

REDESCRIPTIONS OF NINE COMMON PALAEARCTIC AND HOLARCTIC SPECIES OF PSYCHODINI END. (DIPTERA: PSYCHODIDAE)

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Abstract. 9 species of the tribe Psychodini End. are redescribed in this paper. Published data concerning type-material and type-locality, bionomy and distribution are summarized and many taxonomic problems are discussed. Lectotype-designation of *Psycha grisescens* (Tonn.) is established. Full synonymies of all included species are presented and all important diagnostic characters are figured, especially female structures of genitalia in several views. The male of *Psychoda uniformata* Has. is described for the first time. Occurrence in Czechoslovakia, Austria, U.S.S.R. and Iran is limited as well as some faunistic results are included: *Psychodocha cinerea* (Banks) new to U.S.S.R. and Iran, *P. gemina* (Eat.) and *Psychodula minuta* (Banks) new to Austria and U.S.S.R., *Chodopsycha lobata* (Tonn.) new to Yugoslavia, *Psycha grisescens* (Tonn.), *Psychomora trinodulosa* (Tonn.) and *Logima satchelli* (Quate) new to Austria and *Psychoda uniformata* Has. new to Austria and Iran.

There are many papers dealing with common species characterized and discussed in the present paper, however details of the vestiture of both males and females of almost all studied species were given only by Quate (1955) but I doubt whether they are to be trusted. The structural details given below should be ample for identification. This paper is one of a series of papers as further result of research on moth flies in Czechoslovakia based on the study of all accessible type material. It was accomplished by means of the abundant material collected recently by the author in the whole territory of Bohemia and Moravia, less so of Slovakia. Moreover many Czech colleagues have contributed material from Czechoslovakia for this study. Some quoted material was collected by the author of the present paper during expeditions of the National Museum Praha to Iran (1973 and 1977), during holiday trips to U.S.S.R. (1983 and 1985) as well as by friends in Yugoslavia (Dr. Lauterer, 1982) and sent from Austria (Mr. Ressler and Mr. Rausch, 1972—1982). All material (partially on slides, partially in alcohol) is deposited in the National Museum, Praha. The problematic generic position of the included species was solved by Ježek (1983b and 1984).

Psychodocha cinerea (Banks)

(Figs. 1—20)

Psychoda cinerea Banks, 1894: 331; 1895: 324; Eaton, 1898: 123; Banks, 1901: 274; Kincaid, 1901: 193; Kertész, 1902: 300; Hasegan, 1907: 317; Muttkowski, 1915: 109; Malloch, 1918: 271; Headlee et Beckwith, 1918: 396; Turner, 1923: 549; Johnson, 1925: 45; Curran, 1930: 27; Banks, 1932: 227; Johannsen, 1934: 25; Tonnoir, 1934: 78; Del Rosario, 1936: 100; Enderlein, 1936: 86; Tonnoir, 1940: 58; Hardy, 1942: 142; Rapp, 1944: 205; Satchell, 1947a: 56; b: 611; 1948: 46; Freeman, 1950: 91; Sarà, 1950: 237; 1951a: 5; b: 49; c: 205; Quate, 1954: 352; 1955: 194; Sarà, 1955a: 11; b: 2; Jung, 1956: 189; Satchell, 1956: 118; Sarà, 1958: 2; 1959: 8; Quate, 1960b: 24; Szabó, 1960: 213; Georges, 1961: 102; Nielsen, 1961: 145; Sarà, 1961: 7; 1962: 70; Vaillant, 1963a: 87; Giljarov, 1964: 658; Nielsen, 1964: 155; 1965a: 150; b: 103; Sarà, 1965: 130; Duckhouse, 1966: 208; Vaillant et Botosaneanu, 1966: 91; Bellier, 1967: 58; Pellerano, 1967: 9; Sarà et Salamanna, 1968: 153; Tanasijčuk, 1969: 130; Zuska et Laštovka, 1969: 208; Vaillant, 1971: 38; Duckhouse, 1973: 12; Salamanna, 1974a: 51; b: 64; 1975a: 202; b: 71; c: 82; Szabó, 1976: 278; Wagner, 1977: 26; Elger, 1978: 469; Troiano, 1978: 227; Wagner, 1979a: 54; b: 448; 1980: 120; Salamanna, 1982: 184; Vaillant, 1982a: 206; Salamanna, 1983a: 48; b: 720; Seifert et Smola, 1984: 176; Krek, 1985: 176; Seifert, Wunderer et Smola, 1985: 99.

Psychoda cinerea cinerea Vaillant, 1965: 221.

Psychoda (Psychoda) cinerea; Kloet et Hincks, 1905: 333; Vaillant, 1960: 164; Sarà et Salamanna, 1967: 50.

Psychodocha cinerea; Ježek, 1984: 136; Ježek et Halgoš, 1986: 31.

Threticus compar Eaton, 1904: 57; Rapp et Cooper, 1945: 125.

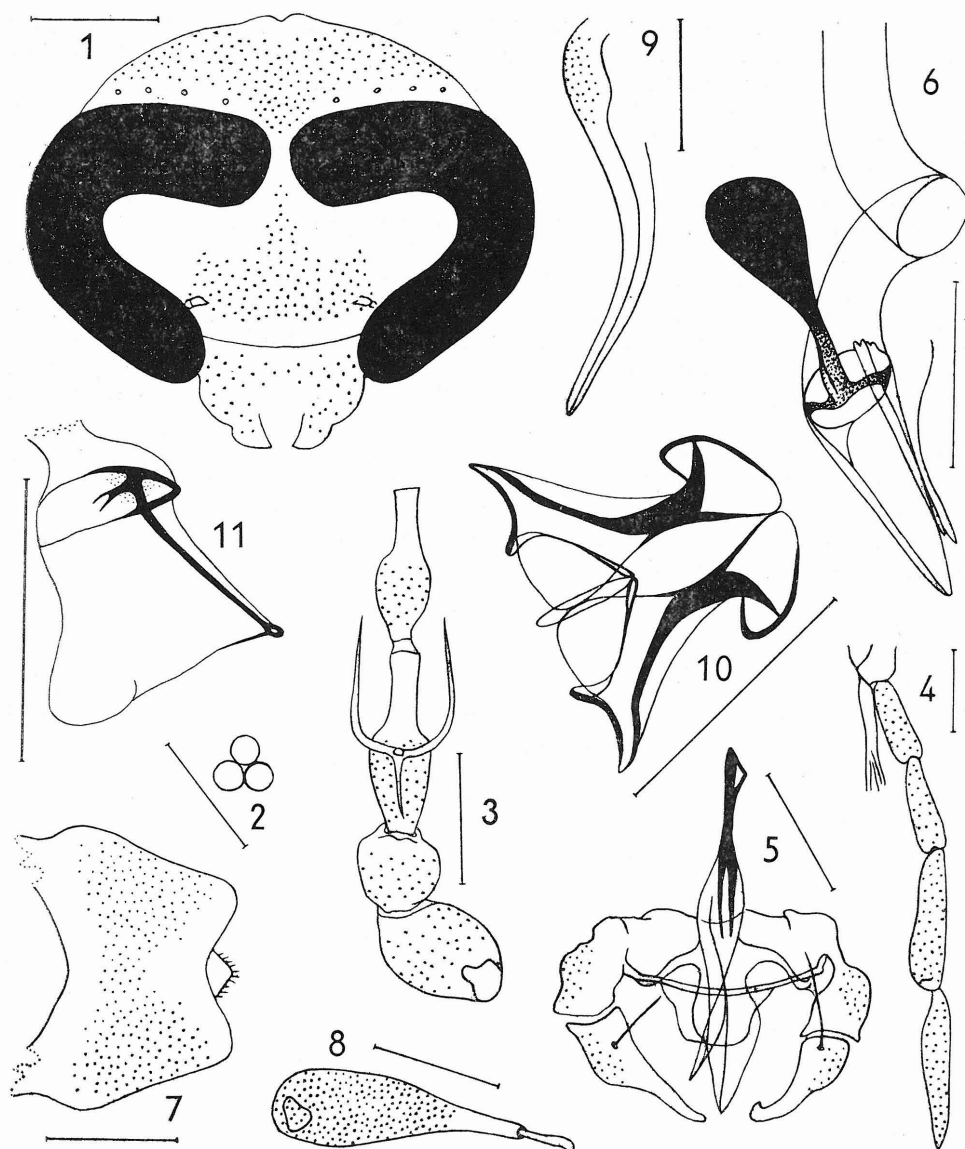
Psychoda (Threticus) compar; Tonnoir, 1919: 14; 1922: 67; Enderlein, 1936: 86.

Psychoda compar; Barendrecht, 1934: 80; Krek, 1979: 1806.

Psychoda prudens Curran, 1924: 219; Dyar, 1926: 103.

Diagnosis. Small species, wings 1.7—2.8 mm. long. Ventral phal-
lomere rather short, without a tuft of hairs subapically. Complicated
forms in area of female genital chamber without mesh-like structures.
Subgenital plate with distinctly sclerotized marginal stripe between
rounded medial lobes.

Male. Index of facet diameter to minimum width of frons 1.3. Index
of distance of tangential points of eye's ends to width of frons 9.3 and
to facet diameter 7.0. Antennae 16-segmented. Scapus egg-shaped, pedi-
cellus almost globular, flagellar segments pitcher-shaped. Basal bulbous
part of 12th segment a little larger than the same of 13th segment, the
length of neck of 12th segment is equal to diameter of its basal part.
13th segment much larger than the last three flagellar segments, segments
13, 14 and 15 with short necks, segment 16 without neck. The last three fla-
gellar segments of the same size, separated, globular, much smaller than
the foregoing segments. Sensory filaments rather large, with three arms.
Terminal lobe of labium with 4 digital projections. Ratios of lengths of
segments of maxillary palps 24:27:39:44. Ratio of maximum length of
cibarium to length of epipharynx 3:2. Anepimeral suture bent. Pleural
suture inconspicuously arched in ventral part. Wings lancet-shaped, wing
margin without dark tufts of hairs on ends of veins; both costal nodes
distinct. Sc rather long, uninterrupted. R₁ arched to Sc, the origin of
R₂₊₃ rather wide of the origin of R₄, R₂₊₃ bent, R₂ and R₃ conspicuously
divergent from the end of R₂₊₃. R₄ and R₅ conspicuously bent to radial
fork, R₅ ends in apex of wing. M₁₊₂ with conspicuously widened base,
straight, M₁ and M₂ conspicuously divergent from M₁₊₂, M₃ inconspi-



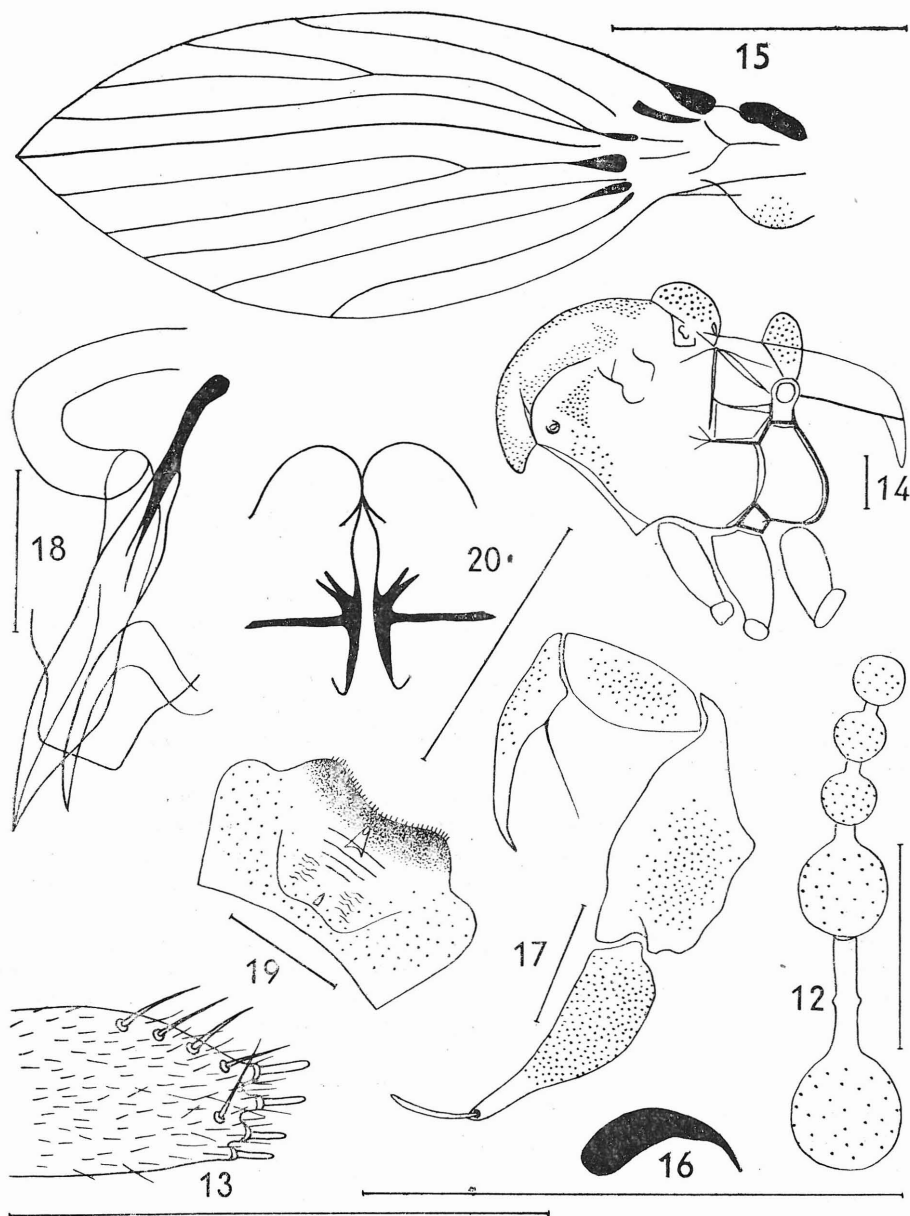
Figs. 1–11: *Psychodocha cinerea* (Banks). ♂: 1 — head; 2 — facets; 3 — basal antennal segments; 4 — maxilla and palpus maxillaris; 5 — coxopodites, harpagones and copulatory organ dorsally; 6 — copulatory organ laterally; 7 — epandrium dorsally; 8 — cercus dorsally; ♀: 9 — cercus laterally; 10 — genital chamber anteriorly; 11 — the same laterally. Scales 0.1 mm.

cuously arched distad to medial fork. The point of connection of M_3 , Cu and M_4 hardly visible. Veins $r-r$, $r-m$, and $m-m$ missing. Medial wing angle approximately 95° . Indexes of wing: $AB:AC:AD=10:12.5:10$; $BC:CD:BD=3.7:5.6:7$. Index of base of M_{1+2} , A to maximum width of wing 2.0. Ratio of length of haltere to its width 2.7:1. Ratios of lengths of femora, tibiae and first tarsal segments: $P_1=10.5:11.5$; $P_2=11.0:15.6$; $P_3=12:16.6.5$. Paired tarsal claws a little bent. Basal apodeme of male genitalia straight, phallobasis with three phallobases around gonoporus. Dorsal phallobases at base very extended by braces of basal apodeme. Ventral phallobase not needle-shaped and without a tuft of hairs apically. It is derived from pair of dorsal completely fused phallobases. Coxopodites outside with well visible protuberance, harpagones approximately 1.5 times longer than coxopodites from lateral view, a little bent and pointed apically. Index of length of coxopodites to length of harpagones 0.7 from dorsal view. Index of maximum width of coxopodite to its minimum width from dorsal view 1.1. Apertures of epandrium missing. Hypandrium rather wide, with oblong protuberance caudally. Epiproct very short, distinctly haired, hypoproct triangular with rounded terminal top. Length of hypoproct a little shorter than its width at base. Cerci almost straight from ventral view, with one retinaculum apically.

Female. Subgenital plate with conspicuously arched sclerotized stripe between external margins of a pair rounded internal lobes, external lobes of subgenital plate rounded, without conspicuous sclerotization. Length of sensory organ of subgenital plate twice larger than its width at base. Conspicuously sclerotized reinforcement in line of subgenital plate missing basally. Complicated forms in area of genital chamber without net-shaped structures, female cercus thin and long.

Material: Czechoslovakia — 35 ♂♂, 30 ♀♀. Bohemia: Čáslav (Kutná Hora distr.) — J., Horní Černůtky — Kn., Kostomlaty nad Labem — J., Praha — Drahaňská rokle — J., Praha-Kunratice — D., J., Maš., S., Praha-Spořilov — St., Veselí nad Lužnicí — Ma., Vinařice (Mladá Boleslav distr.) — J. Moravia: Jablůnka — J., Louky (Karviná distr.) — J., Spytihněv — J. Slovakia: High Tatra National Park, Suchý vrch env. Javorina — J.; Austria — 2 ♂♂, 6 ♀♀. Feichsen — Re., Petzelsdorf — Re., Purgstall — Re., Reinsberg — R., Zehnbach-Steinfeldberg — Re.; U.S.S.R. — 1 ♀. Abchazia, Caucasus, Cimur env. Suchumi — J. (Cat. No. P5-33283, Inv. No. 1379); Iran — 3 ♂♂, 3 ♀♀. Baluchestan, Sekand nr. Sarbaz, Loc. no. 144 of Exp. Nat. Mus. Praha — J., Tehran-Evine, WC of the Plant Pests and Diseases Research Institute, Loc. no. 277 — J. (Cat. No. P5-33284—33289, Inv. No. 698—702, 329).

Comments on material: D. — Dlabola lgt., J. — Ježek, Kn. — Kneifl, Ma. — Máca, Maš. — Mašínová, R. — Rausch, Re. — Ressler, S. — Slouková, St. — Studničková. Using the alphabetic list of settlements of CSSR, I have given the district when the locality is a homonym. Figured male and female specimens were collected on the locality Praha-Kunratice, WC, 3. VII. 1974, Ježek lgt. By the generosity of Dr. F. C. Thompson (Smithsonian Institution, Washington) was borrowed a material of *cinerea* from U.S.A., determined by Quate, for comparison: 2 ♂♂, loc. College



Figs. 12–20: *Psychodocha cinerea* (Banks). ♂: 12 — apical antennal segments; 13 — terminal lobe of labium; 14 — thorax laterally; 15 — wing; 16 — claw of P₁ laterally; 17 — hypopygium laterally; 18 — copulatory organ dorso-laterally; ♀: 19 — subgenital plate; 20 — genital chamber ventrad. Scales 0.1 mm., in Fig. 15 1 mm.

Park, Md. X. 1942, C. T. Greene, USNM; 1 ♂, loc. Washington, D. C., Window, C. N. Ainslie, USNM; 1 ♀, loc. Reno, New. X. 1915, H. G. Dyar, USNM; 1 ♀, loc. U.S., Va. Falls Church, V. 1959, lt. trap, W. Wirth, Bishop Museum; 1 ♂, loc. Dallas, Texas, I. 1908, on window, E. S. Tucker, USNM; 1 ♂, loc. S. Francisco, Co. Cal. V. 1949 — R. E. Ryckman collector, USNM. No morphological differences between specimens of U.S.A. and Czechoslovakia were found, female subgenital plate was figured inaccurately by Quate (1955).

Occurrence: Czechoslovakia I.—X., Austria VIII.—X., U.S.S.R. VIII., Iran III.—IV.

Bionomy: Some information was published by Satchell (1947 a, b). Spermatogenesis was studied by Sarà (1950). Stadium of egg takes 3 days at laboratory temperature sensu Quate (1955), stadium of larva 16 days and pupa 5 days. Life cycle takes 8—25 days sensu Jung (1956). Sensu Vaillant (1971) it is polyvoltine species (9 generations in one year). Larva and pupa were described by Muttkowski (1915), a redescription of that was published by Malloch (1918). Eclosion of this species was registered by Muttkowski in rotten vegetable, by Malloch in an alga cover of a trough with water in shaded places. Crisp et Lloyd (1954) published an occurrence of this species in sewage works. Sensu Jung (1956) larvae live in mud of paddocks in manure, in ducts of drainage machinery, on toilets, in water pipes etc. Sensu Quate (1955) were larvae and pupae of this species discovered in fig rubbish heaps. Vaillant (1960) collected larvae in number 1—3 on 4dm² near banks, they occur in moss and in mud, below stones and on moist rock walls as well as in stagnant water. The occurrence of larvae in food industry in Czechoslovakia was recorded by Zuska et Laštovka (1969). Duckhouse (1966) quoted as habitat of this species cow excrements, hollows of trees, heaps of garden's rests and margins of periodical water reservoirs. He characterized this species as frequent (numerous) in some dry areas of Australia. Wagner (1977) collected adults of this species in light traps. Ressler collected this species on the branches of coniferous trees and in combined (mixed) forests. Author of this presented paper and his colleagues collected this species on banks of gutters, brooks, ponds, arms of rivers, gardens and foul WC. The localities with *Salix Alnus*, *Populus*, *Picea*, *Betula*, *Sambucus*, *Rubus*, *Petasites*, *Caltha*, *Urtica* and *Calamagrostis*. Máca reared this species from rotting tomatoes. In the High Tatra National Park it was collected at an altitude of 1472 m. above sea level; in Abchazia (Caucasus) near a spring by a rocky wall with *Alnus*, *Carpinus*, *Rhododendron*, *Hedera* and *Musci* in a valley of the river Vost. Gumista; in Iranian Baluchestan on banks of a brook in areas of salty swamps near oasis Sekand.

Distribution: Austria, Belgium, Czechoslovakia, Denmark, England, France, Hungaria, Italy, Nederland, Sweden, Switzerland, D. and F. Germany; Afghanistan, Africa mer., Algeria, Australia, Azores, Brazil, Canada, Canary I., Chile, Juan Fernández, New Zealand, Puerto Rico I., U.S.A. New to the fauna of U.S.S.R. and Iran.

Published data on type-material and type-locality: Quate (1955) established from Bank's collection lectotype of ♀ *Psychoda cinerea*

Banks, 1894 from locality Sea Cliff, L. I., New York (N. Banks; Type No. 13535, M. C. Z.), ♂ damaged. Duckhouse (1973) quoted type-locality (♂, ♀) „USA, New York, Long Island, Sea Cliff., holotype in Museum of Comparative Zoology, Harvard, USA“.

Discussion: The species was redescribed by Duckhouse (1966) and Pellerano (1967), chromosomes were studied by Sarà (1951c), compound eyes by Seifert et Smola (1984) as well as by Seifert, Wunderer et Smola (1984). Dyar (1926) wrongly synonymized *Psychoda cinerea* Banks, 1894 with *Psychoda phalaenoides* (Linné, 1758). Del Rosario (1936) and Rapp (1944) quoted a North-American species *Psychoda elegans* Kincaid, 1897 as synonymum of *Psychoda cinerea* Banks, 1894. However this synonymy was not recognized by Quate (1955). I think that the female of *Psychoda elegans* Kincaid, 1897 has netted structures in area of genital chamber. These structures represent the most primitive characters of the subfamily Psychodinae. Females of *Psychoda cinerea* Banks, 1894 lost such structures during development. Del Rosario (1936) synonymized as well *Psychoda domestica* Haseman, 1908 with *Psychoda cinerea* Banks, 1894. Quate (1955) hasn't recognized this synonymy because terminal 4 antennal segments fused in *Psychoda domestica* Haseman, 1908, while in *Psychoda cinerea* Banks, 1894 are quite separated. Type-material of *Psychoda domestica* Haseman, 1908 was probably lost sensu Quate (1955). Vaillant (1965) described and figured new subspecies from Nepal *Psychoda cinerea indica* which is safely valid species *indica*; it was published already by Duckhouse (1973). Vaillant's female figures of nominate subspecies *Psychoda cinerea cinerea*, which was quoted for comparison belongs however to *gemina*. The shape of female subgenital plate as well as forms of genital chamber are characteristic.

***Psychodocha gemina* (Eaton)**

(Figs. 21—39)

Threticus gemina Eaton, 1904: 57.

Psychoda (*Threticus*) *gemina*; Tonnoir, 1919: 14; 1922: 69 (antenna and female subgenital plate [fig. 6 of orig. paper] = *minuta*).

