

KEYS to the INSECTS of the EUROPEAN USSR

(Opređelitel' nasekomykh Evropeiskoi chasti SSSR)

In five volumes
Vol. I

Apterygota, Palaeoptera, Hemimetabola

(Nizshie, drevmekrylye, s nepolnym prevrashcheniem)

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FOREWORD

The Soviet Union has made great progress in its national economy, public health, and science. This development has constantly increased the role of science and has made it one of society's main productive forces. This also applies to entomology, which supplies the theoretical basis for plant protection, pollination of agricultural crops, apiculture, sericulture, and for the control of parasites, blood-sucking insects, and vectors of diseases of domestic animals and man. Entomology deals with a group of animals of an incredible variety of form and biological properties. Almost 1 million species of insects are known today, 80,000 species from the U.S.S.R. Systematics has an important part in entomology as the basis of study and identification of insects.

One of the methods of systematics is the use of keys. Such reference books help to determine the scientific name and systematic position of an insect which for some reason has attracted the attention of the applied entomologist or other scientist. Because of the enormous number of species of insects it is very difficult to make keys and it often requires the efforts of many experts for many years. This is especially true of a key dealing with such a vast area as the Soviet Union. There is however, at present, a great demand for such keys; this demand can best be satisfied by compiling regional keys.

The proposed "Keys to the Insects of the European U.S.S.R." (Opredelitel' nasekomykh evropeiskoi chasti SSSR) is such a regional key. However, the area with which it deals is still so large that it would be impossible to give even the shortest account in one volume. It is therefore planned to publish the key in five volumes:

- I - Apterygota, Palaeoptera and Hemimetabola;
- II - Coleoptera and Strepsiptera;
- III - Neuroptera (i.e., Megaloptera, Raphidioptera and Neuroptera s. str.), Mecoptera, Trichoptera and Lepidoptera;
- IV - Hymenoptera;
- V - Diptera and Aphaniptera.

Not all the species known from the region appear in the Keys. Some rare, narrowly distributed or little-known species are omitted. In some cases the keys define only genera. The purpose of the Keys is to include all genera and all practically important species. It also gives the number of species of genera and other taxa from the European U.S.S.R., often from the whole U.S.S.R. Not all species can therefore be identified. Entomologists working on plant protection, and veterinary and medical entomology will, however, find the names of species important in agriculture, forestry and public health.

The southern boundary of the territory covered by the Key runs along the coast of the Black Sea, including the whole of Crimea, and continues

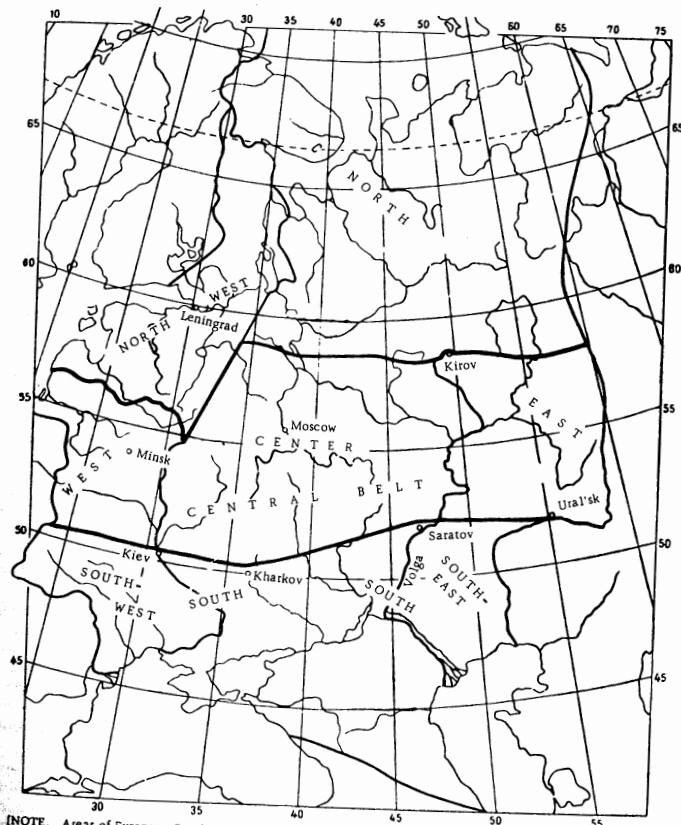
eastwards through southern Ciscaucasia to the northern coast of the Caspian Sea and the Ural River. The fauna of the northern slopes of the Caucasus, which contains many purely Caucasian and southern forms, is therefore largely omitted in the key. The only exception are a few well-known or small orders or suborders, e.g., Ephemeroptera, Odonatoptera, Orthoptera and their allies, Coccinea, etc. The fauna of some regions is so little known that some species which are common in adjacent regions are included in the Keys although they have not been found in the European U.S.S.R. Some species which are frequently introduced to the U.S.S.R. with foreign goods are also included.

The "Keys to the Insects of the European U.S.S.R." is the result of the combined effort of many veteran and younger systematists of the Zoological Institute of the Academy of Sciences of the U.S.S.R. and other institutions in Leningrad, Moscow, Kiev, Khar'kov, Chernovtsy, Stavropol, Ivanovo, Riga, Tallin, Tashkent, etc. All authors carried out their work with great interest and devotion, in accord with the general outline and principles of the book. All of them inevitably met great difficulties due to the unsatisfactory classification of many groups. This required a critical analysis of the known data and occasionally revision of genera or families. Special mention should be made of the voluntary cooperation of entomologists who are not members of the Zoological Institute of the Academy of Sciences, and who contributed greatly to the successful publication of the Keys. I wish to express here my deepest gratitude to all authors and also to my assistant, E. L. Gur'eva of the Zoological Institute. Her diligence and competence greatly contributed to the successful publication of this work.

The following scientists took part in the writing of the first volume, and in the treatment of some orders: A. G. Sharov (Palaeontological Institute of the Academy of Sciences, Moscow) dealt with Protura, Diplura, and Thysanura; E. F. Martynova (Leningrad State University) dealt with Podura (Collembola); O. A. Chernova (Moscow State University) Ephemeroptera; Z. D. Spuris (Biological Institute of the Academy of Sciences of Latvia, Riga) Odonatoptera; G. Ya. Bei-Bienko superorder Orthopteroidea, except Plecoptera which were treated by L. A. Zhil'tsova (Zoological Institute of the Academy of Sciences); V. N. Vishnyakova (Paleontological Institute of the Academy of Sciences) dealt with Psocoptera; D. I. Blagoveshchenskii (Zoological Institute of the Academy of Sciences) dealt with Mallophaga and Anoplura; A. F. Emel'yanov, M. M. Loginova, G. Kh. Shaposhnikov, and E. M. Dantsig (same institute) Homoptera; I. M. Kerzhner (same institute), and T. L. Yaczewski (Zoological Institute of the Polish Academy of Sciences, Warsaw) Hemiptera; V. V. Yakhontov (Institute of Zoology and Parasitology of the Academy of Sciences of Uzbekistan, Tashkent) Thysanoptera. The general section and the key to the orders were written by G. Ya. Bei-Bienko. A. G. Davletshin (Institute of Zoology and Parasitology of the Academy of Sciences of Uzbekistan) also contributed to the book.

The authors dealing with the holometabolous orders will be indicated in the subsequent volumes.

The number of species known is given for many genera, families, orders, and intermediate taxa. The number of species of the European U.S.S.R. is given at the end of the description of the corresponding taxa, preceded by a period and dash. Measurements are given in millimeters omitting



[NOTE. Areas of European Russia are listed first, then all other areas, e.g.: Everywhere (i.e., all of European Russia) except in the North; central Europe.]

the letters "mm", unless otherwise stated. The geographical distribution of species is indicated briefly, often only for the European U.S.S.R. Reference is usually made only to large divisions of this region, e.g., (vide map) North, Southeast, Center, etc.

G. Ya. Bei-Bienko

18. Order *HOMOPTERA*

E. M. Dantsig, A. F. Emel'yanov, M. M. Loginova
and G. Kh. Shaposhnikov

Head not very mobile, hypognathous; mouthparts sucking, without maxillary and labial palps. Mouthparts forming an articulated proboscis originating at posterior part of head; wings normally 2 pairs, in repose usually folded in rooflike manner; fore wings as a rule of uniform texture; wings often absent, or sometimes only anterior pair present; metamorphosis incomplete, sometimes complex; feeding on plant juices; often forming colonies on plants.

Homoptera are of diverse form, usually small (aphids, Psyllidae, Coccoidea, Aleyrodidae and partly Cicadidae), but some are large (Cicadidae). Head usually with slanting frons and usually well-developed eyes; eyes sometimes reduced to 3-faceted ocular tubercles (in some aphids) or absent (part of Coccoidea). Ocelli 2 or 3 or absent, in nymphs always absent. Clypeus usually large, divided into anterior anteclypeus and larger postclypeus. Proboscis usually 3-segmented, recurved beneath body and directed backwards, its base situated on posterior margin of head, near base of forelegs; base of proboscis therefore located between forelegs or directly anterior to them. Articulated proboscis comprising the labium which forms a sheath in which lie 2 pairs of slender bristlelike stylets (strongly modified mandibles and maxillae). Sometimes proboscis reduced or absent (male coccidae, some female coccoidea and some male and female aphids). Maxillary and labial palps absent. Antennae consisting of few segments, usually 3- to 10-segmented, often shorter than body. Pronotum often small, collarlike, rarely large, with processes (Cicadidae, family Membracidae). Mesothorax larger than the other thoracic segments, in winged forms usually with well-developed triangular scutellum. Wings (if present) 2 pairs, in male Coccoidea only fore wings present. Both pairs of wings usually membranous; fore wings as a rule of uniform consistency, but sometimes thicker than hind wings, leathery (part of Cicadidae); hind wings often smaller than fore wings. Venation distinct, usually reduced to a varying degree, only in Cicadidae with cross veins. Legs ambulatory; hind legs of Psyllidae and most Cicadidae saltatorial, with saltatorial musculature in coxae; some aphids with saltatorial forelegs. Legs sometimes much shortened (nymphs of Aleyrodidae, part of aphids and Coccoidea) or rudimentary (some female Coccoidea, some aphids). Abdomen normally with distinct segmentation; abdominal segmentation weakly marked or lost only in some aphids and female Coccoidea. Body often covered with waxy secretions forming a powdery layer, filaments or plates, in Coccoidea often covered by scutellum.

Metamorphosis incomplete, sometimes complicated by the appearance of temporary organs (Cicadidae) or diapause in nymphs (male Coccoidea);

on the other hand, development of apterous forms simplified, epimorphic. Aphids are characterized by polymorphism, by alternation of parthenogenetic and sexual generations, and partly by viviparity. All Homoptera are phytophagous, feeding on plant juices; many species are serious pests of agricultural crops and trees. The damage caused by Homoptera is aggravated by the fact that many species excrete sweet feces on the leaves and other parts of the plant (honey dew). Honey dew is favorable for the development of fungi which form a black film on the plants. Some species transmit viral or other plant diseases.

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The order has long been considered (even at present) as a suborder of the order Hemiptera (true bugs). It is divided into 3 groups: Coleorrhyncha (a few species from the Southern Hemisphere with almost free proboscis and almost flat wings in repose), Auchenorrhyncha (Cicadinea) and Sternorrhyncha (Psyllinea, Aleyrodinea, Aphidinea and Coccinea). Some authors consider these groups as suborders; the main groups of the suborder Sternorrhyncha (Psyllinea, etc.) are therefore considered as superfamilies. Other taxonomists raise the above 3 groups to the rank of "series", an intermediate taxon between suborder and order; the groups of the series Sternorrhyncha become then suborders: Psyllinea, Aleyrodinea, Aphidinea and Coccinea; the series Auchenorrhyncha then contains one suborder only: the Cicadinea. This classification is adopted in the present Key.

LITERATURE. Oshanin, B. Verzeichnis der palaearktischen Hemipteren, Bd. II. Sankt-Peterburg, 1908 (Supplement to "Ezhegodnik Zoologicheskogo muzeya Akademii nauk"); Oshanin, B. Vade mecum destiné à faciliter la détermination des Hémiptères. — Trudy Ruskogo Entomologicheskogo Obshchestva, Vol. 42, No. 2, 1916. See also the literature at the end of the description of the suborders.

Key to Suborders

- 1 (2). Tarsi 3-segmented. Base of proboscis apparently not originating from prothorax, but displaced anteriorly. Antennae very short, 3-segmented (Figure 165, 1-3); 3rd antennal segment forming a slender seta, sometimes segmented. Wings with longitudinal veins and cross veins (Figure 164, 1); fore wings often thicker than hind wings, sometimes with indistinct venation 1. **Cicadinea** (p. 421).
- 2 (1). Tarsi 1- or 2-segmented or absent. Base of proboscis near prothorax; proboscis therefore apparently originating between bases of forelegs. Antennae 1- to 15-segmented; if antennae 3-segmented, apical segment not setiform (Figure 200, 6-8; 229). Wings (if present) without cross veins; fore wings not thicker than hind wings (Figures 199, 1; 223, 1).
- 3 (8). Tarsi usually 2-segmented, always with a pair of claws (Figures 200, 4; 222, 2; 249, 4); if tarsi absent, body covered with a white waxy layer, or abdomen with small cauda or a pair of tubules (Figure 225, 8), or with a cup-shaped depression dorsally, covered by the anal apparatus (Figure 221, 4, 6). 2 pairs of wings or wings absent. Winged species with proboscis.
- 4 (5). Legs short, with thickened femora, saltatorial (Figure 200, 4). Antennae of winged adults 10-segmented, very rarely 8- to 9-segmented, ending in a pair of setae (Figure 200, 6-8). Fore wings with ambient vein (Figure 199, 1, 4) . . . 2. **Psyllinea** (p. 437).

- 5 (4). Legs usually long, with slender femora; usually not saltatorial. Antennae 3- to 7-segmented, ending in a hair or fine spinules. Fore wings (if present) without ambient vein (Figures 221, 3; 223, 1).
- 6 (7). Antennae of winged species 7-segmented, ending in spinelike seta (Figure 221, 1); antennae of apterous forms (nymphs) one-segmented (Figure 221, 10). Both pairs of wings covered with a white layer, of similar size and venation (Figure 221, 1). Apterous forms (nymphs) with cup-shaped depression on dorsum of abdomen covered by the anal apparatus (Figure 221, 4, 6) 3. **Aleyrodinea** (p. 608).
- 7 (6). Antennae 3- to 6-segmented, apical segment ending in short or long point (Figure 229). Wings without white layer; hind wings smaller than fore wings, with different venation (Figure 223, 1). Apterous forms (adults and nymphs) without cup-shaped depression on dorsum of abdomen 4. **Aphidinea** (p. 616).
- 8 (3). Tarsi with one claw, usually one-segmented (Figure 268, 8, 12); if tarsi or legs absent, body without waxy cover and abdomen without tubules and small cauda, without cup-shaped depression on dorsum. One pair of wings (Figure 267, 2) or wings lacking. Winged forms without proboscis. Body sometimes covered by scutellum (Figure 271, 13-17) 5. **Coccinea** (p. 800).

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1. Suborder **CICADINEA** (*Auchenorrhyncha*)

A. F. Emel'yanov

Medium-sized or small, rarely large. Generally with moderately elongate body (Figure 164). Head immovably attached to prothorax, with large compound eyes and 2 or 3 simple ocelli; ocelli rarely absent. The dorsal part of the head is called the vertex (Figure 165, 1, 2, 4, 5) and the ventral part the face (Figure 165, 1-3). The greater part of the face is occupied by the strongly-developed clypeus (Figure 165, 1-3) which is divided by a transverse suture into the ventral, smaller anteclypeus and the dorsal, larger postclypeus. Postclypeus of many Cicadoidea fused with frons, forming frontoclypeus; in this case the frons is often displaced to the vertical surface of the head (Figure 165, 4, 5), where it often forms a small area distinctly delimited by sutures, the frontal plate (Figure 165, 4). 338 The clypeus is flanked by the mandibular plates or lorae (Figure 165, 1-3). The spaces ventral to the eyes, lateral to the clypeus and lorae are the genae; the area between the eyes and the frons or clypeus is the tempora (Figure 165, 3). Antennae 3-segmented; 3rd antennal segment with long, often articulated arista. Antennae situated ventral to eyes (in most Fulgoroidea) or on the postgenae, medially to the eyes. Fore wings membranous or thickened (hemelytra), sometimes shortened, divided by an oblique longitudinal fold (the claval vein) into corium and clavus (Figure 164), as in the Hemiptera (Heteroptera); the part of the corium distal to the clavus is called membrane. Hind wings membranous, sometimes rudimentary. Fore- and middle legs usually cursorial; hind legs saltatorial,

with long and slender tibiae and femora and broad coxae in which the saltatorial musculature is situated; all legs are ambulatory only in Cicadidae. All tarsi 3-segmented. Base of abdomen ventrally with sound-producing organ which is very well developed and externally visible in male Cicadidae. The abdomen consists of 9 dorsally visible segments (II-X) (segment IX is the genital segment, the pygophore (Figure 166, 2), bearing the anal tube (Figure 166, 2); segment X large, the others rudimentary. The male pygophore bears the intromittent organ (penis) and paired sclerotized appendages (styli) (Figure 166, 1, 2); the end (apex) of the styli projects outwards, the basis of the styli articulates with

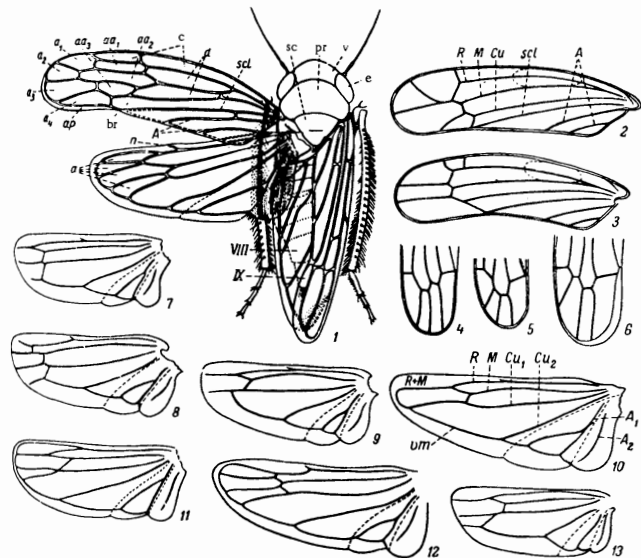


FIGURE 164. Cicadinea. Body structure and wing venation. (after Oman and Ribaut)

1—*Chlorotettix* sp., general habitus (v—vertex, e—eye, pr—pronotum, sc—scutellum, scl—claval vein, c—costal cell, d—discoidal, aa—anteapical, a—apical and br—brachial cell, ap—appendage of wing, n—nodulus); 2—*Eupteryx atropunctata*, fore wing; 3—*Erythroneura parvula*, same; 4—*Dikraneura mollicula*, apex of fore wing; 5—*Kyboasca vittata*, same; 6—*Alebra albostricella*, same; 7—*Typhlocyba quercus*, hind wing; 8—*Eupteryx atropunctata*, same; 9—*Zyginella pulchra*, same; 10—*Kybos smaragdulus*, same (vm—ambient vein); 11—*Dikraneura mollicula*, same; 12—*Alebra albostricella*, same; 13—*Erythroneura tricincta*, same.

the penis by means of a chitinized joint (connective) (Figure 166, 2, 4-8). The penis usually lies in a depression of the posterior wall of the pygophore (genital chamber) and is dorsally covered by the anal tube; the genital chamber of many Fulgoroidea is laterally and ventrally covered by the widened styli. The pygophore of the Cicadoidea bears ventrally the genital valve (Figure 166, 2, 3); paired genital plates (sometimes fused) are attached to the genital valve, and cover the genital chamber ventrally (Figure 166, 2, 3); the genital chamber is laterally protected by the lobes of the pygophore (Figure 166, 2, 3); the styli lie on the inner surface of the genital valve and plates. The penis (Figure 166, 9) consists of phallobase and aedeagus with the ejaculatory duct opening in a gonopore. The gonopore lies sometimes at the apex of the aedeagus, subapical or dorsal (further from the apex), ventral or lateral; sometimes the gonopore lies at the base of the aedeagus.

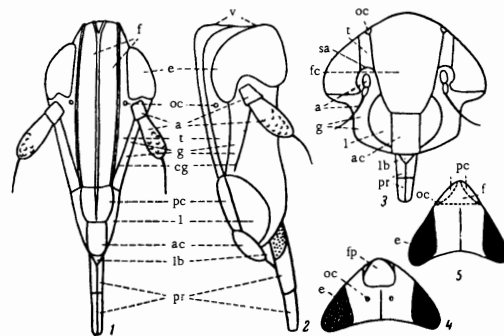


FIGURE 165. Cicadinea. Structure of head (after Ribaut and original)

1, 2—Superfamily Fulgoroidea, head (v—vertex, f—frons, e—eye, oc—ocellus, t—tempus, g—gena, cg—carina of gena, a—antenna, pc—postclypeus, ac—anteclypeus, l—loa, lb—labrum, pr—proboscis); 1—anterior and ventral view; 2—lateral; 3—Superfamily Cicadoidea, face, anterior and ventral view (fc—frontoclypeus, sa—supra-antennal carina); 4—Family Aphrophoridae, vertex (fp—frontal plate); 5—Family Cicadellidae, same (pc—postclypeus).

Cicadinea are widely distributed in various habitats. They are especially numerous in grass associations. They are almost exclusively phytophagous. Only the Achilidae are possibly saprophagous. Many are polyphagous, but oligophagous forms predominate. Plants which are numerous and common are usually fed upon by specific cicadas. Most Cicadinea suck the fluid in vessels of the leaves and the stem of plants. Species of subfamily Typhlocybinae suck juices directly from the cells. The eggs are usually laid in the stems of the plants, which are pierced by the ovipositor. Nymphs pass through 5 instars. There are usually 1 or 2 generations per year, but there may be more in the south and in smaller forms (e.g., Typhlocybinae). Cicadidae have usually one generation every several years.

The mode of life of the nymphs of most species resembles that of the adults. In the families Cixiidae, Cicadidae and Cercopidae the nymphs live underground. Nymphs of the family Aphrophoridae live on plants, in a mass of especially-produced froth. Nymphs of some Tettigometridae live in ant nests. The eggs generally hibernata, adults and old nymphs rarely.

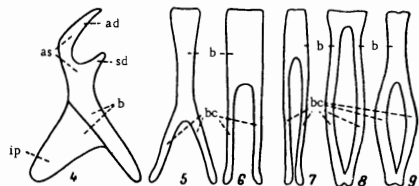
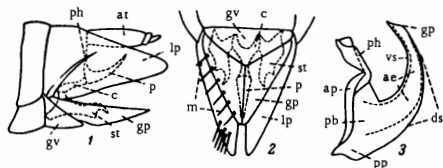


FIGURE 166. Cicadinea. Family Cicadellidae. Structure of male genitalia (after Linnavuori and original)

1, 2—genitalia (lp—lobes of pygophore, at—anal tube, gv—genital valve, gp—genital plates, m—macrochaetae, st—styli, c—connective, p—penis, ph—phragma); 1—lateral; 2—ventral; 3—lateral view of penis (pb—phallobase, ap—anterior part of phallobase, pp—posterior part of phallobase, ae—aeedeagus, ds—dorsal side of aedeagus, vs—ventral side of aedeagus, gp—gonopore); 4—stylus (ip—inner process of base, b—base, as—apex of style, ad—apical denticle, sd—subapical denticle); 5—forked connective with diverging branches (bc—branches of connective); 6—forked connective with parallel branches; 7—connective with approximated apex of branches; 8—connective with fused apex of branches and short base; 9—same, with long base.

Cicadinea are preyed upon by spiders (Salticidae, etc.) and by some fossorial wasps (*Gorytes*, *Bembicinus*, etc.). They are parasitized by some Strepsiptera, Hymenoptera of the family Dryinidae, flies of the family Dorylaidae. The eggs are parasitized by some species of Encyrtidae.

The Cicadinea include a number of agricultural pests, especially in southern regions. They cause damage in three ways: 1) by sucking; this damage is usually not severe, except in the case of shoots or if the insects

340 occur in large numbers; 2) transmission of viral diseases; some species are specific vectors of virus. (*Hyalesthes obsoletus* transmits the virus of large bud of Solanaceae; *Calligypona marginata* transmits the "zakuklevanie" virus[†]) of cereals; *Psammotettix*, group *striatus* transmits the mosaic virus of winter wheat, etc.); 3) piercing young shoots with the ovipositor while laying eggs (on fruit trees and other plants in the south); this damage is caused by Cicadidae and the green leaf hopper; it results in desiccation of the branches above the injured place.—About 660 species of 215 genera.

LITERATURE. Dlabola, J. Křísi—Homoptera (Auchenorrhyncha).—Fauna ČSR, Sr. 1. Praha, 1954; Le Quesne, J. W. Hemiptera (Fulgoroforma).—In: Handbooks for the Identification of British Insects, London, 1960; Ossianilsson, F. Halvvingar. Hemiptera, I. Svensk Insektfauna, Bd. 7, H. 36, 1946; Ossianilsson, F. Halvvingar. Hemiptera, II. Svensk Insektfauna, Bd. 7, H. 27, 1947; Ribaut, H. Homoptères Auchenorrhynches, I (Typhlocybidae).—Faune de France, Vol. 31. Paris, 1936; Ribaut, H. Homoptères Auchenorrhynches, II (Jassidae).—Faune de France, Vol. 57. Paris. 1952.

Key to Families

- 1 (16). Longitudinal carinae usually present on head. Tegulae almost always present (Figure 165, 1, 2). Antennae almost always originating ventral to eyes. (Superfamily Fulgoroidea).
- 2 (3). A movable spur at apex of hind tibia, about as long as the tarsal segments 5. **Delphacidae** (p. 432).
- 3 (2). No such spur.
- 4 (11). 2nd segment of hind tarsi ventrally with a row of small apical spines.
- 5 (6). Frons with 3 longitudinal carinae in addition to the carinae dividing the frons from the tempora; head often markedly elongated in front 1. **Dyctyopharidae** (p. 426).
- 6 (5). Frons with (sometimes without) a longitudinal carina in addition to carinae dividing tempora from frons. Fore wings always membranous.
- 7 (8). Membranes of fore wings markedly overlapping when wings are folded 2. **Achilidae** (p. 428).
- 8 (7). Membranes not overlapping.
- 9 (10). Last segment of proboscis short, not more than twice as long as broad. Fore wings folded in rooflike manner 3. **Derbidae** (p. 428).
- 10 (9). Last segment of proboscis long. Fore wings kept flat when folded. 4. **Cixiidae** (p. 428).
- 11 (4). 2nd segment of hind tarsi with only 2 apical spines laterally.
- 12 (13). Apex of scutellum separated from the rest of scutellum by a distinct transverse groove 6. **Tropiduchidae** (p. 442).
- 13 (12). Scutellum entire, without transverse groove.
- 14 (15). Head with at least carinae separating frons from tempora. Compact, often slightly compressed laterally. Lorae forming angle with clypeus 7. **Issidae** (p. 443).

† [Literal translation: pupation disease. The meaning in the present context could not be determined.]

- 15 (14). Longitudinal carinae on head indistinct. Body dorsoventrally flattened. Lorae large, inside area of face 8. *Tettigometridae* (p. 447).
- 16 (1). Head usually without longitudinal carinae. Tegulae always absent. Antennae always originating between eyes. (Superfamily Cicadoidea).
- 17 (18). Hind legs ambulatory. Vertex with 3 ocelli 9. *Cicadidae* (p. 449).
- 18 (17). Hind legs saltatorial. Vertex with 2 ocelli.
- 19 (24). Vertex with distinctly delimited frontal plate (Figure 165, 4).
- 20 (23). Vertex and pronotum horizontal.
- 21 (22). Pronotum broader than head and eyes, with posteriorly diverging lateral margins 10. *Cercopidae* (p. 451).
- 22 (21). Pronotum about as broad as head and eyes; sides of pronotum more or less parallel 11. *Aphrophoridae* (p. 451).
- 23 (20). Vertex and anterior part of pronotum vertical; pronotum with at least one process posteriorly 12. *Membracidae* (p. 455).
- 24 (19). Frontal plate not clearly delimited 13. *Cicadellidae* (p. 456).

1. Family **DICTYOPHARIDAE**

Of varying habitus. 2 subfamilies. Species of the subfamily Dictyopharinae relatively large and slightly flattened dorsoventrally. Fore and hind wings well developed, membranous, with rich venation. Head usually much prolonged anteriorly. Distributed mainly in countries with hot and humid climate. Species of the subfamily Orgeriinae almost spherical, with porrect head, long legs; running and jumping well, with shortened and thickened hemelytra. In the U.S.S.R. occur only species of the tribe Orgeriini, which is common in the deserts of Soviet Central Asia and in the southern steppes. Mode of life of nymphs similar to that of adults. Eggs hibernating. — 6 genera; not less than 10 species.

Key to Genera

- 1 (4). Hemelytra membranous, thick, well developed. Forelegs and middle legs of about equal length (subfamily Dictyopharinae). Clavus without cross veins (tribe Dictyopharini).
- 2 (3). Process of head conical, short, with pointed apex 1. *Dictyophara*.
- 3 (2). Process of head cylindrical, long, with broadly rounded apex 2. *Chanithus*.
- 4 (1). Hemelytra very thick, leathery. Forelegs usually longer than middle legs (subfamily Orgeriinae). Hemelytra much shorter than abdomen, their posterior margin truncate (tribe Orgeriini).
- 5 (6). Vertex, pronotum and scutellum without median carina. Vertex convex 5. *Haumavarga*.
- 6 (5). Pronotum with median carina.
- 7 (8). Lateral margins of vertex expanded in form of leaves, rising dorsad at an angle; vertex therefore trough-shaped 6. *Tigrahauda*.

- 8 (7). Lateral margins of vertex keel-shaped, not leaf-shaped.
- 9 (10). Eyes posteriorly delimited by keel-shaped occipital margin, not contiguous with pronotum. Carina present between eye and antenna. Face transversely convex 3. *Nymphorgerius*.
- 10 (9). Eyes posteriorly not delimited by keel-shaped occipital margin, directly contiguous with pronotum. No carina between eye and antenna. Face flat 4. *Ranissus*.

Keys to Species of Family **Dictyopharidae**

1. *Dictyophara* Germ. Green; some specimens orange-yellow or red. — 2 species.
- 1 (2). Vertex more than 3 times longer than broad at base, its lateral margins slightly converging apically. 9.5-13. South. Injurious to irrigated crops **D. europaea* L.
- 2 (1). Vertex slightly more than twice as long as broad at base, its lateral margins sharply converging apically. 11-14. South. On oak *D. multireticulata* M. R.
2. *Chanithus* Kol. — 2 species.
- 1 (2). Pronotum with 2 longitudinal carinae. Process of head thick, often slightly inflated apically. Uniformly green, rarely yellow or red. 12-15. South. Polyphagous *Ch. pannonicus* Germ.
- 2 (1). Pronotum with one longitudinal carina. Process of head shorter and thinner, slightly tapering apically. Brownish; face, pronotum, prothorax and mesonotum orange, with green carinae; hemelytra transparent, with brown veins and pterostigma. 11.5-14. Volga Delta, Dagestan *Ch. striatus* Osh.
3. *Nymphorgerius* Osh. — Not less than 3 species in the Southeast.
- 1 (2). Vertex with longitudinal carina. Grayish; face and sides of prothorax with black band; margins of vertex with black spots; scutellum and hemelytra of male black-brown, with light band. Hemelytra smooth. 4-7. Deserts of the Southeast *N. (s. str.) grigorievi* Osh.
- 2 (1). Vertex without longitudinal carina. Gray; hemelytra often darker, with dark brown reticulate pattern. 4.7-6. Southern Urals *N. (Mesorgerius) rysakovi* Kuzn.
4. *Ranissus* Fieb. — 1 species.
- 1 (1). Head short; hemelytra smooth. Vertex with double median carina. Dirty-gray; dorsum of abdomen with indistinct longitudinal stripes. 4.5-9. Steppes of the South and Southwest *R. (Schizorgerius) scythia* Osh.
- 342 5. *Haumavarga* Osh. Monotypic genus.
- 1 (1). Brown or yellowish pale brown. Hemelytra smooth. 4-5.2. Southeast *H. fedtschenkoi* Osh.

6. *Tigrahauda* Osh. Genus consisting of 2 species. — 1 species.

- 1 (1). Vertex with longitudinal carina. Brownish gray. Hemelytra with prominent venation and longitudinal carina along suture. 4.4-5.4. Deserts of the Southeast *T. zarudnyi* Osh.

2. Family ACHILIDAE

A large, mainly tropical family. — 1 genus, 2 species.

Key to Species of Family Achilidae

1. *Elidiptera* Am. S. Slightly flattened dorsoventrally, resembling Cixiidae. Vertex half projecting beyond eyes anteriorly, eyes projecting posteriorly beyond margin of vertex. Mesonotum with 3 longitudinal carinae. — 2 species.
- 1 (2). Carina on posterior margin of vertex almost straight. Dorsum and venter dark brown; hemelytra with light speckles. Dark brown band across dorsal part of frons and genae, eyes and sides of pronotum. Genae ventral to eyes and ventral part of frons light. 8.5-9.5. Northwest. Rare. Nymphs on dead tree trunks
..... *E. lapponica* Zett.
- 2 (1). Carina on posterior margin of vertex markedly concave. Dorsum dark brown; hemelytra with light speckles; venter brown. Whole frons and genae ventral to eyes light; genae anterior to eyes dark brown. 7.5-8.5. Moldavia. On oak, etc. *E. marginicollis* Spin.
- 2 (1).

3. Family DERBIDAE

A large, mainly tropical family. — 1 genus, 1 species.

Key to Species of Family Derbidae

1. *Malenia* Hpt. Head narrow; vertex very short; face narrow and long; lateral carinae of frons projecting anteriorly, leaf-shaped; transverse carinae laterally prolonged in form of ears present on genae ventral to antennae. Pronotum short, markedly transverse, with posterior margin concave, forming an obtuse angle. Mesonotum convex, with traces of 3 longitudinal carinae. Hemelytra membranous, long, folded in rooflike manner. — 1 species.

- 1 (1). Dark brown to black; carinae on face lighter. 4-5. Crimea, Caucasus *M. bosnica* Horv.

4. Family CIXIIDAE

Medium-sized, moderately flattened dorsoventrally; fore wings membranous, flatly folded. Head short; frons with only 3 carinae. Pronotum broad and short, with markedly concave posterior margin. Mesonotum large, with 3 or 5 carinae. Nymphs live in the soil, on roots of plants; adults generally on trees and shrubs; nymphs hibernate. — 6 genera, more than 32 species.

Key to Genera

- 1 (8). Mesonotum with 3 longitudinal carinae.
2 (3). Median longitudinal carina of frons present only in apical half 4. *Hemitropis*.
- 343 3 (2). Median longitudinal carina of frons present across the whole frons.
4 (5). Hind tibiae without spines 1. *Myndus*.
5 (4). Hind tibiae with 3 spines on the outside. Hemelytra broadest posterior to stigma. Outer half of apical margin of hemelytron steeply rounded as much as inner half.
6 (7). Apical margin of hemelytra not granulated. 2. *Cixius*.
7 (6). Apical margin of hemelytra granulated throughout 3. *Tachycixius*.
- 8 (1). Mesonotum with 5 longitudinal carinae.
9 (10). Median longitudinal carina of frons forked apically 5. *Oliarius*.
10 (9). Frontal carina apically simple, not forked 6. *Hyalesthes*.

Keys to Species of Family Cixiidae

1. *Myndus* Stål. In the whole U.S.S.R. 1 species.
- 1 (1). Head black; carinae white; pronotum white, darkened posterior to eyes; mesonotum black; hemelytra white, with brown stripes and spots. 5-6 *M. musivus* Germ.
2. *Cixius* Latr. — More than 8 species.
- 1 (6). Distal end of penis sheath with 3 movable spines (Figure 167, 2,3).
2 (3). Lateral spines of penis sheath with 2 or several points. Brown; carinae light; hemelytra brownish, with indistinct spots. 4.5-6. Northwest (Figure 167, 1) *C. similis* Kbm.
- 3 (2). Spines of penis sheath with one point.
4 (5). Apex of anal tube with 2 long lateroventral processes which are visible dorsally. Brown; hemelytra transparent, with one narrow median band. 6-6.5. South *C. heydeni* Kbm.
- 5 (4). Apex of anal tube without processes. Brown; hemelytra transparent, sometimes with indistinct band. 5-6. (Figure 167, 2,3) *C. stigmaticus* Germ.
- 6 (1). Distal end of penis sheath with 2 movable denticles (Figure 167, 4-10).
7 (8). Ventral margin of penis sheath with one or several denticles (Figure 167, 4,5). Brown; hemelytra slightly darkened, with distinct band anterior to middle. 6.5-7. *C. distinguendus* Kbm.
- 8 (7). Ventral margin of penis sheath without denticles (Figure 167, 6-10).
9 (10). Movable spines of penis sheath very large; right spine slightly curved, lying along penis sheath; left spine strongly curved. Brown; hemelytra yellowish, without pattern. 6. (Figure 167, 6,7) *C. simplex* H.-S.
- 10 (9). Spines less differing in their curvature. Right spine smaller (Figure 167, 8-10).
11 (12). Apex of anal tube with large processes directed ventrally and anteriorly. Brown; hemelytra with brown base, a brown band in the middle and spots at the apex. 6.5-8.5 (Figure 167, 8) *C. nervosus* L.

- 12 (11). Apex of anal tube with vertically-descending dilatation.
 13 (14). Appendage of anal tube in profile with pointed apex, curved slightly anteriorly. Brown; hemelytra with band posterior to middle; hemelytra often dark from base to band. 6-8. (Figure 167, 9). *C. cunicularius* L.
- 14 (13). Appendage of anal tube in profile broadly rounded apically. Brown; hemelytra whitish, with brown band and spots apically. 6-8. South (Figure 167, 10). *C. intermedius* Scott.
3. *Tachycixius* W. Wgn. — 2 species.
- 1 (2). Lateral denticles near middle of ventral side of penis sheath which are visible dorsally at the sides. Denticles of penis sheath not smaller than movable denticles at its apex. Brown; carinae lighter; hemelytra whitish, transparent, with several bands diverging like a fan from apex of clavus. 4.5-5. South. On *Artemisia pauciflora*, etc. (Figure 167, 11, 12). *T. desertorum* Fieb.
- 2 (1). Denticles of penis sheath markedly smaller than movable denticles at its apex, not visible dorsally. Brown, of variable color; hemelytra smoky, with brown spots which may fuse into bands. 5-6. South (Figure 167, 13). *T. pilosus* Oliv.
- 344 4. *Hemitropis* Fieb. — 3 species.
- 1 (2). Veins of hemelytra without dark granules. Body bluish green; hemelytra semitransparent. 3-4. Southeast. On tamarisk. *H. tamaricis* Leth.
- 2 (1). Veins of hemelytra with dark granules. Body pale; mesonotum orange; hemelytra with 2 brown bands and fused brown spots apically. 3-3.5. Dagestan. On tamarisk (Figure 167, 14). *H. fasciatus* Horv.
5. *Oliarus* Stål. — About 15 species.
- 1 (12). Anal tube of male without median process on posterior margin.
 2 (11). Styli without recurrent processes on inner margin.
 3 (8). Posterior margin of anal tube of male without angular notch and without denticles.
 4 (7). Lateral margins of male anal tube uniformly curved, not projecting at an angle.
 5 (6). Apex of penis with one denticle; one long denticle on left side, at base of distal part of penis. Brown to black; carinae on head light brown; pronotum light; hemelytra transparent, often milky-smoky; veins brownish apically, especially the cross veins. 5-9. Usually on reeds *O. leporinus* L.
- 345 6 (5). Apex of penis with 2 denticles; 2 long denticles on left side of base of distal part of penis. Resembling *O. leporinus* L. *O. nanus* Iv.
- 7 (4). Posterior half of lateral margins of anal tube rounded, projecting. Light brown to black. Carinae on head, pro- and mesonotum light brown; hemelytra transparent, often with brown spots in middle and at apex; veins with brown granules, light, apically darkened. 4-5. South *O. obscurus* Sign.

- 8 (3). Posterior margin of anal tube with notch flanked by denticles formed by carinae of anal tube.
 9 (10). Styli similar. Black; carinae light brown; hemelytra transparent, with dark brown veins and a few spots; apex of hemelytra darkened. 8-10. Dagestan. *O. roridus* Fieb.
- 10 (9). Styli dissimilar, left stylus markedly projecting posteriorly, forming a process. Resembling *O. roridus* Fieb. 8-10. Crimea. *O. major* Kbm.
- 11 (2). Styli with long projecting posterior inner angle of leaf-shaped lobe of dorsal side of apex of stylus. Orange-brown to black; carinae on head light brown; pronotum light; carinae on mesonotum brown; hemelytra transparent; veins granulated, light, apically brownish. 5-6.6. Crimea, Caucasus, Southeast. *O. bitinctus* Dlab. (Figure 167, 15).
- 12 (1). Anal tube with median process on posterior margin.

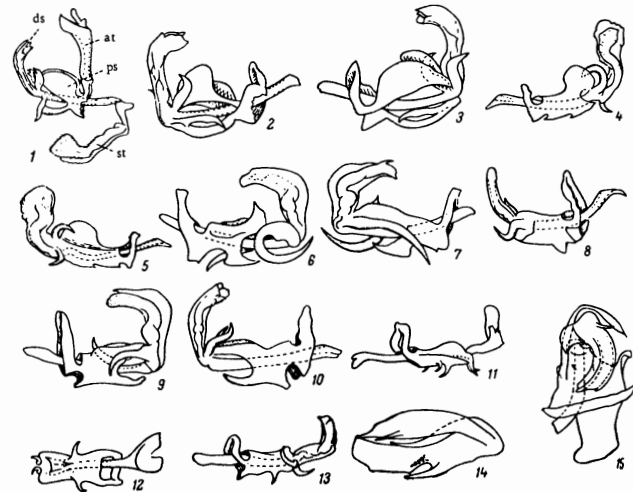


FIGURE 167. Cicadinea. Family Cixiidae. Details of male genitalia (after Wagner and original)

1—*Cixius similis*, penis, anal tube and styli, right side (at—anal tube, ps—penis sheath, ds—distal part of penis, st—stylus); 2, 3—*C. stigmaticus*, penis: 2—right side; 3—left side; 4, 5—*C. distinguendus*, same: 4—left side; 5—right side; 6, 7—*C. simplex*, same: 6—left side; 7—right side; 8—*C. nervosus*, same, right side; 9—*C. cunicularius*, same, left side; 10—*C. intermedius*, same, right side; 11, 12—*Tachycixius desertorum*, same: 11—left side; 12—ventral; 13—*T. pilosus*, same, left side; 14—*Hemitropis fasciatus*, same; 15—*Oliarus bitinctus*, same, dorsal.

- 13 (14). Process of anal tube more or less straight. Black; head and pronotum with brown carinae. Hemelytra transparent; veins brownish, granulated. 6-9. South *O. panzeri* P. Löw.
- 14 (13). Process of anal tube curved to the left.
- 15 (16). Styli identical. Left process on posterior margin of anal tube broadly rounded; right process pointed. Black; carinae on head light brown; pronotum light, with black sides; hemelytra transparent; veins with brown granules, light, apically brown. 5-6.5. South *O. quinquecostatus* Duf.
- 16 (15). Styli not identical; right stylus with more marked inner angle at the apex.
- 17 (18). Posterior margin of anal tube with pointed denticles on each side of process. Black; carinae on head light-brown; sides of pronotum black; carinae and disc light; hemelytra transparent, usually with dark brown spots in the middle and at apex; veins light, with black granules. 5-8. South ... *O. melanochaetus* Fieb.
- 18 (17). Posterior margin of anal tube without denticles on each side of process. Black; carinae on head and pronotum light brownish; hemelytra transparent, with brown veins and darker brown granules with light hairs; apex of hemelytra dark brown. 5-6. South....
..... *O. cuspidatus* Fieb.
6. *Hyalesthes* Sign. — 3 species.
- 1 (2). Dorsal part of clypeus with carina which is a continuation of the median carina of the frons. Median ocellus absent. Black; carinae of vertex, lateral margins of frons and apex of head brownish yellow; pronotum white; legs yellowish brown; hemelytra transparent, with dark veins. 3.5-4.5. Southwest.....
..... *H. luteipes* Fieb.
- 2 (1). Clypeus without carina. Median ocellus distinct.
- 3 (4). Black; lateral margins of vertex and frons white; pronotum white; hemelytra transparent, milky-smoky, with light veins. 4.5-5.5. South. Nymphs usually on roots of *Convolvulus arvensis*; adults polyphagous. Transmitting the virus of large bud disease of Solanaceae **H. obsoletus* Sign.
- 4 (3). Black; margins of vertex white; margins of frons black, with pair of white spots ventrally; pronotum white; hemelytra transparent, milky- or brownish-smoky. 5-7. Ciscaucasia, Caucasus. Transmitting the virus causing large bud disease of Solanaceae....
..... **H. mlkoseviczi* Sign.

5. Family DELPHACIDAE

Small, rarely medium-sized. Head usually short; carinae on head sometimes indistinct. Wings folded in rooflike manner, often shortened. Apex of hind tibiae with large movable spur. Living only on grasses, mainly on Gramineae and Cyperaceae in humid habitats. Mode of life of nymphs like that of adults. Older nymphs usually hibernating, rarely adults or eggs. — 20 genera, more than 90 species.

Key to Genera †

- 1 (2). Spur on hind tibiae rounded, without carinae or denticles. (Subfamily Asiracinae). Fore femora and tibiae leaf-shaped; antennae flattened in form of leaves 1. *Asiraca*.
- 2 (1). Spur on hind tibiae with longitudinal carinae, its ventral side broad, concave, often with denticles at inner margin. (Subfamily Delphacinae).
- 3 (12). Lateral carinae of pronotum reaching its posterior margin.
- 4 (5). Lateral carinae of pronotum becoming more indistinct before reaching its posterior margin, curved inwards. Lateral carinae of face angularly bent at passage to vertex (in profile), projecting anteriorly in form of denticle 10. *Chlorionidea*.
- 5 (4). Lateral carinae of pronotum straight, diverging until they reach its posterior margin. Lateral carinae of face passing to vertex in a uniform curve.
- 6 (7). Lateral carinae of pronotum markedly diverging posteriorly, at an angle of about 45° to longitudinal axis of body.....
..... 5. *Delphacodes*.
- 7 (6). Lateral carinae of pronotum slightly diverging.
- 8 (11). 1st antennal segment short, about as broad as long; 2nd antennal segment about 3 times longer than 1st segment.
- 9 (10). Vertex narrow, prolonged anteriorly, 3 times longer than broad....
..... 2. *Stenocranus*.
- 10 (9). Vertex not more than twice as long as broad..... 3. *Kelisia*.
- 11 (8). 1st antennal segment twice as long as broad; 2nd antennal segment only 1.5-2 times longer than 1st segment..... 4. *Megamelus*.
- 12 (3). Lateral carinae of pronotum not reaching posterior margin, their posterior end curved outwards.
- 13 (14). 1st antennal segment longer than 2nd segment, flattened in form of leaf 6. *Delphax*.
- 14 (13). 1st antennal segment shorter than 2nd segment, not flattened.
- 15 (22). Frons without median carinae or with one not branching carina.
- 16 (19). Vertex pentagonal, with markedly projecting fastigium.
- 17 (18). Frons with a distinct carina which disappears apically.....
..... 18. *Delphacinus*.
- 18 (17). Frons without carina..... 19. *Metropis*.
- 19 (16). Vertex quadrangular, with slightly convex anterior margin.
- 20 (21). Antennae long; 1st antennal segment 3 times longer than broad....
..... 20. *Kormus*.
- 21 (20). Antennae short; 1st antennal segment as long as broad
..... 13. *Eurysa*.
- 22 (15). Frons with 2 median carinae (often little developed) or with one carina branched at least at passage to vertex.
- 23 (28). Frons with 2 median carinae fused throughout their length.
- 24 (25). Frons and pronotum with small pits 16. *Achorotile*.
- 25 (24). Head and pronotum smooth, without pits.
- 26 (27). Vertex quadrangular, with slightly convex anterior margin.....
..... 15. *Criomorphus*.

† A more detailed and natural classification of the genera is given in the following recent publication:
W. Wagner: Mitt. Hamburg. Zool. Mus. Inst., 60: 111-180, 1962.

