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CONTRIBUTION TO THE KNOWLEDGE OF PANIMERUS EAT. (DIPTERA, PSYCHODIDAE) IN CZECHOSLOVAKIA

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The aim of this paper is to present these flies from the taxonomic points of view so that they can be recognized and identified. Much new information and interpretation is presented here, as well as commentary on the observations and interpretation of previous authors. This study is a part of a continuing series of papers treating of the Czechoslovak moth flies. Intergeneric relationships of some Paramormiini End. with the genus *Panimerus* Eat. were demonstrated by Ježek (1983).

Genus **Panimerus** Eaton

Panimerus Eaton, 1913: 425.
Panimerus auct., partim; Enderlein, 1936: 91; Tonnoir, 1940: 27; Rapp, 1946: 175; Fairchild, 1951: 14; Krek, 1971: 184; 1972: 245; Vaillant, 1972: 63; Wagner, 1979a: 42; b: 448; Hackman, 1980: 21.
Panimerus (subgenus of the genus *Panimerus* auct.), partim; Vaillant, 1972: 69.
Panimerus (subgenus of the genus *Telmatoscopus* auct.), partim; Tonnoir, 1919: 12; 1940: 28; Kloet et Hincks, 1945: 333; Jung, 1956: 179; Szabó, 1960: 212; Vaillant, 1963: 228; Nielsen, 1965: 150; Szabó, 1965a: 81; b: 621.
Telmatoscopus auct. (nec Eaton, 1904), partim; Freeman, 1950: 86; Satchell, 1956: 106; Sarà, 1958: 3; Vaillant, 1959: 266; Szabó, 1960: 211; Vaillant, 1960: 72; Nielsen, 1961: 137; Duckhouse, 1962: 418; Vaillant, 1963: 226; Nielsen, 1964: 152; Botosaneanu et Vaillant, 1965: 79; Nielsen, 1965a: 149; Vaillant, 1966: 226; Tanasijčuk, 1969: 125; Rozkošný, 1971: 141.
Telmatoscopus (subgenus of the genus *Telmatoscopus* auct.), partim; Nielsen, 1964: 153.
Telmatoscopus (lapsus) Feuerborn, 1922: 102, partim.
Pericoma auct. (nec Walker, 1856), partim; Eaton, 1893: 126; 1894: 27; 1896: 204; Kertész, 1902: 296; Becker, Bezzi, Bischof, Kertész et Stein, 1903: 162; Feuerborn, 1922: 18; Barendrecht, 1934: 79.
Lepiseoda Enderlein, 1935: 247 (Type-species: *Pericoma notabilis* Eaton, 1893); Rapp, 1946: 174.
Mogisetia Enderlein, 1936: 94 (Type-species: *Pericoma albifacies* Tonnoir, 1919); Rapp, 1946: 175.
Panimerus Eaton sensu Ježek, 1983: 258; 1984: 165.

Type-species: *Pericoma notabilis* Eaton, 1893 (by orig. des.)

Differential diagnosis: The genera *Panimerus* Eaton, 1913, *Telmatoscopus* Eaton, 1904, *Paramormia* Enderlein, 1935, *Psycmera* Ježek, 1984, *Parajungiella* Vaillant, 1972 and *Jungiella* Vaillant, 1972 have indexes of length of first antennal segment to second 1. 7—3. 9, sensory fila-

ments of antennal segments finger-shaped, apical flagellar segments pitcher-shaped. Last segment of maxillary palpus annulate, Sc long and hypandrium developed; but in genera *Trichopsychoda* Tonnoir, 1922, *Philosepedon* Eaton, 1904, *Feuerborniella* Vaillant, 1971 and *Threticus* Eaton, 1904 are indexes of length of first antennal segment to second 0.9—1.4, sensory filaments of antennae with two or three arms, apical segments of flagellum with reduced narrowed parts, last segment of maxillary palpus without an annulation, Sc short, hypandrium not developed. Genus *Panimerus* Eaton, 1913 as well as genera *Telmatoscopus* Eaton, 1904, *Psycmera* Ježek, 1984, *Parajungiella* Vaillant, 1972 and *Jungiella* Vaillant, 1972 have corniculi developed — if corniculi missing, then tufts of spines are presented on first flagellar segments. Sensory filaments, if developed, aren't arranged in rings. Sc broken distad; if it is straight, then its end isn't widened. On the other hand in genus *Paramormia* Enderlein, 1935 corniculi missing, sensory filaments of antennal segments are formed in rings, Sc straight, widened distad. In genera *Panimerus* Eaton, 1913, *Telmatoscopus* Eaton, 1904 and *Psycmera* Ježek, 1984 the medial wing-angles are 185—212°; index of base of M_{1+2}, A to maximum width of wing 1.8—2.0; pedicellus isn't globular — if globular, then corniculi missing. Additional sabre-shaped projections of the male genitalia developed, furca missing. The genera *Parajungiella* Vaillant, 1972 and *Jungiella* Vaillant, 1972 have medial wing-angles of 122—163°, indexes of base of M_{1+2}, A to maximum width of wing 2.1—2.3. Pedicellus globular. Additional sabre-shaped projections of male genitalia lacking, furca developed. In genera both *Panimerus* Eaton, 1913 and *Psycmera* Ježek, 1984 corniculi developed. Index of length of first antennal segment to length of second one 2.4—2.9. Pedicellus not as above. Width of pedicellus much larger than width of first flagellar segment. Sensory filaments of antennae visible. 15^{th} antennal segment with a neck. First flagellar segments without a tuft of spines. Basal apodeme short, structures of male copulatory organ inside not as above. On the other hand in genus *Telmatoscopus* Eaton, 1904 corniculi lacking, index of length of first antennal segment to second 3.7, pedicellus globular, width of pedicellus only slightly larger than width of first flagellar segment, sensory filaments of antennae not visible, 15^{th} antennal segment with a fully developed neck. There are tufts of spines on first flagellar segments. Basal apodeme long. Male copulatory organ inside with a pair of complicated sclerotized forms. Genus *Panimerus* Eaton, 1913 has indexes of distance of tangential points of the eye's ends to the minimum width of frons 2.8—3.9; index of length of corniculi to its minimum width at base 6.6—11.0; the first and second flagellar segments symmetrical; pedicellus with a conspicuous keel-shaped protuberance. Pleural suture on thorax inconspicuously curved. Wings without pigmentation. The end of R_5 at the apex of wing, distance between base of R_1 and R_{2+3} large. Indexes of length of cercus to length of epandrium from lateral view 1.2—1.6. Aperture of epandrium simple. Male copulatory organ without a pair of harpoon-shaped projections. In contrast to genus *Pani-*

merus Eaton, 1913 genus *Psycmera* Ježek, 1984 has index of distance of the tangential points of the eye's ends to minimum width of frons 5.4; index of length of corniculi to minimum width at base 15.7; the first and second flagellar segments asymmetrical; pedicellus with an inconspicuous keel-shaped protuberance. Pleural suture of thorax straight, wings clouded. The end of R_5 behind apex of wing. The distance between base of R_1 and R_{2+3} conspicuously narrow. Index of length of cercus to length of epandrium from lateral view 2.3. Epandrium with two quite separated openings. Male copulatory organ with a pair of long harpoon-shaped projections.

Bionomy: The keys on both larvae of 4th instar and males of palaearctic species were published by Vaillant (1972). Adults were collected by the author of this present paper on the banks of streams, gutters, arms of rivers, ponds with outflows, on moist pastures and dust-heaps, in the dry beds of canals, on banks of water reservoirs and in areas of springs.

Distribution: Holarctic area — 9 species. *Panimerus albifacies* (Tonnoir, 1919) — Europe centr., occ. and mer.; *P. albomaculatus* (Wahlgren, 1904) — Europe occ. and sept.; *P. denticulatus* Krek, 1972 — Balkan; *P. goetghebueri* (Tonnoir, 1919) — Europe centr. and occ., Africa sept.; *P. kreki* Vaillant, 1972 — Europe mer.; *P. maynei* Tonnoir, 1920 — Europe occ., Africa sept.; *P. notabilis* (Eaton, 1893) — Europe centr., occ. and mer.; *P. sarai* Salamanna, 1975 — Europe mer.; *P. verneysicus* Vaillant, 1972 — Alps occ.

Discussion: Sensu Fairchild (1951) Eaton designated *Tipula hirta* Linné, 1772 (= *notabilis* Eaton) as type-species of the genus *Panimerus* Eaton, 1913. Enderlein (1935) described the genus *Lepiseoda* with type-species *Pericoma notabilis* Eaton, 1893, and he established 1936 by subsequent designation *Panimerus scotti* Eaton, 1913 as type-species of the genus *Panimerus* Eaton, 1913 and Rapp (1946) duplicated this mistake. Tonnoir (1940) recognized the name *Panimerus scotti* Eaton, 1913 as a synonym of the name *Pericoma notabilis* Eaton, 1913; but Vaillant doubted this (1972). Unfortunately, the name „*scotti*" is based on the female-specimen and at the present time this synonymy cannot be proved because of lack of knowledge of differential characters in females of all species in the genus *Panimerus* Eaton, 1913 included. Vaillant's (1972) interpretation of the genus *Panimerus* Eaton, 1913 is very large in contrast to the conception of the author of this present paper, where is excluded the genus *Telmatoscopus* (= *Krekiella* Vaillant, 1972) with *T. morulus* (Eaton, 1893) as type-species and the genus *Psycmera* Ježek, 1984 with only one species *P. integella* (Jung, 1956). Enderlein described the genus *Mogisetia* Enderlein, 1936 with type-species *Pericoma albifacies* Tonnoir, 1919, which is closely related to *P. notabilis* (Eaton, 1893). The mentioned generic name must be a synonymum of the generic name *Panimerus* Eaton, 1893, noticed by Duckhouse (1966). In the genus *Panimerus* Eaton, 1913 was described the American species *P. lucens* Vaillant, 1973 but only on the base of a larva. The generic corres-

pondence of this species is uncertain. Moreover in this genus is known *P. nadorensis* Eaton, 1913 as nomen nudum.