Psychoda gemina; Satchell, 1947a: 56; Freeman, 1950: 95; Jung, 1956: 189; Szabó, 1960: 213; Nielsen, 1961: 145; Giljarov, 1964: 658; Nielsen, 1964: 155; Botosaneanu et Vaillant, 1965: 79; Sarà et Salamanna, 1968: 154; Tanasijčuk, 1969: 130; Salamanna, 1975c: 83; Wagner, 1977: 26; Krek, 1979: 1806; Wagner, 1979a: 55; Salamanna et Sarà, 1980: 16; Wagner, 1980: 120; Krek, 1985: 176.

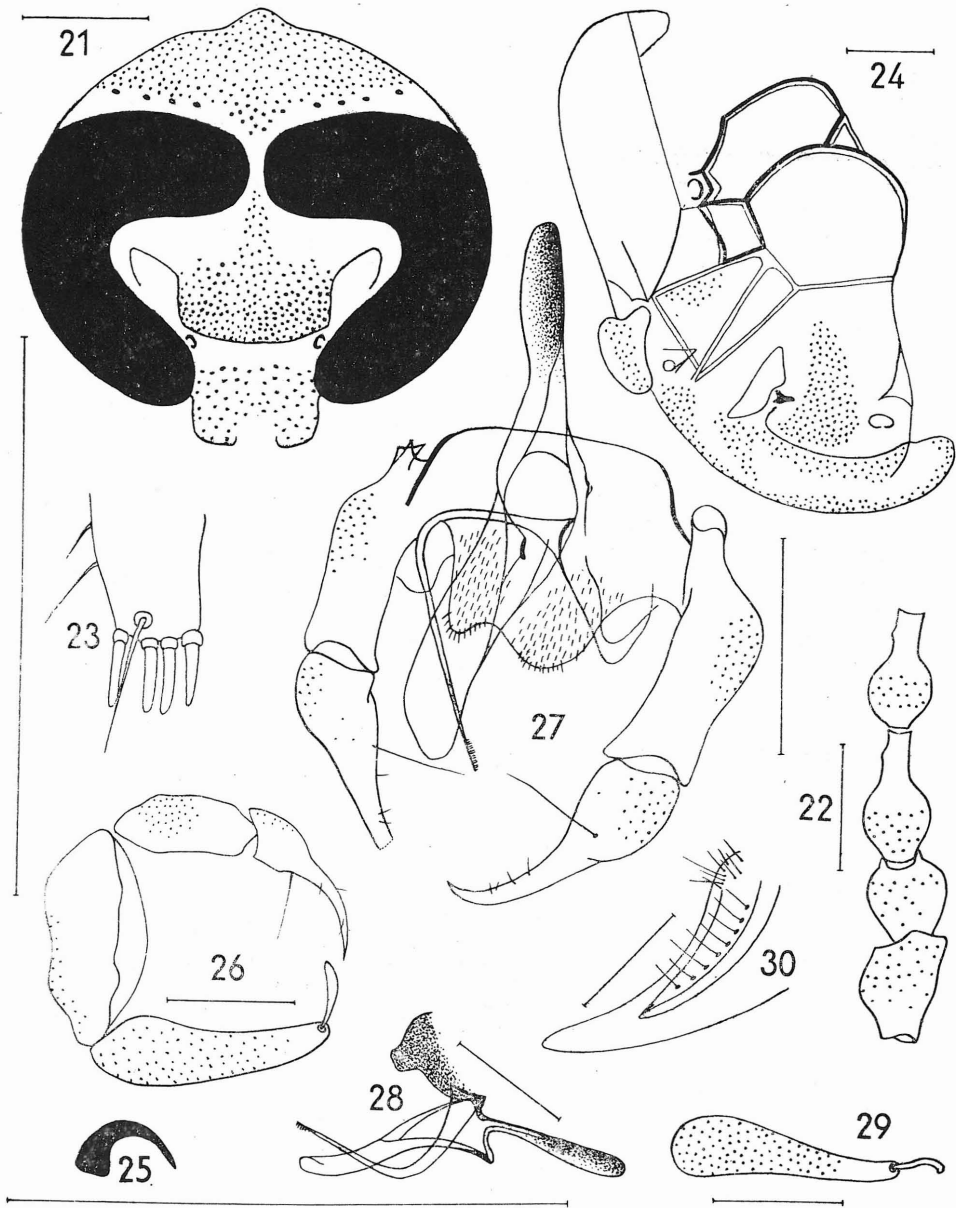
Psychoda (*Psychoda*) *gemina*; Tonnoir, 1940: 64; Kloet et Hincks, 1945: 333; Sarà et Salamanna, 1967: 51.

Psychodocha gemina; Ježek, 1982: 59; 1984: 136; 1986: 97; Ježek et Halgoš, 1986: 31.

Psychoda cinerea cinerea; Banks, 1894 sensu Vaillant, 1965: 220, partim (♀).

Diagnosis. Small species, wings 1.5—2.0 mm. long, ventral phallosomere needle-shaped with tufts of hairs subapically. Complicated forms in area of female genital chamber with mesh-like structures. Female subgenital plate with an upright long brace basally.

Male. Index of facet diameter to width of frons 1.8. Index of distance of tangential points of eye's ends to width of frons 15.0, to facet diameter 8.6. Antennae 16-segmented. Scapus almost cylindrical, narrowed

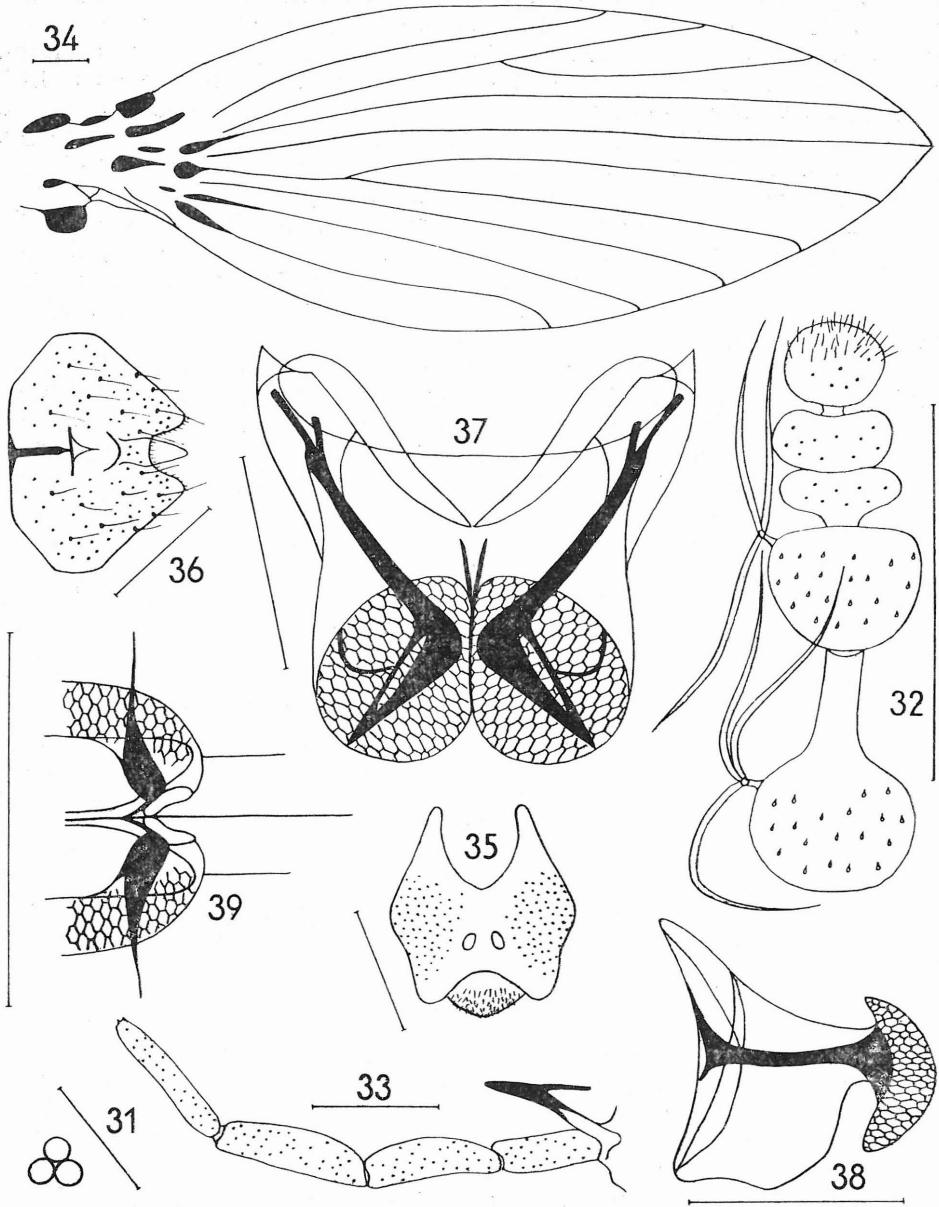


Figs. 21—30: *Psychodocha gemina* (Eat.). ♂: 21 — head; 22 — basal antennal segments; 23 — terminal lobe of labium; 24 — thorax laterally; 25 — claw of P_1 laterally; 26 — hypopygium laterally; 27 — coxopodites, harpagones and copulatory organ dorsally; 28 — copulatory organ dorsolaterally; 29 — cercus dorsally; ♀: 30 — cercus laterally. Scales 0.1 mm.

at base, pedicellus shortly spindle-shaped, segments of flagellum pitcher-shaped, the last three antennal segments separated, approximately of the same size, however much smaller than segment 13 which is without a neck. Segment 16 globular, segments 14 and 15 sometimes a little flattened. Sensory filaments large, with three arms. Terminal lobe of labium with 4 digital projections. Ratios of lengths of segments of maxillary palps 29:38:44:40. Ratio of maximum length of cibarium to length of epipharynx 2.0:1.5. Anepimeral suture straight. Pleural suture bent ventrad. Wings narrowly lancet-shaped, without dark tufts of hairs, both basal and distal costal nodes distinct. Sc rather long, distinct and uninterrupted. R₁ inconspicuously bent to Sc, the origin of R₂₊₃ rather far for indistinct basal field, R₂₊₃ only a little arched, R₂ and R₃ conspicuously divergent from R₂₊₃. R₄ and R₅ conspicuously bent to radial fork, R₅ with end in apex of wing. M₁₊₂ widened at base, straight, as well as M₂. M₁ conspicuously bent to radial fork, M₃ almost straight, M₃ and Cu without a connection on M₄. Veins r—r, r—m and m—m missing. Medial wing angle 74°. Indexes of wing AB:AC:AD=11.8:15.6:11.4, BC:CD:BD=5.1:6.8:7.2. Index of base of M₁₊₂, A to maximum width of wing 2.3. Ratio of length of haltere to its width 3:1. Ratios of lengths of femora, tibiae and first tarsal segment: P₁=9:10:4; P₂=10:12:5; P₃=11:14:6. Paired tarsal claws only a little bent. Corniculi, patagia and tegulae developed. Basal apodeme of male genitalia straight, not bifurcated on its proximal end. Phallobasis with three phallobases. Ventral phallobase long, needle-shaped, conspicuously bent, with a tuft of hairs subapically, dorsal phallobases strong, partially fused. Dorsal phallobases conspicuously extended by braces of basal apodeme at base. Index of maximum width of coxopodite to its minimum one 1.3. Coxopodites outside with a protuberance, harpagones approximately of the same length as coxopodites from lateral view, index of length of coxopodites to length of harpagones 1.1 from dorsal view, harpagones rather strong at base, conspicuously narrowed suddenly, a little bent and pointed apically. Epandrium of characteristic shape with paired small apertures posteriorly, sclerotized remainders of 10th tergum and sternum inside of epandrium indistinct. Hypandrium widened, with oblong protuberance caudally. Epiproct very short, distinctly spined, hypoproct triangular with rounded tops. Length of hypoproct a little shorter than its width at base. Cerci almost straight from ventral view, a little longer than length of epandrium, with one retinaculum apically.

Female. Subgenital plate without distinctly sclerotized arched stripe between external margins of pair of rounded distal lobes; lateral lobes above base of subgenital plate large. Length of sensory organ of subgenital plate three times larger than its width at base. Very sclerotized rib basally in medial line of subgenital plate developed. Complicated sclerotized forms in area of female genital chamber with pair of posterior and with pair of dorsal protuberances, paired ventral part with characteristic net-shaped structure. Cercus wide and short.

Material: Czechoslovakia — 23 ♂♂, 53 ♀♀. Bohemia: Bukvice (České Budějovice distr.), Čakovec, Český Krumlov, Choteč (Praha-západ distr.),



Figs. 31—39: *Psychodocha gemina* (Eat.). ♂: 31 — facets; 32 — apical antennal segments; 33 — maxilla and palpus maxillaris; 34 — wing; 35 — epandrium dorsally; ♀: 36 — subgenital plate; 37 — genital chamber anteriorly; 38 — the same laterally; 39 — the same ventrad. Scales 0.1 mm.

Deštné (Rychnov nad Kněžnou distr.), Doksy (Kladno distr.), Dolní Bezděkov (Kladno distr.), Horní Krupka, Kokořínský Důl, Praha-Divoká Šárka, Kostomlaty nad Labem, Kounice (Kutná Hora distr.), Landštejn, Levý Hradec env. Roztoky (Praha-západ distr.) — Maš., Lhotka (České Budějovice distr.), Praha-Bohnice, Praha-Divoká Šárka, Praha-Dolní Liboc, Praha-Drahaňská rokle, Praha-Jenerálka, Praha-Kunratice, Praha-Zadní Kopanina, Praha-Závist, Rejčkov, Roztoky-Žalov (Praha-západ distr.), Skalice env. Třebívlice, Úholičky, Úvaly (Praha-východ distr.), Velká Paseka, Víška (Rychnov nad Kněžnou distr.), Vlastějovice, Zichovec — K. Moravia: Bojanovice (Znojmo distr.), Branná (Šumperk distr.) — M., Brodek u Prostějova, Břeclav — B., Dolní Lomná, Horní Lomná, Jablunkov, Mutěnice (Hodonín distr.), Napajedla, Salaš (Uherské Hradiště distr.), Uherské Hradiště, Velehrad. Slovakia: Nízke Tatry Mts. — Suchý vrch env. Uľanka, Piesky env. Banská Bystrica, Staré Hory (Banská Bystrica distr.), brook Prostredná env. Hiadeľ, Hiadeľské sedlo env. Korytnica — kúpele; Austria — 6 ♂♂, 8 ♀♀. Feichsen — Re., Petzelsdorf — Re., Purgstall — Re., Reinsberg — R., Re., Schauboden — Re., Scheibbs — Brauchslatt — R. (Cat. No. P5 — 33290—33303, Inv. No. 1547, 1562, 1607, 1709, 1737, 1793, 1797, 1824, 1832, 1834—1835, 1853—1854, 1860); U.S.S.R. — 1 ♂, 1 ♀. Abchazia, Caucasus — Cimur env. Suchumi, Južnyj Prijut (Cat. No. P5 — 33304—33305, Inv. No. 1376, 583).

Comments on the material: Collected by author, only B. — Bukva lgt., K. — Kovář, M. — Martinovský, Maš. — Mašínová, R. — Rausch, Re. — Ressler. Figured male specimen was collected near Salaš (Uherské Hradiště distr.), 2. VIII. 1974 and figured female specimen near Horní Krupka, 4. IX. 1973.

Occurrence: ČSSR IV.—IX., Austria V.—X., U.S.S.R. VII.—VIII.

Bionomy: Ssensu Jung (1956) larvae live in moist mud of paddocks, in manure, in waste pipes, on toilets, sewage works, water mains etc. Ssensu Wagner (1977) larvae live among decayed leaves on the banks of ponds and near springs. Satchell (1947a) didn't recognize a development in manure. Büttiker (1969) collected 1 ♀ from nests of *Riparia riparia* (L.). Ressler collected this species on the branches of coniferous trees. Author of this present paper collected adults near mountain streams drainages, banks of rivers, inundated lowland forests, surroundings of sluices, moist places near dustbins, rills below railway bridges, spring areas with fallen trees, brooks in meadows, ponds and their outflows, swamps in forests, dry water reservoirs and dry cesspools. In the localities were registered a growth of *Alnus*, *Salix*, *Populus*, *Betula*, *Carpinus*, *Fagus*, *Crataegus*, *Acer*, *Sorbus*, *Sambucus*, *Picea*, *Pinus*, *Robinia*, *Ulmus*, *Prunus* and *Fraxinus*, in the undergrowth *Petasites*, *Impatiens*, *Urtica*, *Rubus*, *Ficaria*, *Fragaria*, *Heracleum*, *Geranium*, *Ranunculus*, *Rumex*, *Filipendula*, *Caltha*, *Carex* and *Persicaria*. In the Low Tatra National Park this species was collected at an elevation of about 1000 m. above sea level; in Abchazia near a spring from a rocky wall with *Alnus*, *Carpinus*, *Rhododendron*, *Hedera* and *Musci* in a valley of the river Vost. Gumista and on the banks of mountain river Klyč shaded by *Alnus* and *Rhododendron* (1500 m. above sea level).

Distribution: Belgium, Czechoslovakia, Danmark, England, France, Hungaria, Italy, Yugoslavia, D. and F. Germany, Romania, Spain, Switzerland. New to the fauna of Austria and U.S.S.R.

Data about type-material and type-locality: Lectotypus and paralectotypes have not yet been established from Eaton's syntypic material. Subsequent designation of holotypus, allotypus and paratypes by Tonnoir (1940) from this material must be invalid.

Discussion: In the syntypic series of this species (13 specimens) from Eaton's collection were included sensu Tonnoir (1940) species: *obscura*, *cinerea*, *lobata*, *albipennis* and *lucifuga*. Species *gemina* was represented by one male and three females.

***Psycha grisescens* (Tonnoir)**

(Figs. 40—58)

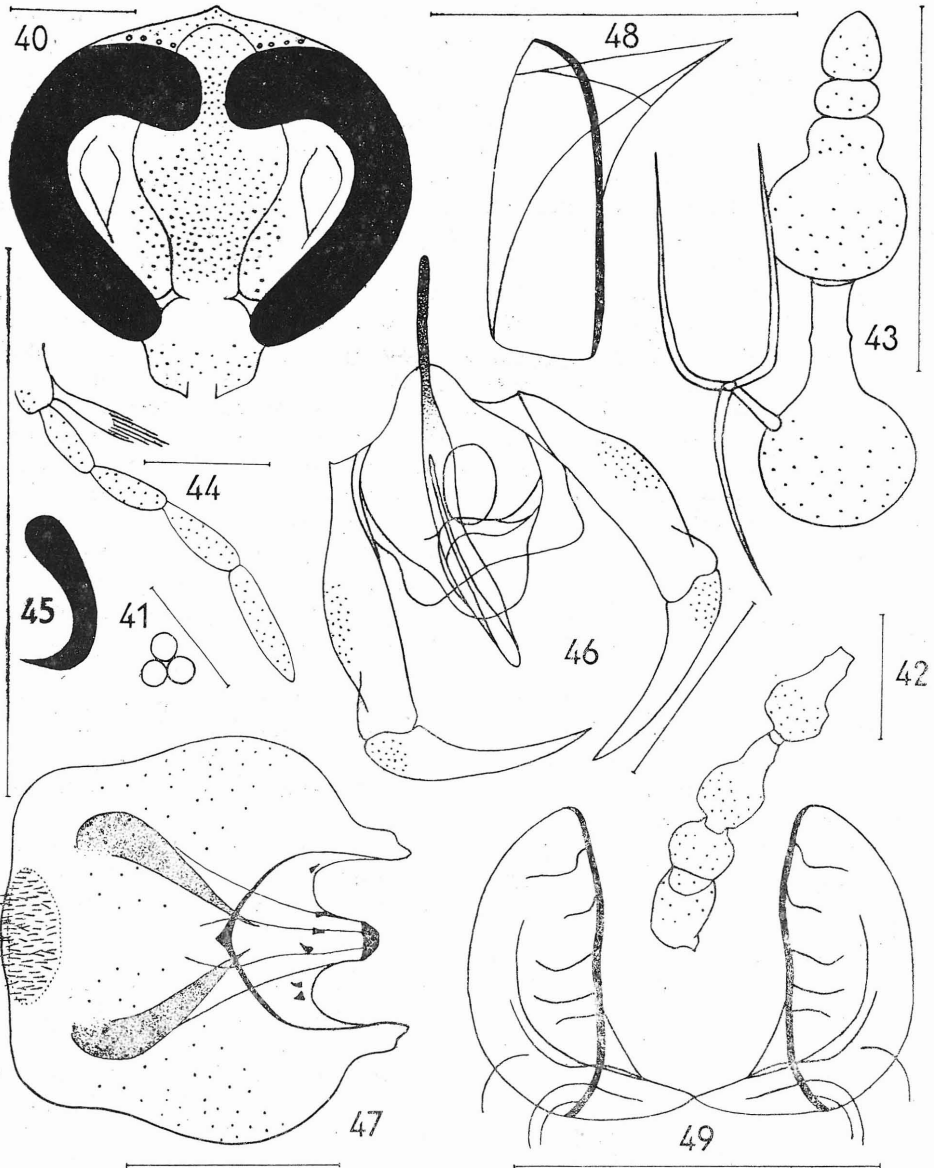
Psychoda (*Psychoda*) *grisescens* Tonnoir, 1922: 87; Kloet et Hincks, 1945: 333; Szabó, 1965a: 80; b: 619; Rozkošný, 1971: 141.

Psychoda grisescens; Barendrecht, 1934: 81; Tonnoir, 1940: 57; Grensted, 1947: 1; Satchell, 1947b: 64; Freeman, 1950: 93; Quate, 1955: 207; Jung, 1956: 188; Satchell, 1956: 119; Szabó, 1960: 213; Georges, 1961: 103; Nielsen, 1961: 145; Vaillant, 1963c: 110; Giljarov, 1964: 659; Nielsen, 1964: 155; Vaillant, 1964: 62; Tanasijčuk, 1969: 132; Vaillant, 1971: 42; 1973a: 140; Wagner, 1973: 520; 1977: 27; Krek, 1979: 1806; Salamanna et Sarà, 1980: 17; Wagner, 1980: 121.

Psycha grisescens; Ježek, 1982: 59; 1984: 137; Ježek et Halgoš, 1986: 31.

Diagnosis. Small species, wings 1.9—2.3 mm. long, without small brown tufts of hairs on the ends of veins in wing margin, ventral phallosome quite reduced, additional sheath with dorsal bow-shaped connection. Epandrium with paired characteristic very long protuberances inside. Base of male cercus strengthened, with long tooth-shaped protuberances. Subgenital plate of female approximately of semicircular shape with a shallow, rather wide incision distad.

Male. Distance between eyes approximately equal to diameter of one facet. Index of distance of tangential points of eye's ends to facet diameter and to width of frons 8.4. Frons with long hairs. Antennae 16-segmented, haired. Scapus cylindrical, pedicellus almost globular, segments of flagellum pitcher-shaped. Basal parts of segments 12 and 13 of the same size, neck of 12th segment not reduced, segments 14 to 16 rather minute in contrast to foregoing segments, segment 14 fused with segment 13, 15th segment conspicuously separated, apical segment a little prolonged. Sensory filaments large, with three arms. Terminal lobes of labium with three digital protuberances. Segments of maxillary palpus with lengths 22:23:26:35. Ratio of maximum length of cibarium to length of epipharynx 3.5:2. Pleural suture in ventral part rather bent. Wings largely lancet-shaped, without conspicuous dark tufts of hairs on ends of veins in wing margin; both costal nodes distinct. Sc rather long, uninterrupted. R₁ bent to C, the origin of R₂₊₃, unattached, R₂ and R₃ only a little diverging from R₂₊₃, which is inconspicuously bent to R₁. R₄ and R₅ conspicuously bent to radial fork, R₅ ends in apex of wing. M₁₊₂ not widened at base, straight, as well as M₂. M₁ a little bent to radial fork, M₃ almost



Figs. 40—49: *Psycha griseascens* (Tonn.). ♂: 40 — head; 41 — facets; 42 — basal antennal segments; 43 — apical antennal segments; 44 — maxilla and palpus maxillaris; 45 — claw of P_1 laterally; 46 — coxopodites, harpagones and copulatory organ dorsally; 47 — epandrium dorsally; ♀: 48 — genital chamber laterally; 49 — the same ventrad. Scales 0.1 mm.

straight, M_3 and Cu without conspicuous connection on M_4 . Veins $r-r$, $r-m$ and $m-m$ not visible. Medial wing angle 84° . Indexes of wing: $AB:AC:AD=6.9:9.2:6.6$; $BC:CD:BD=3.3:5.2:5.8$. Index of base of M_{1+2} , A to maximum width of wing 1.8. Ratio of length of haltere to its maximum width 2.6:1. Ratios of length of femora, tibiae and first tarsal segment: $P_1=8:8.5:3$; $P_2=9:11:3.5$; $P_3=9.5:13:3$. Corniculi, patagia and tegulae not developed. Basal apodeme of male genitalia straight, not divided on its proximal end. Phallobasis with three phallobases around gonoporus. Ventral phallobase quite reduced, additional sheath very widened, not divided, formed characteristically, with a central aperture, sheath embracing dorsal pair of phallobases, which are partially fused, by dorsal bow-shaped connection. Coxopodites conspicuously long. Index of length of coxopodites to length of harpagones from dorsal view 1.3, harpagones pointed apically. Index of maximum width of coxopodite to its minimum width from dorsal view 1.4. Epandrium of characteristic shape with paired characteristic very long protuberances inside. Aperture not developed. Hypandrium narrow. Epiproct slightly haired, reduced, hypoproct rounded. Cerci bent from ventral view, almost globularly strengthened at base, with one retinaculum apically. Base of male cercus strengthened with long tooth-shaped protuberance.

