

Planthoppers of the family Cixiidae from vicinity of Ambo, Ethiopia (Homoptera, Cicadina)

A.F. Emeljanov

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14 species, 10 of them new, are recorded from vicinity of Ambo. New taxa: *Myndus* (*Myndodus* subgen. n.) *velox* sp. n. (type species of the subgenus), *M. (Myndodus) visendus* sp. n., *Cixius* (*Alexius* subgen. n., type species *C. stigmatalis* Mel.) *morton* sp. n., *Mnemosynina* subtrib. n. in *Pentastirini*, *Atonurus* gen. n. (type species *Cixius natalensis* Stål) with *Olipara* subgen. n. (type species *Oliarus guineensis* Van Stalle), *Suriola* gen. n. (type species *Oliarus fici* Van Stalle), *Eumecurus* *hinaevulatus*, *E. bilineolatus*, *E. vanstallei*, *Pentastiridius confusus*, *P. incultus*, *P. dedecurus*, *Afroreptalus daemon* spp. n. The taxonomic position of many African Cixiidae is discussed and new combinations established.

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During my three month stay in Ambo in the Plant Protection Research Centre from May until July 1990 I collected Cicadina in the estate of the Centre in ravine areas where pasture is not allowed and around it in shrub biotopes with grassy glades undergoing intensive pasture. The area is situated at an altitude of 2500 m, and the predominant type of vegetation may be characterized as mountain shrub savanna.

The material was collected in the following localities:

1. Ambo, Shea Prov. (9.5 km W of Addis Ababa, 2400-2500 m).
2. Addis Alem (45 km E of Ambo).
3. Bako (100 km W of Ambo, 1800 m).
4. Gede (55 km W of Ambo).
5. Guder (15 km W of Ambo).
6. Jeldu (Gojo) (20 km NE of Ambo, 2900 m).
7. Tsedey, near Holeta (70 km E of Ambo).

Below is the list of species found and descriptions of new species and some genera and subgenera.

Tribe OECLEINI Muir

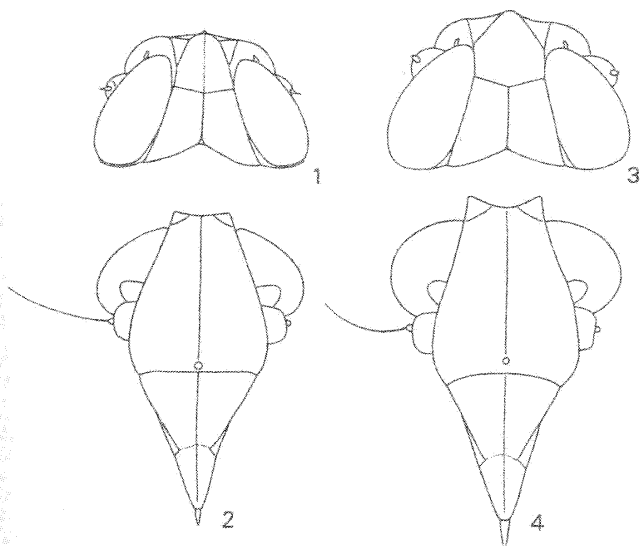
Myndus Stål

Myndodus subgen. n.

Type species *Myndus velox* sp. n.

Description. Habitus similar to that of sub-

genera (or genera) *Myndus* s. str., *Haplaxius* Fowler and allied genera. Head rather large, with voluminous facial part. Macrocorphe elongated, nearly trapeziform, lateral borders slightly concave, median keel well developed, transverse keel (anterior border of coryphe) a little weaker, both keels together forming a cross. Acrometope situated a little before transverse keel, restricted by oblong trigones, almost from its hind border of a lancet-arch or parabolic configuration; borders of acrometope more prominent than anterior and lateral margins of trigones. Eumetope nearly trapeziform, but with rounded epiclypeal angles, below twice as broad as above, lateral and median keels prominent. Postclypeus has the shape of a nearly isosceles triangle, lateral and median keels prominent all along, anteclypeus with weak median keel. Clypeometopal suture straight, impressed. Median ocellus large. Macrocorphe in lateral view slightly convex, eumetope and clypeus form a feeble obtuse angle. Rostrum rather short, as long as clypeus, its middle segment a little longer than last one (more than twice as long in *Myndus* s. str.). Pronotum a little broader than head. Postocular keels of pronotum under eyes turning into oblique keels of paranota, in their middle part reaching almost to the posterior border of pronotum. Lateral keels of pronotum weak,



Figs 1-4. *Myndus* spp., head. 1-2, *M. velox* sp. n.: 1, head, dorsal view, 2, face; 3-4, *M. visendus* sp. n.: 3, head, dorsal view, 4, face.

almost indistinct. Pronotum short, its disc small and transverse. Mesonotum with three keels. Fore coxae without tooth near apex, sometimes with a thick short chaeta in this place. Fore wing venation typical of the genus, vein *CuA*₂ absent. Veins bear granules with thin fragile setae.

Comparison. The new subgenus is similar in external characters to the genus *Trigonocranus* Fieb., which has analogous trigones, but in *Trigonocranus* the head is inflated, postclypeus and eumetope form a more distinct obtuse angle, most of postclypeus without lateral keels. Trigones are not developed in *Myndus* s. str., *Pinacites* Em. and *Perindus* Em.

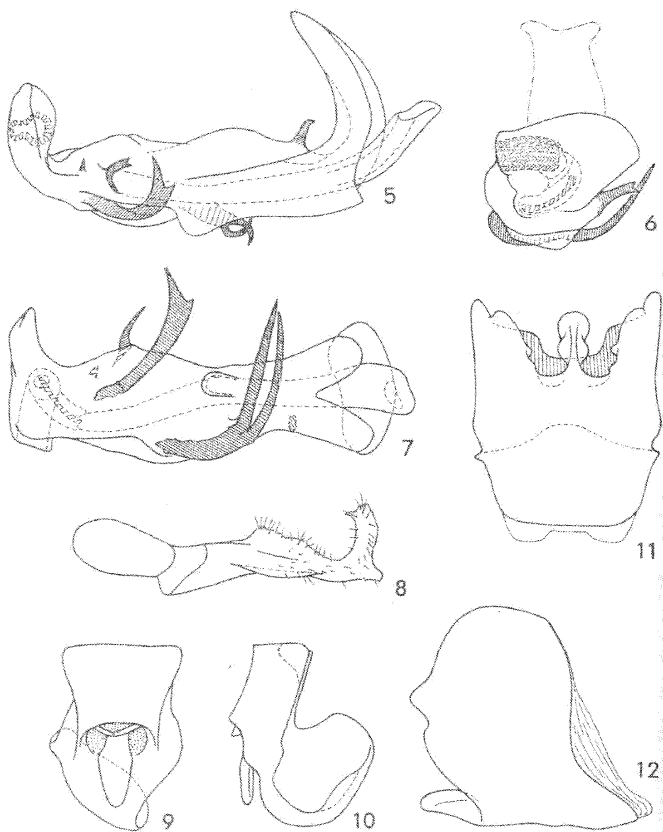
***Myndus (Myndodus) velox* sp. n.**
(Figs 1, 2, 5-12)

Holotype. ♂, Ambo, 15.V.1990 (Emeljanov).

