1985. Entomological Review 64(1):49-65.

UDC 595.753

A CONTRIBUTION TO KNOWLEDGE OF THE FAMILIES KINNARIDAE AND MEENOPLIDAE (HOMOPTERA, FULGOROIDEA)*

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Fam. KINNARIDAE

The small fam. Kinnaridae was distinguished and described by Muir (1925, 1930). For the genus *Kinnara* Dist. Muir has also given an interpretation of the venation of the forewings and has described the male genitalia in a number of species (Muir, 1922, 1923). The literature on the family up to 1943 is summarized in the catalog of Metcalf (1945). Subsequently important data for the systematics and distribution of the Auchenorrhyncha of the fam. Kinnaridae were published by Fennah (1945a, b, 1947, 1948, 1956, 1973, 1981), Ramos (1947, 1957) and Synave (1958). Fennah (1945a) divided the family into two subfamilies, the Kinnarinae and the Prosotropinae and described a number of genera and species from the Western hemisphere. At the present time 17 genera are known in the family and over 80 species, including those described in this paper**.

The range of the family in the Old World comprises the Oriental region, the Maskarene Islands (Madagascar region) and the eastern part of the subtropical Palearctic, and in the New World the Neotropical region (mainly the islands of the Caribbean basin) and the western sector of the subtropical Nearctic. The subfam. Kinnarinae is represented in both hemispheres, but only individual representatives of it extend into the Holarctic subtropics. The second subfamily is wholly neotropical (9 genera).

Study of the family has remained very scanty and in particular the Old World representatives have clearly been poorly studied, as a result of which two genera only are known so far, *Kinnara* Dist. and *Paramicrixia* Dist. Some genera however, specifically *Adolenda* Dist. and *Bashgultala* Dist. have been described in the fam. Cixiidae (Distant, 1911; Dlabola, 1957, 1981), though in actual fact they belong to the fam. Kinnaridae. With the addition of two new genera described in this paper, their total number in the Old World reaches 6 (in the New World the subfam. Kinna-

*Originally published in Entomologicheskoye Obozreniye, No. 3, 1984, pp. 468-483.

**The types of the new species described in this paper have been deposited in the collection of the Zoological Institute of the USSR Academy of Sciences in Leningrad.

rinae comprises 2). The inadequacy and heterogeneity of the descriptions of the representatives of the family make it difficult to make comparisons. In particular, the genitalic structure has not been described in all representatives, while many of the descriptions of them are abridged and incomplete. It is highly significant that the wing venation has been sufficiently fully illustrated, the features of which enable us to distinguish reliable generic characters in this family.

The genus *Paramicrixia* Distant has been described as monotypic from "Bengal" according to a single specimen without indication of the sex (Distant, 1911, 1916). Later Synave (1958) described a second species of the genus from the Maskarene Islands, *P. insularis* Synave, which in its wing venation differs from the type species *P. diaphana* Dist. and is more like *Bashgultala*, but also differs from it appreciably, which has made it necessary to place *P. insularis* Synave in a separate monotypic genus *Nesomicrixia* gen. n.

The genera *Paramicrixia*, *Bashgultala* and *Nesomicrixia* gen. n. form a group, characterized by a median in the forewings branching late and once only, but at the same time unlike the two other genera *Paramicrixia* has a bialveolate stigma and simple branching of the anterior cubital trunk, without the closed cell separated from the wing margins. The last character is particularly significant as being unique in the family. The genera *Bashgultala* and *Nesomicrixia* differ in the general outline of the forewings, which dilate towards the apex in *Nesomicrixia* and are parallel in *Bashgultala*, in the form of the separated cubital cell, which in *Bashgultala* is further subdivided, and possibly in the branching of RP: in *Nesomicrixia* it is biramous, and in *Bashgultala* simple. Furthermore, the genera differ markedly in the length of the styli, the anal tubercle and in the form of the process of the phallotheca that bears the gonopore; in *Nesomicrixia* the anal tubercle is shorter, the styli slender and long, while the gonopore laterally is devoid of processes.

The genus *Adolenda* Distant, the new representative of which, *A. ephedrina* sp. n., was noted in the USSR in the Zerafshan range (Tajikistan), has been erroneously attributed up to the present to the fam. Cixiidae (Distant, 1911, 1916; Dlabola, 1957), although in all its characters, in particular in the wing venation and the structure of the abdomen in the female with fields of wax glands on tergites VI-VIII, it undoubtedly belongs to the fam. Kinnaridae. *A. ephedrina* sp. n. in some features of its venation (supplementary veins of the elytra, distribution of the transverse veins rm and mcu in a single line etc.), should be placed in a separate subgenus *Adlina* subgen. n. *Adolenda boroumandi* Dlab., 1981 and *Adolenda satrapa* Dlab., 1981 belong to the genus *Propleroma* gen. n.

The genus *Adolenda* is clearly endemic to the Palearctic since it is known at present from the Western Himalays (*A. typica* Dist.), the Hindukush (*A. decolorata* Dlab.) and the Zerafshan range (*A. ephedrina* sp. n.).

The new genus *Propleroma* gen. n. from Iran, described below together with two new species, in spite of it belonging to the *Paramicrixia* and *Bashgultala* group, as is clearly evidenced by the genitalic structure, with a many-branched median and a carina on the genae under the antennae, shows similarity to the separate genus *Kinnara*, which evidently has a plesiomorphic character. *Adolenda boroumandi* Dlab., 1981 and *A. satrapa* Dlab., 1981 must also be attributed to the genus *Propleroma* gen. n.; *A. boroumandi* in its external morphology and wing venation is close to *P. zarudnyi* sp. n.; *A. satrapa* Dlab. is more distinctive, but should also be placed in this genus.

All the representatives of the fam. Kinnaridae of the Old World in genitalic structure and the features of their external morphology, especially in the wing venation, should be separated into three tribes.