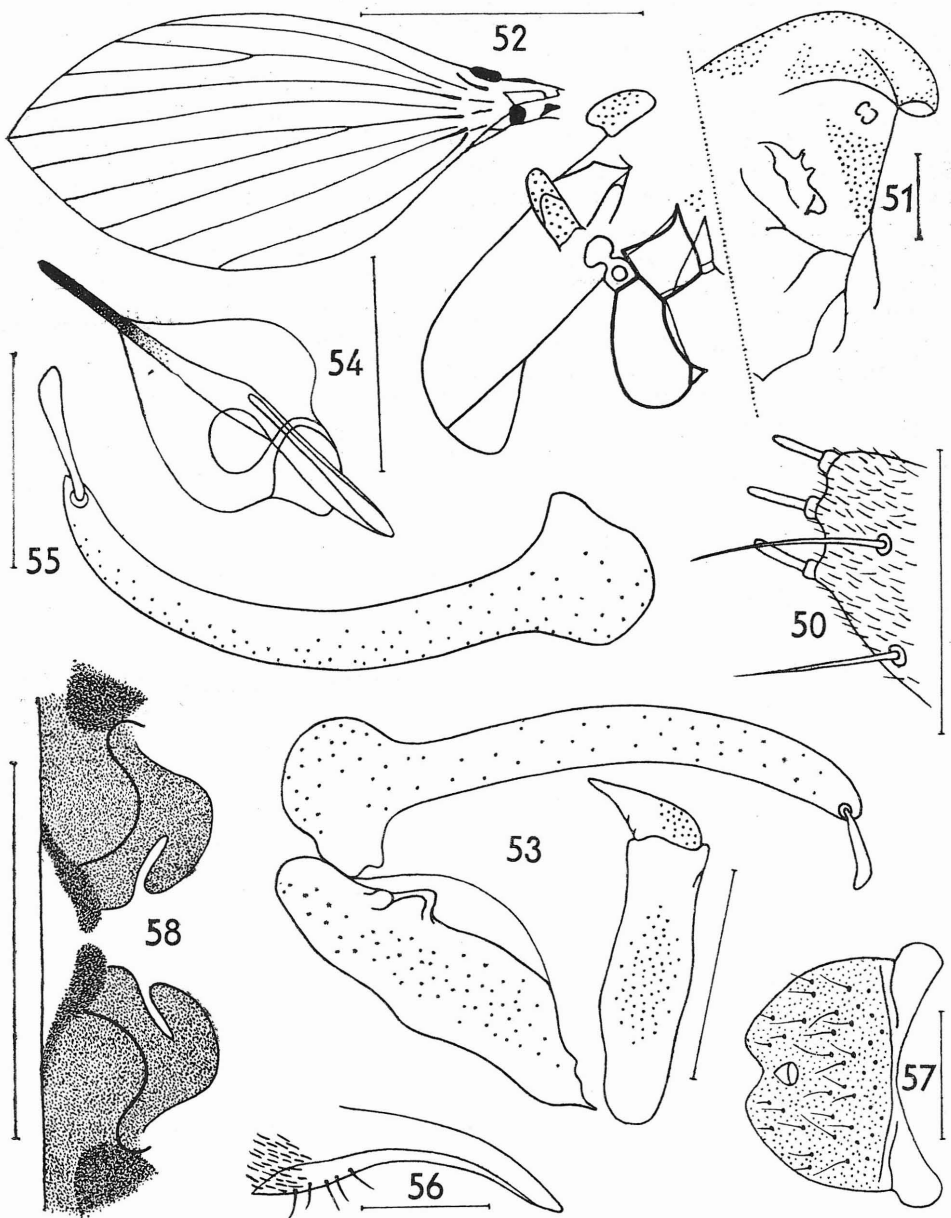
Female. Subgenital plate of semicircular shape with shallow rather wide incision distad. Length of sensory organ equals approximately to its width at base. Forms of area of genital chamber only a little sclerotized, very reduced, with characteristic structures, mansard-shaped, cut on opposite end.

Material: Czechoslovakia — 1 ♂, 3 ♀♀. Bohemia: Horní Lipka, Nové Město (Karlovy Vary distr.), Praha-Kunratice. Moravia: Břidličná — M.; Austria — 8 ♂♂, 2 ♀♀. Purgstall — Re., Reinsberg — R., Schauboden — Re., Zehnbach — R. [Cat. No. P5 — 33306—33315, Inv. No. 1638, 1732, 1770, 1785—1790, 1892].

Comments on material: Collected by author; M. — Martinovský lgt., R. — Rausch, Re. — Ressler. Figured specimen of male is labelled Nové Město (Karlovy Vary distr.), 3. IX. 1973 and female Praha-Kunratice, 7. VII. 1970.

Occurrence: Czechoslovakia VI.—IX., Austria IV.—XI.

Bionomy: Polyvoltine species (Vaillant, 1971), life cycle sensu Satchell (1947b) 12 days. Crisp et Lloyd (1954) quoted as habitat manure. Nielsen (1961) collected adults at light as did Wagner (1977). The last author collected larvae of this species on banks of polluted brooks, Barendrecht (1934) isolated this species from mushrooms. Larvae are saprobiont sensu Jung (1956). Data about pollination of *Arum maculatum* L. by adults of this species quoted Tonnoir (1940) and Grenstedt (1947). Vaillant (1973a) collected larvae in cow excrement and dung-water in 2000—2194 m. above sea level. Ressler collected adults on the banks of a pond, on windows of a flat, on the branches of coniferous trees and in gardens; author of the presented paper in waste pits.



Figs. 50—58: *Psycha grisescens* (Tonn.). ♂: 50 — terminal lobe of labium; 51 — thorax laterally; 52 — wing; 53 — hypopygium laterally; 54 — copulatory organ dorso-laterally; 55 — cercus dorsally; ♀: 56 — cercus laterally; 57 — subgenital plate; 58 — genital chamber anteriorly. Scales 0.1 mm., in Fig. 52 1 mm.

Distribution: Algeria, Belgium, Czechoslovakia (Szabó, 1965b), D. and F. Germany, Denmark, England, France, Hungaria, Nederland, Yugoslavia. New to the fauna of Austria.

Data about type-material and type-locality: „Plusieurs ♂ et ♀ aux environs de Bruxelles, de Fallaën et à Hockai.” quoted only in original description. By the generosity of Dr. Demoulin from Brussels (Inst. Royal Sci. Nat. de Belgique) was loaned now to author of the present paper incomplete syntypic serie of this species and permitted a mounting on microscope slide. As lectotype was designated male from locality Loo, 28. VIII. 1920, Severin lgt. Tonnoir dissected hypopygium in two pars and mounted miniature microscope slide below pinned adult. Author of this paper dissected head as one part, thorax with abdomen and both wings. Legs were dissected, only P₃ not. Maxillary palps missing. Tonnoir's miniature microscope slide was fixed on new microscope slide as well. Second specimen of the same locality is very damaged and is not available to paralectotype-designation: abdomen with genitalia missing. In Tonnoir's miniature microscope slide only antenna presented.

Discussion: Figures of *Psychoda grisescens* sensu del Rosario (1936) are quite different from figures published by Tonnoir (1922). Sensu Quate (1955) male and female genitalia of right *grisescens* closely resembling *pusilla*, however structures figured by del Rosario are quite different: subgenital plate with two conspicuous lobes, short, a little strengthened coxopodites of male genitalia. Right *grisescens* has subgenital plate only with inconspicuous two lobes, coxopodites are longitudinal and strengthened only at base. Depositum unknown. Known locality only: Kingston, Jamaica.

***Psychomora trinodulosa* (Tonnoir)**

(Figs. 59—77)

Psychoda (Psychoda) trinodulosa Tonnoir, 1922: 86; Rozkošný, 1971: 141.

Psychoda trinodulosa; Enderlein, 1936: 86; Tonnoir, 1940: 22; Kloet et Hincks, 1945: 333; Grensted, 1947: 1; Satchell, 1947a: 63; b: 613; 1948: 46; Freeman, 1950: 93; Laurence, 1953: 281; Sarà, 1953: 2; Quate, 1955: 208; Sarà, 1955a: 1; Jung, 1956: 201; Satchell, 1956: 119; Quate, 1960a: 148; b: 26; Szabó, 1960: 213; Georges, 1961: 104; Nielsen, 1961: 145; Vaillant, 1963b: 224; Giljarov, 1964: 659; Nielsen, 1964: 155; Botosaneanu et Vaillant, 1965: 79; Nielsen, 1965a: 151; Vaillant, 1966: 226; Tanasijčuk, 1969: 131; Vaillant, 1971: 34; Wagner, 1973: 520; 1977: 27; 1978b: 70; 1979a: 55; Caspers et Wagner, 1980: 81; Wagner, 1980: 121; 1981: 56; Salamanna, 1982: 185; 1983a: 48; b: 720; Krek, 1985: 177.

Psychomora trinodulosa; Ježek, 1982: 59; 1984: 137; 1986: 97; Ježek et Halgoš, 1986: 31.

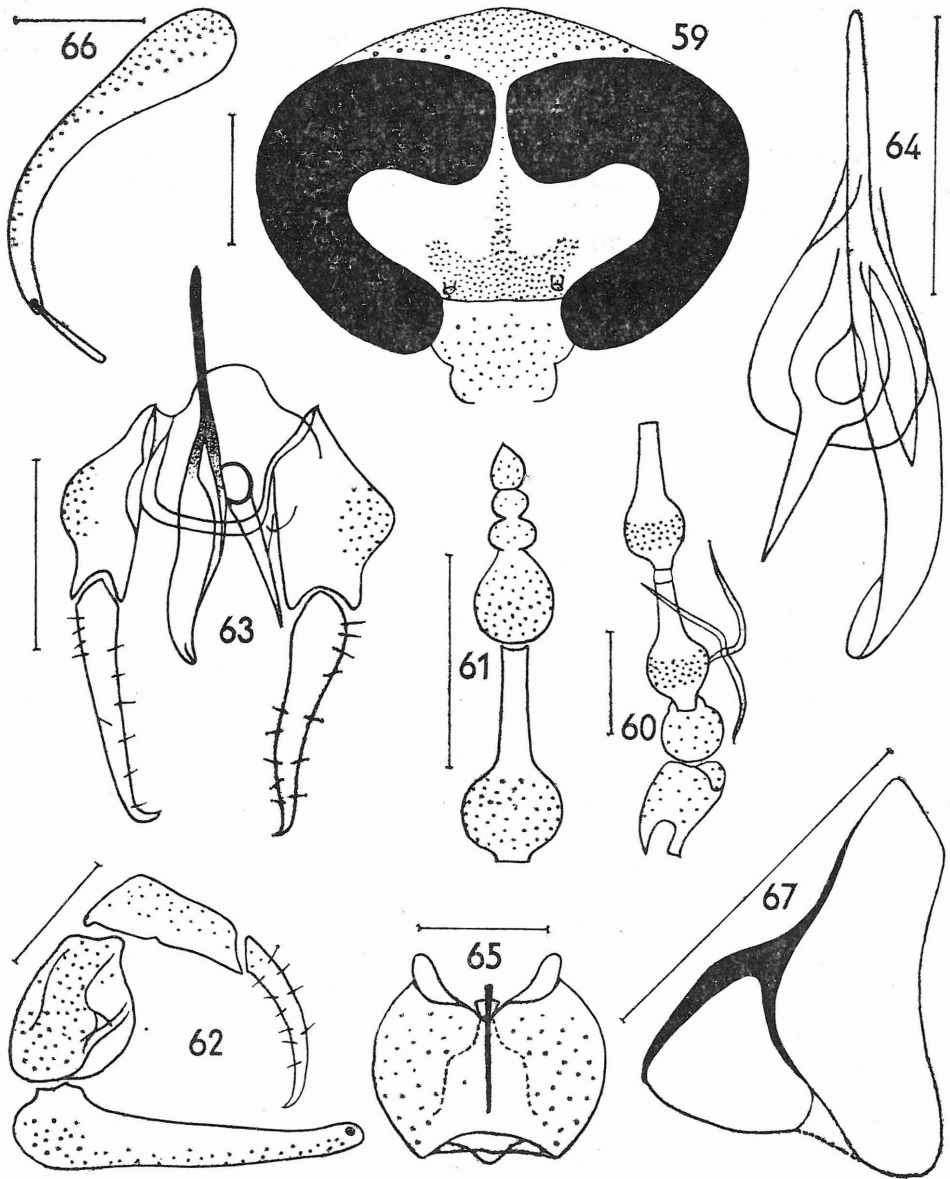
Diagnosis. Small species, wing length 1.6—2.1 mm., basal part of R₃ and M₂ missing. Additional sheath of male copulatory organ developed, ventral phallomere developed, with rather long pointed protuberance, very widened at base, with a circular aperture, dorsal phallomeres partially fused apically. Angle of external margins of medial elevated distal lobes of subgenital plate of female and basal parts of the plate more than 90°, sensory organ pointed on its end, without setae.

Male. Ratio of facet-diameter to width of frons 9:4. Index of distance of tangential points of eye's end to width of frons 14:1, to facet diameter

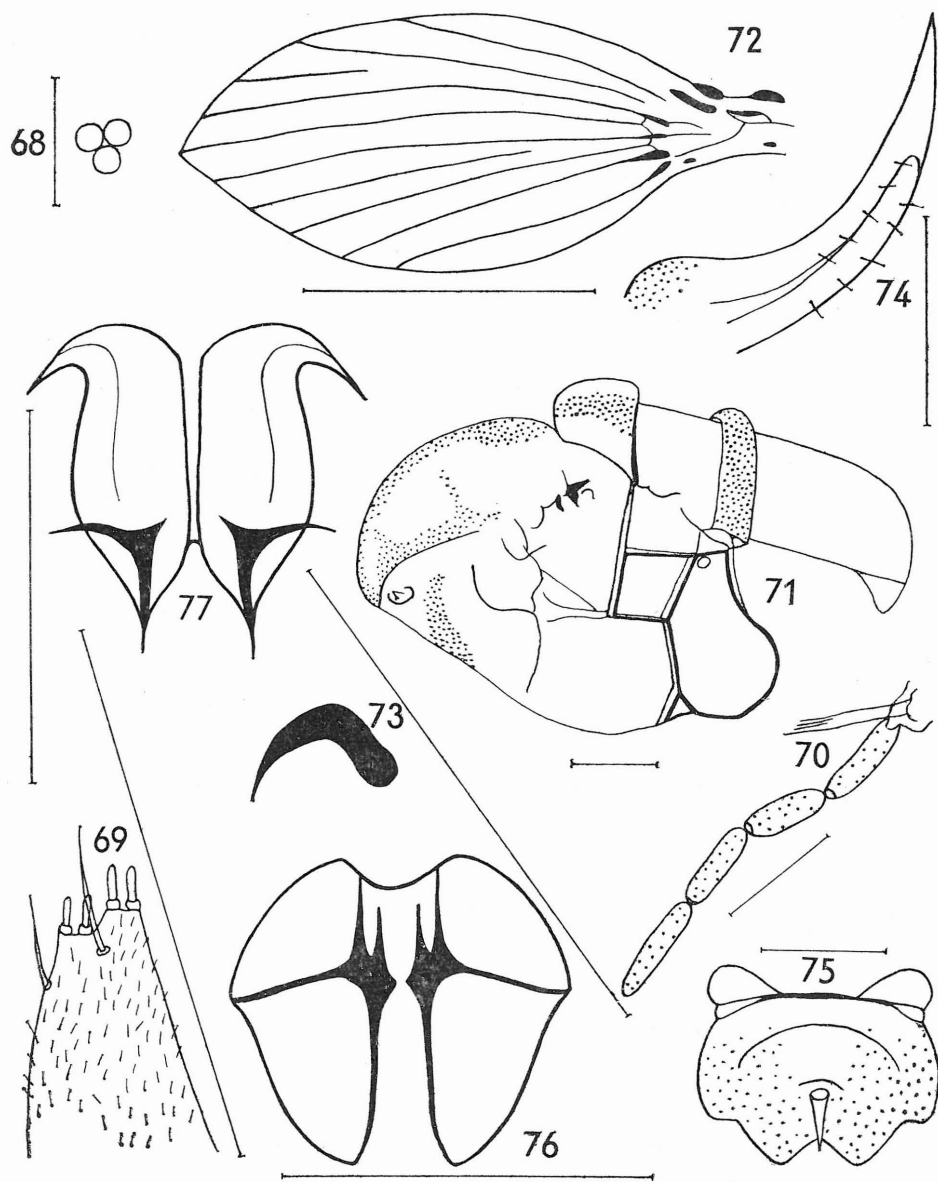
56:9. Antennae 16-segmented. Scapus cylindrical, pedicellus almost globular, segments of flagellum pitcher-shaped. 13th segment of antennae of the same size as foregoing segments, however with reduced narrowed part, segments 14 to 16 conspicuously minuted, without a neck; a partition between segments 13th and 14th as well as between 14th and 15th inconspicuous, segment 16 conspicuously separated, drop-shaped, pointed apically. Sensory filaments rather large, with three branches. Terminal lobe of labium with 4 protuberance of digit-shape. Ratios of lengths of segments of maxillary palpus 28:24:26:31. Ratio of maximum length of cibarium to length of epipharynx 3.2:2.5. Pteropleurite trapezium shaped. Pleural suture not curved in ventral part. Wings largely lancet-shaped, pointless distad, without brown tufts of hairs on ends of veins in the margins of wing, both costal nodes distinct. Sc rather long, uninterrupted. R₁ bent to Sc, the origin of R₂ for basal field, basal part of R₃ missing. R₄ and R₅ bent to Sc, R₅ strengthened with end in apex of wing. M₁ and M₃ arched to radial veins, base of M₂ missing. M₁₊₂ without a widened base. M₃ and Cu without a connection on M₄. Angle of inconspicuous veins r—r, r—m and m—m not straight. Index of base of M₁₊₂, A to maximum width of wing 1.9. Ratio of length of haltere to its width almost 4:1. Ratios of lengths of femora, tibiae and first tarsal segment P₁=9:10:4; P₂=10.5:11.0:6.5; P₃=11.5:14.0:4.5. Paired tarsal claws only a little bent. Basal apodeme of male genitalia straight, not divided on its proximal end. Phallobasis with three phallobases around gonoporus. Ventral phallobase straight, with rather long pointed protuberance, very widened at base, with circular aperture, the pair of dorsal phallobases partially fused apically. Additional sheath of copulatory organ of male developed. Index of length of coxopodites to length of harpagones from dorsal view 0.8. Coxopodites outside with conspicuous protuberance, harpagones approximately of the same length as coxopodites from lateral view, arched and pointed apically. Index of maximum width of coxopodite to its minimum width 1.4. Epandrium as figured. Aperture inconspicuous. Hypandrium narrow. Epiproct very short, distinctly spined, hypoproct triangular with rounded tops. The length of hypoproct a little shorter than its width at base. Cerci bent from ventral view, widened at base, only one retinaculum developed apically.

Female: Angle of external margins of medial elevated distal lobes of subgenital plate and basal parts of the plate more than 90°, sensory organ pointed on its end, without setae. Forms in area of genital chamber rather simple, without mushroom shape from anterior view.

Material: Czechoslovakia — 26 ♂♂, 25 ♀♀. Bohemia: Bělčice (Strakonice distr.), Bukvice (České Budějovice distr.), Čáslav (Kutná Hora distr.), Hořice v Podkrkonoší — Kn., Lázně Kynžvart, Lnáře, Peřimov — D., Povrly, Předonín, Roudníky, Sedloňov, Tchořovice, hill Úhošť env. Kadaň. Moravia: Bordovice, Dolní Marklovice, Louky (Karviná distr.), Okříšky, Ostrava-Poruba, Petrovice u Karviné, Polanka nad Odrou, Záhlínice, Ženklava. Slovakia: Nízke Tatry Mts., Sopotnická dolina env. Brusno; Austria — 14 ♂♂, 48 ♀♀. Feichsen — Re., Hochriess — R., Oberndorf — R., Petzelsdorf — Re., Purgstall — R., Re., Schauboden — Re.,



Figs. 59—67: *Psychomora trinodulosa* (Tonn.). ♂: 59 — head; 60 — basal antennal segments; 61 — apical antennal segments; 62 — hypopygium laterally; 63 — coxopodites, harpagones and copulatory organ dorsally; 64 — copulatory organ dorso-laterally; 65 — epandrium dorsally; 66 — cercus dorsally; ♀: 67 — genital chamber laterally. Scales 0.1 mm.



Figs. 68—77: *Psychomora trinodulosa* (Tonn.). ♂: 68 — facets; 69 — terminal lobe of labium; 70 — maxilla and palpus maxillaris; 71 — thorax laterally; 72 — wing; 73 — claw of P_1 laterally; ♀: 74 — cercus laterally; 75 — subgenital plate; 76 — genital chamber anteriorly; 77 — genital chamber ventrad. Scales 0.1 mm., in Fig. 72 1 mm.

St. Georgen-Leys — R., Zarnsdorf — Re., Zehnbach — Re. (Cat. No. P5 — 33316—33376, Inv. No. 591, 1529—1530, 1538, 1540, 1548, 1577, 1621, 1629—1632, 1634, 1636, 1642, 1646, 1660, 1671, 1679, 1681, 1705—1707, 1712, 1714, 1716, 1718—1719, 1803, 1818—1822, 1846, 1851, 1866, 1884—1886, 1890, 1897—1912, 1920—1923).

Comments on the material: Collected by author, only D. — Dlabola lgt., Kn. — Kneifl, R. — Rausch, Re. — Ressler. Figured specimens of male and female was collected in Petrovice u Karviné, 13. VI. 1975.

Occurrence: ČSSR VI.—IX., Austria V.—X.

Bionomy: Larvae of this species are saprobiont sensu Jung (1956) with life cycle approximately 15 days sensu Satchell (1947b). Wagner (1977) mentioned about development of larvae in horse and cow excrement. Data on pollination of *Arum maculatum* L. by this species were published by Tonnoir (1940) and Grensted (1947). Sensu Nielsen (1961) is a rearing of this species from mushrooms possible. Satchell (1947b) and Bovien (1937) quoted that this species transfer larval stadium of *Rhabditis* Duj. (Anguillulidae) and sensu Nielsen (1961) Gamasidae mites too. Adults are attracted by light at night (Nielsen, 1961). Ressler and Rausch collected this species on the branches of coniferous trees and at light. Author of the present paper collected adults in area of inundated forests, on banks of brooks and gutters, on moist pastures, near arms of rivers, rubbish heaps, at moist material, dry drainages, banks of ponds, spring areas, WC. Localities mostly with *Alnus*, *Salix*, *Populus*, *Quercus*, *Sambucus*, *Fraxinus*, *Tilia*, *Carpinus*, *Corylus*, *Acer*, *Picea* and *Robinia*. The undergrowth with *Scirpus*, *Rubus*, *Filipendula*, *Urtica*, *Calamagrostis*, *Mentha*, *Caltha* and *Phragmites*, in some cases also *Mnium*.

Distribution: Algeria, Belgium, Czechoslovakia, Denmark, England, Finland, France, Hungaria, Italy, Norway, Romania, Sweden, Switzerland, D. and F. Germany, U.S.A., U.S.S.R. (Wagner, 1981). New to the fauna of Austria.