Paratypes. 2 ♂, 4 ♀, Ambo, 27.V-22.VII.1990 (Emeljanov).

Description. Colour mostly brownish and

dirty brown. Macrocorpyhe brown or nearly black, with light brown keels. Face light brown with diffuse whitish keels, lorae often more darkened to dark brown, apex of rostrum darkened. Pronotum light brown, with a pair of black spots or points on the disc, postocular areas more or less darkened. Lateral keels of mesonotum and area between them dark brown to black, median keel distinguished as lighter brown line, lateral parts of mesonotal shield laterally darkened, medially paler brown, sometimes entirely brown. Fore wings semi-transparent, colourless, with brownish veins, usually with dark spots on the base of claval common vein, on top of costal field, and on section of *CuA* exactly between them. Wing membrane granules of longitudinal veins black. Cross-vein *rm* and base of vein *MP* which looks like cross-vein, as well as the first end branch of *RP* light, whitish. Apices of most longitudinal veins and the remaining cross-veins darkened. Darkening on distal branches in the hind part of wing membrane expanding



Figs 5-12. *Myndus velox* sp. n., male genitalia. 5, penis, right side; 6, penis apex, posterior view; 7, penis, ventral view; 8, style; 9-10, anal tube (9, dorsal view; 10, right side); 11-12, pygofer (11, ventral view; 12, right side).

to a spot. Body undersurface dark brown, borders of abdominal sternites light. Fore coxae greyish-brownish, middle and hind coxae dark brown, the remaining leg parts light brown, terminal segments of tarsi and claws darkened.

Male genitalia. Abdominal sternites IV-VIII membranized along the median line, tergite VIII without median ridge, tergites IV-VII with such ridges. Pygofer more or less symmetrical,

its lateral margins with two rounded projections divided by a shallow concavity. Medioventral process large, oblong oval, looking pillow-shaped, convex from above. Styles small, not protruding behind the end of pygofer medioventral process. Style heads boathook shaped, with separate posteromedial projection and sickle shaped lateral lobe. Left side of anal tube apex obliquely curved down and forward, in

form of a broad rounded lobe. Penis with strongly abbreviated distal article (flagellum) as in *Myndus* and *Trigonocranus*. Theca at base on left upper side with an obtuse tooth, on middle left part with a bifurcate process curved medially slightly down and then obliquely forward; fork branches as long as stem, subparallel, tips converging in beak shape. Distally of the left process, a little on the right, a flattened process diverges, with acuminate apex and subapical tooth directed forward and slightly to the right. Right side of theca subapically with transverse arcuate shorter process, apex with rounded irregular lobe curved dorsally.

Length ♂ 4.6-4.8 mm, ♀ 4.9-5.5 mm.

Myndus (*Myndodus*) *visendus* sp. n.
(Figs 3, 4)

Holotype. ♀, near Gedo, 27.VI.1990 (Emeljanov).

Description. Female. *Macrocorphe* elongated, widened behind, lateral borders at level of coryphe concave. Transverse keel of *macrocorphe* (anterior keel of coryphe) weaker than lateral keels and equidistant from apex and base. Median keel of coryphe also weak, median keel of *acrometope* not visible. *Acrometope* pentagonal, with all sides of nearly equal length, lateral margins parallel, anterior angles slightly rounded, external sides of trigones in line with lateral margins of *acrometope*. Eumetope nearly 1.5 times longer than broad, below twice as broad as above, lateral borders in upper part slightly concave, in lower part convex, breadth greatest below antennae, lower margin slightly concave. Pronotum short (seen from above), lateral keels not developed, postocular keel smoothly turning into vertical keel of paranota, which meets their lower border far from the hind corners. Fore coxae without tooth at apex. First and second segments of hind tarsus with 8 teeth, 6 internal teeth of second segment with subapical platellae. Venation of fore wing of common type, branch *CuA*₂ not developed.

Middle part of *macrocorphe* darkened, trigones, lateral borders of *macrocorphe* and hind part of median keel of coryphe light brownish. Eumetope light, with a pair of longitudinal black stripes on both sides of median keel, parts of eumetope lateral to the black stripes and starting from head apex, brownish, becoming white towards epicypeal

lobes. Genae, lower ocellus and clypeus area black, median keel of postclypeus brown. Supraocular area blackened posteriorly. Pronotum whitish, supraocular field blackened, but with black pigment not extending on supraocular keel. Mesonotum black, tegulae light brown. Fore wing transparent, veins slightly brownish, with dark small granules, costal vein, pterostigma and border of wing membrane darker. Metanotum dark brown to black. Fore coxae whitish, middle coxae light brownish, hind coxae brown, femora brown, lighter towards apex, tibiae and tarsi light brown, except the top of the third tarsal segment with claws. Abdomen dark brown to black, sclerite margins partly lightened to brown.

Male unknown.

Length ♀ 6.7 mm.

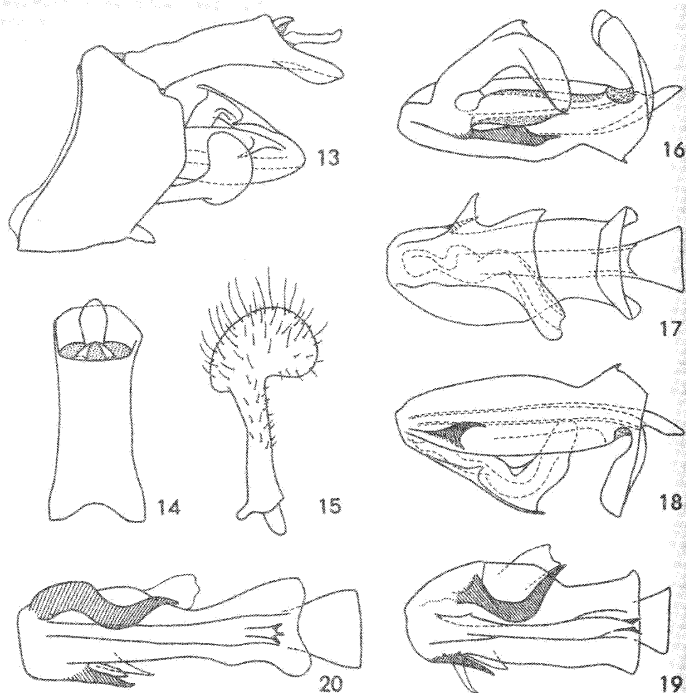
Tribe CIXIINI Spinola

Cixius Latreille

Wilhelm Wagner (1939) proposed a division into subgenera for European members of *Cixius*. This system was adopted later with minor additions for the whole Palaearctic. Wagner's subgeneric classification is not perfect in many respects, being based on a small number of formal characters. Nevertheless, it is useful for treatment of numerous species. In his revision of Afrotropical species of the genus *Cixius*, Van Stalle (1988) divided all species into groups, but without coordinating them with Wagner's subgenera. In my opinion, groups of Van Stalle are larger than Wagner's subgenera; besides, three groups of the four probably do not belong to *Cixius*.