- 27 (26). Vertex pentagonal; fastigium markedly projecting anteriorly 17. *Jassidaeus*.
- 28 (23). Frons with 2 carinae fused in ventral part, or with one carina forked at least at passage to vertex.
- 29 (30). Frons with 2 fused carinae or with one carina forked in dorsal third and delimiting a cell with parallel sides almost from point of bifurcation 14. *Dicranotropis*.
- 30 (29). Frons with a carina forked at passage to vertex or in dorsal third of face; cell formed as result of bifurcation, triangular, with straight diverging sides.
- 31 (34). Veins of hemelytra with protuberant granules.
- 32 (33). 1st antennal segment keel-shaped, three-edged, strongly dilated apically 11. *Conomelus*.
- 33 (32). 1st antennal segment cylindrical. 12. *Euconomelus*.
- 34 (31). Veins of hemelytra smooth.
- 35 (36). Frons broadest ventral to middle; ventral part of face markedly broader than apical part. Vertex much longer than broad at base, narrower apically 8. *Chloriona*.
- 36 (35). Frons with almost parallel sides, usually broadest dorsal to middle; vertex not longer than broad or slightly longer, not narrowing apically.
- 37 (38). Antennae long, reaching middle or ventral margin of clypeus 7. *Euides*.
- 347 38 (37). Antennae short, not reaching dorsal margin of clypeus or nearly reaching it 9. *Calligypona*.

Keys to Species of Family Delphacidae

1. *Asiraca* Latr. In the whole U.S.S.R. 1 species.
- 1 (1). Dark brown, covered with sparse coarse hair. Vertex and dorsal part of face light; pronotum light brown; hemelytra light, with indistinct brown spots and dark oblique band apically; veins brown with granules which bear thick setae. 4.5-5.5. South *A. clavicornis* F.
2. *Stenocranus* Fieb. — 2 or 3 species.
- 1 (2). Inner margin of styli anterior to middle with deep notch ventrally delimited by a rectangular process; styli thus gradually tapering. Pale; brownish yellow, with orange and light stripes; face usually without black pigment; hemelytra often with brownish longitudinal stripe. 5.5-5.7. Center, South *S. minutus* F.
- 2 (1). Inner margin of styli with rounded notch anterior to middle; notch ventrally delimited by weak obtuse process; apex of styli pointed and curved. Resembling *S. minutus* F., but darker brown, face black between carinae, stripe on hemelytra present more frequently. 5.5-6. Northwest, Baltic Region *S. fuscovittatus* Stål.
3. *Kelsia* Fieb. On Cyperaceae. — More than 7 species.
- 1 (2). Appendage of anal tube asymmetrical, only the right process present. Whitish; sides of scutellum black; hemelytra

- transparent, with dark brown longitudinal stripe. 3-3.5. South (Figure 168, 1) *K. monoceros* Rib.
- 2 (1). Appendage of anal tube with two processes (Figure 168, 2,4,10).
- 3 (4). Appendages of anal tube very long, asymmetrical at apex and curved like a loop. Pale, without pattern. 3.5-4.5 (Figure 168, 2,3) *K. pallidula* Boh.
- 4 (3). Appendages of anal tube not very long, straight or only slightly curved (Figure 168, 4,10).
- 5 (6). Appendages of anal tube S-shaped, their apex converging. Apical half of penis slightly arcuate. Sides of pronotum and scutellum dark; vertex, middle of pronotum and of scutellum white; hemelytra with brown longitudinal stripe in anterior part. 2.7-4. On *Carex arenarius* (Figure 168, 4,5) *K. ribauti* W. Wgn.
- 6 (5). Appendages of anal tube straight.
- 7 (8). Left side of aedeagus with subapical denticle directed backward and curved in semicircle. Aedeagus S-shaped in profile. Light; sides of pronotum and of scutellum and stripe on both hemelytra brown. 3-4. South (Figure 168, 6) *K. brucklyi* Fieb.
- 8 (7). No backward-directed denticle. Basal half of aedeagus uniformly curved; apical half of aedeagus straight (J-shaped).
- 9 (10). Lateral margin of pygophore with angular process in dorsal half. Left side of aedeagus with serrated dilatation in the middle. Light-colored; vertex and middle of pronotum and scutellum white; sides of pronotum, scutellum, and stripes on hemelytra brown. 3.5-4.5 (Figure 168, 7) *K. vittipennis* J. Shlb.
- 10 (9). Lateral margin of pygophore more or less straight. Left side of aedeagus with angular notch in the middle. Light-colored; sides of pronotum, scutellum, and longitudinal stripe on hemelytra brown. 3-3.7 (Figure 168, 8-10) *K. guttula* Germ.
4. *Megamelus* Fieb. — 2 species.
- 1 (1). Dark brown; vertex and the whole mediodorsal region light; male darker; female lighter. Usually brachypterous; apex of hemelytra rounded-truncate; hemelytra of specimens with normal wings transparent, more or less without pattern. 3-4.5. Marshes; on Cyperaceae *M. notula* Germ.
5. *Delphacodes* Fieb. — 3 or 4 species.
- 1 (2). Aedeagus in form of rounded block, strongly compressed laterally. Dark brown; hemelytra brownish, transparent. 1.8-2.5 *D. venosus* Germ.
- 2 (1). Aedeagus long and slender. Resembling *Delphacodes venosus* Germ. 2-2.7. Baltic Region *D. capnodes* Scott.
- 348 6. *Delphax* F. On *Phragmites communis*. — 2 species.
- 1 (2). Brown; sides of pronotum and scutellum and inner angles of clavus dark brown. Hemelytra of specimens with normal wings with 2 bands fused with stripes on costal margin, first band fused with longitudinal stripe beginning at base of hemelytron, 2nd band fused with stripe at inner margin of apex of hemelytra. Hemelytra of brachypterous specimens with dark longitudinal stripe. 5.5-6 without hemelytra *D. crassicornis* Panz.

- 2 (1). Brown. Pattern similar, but bands on hemelytra little developed and always separated; hemelytra of brachypterous specimens without pattern. 5.5-6 (not including hemelytra) *D. pulchella* Curt.

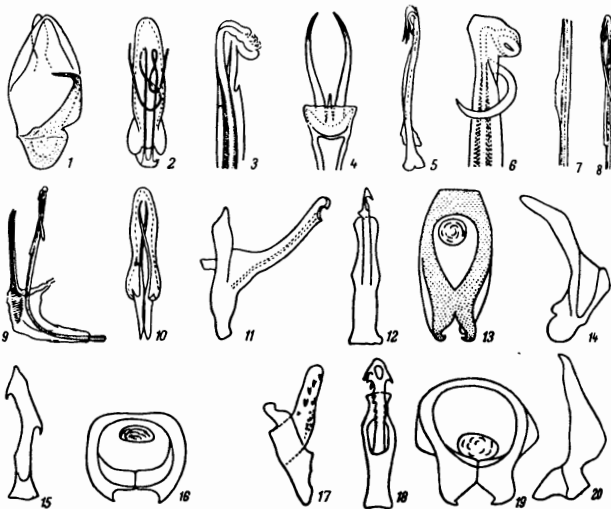


FIGURE 168. Cicadinea. Family Delphacidae (after Wagner, Ribaut and original)

1—*Kelisia monoceros*, anal tube with appendage, ventral; 2,3—*K. pallidula*; 2—same, ventral; 3—apex of penis; 4,5—*K. ribauti*; 4—appendages of anal tube; 5—penis; 6—*K. brucki*, apex of penis; 7—*K. vittipennis*, middle part of aedeagus; 8-10. *K. guttula*; 8—apex of penis; 9—same, lateral; 10—anal tube with appendages; 11-13—*Cr. morio* porcus; 11—penis, lateral; 12—same, posterior aspect; 13—anal tube; 14-16—*C. nigrolineatus*; 14—stylus; 15—penis; 16—anal tube; 17-20—*C. albomarginatus*; 17—penis, lateral; 18—same, posterior aspect; 19—anal tube; 20—stylus.

7. *Euides* Fieb. On *Phragmites communis*.— 4 species.
- 1 (2). Appendages of anal tube separated. Brown; pronotum and scutellum lighter in the middle; hemelytra of specimens with normal wings with dark longitudinal stripe in anterior half and band posterior to middle fusing with stripe at inner margin of apex of hemelytra; brachypterous specimens without pattern. 5.5-6.5 (not including hemelytra) *Eu. speciosa* Boh.
- 2 (1). Both processes of anal tube on a common base.

- 349 3 (4). Left denticle very small, located on right denticle (near its middle). Resembling *Eu. speciosa*; hemelytra of brachypterous specimens darkened. 3.6-5.3 (not including hemelytra). South *Eu. alpina* W. Wgn.
- 4 (3). Left denticle small, situated on base of right denticle. Resembling *E. speciosa*. With normal wings. 5.3-6.5. Dagestan *Eu. caspiana* Dlab.
8. *Chloriona* Fieb. Green or bluish green. Females often brachypterous. On *Phragmites communis*.— 6 or 7 species.
- 1 (6). 2 pairs of denticles on ventral side of anal tube.
- 2 (3). Posterior denticles of anal tube longer than anterior ones. 4.5-5. Baltic Region *Ch. stenoptera* Fl.
- 3 (2). Posterior denticles of anal tube shorter than anterior ones.
- 4 (5). Anterior denticles of anal tube parallel or diverging. Stylus more or less straight, with simple apex. 3.5-5. *Ch. glaucescens* Fieb.
- 5 (4). Anterior denticles of anal tube with converging, approximated apices. Stylus S-shaped, with apex dilated in form of T. 4-5. Northwest *Ch. chinai* Oss.
- 6 (1). Posterior pair of denticles absent.
- 7 (10). Anterior denticles of anal tube curved posteriorly. Styli forming an acute angle.
- 8 (9). Posterior margin of anal tube ventrally with large rounded dilatation. Styli short, thick at apex, slightly T-shaped. 4-5 *Ch. smaragdula* Stål.
- 9 (8). Anal tube with small rounded process on posterior margin. Styli slender, their apex curved and thickened, foot-shaped, with denticle on "heel". 4-5. South *Ch. clavata* Dlab.
- 10 (7). Anterior denticles of anal tube curved anteriorly. Styli forming an obtuse angle, S-shaped, with small backward-directed denticle at apex. 3.8-4. South *Ch. canariensis* Lindb.
9. *Calligypona* J. Shlb.— About 40 species.
- 1 (16). Processes of anal tube separated at the base.
- 2 (15). Styli long, tapering, slightly S-shaped, diverging at an obtuse angle.
- 3 (14). Penis symmetrical; styli parallel to ventral margins of pygophore. Denticles of anal tube pointing in the same direction.
- 4 (11). Gonopore ventral†, apical or subapical. Dorsal wall of pygophore very narrow in the middle, without longitudinal suture.
- 5 (10). Aedeagus with strongly developed dorsal process; this process is sometimes longer than the aedeagus.
- 6 (7). Lateral margins of dorsal notch of pygophore uniformly joining lateral margin (without process). Dorsal process at base of aedeagus thick, long; aedeagus short. Usually brachypterous; dark brown to black; tegmina brownish; margins of sclerites and carinae light. 2.2-4. North *C. discolor* Boh.
- 7 (6). Posterior angles of dorsal notch of pygophore clearly marked. Dorsal process of penis not longer or slightly longer than aedeagus.

† The ventral side of the penis is the lower side when its apex is directed posteriorly.

- 8 (9). Dorsal process of penis relatively short, situated distal to middle of aedeagus. Hemelytra usually slightly shorter than abdomen. Color as in *C. discolor*. North..... *C. obscurella* Boh.
- 9 (8). Dorsal process of penis long, situated at base of aedeagus. Usually with normal wings. Color as in *C. discolor*; hemelytra transparent, brownish. North..... *C. dubia* Kbm.
- 10 (5). Aedeagus without processes. Posterior wall of pygophore with vertical carina dorsal to base of styli. Dorsal groove deep, its posterior angles almost contiguous. Usually brachypterous. Dark brown to black; carinae lighter. 2-4. North, Center..... *C. forcipata* Boh.
- 11 (4). Gonopore dorsal, subapical. Dorsal wall of pygophore broader, with marked longitudinal suture.
- 12 (13). Aedeagus uniformly curved ventrad. Usually brachypterous. Head, pronotum and scutellum pale, orange; hemelytra brownish-chestnut-brown, with white posterior margin; abdomen light to dark. 2.2-4. North..... *C. bohemani* Stål.
- 13 (12). Aedeagus straight in basal half, strongly curved ventrad in apical half. Wings normal. Brown to black; carinae light; hemelytra transparent. 2.5-5..... **C. pellucida* F.
- 14 (3). Penis asymmetrical. Apex of styli diverging from edge of pygophore. Denticles of anal tube diverging from base. Resembling *C. bohemani*. 2.5-5.5. North..... *C. lugubrina* Boh.
- 15 (2). Styli small, with forked apex. Pygophore much narrower than high. Usually brachypterous. Dark brown; vertex, pronotum, and scutellum light; posterior margin of hemelytra white. 1.7-4. North..... *C. pullula* Boh.
- 16 (1). Sclerite of anal tube entire ventrally, not interrupted by suture.
- 17 (38). Anal tube only ventrally with a sclerotized transverse band at posterior margin.
- 18 (25). Anal tube ventrally without denticles or with an unpaired process with rounded apex.
- 19 (24). Posterior margin of pygophore concave ventral to base of styli, notched. Anal tube ventrally without process. Penis asymmetrical.
- 20 (23). Gonopore symmetrically situated; aedeagus with long processes. Styli without basal process on inner margin.
- 21 (22). Processes of aedeagus more or less parallel to it. Hemelytra usually slightly shorter than abdomen. Brown; vertex and middle of pronotum and scutellum light. 2.5-4.8. North..... *C. brevipennis* Boh.
- 22 (21). Processes of penis perpendicular to aedeagus. Resembling *C. brevipennis* Boh. 2.5-4.8..... *C. fairmairei* Perr.
- 23 (20). Gonopore subapical, not symmetrical, directed towards right side. Styli with angular basal process on inner margin. Hemelytra often shortened. Yellowish brown; abdomen often dark brown, with light longitudinal stripes. 2-4. South..... *C. aubei* Perr.
- 24 (19). Posterior margin of pygophore with ventral denticle. Penis slightly asymmetrical. Anal tube with rounded medioventral process. Hemelytra usually shortened. Pale, yellowish brown; male abdomen dark brown to black. 2-4. North, Center..... *C. denticauda* Boh.

- 25 (18). Anal tube with a pair of ventral denticles.
- 26 (27). Styli with very thick basal process on inner margin. Dorsal wall of pygophore very long. Anal tube long, with long diverging processes. Usually brachypterous. Head black, with white carinae; pronotum white, with black spots posterior to eyes; scutellum black; hemelytra transparent; abdomen black, with brown dorsal spot. 2-4..... *C. elegantula* Boh.
- 27 (26). Styli with or without basal denticle on inner margin. Dorsal wall of pygophore short.
- 28 (31). Penis symmetrical. Gonopore not displaced laterally.
- 29 (30). Anal tube small, with narrowly-separated ventral denticles; distance between styli larger than width of anal tube. Styli small, with broad basis and capitate apex. Wings normal. Male black; carinae, vertex, pronotum, and middle of scutellum white; tegmina transparent, with dark spot along median suture; female orange-yellow. 1.7-4. Injurious to cereals, mainly as specific vector of the virus causing "zakuklevanie" virus of cereals..... **C. striatella* Fall. (marginata F.).
- 30 (29). Anal tube very large, much wider than distance between styli; anal tube with broadly separated beak-shaped ventral denticles. Styli small, almost parallel, with pointed apex and basal denticle on inner margin. Usually brachypterous. Pale, orange. 2-4. North..... *C. straminea* Stål.
- 31 (28). Penis asymmetrical; gonopore at least slightly asymmetrical, displaced toward right side.
- 32 (33). Gonopore at least slightly displaced toward right side, ventral. Processes of anal tube not crossed. Usually with normal wings. Dark brown; vertex, pronotum and carinae on face light; hemelytra transparent. 4-5.3..... *C. adela* Fl.
- 33 (32). Gonopore lateral (directed toward right side).
- 34 (35). Denticles of anal tube not crossed. Often brachypterous. Pale; orange, with traces of brown pattern; carinae white; facial carinae with brown borders. 2.2-4. Northwest.... *C. excisa* Mel.
- 35 (34). Denticles of anal tube crossed.
- 36 (37). Margin of pygophore with a pair of ventral denticles ventral to styli. Resembling *C. excisa* Mel. 2-3.5..... *C. collina* Boh.
- 37 (36). Margin of pygophore without ventral denticles ventral to styli. Resembling *C. collina* Boh..... *C. pallens* Stål.
- 38 (17). Anal tube with 2 ventral sclerotized transverse bands.
- 39 (40). Aedeagus nearly straight in profile, without ventral denticle. Stylus with simple, pointed apex. Resembling *C. pallens* Stål. 2-4. North..... *C. distincta* Fl.
- 351 40 (39). Aedeagus markedly S-shaped in profile, with subapical denticle on ventral side. Apex of styli capitate-rounded. 3-5. North..... *C. sordidula* Stål.
10. *Chlorionidea* P. Löw. — 1 species.
- 1 (1). Orange-brown; carinae of head lighter, on dark background. Usually brachypterous; hemelytra truncate-rounded at apex, much shorter than abdomen. 3-4.5. South..... *Ch. flava* P. Löw.

† [See note on p. 425.]

11. **Conomelus** Fieb. Monotypic genus.
- 1 (1). Dark brown; abdomen with light spots; vertex, pronotum, scutellum and dorsal part of face light; tegmina transparent; hemelytra of brachypterous specimens with truncate apex, with brown bands at base and at apex; apex of hemelytra of specimens with normal wings with C-shaped spot. 2.5-3 (not including hemelytra). On *Juncus* spp. **C. anceps** Germ.
12. **Euconomelus** Hpt. Monotypic genus.
- 1 (1). Dark brown; head with light spots. Hemelytra of brachypterous specimens semitransparent, dark brown in apical third. Posterior margin with several white spots. Hemelytra of specimens with normal wings transparent, with brown pattern. 2-2.5 (not including hemelytra). On Cyperaceae **Eu. lepidus** Boh.
13. **Eurya** Fieb. Probably a composite genus. — 1 species.
- 1 (1). Brown; dorsum lighter; pronotum and scutellum with 4 dark longitudinal stripes; hemelytra semitransparent; abdomen with lighter and dark indistinct longitudinal stripes. Usually brachypterous; hemelytra truncate posteriorly. 3-4. South. **Eu. lineata** Fieb.
14. **Dicranotropis** Fieb. — 4 species.
- 1 (2). Styli strongly curved, converging apically. Brilliant, dark brown; carinae on head light; frontal carina bifurcating near middle of frons. 2-3 **D. flavipes** Sign.
- 2 (1). Styli less strongly curved, diverging, their apices widely separated.
- 3 (4). Genital segment of male with well-developed lateral processes on posterior margin. Dark brown; facial carinae, vertex, pronotum and scutellum light; hemelytra shortened, transparent, with brown spot on apex of clavus; abdomen of male with light apical spot dorsally; abdomen of female light, with dark spots laterally. 2.5-3.5. **D. hamata** Boh.
- 4 (3). Genital segment with little lateral processes posteriorly.
- 5 (6). Styli obliquely directed dorsad along posterior wall of pygophore. Brownish black; face velvety-black; pronotum, scutellum and carinae of head light; hemelytra shortened, transparent; dorsum of male abdomen with light spots; abdomen of female light, with dark spots and stripes. 2.7-3.5. Crimea, Southeast **D. beckeri** Fieb.
- 6 (5). Styli directed posteriad, almost perpendicular to posterior wall of pygophore. Pale orange; facial carinae with dark-brown borders; hemelytra transparent, with whitish veins; abdomen of male black. 2.5-2.7. Transcarpathian Region, Caucasus **D. divergens** Kbm.
15. **Criomorphus** Scott. — 8 species.
- 1 (2). Anal tube high and narrow, ventrally with a pair of denticles which converge like a forceps. Resembling *C. nigrolineatus*. 2.7-3.4. Leningrad Region, Kazakhstan (Figure 168, 11-13) **C. porcus** Em., sp. n.

- 2 (1). Anal tube rounded in posterior view (Figures 168, 16, 19; 169, 3, 7).
- 3 (8). Frontal carinae little developed, projecting only slightly, of the same color as the frons.
- 4 (5). Processes of anal tube widely separated, short. Whitish; dorsum with dark brown longitudinal stripes; frons with 2 longitudinal spots; vertex with 3 spots in a triangle. 3-5. Center, South. On *Agropyron repens* (Figure 168, 14-16) **C. nigrolineatus** Scott.
- 5 (4). Processes of anal tube close together, long, with diverging apices.
- 352 6 (7). Stylus with pointed subapical process. Pale brown, with 2 dark spots on ventral part of frons; pronotum with 2 spots laterally; sides of abdomen often dark. 3.5-4. **C. affinis** Fieb.
- 7 (6). Stylus with single pointed apex. Resembling *C. affinis* Fieb. 3.5-4. **C. bicarinatus** H.-S.
- 8 (3). Frontal carinae markedly projecting, light on darker background; female brown; male reddish brown; posterior margin of pronotum and scutellum light; posterior margin of hemelytra white.
- 9 (10). Processes of anal tube short, with converging apices, strongly curved anteriad beneath anal tube. 2-3 (Figure 168, 17-20) **C. albomarginatus** Curt.

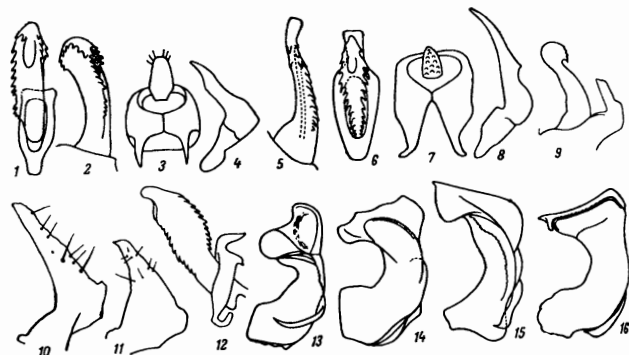


FIGURE 169. Cicadinea. Family Delphacidae and Issidae. Details of male genitalia (after Wagner and original)

1-4—*Criomorphus borealis*: 1—penis, posteriorly; 2—same, lateral; 3—anal tube; 4—stylus;
 5-8—*C. moestus*: 5—penis, lateral; 6—same, posteriorly; 7—anal tube; 8—stylus; 9, 10—*Metropis*
mayri: 9—penis, lateral; 10—stylus; 11, 12—*M. inermis*: 11—stylus; 12—penis, lateral; 13—*Myc-*
terodus rostratulus, same, lateral; 14—*M. orthocephalus*, same; 15—*M. intricatus*, same;
 16—*M. immaculatus*, same.

- 10 (9). Processes of anal tube long, not converging (Figure 169, 3, 7).
- 11 (12). Processes of anal tube straight, directed ventrad. 2-3 (Figure 169, 1-4) **C. borealis** J. Shlb.

- 12 (11): Processes of anal tube with apices strongly curved anteriorly, with thick base and pointed apex. 2-3 (Figure 169, 5-8) *C. moestus* Boh.
16. *Achorotile* Fieb. — 2 species.
- 1 (1). Dark brown to black; dorsal part of face, vertex, middle of pronotum and scutellum light brown; hemelytra brown, transparent; posterior margin of abdominal terga III and III [sic] light. 2.7-3. North, Center *A. albosignata* Dhlb.
17. *Jassidaeus* Fieb. Monotypic genus.
- 1 (1). Hemelytra usually markedly shortened, truncate posteriorly. Female brownish yellow; sides of last 3 abdominal terga with black spots; male black, legs and antennae brownish. 2-2.3. South *J. lugubris* Sign.
18. *Delphacinus* Fieb. Monotypic genus.
- 1 (1). Hemelytra usually markedly shortened, truncate posteriorly. Female pale, orange; male white, thorax and legs black; abdomen black with white band on tergum VIII. 2-2.8. Northwest, Center, South *D. mesomelus* Boh.
- 353 19. *Metropis* Fieb. Male black; female light brown. — 2 or 3 species.
- 1 (2). Anal tubes ventrally with 2 blunt angular processes. Anterior margin of vertex rounded, projecting only slightly. 2.7-3. Crimea (Figure 169, 11,12) *M. inermis* W. Wgn.
- 2 (1). Anal tubes ventrally with 2 pointed processes, curved anteriorly. Vertex pentagonal, with anteriorly projecting, rounded apex. 2.5-3.5. Crimea (Figure 169, 9,10) *M. mayri* Fieb.
20. *Kormus* Fieb. Monotypic genus.
- 1 (1). Red-brown, shiny; hemelytra with white bands at base and apex, shortened, truncate posteriorly. 2-3. Southeast. Monophagous. On *Limonium gmelini* *K. artemisiae* Fieb.

6. Family TROPIDUCHIDAE

A large family, mainly distributed in the Tropics. — 1 genus, 1 species.

Key to Species of Family Tropiduchidae

1. *Trypetimorpha* Costa. Head with sharp carinae; vertex pentagonal; frons with anteriorly-projecting longitudinal carina in the middle; clypeus convex, without carinae. Pronotum and mesonotum with 3 longitudinal carinae. Posterior margin of pronotum with shallow, obtuse, notch. Hemelytra shortened, slightly longer than abdomen, thickened, reticulate, diverging at clavus. — 1 species.
- 1 (1). Light, yellowish, with some black spots; hemelytra dark brown, with light spots. Alternating light and dark brown stripes radially arranged at margin of hemelytra except at clavus. 3-3.6. Lower

reaches of the Dnieper; the Caucasus; Southeast *T. fenestrata* Costa.

7. Family ISSIDAE

Medium-sized or small. Body thickset, often high. Head sometimes with processes; face often vertical. Pronotum transverse, with convex anterior margin in the middle and straight posterior margin. Hemelytra thick, leathery, in subfamily Caliscelinae shortened, frequently not covering part of abdomen; specimens with normal wings and membranous hemelytra occur rarely. Hemelytra in subfamily Issinae always normal, convex, covering body laterally. On trees and grass. Mode of life of nymphs similar to that of adults. — 9 genera, about 25 species.

Key to Genera

- 1 (6). Anterior margin of pronotum always strongly convex; carina at anterior margin of pronotum passing at an angle ventral to eyes, reaching posterior margin of pronotum, dividing sides of pronotum from its median part. Hemelytra shortened, often shorter than abdomen. (Subfamily Caliscelinae).
- 2 (3). Fore tibiae and femora leaf-shaped 1. *Caliscelis*.
- 3 (2). Forelegs simple, not leaf-shaped.
- 4 (5). Lateral lobes of frons, pronotum and scutellum with rounded pits. Anterior margin of vertex angularly rounded. Hemelytra much shorter than abdomen 2. *Aphelonema*.
- 5 (4). Head, pronotum and scutellum without pits. Vertex angularly projecting anteriorly. Hemelytra not shorter than abdomen. 3. *Ommatidiotus*.
- 6 (1). Carina at anterior margin of pronotum posterior to eyes, uniformly curved and continuing parallel to posterior margin of pronotum so that its sides are not divided from the middle part. Hemelytra always normal. (Subfamily Issinae).
- 7 (12). Vertex not transverse or little broader than long. Anterior margin of vertex either markedly projecting anteriorly or with weak but distinct obtuse apex.
- 8 (9). Wings well-developed, slightly shorter than hemelytra. Anterior margin of vertex with distinctly obtuse apex 4. *Issus*.
- 9 (8). Wings lacking. Anterior margin of vertex more or less projecting anteriorly, with rounded apex.
- 10 (11). Lateral carinae of frons dorsally connected with each other and with median carina, not reaching anterior margin of vertex 6. *Mycterodus*.
- 354 11 (10). Lateral carinae of frons dorsally fused with anterior margin of vertex, usually not connected with median carina of vertex 5. *Conosimus*.
- 12 (7). Vertex transverse, separated from face by a straight carina.
- 13 (18). All veins of hemelytra projecting only slightly; venation reticulate, irregular.
- 14 (15). Frons anteriorly produced into 2 hornlike processes 9. *Bootheca* Em., gen. n.

- 15 (14). Frons flat, without processes.
 16 (17). Frons forming an obtuse angle with vertex, distinctly visible dorsally. Subapical denticle of hind tibiae closer to apex of tibia than to the base 8. *Alloscelis*.
 17 (16). Frons vertical, forming right angle with vertex. Subapical denticle on hind tibia closer to base of tibia than to the apex 7. *Falcidiopsis*.
 18 (13). Longitudinal veins of hemelytra and several cross veins in apical part projecting like carinae 10. *Hysteropterum*.

Keys to Species of Family Issidae

1. *Caliscelis* Lap. Hemelytra not covering whole abdomen, truncate posteriorly. Males of Russian species red-brown, with white stripe along claval suture and white basis of terga; females with dense black speckles, gray, with lighter dorsal longitudinal stripe. On *Phragmites communis*. — 2 species.

- 1 (2). Distance between inner carinae of frons (near dorsal margin of frons) equal to their distance from outer carinae. Sides of male without white spots; hind tibiae of female not leaf-shaped. Male 2.5-3.5, female 4-4.5. South *C. affinis* Fieb.
 2 (1). Inner carinae of frons (near dorsal margin of frons) farther distant from each other than from outer carinae. Sides of male abdomen with white longitudinal spots; hind tibiae of male slightly leaf-shaped. Male 3.5-4.5, female 5.5-6.5. South *C. wallengreni* Stål.

2. *Aphelonema* Uhl. Hemelytra covering only basal tergum of abdomen, truncate posteriorly. — 2 species.

- 1 (2). Vertex projecting only slightly anteriorly; frons strongly convex, vertical. Sides of abdominal terga with irregular pits. Vertex with 2 black spots; frons bordered with black, with a pair of round black spots in the middle. Dorsum of body with 4 black longitudinal stripes. 2-3. South *A. punctifrons* Horv.
 2 (1). Vertex markedly angularly projecting anteriorly; frons slightly convex, inclined downward. Sides of abdominal terga with pits arranged in one row. Gray; frons bordered with black, with black spot in form of inverted heart in the middle. 2-3. South *A. scurrilis* Stål.

3. *Ommatidiotus* Spin. Hemelytra shortened, longer than abdomen, flat, with parallel sides. On *Cyperaceae*. — 2 species.

- 1 (2). Vertex, pronotum and scutellum with red longitudinal stripe; dorsum of male light yellow; hemelytra with broad black stripe at costal margin; dorsum of female grayish yellow; hemelytra with other longitudinal stripes. 3-5.5. In humid habitats *O. dissimilis* Fall.
 2 (1). Vertex, pronotum and scutellum with black longitudinal stripe; dorsum of male light yellowish; hemelytra with broad black longitudinal stripe along median line; costal margins light;

dorsum of female yellowish brown, with indistinct brown stripes. 2.5-5. South; steppes *O. inconspicuus* Stål.

4. *Issus* F. On shrubs. — 4 species.

- 1 (4). Vertex about as wide as long in the middle. Carinae on dorsal part of frons branching from longitudinal carina at right angle forming a transverse carina, which passes far from dorsal margin of frons.
 2 (3). An area with finer network of irregular veins (among which the longitudinal veins are dissolved) present in apical part of hemelytra near costal margin. Hemelytra elongate. Brown; middle of hemelytra with brown spot; veins darker; sides of prothorax, dorsal and lateral part of frons dark brown, with light spots. 7-8. Center, South *I. coleopratus* Geoffr.
 355 3 (2). Hemelytra without such an area; longitudinal veins distinct along costal margin. Hemelytra shorter. Brown; hemelytra with darker veins and 2 indistinct dark brown bands; face and sides of pronotum dark brown; ventral part of face and genae with light band continuing to ventral part of sides of pronotum. 6-7.5. Crimea, Caucasus *I. muscaeformis* Schrk.
 4 (1). Vertex about twice as broad as long in the middle. Carinae on dorsal part of frons branching from longitudinal carina at an acute angle on dorsal margin of frons.
 5 (6). Face much longer than broad; median carina of frons distinct throughout. Brown; hemelytra with lighter veins and dark spots, with indistinct dark brown band in the middle. 6-6.5. Caucasus *I. caucasicus* Mel.
 6 (5). Face not longer than broad. Median carina of frons weak. Brown; hemelytra with lighter veins and dark spots. 4.4-5.5. Crimea *I. tendinosus* Spin.
 5. *Conosimus* M.R. On shrubs. — 1 species.
 1 (1). Vertex 1.5 times as long as broad, its anterior margin forming an acute angle. Brown, with fine dark brown speckles. 5-6.5. Caucasus *C. kobachidzei* Dlab.
 6. *Mycterodus* Spin. Brown, with fine dark brown speckles. On shrubs. — 5 species.
 1 (6). Lobes of apex of penis large and broad. Lobes of penis sheath not reaching gonopore (Figure 169, 13-15).
 2 (5). Apex of lobes of penis sheath lying between apical lobes of penis. Apex of dorsal processes of penis lying on sides of penis. (Figure 169, 13, 15).
 3 (4). Lobes on sides of gonopore markedly projecting. Apex of dorsal processes of penis slender, slightly curved. Vertex about 1.5 times as long as broad. 5.5. Caucasus (Figure 169, 13) *M. rostratulus* Em., sp. n.
 4 (3). Lobes on sides of gonopore moderately projecting. Apex of dorsal processes strongly curved, tapering in the form of beaks. Vertex pentagonal, with rounded apex, as long as broad. 5.5-7. Crimea, Caucasus (Figure 169, 15) *M. intricatus* Stål.

- 5 (2). Lobes of penis sheath lying on sides of aedeagus, dorsal to apical lobes of penis. Apex of dorsal processes of penis lying on its dorsal side. Vertex pentagonal, 1.5 times as long as broad. 5.5-6.8. Southwest, Crimea (Figure 169, 14) *M. orthocephalus* Ferr.
- 6 (1). Apical lobes of penis very small. Penis sheath reaching gonopore. Vertex parabolic, 1.5 times as long as broad. 6-7. Center, South (Figure 169, 16) *M. immaculatus* F.
7. *Falcidiopsis* Kuzn. Monotypic genus.
- 1 (1). Dirty-brown; head and dorsum with dense black speckles which are fused on head, pronotum and scutellum; venter and legs black. 2.5-3.5. South *F. kirgizorum* Kuzn.
8. *Alloscelis* Kuzn. Monotypic genus.
- 1 (1). Pale yellow; face with broad longitudinal black stripe in the middle; 2 narrow black stripes at margin of frons and 2 stripes on genae, prothorax and at margin of genae; pronotum and mesonotum often with indistinct spots; cells of hemelytra with dark borders. 4-5.5. South *A. vittifrons* Iv.
9. *Bootheca* Em., gen. n.; type species: *Lusanda taurus* Osh.— 1 species.
- 1 (1). Dirty-brown. Head, pronotum and scutellum with black spots; outer sides of processes and face between them black. Hemelytra with dark brown veins; venter light. 4-5. Southwest *B. taurus* Osh.
10. *Hysteropterum* Am. S.— 9 species.
- 1 (2). Clavus with sharply projecting cross veins. Posterior margin of pronotum with distinct shallow notch in the middle. Hemelytra with network of sharply projecting cross veins; ambient vein absent. Yellowish brown, with traces of diffuse dark spots. 3-3.5. Southeast *H. ergenense* Fieb.
- 356 2 (1). Clavus without cross veins or with weakly-developed cross veins. Posterior margin of pronotum straight.
- 3 (12). Ambient vein consisting of cross veins at posterior margin of hemelytra, at a distance from its margin. Anterior margin of pronotum with a low carina indistinctly interrupted in the middle. Pronotum without pits.
- 4 (5). Dorsal margin of frons strongly concave. Hemelytra with network of sharply-projecting cross veins. Dirty-gray, with brown pattern. 3-4. Crimea *H. tauricum* Kuzn.
- 5 (4). Dorsal margin of frons straight. Hemelytra with a few weakly-marked cross veins.
- 6 (9). Pronotum with longitudinal carina in the middle. Face not longer than broad.
- 7 (8). Dorsum plae, buff-yellow; face, legs and venter dark brown to black. 3.5-4.5. Crimea *H. discolor* Germ.
- 8 (7). Dorsum pale, buff-yellow; face and venter light; legs often with black longitudinal stripes; abdomen brownish. 3.5-4.5. South. Male unknown *H. montanum* Fieb.

- 9 (6). Pronotum without longitudinal carina in the middle. Face markedly longer than broad.
- 10 (11). Anal tube of male simple, with parabolic-rounded apex. Pale, yellowish or brownish. 4-6.5. Crimea *H. grylloides* F.
- 11 (10). Anal tube of male with rounded lateral lobes at apex. Pale, yellowish. 5-5.5. Crimea *H. orientale* Kuzn.
- 12 (3). Only longitudinal veins on hemelytra well developed; ambient vein at posterior margin of hemelytra lacking. Pronotum with high carina which is interrupted in the middle, with deep pits. Pale, straw yellow. 2.7-3. Crimea *H. eugeniae* Kuzn.

8. Family TETTIGOMETRIDAE

Dorsoventrally flattened, moderately small, with markedly thickened hemelytra. Sometimes brachypterous. Mode of life of nymphs similar to that of adults, or nymphs myrmecophilous.— 4 genera, about 20 species.

Key to Genera

- 1 (2). Vertex as long as broad at base; vertex 1.5 times as long as pronotum; anterior margin of vertex parabolic-convex. Scutellum markedly shorter than pronotum and vertex together 1. *Mitricephalus*.
- 2 (1). Vertex shorter than broad at base, or vertex projecting, forming an acute angle; vertex at most slightly longer than pronotum. Scutellum markedly longer than pronotum and vertex together.
- 3 (4). Anterior margin of vertex straight or obtuse-rounded. Vertex much longer in the middle than near the eyes. Frons in profile concave, rarely straight or convex 2. *Tettigometra*.
- 4 (3). Anterior margin of vertex arcuately rounded. Vertex in middle little longer than near eyes. Frons in profile convex.
- 5 (6). Costal margins of hemelytra not expanded and not curved backward 3. *Brachycephalus*.
- 6 (5). Costal margins of hemelytra leaf-shaped and curved 4. *Micrometrina*.

Keys to Species of Family Tettigometridae

1. *Mitricephalus* Sign. Monotypic genus.
- 1 (1). Dorsum brown, dull, with black dots; hemelytra often darker; frons light, with 2 black bands; clypeus and lora darkened. 5.5-6. South *M. macrocephalus* Fieb.
2. *Tettigometra* Latr.— 17 or 18 species.
- 1 (4). Frons convex.
- 2 (3). Dorsum yellow or orange-yellow. Venter yellow, sometimes with brownish spots. 4.5. South *T. virescens* Panz.
- 3 (2). Head, pronotum, scutellum and tegulae brown; hemelytra yellow. Venter with brown spots. 4.4. Crimea *T. beckeri* Horv.
- 357 4 (1). Frons concave or straight.

- 5 (6). Vertex much shorter than pronotum, its anterior margin obtuse. Yellowish gray, dull, with brown speckles. Hemelytra with traces of brown spots and bands which are better marked near costal margin. 3-4. South..... *T. costulata* Fieb.
- 6 (5). Vertex about as long as pronotum.
- 7 (8). Dorsum covered with coarse black hairs. Hemelytra with 3 smooth brown callus-shaped protuberances at level of apex of clavus. Yellowish gray; scutellum with a pair of brown spots; hemelytra brownish in apical three-quarters, with large light spot on claval vein and with some shiny silvery patches. 4.5. Crimea; Ciscaucasia..... *T. hexaspina* Kol.
- 8 (7). Dorsum without hairs or with thinner, light hairs. No callus-shaped protuberances on hemelytra.
- 9 (14). Yellow or greenish.
- 10 (13). Yellow.
- 11 (12). Venter reddish brown. 5.2-6. South..... *T. sulphurea* M. R.
- 12 (11). Venter of the same color as dorsum. 5.0. South..... *T. vitellina* Fieb.
- 13 (10). Pale green. Anterior margin of vertex rounded. 4.5. Southeast. On Chenopodiaceae..... *T. varia* Fieb.
- 14 (9). Brown or gray.
- 15 (22). Frons approximately straight.
- 16 (21). Costal margins of hemelytra converging at apex. Brownish gray or yellowish gray.
- 17 (18). Hemelytra with projecting veins forming carinae. Dorsum dull; veins of hemelytra with some smooth granules. Generally brownish gray with more or less marked bands; color variable. 5.2. Center; South..... *T. obliqua* Panz.
- 18 (17). Hemelytra with veins not markedly projecting. Dorsum slightly shiny; veins of hemelytra without smooth granules. Brownish gray or yellowish gray, without pattern.
- 19 (20). Punctuation of hemelytra forming longitudinal rows in some places. Center, South..... *T. depressa* Fieb.
- 20 (19). Punctuation of hemelytra completely irregular..... *T. atrata* Fieb.
- 21 (16). Costal margins of hemelytra parallel. Dark; reddish brown. 3.5-4.2. Northwest, Center, South..... *T. atra* Hgb.
- 22 (15). Frons markedly concave.
- 23 (26). Grayish brown.
- 24 (25). Punctuation of hemelytra darker than hemelytra. 4.1. South..... *T. griseola* Fieb.
- 25 (24). Punctuation of hemelytra not darker than hemelytra. 4.4. South..... *T. sordida* Fieb.
- 26 (23). Dark; reddish brown; smooth.
- 27 (28). Anterior margin of vertex almost rectangular, markedly projecting. Veins of hemelytra sharply projecting. 5.0. Southeast..... *T. angulata* Lindb.
- 28 (27). Anterior margin of vertex rounded. Veins of hemelytra not sharp. 4-5. South..... *T. fusca* Fieb.

3. *Brachycephalus* Sign.— 1 species.
- 1 (1). Smooth, shiny. Hemelytra without marked veins. Reddish brown; hemelytra yellow. 4.0. Crimea..... *B. laetus* H.-S.
4. *Micrometrina* Lindb.— 1 species.
- 1 (1). Smooth, shiny. Hemelytra without marked veins. Reddish brown to black. 3.5. Crimea, Ciscaucasia..... *M. barani* Sign.

9. Family CICADIDAE

Large. Fore and hind wings of similar consistency, transparent, membranous. Fore femora inflated, with 2 or 3 denticles ventrally; hind legs ambulatory. Well-developed sound-producing organ at base of male abdomen. Eggs are laid into slender branches of trees by piercing with the ovipositor. As a result, the branches dry up above the incision, which injures fruit trees in the south. Nymphs with fossorial forelegs, living underground for several years, sucking roots. A large family, mainly distributed in the Tropics.— 5 genera, 12-15 species.

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Key to Genera

- 1 (6). Fore femora ventrally with 2 large denticles and sometimes an additional very small denticle at apex. Styli fused.
- 2 (5). Frontoclypeus without longitudinal groove in the middle. Penis simple, symmetrical, without processes, with thick aedeagus.
- 3 (4). Head narrower than pronotum. Proboscis reaching posterior margin of metathorax. Ventral margin of fused styli with deep notch..... 1. *Cicada*.
- 4 (3). Head broader than pronotum. Proboscis reaching only posterior margin of mesothorax. Ventral margin of fused styli convex..... 2. *Tibicen*.
- 5 (2). Frontoclypeus with deep longitudinal groove in the middle. Aedeagus slender with asymmetrical processes at apex..... 3. *Tibicina*.
- 6 (1). Fore femora with 3 large denticles. Styli not fused.
- 7 (8). Sides of pronotum almost parallel in middle. Basal cell of fore wings quadrangular, as branches of M and Cu originate at one point or from a common stem. Penis symmetrical, with pair of processes lying more or less parallel to the aedeagus..... 4. *Cicadetta*.
- 8 (7). Sides of pronotum diverging, almost without traces of carina. Basal cell pentagonal, as branches of M and Cu originate separately..... 5. *Cicadatra*.

Keys to Species of Family Cicadidae

1. *Cicada* L.— 1 species.
- 1 (1). Pale brown, with ochre-yellow pattern, and silvery-white pubescence. Fore wings with diffuse brown spots. 25-28, with wings 35-37. Extreme South..... *C. orni* L.

10. Family CERCOPIDAE

Medium-sized; usually richly colored. A large family, mainly distributed in the Tropics.— 1 genus, 4 species.

Key to Species of Family Cercopidae

1. *Cercopis* F. Black, with bluish metallic sheen. Hemelytra with red pattern; basal half of clavus, spots in middle of corium and subapical band red.— 4 species.

- 1 (2). Ocelli connected by a smooth transverse elevation in the form of a scar. Thickset; total width of hemelytra equal to their length at the inner margin. Median spot of hemelytra not touching claval vein; subapical band slightly curved. 6-8. Center. Rare *C. arcuata* Fieb.
- 2 (1). Ocelli not connected by scar. Slender; hemelytra much longer along clavus.
- 3 (6). Subapical band of hemelytra slightly convex posteriorly. Anterior pair of processes on apex of penis half as long as posterior pair.
- 4 (5). Process at apex of genital plate with two angles. Apex of femora black. 8-10. Carpathians *C. sanguinoleata* Scop.
- 5 (4). Process at apex of genital plate with one angle. Apex of femora red. 8-10. Crimea, Caucasus *C. intermedia* Kbm.
- 6 (3). Band strongly curved, nearly parallel to apical margin of hemelytra. Anterior pair of processes of penis two thirds the length of posterior pair. 9.5-11. Center, South *C. sanguinea* Geoffr.

11. Family APHROPHORIDAE

Medium-sized. Dorsum often covered with sparse hair. Vertex with frontal plate which is frequently bordered by a carina. Hemelytra very thick, leathery. Tibiae rounded, with several soft denticles on outer margin and a double crown of spines on the ventral side at the apex. Hind legs saltatory, but hind coxae narrow. Nymphs developing and molting into adults in a mass of froth produced by special glands. Eggs hibernating.— 7 genera, not less than 15 species.

Key to Genera

- 1 (4). Frontoclypeus and pronotum with longitudinal carina in the middle. Frontal plate transverse; distance between ocelli much less than width of frontal plate. Frontal plate with carinae at the margin.
- 2 (3). Apex of frontoclypeus without any special structures. Dorsum bare 1. *Peuceptyelus*.
- 3 (2). Apex of frontoclypeus with 2 parallel carinae on each side. Dorsum usually covered with short hairs 2. *Aphrophora*.
- 4 (1). Pronotum without carina; frontoclypeus with broad and shallow longitudinal groove in the middle which interrupts a series of transverse grooves. Frontal plate narrower; distance between

2. *Tibicen* Latr.— 1 species.

- 1 (1). Black; vertex and pronotum with yellow pattern. 30-36, with wings 45-50. South *L. plebeja* Scop.

3. *Tibicina* Kol. Black, with weak orange pattern. Veins of wings orange-red.— 2 species.

- 1 (2). Anterior half of mesonotum usually with 2 orange longitudinal stripes; posterior part of mesonotum without spots. Fused styli orange, their posterior margin longitudinally convex. 26-28, with wings 37-45. South **T. haematodes* Scop.
- 2 (1). Anterior part of mesonotum without pattern; posterior part of mesonotum with 2 orange spots in pits; posterior margin of pronotum always with orange border. Fused styli black, their posterior margin straight. Size as in *T. haematodes* Scop. Ciscaucasia, Caucasus **T. intermedia* Fieb.

4. *Cicadetta* Kol.— 5-8 species.

- 1 (4). Penis short; processes of penis parallel to aedeagus, broad, diverging at apex.
- 2 (3). Apex of processes pointed, aedeagus relatively broad apically. Green, with black pattern, with silvery-white hairs. 18-24. Southeast *C. prasina* Pall.
- 3 (2). Apex of processes rounded; aedeagus slender at apex. Black, with weak orange pattern and black veins on fore wings. 11-13. South *C. tibialis* Panz.
- 4 (1). Penis slender, long; processes of penis with converging or straight tips.
- 5 (8). Processes longer than aedeagus, with converging tips. Black, with weak orange pattern.
- 6 (7). Processes of penis separated; aedeagus and processes shorter. Fore wings with some diffuse dark spots. 18-21. South *C. adusta* Hag.
- 7 (6). Processes adpressed to aedeagus; aedeagus and processes very slender. Wings without pattern. 16-20. Center, South *C. montana* Scop.
- 359 8 (5). Processes of penis not longer than aedeagus, very slender, adpressed to aedeagus. Orange-white, with black pattern and with silvery-white hair. 20-23. Southeast *C. albeola* Ev.

5. *Cicadatra* Kol. Black, with yellow-orange pattern.— 3 species.

- 1 (2). Dark diffuse spots on fore and hind wings, on cross veins in distal part of fore wings. Apex of penis only with small needle-shaped denticles. 29-40. Southeast *C. querula* Pall.
- 2 (1). Wings without pattern. Apex of penis with large leaf-shaped denticles in addition to small ones.
- 3 (4). Apex of penis with large laterally-displaced denticle on left side. Whole penis slightly curved. 23-32. South *C. atra* Oliv.
- 4 (3). No such denticle on left side of penis near apex; penis strongly curved before the apex. 20-26. South *C. hyalina* F.