Data about type-material and type-locality: In original description is only following mention: "Plusieurs ♂ et o à Hockai (Belgique subalpine)." Tonnoir's syntypic serie (Institut Royal des Sciences Naturelles de Belgique) is probably lost.

Discussion: This species was described in genus *Psychoda* Latreille, 1796 s. lat. and its specific name was not used in the past in a combination with another generic name.

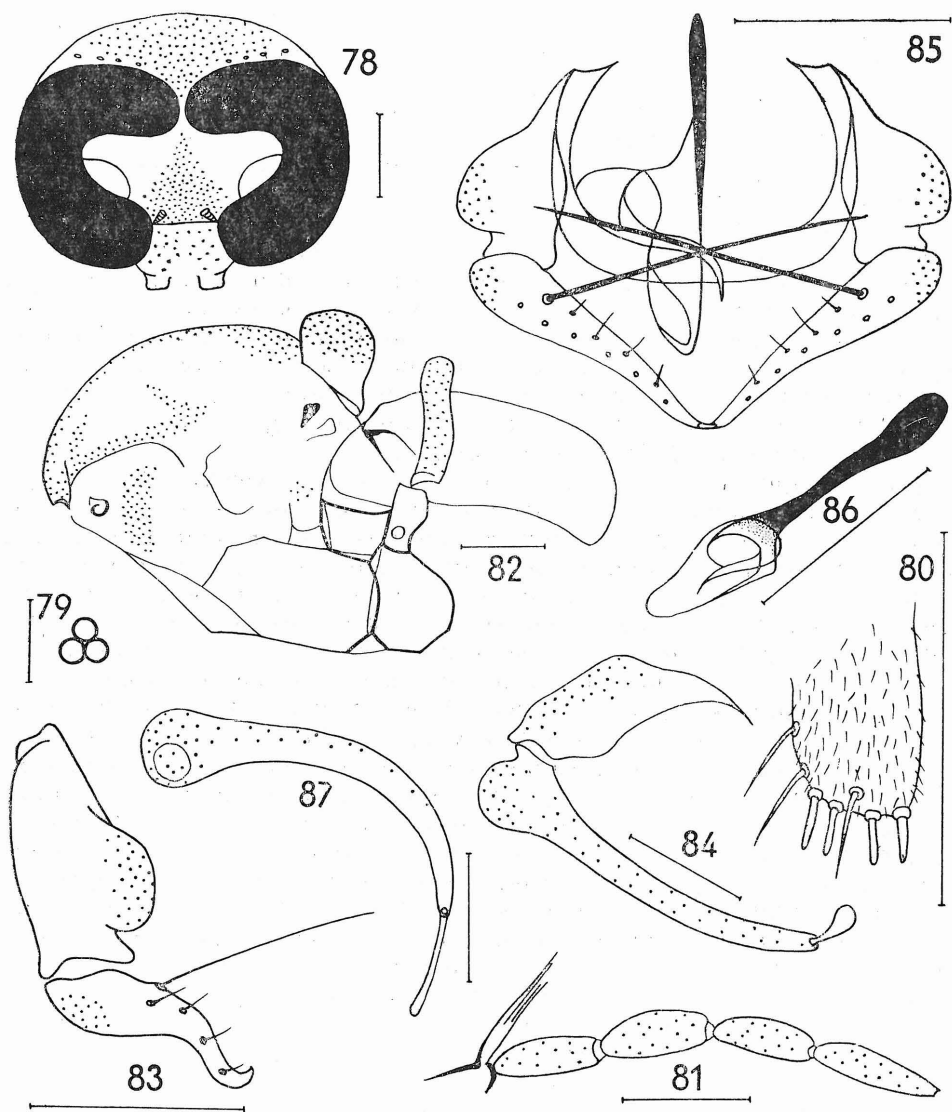
Chodopsycha lobata (Tonnoir)

(Figs. 78—97)

Psychoda lobata Tonnoir, 1940: 60; Lloyd, 1943: 31; Freeman, 1950: 93; Jung, 1956: 202; Szabó, 1960: 213; Nielsen, 1961: 145; 1964: 157; Botosaneanu et Vaillant, 1965: 78; Tanasijčuk, 1969: 133; Vaillant, 1971: 45; Wagner, 1979a: 55; Caspers et Wagner, 1980: 78; Hackman, 1980: 22; Salamanna et Sarà, 1980: 17; Wagner, 1980: 121; Krivošeina, Zajcev et Jakovlev, 1986: 104.

Psychoda (*Psychoda*) *lobata*; Tonnoir, 1940: 64; Kloet et Hincks, 1945: 333.

Chodopsycha lobata; Ježek, 1984: 138; 1986: 97; Ježek et Halgoš, 1986: 31.



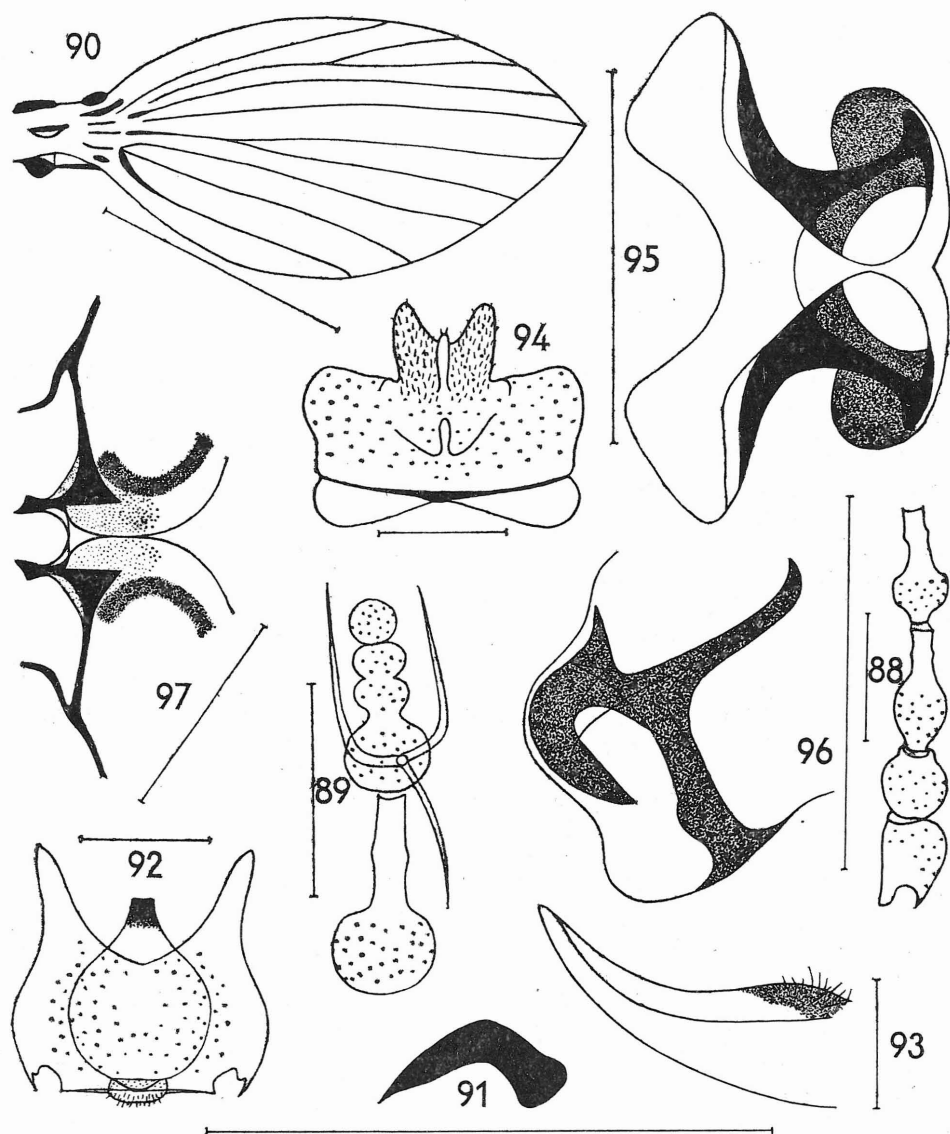
Figs. 78—87: *Chodopsycha lobata* (Tonn.). ♂: 78 — head; 79 — facets; 80 — terminal lobe of labium; 81 — maxilla and palpus maxillaris; 82 — thorax laterally; 83 — coxopodit and harpagon laterally; 84 — epandrium and cercus laterally; 85 — coxopodites, harpagones and copulatory organ dorsally; 86 — copulatory organ laterally; 87 — cercus dorsally. Scales 0.1 mm.

Diagnosis. Small species, wing length 2.0—2.8 mm., without minute dark turfs of hairs on the ends of veins of wing. Both radial and medial forks complete. Coxopodites outside with characteristic conspicuous protuberance, harpagones S-shaped from lateral view, pointed apically. Angle of external margins of medial distal lobes of subgenital plate of female and basal parts of the plate 90°. Female genital chamber of characteristic mushroom shape from anterior view.

Male. Index of facet diameter to width of frons 6.0. Index of distance of tangential points of eye's ends to width of frons and to facet diameter 6.0. Antennae 16-segmented. Scapus prolonged, pedicellus almost globular, segments of flagellum pitcher-shaped. The last 4 segments globular, without necks. 13th segment much more larger than terminal segments, segments 13 to 15 fused, segment 16 distinctly separated from foregoing one. Sensory filaments rather large, with three branches. Terminal lobes of labium with 4 digital projections. Ratios of lengths of segments of maxillary palpus 31:32:28:36. Ratio of maximum length of cibarium to length of epipharynx 2:1. Pleural suture arched in ventral part. Wings broadly lancet-shaped, without tufts of hairs on ends of veins in wing margin, both costal nodes distinct. Sc uninterrupted. R₁ bent to C, origin of R₂₊₃ unattached, R₂ and R₃ only little diverging from R₂₊₃, which is arched to Sc. R₄ and R₅ conspicuously bent to radial fork, end of R₅ in apex of wing. M₁₊₂ without widened base, almost straight, as well as M₁ and M₂. M₃ straight, with a small unevenness distad, M₃ and Cu connected on M₄. Veins r—r, r—m and m—m not visible. Medial wing-angle 86°. Indexes of wing: AB:AC:AD = 7.2:9.6:7.5, BC:CD:BD = 3.4:5.0:5.8. Index of base of M₁₊₂, A to maximum width of wing 1.8. Ratio of length of haltere to its maximum width 3.0:1. Ratios of lengths of femora, tibiae and first tarsal segment: P₁=8:8:3; P₂=10:12.5:4. Basal apodeme of male genitalia straight, widened proximally from lateral view, not divided. Phallobasis with three phallomeres around gonoporus. Ventral phallomere rather long, narrow and pointed, dorsal pair of broad phallomers partially fused. Additional sheath not developed. Coxopodites outside with conspicuous characteristic protuberance, harpagones S-shaped from lateral view, pointed apically. Index of length of coxopodites to length of harpagones from dorsal view 0.8, index of maximum width of coxopodite to its minimum width 1.8. Hypandrium narrow. Cerci very arched from ventral view, with one retinaculum apically.

Female. Subgenital plate oblong-shape with a pair of characteristic lobes and with long sensory organ anteriorly. External margins of distal lobes of subgenital plate are situated at right-angles to basal part of this plate. Complicated sclerotized forms in area of genital chamber without net-shaped structures, mushroom-shaped from anterior view.

Material: Czechoslovakia — 2 ♂♂, 9 ♀♀. Bohemia: Borek (Tachov distr.), České Budějovice, Družec, Sedloňov, Vlastějovice. Moravia: Luka nad Jihlavou, castle Roštejn (Jihlava distr.), Salaš (Uherské Hradiště distr.), Tlumačov (Zlín distr.), Uherské Hradiště; Yugoslavia — 3 ♂♂, 3 ♀♀. Montenegro, Lovčen Mts., Krstac (saddle between Kotor and Cetinje) — L. (Cat. No. P5 — 33378—33383, Inv. No. 315—310).



Figs. 88–97: *Chodopsycha lobata* (Tonn.). ♂: 88 — basal antennal segments; 89 — apical antennal segments; 90 — wing; 91 — claw of P_1 laterally; 92 — epandrium dorsally; ♀: 93 — cercus laterally; 94 — subgenital plate; 95 — genital chamber anteriorly; 96 — the same laterally; 97 — the same ventrad. Scales 0.1 mm., in Fig. 90 1 mm.

Comments on the material: Collected by author, only L. — Lauterer lgt. Figured male is labelled Roštejn (Jihlava distr.), 7. VIII. 1974 and female Borek (Tachov distr.), 29. VIII. 1972.

Occurrence: ČSSR VII.—IX., Yugoslavia X.

Bionomy: Sensu Jung (1956), who published key diagnosis of larvae, are larvae saprobiont. They live in mud of paddocks, manure, with life cycle 8—25 days. Sensu Vaillant (1971) and Krivošeina, Zajcev et Jakovlev (1986) larvae occur in different groups of mushrooms. Author of this paper collected adults in areas of swamps, near gutters, brooks, streams, rivers, moist soil heaps with rotten potatoes. Visited localities with *Alnus*, *Salix*, *Pinus*, *Fraxinus*, *Fagus*, *Sorbus*, *Picea*, *Acer*, *Quercus* and *Castanea*, the undergrowth with *Lappa*, *Urtica*, *Artemisia*, *Scirpus*, *Geranium*, *Rubus*, *Petasites* and *Impatiens*. Mentioned material in Yugoslavia was collected 900—1000 m. above sea level, on the margin of *Pinus* — forest in area of dolomite steppes.

Distribution: Bulgaria, Czechoslovakia, D. and F. Germany, Denmark, England, Finland, Hungaria, Romania. New to the fauna of Yugoslavia.

Data about type-material and type-locality: Holotype (♀) labelled Parhyn, Shute, Devon, X. 1900, Eaton lgt. is deposited in Bruxelles (Institut Royal des Sciences Naturelles de Belgique). Paratypes (♂♂) labelled Tsanikorja, Bulgaria, VIII. 1929, Szilády lgt. and Vanganski Vrh., VIII., Biró lgt. are deposited in Budapest (Természettudományi Múzeum Állattára).

Discussion: Male was shortly described and partially figured by Lloyd (1943). The name of this species was quoted only in combination with the generic name *Psychoda* Latreille, 1796 so far.

***Psychodula minuta* (Banks)**

(Figs. 98—116)

Psychoda minuta Banks, 1984:331; 1901: 274; Haseman, 1907: 318; Swezey, 1907: 117; Malloch, 1918: 268; Turner, 1923: 547; 1924: 338; Johnson, 1925: 45; Johannsen, 1934: 24; Tonnoir, 1934: 78; Del Rosario, 1936: 144; Enderlein, 1936: 86; Hardy, 1942: 142; Rapp, 1944: 206; Quate, 1955: 203; Jung, 1956: 202; Quate, 1960a: 148; b: 25; Szabó, 1960: 213; Georges, 1961: 103; Nielsen, 1961: 145; Vaillant, 1961b: 2; Sarà, 1962: 68; Vaillant, 1963c: 109; Giljarov, 1964: 659; Nielsen, 1964: 157; Vaillant, 1964: 62; Nielsen, 1965a: 151; Tanasijčuk, 1969: 132; Vaillant, 1971: 44; Wagner, 1973: 520; Salamanna, 1974a: 54; Wagner, 1977: 27; Elger, 1978: 469; Wagner, 1978a: 282; 1979a: 55; Caspers et Wagner, 1980: 78; Wagner, 1980: 121; Salamanna, 1982: 184; Wagner, 1982: 15; Salamanna, 1980: 78; Wagner, 1980: 121; Salamanna, 1982: 184; Wagner, 1982: 15; Salamanna, 1983a: 48; b: 720.

Psychoda (*Psychoda*) *minuta*; Vaillant, 1961a:

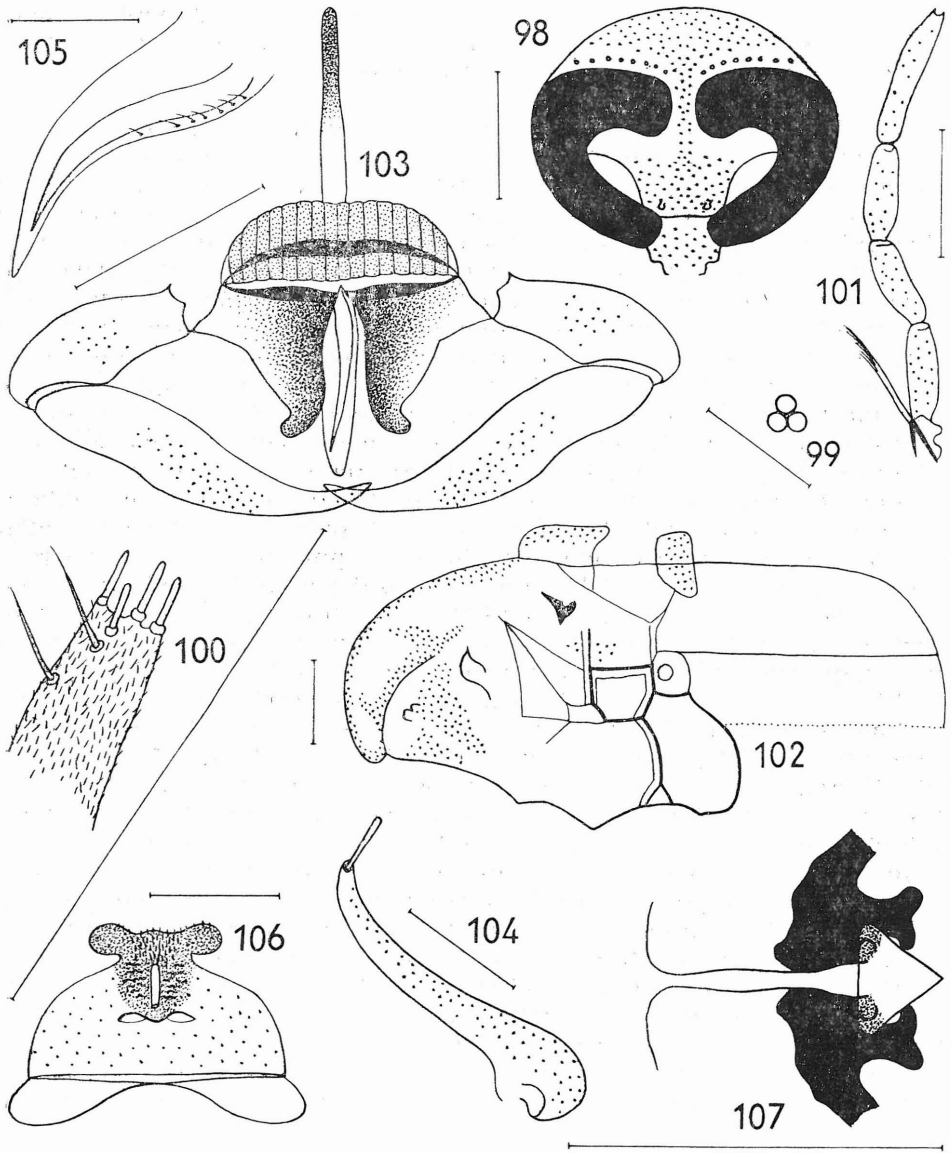
Pericoma minuta; Kertész, 1902: 296.

Psychoda marylandana Del Rosario, 1936: 111, partim [male].

Psychoda spreta Tonnoir, 1940: 57; Rapp et Cooper, 1945: 125; Satchell, 1947a: 65; b: 613; 1948: 46; Freeman, 1950: 93.

Psychodula minuta; Ježek, 1982: 59; 1984: 139; Ježek et Halgoš, 1986: 31.

Diagnosis. Small species, wing 1.8—2.4 mm. long, radial and medial forks complete. Phallobasis with a pair of rather large triangular sclerotized protuberances, dorsal pair of phallobases fused, ventral phallobases narrow and pointed, harpagones rather long, approximately from



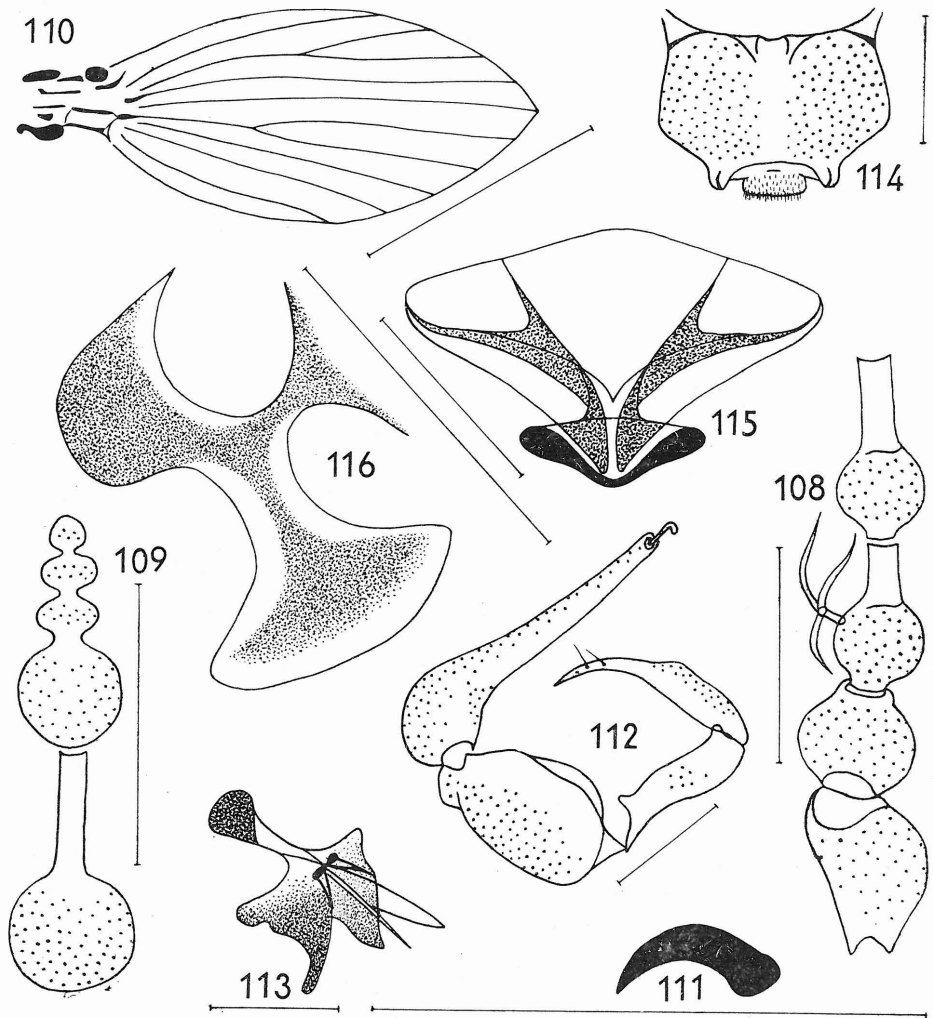
Figs. 98—107: *Psychodula minuta* (Banks). ♂: 98 — head; 99 — facets; 100 — terminal lobe of labium; 101 — maxilla and palpus maxillaris; 102 — thorax laterally; 103 — coxopodites, harpagones and copulatory organ dorsally; 104 — cercus dorsally; ♀: 105 — cercus laterally; 106 — subgenital plate; 107 — genital chamber ventrad. Scales 0.1 mm.

its half conspicuously narrowed and pointed apically, with bent tip. Subgenital plate very narrowed anteriorly, with conspicuous paired rounded very sclerotized lobes distad. Genital chamber of female with forms of characteristic shape.