The first group, with the greatest number of species, can be subdivided into several subgroups corresponding to subgenera based on Wagner's criteria. The first subgroup of species may be referred to the subgenus *Sciocixius* W. Wgn.: *C. chinai* Syn., *C. mukanensis* Syn., *C. trispinosus* V.St., *C. pseudomukanensis* V.St., *C. ugandanus* V.St., *C. curvicastratus* V.St., *C. bamendensis* V.St., *C. obuduensis* V.St., also probably *C. pyrene* Fenn.

Another subgroup associated with the first one is to be referred to subgenus *Issomimus* Jacobi (type species *I. meruanus* Jacobi). It includes only species with abbreviated wings: *C. meruanus* Jacobi, *C. kivuensis* V.St., *C. makungui* V.St. and *C. kalehensis* V.St.



Figs 13-20. *Cixius* spp., male genitalia. 13-19, *C. morion* sp. n.: 13, male genitalia, left side; 14, anal tube, dorsal view; 15, style; 16-19, penis (16, right side; 17, dorsal view; 18, left side; 19, ventral view); 20, *C. ladon* Fenn., penis, ventral view.

The third subgroup is not named, and I propose a new subgenus for it.

Alcixius subgen. n.

Type species *Cixius stigmatalis* Melichar.

Diagnosis. The new subgenus is distinguished by the lateral lamellar dilatation of flagellum, with border forming two projections, the distal one always developed, the proximal sometimes indistinct. The subgenus includes species with three or two mobile spines on the theca, there are also one or two spines situated on the right side. In some species, including *C. stigmatalis*, the second mobile spine is minute or rudimentary. The second right spine is comp-

letely absent in *C. ladon*, *C. almon*, *C. morion* sp. n. The new subgenus includes following species: *C. africanus* Syn., *C. stigmatalis* Mel., *C. terminalis* Jacobi, *C. ladon* Fenn., *C. almon* Fenn., *C. morion* sp. n., *C. manengoubae* V. St.

Cixius (Alcixius) morion sp. n. (Figs 13-19)

Holotype. ♂, Tseday, fountain swamp meadow with Umbelliferae, 16.VII.1990 (Emeljanov).

Description. Male. Similar to the widely distributed African species *C. ladon* Fenn. in external characters, but smaller and differently coloured. Macrocorphe nearly 1.5 times

wider than long, almost rectangular, its anterior margin slightly convex. Anterior keel of coryphe (intermediate transverse keel of vertex) prominent, arcuate and situated medially nearer to anterior border of macrocoryphe, laterally nearer to hind border of coryphe. Median keel on acrometope and coryphe distinct but less prominent. Face rather broad, eumetope, measured along median keel, only a little longer than broad, arcuate, jutting out into metope up to the middle of antennae. Median ocellus small. Rostrum as long as head, a little exceeding hind coxae. Pronotum of a common type, in the middle part a little broader than coryphe, keels prominent. First and second segments of hind tarsus with a row of 12 teeth including 9 middle teeth with subapical spine, one lateral (relative to leg axis) and two medial ones without spines. Wing venation of a common type; fore branch of *CuA* on fore wings unramified.

Similar to *C. ladon* in structure of genitalia, but differs in shorter and wider theca, left vertical process of which is curved in horizontal plane, whereas in *C. ladon* it is curved in plane turned by its external surface to the side and downwards; as a result, curve of process is clearly seen from side; besides, the new species has a small denticle on lower crest of theca on right side near apex; the denticle is lacking in *C. ladon*.

Female unknown.

Length ♂ 4.0 mm.

Cixius (*Alcixius*) *ladon* Fennah
(Fig. 20)

Material. Ambo, 1 ♂, 10.VI.1990, 2 ♀, 19.VI and 20.VII.1990 (Emeljanov); many specimens, Tsedey, 16.VII.1990 (Emeljanov).

Tribe PENTASTIRINI Emeljanov

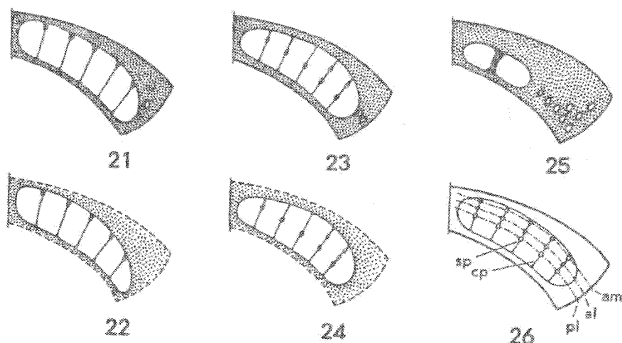
Van Stalle (1986c: 127) indicated separation of anal tube base from theca and articulation of theca with pygofer as a distinctive character (synapomorphy) for the subtribes Pentastirina and Oliarina. He proposed to determine the limits of the tribe Pentastirini based on this character. From this viewpoint, the genus *Mnemosyne* Stål does not fit into the limits of the tribe and such characters as the incomplete ovipositor and five keels on mesonotum should

be excluded from the diagnosis of the tribe. In my opinion, it is better to establish for *Mnemosyne* a new subtribe *Mnemosynina* subtrib. n. in Pentastirini, with the following combination of characters: five keels on mesonotum, ovipositor reduced, direct articulation between anal tube and theca. Undoubtedly, the ovipositor can become reduced independently and repeatedly; the five keels likewise can appear independently and disappear anew; it is also possible to assume independent disjunction of theca-tube articulation. Five keels are present in the genus *Oecleus* Stål (*Oecleini*) as well as in many representatives of the related family Delphacidae; theca-tube disjunction is present in Kinnaridae and Meenopliidae.

However, the similarity in general habitus and pattern of structure and transformation of the male genitalia in *Mnemosyne* make the immediate relationship with Pentastirina s. str. and Oliarina very likely. The hypothesis that five keels and reduced ovipositor of *Mnemosyne* and other Pentastirini are their true synapomorphies seems preferable. This is evidenced also by configuration of wax plates on abdominal tergites VI-VIII (Figs 21-26) in nymphs of *Mnemosyne* and *Oliarus* s. lato (see Šulc, 1928; Myers, 1929; Emeljanov, 1989) and by the punctate anastomosis of *MP* and *CuA*₁ on the hind wing (present also in unrelated genera *Benna* Walker and *Andes* Stål).