KEY TO THE GENERA AND TRIBES OF THE FAM. KINNARIDAE OF THE OLD WORLD

1 (10). Costal vein of forewings normally developed, robust as far as actual nodal line, peripheral vein attenuated and flattened, covered with transverse incisions. Structure of nodal transverse vein normal, as other veins. Posterior branch of radius in forewing not anastomosing with median. Apex of claval vein ($Pcu+A_1$) clearly merging into posterior margin of clavus, far from extending to apex of clavus. Pygophore in male without lateral processes.

2 (9). Penis without membraneous formations, phallotreme located on tubular protuberance of phallotheca. Connective fully developed. Pygophore with rudimentary annular apodema on margin of anterior opening. Articulated apodemes of base of phallotheca located laterally to it. Forewings not tapering to membranule, in quiescence folded like flat roof. Median simple or successively branching dichotomously: terminal branches numbering 1, 2 or 4. Posterior branch of radius (RP or RS) biapical (Tribe Propleromini trib. n.).

3 (4). In forewings first branching of median located around nodal line, its terminal branches numbering 4. In hindwings CuA triramose. On gena under antenna horizontal obliterated carina visible . . . . . *Propleroma* gen. n. (type species *P. brunnescens* sp. n.).

4 (3). In forewings single branching of median, if median does branch, located appreciably distad to nodal line. In hindwings CuA biramose. On gena under antenna no carina present.

5 (8). In forewings after first branching of CuA (at apex of clavus), cell present between its branches, separated from wing margin by oblique vein. Stigma (field delimited to rear of vein RA) unicellular, its margin not projecting rearwards at an angle at site where transverse vein ir arises. Distal transverse veins rm and mcu present.

6 (7). Costal field of forewings not dilating towards membranule, virtually parallel. Posterior branch of radius not branching further . . . . . *Bashgultala* Dlab. (type species *B. clara* Dlabd.).

7 (6). Costal field of forewings dilating towards apex, corium dilating towards membranule. Posterior branch of radius biapical . . . . . *Nesomicrixia* gen. n. (type species *Paramicrixia insularis* Synave).

8 (5). In forewings after first branching of CuA no cell separated from wing margin present. Stigma bicellular, its margin projecting rearwards at an angle at site where transverse vein ir arises. No distal transverse veins rm and mcu present . . . . . *Paramicrixia* Dist. (type species *P. diaphana* Dist.)*.

9 (2). Penis at apex membraneous, phallotreme concealed in cleft of soft formations. Articulated apodemes connected by transverse bar, to which basal part of the phallobase is adjacent below through the constriction. Connective interrupted. Pygophore with powerful and differentiated annular apodema, extending along margin of anterior opening. Forewings from middle constricting towards membranule, in quiescence folded moderately roof-like. Median triramose, forming posterior pecten. Posterior branch of radius not branching. (Tribe Adolendini trib. n.) . . . . . *Adolenda* Dist. (type species *Adolenda typica* Dist.).

10 (1). Costal vein of forewings in distal half of corium attenuated and not distinguishable structurally from peripheral vein of membranule. Nodal transverse vein, distally adjacent to costal field ($Sc+RA_1$), transformed into mat oval plate-like thickening. Posterior branch of radius in forewings for short sector under base of stigma anastomosing with median. Apex of claval vein

*The genus *Paramicrixia* is included in the key exclusively on the basis of the external morphological characters, starting from the proposition that its genitalic structure is of the same type as also in genera *Nesomicrixia* and *Bashgultala*.

merging with apex of clavus or with claval suture close to apex. Wings folding like roof. Lateral margins of pygophore in male with long processes, oriented dorsally. (Tribe Kinnarini Muir, 1925) . . . . . *Kinnara* Dist. (type species *Pleroma ceylonica* Mel.).

The American representatives of the subfam. Kinnarinae, the genera *Oeclidius* V.D. (= *Paroeclidius* Myers) and *Southia* Kirk. (= *Bytrois* Fenn.). clearly belong to the tribe Propleromini and in their venation are similar to the genus *Propleroma* gen. n., but unlike it in the American genera the median and cubitus arise from the basal cell separately.

The features of the external morphology and the genitalic structure in both sexes indicate that the fam. Kinnaridae is closest to the more highly specialized fam. Meenoplidae, and only superficially similar to the fam. Cixiidae, not extending to the genitalic structure, as Muir (1930) has already indicated. The structure of the head and prothorax in the Kinnaridae is plesiomorphic, but is more comparable to that of the Achilidae than to that of the Cixiidae. The somewhat simplified ovipositor of the Kinnaridae and Meenoplidae can only be derived from the apomorphic raking-sweeping type, characteristic of the Achilidae, Achilixiidae, Derbidae etc., but not from the plesiomorphic thrusting-sawing type, characteristic of the Cixiidae and Delphacidae in the Fulgoroidea and all the other superfamilies of the Auchenorrhyncha, Cicadelloidea, Cercopoidea and Cicadoidea.

Thanks to new discoveries and interpretations, the fam. Kinnaridae is reported for the first time for the fauna of the USSR, Afghanistan and Iran. The discovery of the Kinnaridae in the Zerafshan Range extends the range of the family far to the north and, what is particularly remarkable, shifts it beyond the northern boundaries of the subtropics. Overall the following representatives of the family have been noted in the Palearctic:

Kinnara fumata Melichar, 1903: China, Western Hubei (Fennah, 1956);

Adolenda typica Distant, 1911: India, Western Himalayas;

Adolenda decolorata Dlabola, 1957: Afghanistan;

Adolenda ephedrina sp. n.: USSR, Zerafshan Range;

Bashgultala clara Dlabola, 1957: Afghanistan;

Propleroma brunnescens sp. n.: southeastern Iran;

Propleroma zarudnyi sp. n.: southeastern Iran;

Propleroma boroumandi Dlabola, 1981: southeastern Iran;

Propleroma satrapa Dlabola, 1981: southern Iran.

Genus *Propleroma* Emeljanov, gen. n.

Type species *Propleroma brunnescens* sp. n.