Male. Distance between eyes equals approximately to diameter of one facet. Index of distance of tangential points of eye's ends to width of frons, as well as to facet diameter 5.8. Antennae 16-segmented. Scapus almost cylindrical, pedicellus almost globular, segments of flagellum pitcher-shaped. 13th segment without a neck, 14th and 15th segment very small in contrast to 13th segment, 16th segment approximately twice smaller than segments 14 and 15. All 4 terminal segments fused. Sensory filaments of antennae rather small, with three arms. Terminal lobes of labium with 4 finger-like protuberances. Ratios of lengths of segments of maxillary palpus 28:27:26:39. Ratio of maximal length of cibarium to length of epipharynx approximately 1:1. Pleural suture a little bent. Wings lancet-shaped. Costal nodes conspicuous. Sc long, uninterrupted, rather bent, R₁ arched to Sc, the origin of R₂₊₃ unattached, angle of basal part of R₂ and distal part of R₂₊₃ as well as angle of R₃ and R₂₊₃ rather small; R₂₊₃ bent to Sc. R₄ only a little bent to radial fork, R₅ only a little bent with end in wing-apex. Base of M₁₊₂ narrow, straight, as well as M₁ and M₂, angle of basal part of M₂ and distal part of M₁₊₂ the same as angle of M₁ and M₁₊₂; M₃ straight, M₃ and Cu without a connection on M₄. Veins r—r, r—m and m—m not visible. Medial wing angle approximately 107°. Indexes of wing: AB:AC:AD = 6.7:7.8:6.5; BC:CD:BD = 2.5:3.4:4.7. Index of base of M₁₊₂, A to maximum width of wing 2.0. Ratio of length of halteres to its width 2.9:1. Ratios of lengths of femora, tibiae and first tarsal segments P₁=8:8:3; P₂=9:11:4; P₃=10:13:3.5. Paired tarsal claws only a little bent. Basal apodeme of male genitalia straight, not divided on its end, very widened dorso-ventrally. Phallobasis with sheath in a shape of pair rather large triangular sclerotized protuberances, dorsal pair of phallobases completely fused, ventral phallobase narrow and pointed. Coxopodites rather long and thin as well as harpagones, which are approximately from one half conspicuously narrowed and with bent pointed top apically. Index of length of coxopodites to length of harpagones from dorsal view 0.6. Index of maximum width of coxopodites to its minimum width 1.2. Aperture of epandrium lacking. Hypandrium narrow. Epiproct very short, conspicuously haired, hypoproct triangular with rounded tops. Length of hypoproct a little smaller than its width at base. Cerci S-shaped, bent from ventral view, with one short retinaculum apically.

Female. Subgenital plate of characteristic shape, very narrowed anteriorly, with paired, rounded, conspicuously sclerotized lobes anteriorly.

Material: Czechoslovakia — 3 ♂♂, 14 ♀♀. Bohemia: Doubí (Tábor distr.), Kokořínský Důl, Kostomlaty nad Labem, Moldava, Praha-Kunratic, Praha-Šeberov — St., Soběslav, Zichovec — K. Moravia: Čichov, Dolní Bojanovice, Horákov, Louky (Karviná distr.), Napajedla. Slovakia: Nízke Tatry Mts., Hiadelské sedlo env. Korytnica — kúpele; Austria — 1 ♂, 2 ♀♀. Purgstall — Re., Zehnbach — R. (Cat. No. P5 — 33384—33386, Inv.



Figs. 108—116: *Psychodula minuta* (Banks). ♂: 108 — basal antennal segments; 109 — apical antennal segments; 110 — wings; 111 — claw of P_1 laterally; 112 — hypopygium laterally; 113 — copulatory organ dorsolaterally; 114 — epandrium dorsally; ♀: 115 — genital chamber anteriorly; 116 — the same laterally. Scales 0.1 mm., in Fig. 110 1 mm.

No. 1726, 1690, 1894); U.S.S.R. — 1 ♀. Abchazia, Caucasus, Cimur env. Suchumi (Cat. No. P5 — 33387, Inv. No. 1374).

Comments on material: Collected by author, K. — Kovář lgt., St. — Studničková, R. — Rausch, Re. — Ressler. Figured male specimen labelled

Soběslav (18. VII. 1972) and Praha-Kunratice (7. VII. 1976), female specimen labelled Praha-Kunratice (28. VIII. 1970).

Occurrence: ĀSSR IV.—IX., Austria IV.—XI., U.S.S.R. VIII.

Bionomy: Larva and pupa were well described by Satchell (1947a, b, 1948). Sensu Jung (1956) are larvae saprobiont with life-cycle 8—25 days. Quate (1960b) referred development in rotten plants. Vaillant et Botosaneanu (1966) and Sarà (1962) quoted this species from caves, there are finds on bat's guano. Larvae of this species live sensu Vaillant (1971) in moist localities, mostly in dung of animals, above all vertebrates. Wagner (1977) collected adults in light trap. Author of presented paper collected adults on banks of ponds, wood brooks, swamps, gutters, outflows of water reservoirs, manure, waste pits, with *Alnus*, *Carpinus*, *Tilia*, *Quercus*, *Pinus*, *Picea*, *Salix* and *Sambucus* around, undergrowth with mostly *Caltha*, *Carex*, *Typha*, *Filipendula*, *Rubus* and *Urtica*, in Nížké Tatry Mts. 1000 m. above sea level, in Abchazia near a spring from a rocky wall with *Alnus*, *Carpinus*, *Rhododendron*, *Hedera* and *Musci* around in a valley of the river Vost. Gumista.

Distribution: Belgium, Czechoslovakia (Ježek et Halgoš, 1986), D. and F. Germany, Denmark, England, Finland, France, Hungaria, Italy, Sweden; Canada, Syria, U.S.A. New to the fauna of Austria and U.S.S.R.

Data about type-material and type-locality: Quate (1955) established lectotypus of *Psychoda minuta* Banks, 1894 labelled "1 ♂, New York, N. Banks lgt., Typus No. 13536, M.C.Z. (Museum of Comparative Zoology, Harvard)" on the base of a study of Banks's syntypes.

Discussion: Malloch (1918) described larva of species of "*minuta*", which has not reared to adult (unrecognized). Satchell's (1947a, b, 1948) description of larva of this species is in discrepancy with a description of Malloch (1918). Dyar (1926) synonymized name *Psychoda minuta* Banks, 1894 wrongly with name *Psychoda phalaenoides* (Linné, 1758). Sensu Quate (1955) was used in the past name "*minuta*" on the base of limited original description to very small specimens of *Psychoda phalaenoides* (Linné, 1758), *P. satchelli* Quate, 1955 and *P. pusilla* Tonnoir, 1922. Author of this paper compared the material from Czechoslovakia with several specimens of *P. minuta* (Banks, 1894) from U. S. A. loaned by Smiths. Institut from Washington without morphological differences: Falls Church, Va.: 1 ♂, V. 1960; 1 ♂, Holmes Run, X. 1960; 1 ♂, V. 1959; 1 ♀, Holmes Run, VI. 1960; St. Laurence Cony, Cranbery Lake: 1 ♂, VI. 1963. Mentioned material was collected by W. W. Wirth in light trap. Subgenital plate of "cotypus" of *Psychoda marylandana* del Rosario, 1936 (College Park, Md., VIII. 1933, F. C. B., Light Trap, No. 52032, U. S. N. M.) was compared with subgenital plate of *P. minuta* (Banks, 1894) and differences in shapes of both plates are convincing.

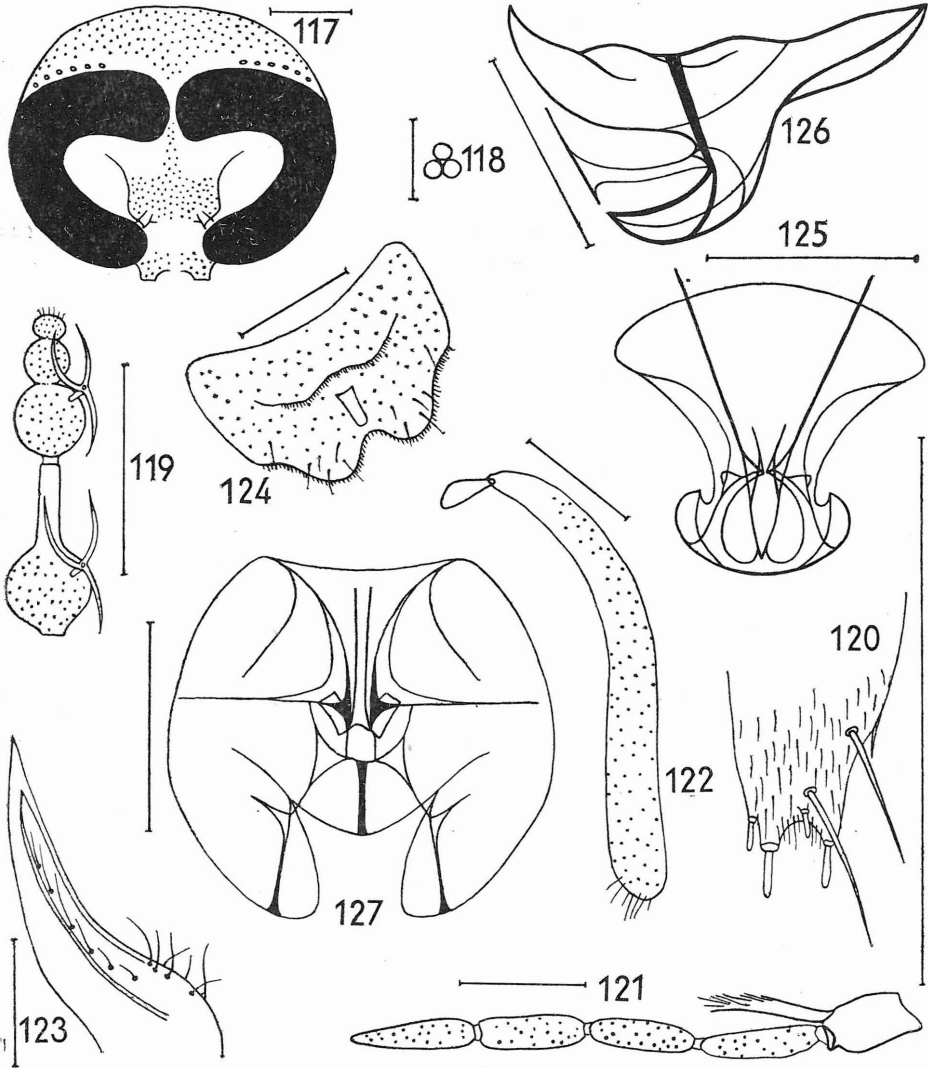
Other material studied: 1 ♀, Victoria, Texas, VI. 1907 ex cow manure, J. D. Mitchell Hunter, No. 1611.39, determined by Quate as *Psychoda marylandana* del Rosario, 1936.

Psychoda phalaenoides (Linné)

(Figs. 117—136)

- Tipula phalaenoides* Linné, 1758: 588; 1761: 438; 1767: 977; Degeer, 1776: 422; Fabricius, 1781: 411; 1787: 327; Rossi, 1790: 273; Fabricius, 1794: 251; Schrank, 1803: 2349; Fairchild, 1951: 13; Quate, 1959: 451; Quate et Quate, 1967: 146; Duckhouse, 1973: 11.
- Tipula nervosa* Schrank, 1803: 2350.
- Trichoptera phalaenoides*; Meigen, 1804: [= *alternata*].
- Tinearia phalaenoides*; Enderlein, 1936: 84.
- Psychoda phalaenoides*; Fabricius, 1805: 49; Latreille, 1809: 251; Perris, 1840: 246; Walker, 1848: 33; Zetterstedt, 1850: 3702 [= *alternata*]; Meigen, 1851: 82 [= *alternata*]; Walker, 1856: 255; Schiner, 1864a: 17; b: 637; Wulp, 1877: 315; Brauer, 1883: 52; Neuhaus, 1886: 18; Eaton, 1893: 129; 1894: 2; Kowarz, 1894: 4; Eaton, 1895: 489; Eaton, 1898: 120; Strobl, 1898: 203; Thalhammer, 1899: 16; Kertész, 1902: 301; Becker, Bezzi, Bischof, Kertész et Stein, 1903: 164; Eaton, 1904: 58; Bezzi, 1907: 179; Vimmer, 1913: 11; Johnson, 1914: 137; Tonnoir, 1919: 15; Feuerborn, 1922a: 26; b: 199; Tonnoir, 1922: 76; Kemper, 1925: 2; Abreu, 1930: 109; Curran, 1930: 27; Barendrecht, 1934: 81; Tonnoir, 1934: 76; Del Rosario, 1936: 97; Enderlein, 1936: 85; Leruth, 1939: 90; Tonnoir, 1940: 51; Rapp, 1944: 207; Rapp et Cooper, 1945: 125; Rapp, 1946: 176; Grensted, 1947: 1; Freeman, 1950: 93; Sarà, 1952: 1; Laurence, 1953: 281; Quate, 1954: 355; Fairchild, 1955: 184; Quate, 1955: 209; Tokunaga et Komyo, 1955: 206; Jung, 1956: 203; Satchell, 1956: 119; Štachelberg, 1956: 37; Tokunaga, 1957: 57; 1958: 360; Sarà, 1959: 11; Quate, 1960b: 27; Georges, 1961: 103; Nielsen, 1961: 144; Vaillant, 1961b: 2; Sarà, 1962: 70; Vaillant, 1963a: 86; Giljarov, 1964: 659; Nielsen, 1964: 155; Vaillant, 1964: 162; Nielsen, 1965a: 151; b: 103; Quate, 1965a: 815; Sarà, 1965: 132; Szabó, 1965a: 86; Vaillant et Botosaneanu, 1966: 91; Tanasijčuk, 1969: 132; Vaillant, 1971: 42; 1973b: 373; Wagner, 1973: 521; Morge, 1974: 126; Meigen in Morge, 1975: 485; Ježek, 1977: 233; Elger, 1978: 469; Krek, 1979: 1806; Caspers et Wagner, 1980: 78; Hackman, 1980: 22; Salamanna et Sarà, 1980: 17; Wagner, 1980: 121; Krek, 1982: 160; 1985: 176; Ježek, 1986: 97; Krivošeina, Zajcev et Jakovlev, 1986: 104; Ježek et Halgoš, 1986: 31.
- Psychoda phallaenoides*; Wagner, 1978b: 70 [lapsus].
- Psychoda phallaenoides*; Wagner, 1973: 520; 1977: 27 [error.]; 1979a: 54.
- Psychoda phallaenoides phalaenoides*; Szabó, 1960: 212.
- Psychoda (Psychoda) phalaenoides*; Kloet et Hincks, 1945: 333; Szabó, 1965a: 79; b: 618; Rozkošný, 1971: 141; Halgoš, 1973: 74.
- Psychoda phalaenoides*; Rondani, 1856: 178; Fairchild, 1951: 11.
- Psychoda phalaenoides elongata* Tonnoir, 1940: 51; Grensted, 1947: 2; Jung, 1956: 207; ? Syn. n.
- Psychoda muraria* Latreille, 1805: 293.
- Psychoda pacifica* Kincaid, 1897: 143; 1899: 31; Haseman, 1907: 317; Tonnoir, 1934: 78.
- Pericoma pacifica*; Enderlein, 1936: 85.
- Psychoda horizontata* Haseman, 1907: 313; Del Rosario, 1936: 144; Rapp, 1944: 205.
- Psychoda tonnoiri* Dyar, 1926: 103.
- Psychoda angustajona* Rapp, 1944: 233.
- Tipula nervosa* Schrank, 1803: 2350.
- Psychoda nervosa*; Meigen, 1818: 106; Macquart, 1826: 168; 1834: 165; Perris, 1840: 346; Walker, 1848: 33; Zetterstedt, 1850: 3706; Neuhaus, 1886: 18; Meigen in Morge, 1975: 485.

Diagnosis. Small species, wing 1.8—2.1 mm. long, wings without maculations, single ventral phallomere of male genitalia reduced, two long dorsal phallomeres partially fused in a grooved form with minute spines inside. Harpagones 1.5 times shorter than coxopodites from lateral view, pointed. The angle of external margins of elevated medial distal lobes of subgenital plate and basal part of subgenital plate is larger

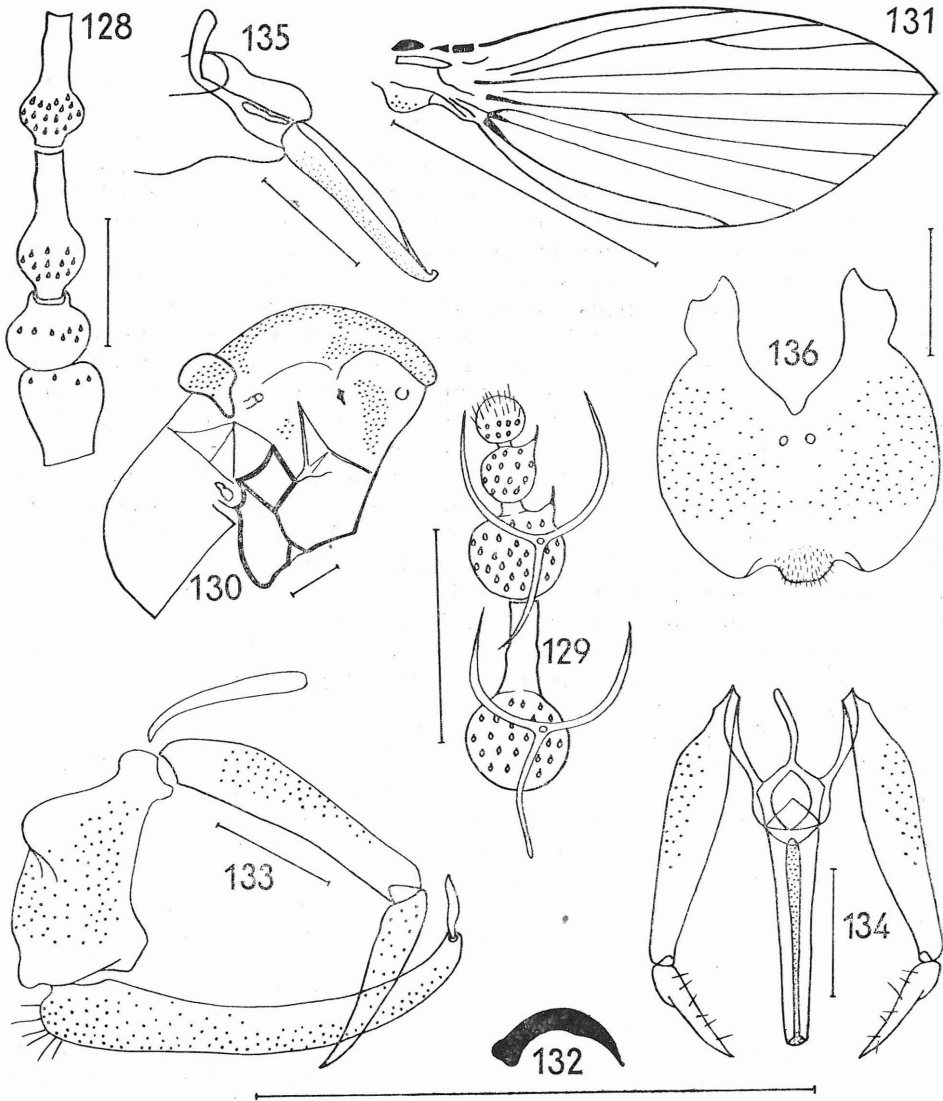


Figs. 117—127: *Psychoda phalaenoides* (L.). ♂: 117 — head; 118 — facets; 119 — apical antennal segments; 120 — terminal lobe of labium; 121 — maxilla and palpus maxillaris; 122 — cercus dorsally; 123 — cercus laterally; 124 — subgenital plate; 125 — genital chamber anteriorly; 126 — the same laterally; 127 — the same ventrad. Scales 0.1 mm.

than 90°. Lobes basally without additional conspicuously sclerotized tongue-like parts, the sensory organ rounded on the end.

Male. Index of facet diameter to width of frons 2.5. Ratio of distance of tangential points of eye's ends to width of frons 37:2, ratio of distance of tangential points of eye's ends to facet diameter 37:5. Frons haired. Antennae 15 segmented, haired as well. Scapus a little longer than its maximum width, narrowed at base, pedicellus almost globular, flagellar segments pitcher-shaped. The last two antennal segments small, of the same size, smaller than foregoing segments, segments 13 and 14 with very short narrowed part and conspicuous subapical spine, 15th segment without narrowed part and without a spine. Paired sensory filaments rather large, with three arms. Terminal lobes of labium with 4 finger-like protuberances. Ratios of lengths of segments of maxillary palps 33:29:29:35. Ratio of maximum length of cibarium to length of epipharynx approximately 1:1. Anepimeral suture straight. Pleural suture in the lower part almost straight. Wings lancet-shaped, without maculations, basal and distal costal nodes distinct. Sc rather short, uninterrupted. R₁ bent to Sc, the origin of R₂₊₃ wide of indistinct basal field, R₂₊₃ inconspicuously arched to costal margin of wing, fork R₂ and R₃ at base rather broad, R₄ almost straight. R₅ straight with end in apex of wing. M₁₊₂ without widened basal part, rather short, straight, fork of M₁ and M₂ at base rather broad, M₃ almost straight. M₃ and Cu connected on M₄. Veins r-r, r-m and m-m not visible. Medial wing angle approximately 90°. Indexes of wing AB:AC:AD=6.4:8.4:6.6; BC:CD:BD=3.1:4.1:5.1. Index of base of M₁₊₂, A to maximum width of wing 2.0. Ratio of length of haltere to its maximum width 3.5:1. Ratios of length of femora, tibiae and first tarsal segments: P₁=9:9:4; P₂=10:11:4; P₃=10:13:4. Paired tarsal claws a little bent. Corniculi, patagia and tegulae not developed. Basal apodeme of male genitalia bent, not divided proximally. Phallobasis with a rudiment of ventral phallosome and two dorsal partially fused phallosomes of a grooved form with minute spines inside. Coxopodites outside without conspicuous protuberance, harpagones approximately 1.5 times shorter than coxopodites from lateral view, pointed apically. Index of length of coxopodites to length of harpagones from dorsal view 2.4. Index of maximum width of coxopodites to its minimum width 2.0. Epandrium of characteristic shape with pair of small rounded apertures anteriorly, sclerotized remainders of 10th tergum and sternum inside of epandrium indistinct. Hypandrium very narrow. Epiproct very short, distinctly haired, hypoproct triangular with rounded tops. Length of hypoproct a little shorter than its width at base. Cerci long, inconspicuously bent from ventral view, of the same width in the whole length, with one retinaculum apically.

Female. Segments 13th and 14th without subapical spine, width of frons equals to diameter of one facet. Subgenital plate of characteristic shape, the angle of external margins of elevated medial distal lobes of subgenital plate and basal part of subgenital plate is larger than 90°; lobes basally without additional conspicuously sclerotized tongue-like parts, the sensory organ rounded on the end.



Figs. 128—136: *Psychoda phalaenoides* (L.). ♂: 128 — basal antennal segments; 129 — apical antennal segments; 130 — thorax laterally; 131 — wing; 132 — claw of P_1 laterally; 133 — hypopygium laterally; 134 — coxopodites, harpagones and copulatory organ dorsally; 135 — copulatory organ dorso-laterally; 136 — epandrium dorsally. Scales 0.1 mm., in Fig. 131 1 mm.

Material: Czechoslovakia — 57 ♂♂, 35 ♀♀. Bohemia: Bukvice (České Budějovice distr.), Čakovec, Horní Lipka, Kaplice (Český Krumlov distr.), Kostomlaty pod Milešovkou, Lázně Kynžvart, Milešov (Litoměřice distr.), Praha — Závist, Roudníky, Velká Paseka, Vilémovice (Havlíčkův Brod distr.), Vlastějovice, Zlatá (Sokolov distr.), Železná Ruda. Moravia: Bedřichov (Šumperk distr.) — M., Dolní Lomná, Dolní Marklovice, Frenštát pod Radhoštěm, Horní Lomná, Hulín (Kroměříž distr.), Petrovice u Karviné, Plumlov, Salaš (Uherské Hradiště distr.), Tichá (Nový Jičín distr.), Uherské Hradiště; Austria — 65 ♂♂, 5 ♀♀. Feichsen — Re., Gaming-Neuhaus — R., Hochriess — R., Lonitz-Lonitzberg — Re., Oberdorf — R., Petzelsdorf — Re., Purgstall — R., Re., Reinsberg — Re., Scheibsbach — R., Re., Scheibbs-Brauchstatt — R., St. Anton a. d. Jessnitz — Re., St. Georgen-Leys — R., Zehnbach — R.

Comments on the material: Collected by author, M. — Martinovský lgt., R. — Rausch, Re. — Ressler. Figured male specimen labelled Lázně Kynžvart, 29. VII. 1971 and female specimen Zlatá (Sokolov distr.), 27. VII. 1971.

Occurrence: ČSSR V.—IX., Austria IV.—XI. There is a harmony with data of Vimmer (1913).