African species currently placed in the genus *Oliarus* Stål

About 90 of 130 of *Oliarus* Stål species which Van Stalle included in his monograph on the African fauna of this genus (Van Stalle, 1987) belong to *Eumecurus* Em. The genus *Eumecurus* is best characterized by the secondarily elongated, long and strong ovipositor as well as by the formula of denticles on metatarsus 7/7 (or rarely 7/5), the simple style with apex as broad as long and rounded in its larger part, and the anal tube with a large and rounded asymmetrical projection. *Eumecurus* comprises all species mentioned on pages 15-107 of Van Stalle's monograph, probably with exception of *O. flavifrons* V.St., but with inclusion of *O. somaliensis* V.St. (p. 155) which has 5 denticles on the second metatarsal segment.



Figs 21-26. Wax plates on abdominal tergites VI-VIII of last instar nymph, schematized. 21, *Haplaxius crudus* V.D., Oecleini (by Wilson & Tsai, 1982, modified: the supposed disposition of crosspieces is shown); 22, *Bothriocera signoreti* Stål, Bothriocerinae (by Myers, 1929); 23, *Reptalus panzeri* P. Löw, Pentastirini (by Sulc, 1928); 24, *Mnemosyne cubana* Stål (by Myers, 1929); 25, *Cixius* sp., Cixiini (by Sulc, 1928 and Emeljanov, 1989); 26, terminology: al, anterior free row; am, anteromarginal row; cp, crosspiece of wax plate; pl, posterior free row, sp, sensorial pit.

Species which Van Stalle attributes to the species group *O. bouakeanus* V.St. (listed on pages 108-163), except *O. somaliensis*, neither belong to *Eumecurus* nor to *Oliarus* sensu stricto. I establish for these species the new genera *Atonurus* gen. n. and *Suriola* gen. n.

The generic attribution of *O. venustia* Fenn., *O. damasi* Syn., *O. euziensis* V.St. and *O. limiticola* V.St. remains obscure. The last two species are similar to members of the genus *Suriola* gen. n.

Atonurus gen. n.

Type species *Cixius natalensis* Stål.

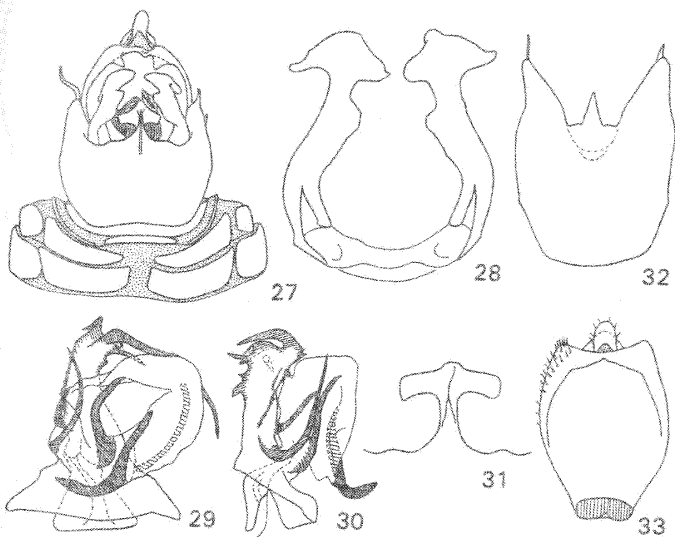
Description. Externally similar to the genera *Melanoliarus* Fenn., *Pseudoliarus* Hpt., *Eumecurus* Em., and reliably distinguished only by male genital characters. Macroscoryphe elongate or as long as broad, anterior border of coryphe acutely angulate, areolet usually present. Fork of metope median keel distinct, fenestrae on lateral margins of metope present. Fore wings without complimentary cross-veins, costal vein with or without granules. Metatarsus with 7 teeth on the first segment and 5 on the second one. Ovipositor short, incomplete.

Pygofer usually asymmetrical, with protruding lateral lobes, the right lobe frequently acuminate, the left one obtuse, in some cases

both lobes acuminate or obtuse, rarely bifurcate. Anal tube apex with large asymmetrical projections. Most common shape of style apex is transverse, with width much greater than length, usually with lateral margin ampliate or bifurcate and caudal margin with projections in the middle. Absence of projections and ridges on dorsal surface is also characteristic. Penis variable, differs from that of other genera in absence of basal process of theca and presence of complex multiapiculate formation on ventral wall of theca. Distal article of penis (flagellum) well developed and nearly always with sclerotized spines.

Comparison. The new genus is distinguished from *Pseudoliarus* Hpt. and related genera by large asymmetrical projections on anal tube apex, from the genera *Oliarus* Stål and *Melanoliarus* Fenn. by the absence of ridges and projections on dorsal surface of style apex, and from the genus *Eumecurus* Em. by the incomplete ovipositor.

Among the species of *Atonurus* gen. n., *A. guineensis* V.St. occupies an isolated position, with anterior keel of coryphe almost straight, transverse, the absence of any keels in the areolet area, the very peculiar style and the unique anchor-shaped medioventral process of the pygofer (Figs 27-31). I propose for this species a new subgenus, *Olipara* subgen. n. (type species *Oliarus guineensis* Van Stalle).



Figs 27-33. *Atonurus* gen. n. and *Suriola* gen. n., male genitalia. 27-31, *Atonurus* (*Olipara* subgen. n.) *guineensis* V.St.: 27, hind part of abdomen, ventral view, 28, styles, 29-30, penis (29, dorsal view; 30, right side), 31, medioventral process of pygofer; 32-33, *Suriola fici* V.St.: 32, pygofer, ventral view, 33, anal tube, ventral view.

New combinations (original combination with generic name *Oliarus* omitted): *Atonurus bouakeanus* Kirk., *A. satschei* V.St., *A. brun-ninervosus* V.St., *A. hastaferens* V.St., *A. gha-nensis* V.St., *A. liberatus* Syn., *A. doris* Liv., *A. pidigalensis* Syn., *A. bispinosus* Syn., *A. dissimilis* Syn., *A. lamottei* Syn., *A. dimako-ensis* V.St., *A. pellucidus* V.St., *A. kankun-densis* Syn., *A. angolensis* Syn., *A. nocturnus* V.St., *A. synavei* V.St., *A. meridianus* V.St., *A. lupialensis* Syn., *A. natalensis* Stål (*Cixius natalensis* Stål), *A. lukawensis* Syn., *A. fuscip-es* V.St., *A. namibianus* V.St., *A. urundianus* Fenn., *A. oleae* V.St., *A. andradanus* V.St., *A. bragancanus* V.St., *A. cornutus* V.St., *A. jugurtha* Fenn., *A. digitatus* V.St., *A. obsoletus* V.St., *A. guineensis* V.St., *A. nigriceps* Syn., *A. ndelelensis* Syn., *A. meingangae* V.St., *A. peregrinus* V.St., *A. nigeriensis* V.St., *A. aeneus* V.St., *A. njalensis* V.St., *A. puncti-costatus* V.St., *A. fuscus* V.St., *A. pseudo-*

