* Mats. (*karafutonis* Mats.)**

3. Carinae running on anterior margins of processes situated lateral to gonopore fusing at apex of theca, and then diverging again, continuing on bases of lower apical processes of theca. Similar to *O. nigrinus*. [p. 491] 3.5-5. – Siberia, Altai, Kazakhstan. – Europe. – Records from E Siberia and the Far East belong to *O. nigrinus*. Late July to early September. (Figs. 390: 1; 391: 1-5) ***O. dissimilis* Fall.**
- Carinae running on anterior margins of dorsal subapical processes of theca situated lateral to gonopore do not fuse at apex of theca, but are connected by short transverse cross-piece. In females, face and venter brown to dark brown, dorsal

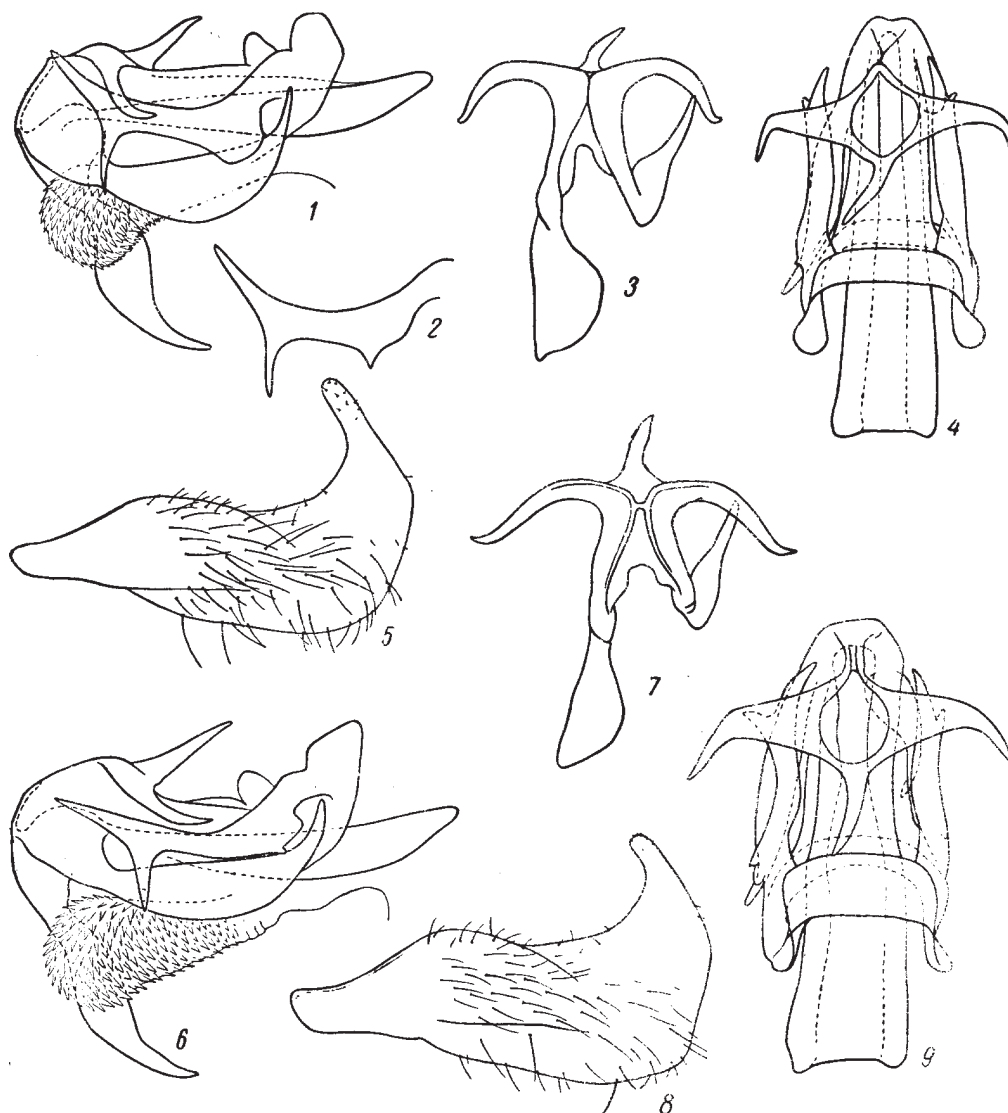


Fig. 391. Cicadines. Family Issidae (original).

