

A REVISION OF THE PALAEARCTIC SPECIES OF GYMNOMUS LOEW (DIPTERA, HELEOMYZIDAE)

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A revision of the genus is given with the new taxonomical status as genus and the generic characters are discussed. Six species new to the science are described: *G. czernyi* sp. n. (Czecho-Slovakia, Germany, Hungary, Poland), *G. gorodkovi* sp. n. (Mongolia), *G. europaeus* sp. n. (several European countries), *G. martineki* sp. n. (Austria, Switzerland), *G. mongolicus* sp. n. (Mongolia), *G. soosi* sp. n. (Bosnia). The lectotypes for *G. spectabilis* (LOEW, 1862) and *G. caesius* (MEIGEN, 1830) are designated. Description of male terminalia of all the twelve species (incl. those of the type-species, *Gymnomus troglodytes* LOEW, 1863) are presented. *G. caesius* (MEIGEN, 1830), *G. ceianui* (MARTINEK, 1985), *G. mariei* (SÉGUY, 1934), *G. sabroskyi* (GILL, 1962) and *G. spectabilis* (LOEW, 1862) are new combinations. *Gymnomus ceianui* (MARTINEK, 1985) was earlier mentioned as *Scoliocentra tatraca* MS name. The key to the hitherto known Palaearctic species is given. With 72 original drawings.

LOEW (1863) described a new genus *Gymnomus*, based on one species *G. troglodytes* from caves. This taxon was treated as a monotypical genus by some specific characters for decades. GORODKOV (1972a) proposed the synonymy of *Gymnomus* with *Scoliocentra* LOEW, 1862, reflecting a very broad generic concept of *Scoliocentra*.

PAPP (1981) noted the homology of the genitalia of the so-called *Scoliocentra caesia*-group and of the type-species *G. troglodytes*. In the Catalogue of Palaearctic Diptera GORODKOV (1984: 28) placed *Gymnomus* as a subgenus of *Scoliocentra* and included other four species in it but the reasoning of his procedure has not been presented yet. We are convinced that the synapomorphies found mainly in male genitalia are enough to prove the monophyly of the species included below. The rank of *Gymnomus* is elevated to the generic level though we know it would be necessary to group and to compare all of the species of the tribe Heleomyzini (not in the sense of MCALPINE 1985, who applied this name for the subfamily Heleomyzinae sensu GORODKOV, 1984). A subsequent paper is planned for studies on the Nearctic species of *Gymnomus* and for the cladistic analysis of all the known species.

Our revision is based mostly on the analysis of male terminalia, which show the best specific characteristics in the genus (see COLLART 1940, PAPP 1981). *Gymnomus troglodytes* differs from other species of the genus in some morphological characters only: humeral bristle absent, eye as high as cheek, arista much longer than head and longer pubescent than that of other species; all these can be treated only as an adaptation to the cave conditions. *Oecothea praecox* (a cave species) and some others species of *Oecothea* (*Oecotheiini*) have reduced eyes as well; some specimens of *Gymnomus troglodytes* also possess a small praesutural dorsocentral; praesuturals are also absent in some *Suillia* (*Suillini*) species: *S. wittei* (COLLART), *S. immaculata* CZERNY (Afrotropical species) [see COGAN 1971], or contrarily, these bristles are present in some specimens of *Tephrochlamys rufiventris* (*Heteromyzini*), where usually absent [see STROBL 1906]. The humeral bristle is rather well developed in most of the genera (also in *Suillia atricornis* though it is absent in an overwhelming majority of the *Suillia* species). Thus all the above mentioned morphological characters of *Gymnomus troglodytes* must be treated only as a homoplasy in Heleomyzidae. The genitalia of *Gymnomus troglodytes* are very similar to those of other species in the genus possessing two symmetrical membranous projections at the basiphallus.

As for the nomenclature of male genital parts we follow GORODKOV's one in this paper; genital parts are drawn in different views but cerci are depicted mainly in caudal view, editum in a medial view at broadest extension of its lateral lobe, surstylus in a medial view at broadest extension and gonite in a lateral-sublateral view when its bristles are seen in the plane of drawing.

The materials were borrowed from various institutions (abbreviations are used in the text in parentheses, an asterisk indicates collections where type specimens are preserved or were borrowed from):

- *HNHM – Magyar Természettudományi Múzeum Állattára, (Zoological Department, Hungarian Natural History Museum), Budapest, Hungary
- *ISEA – Institute of Systematics and Evolution of Animals, PAS, Kraków, Poland
- MHNG – Muséum d'Histoire naturelle, Genève, Switzerland
- *MMB – Moravian Museum, Brno, Czecho-Slovakia
- *MNHN – Muséum National d'Histoire Naturelle, Paris, France
- *MHNN – Musée d'Histoire naturelle, Neuchâtel, Switzerland
- *NMW – Naturhistorisches Museum in Wien, Austria
- TC – Dr. M. Carles-Tolrà's collection (Barcelona, E)
- *USNM – National Museum of Natural History, Smithsonian Institution, Washington, USA
- *VM – Dr. V. Martinek's collection (Dobruška, CSFR)
- *WA – A. Woźnica's collection (Wrocław, PL)
- *ZMB – Zoologisches Museum der Humboldt Universität zu Berlin, Germany
- ZMZ – Zoologisches Museum, Univ. Zürich-Irchel, Switzerland