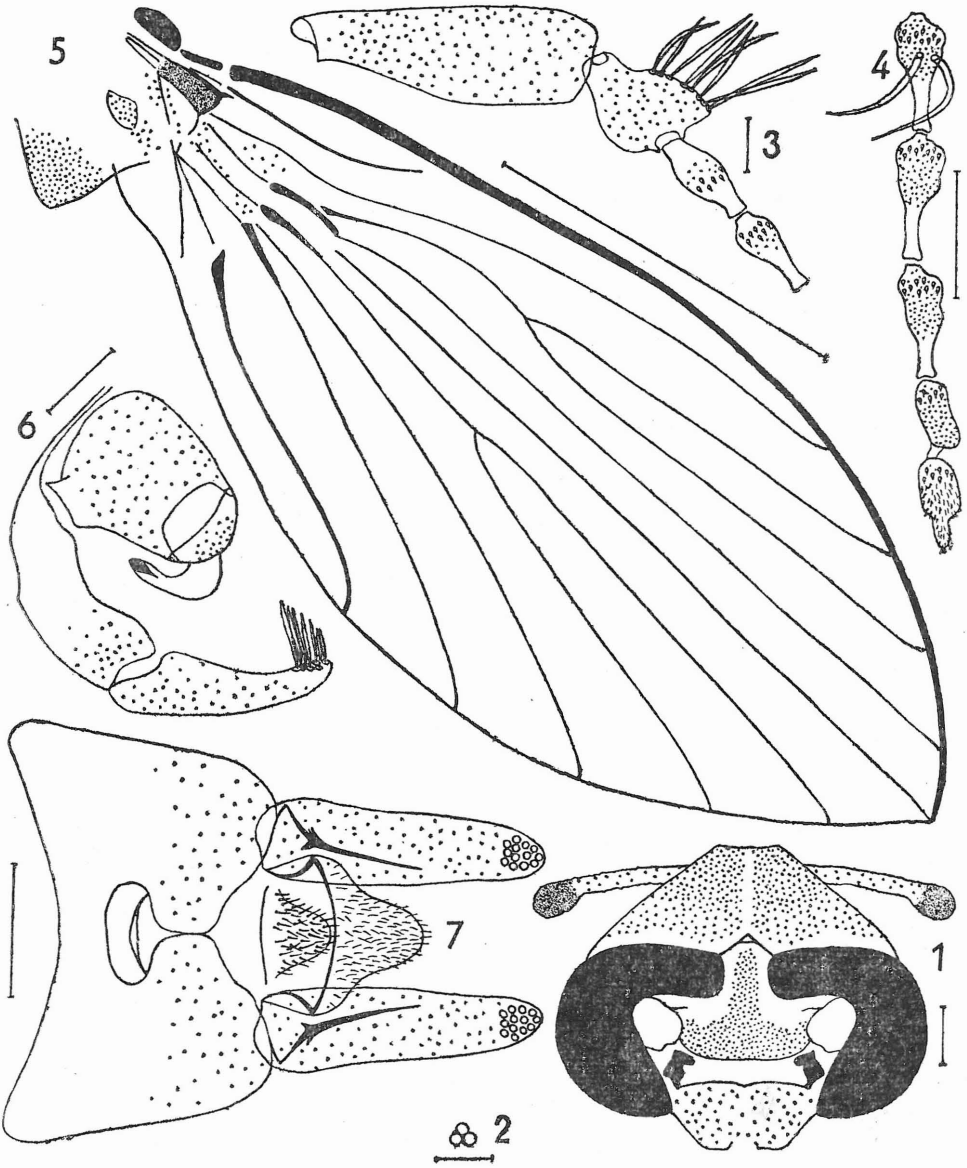
Panimerus denticulatus Krek

(Figs. 1—13)

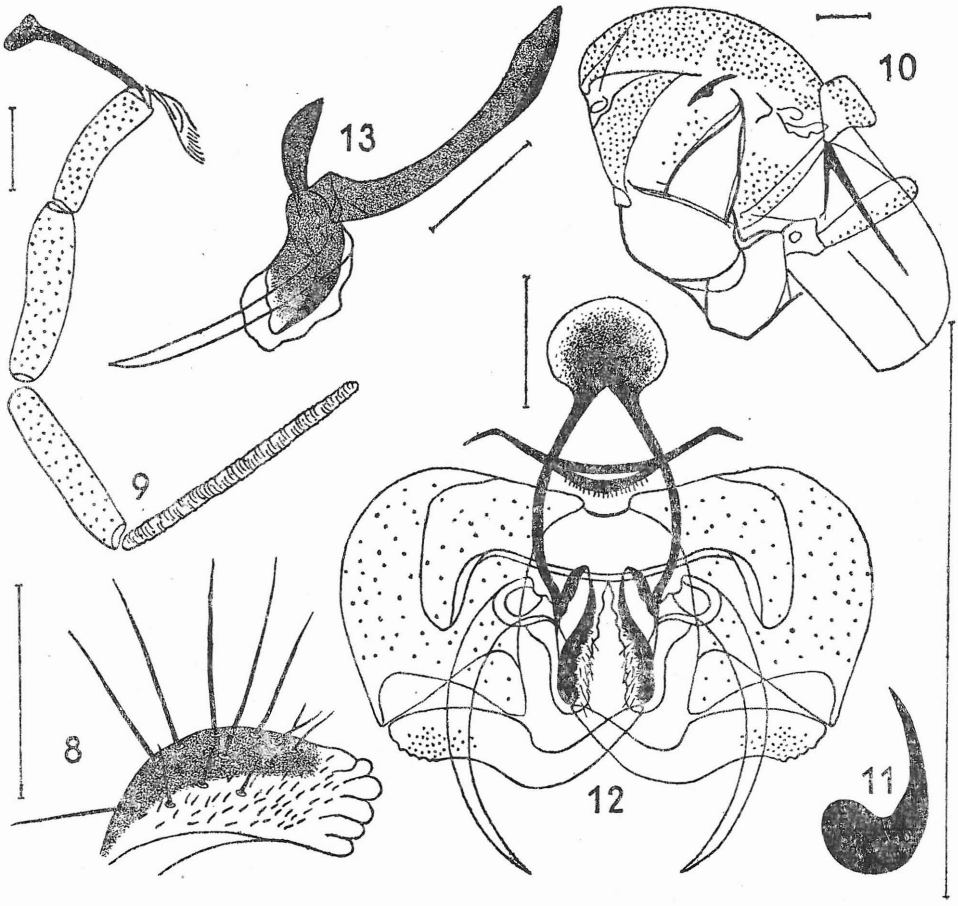
Panimerus denticulatus Krek, 1972: 245.
Panimerus (Panimerus) denticulatus; Vaillant, 1972: 69.
Panimerus denticulatus; Ježek, 1982: 57; 1984: 165.

Diagnosis. Rather big species, wings 2.9—3.3 mm. long without swollen parts of veins in central area of wing, head with long corniculi, hypandrium with a transverse chink, male copulatory organ with a pair of double strongly sclerotized ribs.

Male. Index of facet diameter to minimum width of frons 0.3. Index of distance of tangential points of the eye's ends to minimum width of frons 3.1, to facet diameter 9.3. Frons with rather wide stripe of hairs. Antennae 16 segmented, hairy. Scapus club-shaped, 2.6 times longer than pedicellus, pedicellus with a conspicuous keel on side, flagellar segments flask-shaped. Ratio of maximum width of pedicellus to width of the first and second flagellar segments 2.7 : 1.2 : 1.1. Index of length of first flagellar segment to second 1.1, both the first and second flagellar segments symmetrical. Antennal segment 15 without a protuberance anteriorly, segment 16 with a small hairy digital projection. Paired sensory filaments of antennal segments simple, finger-like, long. Ratios of lengths of maxillary palpus 3.6 : 4.9 : 5.1 : 7.7. Last segment of maxillary palpus annulate and connected basally with apical part of the foregoing segment. Ratio of maximum length of cibarium to length of epipharynx 2 : 1. Corniculi long with a pestle on end. Index of length of corniculi to its maximum width 4.9, to minimum width at base 11.0. Pleural suture conspicuously bent. Wings lancet-shaped, without pigmentation, veins of the central area of wing aren't conspicuously swollen, membrane bare, basal costal nodes distinct. Sc long, not interrupted, with distal end bent to C. R_1 arched to Sc, the origin of R_{2+3} approximately in half of basal field. R_{2+3} conspicuously bent to upper margin of wing, angle of R_2 and R_3 large, distal parts both of R_2 and R_3 inconspicuously bent to C. R_4 rather straight, bent to upper margin of wing only proximally. R_5 straight, with end at apex of wing. Base of M_{1+2} rather widened. M_{1+2} straight, as vell as M_1 and M_2 which are bent in distal part to hind margin of wing. M_3 rather arched to medial fork, M_3 and Cu without a conection on M_4. M_4 inconspicuously bent to medial fork, Cu S-shaped. Veins r-r, r-m and m-m not visible. Medial wing angle 193°. Indexes of wing AB : AC : AD = = 17.4 : 16.1 : 16.7, BC : CD : BD = 3.3 : 5.9 : 9.1. Index of base of M_{1+2}, A to maximum width of wing 2.0. Index of lengths of halteres to its maximum width 3.3 : 1. Ratios of lengths of femur, tibia and first tarsal segment: P_1 = 19.2 : 22.0 : 10.0; P_2 = 22.2 : 26.8 : 11.9; P_3 = 22.2 : 31.2 : 11.5. Paired tarsal claws conspicuously arched. Basal apodeme of male genitalia disunited proximally, with almost rounded end, inner structures of copu-



Figs. 1—7. *Panimerus denticulatus* Krek, ♂: 1: head, 2: facets, 3: basal antennal segments, 4: apical antennal segments, 5: wing, 6: hypopygium laterally, 7: epandrium and cerci dorsally. Scales 0.1 mm., 1 mm. in fig. 5.