- ocelli equal to width of frontal plate or slightly shorter. Carinae at margin of frontal plate passing inside of its anterior angles.
- 5 (6). Supra-antennal carina simple. Hemelytra short, spherically convex. Anterior margin of vertex arcuately rounded
- 6 (5). Supra-antennal carina double. Hemelytra rooflike. Anterior margin of vertex usually angular. **3. Lepyronia.**
- 7 (8). Frontal plate without longitudinal carina, relatively broad
- 8 (7). Frontal plate with longitudinal carina in the middle, which is sometimes visible with difficulty because of the hair. Frontal plate narrower, often longitudinally oblong. **4. Philaenus.**
- 9 (12). Distance between ocelli about equal to width of frontal plate or very little shorter. Frontoclypeus anterior to frontal plate not visible dorsally.
- 10 (11). Vertex and frontal plate very long. Penis dorsoventrally flattened, with denticle-shaped processes at apex (Figure 170, 7,8). Apex of genital plate with denticle at margin of suture. Lobes of pygophore with process, obliquely directed ventrad **6. Paraphilaenus.**
- 11 (10). Vertex and frontal plate not very long; frontal plate often as broad as long. Aedeagus rounded or slightly flattened laterally, with leaf-shaped processes at apex (Figure 170, 10,11,14,16-21). Sutural margin of genital plate without denticles.
- 12 (9). Distance between ocelli markedly shorter than width of frontal plate. Frontoclypeus visible dorsally anterior to frontal plate. **7. Neophilaenus.**
- **5. Lepyroniella.**

Keys to Species of Family Aphrophoridae

1. **Peuceptyelus** J. Shlb. Shiny, slender; hemelytra markedly narrower at apex. — 1 species.
- 1 (1). Yellowish gray, with dark marble pattern; scutellum pitch brown. 5.5-6.5. North. On conifers **P. coriaceus** Fall.
2. **Aphrophora** Germ. Slender; hemelytra markedly tapering apically. Mainly on trees and shrubs. — 4 species.
- 1 (2). Dorsum without hairs. bare. Scutellum strongly concave. Apex of styli Y-shaped. Rust-brown, dull, with light and dark brown markings. Male 6-9, female 7-11. Ukraine. Very rare. **A. corticea** Germ.
- 2 (1). Dorsum covered with short hairs. Scutellum flat or slightly convex. Apex of styli more or less triangular.
- 3 (4). Outer margin of styli slightly concave. Penis slender. Genital plate with pointed, fused rectangular apices. Costal margin of hemelytra markedly convex. Hemelytra grayish brown, on outer side with oblique light spot anterior to middle and a similar subapical spot. Male 8-8.5, female 9-10. (Figure 170, 3) **A. alni** Fall.

- 4 (3). Outer margin of styli deeply or angularly concave. Penis thick, Genital plates broadly rounded at apex or obliquely truncate (Figure 170, 1,2).
- 5 (6). Outer margin of styli with rounded process; inner margin convex before apex. Apex of genital plates broadly rounded. Dark, greenish brown, with dark brown spots forming an indistinct oblique band in middle of hemelytra. 11-12. North, Center (Figure 170, 2) **A. alpina** Mel.
- 6 (5). Outer margin of styli with pointed denticle; inner margin straight before the apex. Genital plates tapering into obliquely truncate apex. Vertex markedly projecting anteriorly. Yellowish brown to brown, hemelytra with indistinct orange-yellow spot in basal half near costal margin and dark brown spots in the middle. 9-11. On willow (Figure 170, 1) **A. salicina** Goeze.
- 3. Lepyronia** Am. S. — 1 species. In the whole U.S.S.R. 2 species.
- 1 (1). Hemelytra more or less spherically convex. Dorsum grayish brown; hemelytra usually with oblique black bands forming a rhombus. Venter black. 5.5-7 **L. coleoptrata** L.
- 4. Philaenus** Stål. — 1 species.
- 1 (1). Thickset; vertex with blunt anterior margin; hemelytra with convex costal margin. Pattern very variable; color pale to black with light bands or longitudinal stripes. 5-6. Mainly in humid and shady habitats Common froghopper — **Ph. spumarius** L.
- 5. Lepyroniella** Mel. Monotypic genus.
- 1 (1). Yellowish or greenish, with more or less marked brown pattern. Usually stripes at sides of pronotum and hemelytra or whole dorsum dark, with light spots, mainly at apex of hemelytra. 4.5-6.3. Ciscaucasia, Caucasus (Figure 170, 4-6) **L. petrovi** Grig.
- 6. Paraphilaenus** Vilb. — 1 species.
- 1 (1). Light, dorsum with dark longitudinal stripe in the middle and at the sides from eyes to apex of hemelytra; these stripes become indistinct on the hemelytra. 7-8. South. Steppes. On cereals (Figure 170, 7-9) **P. notatus** M. R.
- 7. Neophilaenus** Hpt. — 6 species.
- 1 (4). Frontal plate markedly longer than broad; vertex flat. Notch on inner side of apex of styli very wide (Figure 170, 12,13) subgenus **Neophilaenus** s. str.).
- 362 2 (3). Vertex less projecting anteriorly. Outer denticle on apex of stylus closer to basal inner denticle. Light, with dark longitudinal stripes on sides of dorsum posterior to eyes and with dark spots on apex of clavus or even entirely dark with light subapical band. 5-7. In marshes, etc. (Figure 170, 13,14) **N. lineatus** L.

- 3 (2). Vertex more elongate. Outer denticle at apex of stylus equidistant from inner denticles. Light, with dark longitudinal stripes on sides of dorsum posterior to eyes and dark spot on apex of clavus. 4.5-5.5. Crimea (Figure 170, 10-12)..... *N. minor* Kbm.

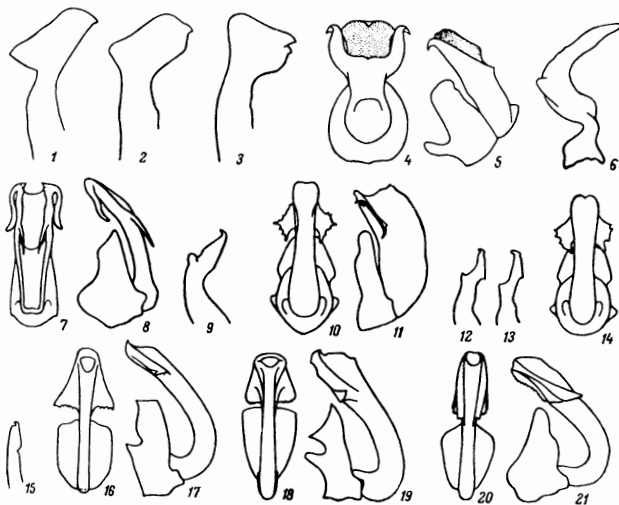


FIGURE 170. Cicadinae. Family Aphrophoridae. Details of male genitalia (original)

1—*Aphrophora salicina*, stylus; 2—*A. alpina*, same; 3—*A.alni*, same; 4-6—*Lepyroniella petrovi*: 4—penis, dorsal; 5—same, lateral; 6—stylus; 7-9—*Paraphilaenus notatus*: 7—penis, dorsal; 8—same, lateral; 9—stylus; 10-12—*Neophilaenus minor*: 10—penis, dorsal; 11—same, lateral; 12—stylus; 13,14—*N. lineatus*: 13—stylus; 14—penis, dorsal; 15-17—*N. albipennis*: 15—stylus; 16—penis, dorsal; 17—same, lateral; 18,19—*N. exclamatoris*: 18—penis, dorsal; 19—same, lateral; 20,21—*N. campestris*: 20—penis, dorsal; 21—same, lateral.

- 4 (1). Frontal plate about as broad as long; vertex slightly or markedly convex. Notch on inner margin of styli very narrow (Figure 170,15) subgenus *Neophilaenus* Em., subgen. n.; subgenotype — *Cicada exclamatoris* Thnb.).
- 5 (6). Lateral margins of lobes at apex of penis more or less parallel, their posterior angles curved ventrad. Dorsum dirty-brown; hemelytra with indistinct light spots on costal margin in the middle and apically. 3.5-6. Center, South. In dry habitats (Figure 170, 20,21)..... *N. campestris* Fall.
- 6 (5). Lateral margins of lobes diverging, their posterior angles curved dorsad (Figure 170, 16,18).

- 7 (8). Posterior margin of apical lobes of penis concave. Dorsum bare; hemelytra with light band in the middle; apex of hemelytra with light spots on outer margin. 4.5-6.5. Center, South (Figure 170, 15-17)..... *N. albipennis* F.
- 8 (7). Posterior margin of apical lobes of penis convex. Vertex convex. Dorsum dark brown to black. Costal margin and basal half of hemelytra light. Hemelytra with light transverse subapical spots on costal margin. 3.5-5. North, Center. Dry habitats (Figure 170, 18,19)..... *N. exclamatoris* Thnb.

12. Family MEMBRACIDAE

Medium-sized. Vertex with frontal plate, vertical; frontoclypeus ventrally projecting in the form of a cone. Pronotum with processes of varying shape and size. Both pairs of wings membranous. Mode of life of nymphs similar to that of adults. A large family, mainly distributed in the Tropics. — 3 genera, 3 species.

Key to Genera

- 1 (4). Posterior process of pronotum narrow, not covering sides of scutellum.
- 2 (3). Sides of pronotum with processes in the form of laterally-directed horns; pronotum with high longitudinal carina continued on sinuous posterior process 1. *Centrotus*.
- 3 (2). Sides of pronotum without processes; pronotum with weakly-marked longitudinal carina and flat posterior process..... 2. *Gargara*.
- 4 (1). Posterior process of pronotum with broad base, covering scutellum completely..... 3. *Stictocephala*.

Keys to Species of Family Membracidae

1. *Centrotus* F. — 1 species.
- 1 (1). Black, with adpressed golden hairs. Hemelytra transparent, with thick brownish veins. 7-8..... *C. cornutus* L.
2. *Gargara* A. S. — 1 species.
- 1 (1). Black (male) or dark brown (female), covered with adpressed golden hairs. Hemelytra with brown spots. 3-4. Center, South. On *Cytisus*, *Glycyrrhiza*, *Caragana* and other *Leguminosae*..... *G. genistae* F.
3. *Stictocephala* Stål. (*Ceresa* A. S.). Sides of pronotum with triangular processes; dorsal carinae on these processes fused into Y-shaped figures, forming a high, sharp carina on posterior process of pronotum. In the whole U.S.S.R. 1 species.
- 1 (1). Whole insect delicate-grass-green; hemelytra transparent, 8-11. Moldavia, Caucasus. A common, serious pest of fruit trees, alfalfa, etc. One generation per year. Eggs hibernating;

hatching in April; maturity reached in July-September.
 Introduced into Europe from North America
 *Buffalo treehopper — *S. bubalus* F.

13. Family **CICADELLIDAE**

Small or medium-sized. Frontoclypeus completely or almost completely covering facial side of head, its dorsal limit usually not visible. Carinae often present dorsal to antennae. Hind coxae of almost all Cicadellidae broad, transverse; hind tibiae flat, tetrahedral, with setae at outer margin. Hemelytra often much thickened; brachypterous specimens frequent. Generally very active, jumping well. Mode of life of nymphs similar to that of adults. At least one generation per year. Eggs hibernating in most species, more rarely adults, sometimes nymphs of the 5th instar. Some species are specific vectors of viral diseases of plants. The largest family of the Cicadinea. — 155 genera, more than 490 species. In the whole U.S.S.R. more than 200 genera.

Key to Genera

- 1 (2). Outer edges of hind tibiae without spines. Apex of femora without spines. (Subfamily Ulopinae). Penis with 2 aedeagi and gonopores 1. **Ulopa**.
- 2 (1). Outer edges of hind tibiae with spines. Apex of femora with spines.
- 3 (4). Spines on outer edges of hind tibiae not numerous (not more than 5), sparse. Frontoclypeal suture replaced by carina dorsal to antennae. (Figure 171, 3). (Subfamily Megophthalminae) 2. **Megophthalmus**.
- 4 (3). Spines on outer edges numerous, always more than 10. Frontoclypeal sutures never replaced by carina.
- 5 (10). Supra-antennal carinae of face entering frons. (Subfamily Jassinae).
- 6 (9). Face in profile convex. Appendage of hemelytra narrow. (Tribe Jassini).
- 7 (8). Anal tube with appendage. Styli small, reduced. Genital plates short, little developed 16. **Jassus**.
- 8 (7). Anal tube without appendage. Styli large, well developed. Genital plates long 17. **Batrachomorphus**.
- 9 (6). Face in profile concave. Appendage of hemelytra broad. (Tribe Penthimini).
- 10 (5). Supra-antennal carinae of face not reaching frons or absent.
- 11 (26). Ocelli on vertex far from its anterior margin; if close to the anterior margin, frontoclypeal suture passing transversely near ocelli. Vertex always well developed.
- 12 (13). Head spatulate, strongly flattened, with sharp anterior margin. (Subfamily Ledrinae). Pronotum with a pair of ear-shaped processes. 3. **Ledra**.
- 13 (12). Head not spatulate, not flattened.
- 14 (17). Anteclypeus with parallel sides, flat; frontoclypeus flat, on the same plane as the genae. (Subfamily Aphrodinae).
- 15 (16). Vertex smooth or with more or less longitudinal grooves, with narrow longitudinal carina in the middle 24. **Aphrodes**.

- 16 (15). Anterior part of vertex covered with transverse grooves. Vertex without longitudinal carina in the middle. ... 25. **Stroggylocephalus**.
- 17 (14). Anteclypeus convex or strongly convex, narrower apically and often projecting beyond ventral margin of genae. Frontoclypeus usually inflated and markedly projecting. (Subfamily Cicadellinae).
- 18 (25). Ocelli closer to anterior margin of vertex than to its posterior margin.
- 19 (20). Frontoclypeus with longitudinal carina. (Tribe Euacanthini). 28. **Euacanthus**.
- 20 (19). Frontoclypeus without longitudinal carina.
- 21 (24). Large sharp carinae present dorsal to antennae. Distance between ocelli about one half or two thirds the width of frontoclypeus. (Tribe Errhomenini).
- 22 (23). Frontoclypeus more or less flat, with depression in dorsal part. Margin of genae projecting in the form of an obtuse angle. Anterior margin of vertex sharp, projecting in a right angle. 27. **Errhomenus**.
- 23 (22). Frontoclypeus strongly convex, without depression. Margin of genae more or less straight. Anterior margin of vertex less sharp, projecting a little in the form of an arc 26. **Bathysmatophorus**.
- 24 (21). Supra-antennal carinae not marked. Distance between ocelli only slightly shorter than width of frontoclypeus. (Tribe Anoterostemmatini) 30. **Anoterostemma**.
- 25 (18). Ocelli nearer to posterior margin of vertex than to anterior margin. (Tribe Cicadellini) 29. **Cicadella**.
- 364 26 (11). Ocelli on face; vertex in this case little developed; in other cases ocelli on border between face and vertex; vertex in these cases always well developed; ocelli exceptionally on vertex (near its anterior margin); in this case the frontoclypeal suture reaches the ocelli obliquely.
- 27 (36). Antennae anterior to eyes. Vertex elongate, projecting anteriorly, with sharp anterior margin.
- 28 (33). Longitudinal carinae present on vertex, face and pronotum. Surface of body wrinkled or pitted, rugose. Veins of hemelytra forming carinae. (Subfamily Dorycephalinae).
- 29 (30). Anterior margin of vertex projecting above eyes in the form of a carina (Figure 173, 1). (Tribe Eupelicini) 9. **Eupelix**.
- 30 (29). Eyes without carina.
- 31 (32). Frontoclypeus without carina. Process of head dorsoventrally flattened. (Tribe Dorycephalini) 20. **Dorycephalus**.
- 32 (31). Frontoclypeus with longitudinal carina. Process of head narrow, tetrahedral (Figure 173, 2). (Tribe Paradorydiini) 21. **Paradorydium**.
- 33 (28). Vertex, face and pronotum without carinae. Surface of body more smooth. Veins of hemelytra less markedly projecting. (Subfamily Hecalinae).
- 34 (35). Ocelli of male closely approximated to eyes; distance of ocelli from eyes in female not more than 1-2 diameters of ocellus. 22. **Hecalus**.

- 35 (34). Distance of male ocelli from eyes 2 or more diameters of ocellus; distance of female ocelli from eyes markedly more than 2 diameters, about equal to diameter of eyes **23. Glossocratus.**
- 36 (27). Antennae closer to ventral margin of eyes than to dorsal margin.
- 37 (242). Ocelli very close to eyes; distance between them many times greater than their distance from eyes; in this case there are no traces of carinae dorsal to antennae and venation is not reduced. (Subfamily Euscelinae).
- 38 (39). Margin of genae without notch ventral to eyes. Genae visible dorsally posterior to eyes. (Tribe Scaphytopiini). 2 gonopores and aedeagi **71. Japananus.**
- 39 (38). Margin of genae with notch ventral to eyes. Genae not visible in dorsal view.
- 40 (47). 2 gonopores, 2 aedeagi or one aedeagus divided in two. (Tribe Opsiini).
- 41 (44). Genital plates with macrochaetae; genital valve normally developed.
- 42 (43). Two completely separate aedeagi; 2 processes branching from phallobase or from basis of aedeagi (Figure 180, 19-30) **57. Opsius.**
- 43 (42). One aedeagus bifurcating in T-shape (Figure 181, 15,17,19-21) **60. Neoaliturus.**
- 44 (41). Genital plates without macrochaetae. Genital valve strongly developed.
- 45 (46). Genital plates short, with long hairs. Anterior margin of vertex sharp. Macropterous **58. Pseudophlepsius.**
- 46 (45). Genital plates moderately long, narrow, bare; their apices may be crossed. Anterior margin of vertex entering face. Brachypterous (Figure 181, 3,4,7,10,13) **59. Achaetica.**
- 47 (40). 1 gonopore, 1 aedeagus.
- 48 (51). Genital plates more or less fused.
- 49 (50). Genital plates fused only at base. Connective free, with appendages. (Tribe Tetartostyliini) **61. Tetartostylus.**
- 50 (49). Genital plates and genital valve completely fused. Connective closely attached to phallobase (Figure 180, 5-18). (Tribe Goniognathini) **56. Goniognathus.**
- 51 (48). Genital plates free.
- 52 (159). Connective forked, its branches diverging or parallel, their apices not approximated (Figure 166, 5,6).
- 53 (54). Ocelli equidistant from eyes and median line of head. Penis asymmetrical (Figure 180, 1-4). (Tribe Grypotini) **5. Grypotes.**
- 54 (53). Ocelli closer to eyes.
- 55 (60). Styli with very small processes articulating with connective. Branches of connective strongly diverging, forming a deep or shallow arch (Figure 184, 3,4). (Tribe Fieberiellini).
- 56 (57). Anterior margin of vertex sharp, with 2 carinae. Anal tube with a pair of processes **77. Fieberiella.**
- 57 (56). Anterior margin of vertex rounded, not sharp. Anal tube without appendages.
- 58 (59). Base of connective longer than its branches. Aedeagus with apical processes (Figure 184, 4-6) **78. Synopropsis.**

- 59 (58). Base of connective very short; branches of connective much longer than base. Aedeagus with dorsal processes in middle (Figure 184, 7,8) **79. Phlogotettix.**
- 365 60 (55). Styli with well-developed apophyses. Branches of connective diverging at an acute angle or parallel.
- 61 (62). Genital plates with a row of short, thick macrochaetae with truncate apex (Figure 182, 1,2). (Tribe Coryphaeini) **62. Coryphaeus.**
- 62 (61). Genital plates with ordinary, pointed macrochaetae or without macrochaetae.
- 63 (72). Hemelytra with 2 subapical cells. Apex of genital plates produced into long weakly sclerotized appendages. (Tribe Macrostelini).
- 64 (65). Penis without processes, with simple apex. Vertex short, markedly transverse (Figure 182, 3) **63. Balclutha.**
- 65 (64). Penis with a pair of apical processes (Figure 182, 4-5).
- 66 (71). Gonopore dorsal, subapical. Aedeagus straight, relatively short (Figure 182, 4-39,44,45).
- 67 (68). Arrangement of macrochaetae on genital plates irregular **67. Sagatus.**
- 68 (67). Genital plates with a marginal row of macrochaetae.
- 69 (70). Head not narrower than pronotum. Sides of pronotum short, parallel **64. Macrosteles.**
- 70 (69). Head narrower than pronotum. Sides of pronotum long, diverging **65. Erotettix.**
- 71 (66). Gonopore ventral, subapical. Aedeagus long, arcuate (Figure 182, 40-43) **66. Sonronius.**
- 72 (63). Hemelytra with 3 subapical cells (Figure 164, 1). Apex of genital plates not produced into soft processes. (Tribe Euscelini).
- 73 (82). Penis asymmetrical.
- 74 (75). Macrochaetae on genital plates irregular **104. Pithyotettix.**
- 75 (74). Macrochaetae on genital plates arranged in one row.
- 76 (81). Aedeagus more or less rounded. Dorsal side of anal tube membranous.
- 77 (80). Gonopore on left side of aedeagus, far from its apex. Penis strongly curved ventrally; anterior part of phallobase well developed.
- 78 (79). Apex of penis simple, pointed (Figure 188, 3,4) **101. Speudotettix.**
- 79 (78). Apex of penis with 2 closely standing processes **105. Macustus.**
- 80 (77). Gonopore subapical, on right side of aedeagus. Aedeagus slightly curved dorsally; phallobase poorly developed (Figure 189, 16,17) **109. Stictocoris.**
- 81 (76). Aedeagus dorsoventrally flattened. Anal tube with sclerotized dorsal wall (Figure 191, 1-10) **116. Streptanus.**
- 82 (73). Penis symmetrical.
- 83 (88). Genital plates without macrochaetae.
- 84 (87). Gonopore apical or subapical. Outer margins of genital plates convex.
- 85 (86). Aedeagus short, more or less straight (Figure 185, 7-15). Macropterous **84. Anoplotettix.**
- 86 (85). Aedeagus long, strongly arcuate (Figure 191, 13). Hemelytra slightly shorter than abdomen, with rounded apex; claval suture indistinct **118. Chroocacus.**

- 87 (84). Gonopore ventral, in middle of aedeagus (Figure 191, 21,22). Genital plates with narrow apex and concave inner margins. Brachypterous 121. **Bobacella**.
- 88 (83). Genital plates with macrochaetae.
- 89 (104). Arrangement of macrochaetae on genital plates irregular.
- 90 (91). Head with several narrow grooves at anterior margin of vertex. Anal tube with ventral hooklike appendage ... 83. **Selenocephalus**.
- 91 (90). Head without such grooves. Anal tube without appendages.
- 92 (93). Pygophore without macrochaetae 102. **Hesium**.
- 93 (92). Pygophore with macrochaetae.
- 94 (95). Genital plates with denticle on inner margin in front of apex of styli. Anal tube very long, reaching far beyond pygophore. Lobes of pygophore produced into pointed processes. (Figures 186, 20,25,26; 187, 1,2) 94. **Paluda**.
- 95 (94). Genital plates without denticles. Anal tube of normal length, not reaching beyond lobes of pygophore.
- 96 (99). Lobes of pygophore with long posteroventral processes. Styli reaching almost to apex of genital plates or projecting.
- 97 (98). Brown, with marbled pattern 89. **Allygidius**.
- 98 (97). Green; black spots near anterior margin of vertex 91. **Graphocraerus**.
- 366 99 (96). Lobes of pygophore without processes. Styli far short of apex of genital plates.
- 100 (101). Aedeagus slender, its cross section more or less round (Figure 188, 19-22). Broad, large forms 107. **Athysanus**.
- 101 (100). Aedeagus thick, often dorsoventrally flattened.
- 102 (103). Dorsal notch of pygophore deep, almost reaching its anterior margin. Macrochaetae present near inner margin of genital plates. Aedeagus forming a thick block; anterior side of phallobase movably articulated with appendage (Figure 190, 1-5) 111. **Limotettix**.
- 103 (102). Dorsal notch of pygophore shallower. Macrochaetae present only near outer margin of genital plates. Aedeagus dorsoventrally flattened, originating from posterior margin of phallobase. Appendage closely attached to anterior margin of phallobase (Figure 189, 18-33) 110. **Scleroracus**.
- 104 (89). Genital plates with one row of macrochaetae.
- 105 (108). Genital plates diverging, not joined, with notch or incision on outer margin or angle. Penis simple, hooklike.
- 106 (107). Genital plates with incision at outer angle (apex). Styli with thick transverse triangular apices. Lobes of pygophore with comb of denticles on posterior margin (Figure 186, 12-14) 92. **Hardya**.
- 107 (106). Genital plates with notch on outer margin. Styli of ordinary form. Apex of lobes of pygophore pointed, with ventral lobe-shaped process (Figure 186, 15-19) 93. **Stenometopiellus**.
- 108 (105). Inner margin of genital plates joined throughout or almost so; outer margins of genital plates without notch.
- 109 (116). One row of macrochaetae at least partly crossing genital plates. Styli often projecting beyond margin of genital plates (Figure 187, 7,25,27).

- 110 (111). One complete transverse marginal row of macrochaetae present. Lobes of pygophore forming thick forked process (Figure 186, 3,6,7) 89. **Allygidius**.
- 111 (110). Macrochaetae in one transverse row, not marginal. Apex of genital plates with long hairs.
- 112 (113). A transverse row of macrochaetae near posterior margin of genital valve and parallel to it. Apex of stylus bent outward at a right angle, projecting. (Figure 187, 24,25) 97. **Taurotettix**.
- 113 (112). Row of macrochaetae bent at an angle, its basal half longitudinal and marginal, its apical half transverse.
- 114 (115). Gonopore dorsal, in middle of aedeagus. Stylus with clavate and flattened apex (Figure 187, 26,27) 98. **Callistophia**.
- 115 (114). Gonopore dorsal, subapical. Styli pointed (Figure 187, 7-23) 96. **Cicadula**.
- 116 (109). Row of macrochaetae marginal, more or less longitudinal.
- 117 (158). Anal tube more or less cylindrical.
- 118 (123). Gonopore on ventral side of aedeagus (Figures 185, 19; 190,6; 191,22).
- 119 (120). Apex of aedeagus without processes (Figure 191, 21,22) 121. **Bobacella**.
- 120 (119). Apex of aedeagus with a pair of processes.
- 121 (122). Apex of processes of aedeagus directed anteriorly and laterally (Figure 190, 6). Hemelytra with supplementary veins 112. **Condylotes**.
- 122 (121). Apical processes of aedeagus recurrent, crossed. Hemelytra without supplementary veins (Figure 185, 18,19) 86. **Colladonus**.
- 123 (118). Gonopore apical or dorsal.
- 124 (157). Genital plates triangular, with rounded or pointed apex, longer at inner margin than genital valve. Macrochaetae numerous.
- 125 (126). Gonopore forming transverse slit on T- or Y-shaped aedeagus (Figures 188, 23-28; 189, 1-15) 108. **Handianus**.
- 126 (125). Gonopore not forming transverse slit, more or less rounded.
- 127 (128). Gonopore dorsal, in middle of aedeagus or forming a process in middle of dorsal side (Figure 188, 7-11). Genital plates long, their outer margin about parallel in basal half 103. **Thamnotettix**.
- 128 (127). Gonopore dorsal, subapical or apical.
- 129 (130). Genital plates transversely, broadly truncate at apex. Phallobase with a pair of flat triangular combs (Figure 186, 8,9) 90. **Phlepsidius**.
- 130 (129). Genital plates with narrow, pointed, narrowly rounded or obliquely truncate apex. Phallobase without combs.
- 131 (144). Anal tube completely sclerotized dorsally, without basal notch.
- 367 132 (135). Apex of hemelytra narrow and more or less rounded.
- 133 (134). Anal tube with comb of pointed processes ventrally. Processes of penis directed anteriorly along aedeagus (Figure 187, 28,29). Apex of hemelytra very narrow 99. **Mocydia**.
- 134 (133). Anal tube without accessory structures. Processes of aedeagus transverse (Figure 188, 1,2). Apex of hemelytra moderately narrow 100. **Mocydiopsis**.

- 135 (132). Apex of hemelytra broadly rounded, as usual.
- 136 (137). Lobes of pygophore ending in denticle. Anal tube very long. Gonopore apical (Figure 187, 3-6) 95. *Elymana*.
- 137 (136). Lobes of pygophore broadly rounded at apex. Anal tube not more than $1\frac{1}{2}$ times as long as broad. Gonopore dorsal, subapical.
- 138 (141). Aedeagus dorsoventrally flattened.
- 139 (140). Penis with processes only at apex (Figure 190, 18-32) 115. *Euscelis*.
- 140 (139). Penis with a pair of long processes at base of aedeagus. (Figure 191, 11,12) 117. *Coulinus*.
- 141 (138). Aedeagus more or less rounded.
- 142 (143). Head not broader than pronotum. Sides of pronotum diverging posteriad. Frontoclypeus $1\frac{1}{2}$ times as long as broad 114. *Euscelidius*.
- 143 (142). Head broader than pronotum. Sides of pronotum parallel. Frontoclypeus broader than long 113. *Laburrus*.
- 144 (131). Anal tube not sclerotized dorsally or with deep basal notch.
- 145 (146). Anal tube almost completely unsclerotized, small 82. *Phlepsius*.
- 146 (145). Anal Tube at least with well-sclerotized sides.
- 147 (150). Lobes of pygophore with processes.
- 148 (149). Penis without processes. Gonopore dorsal, subapical (Figure 188, 17,18). Vertex entering smoothly into face. Thickset 106. *Doliotettix*.
- 149 (148). Penis with processes. Gonopore apical (Figure 184, 13-27). Slender forms with more or less sharp anterior margin of vertex and often anteriorly prolonged head... 80. *Platymetopius*.
- 150 (147). Lobes of pygophore without processes, usually rounded.
- 151 (156). Genital plates with acute-angled or narrowly-rounded apex. Anal tube narrowing apically, its dorsal wall almost completely unsclerotized. Anterior margin of head rounded.
- 152 (153). Penis without processes, broad, short, with large gonopore (Figure 185, 22-26). Hemelytra with accessory veins 88. *Allygus*.
- 153 (152). Penis with processes, slenderer. Gonopore small.
- 154 (155). Penis with a pair of basal processes parallel to aedeagus (Figure 185, 16,17). Gonopore apical 85. *Idiodonus*.
- 155 (154). Penis with a pair of recurrent processes at apex. Gonopore dorsal, subapical (Figure 185, 20, 21) 87. *Lamprotettix*.
- 156 (151). Apex of genital plates narrow, obliquely-truncate. Anal tube long, cylindrical, its dorsal wall sclerotized in apical half. Head strongly projecting anteriorly, conical... 81. *Proceps*.
- 157 (124). Apex of genital plates broad, obliquely truncate; genital plates at inner margin much shorter than valve. Two or three macrochaetae on each genital plate (Figure 191, 14) 119. *Artianus*.
- 158 (117). Dorsal wall of anal tube sclerotized in form of triangular shield. Hemelytra much shortened 120. *Dudanus*.
- 159 (52). Apex of branches of connective fused or close together (Figure 166, 7-9).
- 160 (169). Aedeagus movably articulated with phallobase, short, with large subapical gonopore (Figure 183, 9,10,15-25). Apex of branches

- of connective close together. Connective long, with long base. (Tribe Doraturini).
- 161 (162). Ocelli on vertex, at some distance from its anterior margin. Formula of spines on apex of hind femora: 1 + 2 72. *Chiasmus*.
- 162 (161). Ocelli at anterior margin of vertex. Formula of spines at apex of hind femora: 1 + 2 + 2.
- 163 (166). Anterior margin of vertex sharp, carinate.
- 164 (165). Sides of pronotum with carina. Genital plates with numerous irregularly arranged macrochaetae 73. *Doraturopsis*.
- 165 (164). Sides of pronotum without carinae. Genital plates with isolated macrochaetae 74. *Doratura*.
- 166 (163). Vertex smoothly passing into face.
- 368 167 (168). Penis without processes. Lobes of pygophore with comb of denticles (Figure 183, 25) 75. *Aconurella*.
- 168 (167). Penis with ventral processes. Lobes of pygophore without denticles (Figure 183, 22-24) 76. *Aconura*.
- 169 (160). Aedeagus forming a unit with phallobase; if not, gonopore basal.
- 170 (175). Connective closely attached to phallobase, narrow; apex of branches of connective close together but not fused (Figure 183, 1-8). Sides of pronotum with carina. (Tribe Deltoccephalini).
- 171 (172). Apex of penis without denticles (Figure 183, 1) 68. *Deltoccephalus*.
- 172 (171). Apex of penis pointed or with a pair of denticles (Figure 183, 2-8).
- 173 (174). Apex of penis pointed (Figure 183, 2-6) 69. *Recilia*.
- 174 (173). Apex of penis with a pair of denticles (Figure 183, 7, 8) 70. *Endria*.
- 175 (170). Connective almost always free. Apex of branches of connective fused (Figure 166, 8,9). Sides of pronotum very rarely with carinae. (Tribe Jassargini).
- 176 (177). Formula of spines at apex of hind femora: 1 + 1 + 2 + 2 122. *Aglena*.
- 177 (176). Formula of spines at apex of hind femora: 1 + 2 + 2.
- 178 (241). Genital plates with entire outer margin, without incision.
- 179 (238). Macrochaetae on genital plates arranged in one marginal row. (Figures 192, 7,8; 194, 3,12,16,27; 197,10).
- 180 (193). Connective rocket-shaped, its base not broader than its branches, elongate, longitudinal (Figure 106, 9).
- 181 (182). Pygophore with a regular vertical row of short macrochaetae in addition to long ones. Anal tube well sclerotized dorsally 125. *Metalimnus*.
- 182 (181). Pygophore with more or less irregularly arranged setae of similar length. Anal tube dorsally membranous in a large part.
- 183 (192). Aedeagus symmetrical; styli small, with narrow, rounded apex.
- 184 (191). Genital plates either very short or fused along inner margin; the row of macrochaetae occupies not less than half the length of the outer margin of the genital plates (Figure 194, 3).
- 185 (188). Suture of genital plates markedly shorter than genital valve (Figure 194, 3).
- 186 (187). Genital plates rectangular-truncate at apex, their outer margin markedly concave in the middle 127. *Pantallus*.

- 187 (186). Genital plates obliquely truncate at apex, their outer margin almost straight. Suture of genital plates usually very short (Figures 193, 194,3)..... **130. Psammotettix.**
- 188 (185). Suture of genital plates not shorter than genital valve, usually markedly longer.
- 189 (190). Aedeagus without processes, slightly flattened dorsoventrally (Figure 192, 13,14)..... **128. Mogangina.**
- 190 (189). Sides of aedeagus with long processes at apex; aedeagus often laterally compressed (Figure 192, 15-20)..... **129. Arocephalus.**
- 191 (184). Genital plates long, divided almost from genital valve, their outer margin markedly concave in the middle. Row of macrochaetae at base of outer margin of genital plates less than half as long as outer margin (Figure 194, 12) **131. Cleptochiton.**
- 192 (183). Penis asymmetrical; dorsal side of aedeagus turned to the left (Figure 194, 13,14). Styli with thick ax-shaped apex with denticulated inner margin..... **132. Mogangella.**
- 193 (180). Connective without base or with broad short base, always broader than long, markedly broader than branches (Figure 166, 8).
- 194 (195). Base of connective jagged; connective V-shaped. Phallobase complex, horseshoe-shaped, its horns directed towards base of connective (Figure 192, 9)..... **126. Chelidinus.**
- 195 (194). Base of connective entire; phallobase whole or horseshoe-shaped, its horns directed away from connective.
- 196 (197). Vertex 2-2½ times broader than long..... **123. Paramesus.**
- 197 (196). Vertex not more than 1½ times as broad as long.
- 198 (199). Branches of connective close together at base **124. Paralimnus.**
- 199 (198). Branches of connective separated from base to apex.
- 200 (201). Penis asymmetrical. Genital plates triangular, with separate rounded apex. Styli with thickened apex (Figure 194, 15,16) **133. Ebarrius.**
- 201 (200). Penis symmetrical.
- 202 (203). Sides of aedeagus serrate-denticulate; aedeagus dorsoventrally flattened (Figure 194, 25-28)..... **137. Kasachstanicus.**
- 203 (202). Sides of aedeagus not serrate.
- 369 204 (215). Apex of genital plates broad, obliquely or rectangularly truncate (Figure 195, 21).
- 205 (214). Connective free.
- 206 (207). Penis with a pair of long slender processes branching from phallobase parallel to aedeagus (Figure 195, 3,4). Styli with truncate apex **139. Pleargus Em., gen. n.**
- 207 (206). Penis without process branching from phallobase.
- 208 (211). Styli flattened at apex, their posterior inner margin serrated (Figure 195, 20,21,26).
- 209 (210). Posterior margin of lobes of pygophore with denticles. With brown pigmentation..... **140. Jassargus.**
- 210 (209). Lobes of pygophore without denticles. Pale. Aedeagus short, with 2 anteriorly-directed denticles at apex (Figure 195, 24,25) **141. Mendraus.**
- 211 (208). Styli with smooth, not thickened apex. Apex of genital plates truncate.

- 212 (213). Ventral margin of lobes of pygophore with process. Aedeagus thick, with subapical leaf-shaped process which forms a collar (Figure 194, 21,22)..... **135. Turrutus.**
- 213 (212). Lobes of pygophore without processes. Sides of aedeagus irregularly serrate at apex (Figure 197, 8,9)..... **146. Rosenus.**
- 214 (205). Connective closely attached to phallobase. Pygophore without dorsal notch; lobes of pygophore without denticles. Aedeagus slender, with a pair of apical processes (Figure 195, 1,2)..... **138. Mongolojassus.**
- 215 (204). Apex of genital plates broadly rounded together or narrowly rounded separately.
- 216 (217). Aedeagus clearly distinct from phallobase, divided into right and left lobes almost to the base; gonopore at the base, between lobes of aedeagus (Figure 195, 27,28)..... **142. Pinumius,**
- 217 (216). Aedeagus entire; gonopore not basal.
- 218 (227). Outer margin of genital plates convex, often angular (Figure 197, 1,10).
- 219 (222). A broad, transverse sclerotized plate laterally covering phallobase between phallobase and anal tube (Figure 197, 25-29).
- 220 (221). Anal tube without appendages; process of lobe of pygophore (if present) ventral **151. Palus.**
- 221 (220). Base of anal tube with ventral appendage; process on lobe of pygophore posterodorsal **150. Coelestinus.**
- 222 (219). No such plate, or plate not broader than phallobase.
- 223 (226). Lobes of pygophore with processes. Aedeagus slender.
- 224 (225). Lobes of pygophore irregularly covered with setae; process originating at margin of lobe of pygophore **147. Sorhoanus.**
- 225 (224). Lobes of pygophore with 2 pairs of dense brushes of long setae. Process on lobes of pygophore originating on inner wall, some distance from margin..... **148. Chloothea.**
- 226 (223). Lobes of pygophore without processes. Aedeagus relatively short, and thick (Figure 197, 19,20) **149. Rhoananus.**
- 227 (218). Genital plates with concave outer margin.
- 228 (229). Gonopore dorsal, in middle of aedeagus. Middle part of aedeagus sinuous (Figure 197, 1,2). Vertex much prolonged anteriorly, about twice as long as pronotum **153. Enantiocephalus.**
- 229 (228). Gonopore apical or subapical. Aedeagus not sinuous. Vertex usually not longer than pronotum.
- 230 (235). Styli of ordinary shape (Figures 195,31; 197,30).
- 231 (232). Apex of styli curved inward (Figure 197, 31). Hemelytra with supplementary veins..... **143. Parargus.**
- 232 (231). Apex of styli curved outward, as usual. Hemelytra without supplementary veins.
- 233 (234). Genital plates short, their outer margin strongly concave. Penis thick, without denticles. Gonopore dorsal, subapical, forming a longitudinal slit (Figure 194, 23,24) **136. Philaia.**
- 234 (233). Genital plates slender, along their outer margin weakly concave. Penis slender, with a pair of apical processes. Gonopore oval, apical (Figure 197, 30-32)..... **152. Praganus.**
- 235 (230). Styli forming right angle, their outer arm prolonged in form of denticle (Figure 198, 15,16,20).

- 236 (237). Aedeagus with processes (Figure 198, 1-14, 17). Pygophore with deep dorsal notch **154. Mocuellus.**
- 370 237 (236). Aedeagus simple, without processes (Figure 198, 18,19). Pygophore without dorsal notch **155. Henschia.**
- 238 (179). Macrochaetae on genital plates irregular (Figures 196, 1,6; 197, 1).
- 239 (240). Lobes of pygophore with very long crossed processes (Figure 197, 2-4) **145. Arthaldeus.**
- 240 (239). Lobes of pygophore without processes. Apex of genital plates often crossed **134. Adarrus.**
- 241 (178). Outer or posterior margin of genital plates with notch (Figure 196, 1,6) **144. Diplocolenus.**
- 242 (37). Distance between ocelli not more than twice as long as distance of ocelli from eyes. Carinae present dorsal to antennae, or venation of hemelytra reduced.
- 243 (266). Venation complete. Vertex usually little marked. Oblique carinae present dorsal to antennae.
- 244 (245). Appendage of wings broad, membranous (Figure 172, 8,9). Always macropterous. (Subfamily Idiocerinae) ... **15. Idiocerus.**
- 245 (244). Appendage of wings narrow, leathery; sometimes brachypterous.
- 246 (255). Pronotum projecting angularly anteriorly. Carinae dorsal to antennae, sharp; antennae lying in deep fossae. (Subfamily Macropsinae).
- 247 (248). Grooves on pronotum parallel to posterior margin, present at least in posterior half of pronotum **4. Oncopsis.**
- 248 (247). Grooves on pronotum oblique, forming an angle with posterior margin of pronotum.
- 249 (250). Anal tube with appendage. Pronotum markedly projecting anteriorly; middle of vertex completely covered by pronotum in dorsal view **5. Pediopsis.**
- 250 (249). Anal tube without appendage. Pronotum not so strongly projecting anteriorly; vertex completely visible dorsally.
- 251 (252). Lobes of pygophore with long processes at their posterior margin directed toward base **6. Macropsis.**
- 252 (251). Lobes of pygophore with or without short process.
- 253 (254). Grooves on pronotum slightly oblique, almost transverse in the middle **7. Hephathus.**
- 254 (253). Grooves on pronotum strongly oblique **8. Macropsidius.**
- 255 (246). Pronotum anteriorly uniformly arcuate-convex or straight. Supra-antennal carinae weakly developed. (Subfamily Agalliinae).
- 256 (261). Hemelytra without supplementary veins; if supplementary veins are present, process on posterior margin of vertex near inner margin of eyes small, and notch at anterior margin of pronotum in front of process not marked. (Tribe Agalliini).
- 257 (258). Penis asymmetrical (Figure 171, 23,24) **10. Peragallia.**
- 258 (257). Penis symmetrical.
- 259 (260). Penis with long branched processes at apex (Figure 171, 21,22) **9. Dryodurgades.**
- 260 (259). Penis without processes (Figure 171, 25-32) **11. Agallia.**
- 261 (256). Hemelytra with network of supplementary veins. Posterior margin of vertex always with process near inner margins of

- eyes; anterior margin of pronotum always with angular concavity posterior to this process. (Tribe Melicharellini).
- 262 (263). Posterior margin of vertex thickened in form of cylinder. Apex of hemelytra angular. Head and pronotum bare **12. Melicharella.**
- 263 (262). Posterior margin of vertex narrow. Vertex and pronotum forming a single convex surface. Apex of hemelytra rounded. Head and pronotum covered with hair.
- 264 (265). Pronotum less than twice as broad as long. Eyes projecting slightly on sides of pronotum **13. Platypsectus.**
- 265 (264). Pronotum more than twice as broad as long. Eyes markedly projecting at sides of pronotum **14. Symphygga.**
- 266 (243). Venation reduced; cross veins present only in apical part of hemelytra. Supra-antennal carinae lacking. (Subfamily Typhlocybinae).
- 267 (268). Fore wings with appendage (Figure 164, 6). (Tribe Alebrini) **31. Alebra.**
- 268 (267). Fore wings without appendage (Figure 164, 2-5).
- 269 (276). Hind wings with ambient vein extending beyond apex of R+M. (Figure 164, 11). (Tribe Dikraneurini).
- 270 (275). Penis with one aedeagus and one gonopore.
- 271 (272). Genital plates divided at apex **33. Dicranoneura.**
- 272 (271). Genital plates with simple apex.
- 273 (274). Apical cells of fore wings together broader than long. Thickset species **35. Erythria.**
- 274 (273). Apical cells of fore wings together longer than broad (Figure 164, 4). Slender species **34. Dikraneura.**
- 275 (270). Penis with 2 aedeagi and 2 gonopores (Figure 174, 5,6) **32. Notus.**
- 371 276 (269). Hind wings without ambient vein apically or with ambient vein not reaching beyond apex of posterior branch of R or R+M (if they are fused) (Figure 164, 7-10).
- 277 (284). Anal vein simple (Figure 164, 13). Stylus bidenticulate at apex, with subapical process (Figures 178, 28; 179, 4,7,9,11,12,17). (Tribe Erythroneurini).
- 278 (279). Lobes of pygophore with dorsal and ventral processes. Posterior part of phallobase longer than aedeagus (Figure 178, 27) **51. Alnetoidia.**
- 279 (278). Lobes of pygophore with or without processes. Posterior part of phallobase shorter than aedeagus.
- 280 (283). Apex of stylus expanded in the form of an ax, more or less symmetrical. No subapical denticle on inner margin of stylus. (Figure 179, 12,17).
- 281 (282). Lobes of pygophore with simple straight or forked process **54. Zygina.**
- 282 (281). Process of lobes of pygophore markedly hooked (Figure 179, 1,2) **52. Helionidia.**
- 283 (280). Apex of stylus usually bidenticulate and asymmetrical; inner margin of stylus with sharp subapical denticle (Figure 179, 7,9,11) **53. Erythroneura.**

- 284 (277). Anal vein forked (Figure 164, 7-10). Stylus without distinct subapical lobe and without apical process. (Tribe Typhlocybini).
- 285 (292). Hind wings with ambient vein (Figure 164, 10).
- 286 (287). Anterior margin of vertex parallel to posterior margin or only slightly more curved. Genital plates curved dorsad, with numerous long macrochaetae 36. *Kybos*.
- 287 (286). Vertex in the middle markedly longer than near eyes; anterior margin of vertex not parallel to posterior margin. Genital plates not strongly curved dorsad, often almost straight, without or with a few macrochaetae.
- 288 (289). Apical veins of hemelytra all originating in distal part of median cell (Figure 164, 5). Anal tube and pygophore with processes. 37. *Kyboasca*.
- 289 (288). Venation of hemelytra normal.
- 290 (291). Lobes of pygophore without processes. Costal cell shorter than brachial cell 38. *Chlorita*.
- 291 (290). Pygophore with long appendages. Costal cell as long as brachial cell. Penis simple, without appendages (Figure 175, 22) 39. *Empoasca*.
- 292 (285). Hind wings without ambient vein (Figure 164, 7-9).
- 293 (302). Hind wings with 3 apical cells (Figure 164, 8).
- 294 (295). Apex of hemelytra obliquely, concavely truncate (Figure 176, 1). Lobes of pygophore with ventrally-directed denticles 40. *Eupteroidea*.
- 295 (294). Apex of hemelytra rounded, without notch (Figure 164, 2).
- 296 (301). Penis symmetrical.
- 297 (298). Apical cells forming the broadest part of the hemelytra. Apex of styli pointed and curved. 42. *Eurhadina*.
- 298 (297). Hemelytra broadest in middle (Figure 164, 2). Inner side of styli with subapical denticle (Figure 176, 16).
- 299 (300). Apical lobes of genital plates directed obliquely dorsad 43. *Wagneripteryx*.
- 300 (299). Genital plates uniformly curved, without such lobes 44. *Eupteryx*.
- 301 (296). Penis asymmetrical (Figure 176, 3) 41. *Asymmetropteryx*.
- 302 (293). Hind wings with 1 or 2 apical cells (Figure 164, 7, 9).
- 303 (304). Ambient vein of hind wings uniformly arcuate before joining Cu, not branched (Figure 164, 9) 45. *Zyginella*.
- 304 (303). Ambient vein of hind wings sharply bent at an angle before joining Cu, with a short branch at the bend (Figure 164, 7).
- 305 (306). Stylus with subapical perpendicular denticle (Figure 177, 17). Genital plates without setae or hairs 46. *Linnavuoriana*.
- 306 (305). Styli without perpendicular denticle. Genital plates often with one or several macrochaetae.
- 307 (310). Genital plates without macrochaetae.
- 308 (309). Penis with rudimentary aedeagus; phallobase with a pair of processes at sides of gonopore (Figure 177, 23, 24). Lobes of pygophore without ventrally-directed process 47. *Ossiannilssonola*.