We would like to express our sincere thanks to the curators of the collections: DR. G. BÄCHLI (ZMZ), DR. D. BURCKHARDT (MHNG), DR. M. CARLES-TOLRÁ (Barcelona, E), DR. RUTH CONTRERAS-LICHTENBERG (NMW), DR. J.-P. HAENNI (MHNN), DR. W. KRZEMINSKI (ISEA), DR. P. LAUTERER (MMB), DR. V. MARTINEK (CSFR), DR. W. N. MATHIS (USNM), DR. L. MATILE (MNHN), DR. H. SCHUMANN (ZMB) for the loan of materials important for this study.

Gymnomus LOEW, 1863

LOEW, 1863: Wien ent. Mschr. 7: 36. – Type-species: *Gymnomus troglodytes* LOEW, 1863: l.c.: 37 (orig. des., mon.) (as genus). – Gender: masculine.

Diagnosis: in general as given for *Scoliocentra* LOEW, 1862 by GORODKOV (1962) and PAPP (1981) and specifically: 2 pairs of *ors*, anterior pair comparatively long (except in *troglodytes*), about a half of length of posterior *ors*, 1 pair of vibrissa, peristomal hairs comparatively short (longer but very thin in *mariei*), 1 pair of prosternals, only 1 pair of katepisternals (sternopleurals), anepisternum not covered by hairs; male genitalia with well-developed edita and surstyli, editum widely bilobed (e.g. Fig. 19), medial lobe with dense short black thornlets, basiphallus with two symmetrical membranous projections.

The genus can be characterized as follows: praefrons meets face area (postfrons) at a slightly obtuse angle, colour variable, mostly yellow orange and exceeds in two narrowed wedge-shaped lobes backwards on sides of the ocellar triangle; one strong oral vibrissa, 2 fronto-orbitals (*ors*), the anterior one about 0.3–0.75 length of the posterior one, bending nearly perpendicularly outside. Arista short pubescent. First two basal segments of arista seem swollen. Thoracic chaetotaxy: always 1 pair of prosternal bristles, exceptionally 2 pairs; 1 humeral, 2 notopleurals, posterior one without short hairs around it; 1 praescutellar, 2 scutellar pairs; (0)–1+3 dorsocentral bristles, 1 propleural; anterior corner of anepisternum (mesopleuron) (behind the propleuron) with several small hairs; katepisternum (sternopleuron) with 1 strong bristle, haired, propleuron and anepimeron (ptero-pleuron) without hairs. Scutellum bare. Thorax bluish-grey, brownish in some species. Legs with preapical bristles: preapicals on the fore and hind tibiae thinner than on the mid one. Apical tarsomere of all tarsi with long black hairs. Abdomen yellow to yellowish brown with microtomentum, postabdomen specifically formed by two projections.

Male terminalia: Epandrium and external genitalia form a double-shell over internal genitalia: outer shell: epandrium + cerci + edita; inner shell: large plates dorsal to surstyli + surstyli; the two shells join at two places: laterally to cercal bases and at the surstylus-editum conjointment. Hypandrium meet the outer shell at the dorsal 1/4 of epandrium (and

apices of plates approximate that conjointment). Cerci well developed, in the ventro-basal part connected or even fused on a section e.g. in *G. troglodytes*, editum in two lobes: medial lobe with a projecting process with black thorns (spines) grouped in its broad apex; its lateral lobe usually with some small thin setae and with black thornlets ventrally, surstylus usually longer than cerci and with dense black thornlets on both sides. Gonites with two well-developed black bristles. Phallus long and thin, not haired, basiphallus with two symmetrical membranous projections, apical part broadened. Hypandrium of an intricate structure largely of two U-shaped sclerite which usually bear well-developed bristles (e.g. Fig. 35); aedeagal apodeme partly fused with hypandrium; a well developed distinct but free ejaculatory apodeme always present.

Gymnomus caesius (MEIGEN, 1830)

(Figs 1–4, 13)