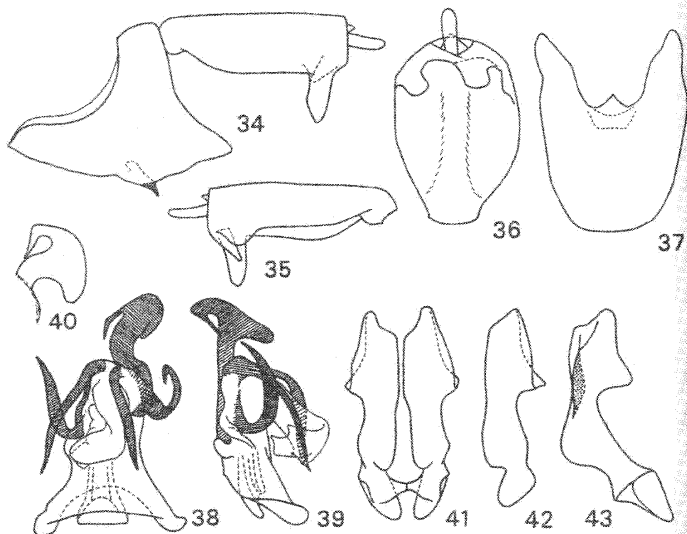
fuscus V.St., *A. gaubi* V.St., *A. eboricola* V.St., *A. sterope* Liv.

This genus should probably include *Oliarus flavifrons* V.St., though its metatarsus bears 7 teeth on both segments.

Suriola gen. n.

Type species *Oliarus fici* Van Stalle.

Description. Similar to *Pseudoliarus fusco-fasciatus* Mel. and related forms in head structure. Macroscoryphe (crown) narrow, anterior keel of coryphe obliquely longitudinal, areolet not developed, fork of eumetope middle keel distinct, fenestrae on epiclypeal lobes of metope present. Fore wing veins with setiferous granules, its membrane without supernumerary cross-veins in antercubital area. Number of teeth on first and second segments of meta-tarsus 7 and 5, respectively. In *Pseudoliarus*,



Figs 34-43. *Eumecurus binaevulatus* sp. n., male genitalia. 34, pygofer and anal tube, left side; 35, anal tube, right side; 36, anal tube, ventral view; 37, pygofer, ventral view; 38-39, penis (38, dorsal view; 39, left side); 40, distal process of theca; 41-43, styles (41, ventral view; 42, ventrolateral view; 43, side view).

macrocorphe mostly twice as long as wide, areolet usually present, 1-2 supplementary cross-veins developed in first anterocubital area.

Anal tube symmetrical, with small slanting lobe on the end sides. Pygofer asymmetrical, with acuminate apex of lateral lobes, the left lobe longer and narrower, the right one shorter, with subapical prominence. Styles unequal, with prominent mediobasal angles. Distal article of penis shortened, bears basally a big arcuate process, bifurcate in the middle part. From the base of distal article a smaller recurrent process diverges, another process from the middle right part of the theca is directed towards the first one. Ovipositor short, incomplete, subgenital sternite asymmetrical, its medial excavation shifted to the right.

Comparison. The new genus is close to *Pseudoliarus* Hpt., *Dorialus* V.St. and *Narravertus* V.St., but differs from them in acuminate lateral lobe of pygofer and details of structure

of penis and styles.

Besides the type species, this genus includes *S. lacon* Lnv., comb. n. (*Oliarus lacon* Lnv.).

Suriola fici Van Stalle (Figs 32-33)

Material. Ambo, 1 ♂, 16.V.1990, 1 ♂, 1 ♀, 30.V.1990 (Emeljanov).

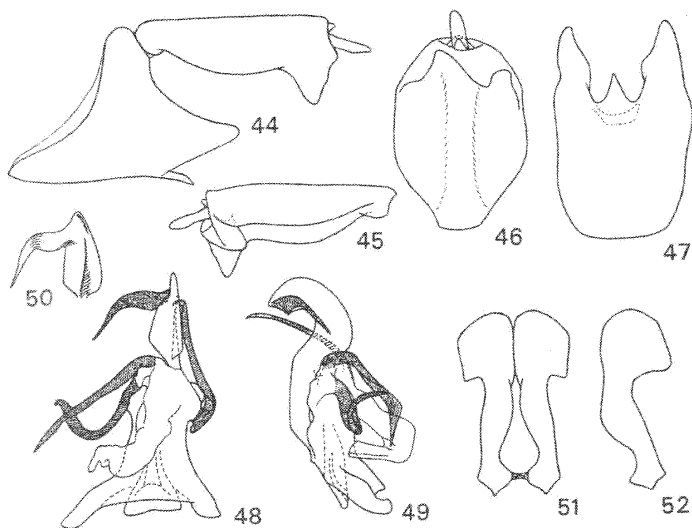
Eumecurus Emeljanov

Eumecurus binaevulatus sp. n. (Figs 34-43)

Holotype. ♂, Ambo, 2.V.1990 (Emeljanov).

Paratypes. 9 ♂, 5 ♀, Ambo, 2.V-31.VII.1990 (Emeljanov).

Description. Macrocorphe moderately narrow, slightly narrowing anteriorly, about twice as long as broad, rectangularly excavated



Figs 44-52. *Eumecurus bilineolatus* sp. n., male genitalia. 44, pygofer and anal tube, left side; 45, anal tube, right side; 46, anal tube, ventral view; 47, pygofer, ventral view; 48-49, penis (48, dorsal view; 49, left side); 50, distal process of theca; 51, styles, ventral view; 52, right style, lateral view.

behind, with oblique keels from its sides opposite to anterior third of eyes. Middle ocellus very small. Tops of epiclypeal lobes of metope slightly knotlike, swollen and blackened, pigmentation around them lighter. Hind tibiae with 3 lateral spines having a short thick conical chaeta on the top. Hind tarsi with 7 teeth on the first and second segments. Fore wing veins with rather numerous setiferous granules.

Black with brownish keels. Blackened knob on the top of epiclypeal lobes of metope separated above by diffuse brownish stripe from other dark-pigmented areas. The middle part of lateral carinae of coryphe with a light spot. A pair of longitudinal brown stripes near the epiclypeal lobes medially on postclypeus sides. Fore wing semitransparent, veins brown with dark granules, top of longitudinal veins and cross-veins on membrane more intensively darkened. Commissural border of clavus darkened up to claval vein top, this darkening

interrupted in middle part.