- 309 (308). Penis with small straight aedeagus, without processes (Figure 177, 20, 21). Lobes of pygophore with ventrally-directed process 48. *Fagocyba*.
- 310 (307). Genital plates with one or several macrochaetae.
- 372 311 (312). Genital plates with only one macrochaeta at the base. Styli simple, pointed (Figure 177, 26) 49. *Typhlocyba*.
- 312 (311). Genital plates with several macrochaetae in the middle and at the base. Styli with angular subapical process 50. *Ribautiana*.

Keys to Species of Family Cicadellidae

Subfamily ULOPINAE

1. *Ulopa* Fall. Genus comprising 2 species.
- 1 (2). Vertex in the middle only $1\frac{1}{2}$ times as long as near eyes. Anterior margin of vertex uniformly curved, only slightly more strongly curved near eyes. Male light, whitish; vertex with 2 dark brown spots; pronotum with 4 dark spots; hemelytra with dark brown longitudinal stripes and veins apically; female brown. 3-4. South. On *Echium vulgare*... *U. trivia* Germ.
- 2 (1). Vertex in the middle twice as long as near eyes. Anterior margin of vertex straight in the middle, strongly convex near eyes. Brown; vertex with 2 dark spots; hemelytra with 3 oblique dark bands and between them 2 light bands. 3-4. North, Center. On *Calluna vulgaris* *U. reticulata* F.

Subfamily MEGOPHTHALMINAE

2. *Megophthalmus* Curt. — 1 or 2 species.
- 1 (1). Vertex short, its anterior margin carinate; from the middle of the anterior margin of the vertex diverge frontal carinae which converge slightly ventral to the antennae; transverse carinae passing dorsal to antennae, which abut on the frontal carinae. Brown; face with dark spots; vertex with 3 dark spots; hemelytra with darker veins. 2.5-4 (Figure 171, 1-3) *M. scanicus* Fall.

Subfamily LEDRINAE

3. *Ledra* F. Pronotum with a pair of markedly projecting, ear-shaped longitudinal combs. On bark of various broad-leaved trees. — 1 species.
- 1 (1). Dorsum dirty-brown, rough, with depressed dark spots, and with some reddish granules; hemelytra semitransparent at apex, with network of brownish veins; venter yellowish. 13-17. South *L. aurita* L.

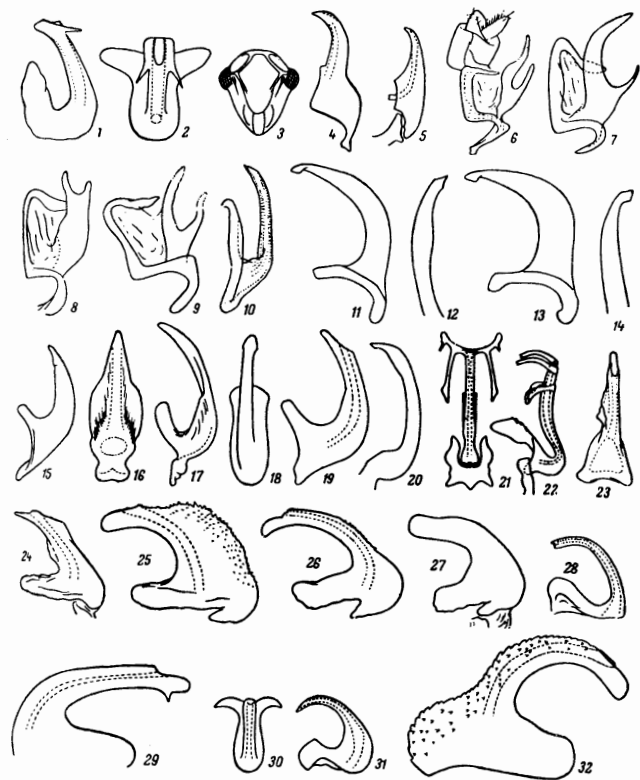


FIGURE 171. Cicadinea. Family Cicadellidae. Details of male genitalia and other characters (after Vilbast(?), Diabola, Ribaut and original)

1-3—*Megophthalmus scanicus*: 1—penis, lateral; 2—same, dorsal; 3—face; 4—*Oncopsis flavicollis*, penis, lateral; 5,6—*O. alni*: 5—same; 6—anal tube and its appendages; 7—*O. tristis*, same; 8—*O. subangulata*, same; 9—*O. flavicollis*, same; 10—*Pediopsis tiliæ*, penis, lateral; 11,12—*Macropsis eleagni*: 11—same; 12—apex of stylus; 13,14—*M. sibirica*: 13—penis, lateral; 14—apex of stylus; 15—*Hephathus nanus*, penis, lateral; 16,17—*Macropsidis dispar*, penis: 16—dorsal; 17—lateral; 18-20—*M. abrotani*: 18—same, dorsal; 19—same, lateral; 20—stylus; 21,22—*Dryodurgades reticulatus*, penis: 21—dorsal; 22—lateral; 23,24—*Peragallia sinuata*, same: 23—dorsal; 24—lateral; 25—*Agallia venosa*, same, lateral; 26—*A. ribauti*, same; 27—*A. laevis*, same; 28—*A. consobrina*, same; 29—*A. vorobjevi*, same; 30,31—*A. brachyptera*, same: 30—dorsal; 31—lateral; 32—*A. estonica*, same.

Subfamily **MACROPSINAE**

4. **Oncopsis** Burm. Brown, with dark brown pattern; hemelytra brownish, with dark brown veins. Color very variable. Mainly on trees of the family Betulaceae. — More than 4 species.

- 1 (4). Dorsal margin of penis convex or slightly concave (Figure 171, 5).
 - 2 (3). Dorsal branch of appendage of anal tube slightly curved dorsad, sometimes straight. 5-6.15. On alder (Figure 171, 5,6) *O. alni* Schrk.
 - 3 (2). Dorsal branch of appendage of anal tube curved ventrad. 3.75-4.55. On birch (Figure 171, 7) *O. tristis* Zett.
 - 4 (1). Dorsal margin of penis saddle-shaped, markedly concave (Figure 171, 4).
 - 5 (6). Branches of appendage of anal tube very similar, shorter than base of fork. 4.7-5.5. On birch and alder (Figure 171, 8) *O. subangulata* J. Shlb.
 - 6 (5). Dorsal branch of appendage of anal tube much longer than ventral branch; base of fork shorter than branches. 4.45-5.4. On birch, hazelnut, alder, linden (Figure 171, 4,9) *O. flavicollis* L.
5. **Pediopsis** Burm. — 1 species.

- 1 (1). Pronotum and head greenish yellow; scutellum and hemelytra brown. 5.1-5.85. On linden (Figure 171, 10) *P. tiliæ* Germ.

374 6. **Macropsis** Lew. On trees and shrubs. — More than 17 species.

- 1 (14). Apex of styli truncate.
- 2 (5). Prothoracic episternum with pointed posterior angle.
- 3 (4). Clavus with transverse vein closely in front of inner angle of clavus. Head, pronotum and scutellum yellow or greenish brown; scutellum with dark triangles in the lateral corners; hemelytra reddish brown, in female often with light border at costal margin. 3.9-4.6. South. On *Ulmus* spp. *M. mendax* Fieb.
- 4 (3). Transverse vein of clavus markedly anterior to inner angle of clavus. Resembling *M. mendax* Fieb. 4.4-5.5. On *Ulmus* spp. *M. glandacea* Fieb.
- 5 (2). Prothoracic episterna with broadly-rounded posterior corner.
- 6 (7). Middle part of penis in profile markedly dilated. Apex of styli markedly prolonged. Thickset. Grayish yellow; face with 3 black spots near dorsal margin, one pair of black spots near ocelli and one pair of large oblong black spots on ventral part of frontoclypeus. Pronotum with 3 spots near anterior margin. Scutellum with black triangles on lateral angles and 4 additional spots in the middle. Hemelytra grayish, semitransparent, with brown veins. 3-3.6. Southeast. On *Spiraea hypericifolia*. (Figure 171, 13,14) *M. sibirica* Kuzn.
- 7 (6). Penis narrow. Apex of styli not prolonged.
- 8 (9). Styli with marked subapical dilatation. Slender. Pale, bluish green; hemelytra semitransparent. 3.2-4.4. South. On *Eleagnus angustifolia* (Figure 171, 11,12) *M. elaeagni* Em.

HOMOPTERA

- 9 (8). Styli without subapical dilatation.
- 10 (11). Outer margin of lorae markedly converging ventrad. Supra-antennal carina usually with black spot ventral to basis of antennae *M. tibialis* Scott.
- 11 (10). Outer margins of lorae parallel. Supra-antennal carina without spot or rarely with spot at level of basis of antennae.
- 12 (13). Claval suture light; lorae usually with spot on ventral margin. Yellowish gray; face with 2 dark spots near dorsal margin, 2 dark spots near ocelli, one dark spot in the middle and 2 oblong dark spots on ventral part of frontoclypeus; pronotum with a pair of irregular spots near anterior margin; scutellum with 3 spots near anterior margin and 2 small spots anterior to groove; hemelytra often with brown veins. 4.1-5.2. On raspberry (*Rubus idaeus*) *M. fuscula* Zett.
- 13 (12). Claval suture dark; lorae completely light. Resembling *M. fuscula* Zett. 4.3-5.4. On willow *M. scutellata* Boh.
- 14 (1). Apex of styli not truncate, pointed or bluntly rounded. Penis in profile usually broader in the middle than at the base. Other species on willow and poplar.
7. *Hephathus* Rib. — 1 species.
- 1 (1). Head, pronotum and scutellum with well-marked black pattern; hemelytra transparent, dove-gray; veins black. 3-4.2. On Compositae (Figure 171, 15) *H. nanus* H.-S.
8. *Macropsidius* Rib. On *Artemisia*. — 4 species.
- 1 (2). Aedeagus dorsoventrally flattened and widened. Gray, with black spots on head, pronotum and scutellum; hemelytra with indistinct longitudinal stripes. 3.3-4.1. South. On *Artemisia* spp. (Figure 171, 16, 17) *M. dispar* Fieb.
- 2 (1). Aedeagus not dorsoventrally flattened, widened at apex. Resembling *M. dispar* Fieb., but with stronger pigmentation. 2.9-3.8. Center, South. On *Artemisia abrotanum* (Figure 171, 18-20) *M. abrotani* Em., sp.n.

Subfamily AGALLIINAE

9. *Dryodurgades* Zachv. — 1 species.
- 1 (1). Grayish brown, with black pattern, mainly on head and scutellum. Hemelytra grayish, with brown veins and a network of supplementary veins. 3.9-4.4. South. On trees (Figure 171, 21, 22) *D. reticulatus* H.-S.
- 375 10. *Peragallia* Rib. — 1 species.
- 1 (1). Slender, whitish, dull. Vertex and posterior margin of pronotum with a pair of black round spots. 2.9-3.9. South (Figure 171, 23, 24) **P. sinuata* M.R.
11. *Agallia* Curt. — Not less than 8 species.
- 1 (10). Apex of penis thick; gonopore dorsal, subapical, markedly distant from apex (Figure 171, 25-27, 29, 32). Light brown, with more or

CICADELLIDAE

- less marked dark brown pattern; a pair of black spots always present on vertex, as well as a pair of black spots near anterior margin of pronotum and triangular spots on scutellum; hemelytra with dark veins.
- 2 (3). Process of anal tube with forked apex. Aedeagus with ventral subapical denticle. 3.2-3.8. Ciscaucasia (Figure 171, 29) *A. vorobjevi* Dlab.
- 3 (2). Process of anal tube with a single apex, its margins irregular, Aedeagus without apical denticles.
- 4 (9). Dorsal wall of aedeagus with denticles.
- 5 (6). Dorsum of aedeagus with a high rasp-shaped comb. 2.5-3.3. (Figure 171, 25) *A. venosa* Fall.
- 6 (5). Aedeagus without comb; denticles standing directly on dorsal wall of aedeagus.
- 7 (8). Aedeagus with denticles from gonopore to connective. Apex of appendage of anal tube broad, obliquely truncate. 2.5-4.1. Estonia (Figure 171, 32) *A. estonica* Vilb.
- 8 (7). Only basal half of aedeagus with denticles. Appendage of anal tube forked at apex. 2.5-3.3 (Figure 171, 26) *A. ribauti* Oss.
- 9 (4). Dorsal wall of aedeagus completely smooth. 2.5-3.3. South (Figure 171, 27) *A. laevis* Rib.
- 10 (1). Gonopore apical or subapical (near the apex); apex narrow and pointed (Figure 171, 28-31).
- 11 (14). Process of anal tube simple, pointed.
- 12 (13). Gonopore apical. Macropterous. Gray; vertex with a pair of black spots; lateral corners of scutellum with triangular spots; cells of clavus of hemelytra and part of those of corium darkened. 3.3-3.9. On nettle (Figure 171, 28) *A. consobrina* Curt.
- 13 (12). Gonopore subapical, dorsal. Hemelytra markedly shortened, truncate. Gray, with black pattern; hemelytra with longitudinal stripes; abdomen with transverse stripes. 2.5-3.3. (Figure 171, 30, 31) *A. brachyptera* Boh.
- 14 (11). Process of anal tube with truncate apex, with pointed corners. Vertex and pronotum transverse, more or less rectangular. Hemelytra markedly shortened and truncate. Male with black pattern; hemelytra with longitudinal stripes; pronotum and abdomen almost completely black; female brown, with traces of dark pattern. 3.5-4.3. Carpathians *A. carpathica* Mel.
12. *Melicharella* Sem. In deserts, on various species of *Calligonum*. — 1 species.
- 1 (1). Face brownish; vertex light, with 3 brown spots. Pronotum light, with interrupted brown band. Hemelytra with brown transverse triangular spot in anterior third (near costal margin) and light veins in anterior half of hemelytra on the outside of spots. Posterior half of hemelytra with brown spots and brown veins. 4.8-6. Deserts in the Caspian area *M. planifrons* Mel.
13. *Platyproctus* Lindb. In deserts, on various species of *Calligonum*. — 1 species.

- 1 (1). Without pattern; pale, dull, yellowish or with brown or black marbled pattern. 4.5-5.5. Caspian region and Dagestan *P. flaveolus* Lindb.
14. *Symphypyga* Hpt. In deserts. — 1 species.
- 1 (2). Pale, pinkish, without pattern. 6.5-7. Sands in southern Trans-Volga region (Urda, Dosang). On species of *Calligonum*..... *S. rubicunda* Em., sp.n.
- 2 (1). Pale, yellowish green, without pattern. 6.3-7.2. Deserts of Soviet Central Asia. On *Eremosparton aphyllum* *S. obsoleta* Hpt.

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Subfamily IDIOCERINAE

15. *Idiocerus* Lew. On trees and shrubs, mainly on willow and poplar. — About 30 species.
- 1 (2). Aedeagus without processes. Face markedly convex, almost vertical. Venter and head light brown, with brown pattern; vertex with a pair of black spots on the sides; pronotum and scutellum brownish black, with yellowish spots; hemelytra with brownish black veins and brown cells (especially on clavus). M and apex of A with white spots. 4-4.55. Crimea. On *Prunus spinosa* (Figure 172, 1,2) *I. notatus* F.
- 2 (1). Aedeagus with a pair of processes. Face slanting, more or less flat.
- 3 (4). Vertex dotted. Genital plates reduced, shortened, completely covered by pregenital sternum. Brownish; face with brown spots, ventrally with large dark spot; pronotum with dark spots near anterior margin; scutellum with dark pattern; hemelytra grayish; veins dark; apex of A_1 with white spot. 5.0. On willow *I. salicicola* Fl.
- 4 (3). Vertex covered with transverse grooves. Genital plates well developed.
- 5 (8). Pronotum with coarse transverse grooves. Processes of aedeagus curved dorsad in profile (Figure 172, 3).
- 6 (7). Processes of aedeagus converging. Apex of styli with 3 short thick setae. Dorsal margin of vertex with dark band. Male yellowish; pronotum with brown reticulate pattern; hemelytra transparent, with some brown spots; veins yellowish; female orange-yellow; dorsum reddish brown. 5.5-7.5. On *Populus niger*, willow, etc. (Figure 172, 3,4) *I. decimusquartus* Schrk.
- 7 (6). Apex of processes of aedeagus diverging. Styli without thick setae. Dorsal margin of vertex with black band; male yellowish green; pronotum dark brown, with light speckles; hemelytra dark brown, with 3 bands consisting of fused light spots; female ventrally yellowish, dorsally reddish brown, often with traces of bands like those of the male. 5.7-6.5. South. On black poplar *I. nobilis* Fieb.
- 8 (5). Pronotum shagreened, without transverse grooves. Processes of aedeagus not curved dorsad in profile (Figure 172, 7,11,13,14, 17,19,21,23).

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- 9 (10). Margin of male genae markedly concave and broadly truncate near apex of anteclypeus. Rich-green, with brown spots on scutellum and at inner margin of hemelytra. 4.15-4.8. On various species of *Populus* (Figure 172,5) *I. ustulatus* M.R.
- 10 (9). Margin of genae convex, straight or slightly concave, not broadly truncate near apex of anteclypeus.
- 11 (38). Styli with 1-10 thick subapical setae which are markedly longer than the other setae. Male antennae with lamellar dilatation at apex.
- 12 (13). Styli with 8-10 thick setae. Processes on aedeagus markedly arcuate. Vertex with a pair of round black spots; scutellum with a pair of spots in the lateral corners; hemelytra dark, with light veins; apical vein and R brown. 4-4.1. On *Populus alba*, etc. (Figure 172, 6,7) *I. ocellaris* M.R.
- 13 (12). Styli with not more than 3 thick setae. Processes of aedeagus almost straight (Figure 172, 10-24).
- 14 (21). Apex of styli with only one thick seta.
- 15 (16). Epipleura of hemelytra step-like denticulate. Anterior ends of 3 outer apical cells almost on the same level. Head and venter yellowish; pronotum with dark brown fused spots; scutellum with black spots; hemelytra with brown veins; basal cells of hemelytra dark; apical cells transparent. 6.1-7.2. Mainly on willow (Figure 172, 9-11) *I. stigmatalis* Lew.
- 16 (15). Epipleura smooth or almost smooth. Anterior end of outer apical cell markedly anterior to anterior end of the next apical cell (Figure 172, 8).
- 17 (18). R dark brown, with light spots. Grayish yellow; some black spots on face, sides of vertex, anterior margin of pronotum and scutellum; hemelytra transparent, veins brown, with some white spots. 6.15-6.4. On willow (Figure 172, 12,13) *I. herrichi* Kbm.
- 18 (17). R completely brown.
- 19 (20). Outer subapical cell markedly widened before posterior end (in area of contact with costal margin). Anterior end of outer apical cell well posterior to level of apex of clavus. Resembling *I. stigmatalis*. 5.3-6. On willow *I. varius* F.
- 377 20 (19). Outer subapical cell not markedly widened posteriorly, completely separated from costal margin by subcostal cell. Anterior end of outer apical cell only slightly posterior to level of apex of clavus; venter and face yellowish; vertex of male with interrupted dark brown band. Pronotum dark brown, with some light spots; scutellum with black spots; hemelytra transparent, with dark brown veins. Apex of A_1 with white spot; traces of brown band sometimes present anterior to apex of clavus, near inner margin of wing; female lighter. 5.35-6.6. On willow (Figure 172, 8) *I. lituratus* Fall.
- 21 (14). Styli with 2 or 3 thick apical setae.
- 22 (31). Apex of aedeagus cylindrical, obliquely cut by opening of gonopore. Processes of aedeagus long, markedly diverging (Figure 172, 16-19).

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- 23 (28). Styli with 2 thick apical setae.
 24 (27). Scutellum without dark spots in lateral corners.
 25 (26). Ventral margin of genital plates straight or convex before apex. Yellowish green; clavus often darkened, with light spot on apex of A_1 . 5.1-6.75. On willow and *Populus alba*. **I. confusus** Fl.
- 26 (25). Ventral margin of genital plates slightly concave before apex. Resembling *I. confusus* Fl. 5.1-6.75. Crimea, Transcarpathian Region. On *Populus nigra*, sometimes on willow (Figure 172, 16,17) **I. fulgidus** F.
- 27 (24). Scutellum with dark triangular spots in lateral corners. Ventral margin of genital plates markedly concave before apex. Venter, head and anterior margin of pronotum yellowish green. Hemelytra dark brown, with light spot on apex of A_1 and light band posterior to apex of clavus. 5.55-6.55. On aspen and willow. **I. laminatus** Fl.
- 28 (23). Styli with 3 thick apical setae. Ventral margin of genital plates always straight.
 29 (30). Hemelytra dull, grayish or greenish, whitish; anterior part of body of the same color as the hemelytra; posterior part of pronotum and clavus, except apex of A_1 , sometimes brownish in male. 5.2-6.65. On white poplar. **I. albicans** Kbm.
- 30 (29). Hemelytra shiny. Venter and head yellowish; pronotum and hemelytra brown. Apex of A_1 with light spot. 4.8-6.3. On aspen, white poplar, etc. (Figure 172, 18,19) **I. populi** L.
- 31 (22). Apex of aedeagus more or less flattened; gonopore markedly distant from apex of aedeagus; processes of aedeagus short, diverging a little (Figure 172, 20-24).
 32 (35). Processes of aedeagus situated anterior to gonopore (Figure 172, 20,21). Margin of frontoclypeus strongly convex ventral to antennae.
 33 (34). Anterior margin of vertex markedly more convex in the middle than at the sides. Vertex with oblique dark stripes near eyes; dorsal part of face with black longitudinal spot; vertex and pronotum with brown speckled pattern. Veins of hemelytra brown, with white speckles; cells transparent; apex of A_1 with white spot. 6.15-6.45. On maple. **I. heydeni** Kbm.
- 34 (33). Anterior margin of vertex uniformly convex. No stripes on vertex near eyes. Resembling *I. heydeni* Kbm. 5.1-5.8. On maple (Figure 172, 20,21) **I. vittifrons** Kbm.
- 35 (32). Processes of aedeagus situated posterior to gonopore (Figure 172, 22-24). Margin of frontoclypeus ventral to antennae almost straight.
 36 (37). Distance of ocelli from each other about equal to their distance from antennae. R completely brown; venter and head yellowish; in male black spot at border between face and vertex; pronotum brown, its anterior margin black in the male; hemelytra brown, with dark brown veins; apex of A_1 with light spot; an indistinct light band present beyond apex of clavus. 5.35-5.85. On willow. (Figure 172, 22,23) **I. elegans** Fl.

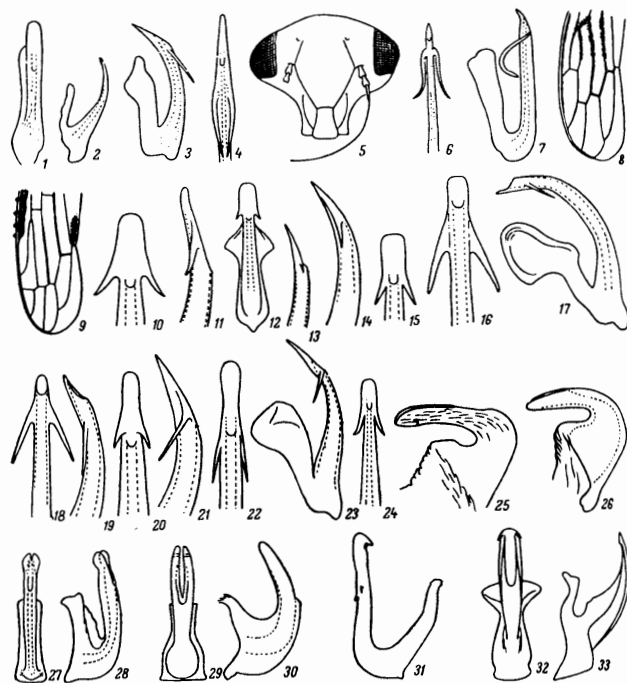


FIGURE 172. Cicadines. Family Cicadellidae. Details of male genitalia and head (after Zakhvatkin, Ribaut and original)

1,2-*Idiocerus notatus*, penis: 1-dorsal; 2-lateral; 3,4-*I. decimusquartus*, same: 3-lateral; 4-apex of penis, dorsal; 5-*I. ustulatus*, face; 6,7-*I. ocularis*, penis: 6-dorsal; 7-lateral; 8-*I. lituratus*, apex of hemelytra; 9-11-*I. stigmatalis*: 9-same; 10-apex of penis, dorsal; 11-same, lateral; 12,13-*I. herrichi*, penis: 12-dorsal; 13-apex, lateral; 14,15-*I. cupreus*, same: 14-lateral; 15-apex, dorsal; 16,17-*I. fulgidus*, same: 16-apex, dorsal; 17-lateral; 18,19-*I. populi*, same: 18-apex, dorsal; 19-apex, lateral; 20,21-*I. vittifrons*, same: 20-apex, dorsal; 21-apex, lateral; 22,23-*I. elegans*, same: 22-apex, dorsal; 23-lateral; 24-*I. distinguendus*, apex of penis, dorsal; 25-*Jassus lanio*, penis, lateral; 26-*J. scutellaris*, same; 27,28-*Batrachomorphus prasinus*, penis: 27-dorsal; 28-lateral; 29,30-*B. irroratus*, same: 29-dorsal; 30-lateral; 31-*Selenocephalus griseus*, same, lateral; 32,33-*S. pallidus*, same: 32-dorsal; 33-lateral.

- 37 (36). Ocelli much further from each other than from antennae. R with some white spots; yellowish gray, with brown pattern; veins of hemelytra dark brown, with white spots; basal 2/3 of hemelytra brownish; white spots at apex of A_1 and on corium at apex of clavus. 4.8-5.2. On black poplar and willow. . . . *I. poecilus* H.-S.
- 38 (11). Styli without thick setae. Male antennae without dilatation.
- 39 (40). Segmented, thickened part of antennal flagellum dark brown. Male scutellum with a pair of black triangular spots in lateral corners. Greenish yellow; hemelytra often with brown band, brownish. 4.55-5.35. On black poplar, etc. Crimea. . . . *I. vitreus* F.
- 40 (39). Antennae completely light. Scutellum of male without black triangular spots in lateral corners.
- 41 (44). M in apical part of hemelytra almost completely white. Veins of hemelytra clearly marked.
- 42 (43). Sides of vertex without a pair of dark round spots. Subapical band of clavus reaching costal margin of hemelytra. Brownish; anterior part of body with brown spots; hemelytra transparent, with brown veins and brown band in the middle. 4.6-5.25. On aspen, black poplar, etc. . . . *I. tremulae* Estl.
- 379 43 (42). Sides of vertex with a pair of black or dark brown round spots. Band in middle of hemelytra not reaching costal margin. Resembling *I. tremulae* Estl. 4.35-5.1. On white poplar, etc (Figure 172, 24). . . . *I. distinguendus* Kbm.
- 44 (41). M of hemelytra yellow or light brown throughout hemelytra. Veins of hemelytra usually weakly marked, especially near outer margin.
- 45 (46). Sides of vertex without a pair of dark spots. Proximal corner of clavus white, of the same color as apex of A_1 . R distinct. Brownish; hemelytra with several light spots sometimes fused into a band. 4.55-5.35. On black poplar. . . . *I. mesopyrrhus* Kbm.
- 46 (45). Sides of vertex with a pair of black spots. Proximal corner of clavus and A_1 without white spots. R almost unrecognizable. Brownish, without pattern; apex of A_1 sometimes whitish. 4.8-5.3. Crimea. On poplar (Figure 172, 14,15). . . . *I. cupreus* Kbm.

Subfamily JASSINAE

16. *Jassus* F. On broadleaved trees. — 2 species. In the whole U.S.S.R. 4 species.
- 1 (2). Lateral margins of aedeagus subapically concave. Vertex as long in the middle as near the eyes. Green; vertex, pronotum and scutellum or whole dorsum with brown spots. 7-8.5. Center, South. On oak (Figure 172, 25). . . . *J. lanio* L.
- 2 (1). Lateral margins of aedeagus subapically convex. Vertex slightly longer in the middle than near the eyes. Green; vertex, pronotum and scutellum with red speckles. 7-8. South. On species of *Ulmus* (Figure 172, 26). . . . *J. scutellaris* Fieb.

17. *Batrachomorpha* Lew. Green or dove gray-green, sometimes reddish. — 3 or 4 species.

- 1 (4). Hemelytra without black dots, usually with a dark spot at apex of clavus.
- 2 (3). Denticles on ventral margin of styli fine, straight. Styli scarcely dilated at apex. Penis not very slender. 6-7. West (Figure 172, 27,28). . . . *B. prasinus* F.
- 3 (2). Denticles on ventral margins of styli large, irregular. Styli markedly dilated at apex. Penis slender. 6-7. Center, South. On *Artemisia abrotanum*, etc. . . . *B. viridulus* Mel.
- 4 (1). Hemelytra with black dots, without spot at apex of clavus. 5-6. South. On *Artemisia* and some Leguminosae (*Astragalus arbuscula*, etc.), on some Chenopodiaceae (*Kochia prostrata*, *Camphorosma monspeliacum*), etc. (Figure 172, 29,30). . . . *B. irroratus* Lew.
18. *Penthimia* Germ. On shrubs and trees. — 1 species.
- 1 (1). Shiny, black; pronotum frequently with 2 orange spots, or whole pronotum reddish or brownish. 5-5.5. West, South. . . . *P. nigra* Goeze.

Subfamily DORYCEPHALINAE

19. *Eupelix* Germ. Monotypic genus.
- 1 (1). Brownish gray to dark gray, often with brown speckles which are more numerous on head, pronotum and scutellum. Indistinct dark fused spots and bands on head. 5-8. On Gramineae (Figure 173,1). . . . *Eu. cuspidata* F.
20. *Dorycephalus* Kouch. Two species in the Old World. — 1 species.
- 1 (1). Light, yellowish gray or greenish gray. Sides of pronotum and hemelytra sometimes with a pair of dark brown longitudinal stripes; male macropterous; hemelytra longer than abdomen, with narrow apex; female usually brachypterous; hemelytra shorter than abdomen, with broadly rounded apex; female sometimes macropterous, and in this case hemelytra longer than abdomen, with narrow apex, and head apically narrower, as in male. 6-10. Southeast. On species of *Stipa*. . . . *D. baeri* Kouch.
- 380 21. *Paradorydium* Kirk. On Gramineae. — 2 species.
- 1 (2). Apex of process of head dorsoventrally flattened; dorsal and ventral carinae not present at apex. Macropterous; hemelytra apically narrowed. (Subgenus *Paradorydium* s.str.). Pale, yellowish or greenish. 6-8. South. On Gramineae, generally on feathergrass and *Festuca sulcata* (Figure 173, 2). . . . *P. lanceolatum* Burm.
- 2 (1). Apex of process of head tetrahedral, as all carinae reach the apex. Usually brachypterous; hemelytra slightly shorter than abdomen,

with broadly rounded apex. (Subgenus *Semenovium* Kuzn.).
Pale. 4-7.5. Deserts of the Southeast. On *Aristida pennata*
..... *P. aristidae* Zachv.

Subfamily **HECALINAE**

22. *Hecalus* Stål. — 1 species.
- 1 (1). Green, ventrally yellowish. Usually macropterous. 6-10.
South *H. glaucescens* Fieb.
23. *Glossocratus* Fieb. — 1 species.
- 1 (1). Hemelytra usually shorter than abdomen. Brownish gray; sides
of pronotum and hemelytra often with a pair of dark longitudinal
stripes. 6.8-10. Southeast. Living close to the ground, among
Elymus angustus, *E. multicaulis* and other Gramineae.
(Figure 173, 3,4) *G. foveolatus* Fieb.
- Subfamily **APHRODINAE**
24. *Aphrodes* Curt. — 14 species.
- 1 (2). Gonopore situated distal to all processes of aedeagus. Anterior
margin of vertex sharp. Male dark brown; vertex and anterior
margin of pronotum with white bands; hemelytra with white
longitudinal veins; female brown, without pattern. 4.5-8
(Figure 173, 5,6) *A. bicinctus* Schrk.
- 2 (1). Posterior margin of gonopore posterior to apical pair of processes
of aedeagus or at the same level (Figure 173, 7-28).
- 3 (14). Aedeagus with only 2 pairs of processes (Figure 173, 7-18).
- 4 (7). Both pairs of processes situated at apex of aedeagus (Figure 173,
7-10).
- 5 (6). Processes of penis slender. Posterior margin of gonopore well
posterior to apex of processes. Anterior margin of vertex not
sharp. Dorsum of male brown, with broad light bands on pronotum
and 2 bands on hemelytra; female brown, without pattern. 3.3-4.6.
South (Figure 173, 7, 8) *A. fuscofasciatus* Goeze.
- 6 (5). Outer processes of penis stout, flattened. Posterior margin of
gonopore at level of basis of inner pair of processes. Anterior
margin of vertex sharp. Gray, with pattern of black and white
speckles. 4-4.2. Southeast (Figure 173, 9,10)
..... *A. astrachanicus* Em., sp. n.
- 7 (4). 2nd pair of processes always distant from apex of penis
(Figure 173, 11-18). Anterior margin of vertex not sharp.
- 8 (9). Both pairs of processes of penis of about equal length. Apical
pair of processes distant from apex. Brown or dark brown;
apex of hemelytra of male and 2 bands light. 3-5 (Figure 173,
11,12) *A. albifrons* L.
- 9 (8). Processes of posterior pair much longer than those of anterior
pair (Figure 173, 13-18).
- 10 (11). Apical processes of penis in profile slightly curved dorsad and
basal processes curved ventrad. Anterior part of body of male

- black, vertex with white spots, pronotum with 2 white bands.
Hemelytra transparent, with dark brown longitudinal veins and
subapical band; female grayish brown. 3.1-4.9. Center, South
(Figure 173, 13,14) *A. histrionicus* F.
- 11 (10). Apical processes of penis in profile curved ventrad and basal
processes curved dorsad (Figure 173, 15-18).
- 12 (13). Posterior processes of penis in dorsal view diverging at apex,
straight or slightly arcuate. Dorsum dark brown; male: vertex
with light band, pronotum with 2 light bands, longitudinal veins
of hemelytra light; female without pattern. 2.6-4.5. (Figure 173,
15,16) *A. flavostrigatus* Don.
- 13 (12). Posterior processes of penis in dorsal view sinuous, converging
at apex. Brown; male: hemelytra with 2 bands consisting of
white spots (anterior band usually consisting of 3 spots); female
without pattern. 3-5. Center, South (Figure 173, 17,18)
..... *A. albiger* Germ.
- 14 (3). Penis with at least 3 pairs of processes (Figure 173, 19-28).
Anterior margin of vertex sharp.
- 15 (22). Apex of penis with a pair of denticles (Figure 173, 19-26).
- 16 (21). Penis with only 2 pairs of denticles in addition to apical denticles
(Figure 173, 19-24).
- 17 (18). Posterior pair of processes of penis fused in a large part.
Dark brown to black; male pronotum with white band, hemelytra
with 2 bands, apex of hemelytra white; female brown, without
pattern. 3.5-4.8 (Figure 173, 19,20) *A. trifasciatus* Geoffr.
- 18 (17). Posterior pair of processes of penis free, their bases close
together (Figure 173, 21-24).
- 19 (20). Apical denticles of penis curved dorsad. Penis less slender.
Male black, hemelytra with 2 bands in profile consisting of white
spots; apex of hemelytra white. Female brown, without pattern.
4.5-5.2. Southwest (Figure 173, 21,22)
..... *A. anguliticeps* Em., sp. n.
- 20 (19). Apical denticles of penis in profile slightly curved ventrad. Penis
slender. Resembling *A. anguliticeps* Em. 4.7-5.7. South
(Figure 173, 23,24) *A. elongatus* Leth.
- 21 (16). Penis with 3 pairs of denticles in addition to apical denticles.
Resembling *A. trifasciatus*. 4-5.9. Transcarpathian Region
(Figure 173, 25,26) *A. tricinctus* Curt.
- 22 (15). Apex of penis without denticles. Male dark brown, hemelytra
with 2 white bands; female brown, without pattern. 3.6-5
(Figure 173, 27,28) *A. bifasciatus* L.
25. *Stroggylocephalus* Fl. Genus comprising 2 species.
- 1 (2). Dorsal side of styli with stout subapical denticles. Lobes of
pygophore with a ventral process. Brown, with dark brown
speckled pattern. 5-6. North, Baltic Region (Figure 173, 29,30)
..... *S. livens* Zett.
- 2 (1). Dorsal side of styli smooth. Lobes of pygophore with 2 ventral
processes. Resembling *S. livens* Zett. 4.7-7 (Figure 173,
31,32) *S. agrestis* Fall.

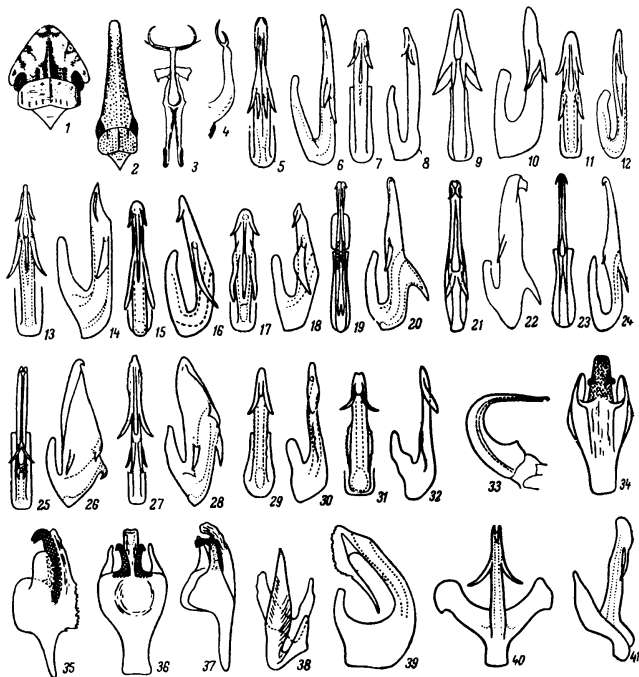


FIGURE 173. Cicadinea. Family Cicadellidae. Details of male genitalia and head (after Dlabola, Linnavuori, Ribaut and original)

1—*Eupelix cuspidata*, anterior part of body; 2—*Paradorydium lanceolatum*, same; 3,4—*Glossocratus foveolatus*, penis: 3—dorsal; 4—lateral; 5,6—*Aphrodes bicinctus*, same: 5—dorsal; 6—lateral; 7,8—*A. fuscofasciatus*, same: 7—dorsal; 8—lateral; 9,10—*A. as-trachanicus*, same: 9—dorsal; 10—lateral; 11,12—*A. albifrons*, same: 11—dorsal; 12—lateral; 13,14—*A. histrionicus*, same: 13—dorsal; 14—lateral; 15,16—*A. flavostrigatus*, same: 15—dorsal; 16—lateral; 17,18—*A. albiger*, same: 17—dorsal; 18—lateral; 19,20—*A. trifasciatus*, same: 19—dorsal; 20—lateral; 21,22—*A. angulaticeps*, same: 21—dorsal; 22—lateral; 23,24—*A. elongatus*, same: 23—dorsal; 24—lateral; 25,26—*A. tricinctus*, same: 25—dorsal; 26—lateral; 27,28—*A. bifasciatus*, same: 27—dorsal; 28—lateral; 29,30—*Stroggylocephalus livens*, same: 29—dorsal; 30—lateral; 31,32—*S. agrestis*, same: 31—dorsal; 32—lateral; 33—*Bathysmatophorus reuteri*, same, lateral; 34,35—*Euacanthus interruptus*, same: 34—dorsal; 35—lateral; 36,37—*Eu. acuminatus*, same: 36—dorsal; 37—lateral; 38—*Cicadella viridis*, same, lateral; 39—*Anoterostemma ivanovi*, same; 40,41—*Errhomenus brachypterus*: 40—same, dorsal; 41—same, lateral.

Subfamily CICADELLINAE

26. *Bathysmatophorus* J. Shlb. Male macropterous; female hemelytra markedly shortened. — 1 species.

- 1 (1). Dirty-brown; pronotum and vertex with black spots; anterior margin of vertex with black band. Male: face black with white band at dorsal margin; female: face with dark pattern, hemelytra often dark brown, with light brown stripe at costal and posterior margin; sides of abdomen dark brown. 6-8. North, Center (Figure 173, 33). *B. reuteri* J. Shlb.

27. *Errhomenus* Fieb. Both sexes brachypterous. Monotypic genus.

- 1 (1). Integument rough; pronotum transversely striated; hemelytra pitted-punctate. Reddish brown. 5.2-7.5. Transcarpathian Region. In moss and under stones (Figure 173, 40,41). *E. brachypterus* Fieb.

28. *Euacanthus* Lep. S. On succulent plants. Polyphagous. — 2 species.

- 1 (2). Orange-yellow; sides of vertex with 2 black spots; pronotum with 2 black spots; lateral corners of scutellum black; hemelytra black; costal margins, suture and stripe along clavus orange. 5-7 (Figure 173, 34,35) *Eu. interruptus* L.
2 (1). Dirty-gray; head and dorsum dark brown; fastigium, area near eyes, middle of pronotum and veins of hemelytra light. 5-6.5 (Figure 173, 36,37) *Eu. acuminatus* F.

29. *Cicadella* Latr. — 1 species.

- 1 (1). Head and venter orange-yellow; face with brownish pattern; vertex with 2 black spots; pronotum, scutellum and hemelytra green or dove-gray to black; costal margin light; apical cells transparent. 5.9. In humid and marshy habitats. Polyphagous. Injurious to fruit trees and other crops in subtropical countries (Figure 173, 38). **C. viridis* L.

383 30. *Anoterostemma* P. Löw. Monotypic genus.

- 1 (1). Brown to black; head, pronotum and scutellum with more or less developed black spots. Hemelytra usually markedly shortened, without claval vein, often dark, with light costal and posterior margin. 3.5-4.5. South. On species of *Juncus*, mainly on solonchak soils (Figure 173, 39) *A. ivanovi* Leth.

Subfamily TYPHLOCYBINAE

31. *Alebra* Fieb. On deciduous trees. — 3 species.

- 1 (4). Gonopore apical (Figure 174, 1). Dorsal corner of lobes of pygopore not more strongly sclerotized than the other part of lobes.
2 (3). Brown dots at base of spines on exterdorsal carina of hind tibiae. Apical cells of hemelytra, apex of cubital cells and middle of hemelytra

- usually markedly darkened. Ratio of body length to breadth of head 4.25-4.65. If there is a brown band on the hemelytra, posterior margin of band at level of 2/3 the clavus. 3.2-4.5. On oak (Figure 174, 1,2)..... *A. albostrielia* Fall.
- 3 (2). Posterior tibiae without dots. Apical cells of hemelytra not or only slightly darkened. Ratio of body length to breadth of head 4.8-5.1. If the hemelytra bears a brown band, its posterior margin lies at level of apex of clavus. 3.6-4.5. On linden, elm, alder and other broad-leaved trees *A. wahlbergi* Boh.
- 4 (1). Gonopore ventral, in apical quarter of aedeagus. Dorsal corner of lobes of pygophore strongly sclerotized. Apex of styli markedly hooked. Yellow. 3.65-3.8. Center. On bird cherry and dog rose (Figure 174, 3,4) *A. dvigubskii* Zachv.
32. *Notus* Fieb. In the whole U.S.S.R. 1 species.
- 1 (1). Yellow; apex of hemelytra dark. 3.8-4. On sedge (Figure 174, 5,6) *N. flavipennis* Zett.
33. *Dicranoneura* Dgl. — 2 species.
- 1 (2). Apex of aedeagus not widened. Genital plates long. Yellowish; anterior part of body and apices of hemelytra sometimes brownish. 3.2-3.7 (Figure 174, 7,8) *D. citrinella* Zett.
- 2 (1). Apex of aedeagus widened. Genital plates shorter. 3.2-4. Northwest (Figure 174, 9,10) *D. forcipata* Fl.
34. *Dikraneura* Hardy. On grass. — At least 5 species.
- 1 (2). Penis simple, without processes. Greenish, with pale spots in anterior part of body. Hemelytra transparent, with yellow-orange stripes along veins; each hemelytron with 4 dark brown spots on membrane. 3.25-3.75. On the lower side of leaves of species of *Verbascum* (Figure 174, 17,18) *D. stigmatipennis* M.R.
- 2 (1). Penis with processes (Figure 174, 19-24).
- 3 (4). Aedeagus small, short, with stout process with 2 points at the base. Golden yellow; apex of hemelytra transparent. 3.2-3.6. Mainly on various Labiatae (Figure 174, 19,20) *D. mollicula* Boh.
- 4 (3). Aedeagus long, well developed, with apical processes (Figure 174, 21-24).
- 5 (6). Median processes of penis long. Anterior part of body yellowish brown; pronotum and vertex with diffuse light band. Hemelytra yellowish green or orange-yellow; apex of hemelytra transparent. 3-3.5. Northwest (Figure 174, 21,22) *D. aridella* J. Shlb.
- 6 (5). Median processes of penis not very long. Resembling *D. aridella* J. Shlb. 3.2-3.8 (Figure 174, 23,24) *D. variata* Hardy.
35. *Erythria* Fieb. — 3 species.
- 1 (2). Penis with a pair of apical, recurrent, forked processes. Green; male darker; head reddish; vertex and anterior margin of pronotum with weak brown spots; legs red. 2.3-2.9. On *Calluna vulgaris* (Figure 174, 11,12) *E. aureola* Fall.

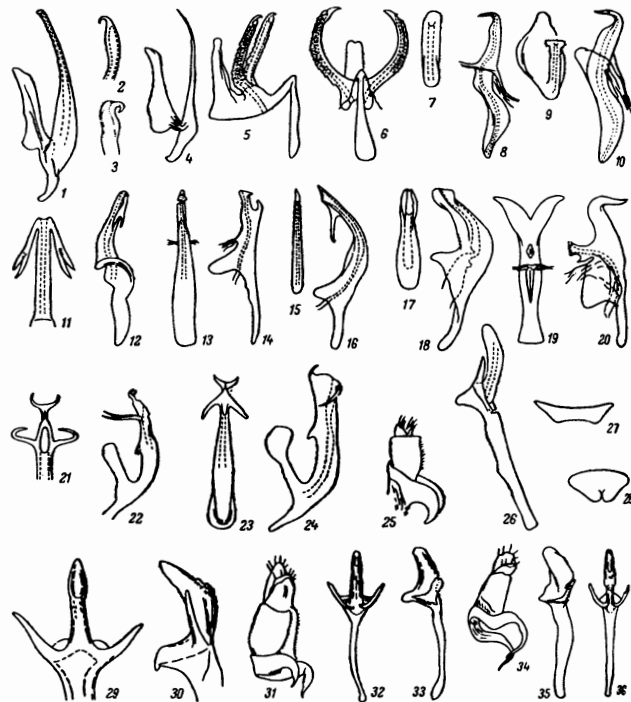


FIGURE 174. Cicadinea, Family Cicadellidae. Details of male genitalia (after Zakhvatkin, Le Quesne, Ossiannilsson and Ribaut)

1,2—*Alebra albostrielia*: 1—penis, lateral; 2—apex of stylus; 3,4—*A. dvigubskii*: 3—apex of stylus; 4—penis, lateral; 5,6—*Notus flavipennis*, penis: 5—lateral; 6—dorsal; 7,8—*Dicranoneura citrinella*, same: 7—dorsal; 8—lateral; 9,10—*D. forcipata*, same: 9—dorsal; 10—lateral; 11,12—*Erythria aureola*, same: 11—dorsal; 12—lateral; 13,14—*E. manderstjernai*, same: 13—dorsal; 14—lateral; 15,16—*E. montandoni*, same: 15—dorsal; 16—lateral; 17,18—*Dikraneura stigmatipennis*, same: 17—dorsal; 18—lateral; 19,20—*D. mollicula*, same: 19—ventral; 20—lateral; 21,22—*D. aridella*, same: 21—apex, dorsal; 22—lateral; 23,24—*D. variata*, same: 23—dorsal; 24—lateral; 25-27—*Kybos smaragdula*: 25—anal tube with appendage; 26—penis, lateral; 27—apodeme of 2nd abdominal segment; 28—*K. lindbergi*, same; 29,30—*K. strigilifer*, penis: 29—dorsal; 30—lateral; 31-33—*K. mucronatus*: 31—anal tube with appendage; 32—penis, dorsal; 33—same, lateral; 34-36—*K. virgator*: 34—anal tube with appendage; 35—penis, lateral; 36—same, dorsal.