Figs. 8—13. *Panimerus denticulatus* Krek, ♂: 8: terminal lobe of labium, 9: maxilla and palpus maxillaris, 10: thorax laterally, 11: claw of P_1, 12: copulatory organ, coxopodites and harpagones dorsally, 13: copulatory organ laterally. Scales 0.1 mm.

latory organ characteristic, outside hairy, with a pair of doubled very sclerotized ribs. External paired protuberances of genitalia are longer than lengths of coxopodites. Coxopodites without conspicuous protuberances outside, harpagones almost S-shaped from dorsal view with rather blunt top. Index of maximum lengths of coxopodites to lengths of harpagones from dorsal view 1.0. Epandrium of characteristic shape. Index of length of cercus to length of epandrium from lateral view 1.6. Apertura with narrow mouth on anterior margin of epandrium. Hypandrium cracked transversally and hairy. Epiproct with conspicuous rather strong hairs, hypoproct with rather soft hairs. Width of hypo-

proct at base twice as wide as its length. Cerci straight from ventral view, with 13 retinaculi subapically. The top of cercus without bifurcation.

Female: unknown.

Material: 200 ♂♂. Bohemia. Družec, Chudíř, Hořice v Podkrkonoší (Kn.), Jabkenice, Konopiště (Benešov distr.)*), Kostomlaty nad Labem, Měrunice, Pěčice (Mladá Boleslav distr.), Praha-Kunratice, Předonín, Račice (Litoměřice distr.). Moravia: Bordovice, Brodek u Prostějova, Dětmarovice, Frenštát pod Radhoštěm, Ostrava-Poruba, Plumlov (M.), Polanka nad Odrou, Račice (Vyškov distr.), Rožnov pod Radhoštěm.

Comments on the material: All collected by author, only Kn. — Kneifl lgt., M. — Martinovský. Figured specimen was collected by author 14. 4. 1971 in the area of Praha 4 - Kunratice. All material deposited in the Department of Entomology, National Museum (Nat. Hist.), Praha.

Occurence in Czechoslovakia: IV—VIII.

Bionomy: Unknown. The adults were collected on the banks of streams, drainages, ditches, arms of rivers, ponds on moist pastures and rubbish-heaps, on plants of dry bottoms of canals for irrigation, water reservoirs and springs. Habitats with the following trees: *Alnus, Salix, Populus, Sambucus, Quercus, Acer, Robinia* and *Corylus.* The undergrowth with *Rubus, Urtica, Calamagrostis, Cirsium, Scirpus, Filipendula, Phragmites* and *Mnium.*

Distribution: Yugoslavia, Czechoslovakia.

Data on both type-material and type-locality: Holotypus (♂) was collected by Krek in Yugoslavia, Bosna, Tjentiště, Čemersko Osoje, 1040 m. Mentioned specimen is deposited in Krek's collection in Sarajevo.

Discussion: The description, figures and a key concerning this included species were published by Krek (1972) and Vaillant (1972).

Panimerus kreki Vaillant
(Figs. 14—27)

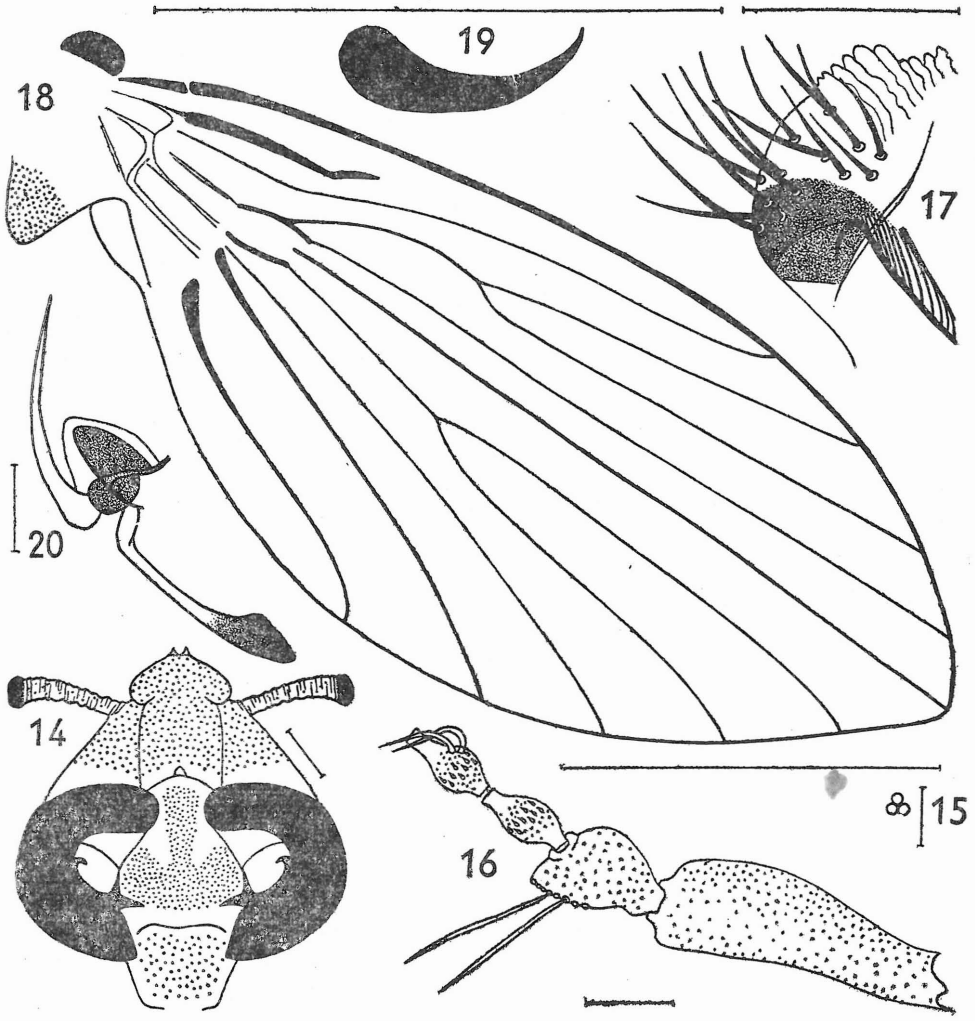
Panimerus kreki Vaillant in litt.; Krek, 1971: 184.
Panimerus (Panimerus) kreki Vaillant, 1972: 70; Salamanna, 1975a: 194; b: 70; c: 78.
Panimerus kreki Wagner, 1979: 448 (nomen nudum).
Panimerus kreki; Ježek, 1982: 58; 1984: 165.

Diagnosis. Rather big species, wings 2.9—3.0 mm. long. The shape of the male genitalia resembling *P. denticulatus* Krek, 1972, however hypandrium is not cracked transversally.

Male. The maximum width of frons below frontal suture five times larger than diameter of one facet, index of facet-diameter to minimum width of frons 0.3. Index of distance of tangential points of the eye's ends to minimum width of frons 2.8, to facet-diameter 8.3. Frons with

*) The name of the district town is only given where according to the alphabetic list of settlements of ČSSR one or more homonyms of the locality exist.

many hairs. Antennae 16-segmented, hairy. Scapus long, widened distad. The length of scapus almost 6 times its width at base, pedicellus with a conspicuous sided protuberance covered by long setae. Index of length of first antennal segment to pedicellus 2.6. Ratio of maximum width of pedicellus to width of the first and second flagellar segment 2.5 : 1.3 : : 1.2. The flagellar segments in contrast to scapus and pedicellus small,