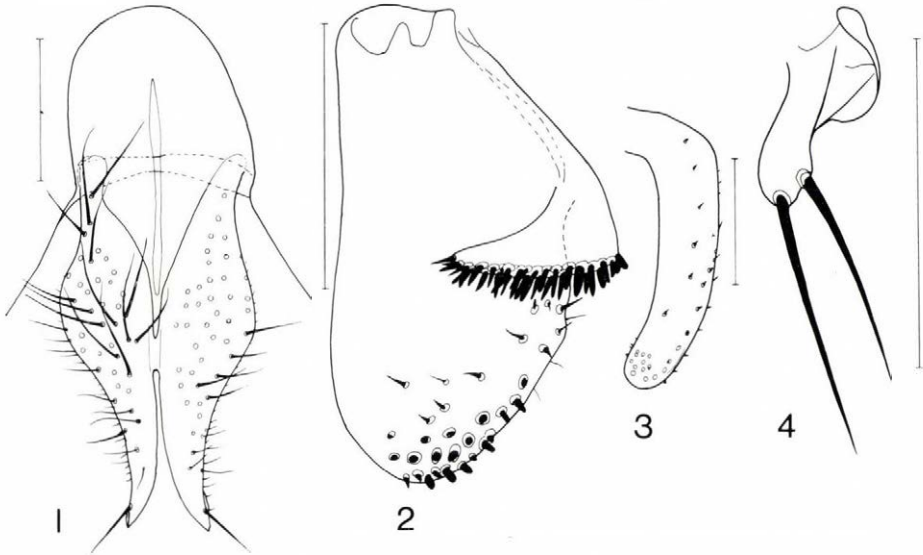
Helomyza caesia MEIGEN, 1830: Syst. Besch. 6: 56. – *Blepharoptera caesia*: LOEW, 1862: 2. – *Amoebaleria caesia*: CZERNY, 1924: 134. – *Scoliocentra (Gymnomus) caesia*: GORODKOV, 1984: 29. – *Scoliocentra caesia*: MARTINEK, 1987: 241.

Total length of body (without antennae) 5.5–7.4 mm.

Head in lateral view about 1.15 times as high as long, anterior part of frons mostly yellow, posterior part behind anterior *ors* orange-brownish. Stripes near eyes with white pollinosity like parts of ocellar triangle and occiput. Ocellar triangle dark brown. Peristomal setae in 1 or 2 rows. 2 strong *ors*, anterior one about 0.66 length of the posterior one, bending nearly perpendicularly outside. Face yellow, palpi yellow-orange like scape and pedicel. Proboscis regularly brown. 2 strong *vt*, *pvt* relatively weaker. – Flagellomere relatively large, about 0.65 of cheek height, round, yellow-reddish and little darkened apically. Arista blackish-brown, very short pubescent, longer than height of head. Eyes round. Face below antennae more depressed, cheek-eye ratio about 0.58–0.60.

Thorax: mesonotum bluish grey, dorsal and pleural parts of thorax with white-grey pollinosity. Humerus grey, dorsal part densely covered by black thin and short setae. Scutellum greyish, brown marginally. Postscutellum in the same basic colour. Hind part of anepisternum and anterior part of anepimeron greyish-brown. Chaetotaxy: 1 + 3 dorsocentral bristles emerging from relatively large black spots, sometimes the dorsocentrals on a thin black stripe. Anterior corner of anepisternum with several small hairs, halteres pale yellow.

Wings: length 5.7 to 7.7 mm, width 2.5 to 2.9 mm. Membrane hyaline, crossveins not darkened. Costal spines strong and longer than width



Figs 1-4. *Gymnomus caesius* (MEIGEN), male genitalia: 1=cerci, caudal view, 2=editum, medial view, 3=surstylus at its broadest (sublateral-medial view), 4=gonite, lateral view. - Scales: 0.2 mm (all)

of the costa. Veins yellowish-brown. Medial vein ratio: lectotype 1.24, paralectotype 1.231, other specimens 1.139-1.390.

Legs yellowish orange, short haired. Mid and hind femora with dorsolateral bristles, hind femora with 3-4 black subapical dorsolateral bristles. Apical tarsomeres of fore and mid tarsi dark brown, other tarsomeres only darkened in their apical part. Two apical tarsomeres of hind tarsi brownish. Tibiae and tarsi short haired.

Abdomen: Tergites 1-4 dark bluish-grey, tergites 2-4 on the edges with small yellowish orange stripes. Tergite 4 in apical half yellowish orange as the caudal segments and epandrium. All tergites short haired with strong black marginal bristles.

Male terminalia: epandrium semiglobular, cerci (Figs 1, 13) much longer than wide, extended on the dorsal side and very much narrowed in the apical half, edita (Fig. 2) with very broad and rounded lateral lobe, medial surface apically with black thorns (spines), medial lobe broad apically with numerous rather long black thornlets; surstylus (Fig. 3) finger-like, curved distally with several black thornlets apically; gonites (Fig. 4) thin, shortly stalked with 2 strong and almost equally long bristles.

Type material - Lectotype by present designation: male (MNHN): "Meigen"- "caesia ♂" (handwriting, round); the lectotype is in a poor state of preservation: right half of its head was eaten by *Anthrenus* larvae, most parts of its legs lost; genitalia preserved in

a microvial with glycerin. – Paralectotypes: 1 female (MNHN): “Meigen” “caesia” [handwriting, round]; 1 male (NMW): only the male genitalia (dissected) in a plastic vial preserved in Vienna bearing a single red label: Lectotypus “♂ *Helomyza caesia* Meigen” (handwriting of K. B. Gorodkov).