- 385 2 (1). Penis with a single process (Figure 174, 13-16).
- 3 (4). Process of aedeagus dorsal. Grayish brown; head yellowish, with brown spots; pronotum with light and dark spots at anterior margin; scutellum with black spots. 3-3.35. Transcarpathian Region (Figure 174, 13,14)..... **E. manderstjernai** Kbm.
- 4 (3). Process of aedeagus ventral. Head and pronotum yellowish, with indistinct pattern; face of male dark brown; hemelytra grayish green, with traces of reddish color; brown spot on membrane near apex of clavus. 2.75-3. Transcarpathian Region (Figure 174, 15,16) **E. montandoni** Put.
36. **Kybos** Fieb. On Betulaceae and Salicaceae. — Not less than 10 species.
- 1 (10). Phallobase with a pair of long processes (Figure 174, 26-36). Claval suture usually dark.
- 2 (5). Processes of phallobase more or less parallel to aedeagus.
- 3 (4). Apodeme of abdominal segment II markedly transverse, its posterior margin slightly concave. Green; dorsum of body with brown longitudinal stripe. 3.8-4.6. On alder (*Alnus incana*, *A. glutinosa*) (Figure 174, 25-27)..... **K. smaragdula** Fall.
- 4 (3). Apodeme of abdominal segment II less markedly transverse, its posterior margin divided into 2 convex lobes by a sharp notch. Processes of phallobase closer together. Resembling *K. smaragdula* Fall. 4-4.3. North, Center. On birch (*Betula pubescens*, *B. verrucosa*) (Figure 174, 28)..... **K. lindbergi** Lnv.
- 5 (2). Processes of phallobase markedly diverging (Figure 174, 29,32,36).
- 6 (7). Apical part of aedeagus with irregularly arranged denticles. Resembling *K. smaragdula*. 4.3. Northwest. On willow (*Salix caprea*, *S. cinerea*) (Figure 174, 29,30)..... **K. strigilifer** Oss.
- 7 (6). Apex of aedeagus smooth, without denticles (Figure 174, 32,33, 35,36).
- 8 (9). Processes of phallobase broad in profile, with truncate apex. Processes of anal tube thick, with long slender apex, resembling *K. smaragdula*. 4.6-4.7. Center. On *Salix acutifolia* (Figure 174, 31-33)..... **K. mucronatus** Rib.
- 9 (8). Processes of phallobase narrow in profile, tapering to a pointed apex. Processes of anal tube slender, long. 4-4.65. On willows (*Salix fragilis*, *S. alba*, *S. pentandra*) (Figure 174, 34-36)..... **K. virgator** Rib.
- 10 (1). Phallobase without processes. Claval vein usually not dark (Figure 175, 1,3,4).
- 11 (14). Penis narrow in sagittal section, flattened laterally.
- 12 (13). Process of lobes of pygophore with thick, obliquely truncate apex. Light green, without brown pattern. 3.8-4.7. On poplar and aspen (*Populus niger*, *P. tremula*) (Figure 175, 1,2)..... **K. populi** Edw.
- 13 (12). Process of lobes of pygophore gradually tapering to pointed apex. Green; dorsum with brown longitudinal stripe. 3.8-4.9. On willow (*Salix purpurea*), etc. **K. rufescens** Mel.
- 14 (11). Penis thick in sagittal section. 4-4.7. Center. On *Salix caprea* (Figure 175, 3,4)..... **K. sordidulus** Oss.
37. **Kyboasca** Zachv. — 2 or 3 species.
- 1 (2). Aedeagus branching from phallobase almost at right angle, smooth. Green; anterior part of body with light spots; hemelytra with yellow stripes along cells, dark at apex. 3-3.4. On *Artemisia* (Figure 175, 5,6)..... **K. vittata** Leth.
- 2 (1). Aedeagus branching from phallobase at a very obtuse angle, with irregular longitudinal combs. Anterior part of body brownish, with pale spots. Hemelytra greenish, with brown spot at apex of cubital cell. 3.2-3.4. South. Polyphagous (Figure 175, 7,8) **K. bipunctata** Osh.
38. **Chlorita** Fieb. Most species on *Artemisia* and other Compositae. — More than 10 species.
- 1 (8). Penis without processes (Figure 175, 9,10,12,13,15). (Subgenus *Eremochlorita* Zachv.).
- 2 (3). Appendages of anal tube almost straight, slightly S-shaped. Penis long, with clavate, flattened apex. Green; hemelytra with pattern of pale and green speckles. 1.8-3.4. Southeast **Ch. akdzhusani** Zachv.
- 386 3 (2). Appendage of anal tube bent at a right angle. Penis rather short, not inflated at apex.
- 4 (7). Appendages of anal tube symmetrical.
- 5 (6). Aedeagus without constriction. Green; hemelytra with pattern of pale and green speckles. 2.3-2.4. Southeast.(Figure 179, 9-11) **Ch. tessellata** Leth.
- 6 (5). Aedeagus with constriction in the middle. Resembling *Ch. tessellata* Leth. Southern Transvolga Region. On *Artemisia arenaria* and *A. scoparia* (Figure 175, 12-14)..... **Ch. arenicola** Zachv.
- 387 7 (4). Appendages of anal tube asymmetrical, right appendage shorter, with more strongly curved apex. Resembling *Ch. tessellata*. 1.9-2.9. Dagestan (Figure 175, 15,16)..... **Ch. orientalis** Dlab.
- 8 (1). Penis with processes (Figure 175, 17,18,20,21). (Subgenus *Chlorita* s. str.). Green; apex of hemelytra darkened.
- 9 (10). Phallobase without processes. Penis with a pair of apical denticles which are directed away from the ventral margin of the gonopore; dorsal margin of aedeagus angularly projecting. 1.9-2.5. Southeast **Ch. krascheninnikovi** Zachv.
- 10 (9). Phallobase with processes.
- 11 (16). Aedeagus thick, with a pair of apical denticles. Processes of phallobase not longer than aedeagus (Figure 175, 17,18,20,21).
- 12 (15). Phallobase with a pair of forked processes (Figure 175, 17-20).
- 13 (14). Phallobase with a pair of simple processes in addition to a pair of forked ones. 2.3-2.6. Transcarpathian Region. On *Thymus* sp. (Figure 175, 17,18)..... **Ch. dumosa** Rib.
- 14 (13). Phallobase with only one pair of forked processes. 2.6-3.1. South (Figure 175, 20,21)..... **Ch. prasina** Fieb.

- 15 (12). Both pairs of processes of penis not bifurcate. 2-2.2. Southeast. On *Thymus* sp. (Figure 175, 26,27)..... *Ch. thymi* Em., sp.n.

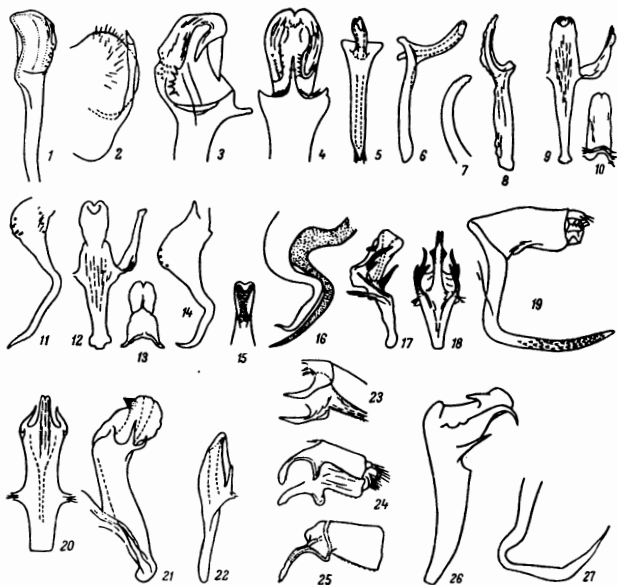


FIGURE 175. Cicadinea. Family Cicadellidae. Details of male genitalia (after Zakhvatkin, Dlabola, Osiannilsson, Ribaut and original)

- 1,2—*Kybos populi*: 1—penis, lateral; 2—lobe of pygophore, inner view; 3,4—*K. sordidulus*, penis: 3—lateral; 4—dorsal; 5,6—*Kyboasca vittata*, same: 5—dorsal; 6—lateral; 7,8—*K. bipunctata*: 7—apex of pygophore lobe process; 8—penis, lateral; 9-11—*Chlorita tessellata*: 9—same, dorsal; 10—apex of penis, ventral; 11—appendage of anal tube; 12-14—*Ch. arenicola*: 12—penis, dorsal; 13—apex of penis, ventral; 14—appendage of anal tube; 15,16—*Ch. orientalis*: 15—apex of penis, dorsal; 16—appendages of anal tube; 17-19—*Ch. dumosa*: penis: 17—lateral; 18—same, dorsal; 19—anal tube with appendage; 20,21—*Ch. prasina*, penis: 20—dorsal; 21—lateral; 22,23—*Empoasca flavescens*: 22—appendages of anal tube; 23—penis, lateral; 24—*E. pteridis*, anal tube with appendage; 25—*E. decipiens*, same; 26,27—*Chlorita thymi*: 26—penis, lateral; 27—process of anal tube.
- 16 (11). Aedeagus slender, without processes. Processes of phallobase markedly longer than aedeagus. 2.7-3. On *Achillea millefolium*..... *Ch. viridula* Fieb.

39. *Empoasca* Walsh. Polyphagous.— Not less than 4 species.
- 1 (2). Appendage of anal tube without sharp posterior process at base. Pale green; cubital vein usually darkened. 3.1-3.7 (Figure 175, 22,23) **E. flavescens* F.
- 2 (1). Appendage of anal tube with sharp posterior process at base (Figure 175, 24,25).
- 3 (4). Process of lobes of pygophore with large pointed process in middle of dorsal margin. Pale green. 3.1-3.5 (Figure 175, 24)..... **E. pteridis* Dhlb.
- 4 (3). Process of lobes of pygophore without any processes. Pale green. 3.2-4 (Figure 175, 25)..... **E. decipiens* Paoli.
40. *Eupteroidea* Yng.— 1 species.
- 1 (1). Milky-white; hemelytra with pale blue tinge. Apex of hemelytra with dark brown spot; brown stripes diverging like a fan from spot beyond apex of clavus. 3.9-4.4. Mainly on *Tilia* spp. (Figure 176, 1,2)..... *Eu. stellulata* Burm.
41. *Asymmetropteryx* Dlab. Monotypic genus.
- 1 (1). Anterior margin of vertex white; anterior margin of vertex and sides of pronotum with brown stripe. Hemelytra with weak brownish longitudinal stripes in basal half and the same radial pattern apically as in *Eupteroidea stellulata*. 3.3-3.6. North. On *Vaccinium myrtillus* (Figure 176, 3)..... *A. pictilis* Stål.
42. *Eurhadina* Hpt. On broad-leaved trees.— 4 species.
- 1 (6). Apical pair of processes of aedeagus bifurcate (Figure 176, 4-9).
- 2 (5). Branches of apical pair of processes unequal, inner branches a quarter the length of outer ones (Figure 176, 4-7).
- 3 (4). Subapical pair of processes much shorter than apical pair. White; hemelytra brownish in apical part; an oblique brown stripe at posterior margin of waxy spot; cross vein dark at outer and inner margin of hemelytra. 3.3-4. On oak (Figure 176, 4,5)..... *Eu. concinna* Germ.
- 4 (3). Subapical pair of processes as long as apical pair. Yellow; hemelytra brownish in apical part. Oblique brown stripe along posterior margin of waxy spot, continuing along R to cross vein; cross vein dark from R to costal margin; membrane with brown spot. 3.6-4.2. On oak (Figure 176, 6,7)..... *Eu. pulchella* Fall.
- 5 (2). Branches of apical pair of processes almost equal; inner branch more than three-quarters the length of the outer one. Brown band usually posterior to waxy spot of hemelytra, continuing along clavus almost to base of hemelytra. 3.85-4.5. Transcarpathian Region. On maple (Figure 176, 8,9)..... *Eu. loewi* Then.
- 388 6 (1). Apical pair of processes of aedeagus simple, not bifurcate. Resembling *Eu. concinna*. 3.6-4. On *Ulmus laevis* (Figure 176, 10,11)..... *Eu. kirschbaumi* W. Wgn.
43. *Wagneripteryx* Dlab. Monotypic genus.
- 1 (1). Yellowish green; hemelytra darker. 3.9-4.7. On *Pinus silvestris* (Figure 176, 12,13)..... *W. germari* Zett.

44. **Eupteryx** Curt.— More than 17 species.

- 1 (24). Lobes of pygophore with long process on inner side (Figure 176, 17,18,21,22).
- 2 (11). Process on lobes of pygophore forked (Figure 176, 17,18,21,22). Greenish yellow, with black spots and brown pattern on hemelytra.
- 3 (6). Apex of posterior branch of process of pygophore strongly curved ventrad (Figure 176, 17).
- 4 (5). Ground color yellowish orange. Black spots on vertex markedly extending anteriorly, their anterior margin irregular. Lorae usually light. 3.4-3.95. On various grasses (Figure 176, 14-17)..... **Eu. aurata** L.
- 5 (4). Ground color yellowish green. Black spots on vertex extending slightly anteriorly, their anterior margin regular, straight or rounded. Lorae always black. 3.15-3.75..... **Eu. atropunctata** Goeze.
- 6 (3). Posterior branch of process of pygophore slightly curved, its apex directed dorsad or posteriad (Figure 176, 18,21,22).
- 7 (10). Branches of process of pygophore of about equal thickness, one not more than twice as long as the other.
- 8 (9). Posterior branch of process of pygophore shorter than anterior one. 3.7-4.2 (Figure 176, 18-20)..... **Eu. ornata** Leth.
- 9 (8). Posterior branch of process of pygophore longer than anterior one. 3.35-3.8 (Figure 176, 21)..... **Eu. signatipennis** Boh.
- 10 (7). Posterior branch of process of pygophore stout, with slender process on the anterior margin. 3.3-3.5. Center on *Origanum vulgare* (Figure 176, 22-24)..... **Eu. origani** Zachv.
- 11 (2). Process of lobes of pygophore simple.
- 12 (21). Process of lobes of pygophore not projecting beyond dorsal margin of pygophore posteriorly. Dorsal margin of pygophore without denticles posteriorly; anal tube without processes.
- 13 (18). Processes on apex of aedeagus simple, almost straight, directed posteriorly and parallel to aedeagus (Figure 176, 25-30). Greenish yellow; hemelytra with some brown spots; veins in apical part of hemelytra with brown borders.
- 14 (17). Dorsal side of aedeagus convex in profile; apex of processes of penis reaching to half the length of the aedeagus or beyond.
- 15 (16). Processes of aedeagus reaching half the length of aedeagus, straight, their apex slightly curved inward. 2.8-3.5. On *Artemisia* (Figure 176, 25,26)..... **Eu. artemisiae** Kbm.
- 16 (15). Processes of aedeagus longer, reaching beyond middle of aedeagus, their apex markedly curved outward. 3-3.5. Center, South. On *Artemisia abrotanum* (Figure 176, 29,30)..... **Eu. semipunctata** Fieb.
- 17 (14). Dorsal side of aedeagus concave in the middle in profile. Processes of penis less than half as long as aedeagus, not reaching middle of aedeagus. 2.55-2.95. On *Artemisia* (Figure 176, 27,28)..... **Eu. gallica** W. Wgn.
- 18 (13). Processes of aedeagus not parallel to aedeagus.
- 19 (20). Processes of aedeagus crossed, simple. Vertex with 3 black spots; scutellum with 4 black spots; cells of hemelytra

bordered with brown. 2.65-3.2. Transcarpathian Region (Figure 177, 1,2)..... **Eu. melissae** Curt.

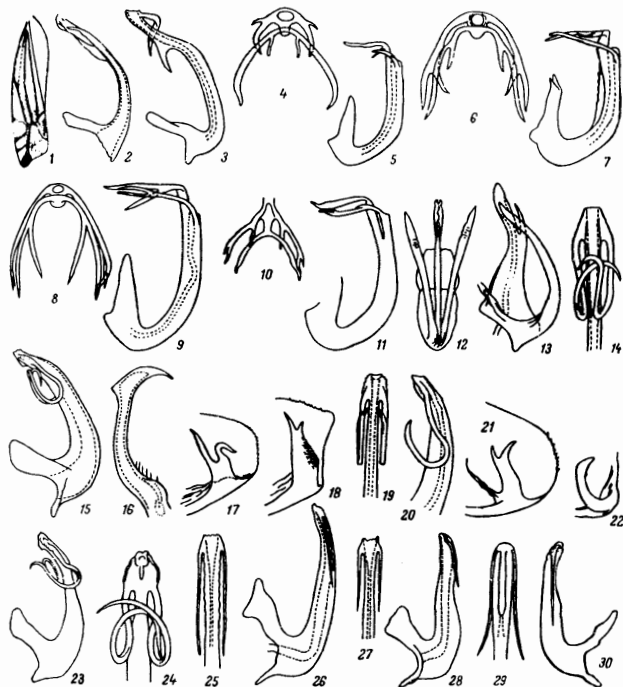


FIGURE 176. Cicadinea. Family Cicadellidae. Details of male genitalia and wing (after Zakhvatkin and Ribaut)

1, 2—*Eupteryx pictilis*: 1—hemelytron; 2—penis, lateral; 3—Asymmetropyx pictilis, penis, lateral; 4, 5—*Eurhadina concinna*, penis: 4—apex, anterior view; 5—lateral; 6, 7—*Eu. pulchella*, same; 6—apex, anterior view; 7—lateral; 8, 9—*Eu. loewi*, same; 8—apex, anterior view; 9—lateral; 10, 11—*Eu. kirschbaumi*, same; 10—apex, anterior view; 11—lateral; 12, 13—*Wagneriptyx germani*, same; 12—dorsal; 13—lateral; 14-17—*Eupteryx aurata*: 14—apex of penis, dorsal; 15—same, lateral; 16—stylus; 17—lobe of pygophore, inner aspect; 18-20—*Eu. ornata*: 18—lobe of pygophore, inner aspect; 19—apex of penis, ventral; 20—same, lateral; 21—*Eu. signatipennis*, lobe of pygophore, inner aspect; 22-24—*Eu. origani*: 22—same; 23—apex of penis, ventral; 24—penis, lateral; 25, 26—*Eu. artemisiae*: 25—apex of penis, dorsal; 26—penis, lateral; 27, 28—*Eu. gallica*: 27—apex of penis, dorsal; 28—penis, lateral; 29, 30—*Eu. semipunctata*: 29—apex of penis, dorsal; 30—penis, lateral.

- 20 (19). Processes of aedeagus diverging, branched. Head, pronotum and scutellum with black pattern consisting of fused spots; cells of hemelytra with brown border; hemelytra with dark spot near posterior margin of waxy spot. 2.7-3.25. Northwest (Figure 177, 3,4) *Eu. alticola* Rib.
- 21 (12). Posterodorsal angle of pygophore with 1 or 2 denticles.
- 22 (23). Anal tube with processes; ventral margin of lobes of pygophore without processes. Dorsum dark brown; anterior part of vertex light; hemelytra with several large light spots near margin. 3.05-3.55. In humid habitats (Figure 177, 13,14).... *Eu. vittata* L.
- 23 (22). Anal tube without processes. Ventral margin of lobes of pygophore with long process directed dorsad along inner wall. Resembling *Eu. vittata* L. 2.15-2.7. In dry habitats (Figure 177, 15,16).... *Eu. notata* Curt.
- 390 24 (1). Lobes of pygophore without processes.
- 25 (28). Posterior margin of lobes of pygophore with denticles.
- 26 (27). Processes at apex of aedeagus forked; two branches of fork equally long. Head, pronotum and scutellum with black pattern consisting of fused spots; cells of hemelytra with brown border; hemelytra with dark spot at posterior margin of waxy area. 2.7-3.6 (Figure 177, 5,6)..... *Eu. stachydearium* Hardy.
- 27 (26). Processes at apex of aedeagus with denticle on posterior margin (near base). Resembling *Eu. stachydearium* Hardy. 2.7-3.55. (Figure 177, 7,8) *Eu. collina* Fl.
- 28 (25). Posterior margin of lobes of pygophore without denticles.
- 29 (30). Processes at apex of aedeagus smooth, without denticles. Head, pronotum and scutellum with black fused spots; hemelytra with large dark to black fused spots. 2.9-3.6 (Figure 177, 9,10)..... *Eu. urticae* F.
- 30 (29). Processes at apex of aedeagus with denticles. Resembling *Eu. urticae* F. 3.3-3.7 (Figure 177, 11,12)..... *Eu. cyclops* Mats.
45. *Zyginella* P. Löw. — 1 species.
- 1 (1). Green; clavus red; membrane of hemelytra with 2 transverse brown stripes at outer margin, a brown stripe at the inner margin and a brown spot in the middle. 3.0. Crimea. On oak..... *Z. quercus* Kuzn.
46. *Linnavuoriana* Dlab. — 2 species.
- 1 (2). Lamellar processes at base of aedeagus obtuse, projecting slightly. Pale, yellowish green; face pale; vertex with 2 spots; pronotum with 4 spots often fused in pairs; scutellum with 2 spots which are sometimes fused; hemelytra with 2 oblique brownish bands in basal part and brownish distal part. 3.25-3.75. On willow (*Salix* spp.) (Figure 177, 17,18).... *L. sexpunctata* Fall.
- 2 (1). Lamellar processes at base of aedeagus long and slender, with more or less rounded apex. Reddish; sides of fronto- and anteclypeus dark; pattern on dorsum as in *L. sexpunctata* Fall., but pronotum with one additional pair of spots posterior to eyes,

- and bands on hemelytra often partly fused. 3.5-3.7. On birch (*Betula* spp.) (Figure 177, 19)..... *L. decempunctata* Fall.
47. *Ossiannilssonola* Christ. — 1 species.
- 1 (1). Pale yellow; margins of clavus more or less brown; apex of cubital, medial cell and usually also of radial cell brownish; apex of hemelytra dark. 4-4.8. Transcarpathian Region. On maple (Figure 177, 23-25)..... *O. callosa* Then.
48. *Fagocyba* Dlab. — 1 species.
- 1 (1). Yellow to reddish brown; apex of hemelytra and subcostal cell transparent. 3.5-4. Transcarpathian Region. On beech (*Fagus* sp.) (Figure 177, 20-22)..... *F. cruenta* H.-S.
49. *Typhlocyba* Germ. On trees and shrubs. — Not less than 12 species.
- 1 (2). Lobes of pygophore with apical denticle. Genital plates with sub-apical denticle. Penis with basal processes. (Subgenus *Typhlocyba* s. str.). Pale, yellowish, dorsum with red spots. 3-3.3 (Figure 177, 26,27) *T. quercus* F.
- 2 (1). Lobes of pygophore without denticle. Genital plates without denticle. Penis with apical processes (Figure 177, 28-31; 178, 1-14). (Subgenus *Edwardssiana* Zachv.).
- 3 (4). Apex of penis with one pair of processes. Yellow; head and pronotum light. 3.35-3.8. Transcarpathian Region. On hazel (*Corylus avellana*) (Figure 177, 28,29) *T. avellanae* Edw.
- 4 (3). Apex of penis with 2 pairs of processes which are often bifurcate (Figures 177, 30,31; 178, 1-14).
- 5 (6). Both pairs of processes of penis not bifurcate. Light, sometimes yellowish. 3.4-3.85. On various trees and shrubs (Figure 177, 30,31) *Rose Leafhopper — *T. rosae* L.
- 6 (5). Ventral pair of processes of penis forked (Figure 178, 1-14).
- 7 (10). Dorsal pair of processes of penis longer than ventral pair (Figure 178, 1-4).
- 392 8 (9). All apical processes of penis straight. Whitish yellow. 3.4-3.8. Center. On dog rose (Figure 178, 1,2)..... *T. severtsovi* Zachv.
- 9 (8). All apical processes of penis curved. Head, pronotum and scutellum pale; hemelytra yellow, with darker veins. 3.5-3.65. Transcarpathian Region. On white beech (*Carpinus betulus*) (Figure 178, 3,4)..... *T. fraterculus* Edw.
- 10 (7). Dorsal pair of processes of penis shorter than ventral pair (Figure 178, 5-14).
- 11 (12). Basal branch of ventral pair of processes of penis very long, markedly recurrent. Yellow; scutellum, base of hemelytra, and stripe along outer margin of clavus and apex of hemelytra brown. 3.75-4. On alder (Figure 178, 5,6)..... *T. geometrica* Schrk.
- 12 (11). Basal branch of ventral pair of processes of penis moderately long, not longer than ventral branch, slightly curved (Figure 178, 8-14).

- 13 (14). Apical branch of ventral pair of processes of penis longer than basal branch, strongly curved. Yellow; head and pronotum pinkish; costal margins of hemelytra orange. 3.9. Center, (Figure 178, 7,8) *T. menzbieri* Zachv.

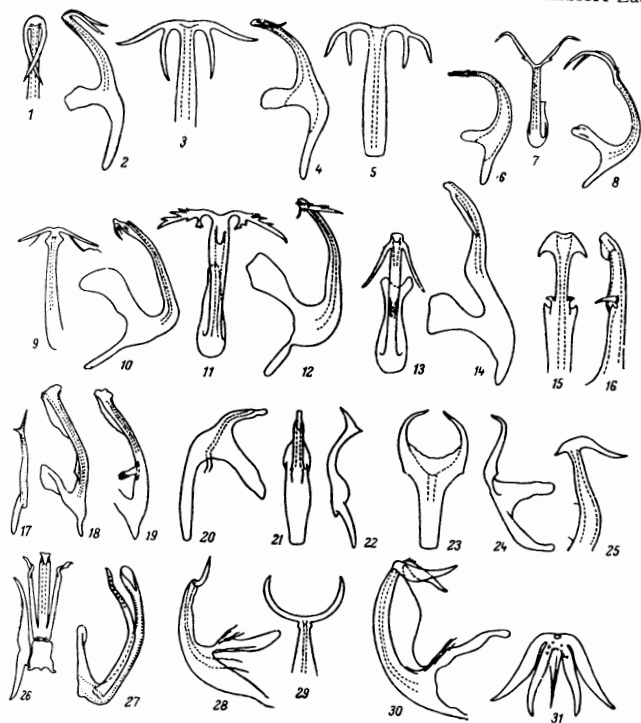


FIGURE 177. Cicadinea. Family Cicadellidae. Details of male genitalia (after Ribaut)

- 1,2—*Eupteryx melissae*: 1—apex of penis, dorsal; 2—penis, lateral; 3,4—*Eu. alticola*: 3—apex of penis, dorsal; 4—penis, lateral; 5,6—*Eu. stachydearum*: 5—same, dorsal; 6—same, lateral; 7,8—*Eu. collina*: 7—same, dorsal; 8—same, lateral; 9,10—*Eu. urticae*: 9—same, dorsal; 10—same, lateral; 11,12—*Eu. cyclops*: 11—same, dorsal; 12—same, lateral; 13,14—*Eu. vittata*: 13—same, dorsal; 14—same, lateral; 15,16—*Eu. notata*: 15—apex of penis, dorsal; 16—same, lateral; 17,18—*Linnavuoriana sexpunctata*: 17—stylus; 18—penis, lateral; 19—*L. decempunctata*, same; 20—22—*Fagocyba cruenta*: 20—same; 21—same, dorsal; 22—stylus; 23—25—*Ossiannilssonola callosa*: 23—penis, dorsal; 24—same, lateral; 25—stylus; 26,27—*Typhlocyba quercus*: 26—penis, dorsal; 27—penis, lateral; 28,29—*T. avellanae*: 28—penis, lateral; 29—apex of penis, dorsal; 30,31—*T. rosae*: 30—penis, lateral; 31—apex of penis, anterior aspect.

- 14 (13). Apical branch of ventral pair of processes of penis not longer than basal branch and slightly curved (Figure 178, 9-14).
- 15 (18). Branches of basal pair of processes of penis more or less longitudinal, their apex widely separated (Figure 178, 10,12).
- 16 (17). Processes of apical pair of branches of penis about as long as basis of processes of basal pair. Pale yellow. 3.1-3.4. Transcarpathian Region (Figure 178, 9,10) ... *T. frustrator* Edw.
- 17 (16). Processes of apical pair of branches of penis much longer than basis of processes of basal pair. Resembling *T. frustrator* Edw. 3.5-3.7. Center, South (Figure 178, 11,12) *T. ampliata* W. Wgn.
- 18 (15). Branches of basal pair of processes of penis more or less transverse, their inner branches converging. Pale yellow; scutellum anterior to groove, stripe at scutellar margin of clavus, apical half of clavus and spot on corium at apex of clavus brown. 3.15-3.6. On alder (Figure 178, 13,14) *T. gratiosa* Boh.
50. **Ribautiana** Zachv. — 5 species.
- 1 (2). Processes of phallobase situated ventral to aedeagus in profile, their apex strongly curved outward. Aedeagus curved ventrally. Yellow; apical veins and cells dark. Apex of scutellum usually black; a spot at anterior margin of pronotum; 2 additional spots at anterior margin of vertex of female. 3.65-4.05. Usually on elm (Figure 178, 15-17) *R. ulmi* L.
- 2 (1). Processes of phallobase situated dorsal to aedeagus in profile, their apex sometimes slightly curved outward. Aedeagus almost straight (Figure 178, 18-26).
- 3 (8). Aedeagus straight or slightly curved ventrally (Figure 178, 18-23).
- 4 (7). Apex of aedeagus forming process, with only one pair of short processes. Aedeagus with small processes in the middle of the dorsal side (Figure 178, 18-21).
- 5 (6). Dorsal side of aedeagus with one forked process. Yellow; a dark diffuse spot on cross veins; apex of apical veins dark. 2.7-3.5. Dagestan. Polyphagous (Figure 178, 18,19) ... *R. tenerima* H.-S.
- 6 (5). Dorsal side of aedeagus with a pair of processes, each with a separate base. Resembling *R. tenerima* H.-S. 3.1-3.45. Center. On raspberry and blackberry (*Rubus idaeus*, *R. caesius*) (Figure 178, 20,21) *R. rubi* Hardy.
- 7 (4). Apex of aedeagus with 2 pairs of long processes, apex not forming process. Dorsal side of penis without processes in the middle. Yellow; hemelytra pale, with yellow longitudinal stripes; apex of hemelytra dark. 3.25-3.65. Crimea. On oak (Figure 178, 22,23) *R. scalaris* Rib.
- 8 (3). Aedeagus curved dorsally. Phallobase with a process of varying form near aedeagus; dorsal side of aedeagus sometimes also with a basal process. Pale, whitish. Fastigium with 2 spots; apex of scutellum black. 3.2-3.6. Center. On elm (*Ulmus laevis*) (Figure 178, 24-26) *R. ognevi* Zachv.

51. *Alnetoidia* Dlab. — 1 species.

- 1 (1). Anterior part of body pale, yellowish; hemelytra lemon-yellow.
3.9-4.3. On alder and elm (Figure 178, 27,28) *A. alneti* Dhlb.

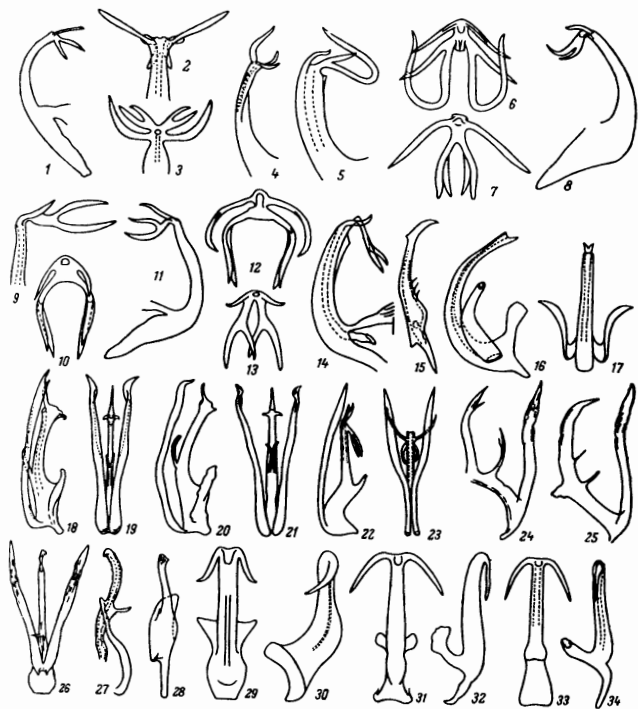


FIGURE 178. Cicadinae, Family Cicadellidae. Details of male genitalia (after Zakhvatkin, Ribaut and original)

1,2 — *Typhlocyba severtsovi*: 1—penis, lateral; 2—apex of penis, dorsal; 3,4—*T. fraterculus*: 3—apex of penis, dorsal; 4—penis, lateral; 5,6—*T. geometrica*: 5—same; 6—apex of penis, anterior aspect; 7,8—*T. menzbieri*: 7—same; 8—penis, lateral; 9,10—*T. frustrator*: 9—apex of penis, lateral; 10—same, anterior aspect; 11,12—*T. ampliata*: 11—penis, lateral; 12—apex of penis, anterior aspect; 13,14—*T. gratiosa*: 13—penis, lateral; 14—apex of penis, anterior aspect; 15-17—*Ribautiana ulmi*: 15—stylus; 16—penis, lateral; 17—same, dorsal; 18,19—*R. tenerima*: 18—same, lateral; 19—same, dorsal; 20,21—*R. rubi*: 20—same, lateral; 21—same, dorsal; 22,23—*R. scalaris*: 22—same, lateral; 23—same, dorsal; 24-26—*R. ognevi*: 24,25—same, lateral (different specimens); 26—same, dorsal; 27,28—*Alnetoidia alneti*: 27—same, lateral; 28—stylus; 29,30—*Helionidia statices*: 29—penis, dorsal; 30—same, lateral; 31,32—*H. ribauti*: 31—same, dorsal; 32—same, lateral; 33,34—*H. tamaricis*: 33—same, dorsal; 34—same, lateral.

394 52. *Helionidia* Zachv. — At least 5 species.

- 1 (2). Apex of processes of lobes of pygophore straight. Processes of penis in profile curved ventrally. Thickset; yellowish green; vertex with a pair of black spots. 2.1-2.4. Southeast. On *Limonium suffruticosum* (Figure 178, 29,30) *H. statices* Zachv.
- 2 (1). Apex of processes of lobes of pygophore curved. Processes of penis in profile curved dorsally (Figure 178, 31-34).
- 3 (4). Apex of process of lobes of pygophore curved inward. Yellowish green; dark spots ventral to sockets of antennae; vertex with a pair of black spots. 2-2.5. Southwest. On *Tamarix* spp. (Figures 178, 31,32; 179,2) *H. ribauti* Zachv.
- 4 (3). Apex of process of lobes of pygophore curved outward. Green; resembling *H. ribauti* Zachv. Anterior margin of pronotum with brown spots; scutellum with black spots in lateral corners; apex of hemelytra dark. 2.3-2.6. Transcarpathian Region. On tamarisk (Figures 178, 33,34; 179,1) *H. tamaricis* Put.
53. *Erythroneura* Fitch. On trees and shrubs. — More than 8 species.
- 1 (4). Penis without processes. Apex of styli right-angled-genuiculate, with 2 angles (Figure 179, 3,4). (Subgenus *Flammigeroidia* Dlab.).
- 2 (3). Hemelytra with sinuous longitudinal stripe at inner margin; this stripe delimits 2 light spots near the claval vein. Yellowish; dorsal part of face with red band; vertex and pronotum with red longitudinal stripe in the middle; scutellum brownish. 2.9-3.3. On various trees (Figure 179, 3,4) *E. flammigera* Geoffr.
- 3 (2). Hemelytra with continuous red longitudinal stripe on claval vein; outer margin of this stripe serrated. Yellowish; vertex and pronotum with red longitudinal stripe in the middle; scutellum red. 2.3-2.6. On heather (*Calluna vulgaris*) *E. rubrovittata* Leth.
- 4 (1). Phallobase with a pair of processes. Apex of styli Z-shaped, its 3 corners forming denticles (Figure 179, 5-11). (Subgenus *Erythroneura* s.str.).
- 5 (6). Processes of phallobase far from aedeagus. Greenish yellow; vertex with a pair of black spots; fastigium reddish; pronotum reddish brown in the middle; scutellum with a pair of black spots in lateral angles; hemelytra each with 2 reddish longitudinal stripes. 2.65-3.05. (Figure 179, 5-7) *E. parvula* Boh.
- 6 (5). Processes of phallobase close to aedeagus (Figure 179, 8,10).
- 7 (8). Dorsum of aedeagus protruding in form of lobe; apex of aedeagus with 2 curved lobules. Resembling *E. parvula* Boh. 3.1-3.3. Transcarpathian Region. On oak (Figure 179, 8,9) *E. velata* Rib.
- 8 (7). Aedeagus without dorsal protuberance; apex of aedeagus without lobules. Resembling *E. parvula*. 2.95-3.4. Transcarpathian Region. On oak (Figure 179, 10,11) *E. spatulata* Rib.

54. *Zygina* Fieb. — About 10 species.
- 1 (8). Phallobase without processes (Figure 179, 13, 14-16, 18).
 2 (3). Apex of penis with a pair of long dorsal recurrent processes. Greenish; face brown; fastigium with a pair of black triangles; pronotum yellow anteriorly and laterally; hemelytra dark. 2.35-2.7. South (Figure 179, 12, 13)..... *Z. bisignata* M.R.
- 3 (2). Apex of penis without dorsal processes, with lateral or ventral processes (Figure 179, 14-16, 18).
- 4 (5). Inner margin of genital plates with angular subapical process which is curved dorsad. Males yellow, with dark spot at apex of scutellum; females more richly colored: scutellum and middle of vertex and pronotum with dark longitudinal spot with red border; claval vein of hemelytra usually red. 2.45-2.6. On *Hypericum perforatum* (Figure 179, 14, 15)..... *Z. hyperici* H.-S.
- 5 (4). Genital plates without such process.

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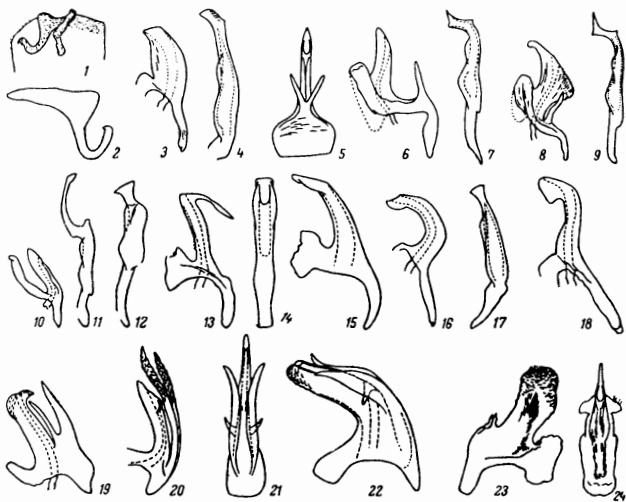


FIGURE 179. Cicadinea, Family Cicadellidae. Details of male genitalia (after Zakhvatkin, Ossianilsson and Ribaut)

1—*Hellonidia tamaricis*, appendage of lobe of pygophore; 2—*H. ribauti*, same; 3, 4—*Erythro-neura flammigera*: 3—penis, lateral; 4—stylus; 5-7—*E. parvula*: 5—penis, dorsal; 6—penis, lateral; 7—stylus; 8, 9—*E. velata*: 8—penis, lateral; 9—stylus; 10, 11—*E. spathulata*: 10—penis, lateral; 11—stylus; 12, 13—*Zygina bisignata*: 12—same; 13—penis, lateral; 14, 15—*Z. hyperici*: 14—same, dorsal; 15—same, lateral; 16, 17—*Z. rorida*: 16—same, lateral; 17—stylus; 18—*Z. nivea*, penis, lateral; 19—*Z. scutellaris*, same, lateral; 20—*Z. silvicola*, same; 21, 22—*Z. moczarjyi*: 21—same, dorsal; 22—same, lateral; 23, 24—*Z. viadensis*: 23—same, lateral; 24—same, dorsal.

- 6 (7). Aedeagus strongly curved in basal half. Light, with red and orange spots which are sometimes fused. 2.45-2.9. South. On oak (Figure 179, 16, 17)..... *Z. rorida* M.R.
- 7 (6). Aedeagus straight in basal half, more strongly curved in apical part. White or slightly yellowish, sometimes with red spots on vertex, scutellum, etc. 3.3-3.7. South. On poplar and willow (Figure 179, 18)..... *Z. nivea* M.R.
- 395 8 (1). Phallobase with a pair of processes (Figure 179, 19-24).
- 9 (14). Processes of phallobase long, slightly longer or shorter than aedeagus (Figure 179, 19-22).
- 10 (11). Phallobase with 4 processes. Apex of aedeagus without a pair of processes. Greenish yellow; anteclypeus dark; frontoclypeus and vertex brownish; posterior margin of vertex and anterior margin of pronotum yellowish; the other part of the pronotum brownish; scutellum with a pair of black spots in lateral corners and with an apical spot; veins of hemelytra dark apically; cells dark. 2.55-3.2. (Figure 179, 19)..... *Z. scutellaris* H.-S.
- 11 (10). Phallobase with 2 processes (Figure 179, 20-24).
- 12 (13). Apex of aedeagus with a pair of processes. Resembling *Z. scutellaris*. 3.4-3.6. Baltic Region (Figure 179, 20)..... *Z. silvicola* Oss.
- 13 (12). Middle of aedeagus with one or two processes. Processes of phallobase slightly shorter than aedeagus. Resembling *Z. scutellaris*. 2.5-3.2. Ciscaucasia and Caucasus. On *Dactylis glomerata* and corn (Figure 179, 21, 22)..... **Z. moczarjyi* Horv.
- 396 14 (9). Processes of phallobase short. Resembling *Z. scutellaris*, but darker. 2.2-2.7. Center. On *Koeleria glauca* (Figure 179, 23, 24)..... *Z. viadensis* W. Wgn.

Subfamily EUSCELINAE

55. *Grypotes* Fieb. On pines. Genus comprising 2 species.
- 1 (2). Apex of penis with arrow-shaped processes. Pale, greenish gray; a pair of black spots on vertex near eyes; black sinuous bands on junction of vertex with face; face with black pattern. 4-4.8. North, Center (Figure 180, 3, 4)..... *G. puncticolis* H.-S.
- 2 (1). Apex of penis without processes. Pale, yellowish green. Vertex with a pair of black spots near eyes and band bent posteriorly at an angle; 4 spots on junction of vertex with face; face with black pattern. 3.6-4.3. South (Figure 180, 1, 2)..... *G. staurus* Iv.
56. *Goniognathus* Fieb. — 6 species.
- 1 (2). Aedeagus markedly arcuate. Apex of styli slender, with triangular dilatation. (Subgenus *Tamaricades* Em.). Smooth, shiny, yellowish; vertex with black pattern; hemelytra with reddish veins; cells of hemelytra with brown border; costal margin of hemelytra with 2 parts without pattern. 6-7. Southeast. On tamarisk (Figure 180, 5, 6)..... *G. decoratus* Hpt.

- 2 (1). Aedeagus more or less straight. Apex of styli thick. Rugose. (Figure 180, 7-18). (Subgenus *Goniognathus* s. str.).
- 3 (8). Penis simple; phallobase and aedeagus without processes (Figure 180, 7-10, 12, 13).
- 4 (5). Apex of aedeagus dorsoventrally flattened, spatulate. Reddish brown to black; hemelytra, face and venter with some light spots. 4.5-5.5. South (Figure 180, 7, 8)..... *G. brevis* H.-S.
- 5 (4). Apex of aedeagus not dorsoventrally flattened (Figure 180, 9, 10, 12, 13).
- 6 (7). Apex of aedeagus with ventral lobe-shaped carina. Gray, with dark angular spots and speckles. Face with black pattern. 4-6. South. On *Artemisia* (Figure 180, 9-11)..... *G. rugulosus* Hpt.
- 7 (6). Apex of aedeagus simple, pointed. Resembling *G. rugulosus* Hpt., but lighter. 5-5.7. On annual halophytes. (Figure 180, 12-14)..... *G. sanguinisparvus* Hpt.
- 8 (3). Phallobase with long processes (Figure 180, 15-18).
- 9 (10). Processes of phallobase separate, more or less parallel. Aedeagus without processes. Brownish gray; hemelytra, pronotum and scutellum with some angular fused spots; face with black pattern. 4.7-5. South (Figure 180, 15, 16)..... *G. guttulinervis* Kbm.
- 10 (9). Processes of phallobase on a common stem. Aedeagus with recurrent denticle. The whole insect has fine dark brown to black speckles; hemelytra dark brown, with light spots. 3.5-4.5. South (Figure 180, 17, 18)..... *G. bolivari* Mel.
57. *Opsius* Fieb. On tamarisk. — 7 or 8 species.
- 1 (4). Basis of aedeagus and process widely separated on each side; processes of aedeagus close together at the base (Figure 180, 19, 20, 29, 30).
- 2 (3). Processes about twice as long as aedeagi. Pale yellow, only slightly greenish, with numerous black speckles which do not cover some free round areas. 4.1-4.9. Southeast (Figure 180, 19, 20)..... *O. pallasi* Leth.
- 3 (2). Processes about as long as aedeagi. Yellow, without speckles; hemelytra brownish: costal margin of hemelytra with 2 light spots. 3.5-4.7. Southeast (Figure 180, 29, 30)..... *O. versicolor* Dist.
- 4 (1). Base of aedeagus and processes converging on both sides; basis of processes of aedeagus distant from each other (Figure 180, 21-28).
- 5 (10). Aedeagus and process more or less parallel on each side, slender, long (Figure 180, 21-24).
- 6 (9). Phallobase markedly inflated (Figure 180, 21, 22).
- 7 (8). Phallobase without any accessory processes. Green, without speckles; apex of hemelytra dark brown, with 2 transparent spots near costal margin. 3.8-5. South (Figure 180, 21, 22)..... *O. stactogalus* Fieb.

- 398 8 (7). Phallobase inflated, with a pair of small, slender processes crossed at the apex. Resembling *O. stactogalus* Fieb. 3.8-4.1. Crimea..... *O. cypriacus* Lindb.

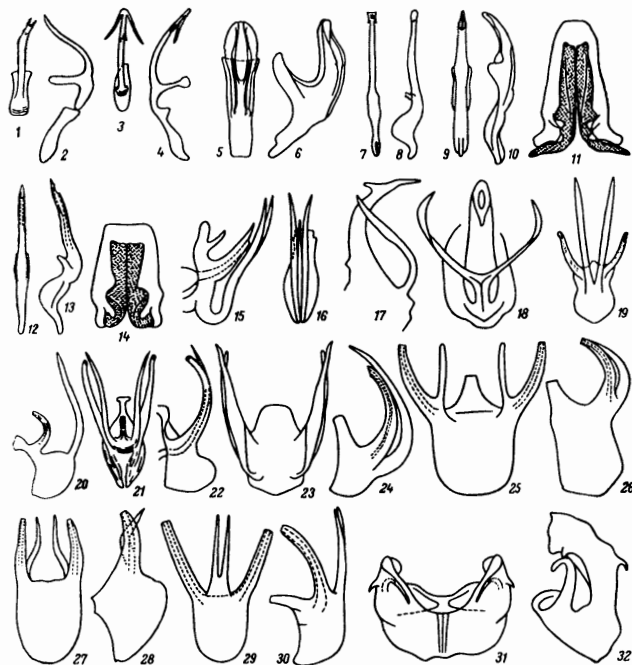


FIGURE 180. Cicadinea. Family Cicadellidae. Details of male genitalia (after Vilbast, Diabola, Ribaut and original)

1, 2—*Grypotes staurus*: 1—penis, dorsal; 2—same and connective, lateral; 3, 4—*G. puncticollis*: 3—penis, dorsal; 4—same and connective, lateral; 5, 6—*Goniognathus decoratus*: 5—penis, dorsal; 6—same, lateral; 7, 8—*G. brevis*: 7—same, dorsal; 8—same, lateral; 9-11—*G. rugulosus*: 9—same, dorsal; 10—same, lateral; 11—genital plates and styli; 12-14—*G. sanguinisparvus*: 12—penis, dorsal; 13—same, lateral; 14—genital plates and styli; 15, 16—*G. guttulinervis*: 15—penis, lateral; 16—same, dorsal; 17, 18—*G. bolivari*: 17—same, lateral; 18—same, dorsal; 19, 20—*Opsius pallasi*: 19—same, dorsal; 20—same, lateral; 21, 22—*O. stactogalus*: 21—same, dorsal; 22—same, lateral; 23, 24—*O. tigripes*: 23—same, dorsal; 24—same, lateral; 25, 26—*O. discissus*: 25—same, dorsal; 26—same, lateral; 27, 28—*O. smaragdinus*: 27—same, dorsal; 28—same, lateral; 29, 30—*O. versicolor*: 29—same, dorsal; 30—same, lateral; 31, 32—*Pseudophlepsius binotatus*: 31—same, dorsal; 32—same, lateral.