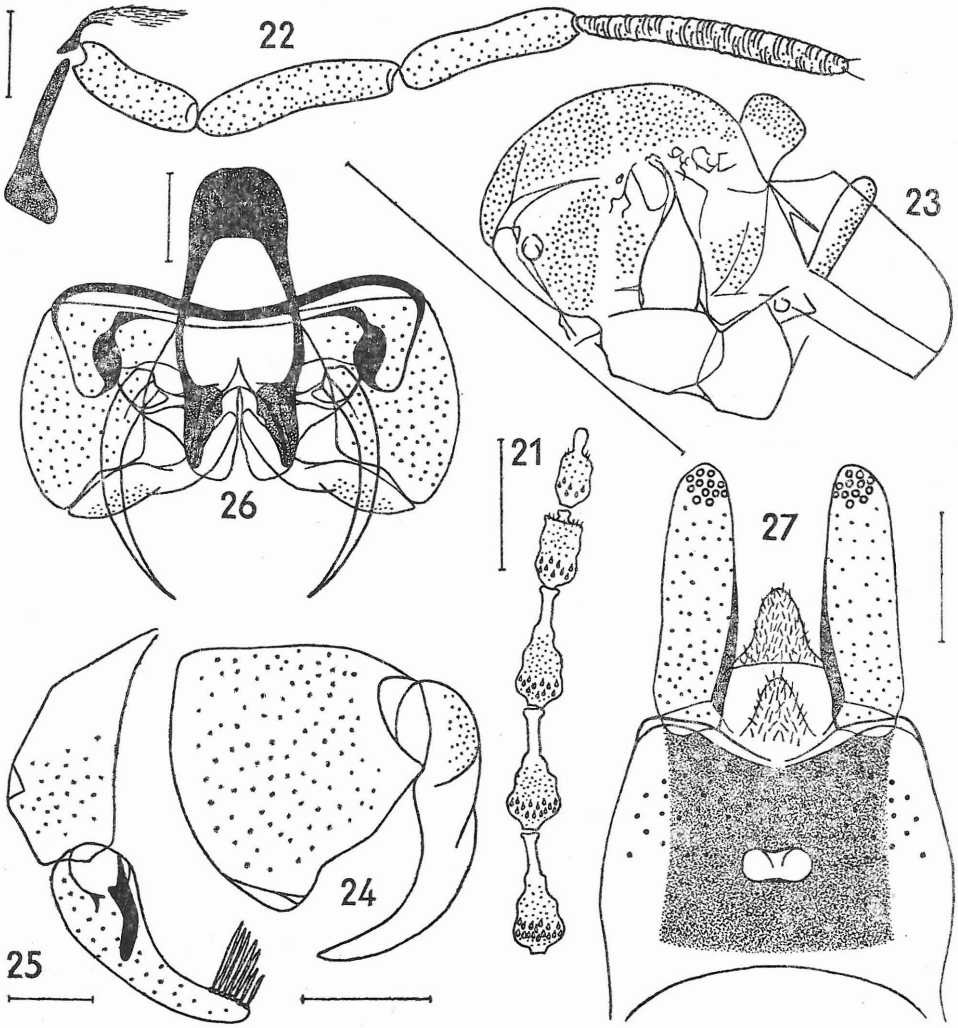
Figs. 14—20. *Panimerus kreki* Vail., ♂: 14: head, 15: facets, 16: basal antennal segments, 17: terminal lobe of labium, 18: wing, 19: claw of P_1, 20: copulatory organ laterally. Scales 0.1 mm., 1 mm. in fig. 18.

pitcher-shaped. Index of length of the first flagellar segment to second one 0.7, last two mentioned segments symmetrical. Sensory filaments of antennae finger-like, single, of medium size. Ratios of lengths of segments of maxillary palpus 3.9 : 5.6 : 4.9 : 7.4. Last maxillar segment annulate and connected basally with the apex of the foregoing segment. Ratio of maximum length of cibarium to length of epipharynx 2.1 : 1. Corniculi long. Index of length of corniculi to maximum width 3.7, to minimum width at base 6.6. Wings lancet-shaped, without numerous swollen local parts of veins in central area of wing, without pigmentation, membrane bare, costal nodes distinct. Sc rather strengthened, long uninterrupted, bent distad to upper margin of wing, R_1 conspicuously arched in the same way. The origin of R_{2+3} beginning behind one half of incomplete basal field. R_{2+3} conspicuously arched to the bent part of Sc, R_2 and R_3 straight, angle of R_3 and R_{2+3} not so large as angle of R_2 and R_{2+3}. R_4 and R_5 straight, R_5 with end at apex of wing. R_{2+3} and R_5 strengthened. M_{1+2} straight, without widened base, M_1 bent to upper margin of wing, M_2 S-shaped, angle of M_1 and M_2 rather large. M_3 a little bent to medial fork, M_4 S-shaped as well as Cu, however Cu much more arched. M_3 and Cu are not connected on M_4. M_4 and Cu strengthened, widened basally. Veins r-r, r-m and m-m not visible. Medial wing-angle 190°. Indexes of wing: AB : AC : AD = 17.1 : 15.7 : 16.2, BC : CD : BD = 3.8 : 6.0 : 9.8. Index of base of M_{1+2}, A to maximum width of wing 1.8. Indexes of lengths of halteres to their width 2.8 : 1. Ratios of length of femur, tibia and 6irst tarsal segment: P_1 = 19.9 : : 22.2 : 10.0; P_2 = 22.0 : 29.0 : 11.3; P_3 = 23.2 : 33.0 : 12.0. Paired tarsal claws only a little bent. Proximal part of basal apodeme of male genitalia almost circular, with a pair of distal stripes. Male copulatory organ outside smooth, inside with a pair of doubled strongly sclerotized ribs. Coxopodites without a protuberance outside, harpagones bent, with a blunt top. Index of maximum lengths of coxopodites to lengths of harpagones from dorsal view 1.1. The length of external paired protuberances of male genitalia larger than length of coxopodites. Aperture of epandrium oval-shaped, narrowed antero-posteriorly. Sclerotized remainders of 10^{th} abdominal segment inside of epandrium large. Index of length of cercus to length of epandrium from lateral view 1.4. Hypandrium narrow, without broader parts, not cracked transversally. Both epiproct and hypoproct tongue-shaped, narrowed distad, with rounded top, hairs of epiproct more widely spaced and longer than the same of hypoproct. The length of hypoproct a little shorter than its breadth at base. Cerci straight from ventral view, with 12 retinaculi subapically. The top of cercus without bifurcation.

Material: 2 ♂♂. Bohemia: Konopiště (Benešov distr.), Předonín.

Comments on the material: All collected by author, figured specimen labelled Konopiště, 24. 6. 1972, deposited in the National Museum (Nat. Hist.), Praha.

Occurence in Czechoslovakia: VI—VIII.



Figs. 21—27. *Panimerus kreki* Vail., ♂: 21: apical antennal segments, 22: maxilla and palpus maxillaris, 23: thorax laterally, 24: coxopodit and harpagon laterally, 25: epandrium and cercus laterally, 26: copulatory organ, coxopodites and harpagones dorsally, 27: epandrium and cerci dorsally. Scales 0.1 mm., 1 mm. in fig. 23.

Bionomy: Very little known. The last instar larvae was described by Vaillant (1972), who collected larvae in muddy banks of slowly flowing streams in October and the adult eclosed in February of the next

year. Author of this paper collected adults on banks of drainages (moist or dry) shaded by *Alnus, Acer, Robinia* and *Urtica.*

Distribution: Czechoslovakia, France, Italy, Yugoslavia.

Data on both type-material and type-locality: Holotypus was not designated by author in his original paper. He established „typenexemplar" in the sense of holotypus. It was reared from larvae collected near Manosque (Basses Alpes, 380 m.), France. Figures of male are based on a specimen collected by Krek in Yugoslavia (Bosna, Čemerno, 920 m.), 27. 7. 1968. This specimen wasn't designated as paratypus in that original paper. Type specimen is deposited in the Vaillant's collection.

Discussion: Original description and figures were published by Vaillant one year later than Krek's short information about „*Panimerus kreki* Vaillant" from Bosna 1971.

Panimerus notabilis (Eaton)

(Figs. 28—41)

Pericoma notabilis Eaton, 1893: 125; 1894: 27; 1896: 204; Kertész, 1902: 296; Becker, Bezzi, Bischof, Kertész et Stein, 1903: 162; Feuerborn, 1922: 18; Barendrecht, 1934: 79.

Telmatoscopus notabilis; Freeman, 1950: 86; Duckhouse, 1982: 418; Botosaneanu et Vaillant, 1965: 79: Vaillant, 1966: 228; Tanasijčuk, 1969: 125.

Telmatoscopus (Panimerus) notabilis; Tonnoir, 1919: 12; 1940: 28; Kloet et Hincks, 1945: 333; Jung, 1956: 179: Szabó, 1960: 212; Vaillant, 1963: 228; Nielsen, 1965: 150; Szabó, 1965a: 81; b: 621.