General habitus cixioid, head small, appreciably narrower than pronotum, body moderately dorsoventrally flattened, wings when quiescent folded slopingly roof-like their costal margins nearly parallel or slightly divergent rearwards. Vertex small, constricting anteriorally, its breadth from behind almost identical to its length, posterior margin emarginate at obtuse angle, anterior one transverse, bordered by slightly manifested carina, lateral carinae and posterior margin sharp, elevated, surface of vertex impressed, slight median longitudinal carina evanescent mesally visible rearwards. Frons divided into two parts, upper one between eyes narrow and compressed, formed by parallel thick carinae, separated by groove, below passing into basal part, dilating towards clypeus and delimited by narrower and higher carinae, which are slightly curved arcuately with convexity outside; median carina absent, boundary with clypeus slightly concave. Postclypeus about 1.5 times shorter than basal part of frons, constricting below, its lateral carinae serving as immediate continuation of lateral frontal ones and extending down to its boundary with but median one located on frons around its lower margin slightly smaller than lateral ones. Eyes more than twice as broad as upper part of frons and anterior margin of vertex. Under antennae on genae horizontal carina visible. Second antennal segment slightly elongate, urceolate. Pronotum short, lateral parts of upper side broader. Scutellum with three distinct carinae, lateral carinae virtually parallel, slightly divergent rearwards. Forewings relatively elongated, very slightly dilating towards membranule; membranule about 1.5 times as long as broad along nodal line, evenly rounded on apex. Costal field broad, as broad as in basal part. Stigma bicellular, its transverse vein lying approximately on continuation of subapical transverse veins rm and mcu. RP on apex bifurcate. Median branching for first time at level of nodal line, both branches furcate before apex. CuA behind apex of clavus with closed cell, separated from wing margin by oblique, almost longitudinally arranged vein; marginal cubital cells 1-2. Hindwings with biapical RP and M and triapical CuA.

The new genus in the character of the venation and the presence of a carina under the antenna is similar to *Kinnara* Dist. Unlike *Kinnara*, in *Propleroma* gen. n. the posterior branch of the radius does not anastomose with the median, but the total number of terminal branches is the same.

Propleroma brunnescens Emeljanov, sp. n. (Fig. 1, 8-13).

Basic color of vestiture dark brown, with somewhat lighter carinae. Underside of body and especially legs lighter, brown. Head dark brown, antennae, clypeus and frenula lighter, with whitish carinae, antennae also lighter than basic color of head, pronotum and scutellum dark brown, with lighter carinae. Elytra transparent, hyaline, with brown maculae and bands. Bands passing through transverse veins along nodal line and along subapical transverse veins, beginning at transverse vein of stigma. Distad of second band, terminal parts of longitudinal veins accompanied by stripes broader than vein. On corium 4 speckles in costal field, touching veins ScR and located at about same distances from apex of basal cell to first branching of ScR; 2 maculae on median, dividing its sector from root on trunk ScR to first branching into three approximately equal parts; 3 approximated maculae on CuA, so that the end ones are behind maculae on M, on CuA a further evanescent macula opposite site of separation of trunks of ScR and M; veins of clavus darkened and bearing two large evanescent maculae, one in middle of independent part of A_1, the other before entry of $Pcu+A_1$, into suture of clavus.

Male genitalia. Pygophora annular, somewhat compressed, laterally, in profile dilated appreciably downwards. Anal tubercle short, with incision on apex, bounded laterally by short blunt-ended lobes; lower wall bearing small digitate process mesally recurved rearwards. Segment XI large, obpyriform, projecting rearwards and upwards, covering shorter anal style. Anal style apically slightly dilated laterally. Penis cylindrical, short, tertiary gonopore (external opening of phallotheca) located on apex of short cylindrical process, covered above by longer and thicker bluntened process of theca, slightly deflected by apex ventrally. Base of theca laterally bearing large narrow apophyses for articulation with pygophore and below long narrow process, located between harpagones and approximated to their bases. External part of aedeagus completely reduced, apodema of aedeagus (so-called connective) well developed, complete, with laterally flattened upper lobe. Harpagones long, with dilated lobes in base, which cover penis behind and below. Basal lobe evidently formed by fusion of primary apex of harpagone with upper basal process by formation of anastomosis between them, extending along medial wall of harpagones. Actual apices of harpagones forming narrow and long chelately curved processes, corresponding to distal upper teeth of the more generalized fulgoroi harpagones. Articulations of anal tubercle and penis with pygophore markedly separated, articulation of penis shifted far forwards deep into posterior margin of pygophore. Unlike *Nesomicrixia insularis* Syn. and *Bashgultala clara* Dlab., lower part of phallobase in *Propleroma brunnescens* sp. n. constricted, anal tubercle bilobate, but apices of harpagones simple, without lateral tooth or process.

Length of ♂ approximately 4.6 mm (specimen damaged), of ♀ 5.0 mm.

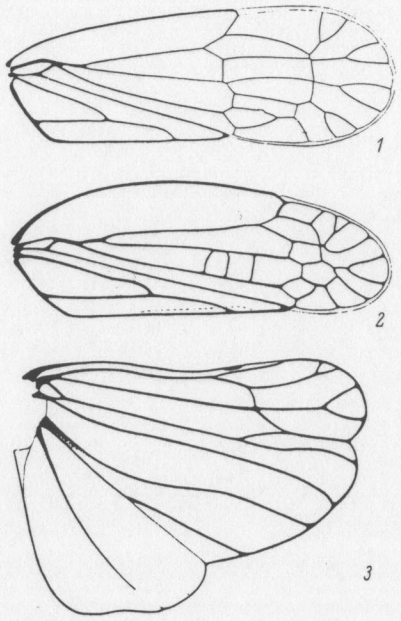

Fig. 1-3. Kinnaridae, wings.

1 - *Propleroma brunnescens* sp. n., forewing;
2-3 *Adolenda ephedrina* sp. n. (2 - forewing;
3 - hindwing).

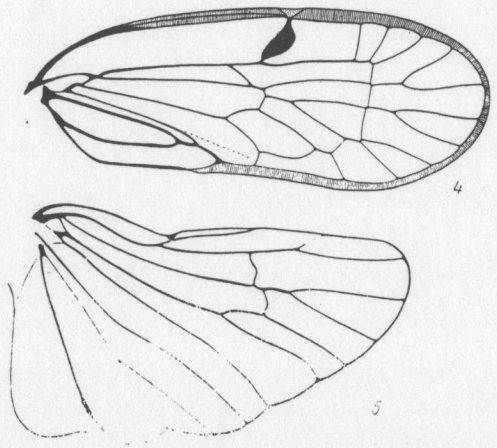

Fig. 4-5. *Kinnara ceylonica* Mel., wings:

4) forewing; 5) hindwing.