- 9 (6). Phallobase not inflated. Yellowish green, densely covered with black speckles which are absent on some rounded areas. 3.2-3.8. Southeast (Figure 180, 23,24)..... *O. tigris* Leth.
- 10 (5). Aedeagus and process on each side diverging (Figure 180, 25-28).
- 11 (12). Aedeagi more or less parallel; distance between apex of aedeagi about equal to breadth of phallobase. Resembling *O. stactogalus*, but with some black speckles. 3.7-4.3. Crimea (Figure 180, 27,28)..... *O. smaragdinus* Em., sp.n.
- 12 (11). Aedeagi diverging; distance between their apex twice as much as breadth of phallobase. Bluish green, with whitish spots on cells. Hemelytra sometimes with speckles. 4-5. Southeast (Figure 180, 25,26)..... *O. discensus* Horv.

58. *Pseudophlepsius* Zachv. — 1 species.

- 1 (1). Slender, brownish; face and dorsum with fine brown reticular pattern. Anterior margin of vertex with 2 dark spots. 5.2-7. South, East. On some Leguminosae such as *Cytisus*, *Glycyrrhiza*, *Alhagi*, etc. (Figure 180, 31,32)..... *P. binotatus* Sign.

59. *Achaetica* Em. Oligophagous, on various halophytes (Chenopodiaceae). — 5 species.

- 1 (4). Lobes of penis without denticle in middle of ventral margin, which gradually tapers to a pointed apex. Outer margin of genital plates with a rounded process with a sharp edge in basal half (Figure 181, 1-4).
- 2 (3). Apex of styli thick, rounded. Apex of lobes of penis thicker. Dark brown to black; vertex and face usually with well-marked pattern; hemelytra often with reticular pattern. 2.5-3.5. Southeast. On *Camphorosma monspeliacum* and *Kochia prostrata* (Figure 181, 1-3)..... *A. camphorosmatis* Em.
- 3 (2). Apex of styli pointed, slender. Apex of lobes of penis slenderer. Grayish, with dark pattern mainly on abdomen and venter; vertex sometimes with pattern. 2.3-3.6. Southeast. On annual halophytes (*Petrosimonia monandra* and *P. oppositifolia*) (Figure 181, 4)..... *A. pusilla* Em., sp.n.
- 4 (1). Lobes of penis with denticle in middle of ventral margin, with broadly rounded apex and with denticle near ventral margin (Figure 181, 5-13).
- 5 (6). Apex of styli elongate, markedly obliquely truncate. Grayish, with dark pattern. 2.5-3.7. Southeast. On *Halocnemum strobilaceum* (Figure 181, 5-7)..... *A. halocnemis* Em., sp.n.
- 6 (5). Apex of styli short, almost rectangularly truncate (Figure 181, 10,13). Reddish brown, with brown pattern.
- 7 (8). Dorsal membrane of aedeagus reaching apex of lobes of penis. Apex of genital plates always acute-angled. 2.6-3.5. Southeast. On *Anabasis aphylla* and *A. truncata* (Figure 181, 8-10)..... *A. caspia* Em., sp.n.
- 8 (7). Dorsal membrane of aedeagus ending halfway between apex of lobes of penis and the ventral denticles. 2.4-3.6. Southeast. On *Anabasis salsa* and *Nanophyton erinaceum* (Figure 181, 11-13)..... *A. anabasis* Em.

60. *Neoliturus* Dist. — Not less than 4 species.

- 1 (2). Branches of aedeagus forming almost a full circle. Genital plates with obtuse outer margin. (Subgenus *Circularifer* Zachv.). Yellow, often reddish or with traces of brown pattern. 2.5-3.8. South (Figure 181, 14,15)..... *N. haematoceps* M.R.

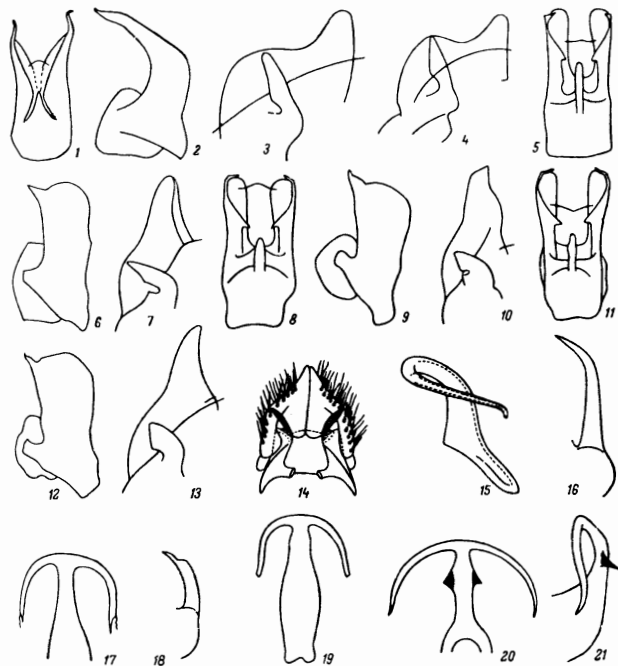


FIGURE 181. Cicadinea. Family Cicadellidae. Details of male genitalia (after Diabola, Ribaut and original)

1-3 — *Achaetica camphorosmatis*: 1—penis, ventral; 2—same, lateral; 3—genital plate and stylus, dorsal; 4—*A. pusilla*, genital plate and stylus, dorsal; 5-7—*A. halocnemis*: 5—penis, ventral; 6—same, lateral; 7—genital plate and stylus, dorsal; 8-10—*A. caspia*: 8—penis, ventral; 9—same, lateral; 10—genital plate and stylus, dorsal; 11-13—*A. anabasis*: 11—penis, ventral; 12—same, lateral; 13—genital plate and stylus, dorsal; 14, 15—*Neoliturus haematoceps*: 14—genital plates, valve and styli, dorsal; 15—penis, lateral; 16, 17—*N. gutturalis*: 16—process of lobe of pygophore; 17—penis, dorsal; 18, 19—*N. fenestratus*: 18—process of lobe of pygophore; 19—penis, dorsal; 20, 21—*N. pulcher*: 20—same, dorsal; 21—same, lateral.

HOMOPTERA

- 2 (1). Branches of aedeagus forming a semicircle (Figure 181, 17,19,20). Genital plates triangular, their outer margin more or less straight. (Subgenus *Neoaliturus* s. str.).
- 3 (6). Aedeagus without denticles (Figure 181, 17,19).
- 4 (5). Process on inner wall of lobes of pygophore sharply tapering subapically. Black; hemelytra with several rounded transparent areas, mainly on the membrane. 2.8-3.4. South (Figure 181, 18,19) *N. fenestratus* H.-S.
- 399 5 (4). Process on inner wall of lobes of pygophore uniformly tapering at apex. The whole body has brown fused spots; hemelytra with transparent areas as in *N. fenestratus* H.-S. 2.8-3.4. South (Figure 181, 16,17) *N. guttulatus* Kbm.
- 6 (3). Base of aedeagus with pointed lateral denticles. Pale, yellowish; cells of hemelytra with brownish border. 3-3.4. Extreme South-east (Figure 181, 20,21) *N. pulcher* Hpt.
- 400 61. *Tetartostylus* W. Wgn. — 1 species.
- 1 (1). Slender; vertex as long in the middle as at the sides. Pale, greenish; face with weak brownish pattern. 4.5-6. South. On beard-grass (*Andropogon*) *T. pellucidus* Mel.
62. *Coryphaeus* Fieb. Monotypic genus.
- 1 (1). Orange-yellow; head with black pattern; pronotum with 2 black bands; hemelytra with dark brown cells. 5.3-6.7. On bulrushes (*Scirpus lacustris*) (Figure 182, 1,2) *C. gyllenhali* Fall.
63. *Balclutha* Kirk. — 2 or 3 species.
- 1 (2). Lobes of pygophore without processes. Slender, green or brownish; dorsum often with brown spots. 3.2-4.2 (Figure 182, 3) *B. punctata* Thunb.
- 2 (1). Lobes of pygophore with apical process ventrally. Yellowish red. 2 indistinct bands on junction of face and vertex; pronotum with traces of longitudinal stripes. 3.5-3.9. South *B. rosea* Scott.
64. *Macrosteles* Fieb. — 17 species.
- 1 (8). Penis with short apical processes which are markedly less than half as long as aedeagus (Figure 182, 4-11).
- 2 (5). Processes of penis curved, crossed, their apex directed towards base of aedeagus (Figure 182, 4-7).
- 3 (4). Processes of penis curved backwards at base, on the same plane as the aedeagus in profile. Yellow; a pair of black spots at anterior margin of vertex; an additional pair of black spots often present posterior to the above spots; ventral part of frontoclypeus with dark spot; apex of hemelytra dark. 3.1-4. On *Filipendula ulmaria* and *Sanguisorba officinalis* (Figure 182, 4,5) *M. septemnotatus* Fall.
- 4 (3). Processes of penis curved in anterior part, ventral to aedeagus in profile and at an angle with aedeagus. Greenish yellow, without pattern. 3-3.6. Center, South (Figure 182, 6,7) *M. oshanini* Razv.

CICADELLIDAE

- 5 (2). Processes of penis not crossed, diverging (Figure 182, 8-11).
- 6 (7). Processes of penis forming a posteriorly-directed semicircle. Greenish; vertex with 2 pairs of black spots and one band between them; this band is often interrupted; hemelytra usually dark, with several light spots. 3.6-4.5. On horsetail (*Equisetum palustre*) (Figure 182, 8,9) *M. frontalis* Scott.
- 7 (6). Processes of penis very short, hooked, obliquely directed anteriorly and ventrad. Pale, pinkish, with traces of brownish spots. 3-4. South. On *Salicornia europaea* (Figure 182, 10,11) *M. salsolae* Put.
- 8 (1). Penis with long processes which are at least half as long as the aedeagus (Figure 182, 12-37).
- 9 (12). Processes of penis curved at the base, directed posteriorly parallel to aedeagus (Figure 182, 12-15).
- 10 (11). Apex of aedeagus with a pair of lateral denticles; processes of penis crossed near the middle. Greenish; vertex with 2 pairs of black spots; hemelytra often dark, brown, with several light spots. 3.8-4.8 (Figure 182, 12,13) *M. variatus* Fall.
- 11 (10). Dorsal side of aedeagus with a pair of denticles in the middle; processes of penis crossed at base. Pattern as in *M. sexnotatus*, but dorsum often very dark. 2.7-4. On *Juncus* spp. (Figure 182, 14,15) *M. horvathi* W. Wgn.
- 12 (9). Processes of penis directed anteriorly (Figure 182, 16-37).
- 13 (14). Processes of penis branched. Yellowish green; vertex with 4 black spots. 2.7-4 (Figure 182, 16,17) *M. quadripunctulatus* Kbm.
- 14 (13). Processes of penis not branched (Figure 182, 18-37).
- 15 (18). Apex of aedeagus with a pair of lateral denticles (Figure 182, 18-21).
- 16 (17). Processes of penis converging, slightly crossed. Apical denticles of aedeagus curved dorsad. Pale, hemelytra with brown spots. 3-4. Transcarpathian Region (Figure 182, 18-19) *M. maculosus* Then.
- 17 (16). Processes of penis diverging. Apical denticles of aedeagus ventrally curved. 3-4. North. On *Empetrum nigrum* (Figure 182, 20,21) *M. empetri* Oss.
- 18 (15). Aedeagus without apical denticles (Figure 182, 22-37).
- 401 19 (28). Processes of penis diverging (Figure 182, 22-31).
- 20 (21). Processes of penis slender, parallel in apical part. Resembling *M. sexnotatus*. 2.7-4 (Figure 182, 22,23) *M. viridegriseus* Edw.
- 21 (20). Processes of penis broad, flattened, diverging (Figure 182, 24-31).
- 22 (23). Aedeagus in profile markedly bent at an obtuse angle posterior to middle, directed towards the phallobase at an angle to the base. Resembling *M. sexnotatus*. 3.2-4 (Figure 182, 24,25) *Six-pointed Leafhopper — *M. laevis* Rib.
- 23 (22). Aedeagus straight, more or less parallel to phallobase (Figure 182, 26-31).
- 24 (25). Processes of aedeagus curved ventrally (at an obtuse angle to aedeagus), also curved in the middle. Yellowish green; a pair of black spots on junction of face and vertex; a band which is

- interrupted in the middle in anterior part of vertex; a pair of spots in posterior part of vertex; spots sometimes fused; lateral corners of scutellum with triangular spots. 2.7-4. Not injurious (Figure 182, 26,27)..... *M. sexnotatus* Fall.
- 25 (24). Processes of penis uniformly arcuate, conjugate to axis of aedeagus (Figure 182, 28-31).
- 26 (27). Ventral side of aedeagus with a lamellar process with irregular margin; this process is well marked in profile. Resembling *M. sexnotatus*. 3.3-4.2 (Figure 182, 28,29).....
..... *M. cristatus* Rib.
- 27 (26). Ventral side of aedeagus without such a process, regular and straight in profile. Resembling *M. sexnotatus*. 2.7-4 (Figure 182, 30,31)..... *M. alpinus* Zett.
- 28 (19). Processes of penis crossed at apex (Figure 182, 32-37).
- 29 (32). Aedeagus with lamellar processes with irregular margin at the sides (Figure 182, 32-35).
- 30 (31). Aedeagus diverging at an acute angle from phallobase, with a dilatation with irregular margin only in the middle, where it is therefore markedly broader. Resembling *M. variatus*. 3.5-4.5 (Figure 182, 32,33)..... *M. lividus* Edw.
- 31 (30). Aedeagus parallel to phallobase, with irregular margin throughout. Resembling *M. sexnotatus*. 3.3-3.9 (Figure 182, 34,35).....
..... *M. fieberi* Edw.
- 32 (29). Aedeagus smooth, without such dilatations. Processes of penis crossed near middle. Yellowish green; vertex with 2 pairs of spots and interrupted band between them; pattern variable, spots often fused. 3-3.6. On *Puccinellia* sp. (Figure 182, 36,37).....
..... *M. sordidipennis* Stål.
65. *Erotettix* Hpt. Monotypic genus.
- 1 (1). Dirty-yellow with black pattern and black veins of hemelytra to completely black with a bluish tinge. 3.8-5. On floating leaves of water lilies and pond weeds (*Nymphaea*, *Nuphar*, *Potamogeton* (Figure 182, 38,39)..... *E. cyane* Boh.
66. *Sonronius* Dorst. Genus comprising 2 species.
- 1 (2). Apical processes of penis curved, converging. Frontoclypeus with black spots between antennae; 2 black spots on junction of face and vertex; vertex more or less dark; veins more or less black. 4.7-5.3. On *Filipendula ulmaria* (Figure 182, 40,41)..... *S. quadripunctatus* Fall.
- 2 (1). Processes straight, parallel. Frontoclypeus dark brown between antennae. Junction of face and vertex without spots. Veins yellow. 3.6-4.4 (Figure 182, 42,43)..... *S. binotatus* J. Shlb.
67. *Sagatus* Rib. Monotypic genus.
- 1 (1). Slender, yellow; frontoclypeus brownish; vertex with a pair of round black spots; diffuse brownish spots on pronotum and near clavus of hemelytra. 4-6. On willow (Figure 182, 44,45).....
..... *S. punctifrons* Fall.

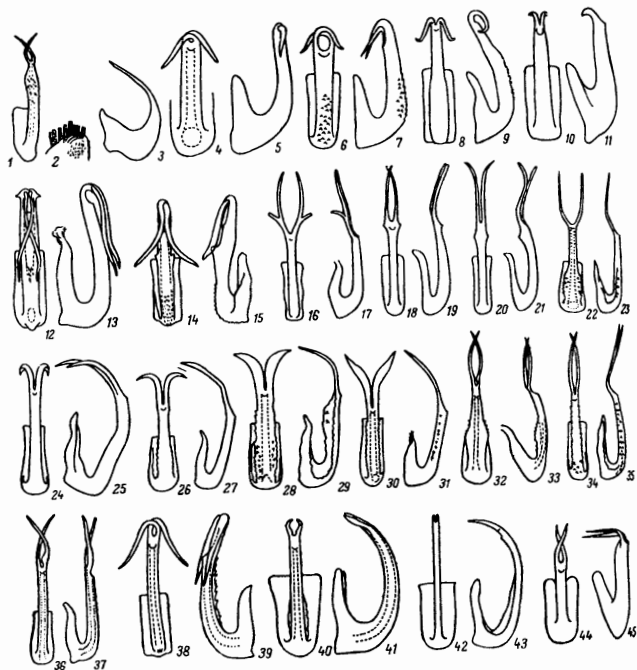


FIGURE 182. Cicadinea, Family Cicadellidae. Details of male genitalia (after Ossianilsson and Ribaut)

1, 2 - *Coryphaeus gyllenhalii*: 1 - penis, dorsal; 2 - apex of genital plate with macrochaetae;
3 - *Balcutha punctata*; penis, lateral; 4, 5 - *Macrosteles septemnotatus*: 4 - same, dorsal; 5 - same, lateral; 6, 7 - *M. oshanini*: 6 - same, dorsal; 7 - same, lateral; 8, 9 - *M. frontalis*: 8 - same, dorsal; 9 - same, lateral; 10, 11 - *M. salsolae*: 10 - same, dorsal; 11 - same, lateral; 12, 13 - *M. variatus*: 12 - same, dorsal; 13 - same, lateral; 14, 15 - *M. horvathi*: 14 - same, dorsal; 15 - same, lateral; 16, 17 - *M. quadripunctulatus*: 16 - same, dorsal; 17 - same, lateral; 18, 19 - *M. maculosus*: 18 - same, dorsal; 19 - same, lateral; 20, 21 - *M. empetri*: 20 - same, dorsal; 21 - same, lateral; 22, 23 - *M. viridigriseus*: 22 - same, dorsal; 23 - same, lateral; 24, 25 - *M. laevis*: 24 - same, dorsal; 25 - same, lateral; 26, 27 - *M. sexnotatus*: 26 - same, dorsal; 27 - same, lateral; 28, 29 - *M. cristatus*: 28 - same, dorsal; 29 - same, lateral; 30, 31 - *M. alpinus*: 30 - same, dorsal; 31 - same, lateral; 32, 33 - *M. lividus*: 32 - same, dorsal; 33 - same, lateral; 34, 35 - *M. fieberi*: 34 - same, dorsal; 35 - same, lateral; 36, 37 - *M. sordidipennis*: 36 - same, dorsal; 37 - same, lateral; 38, 39 - *Erotettix cyane*: 38 - same, dorsal; 39 - same, lateral; 40, 41 - *Sonronius quadripunctatus*: 40 - same, dorsal; 41 - same, lateral; 42, 43 - *S. binotatus*: 42 - same, dorsal; 43 - same, lateral; 44, 45 - *Sagatus punctifrons*: 44 - same, dorsal; 45 - same, lateral.

68. *Deltocephalus* Burm. 1 or 2 species.

- 1 (1). Apex of aedeagus simple, without processes. Venter black; face with traces of light pattern; vertex brownish, sometimes with 2 irregular dark spots; the other part of the dorsum more or less dark brown. 2.15-3.2 (Figure 183, 1).... *D. pulicaris* Fall.

403 69. *Recilia* Edw. — 3 species.

- 1 (2). Aedeagus strongly curved. Styli thick, their apex reaching margin of genital plates. Brown; face with dark pattern; anterior margin of vertex with dark band, its dorsal margin interrupted by round spots which form T-shaped denticles; cells of hemelytra with brown border. 3.15-3.8. Carpathians (Figure 183, 2).....
..... *R. coronifer* Marsh.
2 (1). Aedeagus slightly curved (Figure 183, 3-6). Styli small, their apex far from margin of genital plates.
3 (4). Aedeagus broader, its lateral margins with a row of denticles in the middle. Resembling *R. coronifer* Marsh. 2.75-3.5. Crimea (Figure 183, 5,6)..... *R. horvathi* Then.
4 (3). Aedeagus narrower, its lateral margins smooth. Resembling *D. coronifer*. 2.8-3.25. South (Figure 183, 3,4).....
..... *R. schmidgeni* W. Wgn.

70. *Endria* Om. One species in the Palearctic Region.

- 1 (1). Slender; grayish, with brown pattern; anterior margin of vertex with 4 black spots; a band interrupted in the middle posterior to these spots; posterior margin of vertex with 4 brown spots; pronotum with longitudinal stripes; hemelytra transparent; some cells of hemelytra with brown border. Macropterous. 3.9-4. Kursk Region. On reed (*Calamagrostis epigeios*) (Figure 183, 7,8)..... *E. nebulosa* Ball.

71. *Japananus* Ball.

- 1 (1). Slender; resembling species of *Platymetopius*. Head, pronotum and scutellum dirty-yellowish green; hemelytra transparent, with dull brown bands and reddish veins. 4.5-6. Occurs possibly in the South. Mainly on maple..... *J. hyalinus* Osb.

72. *Chiasmus* M.R. This genus was possibly erroneously recorded from the European U.S.S.R.

- 1 (1). Hemelytra markedly shortened. Gray, dull. Vertex only a little longer than pronotum, with indistinct spots; pronotum with a transverse row of dark spots; dorsum of abdomen dark gray. 2.7-3.2. South..... *Ch. conspurcatus* Perr.

73. *Doraturopsis* Lindb. — 1 species. In the whole U.S.S.R. 2 species.

- 1 (1). Pale, gray. Head, dorsum of body and whole abdomen with black speckles resembling warts. Dorsal part of face often dark. 5.5-9. South. On low and sparsely standing reeds (*Phragmites communis*) on solonchak soils (Figure 183, 9,10).....
..... *D. heros* Mel.

74. *Doratura* J. Shlb. Gray, often greenish opalescent when alive; vertex usually with 3 black spots at anterior margin; face with black bands; abdomen with longitudinal stripes consisting of spots. On Gramineae. — 12 species.

- 1 (8). Dorsal side of aedeagus without denticles. Apical part of styli long, curved. (Subgenus *Doratura* s.str.).
2 (7). Apex of styli slightly curved, tapering (Figure 183, 12-14).
3 (4). Dorsal side of aedeagus with indistinct papillae in basal part. 3.5-4.3. (Figure 183, 14-16)..... *D. stylata* Boh.
4 (3). Dorsal side of aedeagus completely smooth.
5 (6). Apical part of styli not very long, less than 1.5 times as long as basal part. 2.7-4. South (Figure 183, 13)..... *D. exilis* Horv.

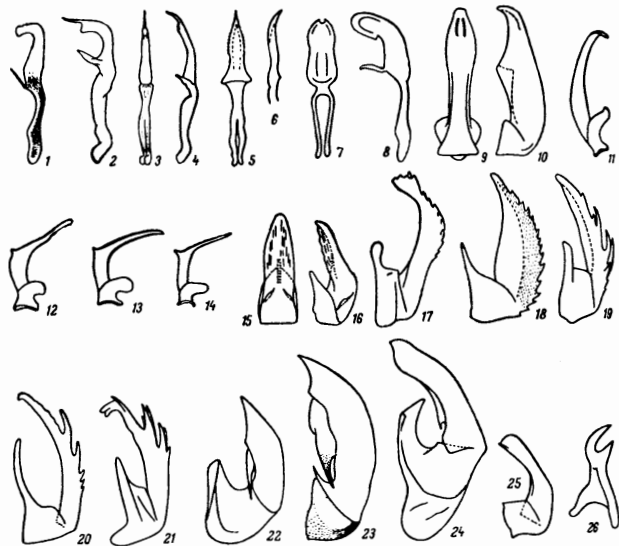


FIGURE 183. Cicadinea, Family Cicadellidae. Details of male genitalia (after Bern, Wagner, Ribaut, Horvath and original)

1—*Deltocephalus pulicaris*, penis and connective, lateral; 2—*Recilia coronifer*, same; 3,4—*R. schmidgeni*; 3—same, ventral; 4—same, lateral; 5,6—*R. horvathi*; 5—same, dorsal; 6—penis, lateral; 7,8—*Endria nebulosa*; 7—penis and connective, dorsal; 8—same, lateral; 9,10—*Doraturopsis heros*; 9—penis, dorsal; 10—penis, lateral; 11—*Doratura heterophylla*, stylus; 12—*D. impudica*, same; 13—*D. exilis*, same; 14-16—*D. stylata*; 14—stylus; 15—penis, dorsal; 16—same, lateral; 17—*D. homophylla*, same; 18—*D. salina*, same; 19—*D. concors*, same; 20—*D. rusaevi*, same; 21—*D. medvedevi*, same; 22—*Aconura fasciata*, same; 23—*A. jakovlevi*, same; 24—*A. volgen-sis*, same; 25,26—*Aconurella proluxa*; 25—same; 26—stylus.

HOMOPTERA

- 6 (5). Apical part of styli long, 1.5 times as long as basal part. 4-5.8. Center, South. On *Agropyron sibiricum*, etc. (Figure 183, 12). **D. impudica** Horv.
- 7 (2). Apex of styli strongly curved and obliquely truncate. 4-5.5. South (Figure 183, 11). **D. heterophyla** Horv.
- 8 (1). Dorsal side of aedeagus with stout denticles. Apical part of styli short, straight. (Subgenus *Doraturina*, subgenus novum; type of subgenus: *Jassus homophylus* Fl.).
- 9 (12). Penis with short denticles arranged in 2 regular rows (Figure 183, 17-18).
- 10 (11). Denticles present only in apical part of aedeagus. 3.2-4.8 (Figure 183, 17) **D. homophyla** Fl.
- 11 (10). Denticles on the whole dorsal side of aedeagus. 3.2-4.8. South (Figure 183, 18). **D. salina** Horv.
- 404 12 (9). Penis with long processes (spines) which are not regularly arranged in 2 rows (Figure 183, 19-21).
- 13 (14). Whole dorsal side of penis covered with similar spines; distal spines shorter. 3-4.5 (Figure 183, 19). **D. concors** Horv.
- 14 (13). Spines on basal half of aedeagus long, in apical half of aedeagus short or absent.
- 15 (16). Apex of aedeagus forked. 2.7-3.4. South. On alkali grass (*Puccinellia* spp.) (Figure 183, 21) **D. medvedevi** Logv.
- 16 (15). Apex of aedeagus simple. Southeast. On *Agropyron ramosum* (Figure 183, 20) **D. rusaevi** Kuzn.
75. **Aconurella** Rib. — 1 species. In the whole U.S.S.R. 5 species.
- 1 (1). Green; face with black fused spots; vertex usually with 3 spots at anterior margin. 2.1-3.4. Southeast (Figure 183, 25, 26) **A. proluxa** Leth.
76. **Aconura** Leth. Most species live on *Aeluropus litoralis*. — 3 species.
- 1 (2). Aedeagus several times longer than phallobase. Hemelytra shorter than abdomen, with rounded apex. Yellowish green, sometimes brownish; a pair of black spots on junction of face and vertex. 2.8-5.6. South. (Figure 183, 23). **A. jakovlevi** Leth.
- 2 (1). Aedeagus not more than 1.5 times as long as phallobase (Figure 183, 22, 24).
- 3 (4). Processes on ventral side of aedeagus short. Hemelytra markedly shortened, truncate posteriorly. Light gray; vertex with narrow black band which is interrupted in the middle; junction of face and vertex with a pair of black spots; male abdomen dorsally black, with a light band on tergum VIII. 2.6-5.4. Southeast (Figure 183, 24) **A. volgensis** Leth.
- 4 (3). Processes on ventral side of aedeagus long. Resembling *A. volgensis* Leth., but abdomen black dorsally; posterior margin of abdominal terga light. 2.2-3.5. Southeast (Figure 183, 22). **A. fasciata** Em., sp.n.
77. **Fieberiella** Sign. (Figure 184, 1, 3). — 2 species.
- 1 (2). Processes of anal tube and of lobes of pygophore with a single apex. Slender. Body covered with fine black speckles. Dorsum

CICADELLIDAE

- pale brown; hemelytra slightly darker; face pale, with black dorsal band. 6.5-7.5. South. On various trees and shrubs. **F. septentrionalis** W. Wgn.
- 2 (1). Process of anal tube forked; process of pygophore with a single apex. Resembling *F. septentrionalis* W. Wgn. Western Caucasus **F. lugubris** Em., sp.n.
78. **Synophropsis** Hpt. Monotypic genus.
- 1 (1). Slender, pale, brownish; apical cells of hemelytra with brown border. 6-6.7. Crimea. On *Laurus nobilis* (Figure 184, 4-6) **S. lauri** Horv.
79. **Phlogotettix** Rib. Monotypic genus.
- 1 (1). Slender; pale, brownish; a round black spot at posterior margin of vertex; black spots ventral to antennae. 4.5-5.5. Carpathians (Figure 184, 7, 8) **Ph. cyclops** M.R.
80. **Platymetopius** Burm. Usually polyphagous. — 10 species.
- 1 (10). Lobes of pygophore with long, geniculate process forming an acute angle (Figure 184, 9-12). Hemelytra with longitudinal stripe with serrated margin along clavus.
- 2 (9). Apical processes of aedeagus projecting only a little beyond margin of gonopore (Figure 184, 14, 15).
- 3 (4). Lobe on process of pygophore not present ventrally. Yellowish orange; vertex, pronotum, scutellum and stripe on hemelytra brown. 4.6-6.9. South. On trees and shrubs (Figure 184, 10, 13, 14) **P. major** Kbm.
- 4 (3). Lobe of process of pygophore present ventrally (Figure 184, 9, 11, 12).
- 5 (6). Lateral margin of lobe on process of pygophore angularly protruding in the middle. Resembling *P. major*. 4.3-5.4 (Figure 184, 9, 15) **P. undatus** Deg.
- 6 (5). Lateral margin of lobe on process of pygophore rounded in the middle, but projecting (Figure 184, 11, 12).
- 7 (8). Yellowish orange; vertex, pronotum, scutellum and stripe on hemelytra brownish, as in *P. major*. 4.2-6.3. Chechen-Ingush A.S.S.R. (Figure 184, 11) **P. henribauti** Dlab.
- 8 (7). Greenish yellow; vertex, pronotum, scutellum and stripe on hemelytra grayish brown. 4.3-6.6. Southwest (Figure 184, 12) **P. dorsofenestratus** Dlab.
- 9 (2). Apical processes of aedeagus long, diverging, projecting far beyond margin of gonopore. Resembling *P. dorsofenestratus*. 5.4-6. South (Figure 184, 16-18) **P. ponticus** Em., sp.n.
- 10 (1). Processes on lobes of pygophore not geniculate.
- 11 (18). Penis with 2 pairs of processes (Figure 184, 19-25).
- 12 (15). Processes of lobes of pygophore with serrated, irregular posterior margin (Figure 184, 22).
- 13 (14). Aedeagus strongly curved before apex. Apical processes of aedeagus not projecting beyond margin of gonopore. Yellow or greenish yellow. 4.9-6.3. Southeast (Figure 184, 19) **P. chloroticus** Put.
- 14 (13). Aedeagus almost straight before apex. Apical processes of aedeagus very long, projecting far beyond margin of gonopore. Pale; vertex, pronotum, scutellum and longitudinal stripe on

hemelytra brownish, with light speckles. Outer margin of stripe on hemelytra broken in a steplike manner. 3.6-4.7. Southeast (Figure 184, 20-22) *P. minor* Vilb.

406 15 (12). Posterior margin of processes of lobes of pygophore straight.

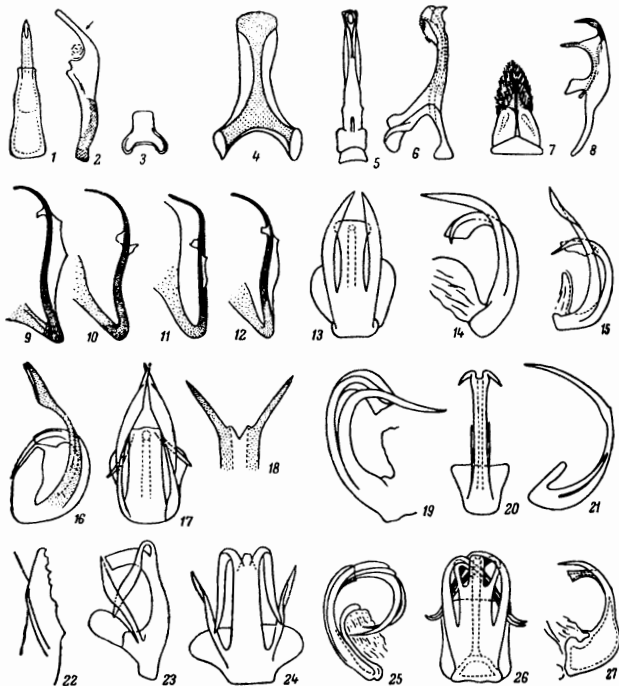


FIGURE 184. Cicadinae. Family Cicadellidae. Details of male genitalia (after Diabola Ribaut and original)

1-3 - *Fieberiella flori*: 1 - penis, dorsal; 2 - same, lateral; 3 - connective; 4-6 - *Synphroprosis lauri*: 4 - same; 5 - penis, dorsal; 6 - same, lateral; 7, 8 - *Phlogotettix cyclops*. 7 - genital plates and genital valve; 8 - penis, lateral; 9 - *Platymetopius undatus*, process of lobe of pygophore, lateral; 10 - *P. major*, same; 11 - *P. henribauti*, same; 12 - *P. dorsofenestratus*, same; 13, 14 - *P. major*: 13 - penis, dorsal; 14 - same, lateral; 15 - *P. undatus*, same; 16-18 - *P. ponticus*: 16 - same; 17 - same, dorsal; 18 - apex of penis, anterior view; 19 - *P. chloroticus*, penis, lateral; 20-22 - *P. minor*: 20 - same, dorsal; 21 - same, lateral; 22 - process of lobe of pygophore; 23, 24 - *P. rostratus*: 23 - penis, lateral; 24 - same, dorsal; 25, 26 - *P. guttatus*: 25 - same, lateral; 26 - same, dorsal; 27 - *P. obsoletus*, same, lateral.

16 (17). Apical processes of aedeagus sharply bent at base, recurrent, crossing basal process on their side. Vertex twice or 3 times longer than pronotum. Brownish. Dorsal part of face with V-shaped black pattern; vertex with double longitudinal brown stripe. Cells of hemelytra with brown borders. 4-5. South (Figure 184, 23, 24) *P. rostratus* H.-S.

407 17 (16). Apical and basal processes on sides of penis parallel, ventrally curved and crossing processes of the opposite side. Vertex slightly shorter than pronotum. Brownish; face sometimes with brown line at dorsal margin; cells of hemelytra with brown border. 5-6. South (Figure 184, 25, 26) *P. guttatus* Fieb.

18 (11). Penis with one pair of processes. Vertex markedly shorter than pronotum, with 2 apical black spots; pale, brownish; cells of hemelytra with brown border. 4.7-5.5. South (Figure 184, 27) *P. obsoletus* Sign.

81. *Proceps* M.R. Monotypic genus.

1 (1). Slender. Head markedly prolonged into conical process. Dorsum dark brown to black; vertex, dorsal part of face, pronotum and scutellum with light longitudinal stripes; pronotum, scutellum and hemelytra with light speckles; cells at costal margin of hemelytra transparent; venter light. 4-4.4. South (Figure 185, 1, 2) *P. acicularis* M.R.

82. *Phlepsius* Fieb. With dense brown pattern consisting of fused spots; hemelytra with reticulate pattern. Polyphagous. In the whole U.S.S.R. 2 species.

1 (2). Dorsal side of aedeagus concave. Thickset; anterior margin of vertex sharp. Hemelytra darker than the body, with some light spots. 4.9-5.7. South (Figure 185, 5, 6) *Ph. intricatus* H.-S.

2 (1). Dorsal side of penis convex. Slenderer; anterior margin of vertex rounded. Hemelytra not darker than the body; reticulate pattern of hemelytra well marked. 5.4-5.8. Southeast (Figure 185, 3, 4) *Ph. ornatus* Perr.

83. *Selenocephalus* Germ. Brown; dorsum with marbled pattern of dark brown speckles; veins of hemelytra marked by a dotted line. Dorsal part of face with narrow dark band. - 2 species.

1 (2). Aedeagus originating in middle of phallobase, with only 2 apical denticles. Color lighter. 7-8.5. Crimea, Ciscausia (Figure 172, 32, 33) *S. pallidus* Kbm.

2 (1). Aedeagus originating on ventral part of phallobase, with denticles in its middle part in addition to apical denticles. Color darker. 7-9. South (Figure 172, 31) *S. griseus* F.

84. *Anoplotettix* Rib. In the whole U.S.S.R. 4 species.

1 (2). Aedeagus branching from ventral margin of phallobase. Apical process of lobes of pygophore elongate, rounded. Head, pronotum and scutellum reddish; 4 black spots on sides of vertex and at dorsal margin of frontoclypeus; pronotum with dark brown band; hemelytra transparent, with brown veins and apex. 6-7. Crimea. (Figure 185, 7, 8) *A. loewi* Horv.

- 2 (1). Aedeagus branching from dorsal margin of phallobase. Apical process of lobes of pygophore short, sometimes pointed (Figure 185, 9-12, 14, 15).
- 3 (4). Aedeagus long and slender; posterodorsal margin of genital plates with denticle. Color as in *A. loewi*, but spots on face and vertex transverse, lying on brown bands. 6-7.1. Ciscaucasia (Figure 185, 9, 10) *A. magnificus* Em.
- 4 (3). Aedeagus short, stocky. Genital plates without denticles (Figure 182, 11, 12, 14, 15).
- 5 (6). Processes on lobes of pygophore hatchet-shaped, dorsally and ventrally delimited by a denticle. Gonopore slightly dorsal, flanked by lobes. Yellowish brown; hemelytra transparent, with brown apex and veins. Head usually without spots. 5-6. Moldavia (Figure 185, 11-13) *A. horvathi* Metc.
- 6 (5). Processes on lobes of pygophore simple, pointed, without dorsal denticle. Gonopore apical. Color as in *A. horvathi*; a pair of black spots usually present on dorsal part of frontoclypeus and at anterior margin of vertex. 5.3-6. Carpathians (Figure 185, 14, 15) *A. fuscovenosus* Ferr.
85. *Idiodonus* Ball. 1 species in the Old World.
- 1 (1). Light, yellowish; dorsal part of face usually with a pair of black spots. Face and dorsum with fused red speckles; venter with black spots. 4.3-5.5. North, Center. Polyphagous (Figure 185, 16, 17) *I. cruentatus* Panz.
- 408 86. *Colladonus* Ball. 1 species in the Old World.
- 1 (1). Brownish; vertex with black band; frontoclypeus with a pair of black spots dorsally and a serrated pattern laterally; hemelytra semitransparent, with light veins; venter with black spots. 4.4-4.9. (Figure 185, 18, 19) *C. torneellus* Zett.
87. *Lamprotettix* Rib. Monotypic genus.
- 1 (1). Head and scutellum pale yellow; pronotum brownish green; face with black pattern and 2 spots dorsally; vertex with interrupted band; scutellum with black spots in lateral corners; hemelytra brown, with dark brown spots and some greenish cross veins. 5.1-5.7. Northwest, Southwest. Polyphagous (Figure 185, 20, 21) *L. octopunctatus* Schrk.
88. *Allygus* Fieb. On trees and shrubs. Polyphagous. — 2 species.
- 1 (2). Penis slightly curved; a row of macrochaetae at outer margin of genital plates; posterior angles of pregenital sternum of female rounded-rectangular; face with black pattern; dorsum with brown pattern on light ground; hemelytra with pattern of fused transverse stripes; cross veins sometimes light. 6-7 (Figure 185, 22, 23) *A. mixtus* F.
- 2 (1). Penis strongly curved; the row of macrochaetae at a small distance from margin of genital plates; posterior angles of pregenital sternum markedly projecting, prolonged posteriad.

- Face with black pattern; dorsum with brownish pattern on light ground; hemelytra brownish, with light veins and some brown spots. 6.5-7.5 (Figure 185, 24-26) *A. modestus* Scott.
89. *Allygidius* Rib. Brownish species with brown pattern; hemelytra with brown spots and light veins. Mainly on trees and shrubs. Polyphagous. — 4 species.
- 1 (4). Appendages of lobes of pygophore not forked. Macrochaetae of genital plates irregularly arranged (Figure 185, 27, 32). (Subgenus *Allygidius* s.str.).
- 2 (3). Styli projecting beyond genital plates. Processes of genital plates not crossed, directed ventrad. 6.5-7.5 (Figure 185, 27-29) *A. commutatus* Scott.
- 3 (2). Styli not projecting beyond genital plates. Processes crossed, more or less on a horizontal plane. 8-9. South. (Figure 185, 30-32) *A. atomarius* F.
- 4 (1). Appendages of lobes of pygophore with forked apex. Macrochaetae on genital plates in one row (Figure 186, 3, 6, 7). (Subgenus *Dicrallygus* Rib.).
- 5 (6). Apex of styli pointed, projecting beyond genital plates. Fork at apex of processes of pygophore small. 6-7. South (Figure 186, 1-3) *A. mayri* Kbm.
- 6 (5). Styli clavate, their apex not projecting beyond genital plates. Fork of processes of pygophore large. 6.5-7.5. South (Figure 186, 4-7) *A. furcatus* Ferr.
90. *Phlepsidius* Em. — 1 species.
- 1 (1). Dorsum brown; hemelytra with brown veins; cells of hemelytra in some places dark brown at a distance from veins; venter pale. 4.4-4.7. Southeast. On shrubs and undershrub of Family Chenopodiaceae (Figure 186, 8, 9) *Ph. desertorum* Em.
91. *Graphocraerus* Thms. Monotypic genus.
- 1 (1). Green; vertex with 6 black spots; pronotum with 4 spots in a transverse row; hemelytra with prominent veins; male hemelytra slightly longer, female hemelytra slightly shorter than abdomen. 5-6.5. On Gramineae (Figure 186, 10, 11) *G. ventralis* Fall.
92. *Hardya* Edw. — 1 species.
- 1 (1). Brown, with dark brown pattern; anterior margin of vertex with 6 black spots followed by a sinuous line forming a fanlike pattern consisting of 4 longitudinally-prolonged loops; face with black pattern; scutellum with orange spots; hemelytra with several dark brown spots. 2.7-4 (Figure 186, 12-14) *H. tenuis* Germ.
- 410 93. *Stenometiellus* Hpt. — Not less than 3 species.
- 1 (2). Ventral side of lobes of pygophore with broad apical, downward-curved lobe. Apex of genital plates more or less flat, short. Grayish, with dark brown pattern; pattern of vertex consisting of longitudinal lines in posterior part and transverse lines in anterior part; pronotum and scutellum spotted; some cells of

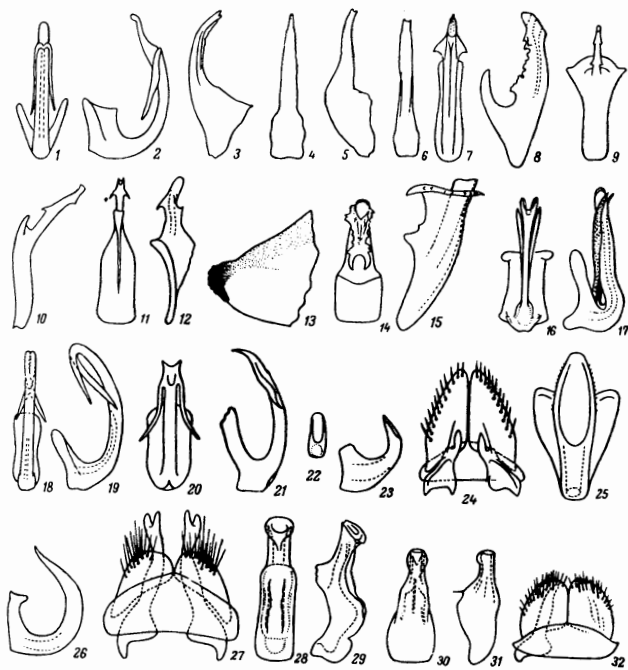


FIGURE 185. Cicadinea. Family Cicadellidae. Details of male genitalia (after Zakhvatkin, Ribaut and original)

1, 2 — *Proceps acicularis*: 1 — penis, dorsal; 2 — same, lateral; 3, 4 — *Phlepsius ornatus*: 3 — same, dorsal; 4 — same, lateral; 5, 6 — *Ph. intricatus*: 5 — same, dorsal; 6 — same, lateral; 7, 8 — *Anoploretix loewi*: 7 — same, dorsal; 8 — same, lateral; 9, 10 — *A. magnificus*: 9 — same, dorsal; 10 — same, lateral; 11-13 — *A. horvathi*: 11 — same, dorsal; 12 — same, lateral; 13 — apex of lobe of pygophore; 14, 15 — *A. fuscovenosus*: 14 — penis, anterior aspect; 15 — same, lateral; 16, 17 — *Idiodonus cruentatus*: 16 — same, dorsal; 17 — same, lateral; 18, 19 — *Colladonus torneellus*: 18 — same, dorsal; 19 — same, lateral; 20, 21 — *Lamprotettix octopunctatus*: 20 — same, dorsal; 21 — same, lateral; 22, 23 — *Allygus mixtus*: 22 — same, dorsal; 23 — same, lateral; 24-26 — *A. modestus*: 24 — genital plates, valve and styli, dorsal; 25 — penis, dorsal; 26 — same, lateral; 27-29 — *Allygidius commutatus*: 27 — genital plates, valve and styli, ventral; 28 — penis, dorsal; 29 — same, lateral; 30-32 — *A. atomarius*: 30 — same, dorsal; 31 — same, lateral; 32 — genital plates, valve and stylus, ventral.

- hemelytra with brown border. 2.8-3.2. Steppes of the East; Kazakhstan (Figure 186, 15-17)..... *S. tesquorum* Em., sp. n.
- 2 (1). Lobe of pygophore little developed, not curved downward. Apex of genital plates longer, strongly curved dorsad. Grayish, almost without pattern. 2.8-3.2. South. On *Festuca sulcata* (Figure 186, 18, 19)..... *S. festucarius* Logv.
94. **Paluda** DeL. On Gramineae. — 6 species.
- 1 (4). Gonopore apical; sides of aedeagus with carinate processes. Processes of lobes of pygophore longer, their apex directed posteriad or dorsad; ventral margin of lobes membranous in the middle (Figure 186, 20-24). (Subgenus *Paluda* s. str.).
- 2 (3). Process of pygophore straight, sword-shaped, its apex directed posteriad. Pale, yellowish. 4.2-5. East. On *Agropyron repens*, etc. (Figure 186, 20-22)..... *P. agropyri* Em.
- 3 (2). Process of pygophore curved dorsad at apex. Yellow. 4-4.5. On *Calamagrostis epigeios* (Figure 186, 23-25)..... *P. flaveola* Boh.
- 4 (1). Gonopore ventral, subapical; aedeagus simple, rounded. Processes of lobes of pygophore shorter, their apex directed obliquely ventrad; lobes without membranous part (Figure 186, 25-28). (Subgenus *Rhopalopyx* Rib.).
- 5 (8). Apex of aedeagus bidentate; outer subapical corner of styli well developed, prominent. Pale; vertex with 3 black spots at anterior margin and one black spot in middle of posterior margin; pronotum, scutellum and hemelytra with black longitudinal stripes.
- 6 (7). Lobe of pygophore uniformly tapering. 3.6-3.9. In dry meadows (Figure 186, 26-28)..... *P. preysleri* H.-S.
- 7 (6). Lobe of pygophore with rounded apex, with denticle (approximately as in Figure 187, 2). 3.6-3.9. In marshy meadows..... *P. adumbrata* C. Shlb.
- 8 (5). Apex of aedeagus rounded, slightly notched; outer subapical corner of styli little developed. Without pattern.
- 9 (10). Apical denticle of lobes of pygophore long; setae of pygophore not reaching its apex; ventral margin of lobe uniformly concave anterior to denticle. Pale; greenish. 3-4 (Figure 187, 1)..... *P. vitripennis* Fl.
- 10 (9). Apical denticle of lobes of pygophore short; setae of pygophore reaching beyond apex; ventral margin of lobes angularly concave anterior to denticle. Pale; greenish. 3-4. South (Figure 187, 2)..... *P. parvispina* W. Wgn.
95. **Elymana** DeL. On Gramineae. — 2 species.
- 1 (2). Lobes of pygophore with a row of fine denticles dorsally. Apical processes of penis not curved dorsad. Greenish yellow. 4-5.4 (Figure 187, 5, 6)..... *E. sulphurella* Zett.
- 2 (1). Lobes of pygophore with stout denticle dorsally. Apical processes of penis curved dorsad. Resembling *E. sulphurella*. 5-5.5. North, Center. In humid, shady forests (Figure 187, 3, 4)..... *E. kozhevnikov* Zachv.