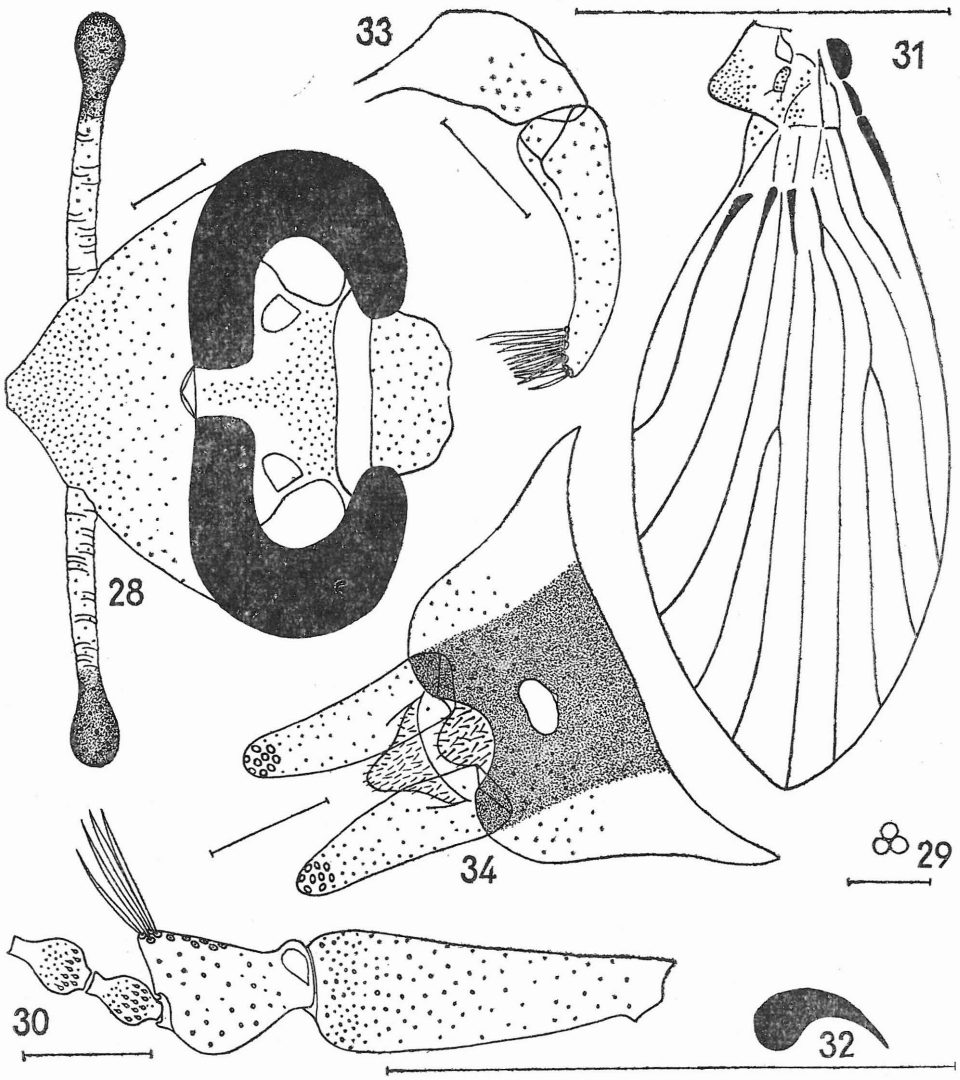
Panimerus notabilis; Krek, 1971: 184; Wagner, 1979a: 42; Hackman, 1980: 21; Ježek, 1982: 58; 1984: 165.

Panimerus (Panimerus) notabilis; Vaillant, 1972: 68.

Pericoma canescens auct. (nec Meigen, 1804); Walker, 1856: 258.

Diagnosis. The species of middle size, wings not clouded, 2.0—2.3 mm. long, without swollen parts of veins in central area. Head with long corniculi, basal apodeme mostly bilobed proximally, distal paired ends parallel or a little divergent, male copulatory organ with a pair of big internal sclerotized lobes. Harpagones bent from dorsal view, with a tooth subapically.

Male. Frons more than twice larger than diameter of one facet. Index of facet diameter to minimum width of frons 0.4. Index of distance of tangential points of the eye's ends to minimum width of frons 3.9, to facet diameter 9.2. Frons with irregular set of hairs as figured, antennae 16-segmented, hairy. Scapus long with conspicuous protuberance, club-shaped, widened distad, twice longer than pedicellus. Index of length of first antennal segment to length of pedicellus 2.4. Ratio of maximum width of pedicellus to width of first and second flagellar segments 3.4 : 1.3 : 1.5. Index of length of first flagellar segment to second 0.9. Flagellar segments bottle-shaped, both first and second flagellar segments symmetrical. Last antennal segment with a distal hairy pestle-shaped protuberance, foregoing segment without a neck. Sensory filaments of antennae of middle length, finger-like. Ratios of lengths of



Figs. 28—34. *Panimerus natabilis* (Eat.), ♂: 28: head, 29: facets, 30: basal antennal segments, 31: wing, 32: claw of P_1, 33: epandrium and cercus laterally, 34: epandrium and cerci dorsally. Scales 0.1 mm., 1 mm. in fig. 31.

segments of maxillary palps 2.8 : 3.7 : 4.0 : 5.6. Last segment of maxillary palpus annulate and connected basally with the apex of foregoing segment. Ratio of maximum length of cibarium to length of epipharynx

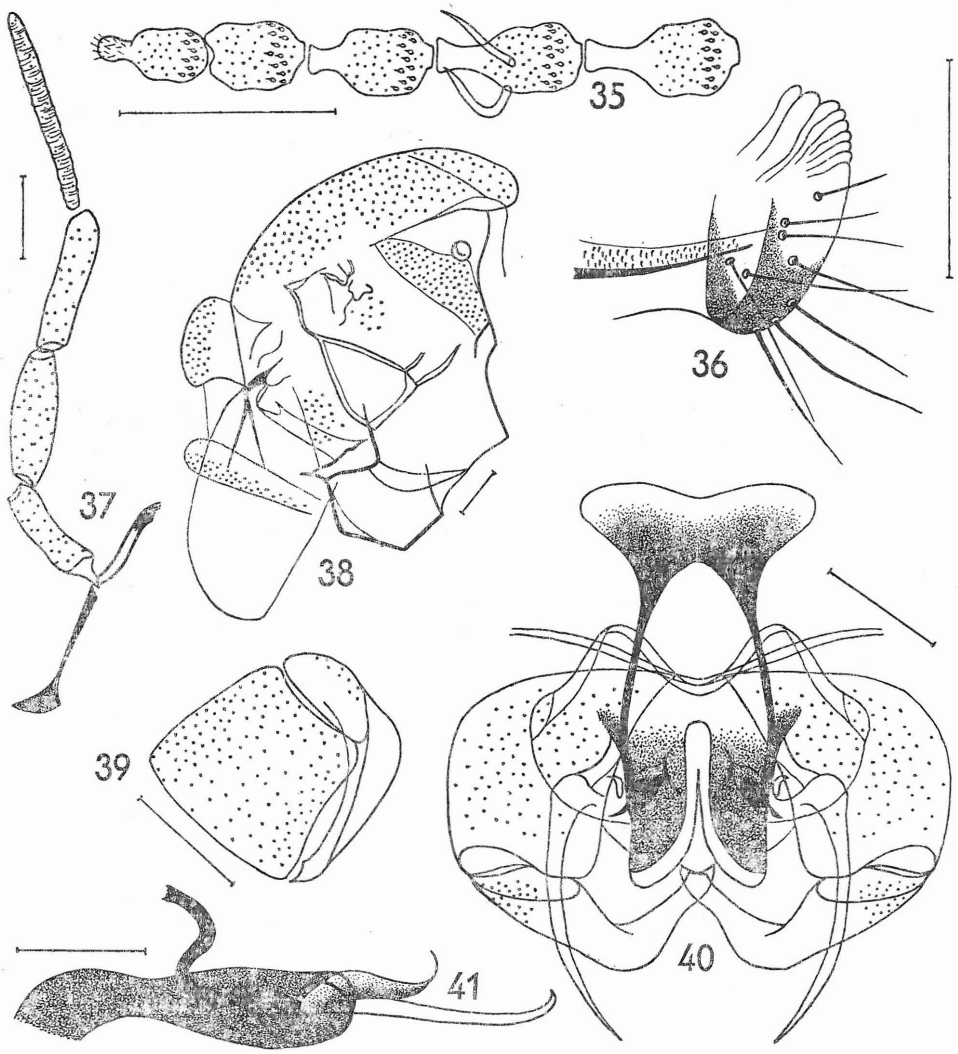
1.7 : 1. Corniculi long with pestle top. Index of length of corniculi to its maximum width 5.4, to minimum width at base 9.5. Wings without pigmentation, lancet-shaped, without swollen parts of veins in central area, wing membrane bare, costal nodes distinct. Sc long, uninterrupted, bent distad, R_1 arched to upper margin of wing, the origin of R_{2+3} in the half of basal field, R_{2+3} bent to upper margin of wing, angle of R_2 and R_3 rather large, both R_2 and R_3 almost straight, distal end of R_2 a little bent to upper margin of wing. R_4 conspicuously bent proximally to radial fork, R_5 straight with end in apex of wing. M_{1+2} straight, rather widened at base, angle of M_1 and M_{1+2} larger than angle of M_2 and M_{1+2}, both vein M_1 and M_2 bent distad to hind margin of wing. M_3 conspicuously bent to medial fork as well as M_4; M_3 and Cu without a connection on M_4, Cu S-shaped. Veins r-r, r-m and m-m not visible, medial wing-angle 212°. Indexes of wing: AB : AC : AD = 11.6 : 9.6 : 10.4, BC : CD : BD = 2.9 : : 3.8 : 6.5. Index of base of M_{1+2}, A to maximum width of wing 1.9. Ratio of length of halteres to its width 2.3 : 1. Ratios of lengths of femora, tibiae and first tarsal segments: P_1 = 9.6 : 11.6 : 5.3; P_2 = 10.0 : 13.2 : 6.0; P_3 = 10.5 : 14.9 : 6.0. Paired tarsal claws bent. Basal apodeme of male genitalia bilobed proximally, with distal paired parallel or little divergent ends, male copulatory organ with a pair of big internal sclerotized lobes, smooth outside. Length of external paired protuberances of male genitalia more than length of coxopodites. Coxopodites outside without protuberance, harpagones bent from dorsal view, with a conspicuous subapical tooth. Index of maximum length of coxopodites to length of harpagones from dorsal view 0.8. Aperture of epandrium developed. Index of length of cercus to length of epandrium from lateral view 1.6. Hypandrium narrow, without broader parts. Epiproct rather short, with strong hairs; hypoproct triangular, with rounded tops and soft hairs. Width of hypoproct at base twice its length. Cerci S-shaped from ventral view, with 7—9 retinaculi subapically. The top of cercus without bifurcation.