Other specimens examined: 1 ♂ (NMW): Nordsh. Hoffm. 1 ♂ (NMW): Kraus 1880 II Wallor Loch. – Czecho-Slovakia: 26 ♂ (VM): Slovakia centr.: Vlečá cave (Slovenský Raj), 22. 07. 1989., V. KOSEL leg.; 8 ♂, 4 ♀ (VM): idem, 22. 07. 1976; 1 ♂ (VM): idem, 23. 09. 1976; 1 ♂ (VM): idem, 14. 08. 1976; 2 ♂ (VM): Slovakia, M. Karpaty, Zbojnická cave, 1. 07. 1989. 1 ♂ (MMB): Slovakia bor. 96/67, Vysoké Tatry, 1600 m., Trojhrané pleso, 12. 09. 67, P. LAUTERER. – Germany: 2 ♂ (ZMB): Pössneck, Riedel 2./7. 10. 07; 1 ♂ (ZMB): St. Wendel Rheinh. DUDA, 22. 05. 14; 1 ♀ (ZMB): 9. 11. 25 coll. M. P. RIEDEL. – Poland: 1 ♂, 1 ♀ (ZMB): Niemcza, DUDA, 2. 11. 08/8. 03. 07; 1 ♂ (ZMB): “caesia Mg”, Niemcza, Duda, 21. 05. 12; 3 ♂ (ISEA): Tatry, J. Lodowa, 4. 09. 51; 1 ♂ (ISEA): idem, 25. VII. 1952. – Switzerland: 1 ♀ (ZMZ): env. of Zürich., 25. III. 1919. – Hungary (HNHM): 10 ♂, 4 ♀: B.[ükk] N.[atjional] P.[ark], Nagyvisnyó, Diabáz-barlang, 900 m, 24m, 1981. IX. 23., leg. ÁDÁM L.; 2 ♂: idem, Bánkúti víznyelő, 0–10 m; 1 ♂: Bükki N. P., Bánkút, Diabáz barl. bejárata [entrance of the cave] – 1982. VI. 2., leg. MISIKNÉ; 7 ♂: B.N.P., Nagyvisnyó, Bánkúti víznyelő barlang, 900 m, 1981. IX. 23., leg. ÁDÁM-PAPP L.; 16 ♂, 7 ♀: B.N.P., Nagyvisnyó, Diabáz-barlang, 1982. IX. 15., leg. ÁDÁM-PAPP; 2 ♀: idem, 0–10 m; 2 ♂, 3 ♀: B.N.P., Miskolc, Vizes-barlang, 1984. VIII. 22., leg. MERKL O.; 1 ♂: B.N.P., Miskolc, Kecskelyuk, 1981. VIII. 23., leg. PAPP L.; 1 ♀: B.N.P.: Szilvásvárad, 1981. IX. 24, leg. ÁDÁM; 1 ♂: Bükk-hg., Istállóskő – irtás – 1959. IX. 20., leg. TÓTH S.; 1 ♂: Pécs, THALHAMMER, “VII. 11.” – “Blepharoptera caesia Mg.” coll. Thalhammer; 1 ♀: Mosonmagyaróvár, 1948. VI. 11., RUFF; 1 ♀: Budap.[est], 14. 6. [18]80.; 1 ♀: “Utcán” [on the street], 36 K.38. – Romania (HNHM): 1 ♀: Hu.Bihar, Melegsamos, Bokor, Becazár p.; 1 ♂: Hu. Bihar, Alun-völgy, BOKOR (on the reverse side: “Aluni-b.[arlang]”); 1 ♂, 1 ♀: Hu.Bihar, Ponor-völgy, BOKOR (on the reverse side: “Csiki b[arlang]”); 1 ♂, 1 ♀: Szászka [Sasca Romana], “21. II. 904., Kristen”. – “*H. caesia* Mg.” Det. CZERNY; 1 ♂, 2 ♀: Hu.Bihar, Bársza, BOKOR; 3 ♂: “Ferice/Feritse” – “*H. caesia* Mg.” Det. CZERNY; 1 ♂, 1 ♀: Bedelői h., Csiki – Klára barlang, 1916. VII. 1. Austria: 1 ♂ (NMW): Austria – “caesia” Alte Sammlung; 1 ♂ (HNHM): Austria inf., Wien – “*H. caesia* Mg.” Det. CZERNY; 1 ♀ (HNHM): Tyrolis, Stilsfer Loch – “*H. caesia* Mg.” Det. Czerny. – France: 1 ♂ (HNHM): Isère: tran de Glaz, 19. VIII. 1974, leg. Crolle; 3 ♂ (MHNG): Grotte du Guier Mort, France (Isère), 1974, leg. lab. Biol. Sout.; 2 ♂, 2 ♀ (MHNG): Barne Froide Supérieur, Près de Faline, Hte Savoie, (F), Août 1973, leg. J. D. BOURNE; 2 ♂ (MHNG): Trou de Glatz, France (Isère), 1978, leg. lab. Biol. Sout, Lyon; 2 ♂, 7 ♀ (MHNG): Grotte Vers-chez le Brandt, NE 1, 27. 08. 1980, leg B. HAUSER et al., L. PAPP det.; 3 ♂, 4 ♀ (MHNG): Gr. du Grand Bochat, NE 33, 17. 07. 1978, leg. STRINATI et AELLEN, L. PAPP det.; 2 ♂ (MHNG): Gr. du Prégure, NE 12, 28. 07. 1980, V. AELLEN leg.; 1 ♂, 1 ♀ (MHNG): Gr. aux Pards, NE 51, 23. 07. 1978, Leg. V. AELLEN, L. PAPP det.