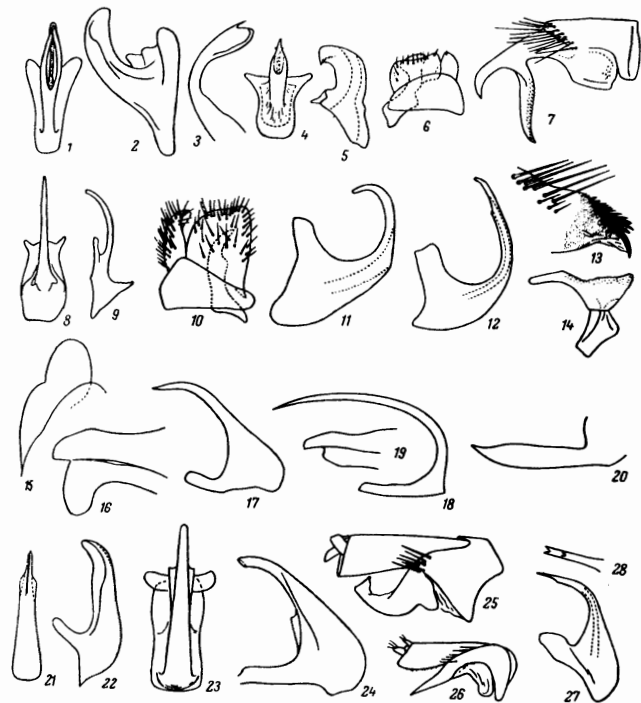


FIGURE 186. Cicadinea. Family Cicadellidae. Details of male genitalia (after Diabola, Ribaut and original)

1-3 — *Allygidius mayri*: 1—penis, dorsal; 2—same, oblique-lateral; 3—process of lobe of pygophore; 4-7 — *A. furcatus*: 4—penis, dorsal; 5—same, lateral; 6—genital plate, valve and stylus, oblique-ventral; 7—lobe of pygophore; 8,9—*Phlepsidius desertorum*: 8—penis, dorsal; 9—same, lateral; 10,11—*Graphocraerus ventralis*: 10—genital plates, valve and stylus, oblique-ventral; 11—penis, lateral; 12-14—*Hardya tenuis*: 12—same; 13—lobe of pygophore; 14—stylus; 15-17—*Stenometiopiellus tesquorum*: 15—genital plate; 16—apex of lobe of pygophore; 17—penis, lateral; 18,19—*S. festucarius*: 18—same; 19—apex of lobe of pygophore; 20-22—*Paluda agropyri*: 20—process of lobe of pygophore; 21—penis, dorsal; 22—same, lateral; 23-25—*P. flaveola*: 23—same, dorsal; 24—same, lateral; 25—genitalia, lateral; 26-28—*P. preysleri*: 26—genitalia, lateral; 27—penis, lateral; 28—apex of penis, dorsal.

96. *Cicadula* Zett. In humid and marshy habitats on sedge.—
9 species.

- 1 (10). Lobes of pygophore with toothlike processes. (Subgenus *Cicadula* s.str.).
2 (3). Apex of penis simple, without any appendages. Greenish yellow; pattern as in *C. quadrinotata*. 4.4-5. Northwest (Figure 187, 8,9) *C. saturata* Edw.
3 (2). Apex of penis with slender processes (Figure 187, 10-17).
4 (5). Apex of penis with 4 processes. Male orange-yellow; female greenish yellow; pattern as in *C. quinquenotata*, but often completely or partly absent. 4.7-5.5. On sedge (Figure 187, 10,11) *C. flori* J. Shlb.
5 (4). Apex of penis with 3 processes; median process forked (Figure 187, 12-17).
6 (7). Phallobase markedly inflated ventrally in the form of a cone. Median process at apex of penis much shorter than lateral processes. Greenish yellow; vertex with black spots lateral to ocelli; dorsal part of frontoclypeus with two transverse black spots; frontoclypeus often with dark spots ventral to antennae; dark spots at base of antennae. 3.9-5.2 (Figure 187, 12,13) *C. quadrinotata* F.
412 7 (6). Phallobase not inflated ventrally, gradually passing into aedeagus. Median process not less than half as long as lateral processes (Figure 187, 14-17).
8 (9). Penis uniformly curved; phallobase slightly thickened. Lateral processes of apex of aedeagus in profile on a line with apex of aedeagus. Apical process of lobes of pygophore almost as large as basal process. Yellow; frontoclypeus with 2 oblong spots ventral to antennae and 2 transverse spots at dorsal margin; vertex with 2 round spots lateral to ocelli. 4.5-5.5. Northwest. On sedge (Figure 187, 14,15) *C. quinquenotata* Boh.
9 (8). Aedeagus angularly curved, strongly dilated at base. Lateral processes of apex of aedeagus in profile forming an angle with apex of aedeagus. Apical process of lobes of pygophore much smaller than basal process. Habitus and size as in *C. quadrinotata* (Figure 187, 7,16,17) *C. persimilis* Edw.
10 (1). Lobes of pygophore without processes.
11 (14). Aedeagus without processes. Gonopore dorsal, subapical. (Subgenus *Cyperana* DeL.).
12 (13). Apex of lobes of pygophore not curved dorsad, their dorsal margin convex. Styli with narrow apex. Yellow or orange-yellow; transverse black spots at dorsal margin of face, 2 spots on frontoclypeus and 2 spots on tempora. 4-5.8. North (Figure 187, 18,19) *C. intermedia* Boh.
13 (12). Apex of lobes of pygophore slightly curved dorsad, their dorsal margin concave. Styli thickened at apex. Resembling *C. intermedia*. 5-6.8. Northwest *C. ornata* Mel. (straminea S.DeL.).
14 (11). Aedeagus with a pair of anteriorly-directed median processes. Gonopore apical (Figure 187, 20-23). (Subgenus *Henriana* Em., subgen. n.; type of subgenus: *Jassus frontalis* H.-S.).

- 15 (16). Processes closer to apex of aedeagus than to the base. Aedeagus in profile not tapering. Yellow, with orange spots; tempora black at base of antennae; fastigium with 2 dark spots. 4.5-6. South (Figure 187, 20,21)..... *C. frontalis* H.-S.
- 16 (15). Processes closer to base of aedeagus than to the apex. Aedeagus in profile broader at base than at apex. Greenish yellow, with orange spots; frontoclypeus often dark; 2 black dots on fastigium. 4.2-5.3. Moldavia. On *Baldingera arundinacea* (Figure 187, 22,23)..... *C. placida* Horv.
97. *Taurotettix* Hpt. Monotypic genus.
- 1 (1). Vertex flat, its anterior margin angular. Greenish yellow; hemelytra of female reaching apex of pygophore; ovipositor projecting beyond pygophore; hemelytra of male slightly longer than abdomen. 4-5. South. On *Agropyron cristatum*, *A. desertorum* (Figure 187, 24,25)..... *T. beckeri* Fieb.
98. *Callistrophia* Em. Monotypic genus.
- 1 (1). Rich-yellow; hemelytra with a brown longitudinal stripe; this stripe is often present only in apical part of hemelytra. 5-6. Southeast. On *Agropyron* spp., *Hordeum* spp. In solonchak meadows (Figure 187, 26,27)..... *C. elegans* Mel.
99. *Mocydia* Edw. Monotypic genus.
- 1 (1). Light; anterior margin of vertex with a pair of black oblique lines; dorsum with brownish longitudinal stripes. 4.2-5.4. Crimea (Figure 187, 28,29)..... *M. crocea* H.-S.
100. *Mocydiopsis* Rib. In the whole U.S.S.R. 1 species.
- 1 (1). Brownish; dorsum with traces of reddish longitudinal stripes. Median apical cell of hemelytra dark brown. 3.7-4.6. South (Figure 188, 1,2)..... *M. attenuata* Germ.
101. *Pseudotettix* Rib. - 1 species. In the whole U.S.S.R. 2 species.
- 1 (1). Brown to dark brown; venter black; frontoclypeus usually with dark transverse pattern; vertex with indistinct band; anterior margin of pronotum with spots; hemelytra sometimes darker than remainder of dorsum, with light veins. 5-5.8. In forests. (Figure 188, 3,4)..... *S. subfuscus* Fall.
- 414 102. *Hesium* Rib. Monotypic genus.
- 1 (1). Brownish-chestnut; venter black; vertex usually with black band; frontoclypeus black; anterior margin of pronotum and scutellum with black spots; apex of A with white spots. 5.9-6.55. (Figure 188, 5,6)..... *H. biguttatum* Fall.
103. *Thamnotettix* Zett. - 3 species.
- 1 (2). Gonopore directly on dorsal side of aedeagus. (Subgenus *Loepotettix* Rib.). Pale brown. 5.9-6.7. Crimea (Figure 188, 7,8)..... *Th. dilutior* Kbm.



FIGURE 187. Cicadinea. Family Cicadellidae. Details of male genitalia (after Wagner, Zakhvatkin, Ribaut and original)

1 - *Paluda vitripennis*, apex of lobe of pygophore; 2 - *P. parvispina*, same; 3,4 - *Elymana kozhevnikovi*; 3 - penis, lateral; 4 - lobe of pygophore; 5,6 - *E. sulphurella*; 5 - penis, lateral; 6 - lobe of pygophore; 7 - *Cicadula persimilis*, genital plates, valve and styli; 8,9 - *C. saturata*: 8 - penis, dorsal; 9 - same, lateral; 10,11 - *C. flori*: 10 - apex of penis, dorsal; 11 - penis, lateral; 12,13 - *C. quadrinotata*: 12 - apex of penis, dorsal; 13 - penis, lateral; 14,15 - *C. quinquenotata*: 14 - apex of penis, dorsal; 15 - same, lateral; 16,17 - *C. persimilis*: 16 - apex of penis, dorsal; 17 - same, lateral; 18,19 - *C. intermedia*: 18 - penis, dorsal; 19 - same, lateral; 20,21 - *C. frontalis*: 20 - same, dorsal; 21 - same, lateral; 22,23 - *C. placida*: 22 - same, dorsal; 23 - same, lateral; 24,25 - *Taurotettix beckeri*: 24 - same, lateral; 25 - genital plate and stylus, ventral; 26,27 - *Callistrophia elegans*: 26 - same, lateral; 27 - genital plate and stylus, ventral; 28,29 - *Mocydia crocea*: 28 - penis, dorsal; 29 - same, lateral.

- 2 (1). Gonopore at apex of long process on dorsal side of aedeagus (Figure 188, 9-11). (Subgenus *Thamnottettix* s. str.).
- 3 (4). Dorsal side of aedeagus with apical denticle. Pale brown, sometimes with red speckles. 7-7.5. Southwest (Figure 188, 9)..... *Th. exemptus* P. Löw.
- 4 (3). Dorsal side of aedeagus without apical denticle. Green or pale brown, sometimes with red speckles. 5.6-7.7 (Figure 188, 10, 11)..... *Th. confinis* Zett.
104. *Pithyotettix* Rib. On conifers.— 2 species.
- 1 (2). Pygophore symmetrical. Penis with processes. (Subgenus *Pithyotettix* s. str.). Head, pronotum and scutellum yellowish green, sometimes red; frontoclypeus with brown pattern; hemelytra brown; apex of veins of clavus and corium white; basal third of corium and spot posterior to middle whitish; venter more or less black. 5.4-5.9. On spruce (*Picea abies*) (Figure 188, 12)..... *P. abietinus* Fall.
- 2 (1). Pygophore asymmetrical. Penis without processes. (Subgenus *Perotettix* Rib.). Head and pronotum pale brown; lora, ante- and frontoclypeus brown; anterior margin and middle line of pronotum brown; scutellum brown, with a pair of dark spots; hemelytra brown, some veins light. 5.1-5.5. Western Belorussia. On spruce. Rare (Figure 188, 13-15)..... *P. pictus* Leth.
105. *Macustus* Rib. Monotypic genus.
- 1 (1). Hemelytra of female slightly shorter than abdomen. Brown; vertex with 2 indistinct brown bands; anterior band projecting anteriorly in the form of an obtuse angle. Frontoclypeus with brown pattern. Pronotum and scutellum with indistinct spots. 4.2-5.6. Marshes and other humid habitats. On Gramineae (Figure 188, 16)..... *M. griseus* Zett.
106. *Doliotettix* Rib. Monotypic genus.
- 1 (1). Males narrower and slenderer than female. Yellowish green; venter black; frontoclypeus with brown pattern. 4-4.8. North, Center (Figure 188, 17, 18)..... *D. pallens* Zett.
107. *Athysanus* F. Polyphagous; in humid habitats.— 2 species.
- 1 (2). Processes at apex of aedeagus. Head very broad; insect light, silvery; vertex with black band; dorsum with black longitudinal stripes. 6.5-8. Generally on sedge (Figure 188, 19, 20)..... *A. argentatus* F.
- 2 (1). Processes of aedeagus subapical. Gray, with black fused pattern; vertex with transverse band; pronotum with longitudinal stripes. Hemelytra with V-shaped bands; hemelytra of female slightly shorter than abdomen. 4.8-5.6. In humid vegetation consisting of *Geranium*, *Geum*, etc. (Figure 188, 21, 22)..... *A. quadrum* Boh.

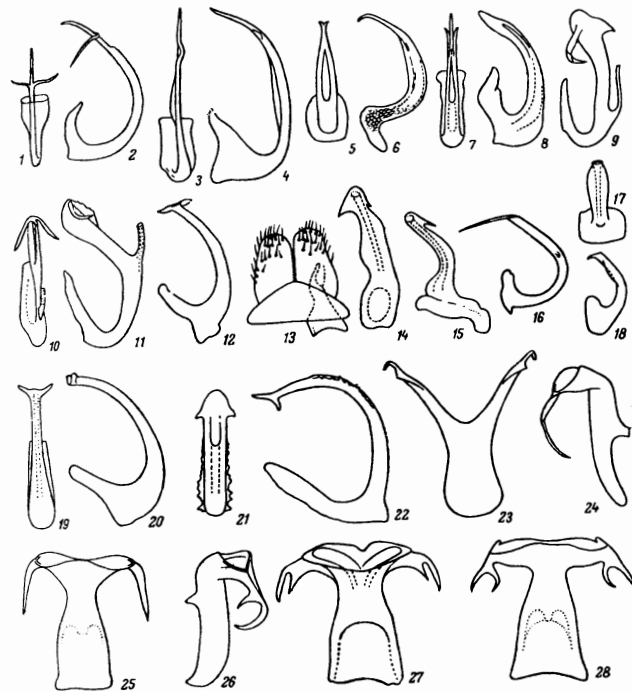


FIGURE 188. Cicadinea. Family Cicadellidae. Details of male genitalia (after Ribaut and original)

1, 2—*Mocydiopsis attenuata*: 1—penis, dorsal; 2—same, lateral; 3, 4—*Pseudotettix subfuscus*: 3—same, dorsal; 4—same, lateral; 5, 6—*Hesium biguttatum*: 5—same, dorsal; 6—same, lateral; 7, 8—*Thamnottettix dilutior*: 7—same, dorsal; 8—same, lateral; 9—*Th. exemptus*—same, lateral; 10, 11—*Th. confinis*: 10—same, dorsal; 11—same, lateral; 12—*Pithyotettix abietinus*, same, lateral; 13-15—*P. pictus*: 13—genital plates, valve and stylus, ventral; 14—penis, lateral; 15—same, dorsal; 16—*Macustus griseus*, same, lateral; 17, 18—*Doliotettix pallens*: 17—same, dorsal; 18—same, lateral; 19, 20—*Athysanus argentatus*: 19—same, dorsal; 20—same, lateral; 21, 22—*A. quadrum*: 21—same, dorsal; 22—same, lateral; 23—*Handianus flavovarius*, same, dorsal; 24, 25—*H. ephedrae*: 24—same, lateral; 25—same, dorsal; 26, 27—*H. beybienkoi*: 26—same, lateral; 27—same, dorsal; 28—*H. ignoscus*, same.

108. **Handianus** Rib. — 13 species.
- 1 (2). Lobes of pygophore not visible ventrally, shorter than genital plates. Penis Y-shaped. Aedeagus short, its branches directed posteriad and ventrad. Yellow; face and vertex with pattern of black spots; hemelytra of male usually with black longitudinal stripes. 5-7. South. On Gramineae (Figure 188, 23) **H. flavovarius** H.-S.
- 2 (1). Lobes of pygophore visible ventrally at apex of sides of genital plates. Aedeagus T-shaped; macropterous (Figure 188, 25, 27, 28).
- 3 (24). Lobes of pygophore without subapical denticle.
- 4 (21). Lobes of pygophore (Figure 188, 25, 27, 28) in ventral aspect without subapical notch on outer margin, with simple pointed apex.
- 5 (6). Branches of penis without processes, their apex curved anteriorly. Dove-gray; anterior margin of vertex with black pattern; legs with brown pattern. 4.8-5.5. Southeast; Kazakhstan. On *Ephedra distachya* (Figure 188, 24, 25) **H. ephedrae** Em., sp.n.
- 416 6 (5). Branches of penis ending in 2 different processes, often with a denticle at sides of gonopore (Figures 188, 26-28; 189, 1-11).
- 7 (8). Posterior margin of gonopore with deep, sharp notch in the middle. Pale yellow, without pattern. 5.2-6. Extreme South. On halophytes (Figure 188, 26, 27) **H. beybienkoi** Dlab.
- 8 (7). Posterior margin of gonopore without sharp notch (Figures 188, 28; 189, 1-11).
- 9 (10). Outer process of branches of penis longer than inner process. Brownish gray, with dark pattern. 5.4-6. South. On broom (*Cytisus ruthenicus*) and other Leguminosae (Figures 188, 28; 189, 1) **H. ignoscus** Mel.
- 10 (9). Outer process of branches of penis shorter than inner process (Figure 189, 2-11).
- 11 (14). Denticles at margin of gonopore large, distinctly separated from posterior margin of gonopore in profile. Posterior margin of gonopore slightly convex, distinctly brokenly curved, with 2 apices (Figure 189, 2-5).
- 12 (13). Outer processes of branches of penis little developed. Resembling *H. ignoscus*. 4.5-5.5. Southeast. On *Artemisia* (Figure 189, 2, 3) **H. pellucidus** Em., sp.n.
- 13 (12). Outer processes of branches of penis strong. Resembling *H. pellucidus*. 4.3-5.8. Southeast; Kazakhstan. On *Artemisia* and *Pyrethrum* sp. (Figure 189, 4, 5) **H. arnoldii** Em., sp.n.
- 14 (11). Denticles at margin of gonopore not developed or only slightly so, and indistinctly delimited from posterior margin of gonopore in profile. Posterior margin of gonopore concave or sinuous. (Figure 189, 6-11).
- 15 (16). Denticles at margin of gonopore little further apart than apices of inner processes of branches of penis. Margin of gonopore straight, slightly sinuous. Pale reddish brown, with slightly marked pattern. 4.7-5.5. Southeast; Kazakhstan. On *Limonium gmelini* and *L. suffruticosum* (Figure 189, 6, 7) **H. limonii** Em., sp.n.
- 16 (15). Denticles at margin of gonopore much closer together than apex of inner processes of branches of penis (Figure 189, 9, 11).
- 17 (20). Posterior margin of gonopore markedly sinuous, but usually straight (Figure 189, 9).
- 18 (19). Brownish, with reddish brown pattern. 5.9-6.6. South. On *Cerasus fruticosus* (Figure 189, 8, 9) **H. cerasi** Em., sp.n.
- 19 (18). Grayish, with blackish pattern. 5-6.1. Center, South. On *Cytisus ruthenicus* **H. cytisi** Zachv.
- 20 (17). Posterior margin of gonopore distinctly concave. Resembling *H. cytisi*. 4.6-5.2. Southeast; Kazakhstan. On *Spiraea hypericifolia* (Figure 189, 10, 11) **H. spiraeae** Em., sp.n.
- 21 (4). Lobes of pygophore with ventral subapical notch on outer margin, their apex rounded.
- 22 (23). Apex of genital plates slightly prolonged and curved outward. Pale yellow; vertex with 6 black spots. 6-7. South. On some Compositae (*Senecio* spp., *Echinops ritro*, etc.) (Figure 189, 12, 13) **H. procerus** H.-S.
- 23 (22). Apex of genital plates not prolonged and connected. Hemelytra usually reaching apex of abdomen. Pale, yellowish or dove-gray. 4.6-5.6. Southeast; Kazakhstan. On *Eurotia ceratoides* (Figure 189, 14, 15) **H. eurotiae** Em., sp.n.
- 24 (3). Lobes of pygophore with subapical denticle on outer side. Yellow, with 4 black spots at anterior margin of vertex. 5-6. Southeast. Polyphagous; developing on ephemeral plants **H. imperator** Dlab.
- 418 109. **Stictocoris** Thms. Monotypic genus.
- I (1). Moderately thickset. Light; vertex with 2 round black spots; frontoclypeus with a pair of spots dorsally and one spot in the middle; genae with a pair of spots ventral to antennae; pronotum with large spot in middle of posterior margin, a pair of small spots at anterior margin and a pair of small spots at sides of posterior margin; hemelytra with dark longitudinal stripes. 4-4.8 (Figure 189, 16, 17) **S. lineatus** F.

FIGURE 189. Cicadinea. Family Cicadellidae. Details of male genitalia (after LeQuesne, Ossianllnsson, Ribaut and original)

1 — *Handianus ignoscus*, penis, lateral; 2, 3 — *H. pellucidus*; 2 — same; 3 — same, dorsal; 4, 5 — *H. arnoldii*; 4 — same, lateral; 5 — same, dorsal; 6, 7 — *H. limonii*; 6 — same, dorsal; 7 — same, lateral; 8, 9 — *H. cerasi*; 8 — same, lateral; 9 — same, dorsal; 10, 11 — *H. spiraeae*; 10 — same, lateral; 11 — same, dorsal; 12, 13 — *H. procerus*; 12 — same, lateral; 13 — same and connective, dorsal; 14, 15 — *H. eurotiae*; 14 — penis, lateral; 15 — same, dorsal; 16, 17 — *Stictocoris lineatus*; 16 — same, dorsal; 17 — same, lateral; 18 — *Scleroracrus paludosus*, penis, ventral and lateral; 19-21 — *S. corniculatus*; 19 — same, dorsal; 20 — same, lateral; 21 — lobe of pygophore; 22-24 — *S. decumanus*; 22 — penis, dorsal; 23 — same, lateral; 24 — lobe of pygophore; 25-27 — *S. plutonius*; 25 — penis, dorsal; 26 — same, lateral; 27 — lobe of pygophore; 28-30 — *S. russoolus*; 28 — penis, dorsal; 29 — same, lateral; 30 — lobe of pygophore; 31-33 — *S. transversus*; 31 — penis, dorsal; 32 — same, lateral; 33 — lobe of pygophore.

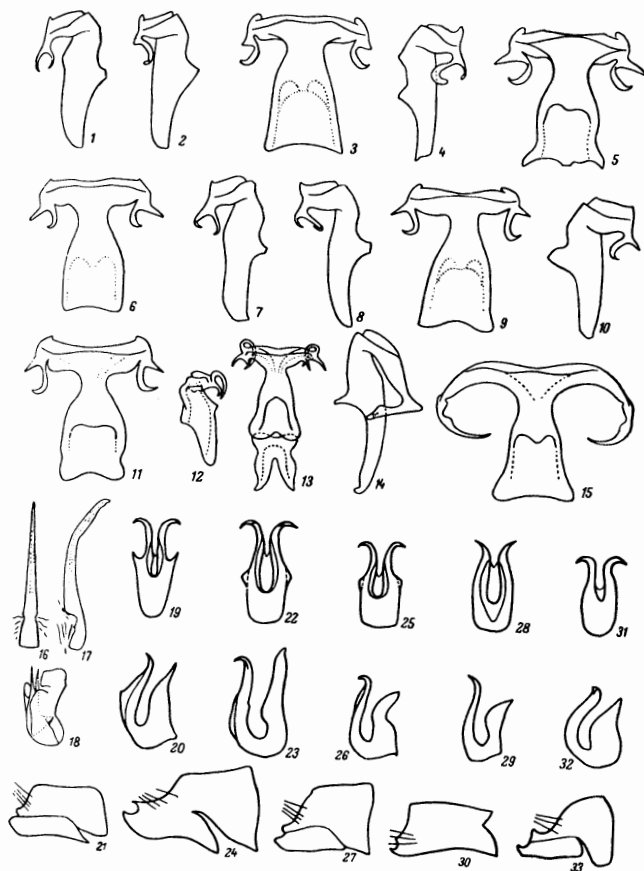


FIGURE 189. For legend, see page 525.

110. **Scleroracus** V.D. — 6 species.
- 1 (2). Dorsal wall of anal tube not sclerotized. (Subgenus *Ophiolix* Rib.). Yellowish, with black, speckled pattern; vertex with black band followed by an additional band which is interrupted in the middle; hemelytra with dark longitudinal stripes. 4-4.8. North (Figure 189, 18)..... *S. paludosus* Boh.
- 2 (1). Dorsal wall of anal tube sclerotized in a large part. (Subgenus *Scleroracus* s. str.).
- 3 (4). Sides of aedeagus with pointed, anteriorly-directed denticles. Black; head with pattern of light transverse lines; pronotum and scutellum with fused black spots; cells of hemelytra with dark borders. 4.1-5 (Figure 189, 19-21)..... *S. corniculatus* Marsh.
- 4 (3). Sides of aedeagus without processes or with blunt processes.
- 5 (8). Sides of aedeagus with blunt processes (Figure 189, 22, 25).
- 6 (7). Dorsal process of lobes of pygophore pointed, directed posteriorly. Resembling *S. corniculatus* (Figure 189, 22-24)..... *S. decumanus* Kontk.
- 7 (6). Dorsal process of lobes of pygophore short, blunt. Resembling *S. decumanus* (Figure 189, 25-27)..... *S. plutonius* Uhl.
- 8 (5). Sides of aedeagus completely smooth.
- 9 (10). Dorsal process of lobes of pygophore directed posteriorly at apex. Apical processes of aedeagus slightly curved outward. Resembling *S. plutonius*, but paler (Figure 189, 28-30)..... *S. russeolus* Fall.
- 10 (9). Dorsal process of lobes of pygophore directed dorsally at apex. Apical processes of aedeagus strongly curved outward. Venter black; face with black fused spots on yellowish ground; vertex with black band; pronotum black, with light spots which form an indistinct band; veins of hemelytra light; cells of hemelytra dark. 2.9-3.7. On Compositae (Figure 189, 31-33)..... *S. transversus* Fall.
111. **Limotettix** J. Shlb. Greenish yellow; face with black pattern; vertex with band anteriorly. — 4 species.
- 1 (2). Apex of styli slightly dilated and sharply truncate. 4-4.7 (Figure 190, 2-5)..... *L. striola* Fall.
- 2 (1). Apex of styli right-angled geniculate (Figure 190, 1).
- 3 (6). Carinae on dorsal side of penis gradually disappearing posteriorly.
- 4 (5). Ventral margin of penis concave. Pattern on face little developed. 4.4-5.3. Dagestan, Azerbaijan (Figure 198, 25)..... *L. aviger* Em., sp. n.
- 5 (4). Ventral margin of penis convex. 4.5-5.5. Center, Northwest (Figure 198, 26)..... *L. sphagneticus* Em., sp. n.
- 6 (3). Carinae on dorsal side of aedeagus ending suddenly posteriorly. 4-5.4. North (Figures 190, 1; 198, 27)..... *L. atricapilla* Boh.
112. **Condylotes** Em. 1 species. In the whole U.S.S.R. 2 species.
- 1 (1). Hemelytra slightly shorter than abdomen. Face with dark brown pattern and a pair of black spots dorsally; vertex with brown spots; pronotum and scutellum with brown speckled pattern;

hemelytra brown, with light network of veins. 3-4.4. South.
 On Compositae such as *Tanacetum achilleifolium*,
Linomyris tatarica, etc. (Figure 190, 6).....
 **C. zachvatkini** Em.

113. **Laburrus** Rib. On *Artemisia* and other Compositae. In the whole U.S.S.R. 6 species.

1 (2). Apex of styli markedly thickened. (Subgenus *Esolanus* Rib.). Aedeagus shorter (Figure 190, 7,8). Broad; hemelytra slightly shorter than abdomen. Yellow. 3.5-4.6. South. On various Compositae such as *Centaurea* spp., *Serratula* spp., *Linomyris* spp., etc. (Figure 190, 7,8)..... **L. pallax** Horv.

2 (1). Apex of styli slender (Figure 190, 9). (Subgenus *Laburrus* s. str.).

3 (10). Lobes of pygophore markedly projecting beyond dorsal margin of pygophore.

419 4 (5). Reddish brown to black; very shiny, sometimes with waxy film; hemelytra slightly shorter than abdomen. 3.1-3.8. Southeast. On *Artemisia pauciflora*. Males rare (Figure 190,10).....
 **L. amazon** Em.

5 (4). Bluish gray or green.

6 (9). Green.

7 (8). Green, with brown spots on hemelytra. 3.7-4.2. Center, South. On *Artemisia abrotanum* (Figure 190,11).....
 **L. abrotani** Em.

8 (7). Greenish yellow, slender; hemelytra longer than abdomen, sometimes black at apex. 3.9-5.2. Center, South. On *Artemisia* and various other Compositae (Figure 190, 9,12).....
 **L. impictifrons** Boh.

9 (6). Bluish gray, sometimes with brown spots on hemelytra. 3.4-4.7. On *Artemisia austriaca*, *A. incana*, etc. (Figure 190,13).. South.....
 **L. handlirschi** Mats.

10 (3). Lobes of pygophore truncate posteriorly. Bluish gray, sometimes with brown spots as *L. handlirschi*. 3.3-3.5. South; Crimea.....
 **L. kuznetsovi** Em.

114. **Euscelidius** Rib. With brown speckled pattern; vertex posterior to ocelli with a pair of transverse triangular spots, their apex directed outward. — 2 species. In the whole U.S.S.R. 3 species.

1 (2). Apex of penis with 2 downward-curved denticles. Aedeagus uniformly curved. Ocelli small, their distance from eyes larger than diameter of ocellus. Apex of face with 2 dark spots. 3.3-5.2 (Figure 190, 14,15)..... **Eu. variegatus** Kbm.

2 (1). Apex of penis widened transversely, its lateral angles pointed and curved posteriorly. Aedeagus sharply bent at base, straight in basal half, then arcuate. Ocelli large, their distance from eyes about equal to diameter of ocellus. 4.5-5.4 (Figure 190, 16,17).....
 **Eu. schenki** Kbm.

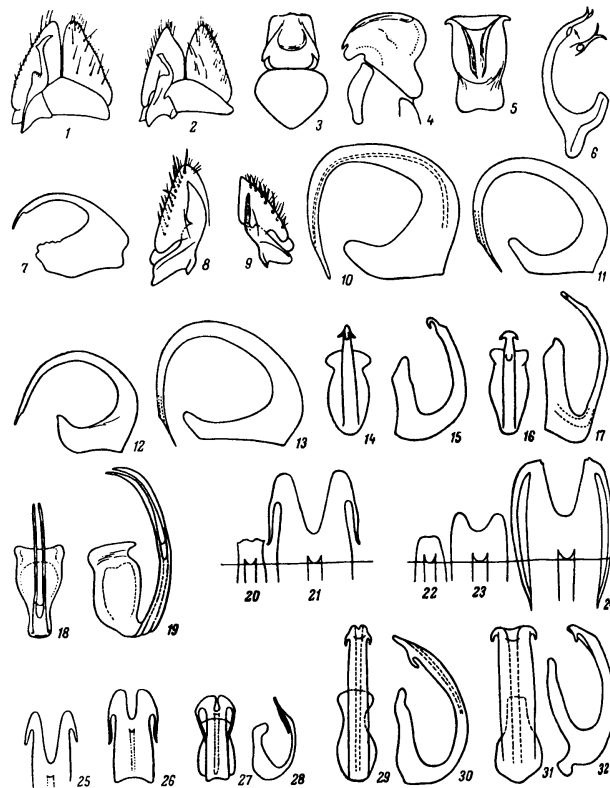


FIGURE 190. Cicadinae. Family Cicadellidae. Details of male genitalia (after Müller, Ossiannilsson, Ribaut and original)

1—*Limotettix atricapilla*, genital plates, valve and stylus; 2-5—*L. striola*: 2—genital plates, valve and stylus; 3—penis, anterior aspect; 4—same, lateral; 5—same, dorsal; 6—*Condylothes zachvatkini*, same lateral, and apex of penis, ventral; 7,8—*Laburrus pallax*: 7—penis, lateral; 8—genital plates and stylus, dorsal; 9—*L. impictifrons*, same; 10—*L. amazon*, penis, lateral; 11—*L. abrotani*, same; 12—*L. impictifrons*, same; 13—*L. handlirschi*, same; 14,15—*Euscelidius variegatus*: 14—penis, dorsal; 15—same, lateral; 16,17—*Eu. schenki*: 16—penis, dorsal; 17—same, lateral; 18,19—*Euscelidius obsoletus*: 18—same, dorsal; 19—same, lateral; 20,21—*Eu. plebejus*, variations of apex of penis; 22-24—*Eu. lineolatus*, same; 25—*Eu. distinguendus*, apex of penis; 26—*Eu. venosus*, same; 27,28—*Eu. seriphidii*: 27—penis, dorsal; 28—same, lateral; 29,30—*Eu. discolor*: 29—same; 30—same, dorsal; 31,32—*Eu. luteus*: 31—same; 32—same, lateral.

115. **Euscelis** Brullé. — 8 species.
- 1 (12). Brown or gray. Outer margin of genital plates straight or slightly concave in the middle. (Subgenus *Euscelis* s. str.).
- 2 (3). Aedeagus with long apical processes directed anteriorly. Hemelytra not longer than abdomen. Pale gray; vertex with black spots; face with black pattern. 4.3-5.6. South (Figure 190, 18,19)..... **Eu. obsoletus** Kbm.
- 3 (2). Aedeagus without processes or with recurrent or laterally-directed processes (Figure 190, 20-32).
- 4 (5). Base of notch at apex of aedeagus much closer to base of aedeagus than apex of processes. Macropterous, with marked brownish gray pigmentation. 3.1-4 (Figure 190, 25)..... **Eu. distinguendus** Kbm.
- 5 (4). Base of notch at level of apex of branches or closer to apex of aedeagus, or branches absent (Figure 190, 20-27).
- 6 (9). Notch of aedeagus narrow distally (Figure 190, 26,27). Hemelytra not longer than abdomen.
- 7 (8). Margin of notch of aedeagus slightly serrate distally. Processes of aedeagus slightly S-shaped, about parallel. Brown, often very dark, almost black. 3.2-4.5 (Figure 190, 26).... **Eu. venosus** Kbm.
- 8 (7). Margin of notch smooth distally. Processes of aedeagus more or less straight, converging. Gray or brown. 3.4-4.1. Southeast. On *Artemisia pauciflora*, etc. (Figure 190, 27,28).... **Eu. seriphidii** Em.
- 9 (6). Notch of aedeagus widening distally, often very shallow (Figure 190, 20-24).
- 10 (11). If the branches at the apex of the aedeagus are absent, apex with 4 processes; if branches are present, the distal processes of the penis are uniformly and broadly rounded. Macropterous; reddish brown. 3.5-5 (Figure 190, 20,21)..... **Eu. plebejus** Fall.
- 11 (10). If branches are absent, apex with 2 processes; if branches present, distal processes of penis with a denticle or denticulate. 3.1-5. South (Figure 190, 22-24)..... **Eu. lineolatus** Brullé.
- 12 (1). Pale yellow, with black pattern mainly on head and pronotum. Outer margin of genital plates convex. (Subgenus *Ederanus* Rib.).
- 13 (14). Slenderer; genital plates markedly elongate. Face usually black; vertex and pronotum sometimes with black band; cells of hemelytra dark. Hemelytra of female slightly shorter than abdomen. 4.7-6. On *Glyceria aquatica* (Figure 190, 29,30)..... **Eu. discolor** J. Shlb.
- 421 14 (13). Thickset. Genital plates short. Face with black spots dorsal to antennae; vertex and pronotum each with a pair of black spots. Hemelytra usually shorter than abdomen. 5-6.5. North. On *Calamagrostis lanceolata* in marshy forests (Figure 190, 31,32)..... **Eu. luteus** C. Shlb.
116. **Streptanus** Rib. Hemelytra usually shorter than abdomen. — 6 species.
- 1 (8). Apical dilatation of penis (spatula) not broader than long. Aedeagus markedly tapering (Figure 191, 1-6). Anterior part

- of vertex with 2 interrupted bands; posterior angles of vertex with 2 spots. Dorsum with longitudinal stripes and spots. Pattern often indistinct.
- 2 (3). Spatula markedly longer than broad; distance of posterior margin of gonopore from posterior margin of spatula about twice the length of the spatula. Usually pale. 3.2-5 (Figure 191, 1,2)..... **S. sordidus** Zett.
- 3 (2). Spatula at most slightly longer than broad. Distance of posterior margin of gonopore from posterior margin of spatula more than 3-4 times the length of spatula (Figure 191, 3,5).
- 4 (7). An angular dilatation on the left side or on both sides of base of aedeagus (Figure 191, 4,5).
- 5 (6). An angular dilatation on both sides of base of aedeagus. Spatula symmetrical; aedeagus markedly tapering anterior to spatula. Dark-colored specimens predominating. 4.5-5.6 (Figure 191, 3,4)..... **S. aemulans** Kbm.
- 6 (5). Angular dilatation present only on left side of base of aedeagus. Spatula slightly asymmetrical. Hemelytra of male slightly longer than abdomen. 4.5-5.5. Northeast and Center. In marshy parts of forests (Figure 191, 5)..... **S. okaensis** Zachv.
- 7 (4). Dilatations at base of aedeagus absent. Usually pale, without pattern. 3.2-5. North. In humid meadows (Figure 191, 6)..... **S. confinis** Reut.
- 8 (1). Spatula short, markedly transverse. Aedeagus broad, with parallel sides (Figure 191, 7-10).
- 9 (10). Aedeagus without dilatations at base, its sides parallel. Pale brown, without pattern. Hemelytra markedly shortened. 3.2-4. North, Center. In forests and marshes (Figure 191, 7,8)..... **S. marginatus** Kbm.
- 10 (9). Aedeagus with obtuse dilatations at base, very broad, slightly tapering. Hemelytra almost reaching apex of abdomen. Strongly pigmented. 3.7-4.1. Northeast; Taimyr (Figure 191, 9,10)..... **S. arctous** Em., sp.n.
117. **Coulinus** Beir. — 1 species.
- 1 (1). Hemelytra slightly longer than abdomen. Venter black, with traces of brown; dorsum with indistinct pattern, brown, with reddish tinge. 3.5-4. Arctic Urals (Figure 191, 11,12)..... **C. unus** Beir.
118. **Chroocacus** Em. Monotypic genus.
- 1 (1). Male: venter and face black; dorsum dirty-yellow, with black pattern; female dirty-yellow, with traces of brown pattern. 4.2-4.5. Caucasus Range (Figure 191, 13)..... **Ch. psittaceus** Em.
119. **Artianus** Rib. Broad, light, silvery-gray. Vertex with dark band; pronotum, scutellum and hemelytra with dark longitudinal stripes. Genus comprising 2 species.
- 1 (2). Apical processes of aedeagus markedly diverging. 4.2-6.2. South. On *Agropyron cristatum*, *A. desertorum* and on *Bromus inermis* (Figure 191, 14-16).... **A. interstitialis** Kbm.

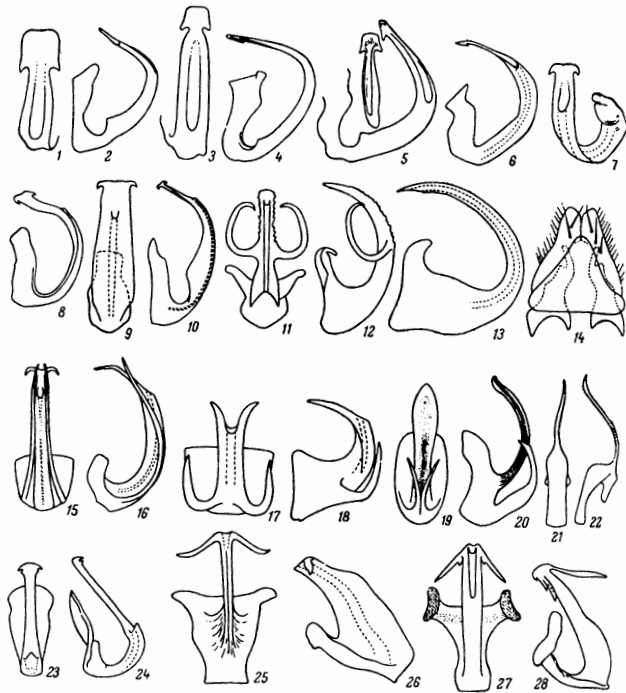


FIGURE 191. Cicadinae. Family Cicadellidae. Details of male genitalia (after Bem, Diabola, Zakhvatkin, Ossiannilsson, Ribaut and original)

1,2—*Streptanus sordidus*: 1—apex of penis, dorsal; 2—penis, lateral; 3,4—*S. aemulans*: 3—apex of penis, dorsal; 4—penis, lateral; 5—*S. okaensis*, penis, lateral, and apex of penis, dorsal; 6—*S. confinis*, penis, lateral; 7,8—*S. marginatus*: 7—same, oblique-dorsal; 8—same, lateral; 9,10—*S. arctous*: 9—same, dorsal; 10—same, lateral; 11,12—*Coulinus usnus*: 11—same, dorsal; 12—same, lateral; 13—*Chroocacus psittaceus*, same, lateral; 14-16—*Artianus interstitialis*: 14—genital plates, valve and styli, ventral; 15—penis, dorsal; 16—same, lateral; 17,18—*A. manderstjernai*: 17—same, dorsal; 18—same, lateral; 19,20—*Dudanus pallidus*: 19—same, dorsal; 20—same, lateral; 21,22—*Bobacella corvina*: 21—same, dorsal; 22—same, lateral; 23,24—*Aglena ornata*: 23—same, dorsal; 24—same, lateral; 25,26—*Paramesius nervosus*: 25—same, dorsal; 26—same, lateral; 27,28—*P. reticulatus*: 27—same, dorsal; 28—same, lateral.

- 2 (1). Apical processes of aedeagus parallel. 4.2-6.2. Southwest (Figure 191, 17,18) *A. manderstjernai* Kbm.
120. *Dudanus* Dlab. Genus comprising 2 species.—1 species.
- 1 (1). Hemelytra markedly shortened, their posterior margin truncate. Pale; dorsal part of face with black band continuing posterior to eyes at sides of pronotum and on hemelytra; dorsum of abdomen sometimes with 4 longitudinal rows of black spots. 3.3-4. In steppes of the Southeast. On *Stipa* spp. (Figure 191, 19,20) *D. pallidus* Dlab.
- 423 121. *Bobacella* Kurn.—1 species.
- 1 (1). Cylindrical, with markedly shortened hemelytra. Completely black, shiny; a pair of light spots sometimes on frontoclypeus and on dorsal angles of lora. 2.5-3. South. Polyphagous (Figure 191, 21,22) *B. corvina* Horv.
122. *Aglena* Am.S. Monotypic genus.
- 1 (1). Males pale yellow; face with black pattern; vertex with band; pronotum with 4 spots in posterior half; scutellum black; hemelytra with broad black bands in the middle and at the apex; female greenish yellow; pronotum with 2-4 dots; hemelytra without pattern. 8-10. On *Bolboschoenus maritimus* (Figure 191, 23,24) *A. ornata* H.-S.
123. *Paramesius* Fieb.—3 species.
- 1 (4). Junction of vertex and face sharp, with 2 straight and parallel lines dorsal and ventral of ocelli.
- 2 (3). Dorsum with vermilion-red longitudinal stripes. Pale; dorsal part of face with red band; 2 red longitudinal stripes on vertex, pronotum and scutellum; 2 additional stripes lateral to these stripes on pronotum; hemelytra with red longitudinal stripes. 5-6. Southwest *P. taeniatus* Horv.
- 3 (2). No red pigment. Grayish; vertex with brownish band; pronotum brownish; cells of hemelytra with brown border. 4.7-6.5. On *Bolboschoenus maritimus* (Figure 191, 25,26) *P. nervosus* Fall.
- 4 (1). Junction of vertex and face gradual. Face with dark brown pattern, with a band which is interrupted in the middle between ocelli; vertex with broad band interrupted in the middle. Pronotum and scutellum with dark brown spots; hemelytra dark brown, with light and white spots on cross veins. 4.3-6.7. South. On *Bolboschoenus maritimus* (Figure 191, 27,28) *P. reticulatus* Horv.
124. *Paralimnus* Mats. On *Phragmites communis*.—5 or 6 species.
- 1 (4). Apex of penis with long dorsal denticle (Figure 192, 1). (Subgenus *Paragygrus*, subgenus novum; type of subgenus: *Paralimnus major*, sp.n.).

- 2 (3). Dorsal denticle at apex of penis more than twice as long as ventral denticle. Pale green; dorsal part of face with dark band; a black line at anterior margin of vertex; brown spots in apical part of hemelytra. 4.2-5. South; possibly erroneously recorded from the European U.S.S.R. *P. rotundiceps* Leth.
- 3 (2). Dorsal denticle at apex of penis only slightly longer than ventral denticle. Resembling *P. rotundiceps*. Hemelytra without pattern or with faintly-bordered cells. 4.5-5.6. Southeast; Kazakhstan and Transbaikalia (Figure 192, 1) *P. major* Em., sp. n.
- 4 (1). Apex of penis with only short denticles or without denticles (Figure 192, 2-5).
- 5 (8). Phallobase large, its anterior part developed. Apex of aedeagus with short denticles. (Subgenus *Paralimnus* s. str.).
- 6 (7). Aedeagus short, originating in middle of phallobase. Pale; 2 narrow brown bands on border between face and vertex; vertex, pronotum and scutellum with orange spots; hemelytra with light veins and cells with brown borders. 3.8-5 (Figure 192, 2,3) *P. phragmitis* Boh.
- 7 (6). Aedeagus longer, originating at posterior margin of phallobase. Resembling *P. phragmitis*. 3.8-4.2. Volga Delta (Figure 198, 21,22) *P. zachvatkini* Em., sp. n.
- 8 (5). Anterior part of phallobase not developed. Apex of penis without process. (Subgenus *Anthocallis*, subgen. n.; type of subgenus: *Paralimnus minor* Kuzn.). Pale; color very variable; dorsal part of face brown; vertex with brown spots; anterior margin of vertex often with 2 narrow bands; hemelytra brown, with light veins and white spots on cross veins.
- 9 (10). Aedeagus thicker, uniformly curved. 3-4.5. South, east to the Volga (Figure 192, 5) *P. picturatus* Hpt.
- 10 (9). Aedeagus slenderer, more sharply curved at base. 3.7-5. Southern Transvolga region (Figure 192, 4) *P. angusticeps* Zachv.
125. *Metalimnus* Rib. Genus comprising 2 species.
- 1 (2). Genital plates truncate at apex, their outer margin slightly concave. Vertex, pronotum and scutellum with red or brown spots on pale ground; hemelytra with dark brown pattern; anterior margin of vertex rounded. 3.3-4.5. On sedge (Figure 192, 6,7) *M. formosus* Boh.
- 2 (1). Genital plates with rounded apex, their outer margin slightly convex. Vertex, pronotum and scutellum with red longitudinal stripes on light ground; hemelytra with dark brown pattern; anterior margin of vertex sharp. 3-3.8 (Figure 192, 8) *M. marmoratus* Fl.
126. *Chelidinus* Em. Monotypic genus.
- 1 (1). Pale, whitish pale blue. Dorsal part of face with dark brown band; anterior margin of vertex with dark line interrupted in the middle; pronotum with 4 brown longitudinal stripes; apex of hemelytra with brown and white spots diverging like a fan;

- veins of hemelytra light. 3.6-4.7. Southeast. On *Artemisia* spp. (Figure 192, 9,10) *Ch. cinerascens* Em.
127. *Pantallus* Em. Monotypic genus.
- 1 (1). With a rich brown to black pattern on light ground; anterior half of vertex with 4 fused dark spots; hemelytra slightly shorter than abdomen, with 2 irregular oblique light bands. 2.6-3.4. South. On Gramineae (Figure 192, 11,12) *P. alboniger* Leth.
128. *Mogangina* Em. Monotypic genus.
- 1 (1). Hemelytra slightly longer than abdomen. Gray; face with black fused spots; vertex with 4 black spots at anterior margin; pronotum with longitudinal stripes; hemelytra with lighter veins; apical cells of hemelytra with brown border. 2.9-3.2. South. On *Bromus inermis* (Figure 192, 13,14) *M. bromi* Em.
129. *Arocephalus* Rib. On Gramineae. — 3 species.
- 1 (4). Gonopore closer to apex of aedeagus than to base (Figure 192, 15-18). Male pygophore with dorsal notch. (Subgenus *Arocephalus* s. str.).
- 2 (3). Aedeagus markedly flattened laterally, with 2 pairs of processes. Hemelytra longer than abdomen. Brownish gray; 2 black stripes at sides of anterior margin of vertex; cells of hemelytra with brown border. 3.4-4.2. South (Figure 192, 15,16) *A. longiceps* Kbm.
- 3 (2). Aedeagus not flattened laterally, with only one apical pair of processes. Hemelytra of female slightly shorter than abdomen; hemelytra of male slightly longer than abdomen. Pale, yellowish; hemelytra brownish, with brownish borders apically. 2.2-2.9. South (Figure 192, 17,18) *A. languidus* Fl.
- 4 (1). Gonopore closer to base of aedeagus than to apex. Pygophore of male without dorsal notch. (Subgenus *Ariellus* Rib.). Aedeagus very long and slender. Hemelytra shorter than abdomen. Gray; 2 black stripes at sides of anterior margin of vertex; a black spot at inner margin of apex of hemelytra. 2.5-3.1. Northwest (Figure 192, 19,20) *A. punctum* Fl.
130. *Psammotettix* Hpt. — Not less than 23 species.
- 1 (8). Apex of penis with 2 denticles (Figures 192, 21-26; 193, 1).
- 2 (7). Denticles of penis stout, curved dorsad (Figure 192, 21-26).
- 3 (4). Phallobase with a pair of long processes. Slender. Brownish, with dark brown pattern; cells of hemelytra with brown border; the borders interrupted by 2 light apical bands and spots. 3.2-3.4. South. On *Aeluropus litoralis* (Figure 192, 21,22) *P. pictipennis* Kbm.
- 4 (3). Phallobase without processes or with only small processes (Figure 192, 23-26).
- 5 (6). Lobes around gonopore (spatula) close together. Phallobase without processes. Thickset; vertex markedly prolonged. Yellow, sometimes with traces of pattern. 3.5-4. South. On *Aeluropus litoralis* (Figure 192, 23,24) *P. salsuginosus* Logv.