Bionomy: Perris (1840) reared this species from a mushroom, which was determined by him "*Boletus pinetorum*" (= nomen nudum) and described larva and pupa; the mentioned paper has historical value only. A description of larva and pupa was published later by Flachs (1943) as well and a redescription was quoted by Satchell (1947b). Štákelberg (1956) included this species among synanthropic species. *Sensu* Jung (1956) are larvae saprobiont, they live in mud of paddocks, in manure, cow dung, in waste pipes, water supply, life-cycle 8—25 days, however *sensu* Satchell (1947b) 8 days. Johnson (1914) allegedly registered eclosed specimens of this species on filters in sewage workers. Grensted (1947) compiled older literary data of Eaton (1898), Feuerborn (1922b) and Tonnoir (1940) about pollination of *Arum maculatum* L. by adults of *Psychoda phalaenoides* (Linné, 1758) closed in plant's sheaths. The mentioned author quoted also 5 another species of *Psychoda* Latreille, 1796 s. lat., which participated on the pollination. Remmaert (1970) described a time of synchronisation of seasonal dynamics of this species with the time of opening of sheaths of *Arum*. Nielsen (1961) and Wagner (1977) collected this species at light. *Sensu* Satchell (1947b) *Psychoda phalaenoides* Linné, 1758 is dominant species in pastures. The transmission of larval instars of *Rhabditis* Duj. (Anguillulidae) quoted Boviën (1937) and the transmission of mites from family Gamasidae Nielsen (1961). This species was collected also in caves by Bezzi (1907) and Leruth (1939) and some data from caves were discussed by Vaillant et Botosaneanu (1966). *Sensu* Vaillant (1971) the species is parthenogenetic. Rausch collected this species on the branches of coniferous trees, Ressler on windows of a flat. Author of this presented paper collected adults on banks of mountain forest brooks, on decaying organic matter in drainages, growth of alders, on dry places, banks of rivers, springs on meadows, outflows from ponds and swamps with *Populus*, *Alnus*, *Picea*, *Fa-*

agus, Sorbus, Larix, Tilia, Fraxinus, Ulmus, Acer, Crataegus, Carpinus and *Castanea*, the undergrowth with *Urtica, Petasites, Impatiens, Ficaria, Grossularia, Iris, Rubus, Fragaria, Filipendula* and *Assarum*.

Distribution: Austria, Belgium, Czechoslovakia, D. and F. Germany, Denmark, England, Finland, France, Greece, Hungary, Nederland, Norway, Sweden, Switzerland; Alaska, Algeria, Canada, Canary I., Formosa, Japan and New Zealand.

Published data on type-material and type-locality: Probably collected in Europe, type-material probably lost (Quate, 1960b). Quate (1955) established lectotype of synonymized species *Psychoda pacifica* Kincaid, 1897 in Kincaid's collection (Seattle, Washington, IV. 1897, ♂), lectotype of synonymized species *Psychoda horizontata* Haseman, 1907 (Columbia, Missouri, XI. 1906, ♂) which is deposited on the University of Kansas in "Snow Collection". Holotype of synonymized species *Psychoda angustifona* Rapp, 1944 (North Greece, Monroe Co., ♂) is deposited in New York (Amer. Mus. Nat. Hist.).

Discussion: Geoffroy (1762) included species "*Tipula phalaenoides* Linné, 1758" in the genus *Bibio* which he described. The species in this paper are characterized, however binominal nomenclature is not recognized and species are without names. Kertész (1902) noticed that *Psychoda phalaenoides* (Linné, 1758) of some older authors = *alternata*. Synonyms were summarized and wrongly determined specimens discussed by Tonnoir (1934). Adolph (1922) studied the morphology of wing, Kemper (1925) published results of a study of tracheal system of larvae, pupae and adults. Problems about the subspecies of *Psychoda phalaenoides elongata* Tonnoir, 1940 were discussed by Grensted (1947). Eaton (1893) and Tonnoir (1919) used the name *Psychoda phalaenoides* (Linné, 1758) for species with 15-segmented antennae, which is "common", in contrast to Dyar (1926) who used mentioned name for species which 14-segmented antennae — *Psychoda severini* Tonnoir, 1922, which is "the most common". Quate (1955) used Linné's name on the base of indication "common or officinal" as well as Del Rosario (1936) and a row of recent authors for species with 15-segmented antennae. The application of Linné's name in sense of Dyar (1926) seems sensu Quate (1955) unjustified in contrast to Eaton's and Tonnoir's application of this name to abundant and well described and figured species. The suggested nomen novum *Psychoda tonnoiri* Dyar, 1926 instead of *Psychoda phalaenoides* (Linné, 1758) was rejected and is quoted as a synonym to the mentioned Linné's species. In Bohemia registered species *Psychoda phalaenoides* (Linné, 1758) already Kowarz (1894), as the first to Slovakia Fekete (1914), Dyar (1926) wrongly synonymized *Psychoda domestica* Haseman, 1908 with *Psychoda phalaenoides* (= *satchelli*) and applied the name *phalaenoides* to abundant species with 14-segmented antennae and omitted that *Psychoda domestica* Haseman, 1908 has 16-segmented antennae. Sensu Quate (1955) is type-material of *P. domestica* Has. probably lost. Dyar (1926) synonymized the name of *Psychoda longifringa* Haseman, 1907 with *Psychoda phalaenoides* (Linné, 1758). Sensu Quate (1955) are antennae of *Psychoda longifringa* Has. 13-segmented and figured sub-

genital plate does not in the least suggest *phalaenoides* or *satchelli* (= *phalaenoides* Dyar nec Linné). Dyar (1926) synonymized with the name *Psychoda phalaenoides* (Linné, 1758) names *Psychoda degenerans* Walker, 1848 and *Psychoda pallens* Williston, 1896. This synonymy has not been revised so far.

***Psychoda uniformata* Haseman**

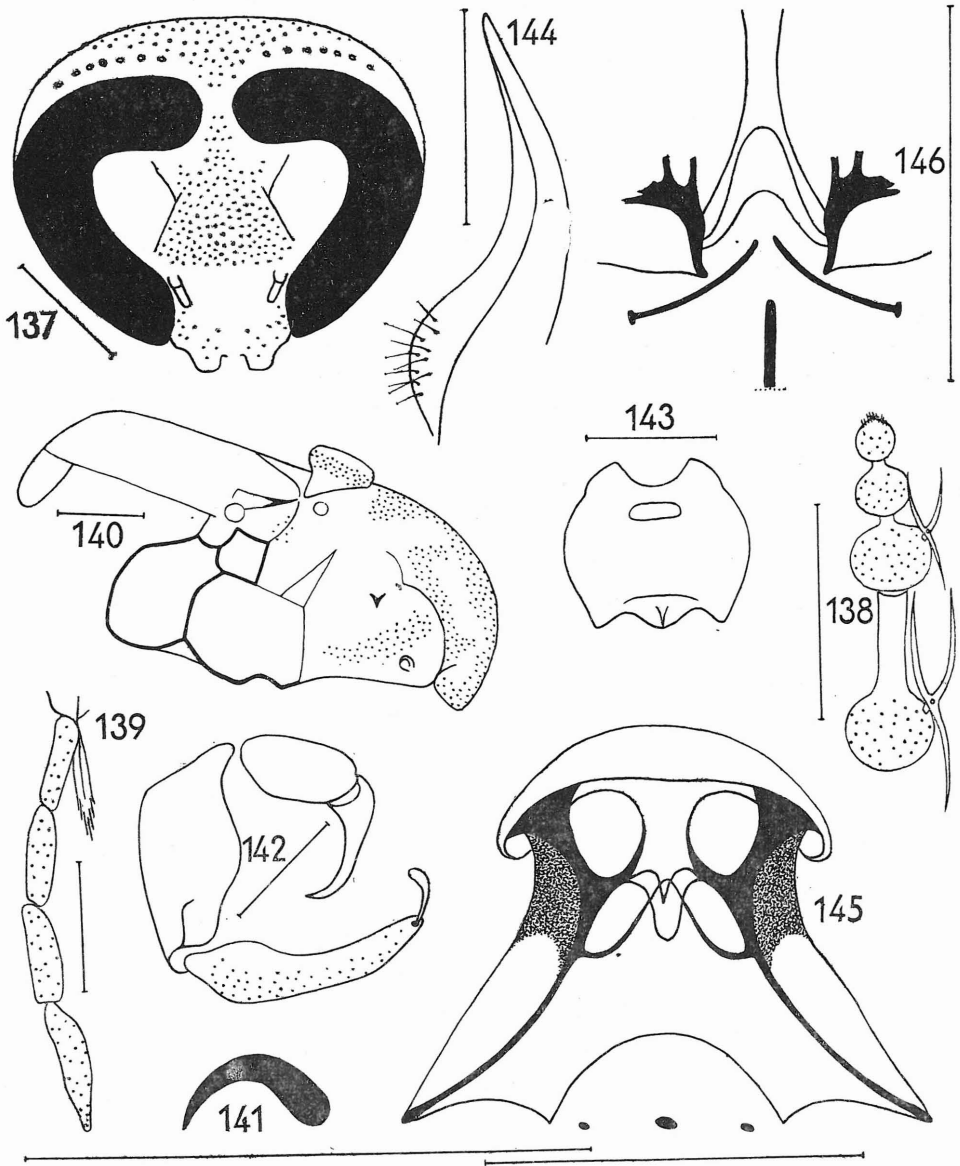
(Figs. 137—156)

Psychoda uniformata Haseman, 1907: 319; Quate, 1955: 213; 1960b: 27; 1965b: ; Sarà et Salamanna, 1968: 155; Ježek, 1986: 97; Ježek et Halgoš, 1986: 31.

Psychoda moravica Vaillant, 1966: 225; Zuska et Laštovka, 1969: 205; Vaillant, 1971: 42; 1973c: 675.

Diagnosis. Small species without maculations on wings, wing-length 1.6—1.8 mm., R₅ strengthened, ventral phallomere developed, pair of dorsal phallomeres partially fused; harpagones with conspicuously arched top from lateral view. The angle of external margins of middle elevated distal lobes of female subgenital plate and basal part of this plate a little larger than 90°, basal lobes with additional very sclerotized lobules. Sensory organ pointed apically. Genital chamber of female of characteristic shape.

Male. Index of facet diameter to width of frons 1.0. Ratio of distance of tangential points of the eye's ends to width of frons as well as to facet diameter 28:3. Frons haired, antennae 15-segmented, haired. Scape almost cylindrical, narrowed at base, pedicel almost globular, flagellar segments bottle-shaped. Basal parts of segments 13 and 12 globular, of the same size, segment 13 with an inconspicuous narrowed part in contrast to segment 12, 14th segment globular, without a neck, smaller than foregoing one, terminal segment of the same shape, a little smaller than segment 14. Sensory filaments rather big, with three arms. Terminal lobe of labium with 5 digital protuberances. Ratios of lengths of segments of maxillary palps 26:28:28:36. Ratio of maximal length of cibarium to length of epipharynx 1:1. Anepimeral suture conspicuously S-shaped. Pleural suture curved. Wings narrowly lancet-shaped, R₅ strengthened, basal and distal costal nodes well visible. Sc rather long, uninterrupted. R₁ bent to Sc, the origin of R₂₊₃ before inconspicuously limited basal field, R₂₊₃ a little bent to costal wing margin, radial fork rather large in the base; R₄ conspicuously arched to radial fork, R₅ a little strengthened with the end in apex of wing. M₁₊₂ without strengthened base, short and almost straight, medial fork at base rather large, M₃ a little bent to medial fork, a connection of M₃ and M₄ is a little behind the connection of Cu and M₄. Veins r-r, r-m and m-m not visible. Medial wing-angle 91°. Indexes of wing: AB:AC:AD=10.2:12.1:9.3, BC:CD:BD=3.0:4.5:5.4. Index of base of M₁₊₂, A to maximum width of wing 2.4. Ratio of length of haltere to its width 2.4:1. Ratios of length of femora, tibiae and first tarsal segment: P₁=7.5:8:3.5; P₂=8:10:4; P₃=9:11:4. Paired tarsal claws a little bent. Corniculi, patagia and tegulae not developed. Basal apodeme of genitalia straight, without a bifurcation on end. Ventral phallomere of copulatory organ developed, two dorsal phallomeres fused distad. Coxopodites out-



Figs. 137—146: *Psychoda uniformata* Has. ♂: 137 — head; 138 — apical antennal segments; 139 — maxilla and palpus maxillaris; 140 — thorax laterally; 141 — claw of P_1 laterally; 142 — hypopygium laterally; 143 — epandrium dorsally; ♀: 144 — cercus laterally; 145 — genital chamber anteriorly; 146 — the same ventrad. Scales 0.1 mm.

side without protuberances, harpagones a little longer than coxopodites from lateral view, with conspicuously arched top. Index of the length of coxopodites to length of harpagones from dorsal view 0.7. Index of maximal width of coxopodites to its minimal width 1.1. Epandrium of characteristic shape. Aperture unpaired, approximately elliptic, the sclerotized remainders of 10th tergite and sternite inside of epandrium indistinct. Hypandrium narrow. Epiproct very short, distinctly haired, hypoproct triangular with rounded top. The length of hypoproct a little shorter than its width at base. Cerci arched from ventral view, short, of the same width in its length, with one rather long retinaculum apically.

Female. Width of frons twice larger than diameter of one facet. Subgenital plate of characteristic shape. The angle of external margins of middle elevated distal lobes of female subgenital plate and basal part of this plate a little larger than 90°, basal lobes with additional very sclerotized lobules. Sensory organ pointed apically. Genital chamber as figured.

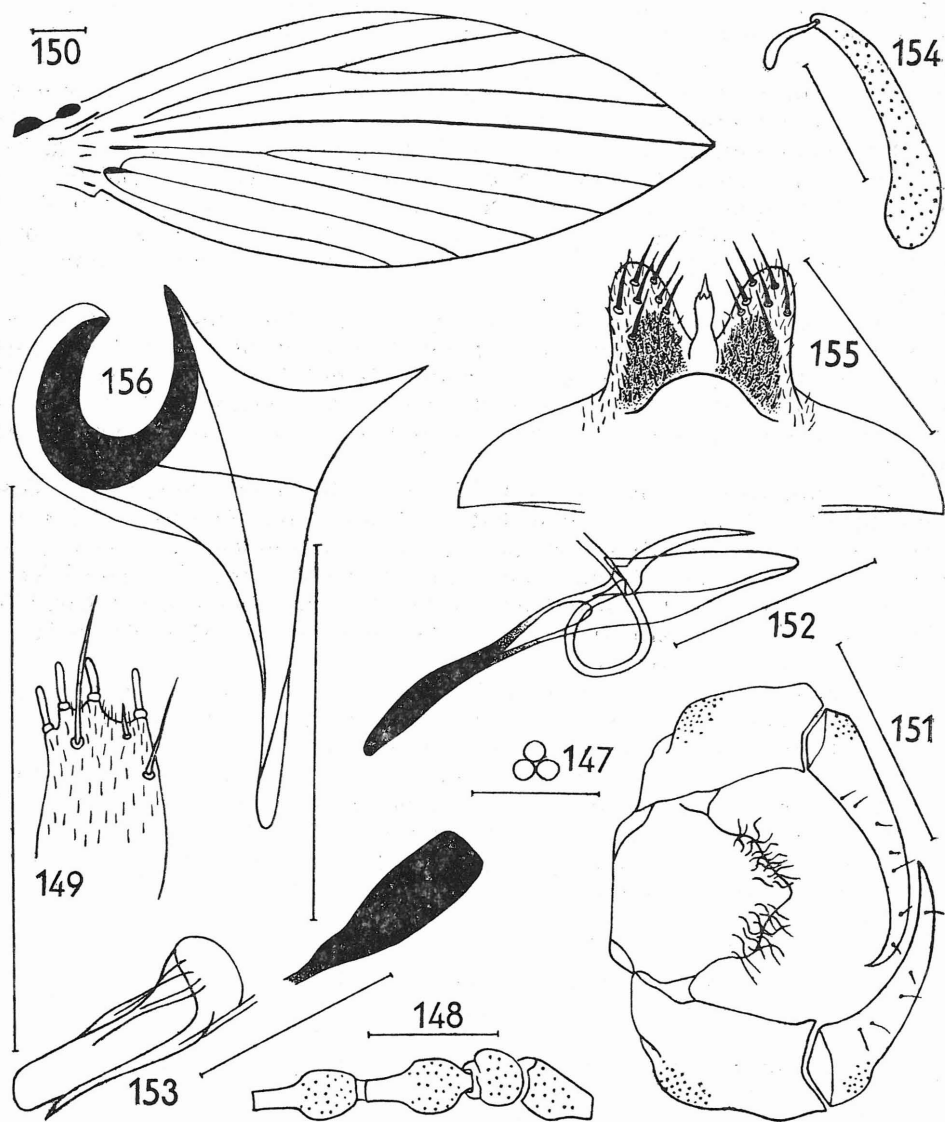
Material: Czechoslovakia — 4 ♂♂, 64 ♀♀. Bohemia: Bělčice (Strakonice distr.), Blatná (Strakonice distr.), Český Brod, Františkovy Lázně, Kolín, Krupka, Lázně Kynžvart, Lnáře, Louny, Měrunice, Nymburk, Ohaveč, Praha-Kunratice, Tachov, Velemín. Moravia: Bystřička, Nová Ves, Ženkla; Austria — 1 ♀. Zehnbach — Re. (Cat. No. P5 — 33390, Inv. No. 1524); Iran — 1 ♀. Esfahan, Loc. No. 256 of Exp. Nat. Mus. Praha (Cat. No. P5 — 33391, Inv. No. 348).

Comments on the material: Collected by author, only Re. — Ressler. Figured male specimen, previously unknown, is labelled Františkovy Lázně, 23. VIII. 1971 and female is labelled Kolín, 26. VIII. 1971. By the generosity of Dr. F. C. Thompson (Smithsonian Institution, Washington, U. S. A.) were loaned to me 2 ♀♀ of *Psychoda uniformata* Haseman, 1907 on slides oriented in a good position for a check-up of determination: det. Quate, 1955, loc. Benson, Cache Co. Utah, VII. 1955, Lite Trap, G. F. Knowlton, F. V. Lieberman; det. Quate, 1954, loc. Lincoln, Nebi — VI. 1953, at lite L. W. Quate.

Occurrence: ČSSR V.—IX., Austria IX., Iran VI.

Bionomy: Larva and pupa not so far described, Zuska et Laštovka (1969) registered an occurrence of larvae in poultry farms and incubators, in abattoir rests, blood, in rests of feathers, on cadavers, on shells of eggs, in manure and excrements. Sensus Vaillant (1971) larvae can be collected in decayed primitive fungi and populations do not have constant parthenogenesis. Author of this paper collected this species on banks of drainages, moist meadows, near arms of rivers, forest brooks, ponds and their outflows, in dry bed of canals shaded by *Alnus*, *Fraxinus*, *Crataegus*, *Salix*, *Populus*, *Quercus*, *Sambucus*, *Acer*, *Robinia*, undergrowth with *Scirpus*, *Phragmites*, *Urtica* and *Lappa*. In Iran was collected material of this species in a garden with *Cupressus*-trees and alf-alfa at an altitude of 1620 m. above sea level (22.—24. VI. 1973).

Distribution: U. S. A., Czechoslovakia, Italy and Mongolia. New to the fauna of Austria and Iran.



Figs. 147—156: *Psychoda uniformata* Has. ♂: 147 — facets; 148 — basal antennal segments; 149 — terminal lobe of labium; 150 — wing; 151 — coxopodites and harpagones dorsally; 152 — copulatory organ dorsally; 153 — copulatory organ laterally; 154 — cercus dorsally; ♀: 155 — subgenital plate; 156 — genital chamber laterally. Scales 0.1 mm.

Data on type-material and type-locality: Quate (1955) published the lectotype-designation of female in 1954 (Columbia, Missouri, IX. 1906), which is deposited in Kansas University (Snow Collection). By the generosity of Dr. George W. Byerse (University of Kansas, Lawrence, Kansas, Department of Entomology, Snow Entomological Museum) was loaned the mentioned lectotypus to me. The specimen on slide very damaged, unfortunately, and female subgenital plate oriented in bad position. By the generosity of Dr. J. Stehlík, CSc. and Dr. P. Lauterer (Moravian Museum, Department of Entomology, Brno) was loaned me female holotype of *Psychoda moravica* Vaillant, 1966 labelled Moravské muzeum Brno, Invent. č. 853/Ent., Collectio K. Landrock, K. Czižek, D. Jacentkovský. Praděd (Moravia bor.), VIII., 1902.

Discussion: Diagnostic characters of *Psychoda moravica* Vaillant, 1966 figured by Vaillant (1966) must be recognized as a variety of *Psychoda uniformata* Haseman, 1907 both by wide of subgenital plate and length of cerci. A connection of R₂ and R₃ on R₂₊₃ was in the original paper incorrectly figured as well as the origin of M₃ and Cu from M₄ which is at holotype inconspicuous.

Logima satchelli (Quate)

(Figs. 157—176)

Psychoda satchelli Quate, 1955: 214.

Psychoda (Psychoda) satchelli; Sarà et Salamanna, 1967: 57.

Psychoda satchelli; Salamanna, 1974b: 65; 1975a: 203; Krek, 1979: 1806; Salamanna et Sarà, 1980: 17.

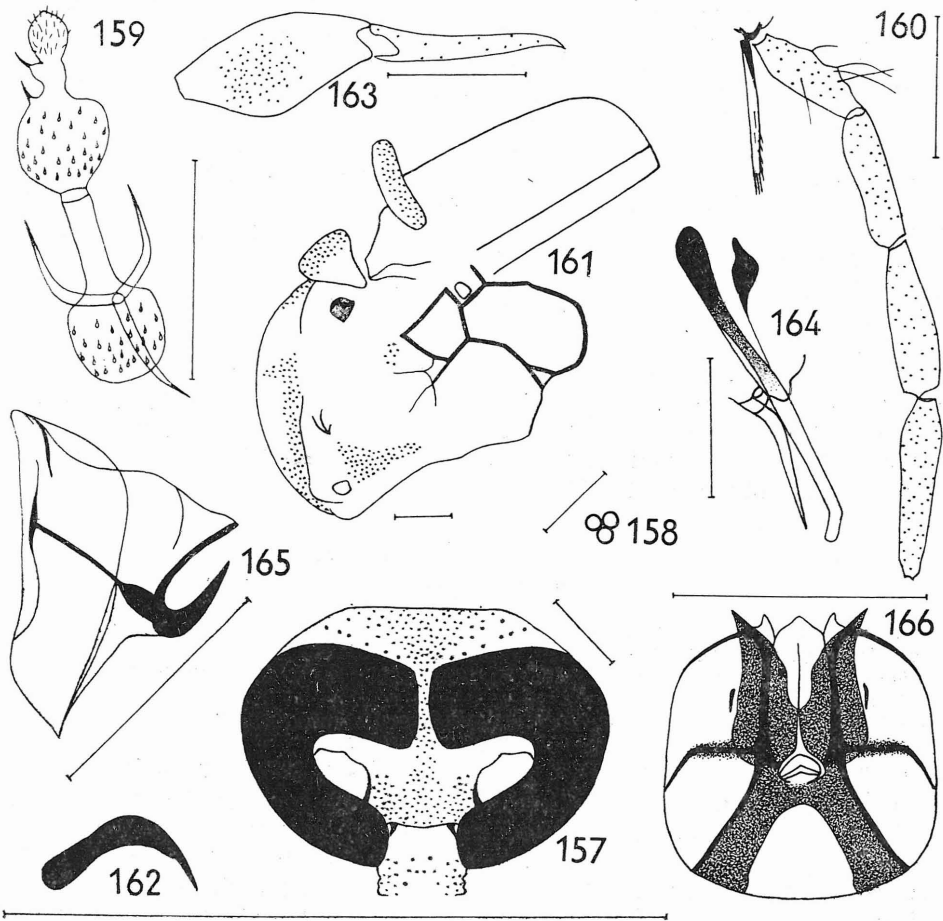
Logima satchelli; Ježek, 1984: 143; 1986: 97; Ježek et Halgoš, 1986: 31.

Psychoda phalaenoides; Dyar, 1926 (nec Linné, 1758): 103.

Psychoda severini; del Rosario, 1936 (nec Tonnoir, 1922): 102; Rapp, 1944: 207.