1-5, *Ommatidiotus dissimilis*: 1, 4, penis (1, right lateral view; 4, dorsal view); 2, left basal process of penis of the same specimen; 3, apex of aedeagus, posterior view; 5, stylus, left lateral view; 6-9, *O. sylvaticus*: 6, 9, penis (6, right lateral view; 9, dorsal view); 7, apex of aedeagus, posterior view; 8, stylus.

part of body light brown or brown; reddish brown median stripe present on coryphe, pronotum and scutellum; fore wings with ochraceous stripes between longitudinal veins, including outer part of clavus medial to its suture. In males, face, venter, and costal parts of fore wings black; vertex light brown with large, black, blurred spot sometimes occupying nearly whole coryphe; pronotum and scutellum light brown with longitudinal black or red-brown stripe; fore wings medial to radial vein light brown, with ochraceous longitudinal stripes lateral to suture of clavus and on suture of wings. Apical parts of tibiae and tarsi lighter. 3.1-3.7. – C and S Yakutia, Chita Prov. – Dry forests, forest edges, apparently on sedges. Late July to mid-August. (Figs. 390: 2; 391: 6-9) ***O. sylvaticus* Em. [p. 492]**

4. Apex of theca slightly attenuate and slanting dorsad. Paired subapical dorsal processes of theca with apices slanting upwards (in posterior view). Metope entirely black, including carinae; clypeal suture light-edged anteriorly in male. Light brown; coryphe, pronotum and scutellum with reddish orange longitudinal stripe; each hemelytron with 3-4 more or less expressed orange longitudinal stripes, C and costal field black in male. Fore and middle legs entirely light. 5.5-9. – Amur., Prim. – Korea. – In moist and swamp meadows, more often in flood plains of rivers. Mid-July to mid-August. (Figs. 390: 5; 393: 5-8) **O. koreanus** Mats.