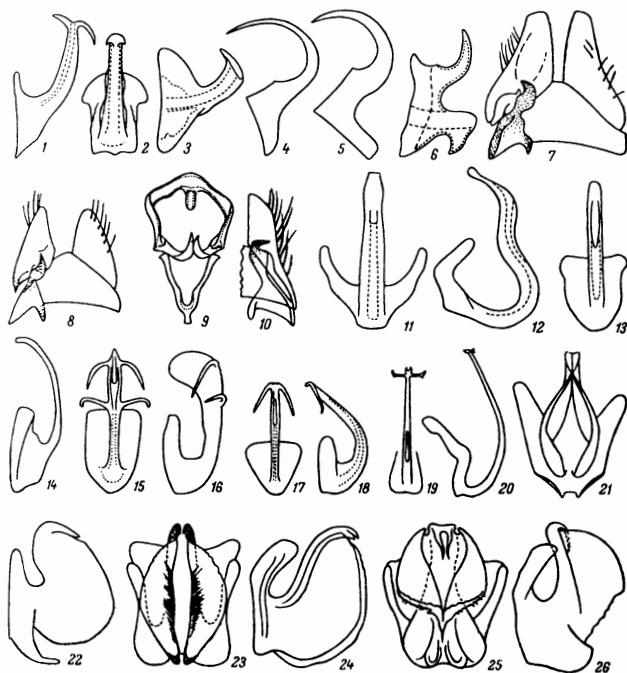


FIGURE 192. Cicadinea. Family Cicadellidae. Details of male genitalia (after Logvinenko, Ossiannilsson, Ribaut and original)

1—*Paralimnus major*, penis, lateral; 2,3—*P. phragmitis*: 2—same, dorsal; 3—same, lateral; 4—*P. angusticeps*, same, lateral; 5—*P. picturatus*, same; 6,7—*Metalimnus formosus*: 6—same, lateral; 7—genital plates, valve and stylus; 8—*M. marmoratus*, genital plates, valve and stylus; 9,10—*Chelidinus cinerascens*: 9—penis and connective; 10—genital plates and stylus, dorsal; 11,12—*Pantallus albioniger*: 11—penis, lateral; 12—same, dorsal; 13,14—*Mogangina bromi*: 13—same; 14—same, lateral; 15,16—*Arocephalus longiceps*: 15—same, dorsal; 16—same, lateral; 17,18—*A. languidus*: 17—same, dorsal; 18—same, lateral; 19,20—*A. punctum*: 19—same, dorsal; 20—same, lateral; 21,22—*Psammotettix pictipennis*: 21—same, dorsal; 22—same, lateral; 23,24—*P. salsuginosus*: 23—same, dorsal; 24—same, lateral; 25,26—*P. narsikulovi*: 25—same, dorsal; 26—same, lateral.

- 6 (5). Lobes around gonopore laterally separated. Phallobase with process. Resembling *P. salsuginosus*. 2.8-4. Southeast. On *Aeluropus litoralis* (Figure 192, 25,26)..... ***P. narsikulovi*** Dlab.
- 7 (2). Denticles on penis small, straight. Phallobase with process. Thickset. Brownish, with dark brown pattern; cells of hemelytra with brown border; some veins of hemelytra white, forming 3 indistinct bands. 3.1-3.7. Southeast. On species of *Artemisia* of the subgenus *Seriphidium* (Figure 193, 1,2)..... ***P. seriphidii*** Em.
- 8 (1). Apex of penis without denticles (Figures 193, 3-26; 194, 1-9).
- 9 (12). Apex of penis prolonged into a long fingerlike process.
- 10 (11). The whole penis curved ventrad, less slender. Brownish, with dark brown pattern; cells of hemelytra with brown interrupted borders. 3-3.4. South (Figure 193, 3,4)..... ***P. ornaticeps*** Horv.
- 11 (10). Apex of penis slightly curved dorsad, penis slenderer. Resembling *P. ornaticeps*. 2.9-3.4. South. On *Artemisia* (Figure 193, 5,6)..... ***P. comitans*** Em., sp.n.
- 12 (9). Apex of penis not prolonged into process (Figure 193, 3-6).
- 13 (14). Aedeagus very broad, dorsoventrally flattened; spatula large. Resembling *P. striatus*. 3.2-4 (Figure 193, 7,8)..... ***P. confinis*** Dhlb.
- 14 (13). Aedeagus relatively slender, not flattened (Figures 193, 9-26; 194, 1-9).
- 15 (16). Spatula very broad, disk-shaped, more than half the length of the aedeagus. Slender. Pale, with traces of brown pattern. 3.9-4.1. Center, South (Figure 193, 9,10)..... ***P. makarovi*** Mor.
- 16 (15). Spatula not disk-shaped, moderately broad or narrow. (Figures 193, 11-26; 194, 1-9).
- 17 (22). Spatula not broader than aedeagus, very long (Figure 193, 15-20).
- 18 (21). Ventral side of aedeagus with slight subapical convexity. Apex of aedeagus more or less rounded (Figure 193, 15-18).
- 19 (20). Aedeagus strongly curved at base, then almost straight. Rather thickset. Pale, with slight brown pattern. 3.6-3.9. South (Figure 193, 15,16)..... ***P. similis*** W. Wgn.
- 20 (19). Aedeagus uniformly curved almost to apex. Thickset. Greenish yellow. 2.4-3. Center. On *Koeleria glauca*, *K. gracilis* (Figure 193, 17,18)..... ***P. koeleriae*** Zachv.
- 21 (18). Dorsal side of aedeagus with subapical convexity; ventral side of aedeagus with slight convexity in the middle. Pale, with traces of brown pattern; hemelytra with several brown spots. 2.9-3.2. South. On *Puccinellia* spp. (Figure 193, 19,20)..... ***P. atropidis*** Em.
- 22 (17). Spatula broader than aedeagus, moderately elongate (Figures 193, 11,12, 21-26; 194, 1-9).
- 23 (26). Spatula large, about half the length of the aedeagus (Figure 193, 11,12).
- 24 (25). Apical margin of spatula uniformly convex. With rich brown pattern; cells of hemelytra with brown border; some cross

- veins of hemelytra white. 3.2-3.4. South (Figure 193, 11,12)....
 **P. nodosus** Rib.
- 25 (24). Apical margin of spatula with a rounded process in the middle. Pale, yellowish, with faint brown pattern. Cells of hemelytra often bordered. 2.7. Baltic Region **P. exilis** W. Wgn.
- 26 (23). Spatula small, less than half the length of the aedeagus (Figures 193, 21-26; 194, 1-9).
- 27 (28). Spatula strongly curved dorsad; apical part of aedeagus slightly curved dorsad. Brownish, with brown pattern; cells of hemelytra with brown border. 3-3.5. (Figure 193, 13,14).....
 **P. poecilus** Fieb.
- 28 (27). Lobes of spatula not curved dorsad, apical part of aedeagus not curved dorsad (Figures 193, 21-26; 194, 1-9).
- 29 (36). Apex of aedeagus in profile pointed and curved like a beak (Figures 193, 21-26; 194, 1,2).
- 30 (33). Apical half of aedeagus in profile almost parallel to branches of phallobase (Figure 193, 21-24).
- 31 (32). Branches of phallobase almost parallel, only very slightly diverging. Apical half of aedeagus slightly curved ventrally. Thickset. Green, with traces of brown pattern. 2.5-3. North (Figure 193, 21,22) **P. frigidus** Boh.
- 32 (31). Branches of phallobase diverging. Apical half of aedeagus straight. Resembling *P. frigidus*. 2.5-2.8. North (Figure 193, 23,24) **P. pallidineris** Dhlb.
- 33 (30). Apical half of aedeagus in profile forming an acute angle with branches of phallobase (Figures 193, 25,26; 194, 1,2).
- 428 34 (35). Aedeagus shorter; spatula broader, about 1/3 of length of aedeagus. Slender, yellowish green. 2.7-3.5 (Figure 193, 25,26) **P. cephalotes** H.-S.
- 35 (34). Aedeagus longer; spatula narrower, about 1/4 the length of the aedeagus. Slender, pale, greenish. 3.1-3.6. Southeast. On *Puccinellia* sp. (Figure 194, 1,2)..... **P. atropidicola** Em.
- 36 (29). Apex of aedeagus in profile rounded or truncate (Figure 194, 3-9).
- 37 (38). Ventral margin of aedeagus in profile smooth, straight. Apical margin of spatula not notched. Slender. Brownish, with indistinct brown pattern; vertex usually with 2 interrupted bands and spots at posterior margin; pronotum with longitudinal stripes; cells of hemelytra with brown borders; hind tarsi light. 3.3-4.3. South (Figure 194, 3-5)..... ***P. striatus** L.
- 38 (37). Ventral margin of aedeagus not smooth in profile. Spatula with apical notch (Figure 194, 6-9).
- 39 (40). Margin of apical notch of spatula not sharp. Spatula in profile slightly curved dorsad. Ventral margin of aedeagus with bend approximately in the middle. Resembling *P. striatus*; hind tarsi dark. 3.7-4.3. (Figure 194, 6,7) ***P. provincialis** Rib.
- 40 (39). Margin of apical notch of spatula sharp. Spatula in profile not curved dorsad. Bend on ventral margin of aedeagus markedly closer to apex of aedeagus than to its base. Resembling *P. striatus*; hind tarsi light. 3.9-4.4. Transmits the

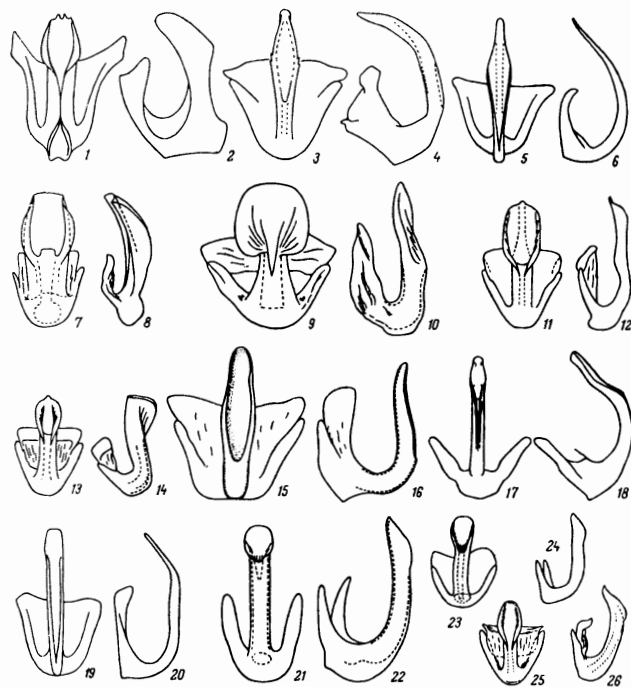


FIGURE 193. Cicadinea. Family Cicadellidae. Details of male genitalia (after Wagner, Zakhvatkin, Moravskaya, Ossiannilsson, Ribaut and original)

1,2 - *Psammotettix seriphidii*: 1—penis, dorsal; 2—same, lateral; 3,4—*P. ornaticeps*: 3—same, dorsal; 4—same, lateral; 5,6—*P. comitans*: 5—same, dorsal; 6—same, lateral; 7,8—*P. confinis*: 7—same, dorsal; 8—same, lateral; 9,10—*P. makarovi*: 9—same, dorsal; 10—same, lateral; 11,12—*P. nodosus*: 11—same, dorsal; 12—same, lateral; 13,14—*P. poecilus*: 13—same, dorsal; 14—same, lateral; 15,16—*P. similis*: 15—same, dorsal; 16—same, lateral; 17,18—*P. koeleriae*: 17—same, dorsal; 18—same, lateral; 19,20—*P. atropidis*: 19—same, dorsal; 20—same, lateral; 21,22—*P. frigidus*: 21—same, dorsal; 22—same, lateral; 23,24—*P. pallidineris*: 23—same, dorsal; 24—same, lateral; 25,26—*P. cephalotes*: 25—same, dorsal; 26—same, lateral.

"zakuklevanie" virus † of oats and other cereals (Figure 194, 8,9) **P. alienus* Mel.

and Southeast. On *Diplachne squarrosa* (Figure 194, 23,24) *Ph. blanda* Kuzn.

131. *Cleptochiton* Em. Monotypic genus.

- 1 (1). Pale, with brown pattern. Vertex with 4 large spots; fastigium with 2 additional small spots; cells of hemelytra with interrupted brown borders. 3.2-3.4. Southeast. On *Agropyron ramosum* (Figure 194, 10-12) *C. variegatus* Em.

132. *Mogangella* Dlab. Genus comprising 2 species.

- 1 (2). Aedeagus more or less uniformly curved. Slender, Pale, with brown pattern; vertex with 2 brown longitudinal stripes divided posteriorly and with 4 dark brown spots at anterior margin; cells of hemelytra with brown borders. 3-3.7. South. On *Agropyron cristatum*, *A. desertorum* and *A. repens* (Figure 194, 13,14) *M. straminea* Dlab.
 2 (1). Apical half of aedeagus straight. 3.1-3.3. South *M. secundaria* Dlab.

133. *Ebarrius* Rib. Genus apparently monotypic.

- 1 (1). Slender. Brownish; face with black pattern; vertex with 2 dark brown spots apically and 2 spots posterior to eyes fused with outer ends of a band which is interrupted in the middle; pronotum with dark longitudinal stripes; cells of hemelytra with brown borders. 3-4.15. (Figure 194, 15,16) *E. cognatus* Fieb.

134. *Adarrus* Rib. — 2 species.

- 1 (2). Gonopore apical; aedeagus slender. Hemelytra with supplementary veins. (Subgenus *Errastunus* Rib.). Venter black; face with fused black pattern; vertex, pronotum and scutellum usually orange-yellow, with indistinct spots; hemelytra dark brown, with light veins. 2.7-3.4 (Figure 194, 17,18) *A. ocellaris* Fall.
 2 (1). Gonopore dorsal; aedeagus broad. No supplementary veins. (Subgenus *Adarrus* s.str.). Vertex long, its anterior margin acute-angled. Brownish; vertex with 3 pairs of black spots, the apical spots triangular and contiguous; hemelytra with brown spots. 2.6-3.5. Transcarpathian Region (Figure 194, 19,20) *A. multinotatus* Boh.

135. *Turrutus* Rib. Monotypic genus.

- 1 (1). Thickset; hemelytra slightly shorter than abdomen. Brownish; face with brown pattern; vertex with 2 longitudinal stripes and a pair of small dark brown spots at apex; pronotum with dark stripes; cells of hemelytra with indistinct borders. 2.7-3.2 (Figure 194, 21,22) *T. socialis* Fl.

136. *Philaia* Dlab. Monotypic genus.

- 1 (1). Pale, grayish. Face with brown pattern; vertex with 2 indistinct gray longitudinal stripes and 4 small brown spots at anterior margin; cells of hemelytra with faint brown borders. 2.6-3.1. Southwest

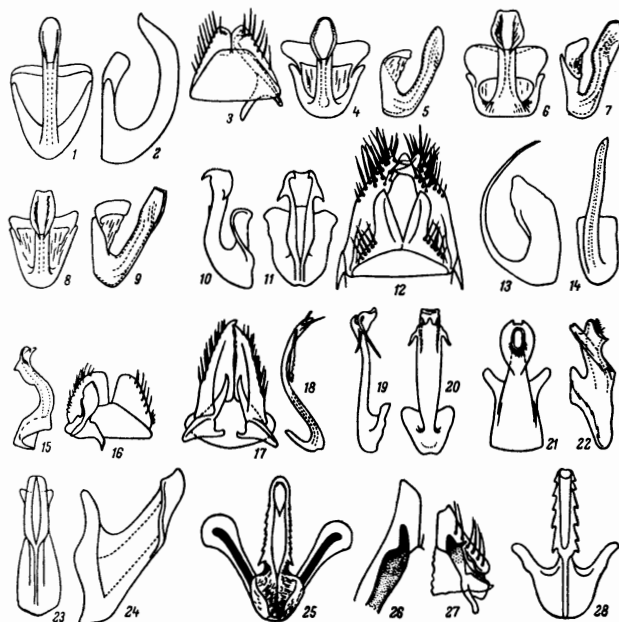


FIGURE 194. Cicadinea. Family Cicadellidae. Details of male genitalia (after Dlabola, Ossianilsson, Ribaut and original)

1,2—*Psammotettix atropicola*: 1—penis, dorsal; 2—same, lateral; 3-5—*P. striatus*: 3—genital plates, valve and stylus, ventral; 4—penis, dorsal; 5—same, lateral; 6,7—*P. provincialis*: 6—same, dorsal; 7—same, lateral; 8,9—*P. alienus*: 8—same, dorsal; 9—same, lateral; 10-12—*Cleptochiton variegatus*: 10—same; 11—same, dorsal; 12—genitalia, ventral; 13,14—*Mogangella straminea*: 13—penis, lateral; 14—same, dorsal; 15,16—*Ebarrius cognatus*: 15—same, lateral; 16—genital plates, valve and stylus, dorsal; 17,18—*Adarrus ocellaris*: 17—same; 18—penis, dorsal; 19,20—*A. multinotatus*: 19—same, lateral; 20—same, dorsal; 21,22—*Turrutus socialis*: 21—same, dorsal; 22—same, lateral; 23,24—*Philaia blanda*: 23—same, dorsal; 24—same, lateral; 25,26—*Kasachstanicus margaritae*: 25—same, dorsal; 26—genital valve and stylus, dorsal; 27,28—*K. volgensis*: 27—same; 28—penis, dorsal.

† [See note on p. 425.]

- 430 137. *Kasachstanicus* Dlab. Genus comprising 2 species.
- 1 (2). Sides of aedeagus parallel, with a few denticles. Brownish, with dark brown pattern; cells of hemelytra with brown borders. 2.5-3. South. On *Agropyron cristatum*, *A. desertorum*, etc. (Figure 194, 27,28) *K. volgensis* Fieb.
- 2 (1). Aedeagus tapering; denticles at sides of aedeagus more numerous. Resembling *K. volgensis*. 2.5-3. South (Figure 194, 25,26)..... *K. margaritae* Dlab.
138. *Mongolojassus* Zachv. — 1 species. In the whole U.S.S.R. 6 species.
- 1 (1). Brownish, with dark brown pattern. Hemelytra with 2 indistinct light bands; cells outside the bands with brown borders. 2.7-3.4. Steppes of the Southeast. On *Stipa* spp., etc. (Figure 195, 1,2) .. *M. sibiricus* Horv.
139. *Pleargus* Em., gen. n.; type species: *Deltocephalus pygmaeus* Horv. — 1 species.
- 1 (1). Brown; with dark brown pattern; vertex with 3 pairs of dark spots; cells of hemelytra with brown borders. 1.9-2.7. South (Figure 195, 3,4)..... *P. pygmaeus* Horv.
140. *Jassargus* Zachv. With distinct dark brown pattern; vertex with 3 pairs of dark spots; cells of hemelytra with broad brown borders. On Gramineae. — 9 or 10 species.
- 1 (4). Aedeagus originating in ventral part of phallobase, slender, with apical processes forming an arrow (Figure 195, 6-9). Posterior margin of anal tube with ventral denticle. (Subgenus *Sayetus* Rib.).
- 2 (3). Aedeagus in profile uniformly curved. Apical processes with angular bend in the middle. 2.7-3.2. North, Center (Figure 195, 8,9)..... *J. allobrogicus* Rib.
- 3 (2). Aedeagus in profile straight. Apical processes straight. 2.7-3.2. (Figure 195, 5-7)..... *J. sursumflexus* Then.
- 4 (1). Aedeagus originating in dorsal part of phallobase, more or less short, thickset, without processes (Figure 195, 10-19, 22, 23).
- 5 (10). Gonopore on ventral side of aedeagus at base (Figure 195, 10-15). (Subgenus *Jassargus* s. str.).
- 6 (9). Phallobase with a pair of stout denticles in addition to aedeagus (Figure 195, 10-13).
- 7 (8). Aedeagus divided into 2 processes down to phallobase; apices of processes crossed. 3.0. South (Figure 195, 10,11)..... *J. lunaris* Logv.
- 8 (7). Aedeagus not divided, with only 2 denticles at apex. 2.7-3.2 (Figure 195, 12,13)..... *J. obtusivalvis* Kbm.
- 9 (6). Phallobase without processes; aedeagus simple, pointed. 2.7-3.2 (Figure 195, 14,15)..... *J. pseudocellaris* Fl.
- 10 (5). Gonopore apical or dorsal (Figure 195, 16-19, 22, 23).
- 11 (16). Gonopore apical, forming a longitudinal slit on dorsal and ventral sides of aedeagus, or on dorsal side only (Figure 195, 16-19). (Subgenus *Arrailus* Rib.).

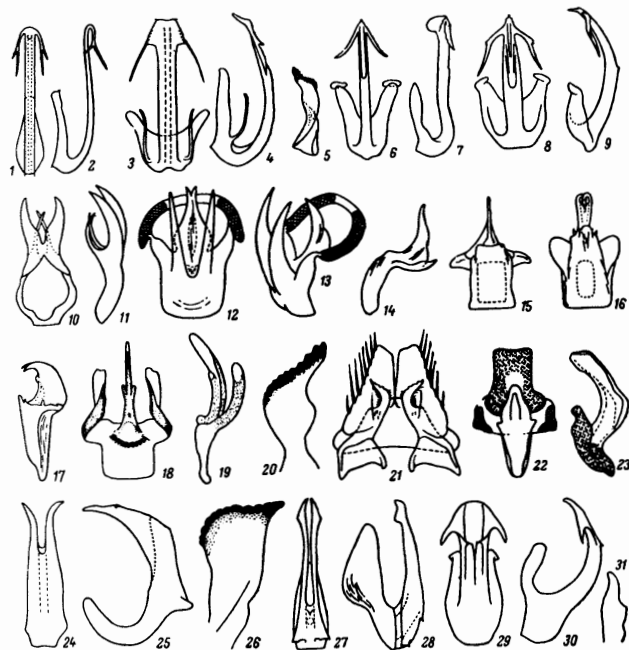


FIGURE 195. Cicadinea. Family Cicadellidae. Details of male genitalia (after Logvinenko, Ribaut and original)

- 1,2—*Mongolojassus sibiricus*: 1—penis, dorsal; 2—same, lateral; 3,4—*Pleargus pygmaeus*: 3—same, dorsal; 4—same, lateral; 5-7—*Jassargus sursumflexus*: 5—apex of stylus; 6—penis, dorsal; 7—same, lateral; 8,9—*J. allobrogicus*: 8—same, dorsal; 9—same, lateral; 10,11—*J. lunaris*: 10—same, dorsal; 11—same, lateral; 12,13—*J. obtusivalvis*: 12—same, dorsal; 13—same, oblique-lateral; 14,15—*J. pseudocellaris*: 14—same, lateral; 15—same, dorsal; 16,17—*J. flori*: 16—same, dorsal; 17—same, lateral; 18-20—*J. ukrainicus*: 18—same, dorsal; 19—same, lateral; 20—apex of stylus; 21-23—*J. repletus*: 21—genital plate, valve and styli, dorsal; 22—penis, anterior aspect; 23—same, lateral; 24-26—*Mendraus chyzeri*: 24—same, dorsal; 25—same, lateral; 26—apex of stylus; 27,28—*Pinumius areatus*: 27—penis, dorsal; 28—same, lateral; 29-31—*Parargus kerzhneri*: 29—same, dorsal; 30—same, lateral; 31—apex of stylus.

- 12 (13). Aedeagus short; lateral lobes near gonopore pointed. 2.7-3.2. (Figure 195, 16,17) **J. flori** Fieb.
- 13 (12). Aedeagus longer, with rounded apex.
- 14 (15). Aedeagus with 2 rounded processes in the middle. 3.2. South (Figure 195, 18-20)..... **J. ukrainicus** Logv.
- 15 (14). Aedeagus without processes. 2.7-3.2..... **J. neglectus** Then.
- 16 (11). Gonopore basal, on dorsal side of aedeagus. Apex of styli slender. (Subgenus *Aurkius* Rib.). 2.7-3.2 (Figure 195, 21-23)..... **J. repletus** Fieb.
141. **Mendraus** Rib. Monotypic genus.
- 1 (1). Thickset; hemelytra slightly shorter than abdomen. Pale whitish; pygophore of male with dorsal black spot. 2-3. South. On *Festuca sulcata* (Figure 195, 24-26)..... **M. chyzeri** Horv.
142. **Pinumius** Rib. Genus comprising 2 species. — 1 species.
- 1 (1). Dorsum yellowish; venter black; face with fused pattern; vertex with 2 brown apical small spots, a brown band interrupted in the middle and 2 brown spots posterior to them; pronotum and scutellum with brown pattern; cells of hemelytra with brown borders. 3-3.5. On Gramineae, especially on sandy soil (Figure 195, 27,28)..... **P. areatus** Stål.
- 432 143. **Parargus** Em. — 1 species.
- 1 (1). Brownish; venter with black pattern; dorsum dark brown; hemelytra with supplementary cross veins; cells of hemelytra with dark brown borders. 2.6-2.9. Steppes of the Southeast. On *Agropyron repens* and other related Gramineae (Figure 195, 29-31)..... **P. kerzhneri** Em.
144. **Diplocolenus** Rib. On Gramineae. — 12 species.
- 1 (4). A toothlike process in front of notch on dorsal side of genital plates. Gonopore dorsal, distant from apex of aedeagus (Figure 196, 1-6). (Subgenus *Diplocolenus* s.str.).
- 2 (3). Notch on genital plates closer to apex than to base. Denticle on posterior margin of lobes of pygophore directed posteriad. Hemelytra reaching apex of abdomen. Brown; vertex with a pair of brown triangular spots at apex and 2 pairs of square brown spots posterior to triangular spots; pronotum with indistinct longitudinal stripes; cells of hemelytra with brown borders. 3.7-5.1. South (Figure 196, 1-3)..... **D. frauenfeldi** Fieb.
- 3 (2). Notch on genital plates closer to base than to apex. Denticle on posterior margin of lobes of pygophore directed ventrad. Hemelytra shorter than abdomen. Brown; pattern on vertex weakly marked. 3.7-5.1. On *Calamagrostis arundinacea*, etc. (Figure 196, 4-6)..... **D. bohemani** Zett.
- 4 (1). No denticles in front of notch on genital plates. Gonopore dorsal, subapical. (Subgenus *Verdanus* Om.).
- 5 (22). Notch of genital plates at lateral margin.
- 6 (7). Aedeagus dorsoventrally flattened, its processes leaf-shaped. Dorsum green, often with black spots; venter black. 3-4.5. North (Figure 196, 7,8)..... **D. limbatellus** Zett.

- 7 (6). Aedeagus slender, rounded. Processes of penis not leaf-shaped. (Figure 196, 9-25).
- 8 (11). Aedeagus with a pair of small processes at the apex (Figure 196, 9-11).
- 9 (10). Aedeagus short, S-shaped in profile (as in Figure 196, 9), but its processes twice as long. Dorsum green or yellow, venter pale to black. 3.5-5. South; Kazakhstan... **D. logvinenkoae** Em., sp.n.
- 10 (9). Aedeagus long, its apical half straight. Habitus and size as in *D. logvinenkoae*. Caucasus and Ciscaucasia (Figure 196, 10,11)..... **D. caucasicus** Em.
- 11 (8). Aedeagus with 2 pairs of processes or one pair of bifurcate processes at apex (Figure 196, 12-25).
- 12 (13). Apex of penis with long T-shaped processes. Dorsum green, sometimes brownish orange; venter pale to black. 3.3-5. The commonest species of the genus (Figure 196, 14,15)..... **D. abdominalis** F.
- 13 (12). Apex of penis not T-shaped, with 2 pairs of processes close together at base or with common base on each side (Figure 196, 12,13, 15-25).
- 14 (15). Ventral pair of processes of penis directed anteriad. Dorsum green, often with black spots and stripes on hemelytra. 3.8-4.6. Carpathians (Figure 196, 12,13)..... **D. nasti** W. Wgn.
- 15 (14). Both pairs of processes of penis directed posteriad (Figure 196, 16-25). Habitus and size as in *D. abdominalis*.
- 16 (21). Both processes of penis with a common base on each side. Carina on ventral margin of dorsal process continuing into dorsal margin of ventral process (Figure 196, 15-23).
- 17 (20). Two pairs of processes of penis of about equal length (Figure 196, 18-21).
- 18 (19). Basis of dorsal pair of processes wide apart. Processes on each side fused only at base. Dagestan (Figure 196, 18,19)..... **D. daghestanicus** Em., sp.n.
- 19 (18). Bases of dorsal pair of processes close together. Processes on each side fused for half their length. Ciscaucasia (Figure 196, 20,21)..... **D. ciscaucasicus** Em., sp.n.
- 20 (17). Ventral pair of processes about twice as long as dorsal pair. Western part of the Greater Caucasus (Figure 196, 22,23)..... **D. intermedius** Em., sp.n.
- 21 (16). Processes of penis on each side completely separated; dorsal processes short, parallel. Ossetia (Figure 196, 24,25)..... **D. oseticus** Em., sp.n.
- 434 22 (5). Notch of genital plates on their posterior margin. Aedeagus short and thick. Dorsum green, venter pale to black. 2.6-3.2. Steppes. On *Festuca sulcata* (Figure 196, 26-28)..... **D. nigrifrons** Kbm.
145. **Arthaldeus** Rib. On Gramineae. Three species of the genus are known.
- 1 (2). Processes of lobes of pygophore with subapical recurrent denticle. Dorsum green or yellow; venter brown to black. 2.9-4.1 (Figure 197, 1-4)..... **A. pascuellus** Fall.

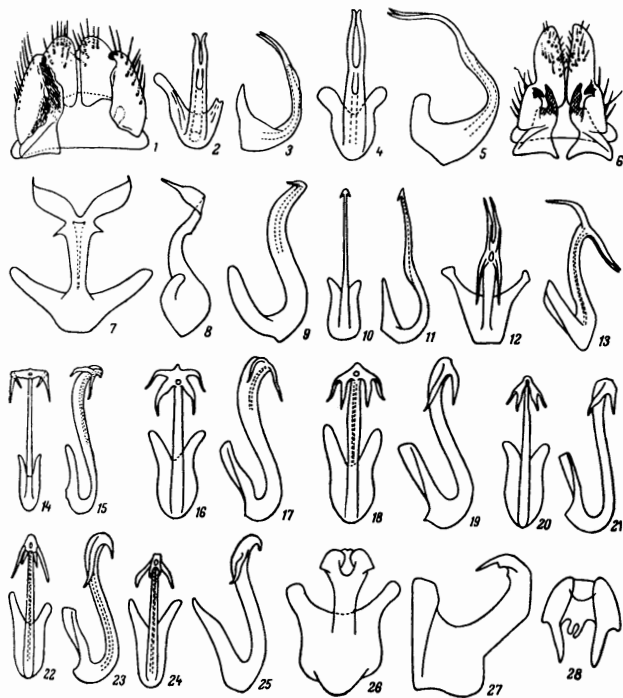


FIGURE 196. Cicadinea. Family Cicadellidae. Details of male genitalia (after Ribaut and original)

1-3—*Diplocolenus frauenfeldi*: 1—genital plates, valve and styli, dorsal; 2—penis, dorsal; 3—same, lateral; 4-6—*D. bohemani*: 4—same, dorsal; 5—same, lateral; 6—genital plates, valve and styli, dorsal; 7,8—*D. himbatellus*: 7—penis, dorsal; 8—same, lateral; 9—*D. orientalis* Rib., same; 10,11—*D. caucasicus*: 10—same, dorsal; 11—same, lateral; 12,13—*D. nasti*: 12—same, dorsal; 13—same, lateral; 14,15—*D. abdominalis*: 14—same, dorsal; 15—same, lateral; 16,17—*D. melichari*: 16—same, dorsal; 17—same, lateral; 18,19—*D. daghestanicus*: 18—same, dorsal; 19—same, lateral; 20,21—*D. ciscaucasicus*: 20—same, dorsal; 21—same, lateral; 22,23—*D. intermedius*: 22—same, dorsal; 23—same, lateral; 24,25—*D. oseticus*: 24—same, dorsal; 25—same, lateral; 26-28—*D. nigriffrons*: 26—same, dorsal; 27—same, lateral; 28—apex of penis.

- 2 (1). Processes of lobes of pygophore without subapical denticle (Figure 197, 5,6). Dorsum green or yellow; venter brown to black; face with light longitudinal stripe tapering towards apex of head.
- 3 (4). Processes of lobes of pygophore without subapical dilatation. Darker and thickset. 3-4.4 (Figure 197, 6,7)..... *A. striifrons* Kbm.
- 4 (3). Processes of lobes of pygophore subapically lanceolate. Pigmentation weaker; slender. 3.7-4.4. Southeast. On *Calamagrostis epigeios* (Figure 197, 5)..... *A. arenarius* Rem.
146. *Rosenus* Om. — 1 species. In the whole U.S.S.R. 2 species.
- 1 (1). Pale, with brown pattern. Frontoclypeus with transverse stripes; vertex with 3 pairs of spots; pronotum with indistinct longitudinal stripes; some cells of hemelytra with brown borders. 2.6-3.2. Arctic Urals (Figure 197, 8,9)..... *R. cruciatus* O.B.
147. *Sorhoanus* Rib. On Gramineae or sedge. — 3 species.
- 1 (2). Denticle on lobes of pygophore ventral, stout. Aedeagus slightly flattened laterally; both pairs of processes similar. Yellow; 2 black longitudinal spots on fastigium. 3.7-4.2. South. On *Bromus inermis* (Figure 197, 15,16)..... *S. medius* M. R.
- 2 (1). Denticle on lobes of pygophore on posterior side, directed posteriad, not very large. Aedeagus not flattened; basal pair of processes larger (Figure 197, 11-14). Yellow; cells of hemelytra sometimes with brown borders. On sedge.
- 3 (4). Aedeagus straight in profile; apical pair of denticles curved dorsad; basal denticles fused at base. 3.5-3.7. In marshy areas (Figure 197, 11,12)..... *S. xanthoneurus* Fieb.
- 4 (3). Aedeagus S-shaped; apical denticles not curved dorsad; basal denticles not fused at base. 4.2-4.8. In marshy areas (Figure 197, 13,14)..... *S. assimilis* Fall.
148. *Chloothea* Em. Genus comprising 2 species. — 1 species.
- 1 (1). Hemelytra much shorter than abdomen, their posterior margin obliquely truncate. Dorsum greenish yellow, shiny; a black line at anterior margin of vertex; apex of hemelytra with a narrow black zone; face, venter and abdomen black; abdomen of male with white ring anterior to pygophore. 2.6-3.3. Southeast. On *Stipa lessingiana*, *S. sareptana*, etc. (Figure 197, 17,18)..... *Ch. zonata* Em.
149. *Rhoanus* Dlab. Monotypic genus.
- 1 (1). Slender. Yellow; hemelytra yellowish green, in female slightly shorter than abdomen. 3.1-4.5. South. On *Agropyron repens* (Figure 197, 19,20)..... *Rh. hypochlorus* Fieb.
150. *Coelestinus* Em. Genus comprising 2 species.
- 1 (1). Slender. Dorsum bluish gray, with traces of brownish pattern; venter black; face with white band. 2.9-3.4. Southeast; Kazakhstan. On steppe sedge (Figure 198, 23,24)..... *C. kasakhstanicus* Em., sp. n.

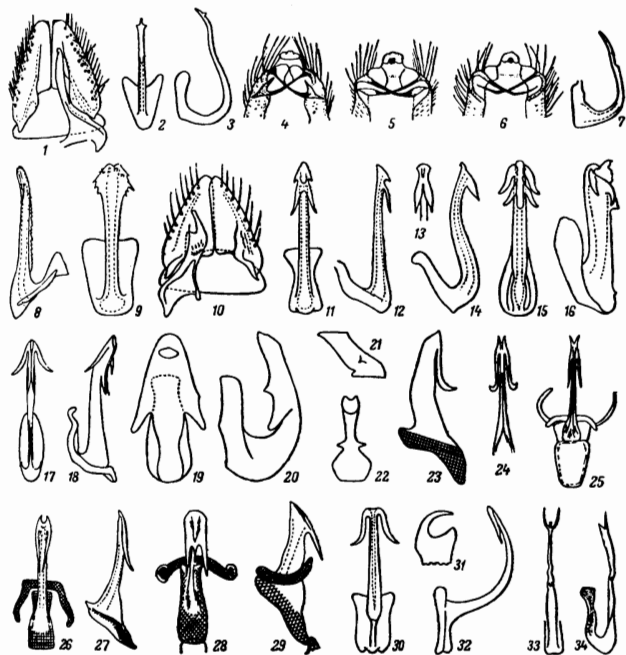


FIGURE 197. Cicadinea. Family Cicadellidae. Details of male genitalia (after Ossiannilsson, Reman, Ribaut and original)

1-4—*Arthaideus pascuellus*: 1—genital plates, genital valve and stylus; 2—penis, dorsal; 3—same, lateral; 4—pygophore, ventral; 5—*A. arenarius*, same; 6, 7—*D. striifrons*: 6—same; 7—same, lateral; 8, 9—*Rosenus cruciatus*: 8—same; 9—same, dorsal; 10-12—*Sorhoanus xanthoneurus*: 10—genital plates, genital valve and stylus; 11—penis, dorsal; 12—same, lateral; 13, 14—*S. assimilis*: 13—apex of penis, dorsal; 14—same, lateral; 15, 16—*S. medius*: 15—penis, dorsal; 16—same, lateral; 17, 18—*Chloothoa zonata*: 17—same, dorsal; 18—same, lateral; 19, 20—*Rhoanans hypochlorus*: 19—same, dorsal; 20—same, lateral; 21, 22—*Palus auran-tiacus*: 21—same; 22—same, dorsal; 23, 24—*P. caudatus*: 23—same; 24—same, lateral; 25—*P. edwardsi*, same, dorsal; 26, 27—*P. panzeri*: 26—same; 27—same, lateral; 28, 29—*P. costalis*: 28—same, dorsal; 29—same, lateral; 30-32—*Praganus hofferi*: 30—same, dorsal; 31—apex of stylus; 32—penis, lateral; 33, 34—*Enantiocephalus cornutus*: 33—same, dorsal; 34—same, lateral.

151. *Palus* DeL. et Sl. On sedge. — 5 species.

1 (8). Lobes of pygophore without denticle.

2 (7). Processes of aedeagus subapical, long (Figure 197, 23-27).
(Subgenus *Palus* s. str.).

3 (6). Aedeagus laterally flattened; apical processes slightly diverging, Head with pattern.

436 4 (5). Apical processes of penis short, blunt. Ventral margin of aedeagus markedly convex before apex. Yellow; anterior margin of vertex with 2 bands interrupted in the middle; inner ends of half bands of each side fused. 3.7-4.4 (Figure 197, 23, 24)
..... *P. caudatus* Fl.

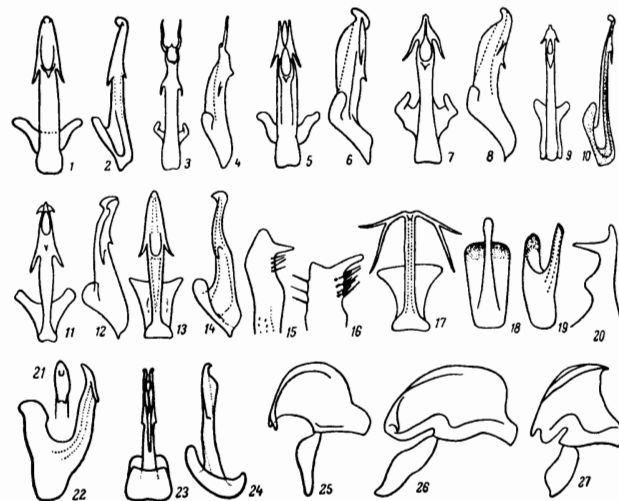


FIGURE 198. Cicadinea. Family Cicadellidae. Details of male genitalia (after Vilbast, Diabola, Ribaut and original)

1, 2—*Mocuellus lingi*: 1—penis, dorsal; 2—same, lateral; 3, 4—*M. longicornis*: 3—same, dorsal; 4—same, lateral; 5, 6—*M. ruthenicus*: 5—same, dorsal; 6—same, lateral; 7, 8—*M. ely-morum*: 7—same, dorsal; 8—same, lateral; 9, 10—*M. stehliki*: 9—same, dorsal; 10—same, lateral; 11, 12—*M. quadricornis*: 11—same, dorsal; 12—same, lateral; 13-15—*M. collinus*: 13—same, dorsal; 14—same, lateral; 15—apex of stylus; 16, 17—*M. metrius*: 16—same; 17—penis, dorsal; 18-20—*Henschia acuta*: 18—same; 19—same, lateral; 20—apex of stylus; 21, 22—*Para-limnus zachvatkini*, sp. n.: 21—apex of penis, dorsal; 22—penis, lateral; 23, 24—*Coelstinus kasakhstanicus*, sp. n.: 23—same, dorsal; 24—same, lateral; 25—*Limotettix aviger*, sp. n., penis, lateral; 26—*L. sphagnetis*, sp. n., same; 27—*L. atricapilla*, same.

- 5 (4). Apical processes of penis longer, pointed; ventral margin of aedeagus without marked convexity. Orange-yellow; dorsum with darker longitudinal stripes; anterior margin of vertex with 4 black spots. 3.1-4.2. Northwest (Figure 197, 25)..... *P. edwardsi* Lindb.
- 6 (3). Aedeagus not flattened, its apical processes not diverging. Head without pattern. Brownish; cells of hemelytra with brown border. 3.2-4. On *Eriophorum* sp. (Figure 197, 26,27)..... *P. panzeri* Fl.
- 7 (2). Processes of aedeagus at its base, short. (Subgenus *Agapelus* Em.). Slender. Orange-yellow; hemelytra with dark subapical spot at outer and inner margin. 3-4. Center (Figure 197, 21,22)..... *P. aurantiacus* Forel.
- 437 8 (1). Lobes of pygophore with ventral denticle. (Subgenus *Airosus* Rib.). Yellow; margin of membrane with brown spots. 3-3.6 (Figure 198, 28,29)..... *P. costalis* Fall.
152. *Praganus* Dlab. Monotypic genus.
- 1 (1). Hemelytra of male slightly longer than abdomen; hemelytra of female slightly shorter than abdomen. Pale, whitish; head and pronotum with faint brownish pattern. 2.4-3.3. South. On Gramineae (*Stipa* spp., etc.). In the steppe (Figure 197, 30-32)..... *P. hofferi* Dlab.
153. *Enantiocephalus* Hpt. Monotypic genus.
- 1 (1). Pale; dorsal part of face with brownish gray stripes from eyes to apex of face; apex of face with 2 black small spots; vertex gray, with light longitudinal stripe; pronotum with gray longitudinal stripes; hemelytra slightly shorter than abdomen, with several brown small spots. 4.8-5. Center, South. On *Agropyron repens* (Figure 197, 33,34)..... *E. cornutus* H.-S.
154. *Mocuellus* Rib. — 8 species.
- 1 (2). Aedeagus slender, with slender bifurcate recurrent processes at apex; gonopore small. (Subgenus *Erzaleus* Rib.). Hemelytra longer than abdomen. Yellowish green. 3.7-4.6. On *Alisma plantago*, *Baldingera arundinacea*, etc. (Figure 198, 16,17)..... *M. metrius* Fl.
- 2 (1). Aedeagus thick; gonopore broad; denticles not bifurcate (Figure 198, 1-14). (Subgenus *Mocuellus* s.str.). Hemelytra usually much shorter than abdomen, with rounded apex. Usually yellowish green. 3-4.7. On Gramineae.
- 3 (4). Penis relatively slender; a very thick recurrent denticle at posterior margin of gonopore. South (Figure 198, 9,10)..... *M. stehliki* Dlab.
- 4 (3). Penis with only a small denticle at posterior margin of gonopore or without denticle (Figure 198, 1-8, 11-14).
- 5 (12). Apex of penis without anteriorly-directed denticles (Figure 198, 1,2,7-14).
- 6 (7). Apex of penis with 2 pairs of posteriorly-directed denticles. South (Figure 198, 11,12)..... *M. quadricornis* Dlab.

- 7 (6). Apex of penis with a pair of posteriorly-directed denticles (Figure 198, 1,2,7-10,13,14).
- 8 (11). Lateral margins of aedeagus convex before apex.
- 9 (10). Posterior margin of gonopore without denticle. Inner margin of styli straight or convex. Center, South. On Gramineae (*Agropyron* spp., *Elymus* spp., etc.) (Figure 198, 13-15)..... *M. collinus* Boh.
- 10 (9). Posterior margin of gonopore with a small denticle. Inner margin of styli markedly concave anterior to denticle. Southeast (Figure 198, 1,2)..... *M. lingi* Vilb.
- 11 (8). Lateral margins of aedeagus concave before apex; posterior margin of gonopore with a small denticle. Southeast (Figure 198, 7,8)..... *M. elymorum* Em.
- 12 (5). Apex of penis with a pair of anteriorly-directed denticles (Figure 198, 3,5).
- 13 (14). Apical denticles of penis not reaching beyond apex; apex of penis well developed, flattened laterally. Southeast (Figure 198, 5,6)..... *M. ruthenicus* Em.
- 14 (13). Denticles long, projecting far beyond apex of penis which is small and denticle-shaped. South (Figure 198, 3,4)..... *M. longicornis* Vilb.
155. *Henschia* Leth. Monotypic genus.
- 1 (1). Hemelytra much shorter than abdomen, widening along claval vein, with rounded apex. Whitish; dorsal part of face with black band continuing behind eyes on sides of pronotum and hemelytra; dorsum of abdomen sometimes with black longitudinal stripes. 3-4. South. On *Stipa* spp. (Figure 198, 18-20)..... *H. acuta* P. Löw.

2. Suborder PSYLLINEA — Jumping plant lice

M.M. Loginova

Small sucking insects (1.5-5.5), resembling Cicadellidae and aphids. They differ from Cicadellidae in the straight anterior margin of the head (in dorsal view), in the structure of the antennae and in reduced longitudinal venation of the wings. They differ from aphids in the thicker fore wings with an ambient vein at the margin, and in the possession of saltatorial 438 hind legs.

Head more or less distinctly separated from thorax, usually slanting ventrally, in the Liviidae porrect. Vertex triangular or rectangular, divided by the coronal suture into halves. The ratio of length of vertex to its breadth is used as a diagnostic character. Two ocelli in the posterior angles of the vertex or at the sides; a 3rd unpaired ocellus at the apex of the coronal suture dorsal to the small frontal sclerite or on the sclerite, which lies between the genae or is covered completely by the anterior processes of the genae, the genal cones. The degree of development of the genal cones, their size and form are important diagnostic characters. The compound eyes are usually convex, often spherical; the compound