Distribution: Austria, Czecho-Slovakia, France, Germany, Hungary, Poland, Romania, Switzerland, Sweden.

Remarks: *G. caesius* is closely related to *G. czernyi* sp. n. and is different from it in characters given in the key below, p. 208.

Gymnomus ceianui (MARTINEK, 1985)
(Figs 5–9)

Scoliocentra ceianui MARTINEK, 1985: 1080. – *Scoliocentra tatrica* "GORODKOV, in litt.": MARTINEK, 1977: 68; 1986: 140; 1987: 241.

Measurements in mm: total body length (without antennae) 5.5–6.0, length of wing 5.8 to 6.5, width of wing 1.8 to 2.0.

Head in lateral view about 1.2–1.3 times higher than long. Frons rather yellow orange. Stripes near eyes with white grey pollinosity like parts of ocellar triangle and occiput. Basic colour of these parts blue grey. 2 strong *ors*, anterior one shorter than half length of posterior one. Peristomal setae in two irregular rows. Cheek-eye ratio about 0.52–0.54. – Flagellomere relatively large and round, at most 0.66–0.67 of cheek height. Colour of scape and pedicel more intensive brown-yellow alike facial plate. Arista relatively long but its pubescence comparatively short.

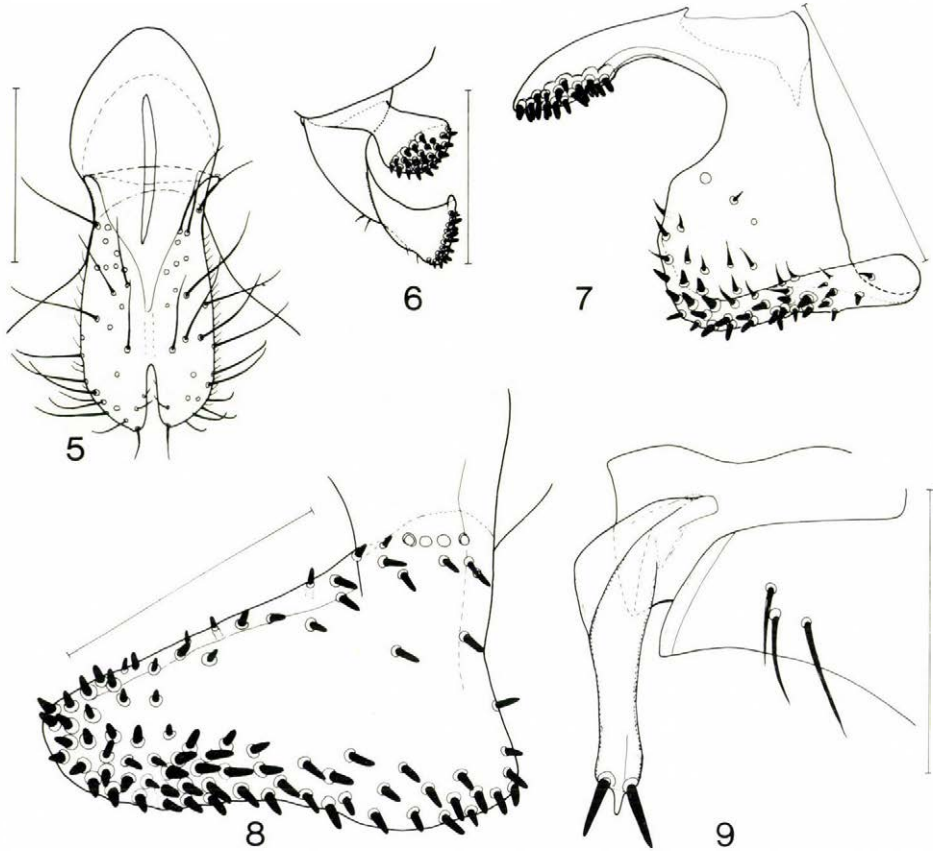
Thorax: dorsal and pleural parts bluish grey with white grey to brown pollinosity, other parts of body slightly brown. Mesonotum covered with black short setae. 1+3 dorsocentrals on relatively large brown spots (particularly so behind suture). 1 strong propleural bristle, anepisternum bare except some fine hairs near propleuron, anepimeron fully bare. One katepisternal, katepisternum with dense and short black hairs. Humeri of the same colour as thorax. Scutellum flat, reddish yellow between bristles and on adjacent borders, otherwise bluish grey like thorax, halteres brownish yellow.

Wings: entirely hyaline, crossveins not clouded. Costal spines longer than width of costa. Medial vein ratio about 1.150–1.333.

Legs: intensively reddish yellow, fore coxae and femora darkened. Hind femora with 2–3 strong dorsolateral bristles.

Abdomen: reddish yellow, tergites 3–5 with clear grey tinge and pollinosity.