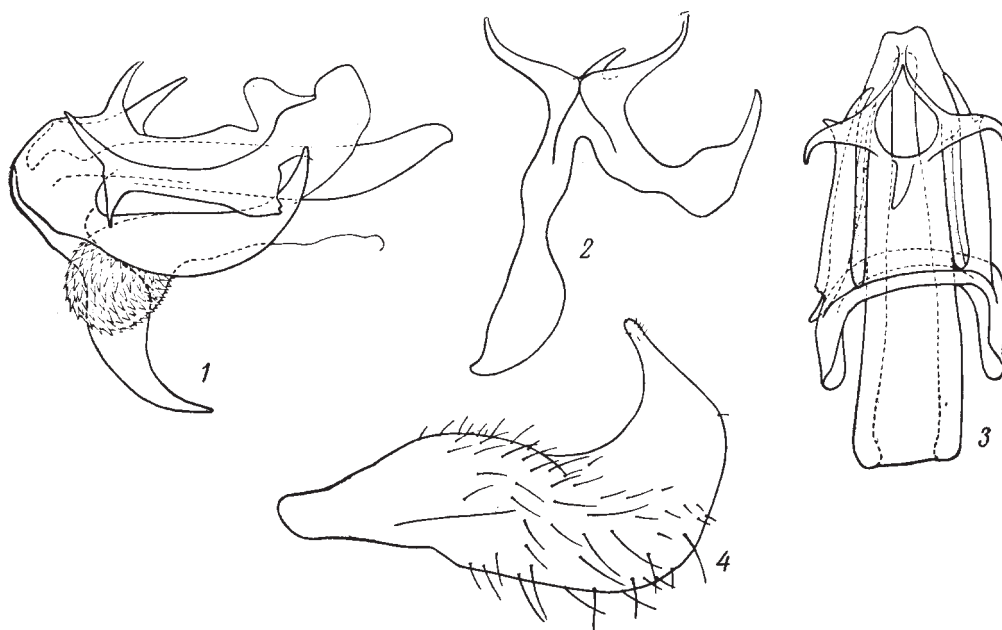


Fig. 392. Cicadines. Family Issidae (original).

1-4, *Ommatidiotus nigritus*: 1, 3, penis (1, right lateral view; 3, dorsal view); 2, apex of aedeagus, posterior view; 4, stylus.

- Apex of theca not attenuate, not slanting upwards and simply widely rounded. Paired dorsal subapical processes of theca slanting downwards. Metope [p. 493] black, with more or less light carinae and rather often with lightened area near carinae. In male, clypeal cuture whitish, but without light edging. Fore and middle legs with brownish bases. In general appearance, similar to *O. koreanus*. 4.4-6. – Amur.; Transbaik. – C and E Mongolia. – In dry and steppe meadows. Mid-July to early August. (Figs. 389: 2; 390: 4; 393: 1-4) **O. acutus** Horv.

2. **Aphelonema** Uhl. Sturdy, with wide head. Metope more or less bevelled ventrad, not visible from above. Middle parts of metope forming more or less flat and rounded area. Fore and middle legs simple, comparatively short. In brachypters, fore wings strongly shortened, straightly truncate posteriorly; macropterous form rare. Coryphe, dorsal part of thorax and hemelytra lying more or less in one line in lateral view. Metope, pronotum, mesonotum and abdominal tergites bearing sensory pits. Male. Pygofer with small lateral projections under anal tube posteriorly. Anal tube simple. Styli simple, flat, hook-shaped, with attenuate apices slanting upwards. Penis asymmetrical, of various structure. Xerophilous, on herb vegetation of meadows, steppes, etc. – 1 species may be found in W Amur. (in USSR more than 6 species).