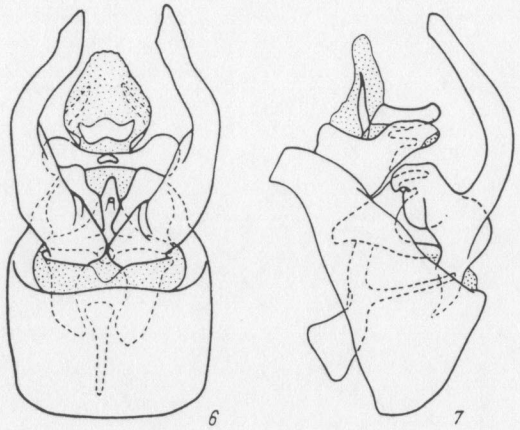

Fig. 6-7. *Propleroma brunnescens* sp. n., general view of male genitalia:

6) viewed from below; 7) viewed from side.

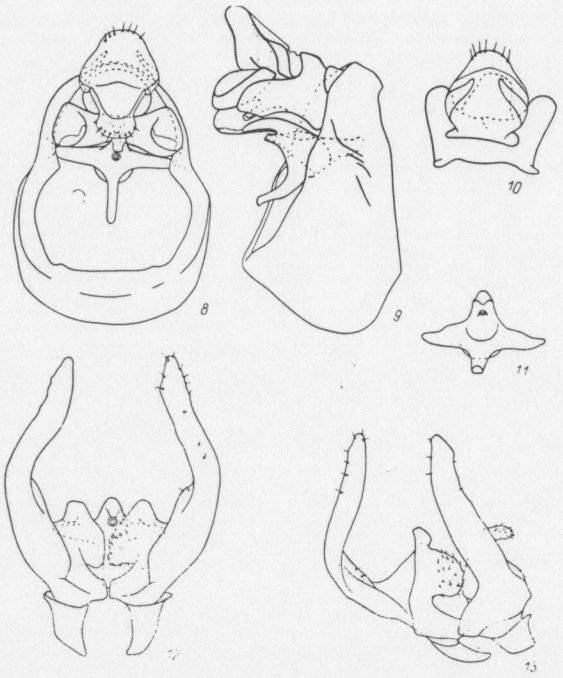

Fig. 8-13. *Propleroma brunnescens* sp. n., structural details of male genitalia:

8) anojugal block from behind, styli removed; 9) idem obliquely from side; 10) anal tubercle from above; 11) penis from behind; 12) styli and penis from behind-

Material. Iran, Karavander, 25.IV.1901, 1 ♂ - holotype, 1 ♀ (Zarudnyy).

Propleroma zarudnyi Emeljanov, sp. n.

Basic color of vestiture brown and light brown. Vertex brown, carinae lighter. Frons whitish, lower part under ocellus along clypeal suture dark brown, in form of band, margins of which on emergence on lateral carinae dilating. Lateral parts of head around ocelli darkened evanescent brown. On genae oblique band, serving as continuation of frontal one, anteriorly rearwards receding from margin of frenula and obliquely intersecting genal horizontal carina. Postclypeus whitish, anteclypeus and frenula brownish. Upper side of pronotum completely whitish or with two evanescent transverse brown maculae to rear of eyes, lateral lobes of pronotum brownish, evanescently fringed by light one along margins and upper carina. Scutellum brown, with light carinae. Elytra transparent, hyaline, but slightly whitish, longitudinal veins whitish, here and there darkened brown in short sectors in form of speckles. On median on basal trunk as far as first branching, two speckles, on CuA in same region 4 speckles, on clavus apex of free part of Pcu and apex of Pcu+A darkened. In coastal field 4 speckles evenly spaced and adjacent to trunk of ScR, as in *P. brunnescens*. Transverse veins and apical sectors of longitudinals also darkened, in nodal region furthermore basal sector of RP darkened as far as site of vein rm. On membranule, in addition, median parts of veins RP and MA darkened in subapical cells. Through stigma beyond veins extends an oblique band from basal part of anterior margin to middle of posterior one. Similarly across marginal cubital cell, lying immediately behind apex of clavus, brown band extending. Underside of thorax and abdomen brownish, legs pale brown, whitish.

P. zarudnyi sp. n., unlike *P. brunnescens* sp. n., is somewhat more thickset, with broader wings, with an almost straight posterior margin of vertex, with less pronouncedly approximatedly above lateral frontal carinae, with more markedly rearwards divergent lateral carinae in scutellum and with more elongated secondary antennal segments. In addition, in *P. brunnescens* sp. n. along sides of median carina of pronotum, a pair of distinct punctate depressions present, not occurring in *P. zarudnyi* sp. n.

Length of ♀ 5.0-5.2 mm.

Male unknown.

Material. Iran, Karavander village, 25.IV.1901, 1 ♀ - holotype (Zarudnyy); Gunich-Tangkan locality, 27.VI.1901, 1 ♀ (Zarudnyy).

Dlabola has described two species from Iran of the fam. Kinnaridae as representatives of the genus *Adolenda*, but both the genitalic structure and the external markings of one of these species (*A. boroumandi*) show that they belong to the genus *Propleroma* gen. n. In particular the form of the pterostigma and the branching sequence of RP, M and CuA are precisely the same as in *P. brunnescens* sp. n. and *P. zarudnyi* sp. n. The latter species is very similar to *P. boroumandi*, but differs in the rearwards divergent lateral carinae of the scutellum.

The diversity in genitalic structure of the representatives of the genus *Propleroma* gen. n. affords us the possibility of dividing it into three subgenera, which subsequently when a more detailed study is made may be considered as independent genera.

1 (4). Lateral lobes of anal tubercle not apically approximated. Above tubularly projecting gonopore simple tubercle or process occurring.