Male terminalia: epandrium relatively large; cerci flat and short (Fig. 5), coalesced subbasally, laterally with fine and long hairs, apically with a pair of thicker hairs; editum (Figs 6, 7) with very long and caudally directed medial lobe bearing a disciform medial apex very densely blackly thorned, lateral lobe with a broad incurving apical part bearing dense thornlets not only in medial surface but on apex; surstylus (Fig. 8) extremely broad basally with strong (i.e. rather long) black thornlets, densely grouped apically and subapically giving a darker colour (or darker impression) of surstylus; gonites (Fig. 9) elongated (stalked) with a small apical process and with two small but thick bristles.



Figs 5–9. *Gymnomus ceianui* (MARTINEK), male genitalia: 5 = cerci in caudal view, 6–7 = edigitum: 6 = caudal view, 7 = medial (sublateral view, lateral lobe at its broadest). 8 = surstylus in widest extension (sublateral view), 9 = gonite with a part of hypandrium, lateral view. – Scales: 0.2 mm (all)

Type material – Paratype male (VM): Romania occ. mer.: Retezat Mts [1650 m] nr. Hunedoara, 18. 9. 1979., Ceianu lgt.

Other specimens examined: 1 ♂ (MMB), *Gymnomus ceianui* (= *tatricus*): Slovakia bor. 96/67, Vysoké Tatry 1600 m, Trojhrané Pleso, 12. 9. 67, P. LAUTERER, "Holotypus in litt." (red), *Scoliocentra* sp. n. GORODKOV det. 72), (genitalia with segments 4–5 dissected, in microvial; lost: flagellomere, second right ors, left first scutellar.) – Poland: 3 ♂ (ISEA): Tatry, J. Lodowa, 20. VII. 1951/7. VII. 1952. – France: 1 ♂ (NMW): Marseille, 217. Spain: coll. M. CARLES-TOLRÀ: Prov. Zaragoza, Monegros, Pina de Ebro, Retuerta de Pina, leg. J. BLASCO-ZUMETA: 19 ♂, 29 ♀: pitfall trap/coloured plate/Malaise trap/Moericke trap/trap with pig liver, 28. 11. 1990–31. 12. 1991 (Nos 2506, 2525, 2527, 2561, 2606, 2630, 2667, 2725, 2885, 3086, 4161, 4205, 4215, 4220, 4221, 4271, 4277, 4285); 1 ♀ (CT): 58.T2.; 1 ♀ (HNHM): Castell defels, 10. 12. 1983, 1 ♀: St. Marçal, 16. 02. 1989. – Hungary: 1 ♂ (HNHM): Simontornya, "K. abl." [in the garden, on window], V. 7. – 1924, Hung. occ. – "*Blepharoptera spectabilis* Lw." – coll. PILLICH.

Distribution: Czecho-Slovakia, France, Hungary, Poland, Romania, Spain. This is a mountain species (Pyrénées, Carpathian Mts), known also from caves.

Remark: Specimens of *G. ceianui* are distinguished from congeners by the characters in the key below, p. 208; with *G. sabroskyi* it forms a special group within the genus. We cannot exclude now that this group would deserve a subgeneric rank (of course as a result of future studies on the Holarctic species).

Gymnomus czernyi sp. n.

(Figs 10–12, 14–17)

Scotiocentra scutellata: MARTINEK 1982: 77; 1986: 140; 1987: 241 (not *scutellata* GARRETT, 1921, misinterpretation).