Diagnosis. Small species; swollen part between fused antennal segments 13 and 14 conspicuous, eccentric, with a strong spine laterally, subapical spine on 13th segment presented, length of the wing 1.9—2.7 mm., the wing without brownish tufts of hairs, coxopodites strengthened in the middle, harpagones long, inconspicuously S-shaped from lateral view, pointed apically; length of coxopodites the same as harpagones, basal apodeme of male genitalia rounded proximally, dorsal phallomeres partially jointed, conspicuously hooked at the tip, ventral phallomere developed as isolated bent pointed sclerit. Subgenital plate of characteristic shape with a pair of conspicuously developed distal rounded lobes which are pigmented, the width of sensory organ at base narrower than its length.

Male. Index of facet diameter to width of frons 1.3; index of distance of tangential points of the eye's ends to width of frons 12.7 and to facet diameter 9.5. Both frons and 14 segmented antennae haired. Length of the first antennal segment a little more than its width, pedicellus asymmetrical, with a conspicuous short sided protuberance, flagellar segments flask-shaped. Swollen part between fused segments 13 and 14 conspicuous, eccentric, with a strong spine laterally (with 2—4 hairs at base — slide No. 456). Segment 13 moreover with a subapical spine of the same



Figs. 157—166: *Logima satchelli* (Quate). ♂: 157 — head; 158 — facets; 159 — apical antennal segments; 160 — maxilla and palpus maxillaris; 161 — thorax laterally; 162 — claw of P_1 laterally; 163 — coxopodit and harpagon laterally; 164 — copulatory organ laterally; 165 — genital chamber laterally; 166 — the same ventrad. Scales 0.1 mm.

size. Terminal lobe of labium with 4 digital projections. Ratios of lengths of segments of maxillary palpus 35:37:43:49. Maximal length of cibarium to length of epipharynx 3.3:2.6 (loc. Strachovice). Pleural suture with a curve in the middle. Wing lancet-shaped, without brownish tufts, costal nodes distinct. Sc rather long, a little arched. R_1 arched to fore margin of wing, origin of R_{2+3} unattached, the angle of distal part of R_{2+3} and basal part of R_2 is larger than the angle of that and basal part of R_3 . R_{2+3} bent to fore margin of wing, R_2 straight, R_3 inconspicuously S-shaped. R_4 bent to radial fork as well as R_5 with the end in apex of wing. M_{1+2}

with a strengthening at base, almost straight; M_1 as well as M_2 straight; base of M_2 without a connection to M_1 . M_3 and M_4 bent to radial fork, Cu strengthened at base, bent to hind wing margin. Cu and M_3 without a jointing basally. Veins r-r, r-m and m-m unascertainable. Index of base of M_{1+2} , A to maximum breadth of wing 1.9. Length of halteres to their greatest breadth 2.6—2.9 (loc. Strachovice). Ratios of length of femur, tibia and first tarsal segment $P_1=10.5:11.5:5.5$; $P_2=12.5:15.0:5.5$; $P_3=14.0:17.0:6.5$. Paired tarsal claws bent. Basal apodeme of the male genitalia almost straight from lateral view, bilobed, proximally from dorsal view, dorsal phallosomes partially jointed, conspicuously hooked at the tip from lateral view, ventral phallosome developed as isolated bent pointed sclerite. Coxopodite with an external protuberance, harpagones of approximately the same length as coxopodites. Index of maximum breadth of coxopodite to its minimum breadth 1.7. Epandrium as figured, aperture missing, sclerotized remains of 10th tergite and sternite inside of epandrium not visible. Hypandrium narrow. Epiproct inconspicuously developed, with many hairs, hypoproct is not visible. Cerci with a little broadened base, C-shaped from ventral view, with one retinaculum apically.

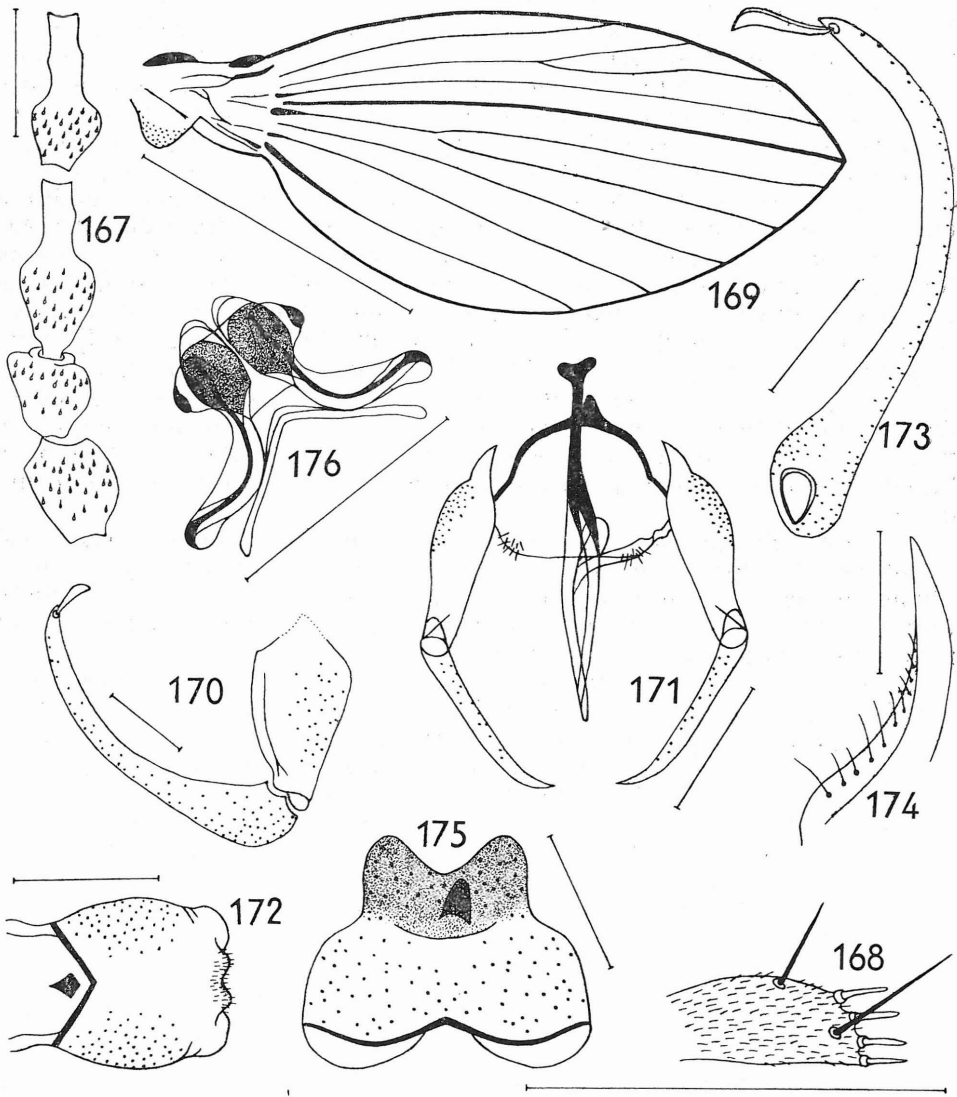
Female. Subgenital plate with a pair of conspicuously developed distal rounded lobes which are pigmented, with short sensory organ in pigmented area. Width of sensory organ at base narrower than its length. Complicated sclerotized structures in the area of genital chamber without mesh-like structures. Cercus as figured, S-shaped.

Material: Czechoslovakia — 11 ♂♂, 21 ♀♀. Bohemia: Dobročovice (Praha-východ distr.), Praha-Bohnice, Praha-Klukovice, Praha-Křeslice, Praha-Prokopské údolí, Průhonice — Maš., Roztoky-Žalov (Praha-západ distr.). Moravia: Lednice (Břeclav distr.) — V.; Austria — 24 ♂♂, 19 ♀♀. Ernegg — Re., Feichsen — Re., Gaming — Re., Oberndorf — R., Purgstall — R., Re., Reinsberg — R., Rogatsboden — Re., St. Georgen-Leys — R., Zarnsdorf — Re., Zehnbach — R. (Cat. No. P5 — 33392—33434, Inv. No. 590, 592, 1406, 1416, 1422, 1424, 1537, 1543, 1549, 1576, 1588, 1608, 1611, 1614, 1616, 1640, 1643, 1645, 1648, 1665, 1683—1685, 1688, 1713, 1721—1722, 1727—1728, 1731, 1827—1828, 1830, 1838, 1845, 1852, 1857, 1862, 1867, 1877, 1887, 1891, 1896).

Comments on the material: Collected by author, Maš. — Mašínová lgt., R. — Rausch, Re. — Ressler, V. — Vaňhara. Figured male labelled Praha-Dobročovice, 31. III. 1981, terminal lobe of labium figured from slide No. 453 labelled Strachovice env. Temelín, 12. VI. 1983 and female from slide No. 467 of the same locality.

Occurrence: ČSSR III.—IX., Austria IV.—XII.

Bionomy: In America is *L. satchelli* (Quate, 1955) frequent near compost, light, in light trap, citronella bait trap, rotary trap and emergence trap. In Czechoslovakia Vaňhara collected this species in a light trap as well; in Austria Ressler collected this species in ditches, on the branches of coniferous trees, WC and windows of a flat; author of this present paper on the banks of brooks near rivers, in swamps, small reservoirs, an outflow of a piggery, silo pits and soil heaps. Localities were shaded



Figs. 167—176: *Logima satchelli* (Quate). ♂: 167 — basal antennal segments; 168 — terminal lobe of labium; 169 — wing; 170 — epandrium and cercus laterally; 171 — coxopodites, harpagones and copulatory organ dorsally; 172 — epandrium dorsally; 173 — cercus dorsally; ♀: 174 — cercus laterally; 175 — subgenital plate; 176 — genital chamber anteriorly. Scales 0.1 mm., in Fig. 170 1 mm.

by *Alnus*, *Salix*, *Betula*, *Quercus*, *Acer*, *Fraxinus*, *Carpinus*, *Sambucus*, *Robinia*, *Prunus* and *Populus*, with *Carex*, *Typha*, *Urtica*, *Ficaria* and *Rumex* in the undergrowth.

Distribution: Czechoslovakia, Italy, Yugoslavia; Canada, U.S.A. New to the fauna of Austria.

Data on both type-material and type-locality were published by Quate (1955) in original paper. Holotype and allotype are deposited at California Academy of Sciences. Numerous paratypes are deposited at California Insect Survey, University of Nebraska, U. S. National Museum and Canadian National Collection. As type-locality was quoted compost as well as light traps.

Discussion: Quate (1955) gave the differential diagnosis of male *Psychoda satchelli* Quate, 1955 by comparison with *Psychoda albipennis* auct. (= *Logima zetterstedti* Ježek, 1983). Dorsal pair of phallomeres of the last quoted species said to be without conspicuous hooked end in contrast to the former species. Knowledge of the variability of this character is badly needed; loaned paratype of male of "*satchelli*" on a slide deposited in Washington, D.C., U.S.A. (Smithsonian Institution) is dorsal pair of phallomeres with only inconspicuous hooked end in contrast to *Logima zetterstedti* Ježek, 1983. Sarà et Salamanna (1967) figured damaged male genitalia and determination is not clear. Salamanna (1975a) figured subgenital plate of female *P. satchelli* Quate, 1955, however it is certainly *L. zetterstedti* Ježek, 1983. The figures mentioned aren't in keeping with the original ones sensu Quate (1955). Author of this paper compared the material from Czechoslovakia with several specimens from U. S. A. loaned by Smiths. Institut from Washington without morphological differences: Paratypus ♂, Auburn, Ala, VIII. 1948, Wite Trap, U. S. N. M. Euparal 1953 LWQ; paratypus ♀, Straw berry Cnyn., Berkeley, Calif. XII. 1950, Euparal 1954 LWQ; ♀, Cranberry Lake, St. Lawrence CONY, VI. 1963, W. W. Wirth, light trap; ♂, Falls Church, Va., Holmes Run, V. 1960, W. W. Wirth, light trap; ♂, Falls Church, Va., V. 1960, W. W. Wirth, light trap, HRA; ♂, Falls Church, Va., Holmes Run, X. 1960, W. W. Wirth, light trap; ♂, Falls Church, Va., Holmes Run, VI. 1960, W. W. Wirth, light trap; ♀, Fllis Hollow, Tompkins CO.NY, VI. 1963, C. O. Berg, light trap; ♂, Lewis, CO.NY, Pine Grove, Watson, VI. 1963, W. W. Wirth, light trap.

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References

- Abreu E. S., 1930: Monografía de los Psychodidos de las islas Canarias. *Mem. R. Acad. Barcelona*, **22** (3): 91—128.
- Adolph E., 1922: Eine Bemerkung über die Flügel der Diptere Psychoda phalaenoides. *Arch. Natg. Berlin*, **82A** (1917): 54.
- Anonymus (1964a): Abecední seznam obcí a jejich částí s příslušnými dodávacími poštami v Československé socialistické republice. (Alphabetic list of villages and their parts in ČSSR, with respective post-offices. [Nakladatelství dopravy a spojů, Praha, 1181 pp. (in Czech).
- Anonymus (1964b): Přehled obcí a jejich částí v Československé socialistické republice, jejichž názvy zanikly, byly změněny, nebo se staly místními částmi v době od 5. V. 1945—1. VII. 1964. [List of villages and their parts in ČSSR, of which names were abolished, changed or established as local parts of villages from 5. V. 1945 to 1. VII. 1964.] Nakladatelství dopravy a spojů, Praha, 102 pp. (in Czech).
- Banks N., 1894: Some Psychodidae from Long Island, N. Y. *Canad. Ent.*, **26**: 329—333.
- Banks N., 1895: Notes on Psychoda. *Canad. Ent.*, **27**: 324.
- Banks N., 1901: The Eastern species of Psychoda. *Canad. Ent.*, **33**: 273—275.
- Banks N., 1932: Some Psychodidae from the Carolina Mountains. *Bull. Brooklyn ent. Soc.*, Lancaster, Pa., **26** (1931): 227—228.
- Barendrecht G., 1934: Preliminary note on Dutch Psychodidae. *Ent. Ber.*, Amsterdam, **9**: 78—80.
- Becker T., Bezzi M., Bischof J., Kertész K. et Stein P., 1903: Katalog der paläarktischen Dipteren. I. Budapest, 396 pp.
- Bellier M. T., 1967: Les Diptères Psychodidae des eaux a cours lent et des étangs. *Trav. Lab. Hydrobiol. Piscic. Univ. Grenoble*, **57—58** (1965—1966): 57—63.
- Bezzi M., 1907: Ulteriori notizie ditterofauna delle caverne. *Atti Soc. Ital. Sci. nat.*, Milano, **46**: 177—187.
- Botosaneanu L. et Vaillant F., 1965: Les Diptères Psychodidae de Roumanie. *Trav. Lab. Hydrobiol. Piscic. Univ. Grenoble*, **56** (1964): 77—80.
- Bovien P., 1937: Some types of association between Nematodes and Insects. *Vid. Medd.*, **101**: 1—114.
- Brauer F., 1883: Die Zweiflügler des Kaiserlichen Museums zu Wien III. Systematische Studien auf Grundlage der Dipterenlarven nebst einer Zusammenstellung von Beispielen aus der Literatur über dieselben und Beschreibung neuer Formen. *Denkschr. Akad. Wiss. Wien, Math.-nat.*, **47**: 1—100.
- Büttiker W., 1969: Parasiten und Nidicolon der Uferschwalbe [Riparia riparia (L.)] in der Schweiz. *Mitt. Schweiz. Entomol. Ges.*, **42**: 205—220.
- Caspers N. et Wagner R., 1980: Emergenz — Untersuchungen an einem Mittelgebirgsbach beim Bonn. II. Psychodiden — Emergenz 1976/1977. *Arch. Hydrobiol.*, Stuttgart, **88** (1): 73—95.
- Crisp G. et Lloyd L., 1954: The community of insects in a patch of woodland mud. *Trans. R. ent. Soc. London*, **105**: 269—313.
- Curran C. H., 1924: Some apparently new Canadian Psychodidae (Dipt.). *Canad. Ent.*, Orillia, **56**: 215—220.
- Curran C. H., 1930: Report on the Diptera collected at the Station for the study of insects, Harriman Interstate Park, N. Y. Appendix on Tipulidae and Ptychopteridae by C. P. Alexander. *Bull. Amer. Mus. Nat. Hist.*, New York, **61**: 21—115.
- Degeer C., 1776: Mémoires pour servir à l'histoire des Insectes. VI, Stockholm, 522 pp.
- Duckhouse D. A., 1966: Psychodidae (Diptera, Nematocera) of Southern Australia: subfamily Psychodinae. *Trans. R. ent. Soc. Lond.*, **118**: 153—220.
- Duckhouse D. A., 1973: A catalogue of the Diptera of the Americas South of the United States. 6A Family Psychodidae. Subfamilies Bruchomyiinae, Trichomyiinae, Sycoracinae and Psychodinae. São Paulo, 29 pp.

- Dyar H. G., 1926: Three Psychodids from the Glacier National Park (Diptera, Psychodidae). *Insector Ins. Menst.*, Washington, **14**: 103–106.
- Eaton A. E., 1893: A synopsis of British Psychodidae. *Ent. Mag.*, **29**: 5–8, 31–34, 120–130.
- Eaton A. E., 1894: Description of a new species of *Pericoma* from Delagoa Bay. *Ent. Mag.*, **30**: 22–28.
- Eaton A. E., 1895: Supplementary notes on Dr. Fritz Müller's paper on a new form of larvae of Psychodidae (Diptera) from Brazil. *Trans. ent. Soc. London*, **1895**: 489–494.
- Eaton A. E., 1898: Supplement to "A synopsis of British Psychodidae". *Ent. Mag.*, **34**: 117–125, 154–158.
- Eaton A. E., 1904: New genera of European Psychodidae. *Ent. Mag.*, **15**: 55–59.
- Elger M., 1979: Faunistisch – ökologische Untersuchungen an Schmetterlingsmücken (Psychodidae, Diptera). *Zool. Beitr.*, **24** (3) (1978): 465–469.
- Enderlein G., 1936: Klassifikation der Psychodiden (Dipt.). *Dtsch. ent. Z.*, Berlin, **4**: 81–112.
- Fabricius J. C., 1781: Species insectorum exhibentes eorum differentias specificas, synonyma, auctorum, loca natalia, metamorphosin. II. Hamburgi et Kilonii, 517 pp.
- Fabricius J. C., 1787: Mantissa insectorum sistens species nuper detectas. Hafniae, 382 pp.
- Fabricius J. C., 1794: Entomologia systematica emendata et aucta. IV. Hafniae, 472 pp.
- Fabricius J. C., 1805: Systema antliatorum secundum ordines, genera, species. VIII. Brunsvigae, Reichard, 372 pp.
- Fairchild G. B., 1951: Some nomenclatorial notes on Psychodidae (Diptera). *Bull. Brooklyn ent. Soc.*, Lancaster, Pa., **46**: 10–18.
- Fairchild G. B., 1955: The relationships and classification of the Phlebotominae (Diptera, Psychodidae). *Ann. ent. Soc. Amer.*, Columbus, **48**: 182–196.
- Fekete G., 1914: Diptera faunájához. *Ber. Musealver. Com. Trencsén*, **1914**: 89–93.
- Feuerborn H. J., 1922a: Der sexuelle Reizapparat (Schmuck-, Dust- und Berührungsgorgane) der Psychodiden nach biologischen und physiologischen Gesichtspunkten untersucht. Zugleich ein Beitrag zur Kenntnis der Physiologie der Sinnesorgane und der Organe des Geschlechts- und Bereitschaftsduftes. *Arch. Natg.* Berlin Abt. A, **88** (4): 1–137.
- Feuerborn H. J., 1922b: Das Hypopygium „inversum“ und „circumversum“ der Dipteren. *Zool. Anz.* Leipzig, **55**: 189–213.
- Flachs K., 1943: Über einige an der Humifikation des Mistes sich beteiligende Mücken und deren Larven. *Prakt. Blätter Pflanzenbau Pflanzenschutz*, **20**: 174–204.
- Freeman P., 1950: British Psychodidae. *Handb. Ident. Br. Ins.*, **9** (2): 77–96.
- Geoffroy E. L., 1762: Histoire abrégée des Insectes qui se trouvent aux environs de Paris, dans laquelle ces animaux sont rangés suivant un ordre méthodique. II. Paris, Durand, 690 pp.
- Georges D., 1961: Diptères Psychodidae paléarctiques recueillis par M. le Dr. J. Clastrier. *Trav. Labor. Hydrob. Univ. Grenoble*, **53**: 101–109.
- Giljarov M. S., 1964: *Opredělitel' obitajuščich v počve ličinek nasekomych*. Izdatel'stvo Nauka, Moskva, 919 pp.
- Grensted L. W., 1947: Diptera in the spathes of *Arum maculatum* L. *Ent. Mont. Mag.*, **83**: 1–3.
- Hackman W., 1980: A check list of the Finnish Diptera. I. Nematocera and Brachycera (s. str.). *Notulae Entomologicae*, **60**: 17–48.
- Halgoš J., 1973: Príspevok k poznaniu rozšírenia druhov čeláde Psychodidae (Diptera Nematocera) na území západného Slovenska. *Acta Fac. Rerum nat. Univ. Comen. Zool. Bratisl.*, **19**: 71–77.
- Hardy D. E., 1942: Notes on Diptera in Snow entomological collection. *J. Kansas ent. Soc.*, Manhattan, **15**: 142–143.
- Haseman L., 1907: A Monograph of the North American Psychodidae, including ten new Species and an aquatic Psychodid from Florida. *Tr. Amer. ent. Soc.*, **33**: 299–333.
- Haseman L., 1908: Notes on the Psychodidae. *Ent. News*, **19**: 274–285.
- Headlec T. J. et Beckwith C. S., 1918: Sprinkling sewage filter fly *Psychoda alternata* Say. *J. Econ. Ent.*, **11**: 395–401.