2 (3). Harpagones with long narrow apices. Above tubularly projecting gonopore long digitate process occurring. Articulated apophyses of phallotheca oriented strictly to one side . . . . . subgenus *Propleroma* subgen. n. (type species *Propleroma brunnescens* sp. n.).

3 (2). Harpagones with short wide apices. Above tubularly projecting gonopore occurs a low powerful tubercle. Articulated apophyses of phallotheca oriented to one side and upwards . . . . . subgenus *Perloma* subgen. n. (type species *Adolenda boroumandi* Dlab.).

4 (1). Lateral lobes of anal tubercle approximated apically. Above tubularly projecting gonopore two processes present . . . . . subgenus *Microcodes* subgen. n. (type species *Adolenda satrapa* Dlab.).

Genus *Adolenda* Distant, 1911

Subgenus *Adolina* Emeljanov, subgen. n.

Type species *Adolenda ephedrina* sp. n.

Habitus intermediate between Cixiidae with flatly arranged wings, as in *Cixius* Latr. and Derbidae of *Malenia* Hpt. type with roof-like wings: in anterior part, elytra arranged very flatly and broad, in posterior part narrower more steeply roof-like. Head small, appreciably narrower than pronotum, also in turn narrower than pronotum with spaced forewing bases. Vertex narrow, constricting anteriorly to short transverse carina clearly defined, surface of vertex sulcate. Lateral carinae of posterior margin distinct, mesally extending anteriorly into short rapidly evanescent median carina, at sides of which small elongate depressions visible, indistinctly delimited from common sulcus of anterior part of vertex. Margins of lateral frontal carinae, when viewed from above, projecting in front of vertex. Frons narrow and very long, dilating below towards clypeus virtually threefold. Lateral carinae of frons high foliate, oriented forwards, so that frons becomes sulcate, median carina as well as intermediate ones absent. When viewed in profile, vertex straight horizontal, frons at margins of carinae convex, on the whole perpendicular, transition of frons to vertex distinct obtuse-angled. Three ocelli present, lateral large ones well developed, median one reduced. Genae totally devoid of formations. Eyes on lower margin with distinct incision above antennae. Antennae with short first and elongated urceolate second segment, virtually 1.5 times as long as broad. Postclypeus constricting towards apex, lateral carinae of frons passing into postclypeus and gradually descending to its lower margin, median carina scarcely manifested. Anteclypeus with well defined median carina. Proboscis long, extending to anterior margin of genitalic block. Pronotum from front rearwards short, its upper part curved at obtuse angle before angle. Upper part of pronotum along anterior and posterior margin bounded by carinae, also delimited from lateral lobes by carina, in addition, median longitudinal carina present. Anterior margin behind and externally to eyes projecting forwards roundly, here behind it round flat depression present, inside and from behind delimited by indistinct carina terminating blindly. Lateral lobes of pronotum rhomboid, without any distinctive features. Scutellum with 3 carinae and acute-angled posterior end, lateral carinae virtually parallel, only their posterior ends slightly recurved externally. Elytra with convex costal margin, and constricted towards rounded apices, as in *Adolenda* s. str. Stigma separated basally from costal field of clear vein. Distad to stigma 2-3 radial cells, 3 in number, when median transverse vein divides furcately. In medial field more basally to membranule 2-3 additional transverse veins occurring. Legs simple slender, femora of fore and middle legs narrow, hind tibiae without lateral teeth, on apex bearing 7-8 teeth (3+4, 3+5), hindtarsi with subapical setae on distal teeth of second segment and without them on first.

Hindwings with structure typical of the family. Posterior radial branch (RP or RS) furcate at apex. Median branching into two at apex, CuA somewhat distad to middle. Transverse vein rm to rear serving as immediate continuation of transverse vein mcu. At apex of anterior branch of CuA, wing margin forming sharp incision, not shown in *Adolenda typica* Dist. in the drawing in Distant's work (1916). In *Adolenda decolorata* Dlab., incision of this kind present, but less pronounced (Dlabola, 1957).

Male genitalia. Pygophore high and short, narrower above and roundly dilated and bulging below in natural position markedly recurved upwards. Anterior opening

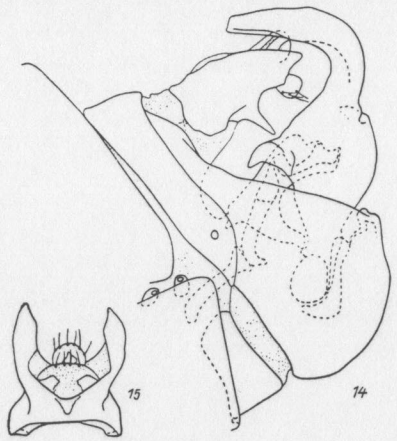

Fig. 14-15. *Adolenda ephedrina* sp. n., male genitalia.

14) general view from side; 15) anal tubercle from above.

above middle dilations-lobes, almost touching by their medial margins. These lobes below and above strenghthened by pectines, running obliquely along inner surface of walls to posterior opening: lower pecten vanishes halfway, upper one diminishing extends to articulated condyles of anal tubercle. In lower part of lateral margins phragma also bearing small lobate processes. Lateral condyles for articulation with phallobase carried far forwards of posterior margin of pygophore and located near large lobes of anterior phragma, these condyles connected by oblique carina with condyles serving for articulation of anal tubercle. Anal tubercle broad and short with broad base and subbasal band. Apex of anal tubercle deeply emarginate, forming two lateral lobes with tubercle below and tapering apices, segment IX and terminal appendages located between these lobes. Lower margin of anal tubercle (segment X) under incision to rear bearing sclerotized process, oriented downwards perpendicularly to its lower wall. Harpagones (styli) large, G-shaped in profile, curved so that their apices are located in quiescence under anal tubercle. Base of harpagones dilated with lateral and medial processes. Lateral process recurrently recurved, medial one above. Evidently the actual harpagone apex corresponds to the hypertrophied upper tooth of the original type harpagones (as in Dictyopharidae and other Fulgoroidea), medial process corresponding to original apex of harpagones of Fulgoroidea, while lateral one more or less retains its position. Penis with T-shaped upper articulated part, short tuberculate, consisting in fact of single phallotheca, while aedeagus is completely reduced in free distal part, only retaining its inner apodema ("connective"), but here also its lower process extending to harpagones reduced (interrupted) in basal part, only retaining terminal part, connecting base of harpagones. Apical region of phallotheca membraneous, opening by cleft above and apically, cleft surrounded by soft round lobes. Ventral inner wall of cleft sclerotized in form of sulcus; basally, where tuberculate duct of theca changes into cleft, opens above - sclerotization surrounding end of tuberculate duct and extending below into sulcus described above.