Male genitalia. Anal tube oblong oval, posteriorly with two finger-shaped projections divided by rectangular excavation, the left projection morphogenetically corresponds to the middle one shifted to the left from morphological middle part, primary left projection developed very weakly. Pygofer nearly symmetrical, with wedge-shaped narrow lateral lobes rounded at apex and conical medio-ventral process. Styles nearly identical, with small elongated lateral angles, hind angle directed backward, anterior angle directed laterally. Theca with a strong process to the left of axis extending backward relatively far beyond flagellum base and ending in securiform enlargement. Flagellum base with four processes, two of them upturned to the right, the first process straight, the second one curved backward in the middle; the third process turned up and forward, the fourth one ram-horn-shaped, turned successively up, back-

ward and down. Middle part of ventral wall of theca with a tumorous projection. Distal article of penis (flagellum) recurrent and curved down and to the right, without processes, except basal ones.

Length ♂ 6.5-6.8 mm, ♀ 7.9-8.1 mm.

Comparison. The new species belongs to the species group with large process of the theca directed backward; it differs from related species in securiform top of this process and four (instead of three) basal processes of flagellum.

***Eumecurus bilineolatus* sp. n.**
(Figs 44-52)

Holotype. ♂, Ambo, 23.V.1990 (Emeljanov).

Paratypes. 60 ♂, 30 ♀, Ambo, 2.V.-31.VII.1990 (Emeljanov).

Description. Superficially similar to *E. binaevulatus* sp. n., but differs in more distinct whitening of the middle keel of the metope and almost imperceptible whitening on its lateral margins. A pair of longitudinal fuscous stripes on the postclypeus are more distinct; epicyclal lobes of metope without knob and entirely black. Sides of pronotum upper part with diffuse light spot on hind margin medially from tegulae.

Male genitalia. Anal tube oblong oval, posteriorly bearing two wedge-shaped lobes rounded at apex and divided by angular excision. The right lobe situated laterocaudally, the left one (primary the middle) nearer to the middle line, the primary left lobe rudimentary. Pygofer nearly symmetrical, with wedged shaped narrow lateral lobes rounded at apex and conical medioventral process. Styles nearly identical, with rounded triangular apex. Theca with strong process to the left of axis which extends relatively far beyond flagellum base; the process is curved in complicated manner, the basal part being bent upward, apical part bent downward and pointed, directed to the left at the end. Base of flagellum with three processes, two of them upturned to the right, the first process nearly straight, the second one bent spirally, the third process situated on left side and directed backward. Distal article of penis recurrent, then curved downward and to the right, without processes, except a basal one.

Length ♂ 5.9-6.4 mm, ♀ 7.3-7.5 mm.

Comparison. The new species belongs to the species group with the large process of the

theca directed backwards. From the relatively close species *E. vanstallei* sp. n. also having a simple end to above mentioned process, it differs in absence of a thecal ventral process and in the not acuminate end of the right lobe of the anal tube.

***Eumecurus vanstallei* sp. n.**
(Figs 53-61)

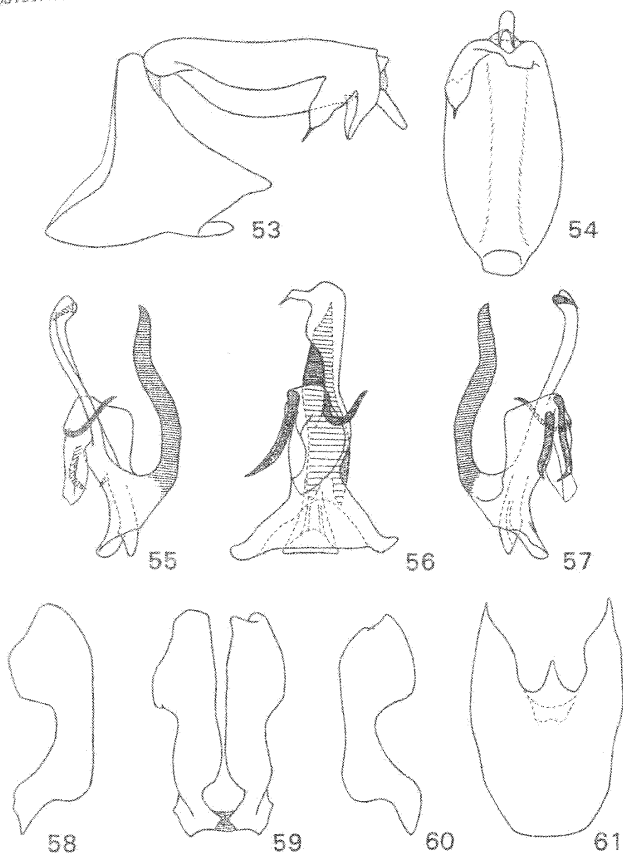
Holotype. ♂, Ambo, 10.VI.1990 (Emeljanov).

Paratypes. 102 ♂, 30 ♀, Ambo, 13.V.-31.VII.1990 (Emeljanov); 1 ♂, 2 ♀, Addis Alem, 13.VI.1990 (Emeljanov).

Description. Macrocoryphe narrow, tapering anteriorly, with oblique keels from its lateral borders a little behind anterior third of eyes, hind border acutely angulate, concave. Fork of eumetopan middle keel occupies approximately one-third of head top width. Middle ocellus very small. Keels on head, pronotum and mesonotum well developed, prominent. Hind tibiae with three lateral teeth. Hind tarsus with 7 teeth on the first and second segments. Fore wing veins bearing numerous granules with rather long and thin fragile setae.

Black, keels of head brownish, postclypeus mesad of epicyclal lobes of metope with a pair of diffuse stripes parallel to suture. Coryphe with whitish spots on lateral margins on level of eye middle. Keels of pronotum white, except their lateral borders; keels of mesonotum brown. Fore wings semitransparent, slightly whitish-smoky, veins of corium brown, with black granules, veins of membrane black.

Male genitalia. Anal tube oblong oval, the hind part of left lateral wall bearing a large lobe with acuminate apex directed downward and forward; on hind margin to the right of middle line the tube bears a smaller wedge-shaped lobe with rounded apex. Pygofer nearly symmetrical, with wedge-shaped lobes rounded at apex. Medioventral process of pygofer conical. Styles with rectangular apices, their angles rounded. Styles slightly different, the left one slightly longer, the right one with small concavity on oblique hind margin. Theca with strong process to the left of the axis, which extends relatively far beyond flagellum base, the end of process rostriform, curved to the right and acuminate. Another large process diverges ventrally from the theca base and extends obliquely backward and downward. Flagellum base with three processes, two upturned to the right, the



Figs 53-61. *Eumecurus vanstallei* sp. n., male genitalia. 53, pygofer and anal tube, left side; 54, anal tube, ventral view; 55-57, penis (55, left side; 56, dorsal view; 57, right side); 58-60, styles (58, left style, lateral view; 59, ventral view; 60, right style, lateral view); 61, pygofer, ventral view.

third process upturned to the left and in the middle part rather brusquely recurved to the left, backward and downward. Flagellum small, bent forwards nearly along sagittal plane.