- Ježek J., 1977: Reinstatement of the genus *Tinearja* Schellenberg (Diptera, Psychodidae). *Acta ent. bohemoslov.*, **74**: 232—241.
- Ježek J., 1982: Some new faunistic records of Psychodidae (Diptera) of Bohemian Karst. *Dipt. bohemoslov.*, Brno, **3**: 57—60.
- Ježek J., 1983a: Contribution to the taxonomy of the genus *Logima* Eat. (Diptera, Psychodidae). *Acta ent. Mus. Nat. Pragae*, **41**: 213—234.
- Ježek J., 1983b: Intergeneric relationships of selected tribes of the subfamily Psychodinae (Diptera, Psychodidae). *Acta ent. Mus. Nat. Pragae*, **41**: 255—259.
- Ježek J., 1984: Six new genera of the tribe Psychodini End. (Diptera, Psychodidae). *Acta faun. ent. Mus. Nat. Pragae*, **17**: 133—153.
- Ježek J., 1986: Mormiini, Paramormiini and Psychodini (Diptera, Psychodidae) in České Budějovice distr. *Dipt. bohemoslov.*, **4**: 95—98.
- Ježek J. et Halgoš J., 1986: Psychodidae, pp. 29—32. In Ježek J. (coord.): Check-list of Czechoslovak Diptera. *Acta faun. ent. Mus. Nat. Pragae*, **18**: 1—342.
- Johannsen O. A., 1934: Aquatic Diptera. Part I. Nematocera, exclusive of Chironomidae and Ceratopogonidae. Ithaca, New York, 71 pp.
- Johnson C. W., 1925: Fauna of New England. Psychodidae. List of the Diptera or two-winged flies. *Occasional Papers of Boston Soc. Nat. Hist.*, **7** (15): 45—46.
- Johnson J. W. H., 1914: Contribution to the biology of sewage disposal. *J. econ. Biol.*, **9**: 105—124, 127—164.
- Jung H. F., 1956: Beiträge zur Biologie, Morphologie und Systematik der europäischen Psychodiden (Diptera). *Dtsch. ent. Z.*, Berlin (N. F.), **3**: 97—257.
- Kemper H., 1925: Morphogenetische Untersuchung des Tracheensystems von *Psychoda phalaenoides* (Diptera). *Zool. Inst. Westf. Wilhelms — Univ. Münster i. W. Diss.*, 1925: 1—34.
- Kertész C., 1902: *Catalogus dipterorum hucusque descriptorum*. I. Leipzig, 357 pp.
- Kincaid T., 1897: The Psychodidae of Washington. *Ent. News Philad.*, **1897**: 143—146.
- Kincaid T., 1899: The Psychodidae of the Pacific coast. *Ent. News Philad.*, **10**: 30—37.
- Kincaid T., 1901: Notes on American Psychodidae. *Ent. News Philad.*, **12**: 193—196.
- Kloet G. S. et Hincks W. D., 1945: A check-list of British Insects. Stockport, 483 pp.
- Kowarz F., 1894: *Catalogus insectorum faunae bohemiae*. II. Fliegen (Diptera) Böhmens. Prag, 42 pp.
- Krek S., 1973: Ekološka klasifikacija i cenotički odnosi Psychodidae u tekúćicama jugoistočne Bosne. *God. Biol. inst. Univ.*, Sarajevo, **26**: 57—95.
- Krek S., 1979: Naselje Psychodidae (Diptera) Rijeke Krivaje. II. kongr. Ekol. Jugosl., Zagreb, 1979: 1803—1811.
- Krek S., 1982: Psychodidae (Diptera) Sjeverne Makedonije. *Glas. Zem. Muzeja* (N. S. sv. Prirodne nauke), Sarajevo, **21**: 147—161.
- Krek S., 1985: Die Psychodidaen-Fauna der SR Serbien. Proceedings on the Fauna of SR Serbia (Serbian Academy of Sciences and Arts, Belgrade), **3**: 149—182.
- Krivošeina N. P., Zajcev A. I. et Jakovlev E. B., 1986: Nasekomye — razrušiteli gribov v lesach Evropejskoj časti SSSR. Nauka, Moskva, 312 pp.
- Latreille P. A., 1796: *Precis des caracteres generiques des insectes, disposes dans un ordre naturel*. Paris, Brive, 201 pp.
- Latreille P. A., 1805: *Histoire naturelle, générale et particuliere, des Crustacés et des Insectes*. 14. Paris, 432 pp.
- Latreille P. A., 1809: *Genera Crustaceorum et Insectorum secundum ordinem naturalem in familiis disposita, inconibus exemplisque plurimis explicata*. IV. Parisiis et Argentorati, Amand König, 399 pp.
- Laurence B. R., 1953: Some Diptera bred from cow dung. *Ent. Month. Mag.*, 4th Ser., **14**: 281.
- Leruth R., 1939: La biologie du domaine souterrain et la fauna cavernicole de la Belgique. *Mém. Mus. roy. H. N. Belg.*, **87**: 294—295.
- Linné C., 1758: *Systema naturae, sive regna tria naturae systematice proposita per classes, ordines, genera et species*. I. Ed. 10. Holmiae, 824 pp. (London, 1956).
- Linné C., 1761: *Fauna svecica sistens animalia Sveciae regni*. Stockholmiae, 578 pp.
- Linné C., 1767: *Systema naturae per regna tria naturae*. I. Ed. 12. Holmiae, 1327 pp.
- Lloyd L., 1943: The male of *Psychoda lobata* Tonnoir (Diptera, Psychodidae). *Proc. R. ent. Soc. London* (B), **12**: 31.

- Macquart J., 1826: Insectes Diptères du Nord de la France. *Rec. Trav. Soc. Sc. Agr. et Arts Lille*, **1823—1824**: 59—224.
- Macquart J., 1834: Histoire Naturelle des Insectes Diptères. I. (Suite à Buffon ed. Roret). Paris, Roret, 578 pp.
- Malloch J. R., 1918: A preliminary classification of Diptera, exclusive of Pupipara, based upon larval and pupal characters, with keys to imagines in certain families. Part I. *Bull. Illinois State Nat. Hist.*, **12** (1915—1917): 161—410.
- Meigen J. W., 1804: Klassifikation und Beschreibung der europäischen zweiflügeligen Insekten (Diptera L.). I. Braunschweig, K. Reichard, 152 pp.
- Meigen J. W., 1818: Systematische Beschreibung der bekannten europäischen zweiflügeligen Insekten. I. Aachen, 333 pp.
- Meigen J. W., 1851: Systematische Beschreibung der bekannten europäischen zweiflügeligen Insekten. I. Halle, 259 pp.
- Morge G., 1974: Eine unbekannte Dipteren-Kollektion Österreichs von ausgefallenen Fundorten. *Naturkund. Jahrb. St. Linz*, **1974**: 89—127.
- Morge G., 1975: Dipteren-Farbtafeln nach den bisher nicht veröffentlichten Original-Handzeichnungen Meigens: „Johann Wilhelm Meigen: Abbildung der europaischen zweiflügeligen Insekten, nach der Natur“. I. *Beitr. Ent.*, Berlin, **25** (2): 383—500.
- Muttkowski R. A., 1915: New Insect life histories I. *Bull. Wisconsin Nat. Hist. Soc.*, **13**: 109—122.
- Neuhaus G. H., 1886: Diptera Marchica. Systematischen Verzeichniss der Zweiflügler (Mücken und Fliegen) der Mark Brandenburg mit kurzer Beschreibung und analytischen Bestimmungs-Tabellen. Berlin, 371 pp.
- Nielsen B. O., 1961: Studies on the Danish Psychodidae (Diptera, Nematocera). *Ent. Medd.*, Copenhagen, **31**: 127—152.
- Nielsen B. O., 1964: Studies on the Danish Psychodidae (Diptera: Nematocera). 2. Preprint *Natura jutl.*, **12**: 149—161.
- Nielsen B. O., 1965a: Psychodidae from Norway and Sweden. *Opusc. ent.*, Lund, **30**: 141—152.
- Nielsen B. O., 1965b: Psychodidae (Diptera) from the Azores and Madeira. *Bolm Mus. munic. Funchal*, **18** (1964): 103—113.
- Pellerano G., 1967: Notas sobre Psychodidae (Diptera) argentinos. 1. Redescrición de *Psychoda alternata* Say, *P. cinerea* Banks y *Telmatoscopus albipunctatus* (Williston). *Physis*, B. Aires, **27**: 9—26.
- Perris E., 1840: Notes pour servir à l'histoire des Psychodes, Diptères de la famille des Tipulaires Lat., tribu des Gallicoles Meig. *Ann. d. Sc. Nat. France*, **13** (2): 346—348.
- Quate L. W., 1954: A revision of the Psychodidae of the Hawaiian Islands (Diptera). *Proc. Haw. Ent. Soc.*, **15**: 335—356.
- Quate L. W., 1955: A revision of the Psychodidae (Diptera) in America north of Mexico. *Univ. Calif. Publ. Ent.*, Berkeley, **10**: 103—273.
- Quate L. W., 1959: Classification of the Psychodini (Psychodidae: Diptera). *Ann. ent. Soc. Amer.*, Washington, **52**: 444—451.
- Quate L. W., 1960a: New species and records of Nearctic Psychodidae (Diptera). *Pan-Pacif. Ent.*, San Francisco, **36**: 143—149.
- Quate L. W., 1960b: Guide to the insects of Connecticut. Part VI. The Diptera or true flies of Connecticut. Seventh fascicle: Psychodidae. *Bull. Connecticut geol. nat. Hist. Surv.*, Middletown, **92**: 1—54.
- Quate L. W., 1965a: A taxonomic study of Philippine Psychodidae (Diptera). *Pacif. Insects*, Honolulu, **7**: 815—902.
- Quate L. W., 1965b: Psychodidae in Stone A., Sabrosky C. W., Wirth W. W., Foote R. H. et Coulson J. R.: A catalog of the Diptera of America North of Mexico. Washington, 1696 pp.
- Quate L. W. et Quate S. H., 1967: A monograph of Papuan Psychodidae, including *Phlebotomus* (Diptera). *Pacif. Insects Monogr.*, **15**: 1—216.
- Rapp W. F., 1944: Catalogue of North American Psychodidae. *J. New York ent. Soc.*, **52**: 201—209.
- Rapp W. F., 1946: Catalogue of the types of genera and subgenera of Psychodidae. *Bull. Brooklyn ent. Soc. Lancaster*, **40** (1945): 172—177.
- Rapp W. F. et Cooper J. L., 1945: Check-list of the Psychodidae of Europe. *J. New York ent. Soc.*, **53**: 117—126.

- Remmaert H., 1970: Tageszeitliche Verzahnung der Aktivität verschiedener Organismen. *Oecologia*, **3** (1969): 214—226.
- Rondani C., 1856: Dipterologia Italicae prodromus. Vol. 1: Genera Italica ordinis dipterorum ordinatim disposita et distincta et in familias et stirpes aggregata. Parmae, 228 pp.
- Rosario F. del, 1936: The American species of Psychoda (Diptera: Psychodidae). *Philipp. J. Sci.*, Manila, **59**: 85—148.
- Rossi P., 1790: Fauna Etrusca, sistens Insecta, quae in provinciis Florentina et Pisana praesertim collegit. Liburni, Masi, I: 272 pp., II: 348 pp.
- Rozkošný R., 1971: To the knowledge of Psychodidae (Diptera) in Czechoslovakia. *Scripta Fac. Sci. Nat. UJEP Brunensis, Biologia* **2**, 1: 133—144.
- Salamanna G., 1974a: Vecchi e nuovi dati sui Psychodidae (Diptera) delle piccole isole italiane. *Boll. Mus. Ist. Biol. Univ. Genova*, **42**: 51—57.
- Salamanna G., 1974b: Contributo alla conoscenza dei Psychodinae (Diptera) Italiani con descrizione di una nuova specie sarda, Panimerus bartolii. *Boll. Mus. Ist. Biol. Univ. Genova*, **42**: 59—70.
- Salamanna G., 1975a: Psychodidae Psychodinae della Puglia e della Basilicata con descrizione di due nuove species (Diptera Nematocera). *Entomologica*, **11**: 193—214.
- Salamanna G., 1975b: Contributo alla conoscenza degli Psychodidae (Diptera) della Campania. *Boll. Mus. Ist. Biol. Univ. Genova*, **43**: 69—74.
- Salamanna G., 1975c: Psychodinae della Calabria con descrizione di due specie nuove (Diptera Nematocera Psychodidae). *Boll. Mus. Ist. Biol. Univ. Genova*, **43**: 75—94.
- Salamanna G., 1982: Psychodinae of Sardinia. I. Psychodini and Telmatoscopini, with descriptions of three new species (Diptera Psychodidae). *Boll. Soc. ent. ital.*, Genova, **114** (8—10): 183—192.
- Salamanna G., 1983a: Psychodinae of Sardinia. II. Pericomini with descriptions of four new species (Diptera Psychodidae). *Boll. Soc. ent. ital.*, Genova, **115** (1—3): 39—49.
- Salamanna G., 1983b: Le attuali conoscenze sugli Psychodidae della Sardegna (Diptera Nematocera). *Lav. Soc. Ital. Biogeogr.*, **8**: 715—722.
- Salamanna G. et Sarà M., 1980: Psicodini delle Dolomiti (Diptera Nematocera). *Mem. Soc. Ent. Ital.*, **58** (1979): 9—40.
- Sarà M., 1950: Sulla spermatogenesi di Psychoda alternata Say e di Psychoda cinerea Banks (Dipt. Psychodidae). *Scientia Genet.*, Turin, **3**: 236—246.
- Sarà M., 1951a: Psicodidi dell' Italia centro-meridionale e descrizione di una nuova specie di Telmatoscopus (Dipt. Nematocera). *Annu. Ist. Mus. Zool. Univ. Napoli*, **2** (1950) (7): 1—8.
- Sarà M., 1951b: Sulla capsula cefalica delle larve dei Ditteri Psicodidi. *Boll. Zool.*, Torino, **18**: 49—56.
- Sarà M., 1951c: Sui cromosomi di Telmatoscopus albipunctatus, con alcuni dati su quelli di Telmatoscopus ustulatus (Diptera, Psychodidae). *Caryologica*, Pisa, **3** (1950): 204—210.
- Sarà M., 1952: Psicodidi della Romagna, con descrizione e note critiche su tre nuove specie dei generi Tinearia, Peripsychoda e Pericoma (Diptera). *Annu. Ist. Zool. Univ. Napoli*, **4** (9): 1—13.
- Sarà M., 1953: Specie nuove di Psicodidi dall' Italia centrale e dalla Sicilia (Diptera). *Ann. Ist. Mus. Zool. Univ. Napoli*, **5** (8): 1—30.
- Sarà M., 1955a: Note morfologiche e sistematiche su Psicodidi europei (Dipt.). *Ann. Ist. Mus. Zool. Napoli*, **6** (11) (1954): 1—14.
- Sarà M., 1955b: Psicodidi della Calabria con descrizione di una nuova specie di Pericoma (Dipt.). *Ann. Ist. Mus. Zool. Univ. Napoli*, **6** (9) (1954): 1—16.
- Sarà M., 1958: Contributo alla conoscenza dei Psicodidi della Svizzera (Dipt.). *Annu. Ist. Zool. Univ. Napoli*, **9** (4) (1957): 1—9.
- Sarà M., 1959: Sinossi dei Psicodini italiani con descrizione di nuove species del gen. Pericoma (Dipt.). *Annu. Ist. Zool. Univ. Napoli*, **10** (6) (1958): 1—15.
- Sarà M., 1961: Nuove osservazioni su Psicodini italiani (Dipt.). *Annu. Ist. Mus. Zool. Univ. Napoli*, **12** (5) (1960): 1—8.
- Sarà M., 1962: Rinvenimento di Psychoda minuta Banks, nuova per l'Italia, in una grotta della Sicilia e considerazioni sui Psicodidi cavernicoli (Dipt.). *Boll. Acad. Gioenia Sci. nat. Catania*, serie 4, **7** (2): 68—73.

- Sarà M., 1965: Osservazioni su Psicodidi delle isole Canarie (Diptera, Psychodidae). *Boll. Soc. ent. ital.*, Genoa **95**: 129—132.
- Sarà M. et Salamanna G., 1967: Nuovo contributo alla conoscenza dei psicodidi italiani (Diptera). *Memorie Soc. ent. ital.*, **46**: 27—72.
- Sarà M. et Salamanna G., 1968: Psicodini del Piemonte (Diptera Nematocera). *Boll. Soc. Ent. Ital.*, **48** (9—10): 149—156.
- Satchell G. H., 1947a: The larvae of the British species of Psychoda (Diptera: Psychodidae). *Parasitology*, London, **38**: 51—69.
- Satchell G. H., 1947b: The ecology of the British species of Psychoda (Diptera: Psychodidae). *Ann. appl. Biol.*, London, **34**: 611—621.
- Satchell G. H., 1948: The respiratory horns of Psychoda pupae (Diptera Psychodidae). *Parasitology*, **39** (1, 2): 43—52.
- Satchell G. H., 1956: New and little known Algerian and Canary Islands Psychodidae. *Ann. Natal Mus.*, Pietermaritzburg, **13** (1955): 101—120.
- Seifert P. et Smola U., 1984: Morphological Evidence for Interaction between Retinula Cells of Different Ommatidia in the Eye of the Moth-Fly Psychoda cinerea Banks (Diptera, Psychodidae). *J. Ultrastruct. Res.*, **86**: 176—185.
- Seifert P., Wunderer H. et Smola U., 1985: Regional differences in a nematoceran retina (Insecta, Diptera). *Zoomorphology*, **105**: 99—107.
- Schiner J. R., 1864a: Catalogus systematicus Dipterorum Europae. Vindobonae, 115 pp.
- Schiner J. R., 1864b: Fauna Austriaca. Die Fliegen (Diptera). II. Wien, 658 pp.
- Schrank F., 1798—1804: Fauna Boica. Nürnberg (Ingolstadt, Landshut). I (1798): 1—292, 293—720; II (1801—1802): 374 pp., 412 pp.; III (1803—1804) 272 pp., 372 pp.
- Strobl G., 1898: Die Dipteren von Steiermark. Admont, 298 pp.
- Swezey O. H., 1907: Notes on Moth-Flies. *Proc. Hawaii ent. Soc.*, **1**: 116—118.
- Szabó J., 1960: Les Psychodides (Diptera, Nematocera) des Bassins-Carpathiques I. *Acta Univ. Debrec.*, **6**: 205—216.
- Szabó J., 1965a: Beiträge zur Kenntnis der Psychodiden-Fauna (Diptera, Nematocera) im östlichen Teil der Tschechoslowakei. *Acta biol. Debrec.*, Budapest, **3** (1964): 69—92.
- Szabó J., 1965b: Beiträge zur Verbreitung der Psychodiden (Diptera, Nematocera), in der Slowakei. *Acta ent. Mus. Nat. Pragae*, **36**: 607—631.
- Szabó J., 1976: A pillészunyogok (Diptera, Psychodidae) egészségügyi szerepe. *Acta biol. Debrecina*, **13**: 275—281.
- Štákelberg A. A., 1956: Sinantropnye dvukrylye fauny SSSR. Izd. AN SSSR. Moskva—Leningrad, 164 pp.
- Tanasijčuk V. N., 1969: Psychodidae in Bej-Bienko G. Ja.: Opredělitěl nasekomych evropejskoj časti SSSR. V (1). Dvukrylye, blochy. Leningrad, 804 pp.
- Thalhammer J., 1899: Ordo Diptera in Fauna regni Hungariae. Budapest, 76 pp.
- Tokunaga M., 1957: Moth-flies from Formosa (Psychodidae, Diptera). *Sci. Rep. Saikyo Univ. Agric.*, Kyoto, **9**: 53—77.
- Tokunaga M., 1958: Japanese Psychodidae. IV. Descriptions and revision of Psychoda species. *Philipp. J. Sci.*, Manila, **86** (1957): 359—403.
- Tokunaga M. et Komyo E., 1955: Japanese Psychodidae, III. New or little-known moth flies, with descriptions of ten new species. *Philipp. J. Sci.*, Manila, **84**: 205—228.
- Tonnoir A. L., 1919: Contribution a l' étude des Psychodidae de Belgique. Note préliminaire. *Ann. Soc. ent. Belgique*, **59**: 136—140.
- Tonnoir A. L., 1922: Synopsis des Espèces européennes du Genre Psychoda (Diptères). *Ann. Soc. ent. Belgique*, Bruxelles, **62**: 49—88.
- Tonnoir A. L., 1934: Notes synonymiques sur quelques Psychodidae (Diptera). *Bull. Ann. Soc. ent. Belg.*, Brussels, **74**: 69—82.
- Tonnoir A. L., 1940: A synopsis of the British Psychodidae (Dipt.), with descriptions of new species. *Trans. Soc. Brit. Ent.*, Southampton, **7**: 21—64.
- Troiano G., 1978: Triploidy in the natural population of the psychodine moth fly Psychoda parthenogenetica Tonnoir (Diptera: Psychodidae). *Caryologia*, **31** (2): 225—232.
- Turner C. L., 1923: The Psychodidae (moth-like flies) as subjects for studies in breeding and heredity. *Amer. Nat.* New York, **57**: 545—558.
- Turner C. L., 1924: Breeding habits and mutations in the moth-like fly (Psychoda). *Science* New York, **60**: 338—339.

- Vaillant F., 1960: Contribution à l'étude des Psychodidae de la France (Diptera). *Rev. franc. Ent.*, Paris, **27**: 163—172.
- Vaillant F., 1961a: Révision des Psychodidae Psychodinae de France (Diptera). *Ann. Soc. ent. France*, Paris, **130**: 131—157.
- Vaillant F., 1961b: Diptères Psychodidae se nourrissant d'escargots morts. *Trav. Lab. Hydrobiol. Piscic. Univ. Grenoble*, **53**: 1—9.
- Vaillant F., 1963a: Einige Psychodiden (Dipteren) aus Österreich. *Verh. zool.-bot. Ges.*, Wien, **101—102** (1962): 86—93.
- Vaillant F., 1963b: Diptères Psychodides recueillis par MM. L. Botosaneanu et St. Negrea en Roumanie. *Čas. ěsl. Spol. ent.*, Prague, **60**: 222—230.
- Vaillant F., 1963c: Contribution à l'étude des Diptères Psychodidae d'Europe. *Trav. Lab. Hydrobiol. Piscic. Univ. Grenoble*, **54—55** (1962—63): 109—121.
- Vaillant F., 1964: Nouvelle contribution à l'étude des Psychodidae (Diptera) de la France. *Trav. Lab. Hydrobiol. Piscic. Univ. Grenoble*, **56**: 61—76.
- Vaillant F., 1965: Diptera from Nepal. Psychodidae. *Bull. Br. Mus. nat. Hist.*, London (Ent.), **17**: 219—226.
- Vaillant F., 1966: Diptères Psychodidae de Moravie. *Acta Mus. Morav.*, **51**: 225—230.
- Vaillant F., 1971: Psychodidae in Lindner E. (ed.): Die Fliegen der palaearktischen Region, Stuttgart, **287**: 1—48.
- Vaillant F., 1973a: Quelques insectes diptères, a larves aquatiques, du parc de la Vanoise. *Trav. Sci. parc. Nat. Vanoise*, **3**: 133—165.
- Vaillant F., 1973b: Some new Psychodidae Psychodinae from the United States (Diptera). *Ann. Soc. Entomol. Fr.*, **9** (2): 345—379.
- Vaillant F., 1973c: Diptères Psychodidae recueillis par M. le Dr. Z. Kaszab en Mongolie. *Ann. Soc. Entomol. Fr.*, **9** (3): 667—677.
- Vaillant F., 1982a: Les larves de Psychoda cinerea (Banks) et la classification des Psychodidae Psychodinae (Diptera). *Trav. Lab. Hydrobiol. Piscic. Univ.*, Grenoble, **1982**: 219—229.
- Vaillant F., 1982b: Les antennes des Diptères Psychodidae de la sous-famille des Psychodinae. *Trav. Lab. Hydrobiol. Piscic. Univ.*, Grenoble, **1982**: 203—210.
- Vaillant F. et Botosaneanu L., 1966: Notes sur les Psychodidae (Diptera) des grottes. *Lucr. Inst. de speol. „Emil Racovita“*, Bucuresti, **5**: 91—98.
- Vimmer A., 1913: Seznam českého hmyzu dvoukrídleho (Catalogus Dipterorum). *Entom. příručky*, Praha, **8**: 1—99.
- Wagner R., 1973: Psychodiden aus dem Breitenbach (Diptera, Psychodidae) 1970. *Arch. Hydrobiol.*, **72** (4): 517—524.
- Wagner R., 1977: Zur Kenntnis der Psychodidenfauna des Allgäus (Diptera: Nemato-cera). *Nachr. Bayer. Ent.*, **26** (2): 23—28.
- Wagner R., 1978a: Die Psychodidenausbeute zweier Sammelreisen des Ungarischen Naturwissenschaftlichen Museums in Budapest in die Volksrepublik Korea (Diptera: Psychodidae). *Fol. ent. Hungarica*, **31** (2): 277—287.
- Wagner R., 1978b: Psychodiden (Dipt.) als Gewässerindikatoren. *Mitt. dtsh. Ges. allg. angew. Ent.*, **1**: 67—71.
- Wagner R., 1979a: Psychodidenstudien im Schlitzlerland. Schlitzer Produktions-biologische Studien (26). Studies on Psychodids in Schlitzlerland (Schlitz studies on productivity, no. 26). *Arch. Hydrobiol.*, Suppl. **57**: 38—88.
- Wagner R., 1979b: Über einige Psychodiden-Arten aus Afghanistan (Diptera: Psychodidae). *Acta Zool. Acad. Scient. Hungaricae*, **25**: 441—448.
- Wagner R., 1980: Über einige Psychodiden (Diptera) aus dem Thüringer Wald. *Ent. Nachr.*, **8** (1980): 118—123.
- Wagner R., 1981: Some Psychodidae (Diptera) from the Southern Caucasus and Iran. *Aquatic Insects*, **3** (1): 45—56.
- Walker F., 1848: List of specimens of Dipterous Insects in the collection of the British Museum. Part I. London, 229 pp.
- Walker F., 1856: *Insecta Britannica*. Diptera. III. London, 352 pp.
- Williston S. W., 1896: On the Diptera of St. Vincent (West Indies). Dolichopodidae and Phoridae by Professor J. M. Aldrich. *Tr. ent. Soc. London*, **1896**: 253—449.
- Wulp V. d. F. M., 1877: *Diptera Neerlandica*. De Tweevleugelige Insecten van Nederland. I. Gravenhage, 497 pp.

-
- Zetterstedt J. W., 1850: Diptera Scandinaviae disposita et descripta (Psychodidae). *Lundie*, 9: 3367—3710.
- Zuska J. et Laštovka P., 1969: Species-composition of the dipterous fauna in various types of food-processing plants in Czechoslovakia. *Acta ent. bohemoslov.*, 66: 201—221.