Material: 76 ♂♂. Bohemia: Český Brod, Dobříš, Hořice v Podkrkonoší (Kn.), Charvatce (Mladá Boleslav distr.), Chudíř, Jinolice, Kosořice, Měrunice, Ostružno, (Jičín distr.), Pěčice (Mladá Boleslav distr.), Předonín, Srbice (Teplice distr.), Teplice — distr. town. Moravia: Bordovice, Brodek u Prostějova, Dětmarovice, Dolní Marklovice, Hodonín — distr. town, Horákov, Kroměříž, Nová Ves (Břeclav distr.), Polanka nad Odrou, Závada (Karviná distr.).

Comments on the material: All material collected by author, Kn. — Kneifl lgt. Figured specimen labelled Český Brod, 19. 8. 1971. All deposited in the National Museum (Nat. Hist.), Praha.

Occurence in Czechoslovakia: V—IX.

Bionomy: Organs for sexual attraction were studied by Feuerborn (1922) and sexual dimorfism (coloration of head and thorax, corniculi of males) by Duckhouse (1962), who described the immature stages which were redescribed by Vaillant (1972). Larvae were collected in muddy banks of slowly flowing streams, the emergence of adults was



Figs. 35—41. *Panimerus notabilis* (Eat.), ♂: 35: apical antennal segments, 36: terminal lobe of labium, 37: maxilla and palpus maxillaris, 38: thorax laterally, 39: coxopodit and harpagon, 40: copulatory organ, coxopodites and harpagones dorsally, 41: copulatory organ laterally. Scales 0.1 mm.

registered in spring and autumn. Larvae of this species were collected near karst spring in Macedonia (Vaillant, 1972). Author of this paper observed mentioned species on moist pasturelands, spring areas, near ponds and their flows, streams, ditches and drainages, water reservoirs,

rubbish-heaps on moist places and arms of rivers. The material was collected in places shaded by *Alnus, Populus, Salix, Corylus, Sambucus, Quercus, Betula, Fraxinus, Picea, Robinia* and *Prunus,* the undergrowth with *Filipendula, Phragmites, Scirpus, Mnium, Rubus, Urtica, Ranunculus, Calamagrostis, Comarum* and *Eupatorium.*

Distribution: England, Belgium, Czechoslovakia, Finland, France, Hungary, Netherlands, Romania, West Germany and Yugoslavia.

Data about type-material and type-locality: By the generosity of Dr. Cranston from the British Museum (Nat. Hist.), London, I examined several syntypes of *Pericoma notabilis* Eaton, 1893 in „dry" slides and he permitted me to mount mentioned type material in Canada Balsam. Lectotype-designation: ♂, Stoney Stoke, 9. 6. 1892, Eaton, Bequest., B. M. 1929—590 — dissected head, thorax with abdomen, wing and hypopygium which was divided in two parts. Right antenna and right maxillary palpus missing, thorax damaged, legs missing, one wing missing as well as right harpagon. Paralectotypes-designation: ♂, Stoney Stoke, 9. 6. 1892, Eaton, Bequest., B. M. 1929—590 — head dissected as 1 whole, thorax with abdomen and wing as the second whole and hypopygium, which was divided in two parts. Right antenna missing as well as right P_2 and P_3 and left wing. As paralectotypus wasn't recognized destroyed male antenna in Eaton's „dry" slide labelled Eaton, Bequest. B. M. 1929—590. Other excluded material: two male antennae and a wing in „dry" slides labelled Stoney Stoke, Eaton, Bequest., B. M. 1929—590, the slide with the mentioned wing dated 9. 6. 1892. I excluded also an unpublished male-specimen wrongly determined by Eaton as *Pericoma notabilis* Eaton, 1893 (= *P. denticulatus* Krek, 1972) labelled Beers plantatin, Redegal Park, 23. 6. 1891, Eaton, Bequest., B. M. 1929—590. As paralectotypes were not designated specimens labelled Beers plantatin, 7. 6. 1892, Eaton, Bequest., B. M. 1929—590 and a wing of female labelled Lower Shapton, 29. 6. 1891, Eaton, Bequest., B. M. 1929—590 because of our rather poor knowledge about female diagnostic characters.

Discussion: Jung (1956) established „hypotypoid" of male on the basis of material from West Germany (Bräuningshof, 19. 6. 1951, Nr. 106). However, the term „hypotypoid" is not discussed by International code of zoological nomenclature.

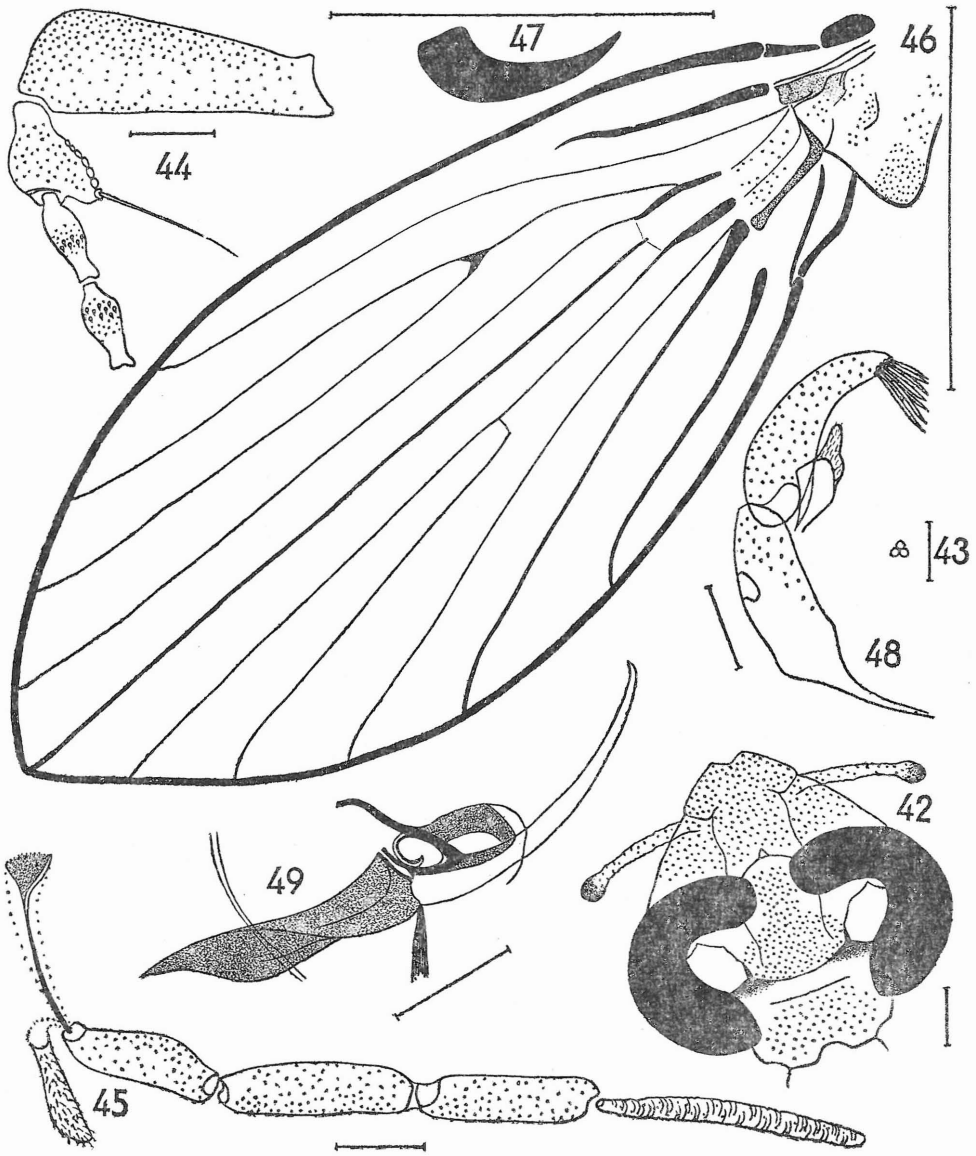
Panimerus verneysicus Vaillant

(Figs. 42—55)

Panimerus (Panimerus) verneysicus Vaillant, 1972: 70.
Panimerus verneysicus; Ježek, 1984: 165.