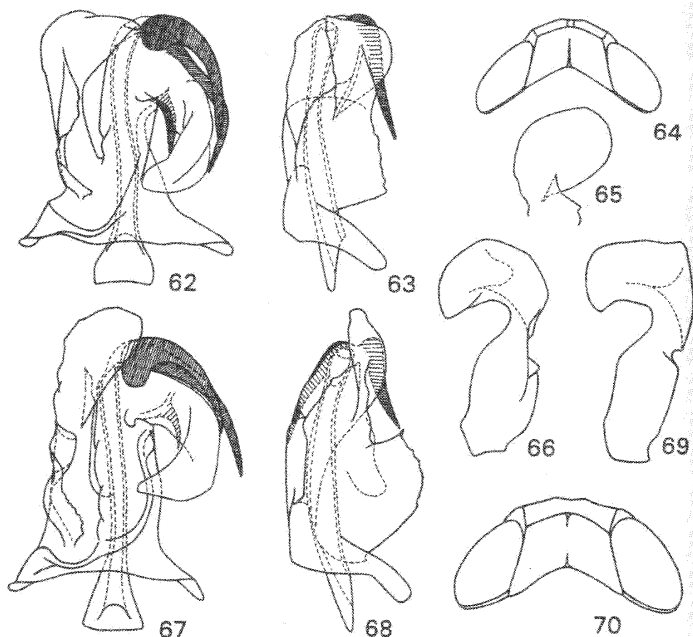
Length ♂ 5.5-6.4 mm, ♀ 6.9-7.1 mm.

Comparison. The new species belongs to the species group characterized by large process of the theca directed backwards; it is distinguished

from other species of this group by presence of large ventral process of theca and acuminate apex of anal tube right lobe.

Eumecurus abyssinicus Van Stalle

Material. Many specimens, Ambo, 3.V-31.VII.1990 (Emeljanov).



Figs 62-70. *Pentastiridiid* spp., head and male genitalia. 62-66, *P. confumatus* sp. n.: 62-63, penis (62, dorsal view; 63, right side); 64, head, dorsal view; 65, apex of right basal process of theca; 66, style, lateral view; 67-70, *P. incultus* sp. n.: 67-68, penis (67, dorsal view; 68, right side); 69, style, lateral view; 70, head, dorsal view.

Eumecurus grossipennis Van Stalle.

Material. 1 ♂, Ambo, 2.VI.1990 (Emeljanov).

Pentastiridiid Kirschbaum

Pentastiridiid confumatus sp. n.
(Figs 62-66)

Holotype. ♂, Ambo, 10.VI.1990 (Emeljanov).

Description. Male. Belongs to *P. inermis* species group (see Van Stalle, 1986a). Small, stumpy. Macrocoryphe nearly as long as broad, coryphe slightly tapering forward, acrometope

slightly broadened forward, hind margin of coryphe obtusely angulate, concave, anterior margin arcuate, convex; anterior margin of acrometope slightly convex, nearly straight, the middle of acrometope with two distinct longitudinal keels delimiting areolet which is slightly longer than broad. Face relatively broad, lateral margins of eumetope convex below and slightly concave in upper part. Postclypeus more convex and short than usually.

Black with light keels of head and pronotum, keels of face brownish, middle keel of postclypeus faintly lightened, lateral keels of macrocoryphe and of pronotum whitish. Keels of mesonotum lightened faintly. Fore wings with

black veins and grey darkening of nearly nontransparent cells.

Male genitalia. Dextral process of theca base with triangular rounded apex similar to that of *P. moestus* Stål, in basal half bearing a high crista with margin protruding upward at an obtuse angle (almost a right angle) at base and gradually reduced towards the top. Flagellum with two large basal spines, the first strictly basal, the other one slightly shifted distally; the third spine situated ventrally as usual and well developed. Flagellum top without spine. Heads of styles comparatively large, rounded, sickle-shaped, with obtuse tip.

Female unknown.

Length ♂ 4.6 mm.

Comparison. The species differs from other members of *inermis*-group in the shape of top expansion of dextral process with distal margin bent ventrally.

Pentastiridius incultus sp. n.
(Figs 67-70)

Holotype. ♂, Ambo, 21.VI.1990 (Emeljanov).

Paratypes. 36 ♂, 4 ♀, Ambo, 6.V-1.VII.1990 (Emeljanov).

Description. Belongs to *P. inermis* species group. Small, stumpy. Macroscoryphe nearly as long as broad, slightly tapering anteriorly, hind margin obtusely angulate, concave, anterior margin faintly convex, almost straight, anterior keel of macroscoryphe thickened posteriorly, its anterior margin nearly straight, hind margin concave, two indistinct longitudinal keels between anterior keels of coryphe and macroscoryphe, anterior keel of coryphe obtusely angulate, rounded. Face relatively broad, lateral margins of eumetope rather short, bent at level slightly above antennae.

Black; lateral keels of coryphe and metope light, postclypeus lateral keels darker. Pronotal keels also light, except lateral borders. Tegulae with light margins, except the front one. Fore wings semitransparent, whitish-greyish, corium veins yellowish, wing membrane veins darkened, cells less darkened. Points of forking of CuA and junction of claval veins (*Pcu+Aj*) darkened. Ridges of hind tibiae lightened.

Male genitalia. The right (dextral) process of theca base with triangular rounded apex as in *P. virgultivagus* Hesse, but in basal half with a high crista, basally sharply truncate, with acuminate angle. Flagellum with two large basal

spines, the ventral being slightly longer, medioventral spine small as in most African species, top of flagellum unarmed. Head of styles relatively large, with obtuse top.

Length ♂ 4.7-5.2 mm, ♀ 5.7-5.8 mm.

Comparison. The species differs from other members of the *inermis*-group in angulate outline of styles with well developed "heel" (posteromedial angle) and in dentiform prominence of the middle part of crista on the dextral process of theca.