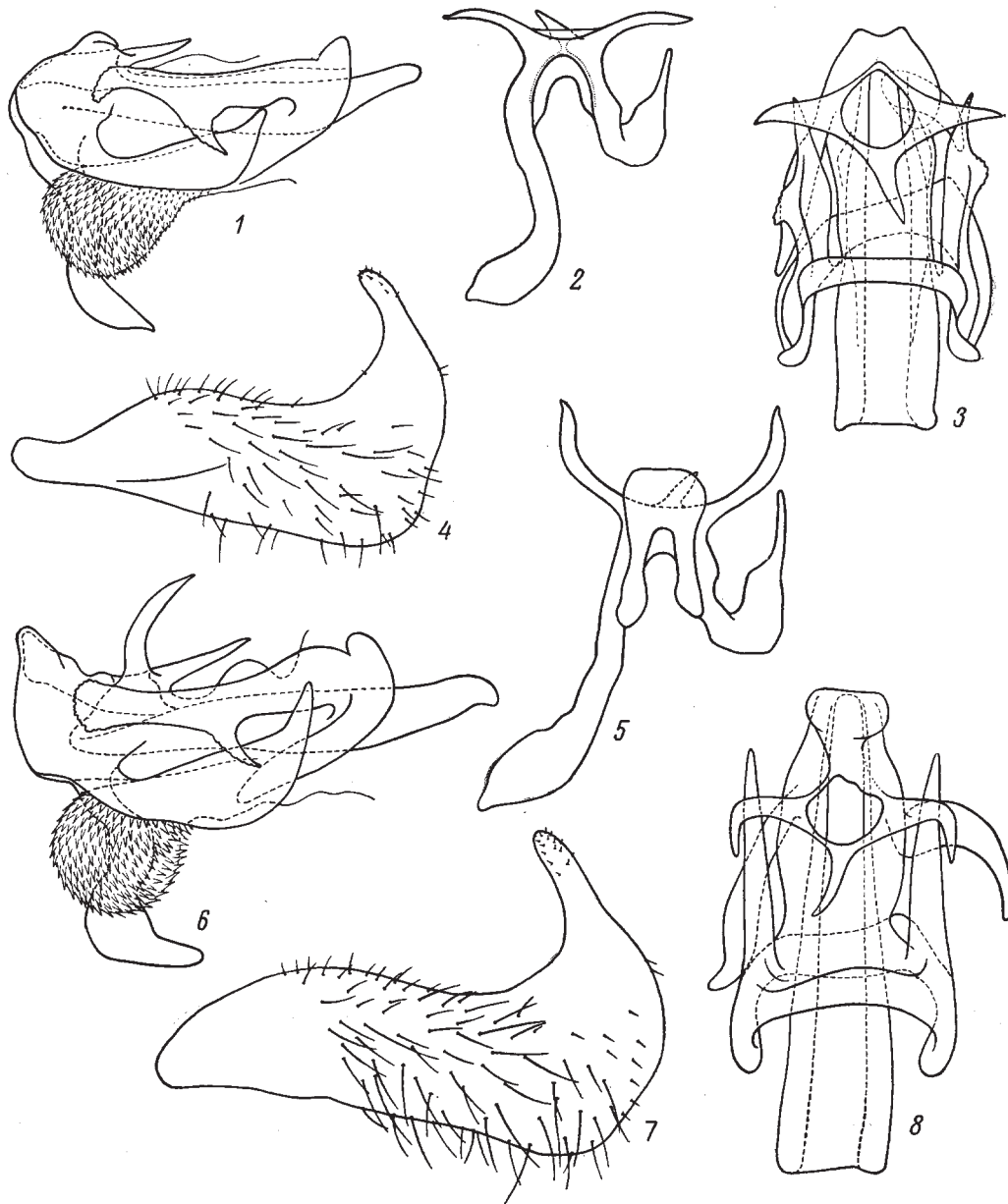


Fig. 393. Cicadines. Family Issidae (original).

1-4, *Ommatidiotus acutus*: 1, 3, penis (1, right lateral view; 3, dorsal view); 2, apex of aedeagus, posterior view; 4, stylus; 5-8, *O. koreanus*: 5, apex of aedeagus, posterior view; 6, 8, penis (6, right lateral view; 8, dorsal view); 7, stylus.

1. Coryphe nearly twice as long as pronotum, longer than wide, with lateral margins converging anteriorly and anterior margin obtuse-angulate projecting. Sensory pits (chaetobothria) on metope arranged in not more than 2 rows; abdominal tergite III without sensory pits. Penis asymmetrical; apex of theca with 2 more or less flattened dorsoventrally processes lengthened distad; the right process long, widened at apex, the left process much shorter, lobe-shaped. Only one hook of aedeagus, slanting to the left, appearing on ventral surface of theca under bases of its processes. Gray dorsally and brownish ventrally. [p. 494] Metope blackened

above and on sides, with V-shaped small spot in the middle part. Abdomen with blackened areas near sensory pit. 2-3. – Transbaikal, Kazakhstan. – Mongolia. – Steppe habitats. Late June to early September. (Figs. 389: 3; 394: 1-3)

..... **A. scurrile** Stål.