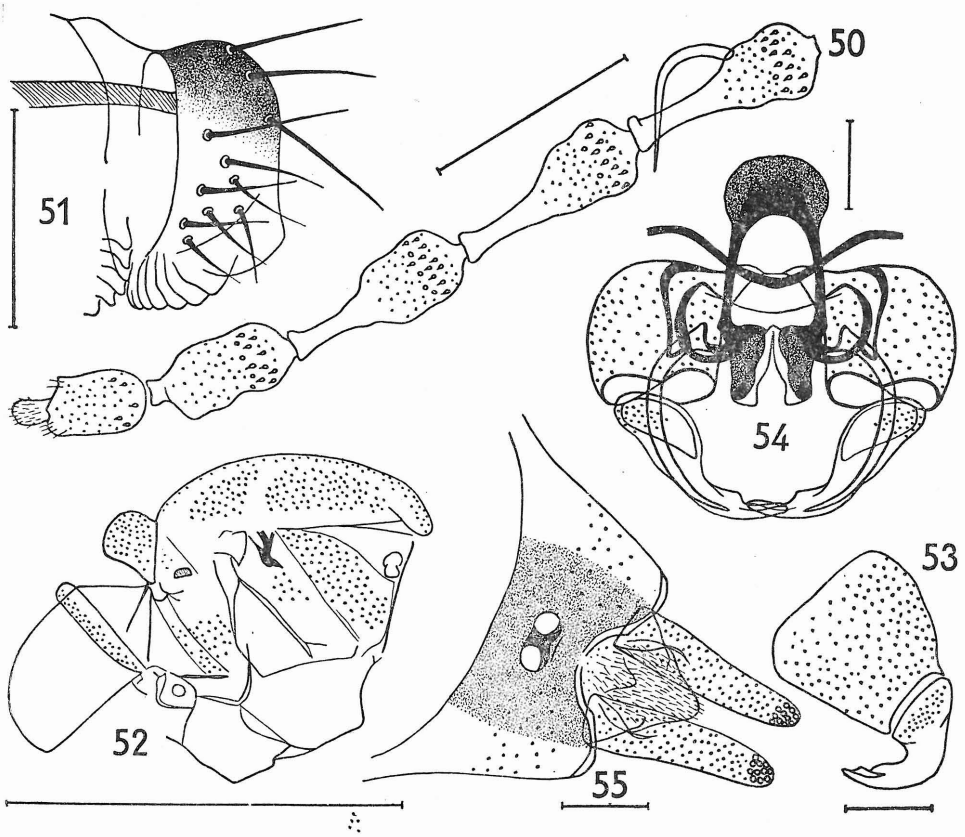
Diagnosis. Rather large species, wings 3.2 mm. long, without swollen parts of veins in central area of wing, hypopygium of characteristic shape, harpagones in the middle with a conspicuous margin forming a tooth visible from dorsal view. Male copulatory organ inside with a pair narrow sclerotized lobes, with conspicuously sclerotized point distad.

Male. Frons below frontal suture five times larger than diameter of



Figs. 42—49. *Panimerus verneysicus* Vail., ♂: 42: head, 43: facets, 44: basal antennal segments, 45: maxilla and palpus maxillaris, 46: wing, 47: claw of P_1, 48: epandrium and cerci laterally, 49: copulatory organ laterally. Scales 0.1 mm., 1 mm. in fig. 46.

one facet, minimum distance between eyes approximately four times larger than diameter of one facet. Index of distance of tangential points of the eye's ends to minimum width of frons 2.8, to diameter of one facet 10.3. Frons with many hairs. Antennae 16-segmented, hairy. Length of scapus approximately five times larger than its width at base, scapus club-shaped, widened distad, index of length of first antennal segment to length of pedicellus 2.9. Pedicellus with conspicuous sided protuberance with stiff bristles, flagellar segments bottle-shaped. Ratio of maximum width of pedicellus to width of first and second flagellar segment 2.4 : 1.0 : 1.1. Index of length of first flagellar segment to second one 1.0, both segments symmetrical. 15th antennal segment with very short neck, basal part of 13th segment a little longer in contrast to 14th sement, 16th segment smaller than foregoing segment, distal part finger-like, hairy. Sensory filaments large, finger-like. Ratios of lengths of segments of maxillary palps 4.3 : 5.2 : 4.9 : 7.3. Last segment of maxillary palpuls annulate and connected with foregoing segment apically. Ratio of maximum length of cibarium to length of epipharynx 3 : 1. Corniculi very long, with pestle-shaped top. Index of length of corniculi to its maximum width 6.0, to its minimum width at base 9.0. Wings without pigmentation, lancet-shaped, veins in central area of wing without swollen parts, membrane bare, costal nodes distinct. Sc long, uninterrupted. R_1 conspicuously bent to Sc, the origin of R_{2+3} in the half of strengthened basal field, R_{2+3} conspicuously bent to upper margin of wing as well, both R_2 and R_3 straight, angle of R_3 and R_2 rather large, with strengthened connection, R_1, R_2, R_3 and R_4 a little bent to upper margin of wing distad. R_4 straight with except of a little bent basal part, R_5 inconspicuously strengthened, straight, with end at apex of wing. M_{1+2} with conspicuously widened base, M_1 straight, M_2 inconspicuously S-shaped, M_1 and M_{1+2} in the same line, a connection of M_2 and M_{1+2} mostly missing, M_3 arched to medial fork, M_3 and Cu without a connection on M_4. M_4 straight, strengthened, Cu S-shaped. Veins M_1, M_2, M_3, M_4 and Cu bent distad to hind margin of wing. Angle of r-r and r-m not straight, m-m missing. Index of base of M_{1+2}, A to maximum width of wing 1.8. Length of halteres to its breadth 3.2 : 1. Ratios of lengths of femora, tibiae and first tarsal segments: $P_1 = 18.5 : 21.2 : 9.8$; $P_2 = 22.0 : 27.0 : 11.2$; $P_3 = 22.2 : 30.8 : 11.8$. Basal apodeme with a rounded proximal widened part, with a pair of narrow distal stripes. Male copulatory organ of characteristic shape, outside smooth, inside with a pair of narrow sclerotized lobes and with conspicuously sclerotized points distad. External paired protuberances of male genitalia longer than coxopodites. Coxopodites outside without protuberances from dorsal view, harpagones with a conspicuous margin forming a tooth in the middle. Index of maximum length of coxopodites to length of harpagones from dorsal view 0.7. Epandrium of characteristic shape, aperture oval, narrowed antero-posteriorly, with an internal antero-posterior partition. Index of length of cercus to length of epandrium from lateral view 1.2. Hypandrium narrow without protuberances and a transverse crack. Epiproct short,



Figs. 50—55. *Panimerus verneysicus* Vail., ♂: 50: apical antennal segments, 51: terminal lobe of labium, 52: thorax laterally, 53: coxopodit and harpagon, 54: copulatory organ, coxopodites and harpagones dorsally, 55: epandrium and cerci dorsally. Scales 0.1 mm., 1 mm. in fig. 52.

distinctly hairy, hypoproct large, triangular, with rounded top, epiproct of the same shape but smaller, short, distinctly hairy. Cerci C-shaped from lateral view, straight from ventral view, with 11 retinaculi subapically. Cercus with a single top.

Material and comments: A single figured specimen is labelled Praha-Kunratice, 7. 7. 1970, Ježek leg. and is mounted on a slide. Deposited in the National Museum (Nat. Hist.), Praha.

Occurence in Czechoslovakia: VII.

Bionomy: Last instar larvae was figured and described by Vaillant (1972). Larvae were collected in muddy banks of river Bonne (West Alpes, 730 m. above sea-level), date of emergence: May and June of the

same year. A single specimen was collected on a bank of a pond shaded by *Alnus* with undergrowth of *Urtica*.

Distribution: France. New species to Czechoslovakia.

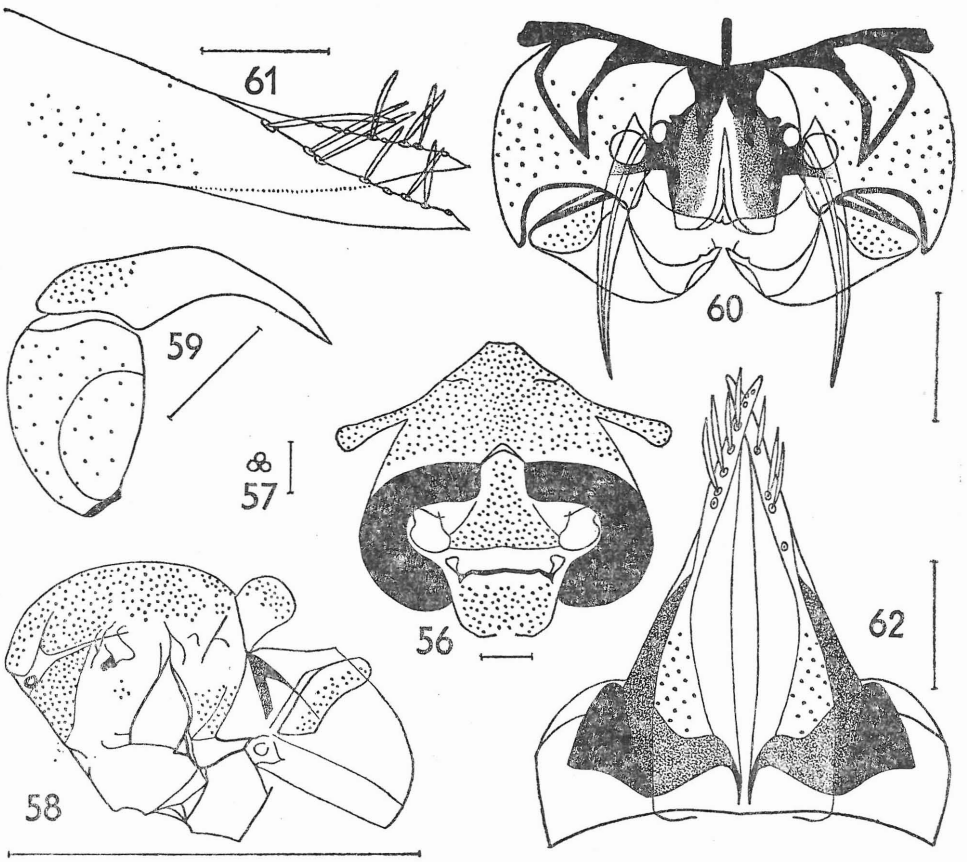
Data about type-material and type-locality: As holotypus (in the original paper "typus") was designated male specimen reared from larva 23. 5. 1966. Another eclosed adults from June (the number unknown) weren't designated as paratypes. Holotypus is deposited in the Vaillant's collection (Grenoble). Type-locality: France, Isère, banks of river Bonne between Les Verneys and Valbonnais.