Pentastiridius dedecorus sp. n.
(Figs 71-76)

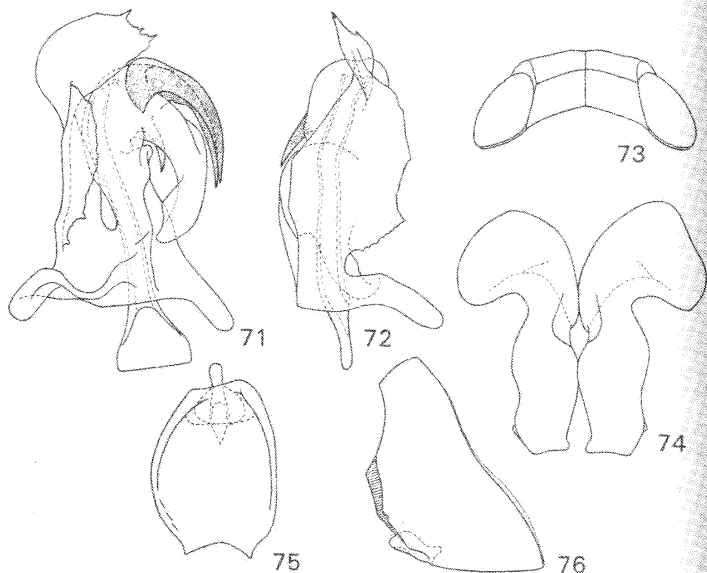
Holotype. ♂, Ambo, 8.VI.1990 (Emeljanov).

Paratypes. 1 ♂, 4.VI.1990, 3 ♀, 3-23.VI.1990 (Emeljanov).

Description. Size and appearance as in two preceding species, but distinctly different in the broad and short head. Macroscoryphe more than 1.5 times as broad as long, its lateral borders markedly protruded anteriorly; anterior margin of acrometope nearly straight; anterior margin of coryphe slightly obtusely angulate, convex, hind margin similarly obtusely angulate convex or arcuate, concave and elevated; a weak median keel visible; lateral margins of acrometope and coryphe of nearly equal length; areolet not developed, in this region an indistinct elevation or even single median keel can be seen. Face relatively broad and short, lorae sloping and visible on each side of clypeus in front view. Median keel of postclypeus not developed or developed partly and feebly, lateral keels weakened towards anteclypeus. Pronotum with broad disc.

Black, head with slightly lightened to dark brown lateral keels of metope and coryphe, and median keel of eumetope, except fork; lateral keels of postclypeus scarcely lighter than background. Rostrum brown. Keels of pronotum, except lateral ones, dirty whitish. Tegulae margins whitish. Keels of pronotum of the same colour as background. Fore wings with brownish veins and light semitransparent cells, pterostigma and distal two-thirds of costa light, vein of claval suture also light, veins of membrane darkened to black, cells darkened to grey or brown. Fore and middle legs lightened from dark brown at femur base to light brown towards tarsus, hind legs with dark femora and light tibiae and tarsi.

Male genitalia. Similar to genitalia of *P. nig-*



Figs 71-76. *Pentastiridius dedecorus* sp. n., head and male genitalia. 71-72, penis (71, dorsal view; 72, right side); 73, head, dorsal view; 74, styles; 75, anal tube, ventral view; 76, pygofer, right side.

ripennis Syn. (see Van Stalle, 1986a). Apex of the right basal process of theca pointed and bears denticles on distal margin, dorsobasal crista of the process basally with a tooth, margin of crista distal of this tooth concave, distal end of concavity limited by obtuse prominence. Flagellum with three spines as usual, two basal ones nearly equal. The right style extending backward further than the left one and slightly concave on posterolateral top margin; apex of the left style convex on hind and lateral margins; anterolateral angles of styles rather broadly rounded. Anal tube slightly asymmetrical, its left side more convex, hind margin oblique, longer on the right. The right lobe of pygofer slightly more developed than the left one.

Length ♂ 4.3 mm, ♀ 5.3-5.8 mm.

Comparison. The new species is distinguished from *P. nigripennis* by slight but clear asymmetry of styles, anal tube and pygofer.

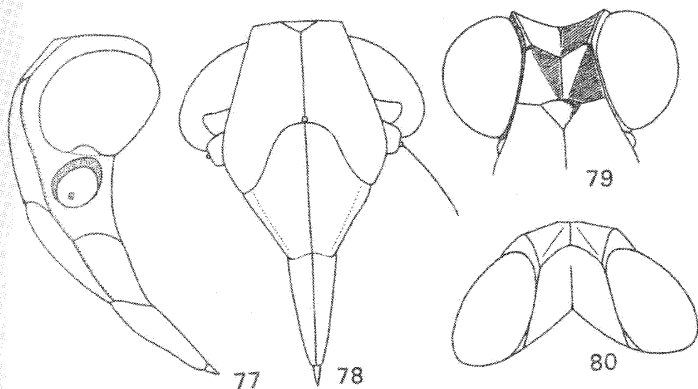
Afroreptalus Van Stalle

Afroreptalus daemon sp. n. (Figs 77-80)

Holotype. ♀, Ambo, on young growth of wheat, 10-15 cm high, 23. VII.1990 (Emeljanov).

Description. Size and habitus typical of the genus *Pentastiridius*. Configuration of macrocoryphe similar to that of *Nesopompe* Kirkaldy, judging from figures by Fennah (1956), and to *Noriaus* *caffer* Stål, judging from figures by Van Stalle (1986).

Female. Macrocoryphe with slightly obtusely angulate concave lateral borders tapering forward in coryphe region and broadened in acrometope region. Acrometope concave, longer than broad, its hind margin obtusely angulate concave, fore margin obtusely angulate but nearly rectangled, convex, acrometope almost twice shorter than coryphe, with



Figs 77-80. *Afreoptalus daemon* sp. n., head. 77, left side; 78, face; 79, upper part, anterodorsal view; 80, dorsal view.

prominent median keel, its anterior margin nearly straight, slightly wavy, in the middle part opposite to fork cell slightly concave; fork short, fork cell occupies scarcely more than one third of acrometope width. Acrometopan cells concave, on their bottom with linear fold extending from ends of anterior margin of coryphe to the top of medial keel. Face diamond-shaped, truncate from above, lateral and median keels prominent, lateral halves of eumetope longitudinally depressed, flute-like; lateral rounded edges of eumetope opposite to eyes distinctly developed. Rostrum exceeding hind margin of hind coxae. Keels of pro- and mesonotum well developed, smooth. Hind femur in basal half with 3 spines. The first segment of hind tarsus long and widened to apex, the second segment short and more widened to apex; the first segment bears 8 simple teeth (without platellae), the second segment 14 teeth with subapical setae (platellae) on each tooth except lateral ones. Wing venation of common type, veins of corium region with weakly developed granules, costal vein without granules. Ovipositor incomplete, typical of the genus.

Deeply black. Lateral margin of eumetope white, except the part above the middle of eyes; lateral borders of coryphe, other keels including those on head, black. Keels of pronotum and borders of tegulae slightly lightened.

Mesonotum entirely black. Fore wings black, opaque, costal vein and pterostigma white, adjoining part of costal field not pigmented, hyaline, semitransparent, with narrow hyaline stripe in hind part and black granules on hind margin. Underside of body and legs black, only membranous part light.

Male unknown.

Length ♀ 6.8 mm.

Comparison. Related to *A. atricollis* V.St., differing from it in the narrower macrocoryphe (as in *A. rustenburgi* Syn.), black opaque fore wings and black tibiae and tarsi.

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