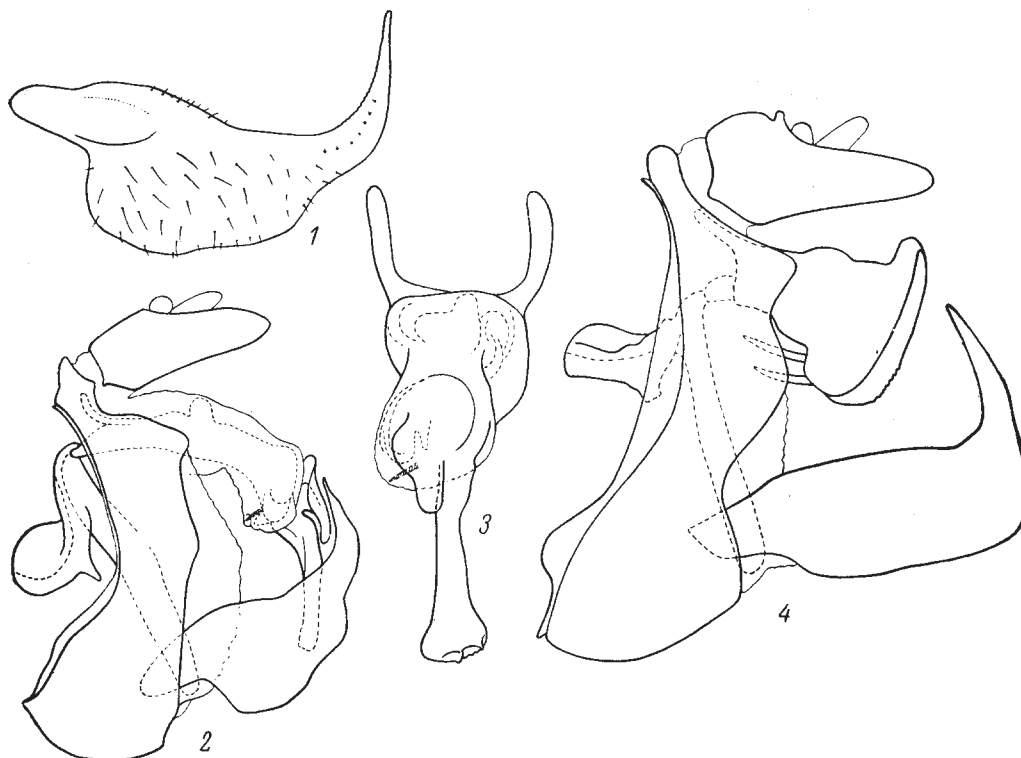


Fig. 394. Cicadines. Family Issidae (original).

1-3, *Aphelonema scurrile*: 1, stylus, left lateral view; 2, genital block of male, left lateral view; 3, penis, posterior view; 4, *Caliscelis wallengreni* Stål, genital block of male, left lateral view.

3. **Caliscelis** Lap. Noticeably compressed laterally. Metope and coryphe forming an obtuse angle in lateral view, so that metope is visible from above. Postclypeus rounded, swollen and most projecting forward. Coryphe and disc of pronotum transverse, about equal. Fore tibiae and femora widened, foliaceous. Hemelytra shortened, tectiform. Upper margin of abdomen strongly convex, bent; posterior [p. 495] tergites situated more or less plumb. Females larger, gray, with abundant black specks, with less strongly widened legs. Males (Fig. 394: 4) smaller, with glossy integument, reddish brown, usually with white stripe along suture of clavus and white spots on tergites behind shortened hemelytra. On grasses, in dry or moist habitats, often on *Phragmites*. – 1 species (in USSR not less than 6).

1. Male unknown. Female with light vertex, discs of pronotum and scutellum and light stripe on suture of elytra and midline of abdomen dorsally. Clypeus gray, with black specks. Face without bristles. 6. – Prim. – Korea, China. – Late June to early July. (Fig. 389: 1) **C. chinensis** Mel.

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Note. All page references correspond to the original Russian text, not to the translation. Junior synonyms are in italics and the names of families and taxa above family in bold-face type. Asterisked page numbers refer to pages with figures and the boldfaced ones, to first pages of the main texts on genera and suprageneric taxa.

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