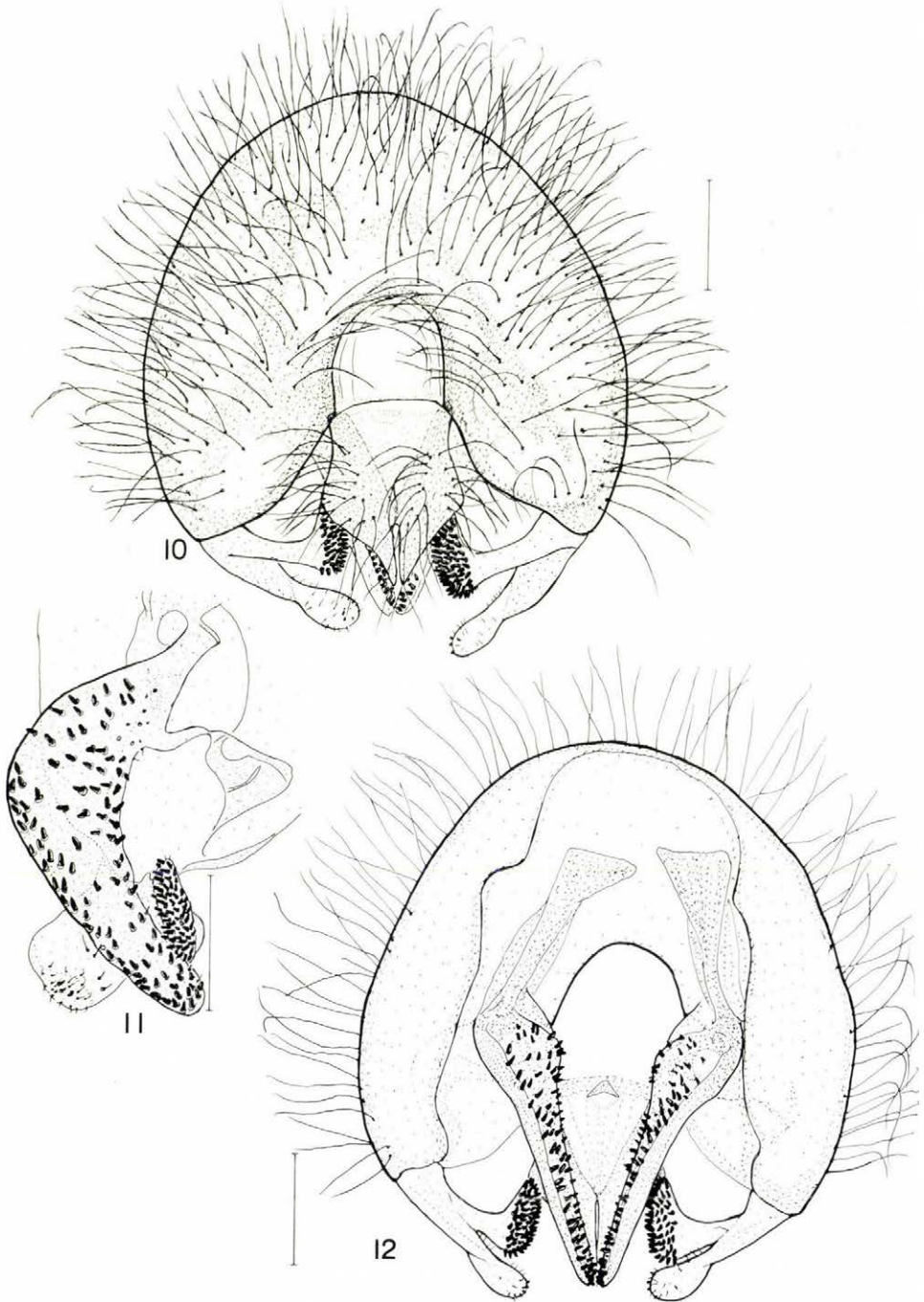
Measurements (in mm): total length of body (without antennae) 5.3–7.1, length of wing 5.7–7.6, width of wing 2.2–2.9.

Head in lateral view about 1.3 times higher than long. Frons meets with facial plate at a lightly obtuse angle. Anterior part mostly orange, posterior part reddish-brown. Stripes near eyes with white grey pollinosity like parts of ocellar triangle and occiput. Face brownish-yellow with silver pollinosity. Ocellar triangle dark brown. Basic colour of these parts blue grey. 2 strong *ors*, anterior one about 0.66 of the length of posterior one. 1 strong vibrissa, with 1–2 small black hairs above. Peristomal setae in 3–4 irregular rows. Palpi orange-brownish. Proboscis regularly dark brown. 2 strong *vt*, *pt* relatively weaker. – Flagellomere smaller than in *caesius*, slightly elongated, at most 0.5 of cheek height, dark brown to blackish-brown. Scape and pedicel more intensive reddish orange. Arista considerably long but pubescence rather short, cheek-eye ratio about 0.64–0.65.

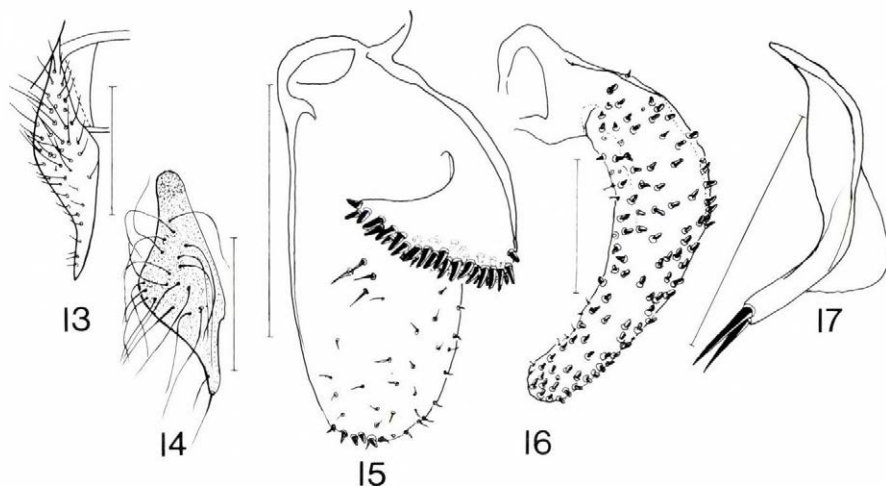
Thorax: dorsal and pleural parts bluish grey with grey pollinosity, other parts of body grey. Mesonotum covered with black short setae. Chaetotaxy: 1 + 3 dorsocentrals emerging from relatively large black spots (particularly so behind suture); usually a thin black stripe between dorsocentrals. Anepisternum bare except some fine hairs near propleuron, anepimeron fully bare. One katapisternal, katapisternum longer black haired than in *caesius*. Humeri of the same colour as thorax. Scutellum flat, brownish between bristles and on adjacent margin, otherwise blue-grey like thorax, halteres yellowish brown.