Female genitalia constitute a markedly modified and in many respect simplified variant of raking-sweeping type (as in Derbidae, Achilidae, Dictyopharidae etc.), having lost their original functions. Pygophore devoid of sclerotized ventral bridge under anal tubercle. Second and third valves simplified and fused in single whole one with another and with valvifer. First valves of ovipositor large, lobate, covering below, laterally and partly from rear block of secondary and tertiary valves. First valves represented only by external lobes, valvifers without distinct boundaries, fused with external lobes. Inner lobes of valves clearly membraneous and almost completely reduced. External lobes on apex bearing large distinct appendages, equipped with sensillae, margin of lobes protruding lobately from under appendage. Ovipositor of this type clearly only able to attach eggs being deposited.

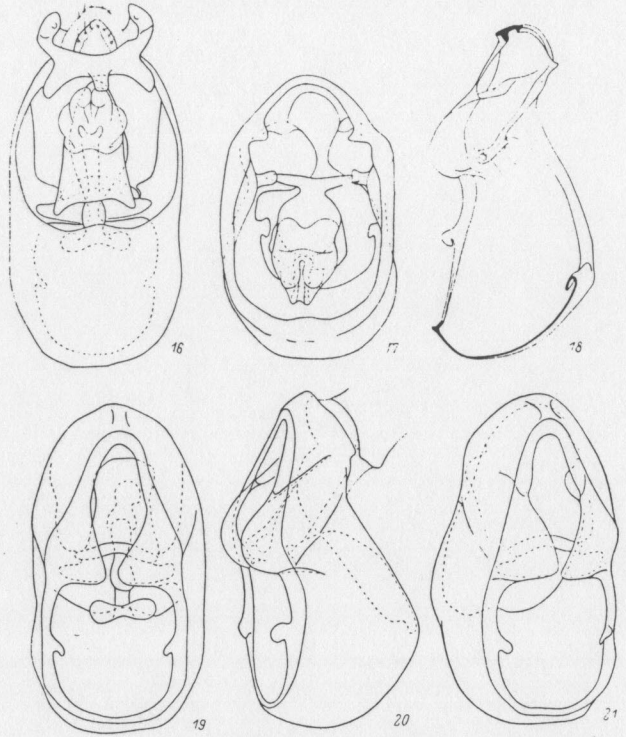

Fig. 16-21. *Adolenda ephedrina* sp. n., structural details of male genitalia:

16) anogenitalic block from behind-side, styli removed; 17) pygophore and penis from behind-above, articulation of theca visible; 18) sagittal cross section of pygophore; 19) pygophore and penis from front; 20) pygophore from side-front, viewed from left; 21) idem from front and slightly from side, viewed from right.

Anal tubercle short and broad, dorsoventrally flattened, when viewed from above virtually round.

The new subgenus *Adolina* subgen. n. is close to the subgenus *Adolenda* s. str., it being approximated to the latter by the general habitus and configuration of the forewings, dilated in the basal third and appreciably constricted towards the apex, and also the oblique position of the mediocubital transverse vein in the hindwings. The new subgenus differs from *Adolenda* s. str. as follows: on the lateral lobes of the top of the pronotum a depression occurs, delimited within and to the rear by a carina terminating blindly, additional transverse veins occur in the mediocubital field, the radial apical cells number 2-3, but when 3 are present, the triangular intermediate third is formed by the distal branching of the first vein, located behind the stigma, on the hind wing deep emargination occurs of the margin opposite

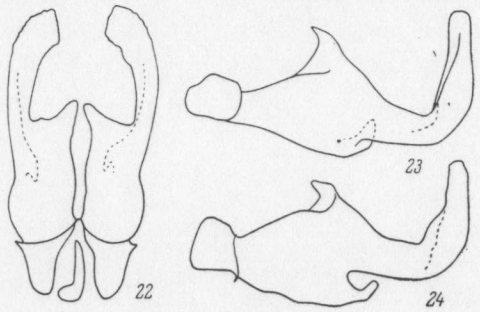

Fig. 22-24. *Adolenda ephedrina* sp. n., styli:
22) from below, both styli; 23) left stylus from side; 24) idem from side-below.

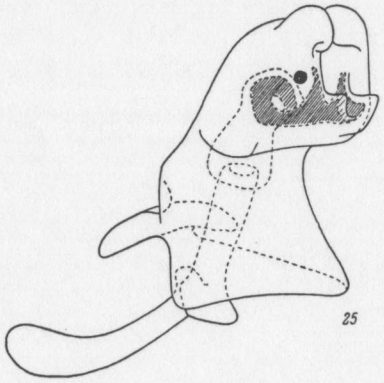

Fig. 25. *Adolenda ephedrina* sp. n., penis.
Viewed from behind-left-below.

the apex of the anterior medial branch, the lateral carinae of the scutellum of the pronotum are slightly divergent, almost parallel. The description and drawings in the work of Distant do not enable us to make a more detailed comparison.

Adolenda (*Adolina* subgen. n.) *ephedrina* Emeljanov, sp. n. (Fig. 2-3, 16-25).