Discussion: The species was published by Vaillant (1972) in subgenus *Panimerus* s. str. of the genus *Panimerus* Eaton, 1913; the name of subgenus *Krekiella* Vaillant, 1972 of the genus *Panimerus* Eaton, 1913 was synonymized with the name of genus *Telmatoscopus* Eaton, 1904. Vaillant (1972) figured this species with 12 retinaculi, however, in his description is mentioned 18—19 retinaculi.

Panimerus sp.

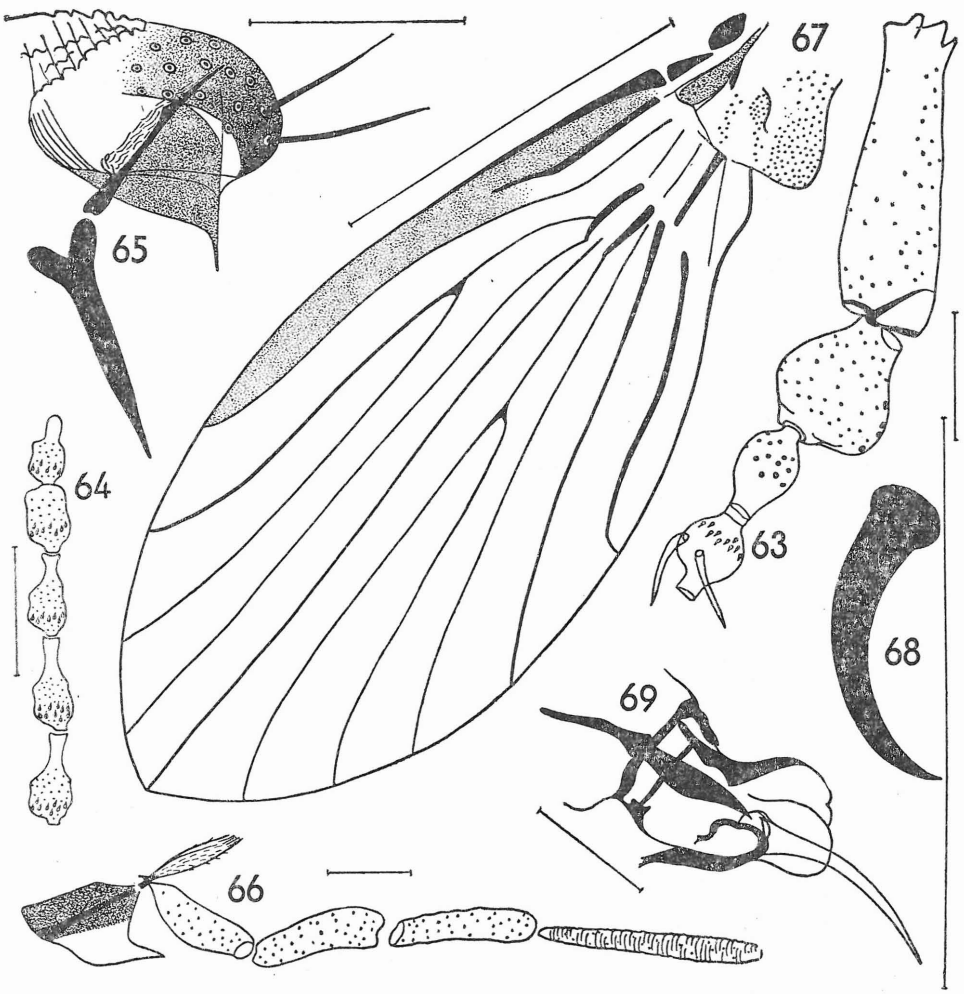
(Figs. 56—69)

Gynandromorph. Frons 4 times larger than diameter of one facet. Frons haired. Index of distance of tangential points of the eye's ends to minimum width of frons 2.4, to diameter of one facet 9.7. Antennae 16-segmented, hairy. Scapus more than three times longer than its distal width, pedicellus without a protuberance, pitcher-shaped, without narrowed part distad. Index of length of first antennal segment to pedicellus 2.3. Ratio of maximum width of pedicellus to width of first and second flagellar segments 3.4 : 1.7 : 1.8. Index of length of first flagellar segment to second one 1.1. Flagellar segments pitcher-shaped, first and second flagellar segment symmetrical, first flagellar segment with a short strengthened neck distad, remaining segments with a long slender narrowed neck distad. The proximal and distal part of 15th antennal segment of the same width; 16th segment smaller, with finger-like distal protuberance. Sensory filaments of antennae finger-like, paired. Ratios of lengths of segments of maxillary palpus 3.3 : 3.7 : 4.0 : 6.0. Last segment of maxillary palpus annulate. Ratio of maximum length of cibarium to length of epipharynx 1.6 : 1. Corniculi rather sclerotized, long. Index of length of corniculi to its maximum width 3.7, to minimum width at base 8.7. Wings lancet shaped, wing-length 2.8 mm., membrane bare, without numerous local strengthened parts of veins in central area, wings with a pigmentation only at C, basal costal nodes distinct. Sc long, uninterrupted, bent distad. R_1 conspicuously bent to upper margin of wing, the area between C and R_1 a little clouded, the origin of R_{2+3} approximately in three quoters of basal field, R_2 in the same line as R_{2+3}, angle of R_2 and R_3 rather small. R_2 S-shaped, strengthened, R_3 bent to hind margin of wing. R_4 a little bent basally to radial fork, R_5 strengthened, almost straight, with end in apex of wing. M_{1+2} with more widened base, straight, M_1 bent to upper margin, M_2 S-shaped, angle of M_2 and M_{1+2} much more



Figs. 56—62. *Panimerus* sp., gynandromorph: 56: head, 57: facets, 58: thorax laterally, 59: coxopodit and harpagon, 60: copulatory organ, coxopodites and harpagones dorsally, 61: cerci laterally, 62: cerci ventrad. Scales 0.1 mm., 1 mm. in fig. 58.

smaller than angle of M_1 and M_{1+2}, M_3 inconspicuously bent to medial fork as well as M_4, M_3 and Cu without a connection on M_4, M_4 strengthened as well as S-shaped Cu; the place of a connection of R_2, R_3 and R_{2+3} is strengthened as well as a connection of M_1, M_2 and M_{1+2} and upper and lower margin of basal field. Veins r-r, r-m and m-m not visible. Medial wing angle 202°. Indexes of wing: AB : AC : AD = 15.6 : 13.5 : 13.9; BC : CD : : BD = 3.7 : 4.7 : 8.2. Index of base of M_{1+2}, A to maximum width of wing 1.8. Index of length of halteres to its width 2.5 : 1. Ratios of lengths of femora, tibiae and first tarsal segments: P_1 = 16.6 : 18.9 : 8.1; P_2 = 19.0 : : 24.0 : 10.2; P_3 = 19.0 : 26.8 : 10.5. Paired tarsal claws scythe-shaped. Basal apodeme of genitalia very reduced, with paired sclerotized approximately



Figs. 63—69. *Panimerus* sp., gynandromorph: 63: basal antennal segments, 64: apical antennal segments, 65: terminal lobe of labium, 66: maxilla and palpus maxillaris, 67: wing, 68: claw of P_1, 69: copulatory organ laterally. Scales 0.1 mm., 1 mm. in fig. 67.

triangular forms distad. Other parts of male copulatory organ full developed including harpagones, with characteristic subapical tooth. Copulatory organ inside with a pair of large sclerotized lobes, outside smooth. Paired external protuberances longer than length of coxopodites. Index of maximum length of coxopodites to length of harpagones from dorsal view 1.2. Hypandrium narrow with two large pointed protuberances. Coxopodites outside without a conspicuous protuberance. Epandrium

not developed and replaced by paired female cerci with 8 retinaculi on each cercus. The complicated sclerotized forms of female genital chamber lacking.

Material: Single specimen collected by author on a bank of a pond shaded by *Salix* 4. 9. 1973 near Srbice (Teplice distr.) was figured and mounted on a slide with Canada Balsam. Deposited in the National Museum (Nat. Hist.), Praha.

Acknowledgements

My thanks are due to Dr. Peter S. Cranston (England, London, British Museum) who has loaned me some type-material from Eaton's collection.

Summary

The author gives a small part of the results of studies on moths flies (Psychodidae) of Czechoslovakia. 4 species from the genus *Panimerus* Eat. are redescribed and figured and the morphology of a gynandromorph from this genus is included. Lectotype and paralectotypes of *P. notabilis* (Eat.) were designated in this paper. Differential diagnosis or only diagnosis of all mentioned taxons are included as well as bionomy, distribution and full synonymy. *P. verneysicus* Vail. is new to Czechoslovakia.

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