Vestiture light brown, with reddish brown and dark brown markings faintly defined. On head and thorax pectines of carinae whitish. Vertex and frons brown to dark brown. Lateral foliate carinae of frons with oblique transverse bands in median part and below at transition into clypeus. Genae darkened on lower margin and around antennae, temples darkened along eye margin. Clypeus between carinae brown, frenula darkened in lower half. Proboscis brown, distal segment bark brown. Antennae light brown, with darker sensillae on 2nd segment, 3rd segment and flagellum dark brown. Upper side of pronotum darkened between carinae, lateral lobes evanescently darkened submarginally. Depressions on lateral lobes of top of pronotum markedly. Scutellum between carinae darkened reddish brown, tegulae lighter. Elytra brown, semitransparent, with darker veins, darkening of veins on membranule more marked, especially clear on distal ends of all branches. Furthermore, single dark stripe present within peripheral vein distad to apex of clavus, and on stigma. Thorax below with dark maculae between lighter carinae, metathorax almost completely dark brown. Abdomen almost black. Legs with dark longitudinal bands between light carinae, apex of tibiae and tarsi completely darkened. Abdomen virtually black, genitalic block in both sexes from light brown to brown.

Length of ♂, 4.3-4.8 mm, ♀ 4.8-5.0 mm.

Material. USSR, Tajikistan, Leningrad Prov., ravine on Obi-Kumar River, 10 km SE of Ayni, 9-10.VI.1982, 21 ♂, including holotype, 27 ♀ (Yemel'yanov).

The species was collected on *Ephedra equisetina* among rocks on a steep slope with northerly exposure, at an altitude of about 1800 m above sea level.

Fam. MEENOPLIDAE

The small fam. Meenoplidae comprises in all about ten genera, distributed in two subfamilies (Muir, 1930; Metcalf, 1945): Meenoplinae Fieb., 1872 (*Meenoplus* Fieb., 1866, *Anigrus* Stål, 1866) and Kermesiinae Kirk., 1906 (*Phaconeura* Kirk., 1906; *Nisia* Mel., 1903; *Eponisia* Mats., 1914; *Robigalia* Dist., 1916; *Suva* Kirk., 1906; *Kermesia* Mel., 1903). Clearly the genus *Kotonisia* Mats. must be excluded from the Meenoplidae since it corresponds very little to the characteristics of the family as regards the abundant branching of the veins on the membranule (7 trunks, 10 terminal branches) and the presence of a carina separating the frons from the vertex, far removed from the posterior margin of the head (Matsumura, 1938).

The ideas on the criteria of the genus in the family have not been reviewed since the beginning of the century. Genitalic structure has so far not been used for perfecting the system of the family, the descriptions in the literature of the genitalia of individual species being used merely to facilitate the identification of individual species. There is no doubt that the genera *Nisia, Eponisia, Kermesia* and possibly also a number of others are composite, requiring fundamental revision. In particular the representatives of the subfam. Kermesiinae (= Nisiinae), described from the USSR as *Nisia paludicola* Vilbaste, 1968 and *Eponisia fumigata* Mitjaev, 1971, differ appreciably from the typical representatives of the corresponding genera even in characters traditionally taken into account in this family. Below new genera are described for them. The basic differences of the new genera from the others are given in the diagnostic key, some further differences being presented after the descriptions.

DIAGNOSTIC KEY TO THE GENERA OF THE SUBFAM. KERMESIINAE*

1 (2). Frons with distinct median carina . . . . . *Phaconeura* Kirk.

2 (1). Frons without distinct median carina.

3 (6). Lateral carinae of postclypeus absent. Median in forewings not branching.

4 (5). Forewings elongated, scarcely dilating towards apex . *Nisa* Mel. (Fig. 29).

*Composed on the basis of Muir's key (1930) with additions; account was not taken of the representatives of the genus *Kermesia* without lateral carinae of cly[illegible] from the most part they do not belong to the genus *Kermesia*, and at th

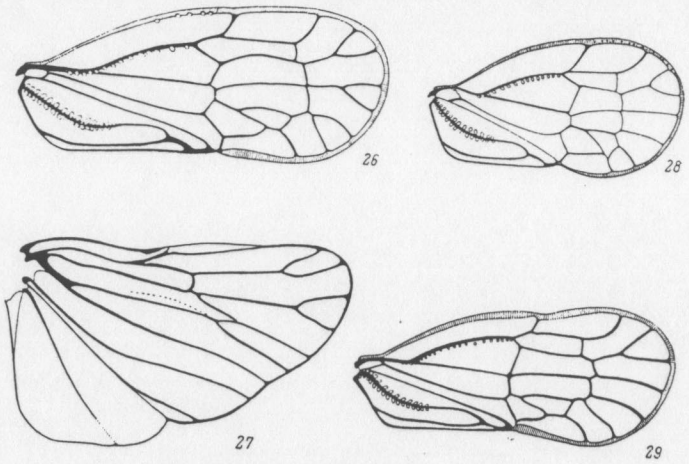

Fig. 26-29. Meenoplidae, wings.

26) *Nisamia fumigata* Mit., forewing; 27) *N. fumigata*, hindwing; 28) *Eponisiella paludicola* Vilb., forewing; 29) *Nisia nervosa*, forewing.

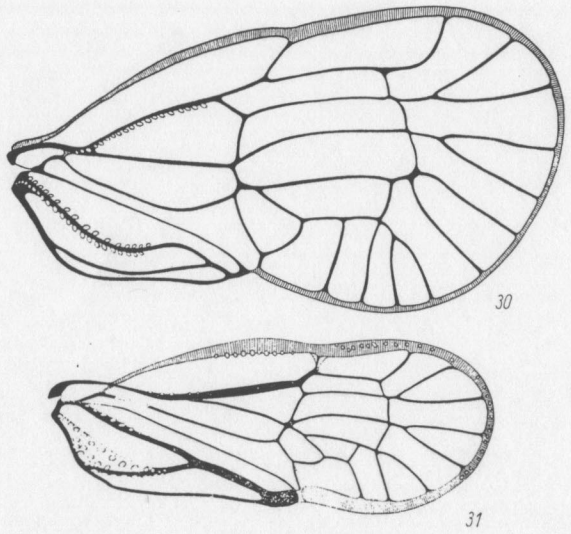

Fig. 30-31. Meenoplidae, wings.

30) *Kermesia* sp., forewing; 31) *Meenoplus albosignatus* Fieb, forewing.

5 (4). Forewings short, appreciably divergent towards apex . . . . . *Eponisiella* gen. n. (Fig. 28).

6 (3). Lateral carinae of postclypeus distinct at least in upper half (in frons).

7 (8). Lateral carinae of postclypeus in lower half (at anteclypeus) not manifested . . . . . *Nisamia* gen. n. (Fig. 26-27).

8 (7). Lateral carinae of postclypeus distinct for whole expanse of frons as far as anteclypeus.

9 (12). No interruption of lateral frontoclypeal carina around frontoclypeal suture.

10 (11). Vertex longer than its breadth . . . . . *Eponisia* Mats.

11 (10). Vertex shorter than its breadth . . . . . *Robigalia* Dist.

12 (9). Lateral frontoclypeal carina interrupted around frontoclypeal suture.

13 (14). Forewings relatively narrow, not markedly divergent towards apex, as a rule 7 apical cells . . . . . *Suva* Kirk.

14 (13). Forewings broad, markedly divergent towards apex, as a rule 8 or 9 apical cells . . . . . *Kermesia* Mel. (Fig. 30).

Subfam. Meenoplinae represented in the USSR by 1 genus, *Meenoplus* Fieb. and a single species, *Meenoplus albosignatus* Fieb. (Fig. 31).

Genus *Nisamia* Emeljanov, gen. n.

Type species *Eponisia fumigata* Mitjaev, 1971.

Relatively slender Auchenorrhyncha. Head when viewed from above somewhat longer than its breadth between eyes. Vertex unitary, i.e., vertical areas (Fennah, 1969) mesally contiguous to one another for a certain distance, this boundary being manifested in the form of short longitudinal carina. Frons in median part, which is visible anteriorly and located between eyes, appreciably dilating below; lower part of frons and upper part, located on vertical surface of head, parallel sided. Frontal sensory pits set in single row. Lateral frontal carinae extending without break to clypeus and there reducing smoothly, vanishing near median part of postclypeus. Pronotum and scutellum of normal structure: disk of pronotum indistinctly separated from lateral parts, lateral carinae of scutellum not manifested. Forewings relatively narrow and long, with biapical median (MA). (Seven apical cells), as in *Kermesia*, 1-2 additional terminal veins may occasionally appear in mediocubital region.

Male genitalia. Pygophore with two slight round processes laterally. Anal tubercle with lateral lobes, apices of which, when viewed from side, broadly rounded. Harpagones (styli) large, curving upwards with long apices, with broad but short upper processes and small medial processes. Penis with powerful hamately curving with apex downwards dorsal process and small tubular process, bearing gonopore under it. Dorsal process above in median part densely covered with digitate or conical sensilla with blunt apex in form of brush. Drawings of the genitalia of *Nisamia fumigata* Mit., comb. n. are to be found in the work of Mityayev (1971).

Original characteristics of the genus are the lateral carinae vanishing into the lower part of the postclypeus. From the genus *Eponisia* Mats. it differs in the proportions of the forewings and the unification of the vertical areas. From the genus *Suva* Kirk., having a similar structure of the vertex, it differs in the single-row distribution of the sensory pits on the frons, and also in the appreciably shorter upper processes of the harpagones.

The genus *Eponisia* Mats. differs markedly from the other Nisiinae in the clearly defined lateral carinae of the disk, extending to the posterior margin of the pronotum, as can be seen from the description and drawings of Matsumura (1914). In the collection of the Zoological Institute of the USSR Academy of Sciences, there is a new species of the genus *Eponisia*, which is completely in accord with the original

time, the series of species from Africa, described as *Eponisia* (*E. albovittata* Fem. *E. brunnescens* Syn. etc.), differ markedly from the typical ones and should be separated into an independent genus, clearly close to the genus *Suva* Kirk., and not to *Eponisia* Mats.

Genus *Eponisiella* Emeljanov, gen. n.

Type species *Nisia paludicola* Vilbaste, 1968.

Relatively thickset Auchenorrhyncha. Head, when viewed from above, somewhat longer than its breadth between eyes, or as long as broad. Triangular vertical areas disjunct over distance somewhat greater than their own breadth. Frons over whole distance same breadth; when viewed from front, about twice as long as broad. Postclypeus without lateral carinae. Frontal sensory pits arranged in single row. Pronotum without lateral carinae of disk. Scutellum with median carina only. Forewings short and broad, on apex rounded almost evenly or slightly tapered, so that anterior margin is slightly longer than posterior one. Medial vein (MA) not branching. Anterior cubital branch in region of indistinct arculus at appreciable distance from unified trunk of ScR+M.

Male genitalia. Pygophore with blunt processes laterally on posterior margin. Anal tubercle with incision in posterior margin, bounded laterally by short blunt processes. Harpagones with poorly developed upper and medial processes. Penis simple in form. Drawings of genitalia of *Eponisiella* Vilb., comb. n. to be found in the work of Vilbaste (1968).

The new genus from the absence of lateral carinae of the postclypeus can be approximated with *Nisia* Mel., but it differs in the short and broad wings, as in *Eponisia guttula* Mats., and the simple form of the penis without lateral lobes and harpagones with reduced upper and medial processes.

To the genus *Eponisiella* gen. n. may be attributed, besides the type species, *Eponisia guttulinervis* Mats., 1914 and *Nisia suisapana* Fenn., 1956.

NEW DISCOVERIES

Nisamia fumigata (Mitjaev, 1971), comb. n. Mangyshlak Prov.: Sandy area, 35 km SSW of Sayutes village, 10.VI.1973 (Yemel'yanov); Karagie depression, 30 km W of Zhetybay, 19.VI.1973 (Yemel'yanov). Taldy-Kurgan Prov.: Lepsa River at Lepsy village, 3.VII.1978 (G. Chernova). The species was described from materials from Sary-Agach in the Chimkent Prov. and from the Panfilov District (Dzharkent) in the Taldy-Kurgan Prov. (Mityayev, 1975).

Eponisiella paludicola (Vilbaste, 1968), comb. n. Maritime Territory: Kedrovaya Pad' reserve, 26.VII.1982 (Kerzhner); Khasan, 24.VIII.1982 (Kerzhner).

Received November 11, 1982

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