Wings: entirely hyaline, crossveins not clouded. Costal spines longer than width of costa. Medial vein ratio about 1.170–1.250.

Legs: intensively red-yellow. Mid and hind femora without bristles. Two apical tarsomeres of fore and mid tarsi dark brown, other tar-



Figs 10–12. *Gymnomus czernyi* sp. n., paratype, male genitalia: 10=epandrium with cerci, edita and surstyli, caudal view, 11=surstylus and editum in medial view, 12=epandrium, edita and surstylus in cranial view. – Scales: 0.2 mm (all)



Figs 13–17. *Gymnomus* species, male genitalia: 13 = *G. caesioides* (MEIGEN): cercus in caudal view; 14–17 = *G. czernyi* sp. n., paratype: 14 = cercus in caudal view, 15 = editum, medial view, 16 = surstylus, medial (sublateral) view, 17 = gonite laterally. – Scales: 0.2 mm (all)

someres only darkened apically. Two apical tarsomeres of hind tarsi darkened marginally and apically. Tarsomeres 2–3 darkened only apically. All tibiae and tarsi long haired. Fore coxae and femora more darker with bluish grey pollinosity. Hind femora with 4–6 strong dorsolateral bristles in two row.

Abdomen: tergites 1–4 blackish-grey. Tergites 2–3 with clear grey pollinosity, tergite 4 in apical half reddish orange, 5th tergite and postabdomen of the same colour.

Male terminalia: epandrium (Figs 10, 12) large and round; cerci short, i.e. as long as wide, in medial part broadened, apically narrowed (Fig. 14), with relatively fine and long hairs; medial lobe of editum (Fig. 15) forms a projecting process with black thorns (spines) grouped on its medial apex, latter as wide as width of editum, lateral lobe with several black thorns and setae; surstylus curved (Figs 11, 16), distally narrowed, with some black thorns on both sides; gonites (Fig. 17) thin with two strong and long bristles, medial part with a membranous lobe.

Holotype male (HNHM): Slovakia c., Slov. Raj – Medvedia cave, V. Kosel lgt. – (on the reverse side) 30. 7. 89. (15–20).

Paratypes: 1 ♂ (ZMB): *Amoebaleria caesia* Mg, 5. 07. 22 (genitalia diss., ?from Germany); Germany: 1 ♂ (ZMB): Pössneck, RIEDEL, 15. 10. 07 W (genitalia diss.); 1 ♂ (ZMB): Pössneck, RIEDEL, 22. 10. 07; 1 ♂ (ZMB): Pössneck, RIEDEL, 7. 10. 07, (aus Steinen sichsonnend). – Poland: 1 ♂ (ZMB): Bad Reinerz [Miedzyrzecze], VII–VIII, M. P. RIEDEL leg.; 1 ♂ (ISEA): Tatry., J. Zimna (Poland), 11. 12. 1951; 1 ♂ (ZMB): Niemcza DUDA, 23. 06. 11; 1 ♂ (ISEA): Tatry, J. Lodowa, 20. VII. 1951 (diss.). – Czecho-Slovakia: 1

♂ (VM): Bohemia centr. Praha Strahov, 5–11. 3. 1975, V. MARTINEK leg.; 1 ♂ (VM): Medvedia (cave), 8. 08. 90; 3 ♂ (VM): label same as for holotype; 1 ♂ (HNHM): Slovakia C., Slov. raj, Psie Diery, 16. 08. 1976., V. KOSEL leg.; 1 ♂, 4 ♀ (VM, HNHM): Slovakia Centr., Vlciá cave, slov. raj, 22. 07. 1976, V. KOSEL leg.; 1 ♂ (VM): idem, 22. 07. 1989; 1 ♂ (VM): CS: Sumava-Trojmezna, fly trap, 48.46N/13.50E 1350 m, PAVLICKO, 3. XI. 88. – Hungary: 1 ♂ (HNHM): Vác, Nagyszálcúcs [Naszály], SZILÁDY, 1930. IX. 30. – Antrum.

Distribution: Czecho-Slovakia, Germany, Hungary, Poland.

G. czernyi sp. n. is dedicated to the late DR. LEANDER CZERNY, the excellent monographer of the heleomyzid species.

Gymnomus europaeus sp. n.

(Figs 18–27)

Amoebaleria ventricosa: CZERNY, 1924: 135; COLLART, 1940: 19, Fig. 4. – *Scoliocentra ventricosa*: PAPP, 1981: 64; MARTINEK, 1987: 241.

Total length of body (without antennae) 6.2–7.8 mm.

Head in lateral view about 1.1–1.15 times as high as long, anterior part of frons yellow orange, posterior part behind anterior *ors* orange-brownish. Stripes near eyes with grey pollinosity like parts of ocellar triangle and occiput. Ocellar triangle dark brown. Ocelli reddish-brown. One strong vibrissa with 1 small hair above. Peristomal setae in 2 irregular rows. 2 strong *ors*, the anterior one about 0.75 times as long as the posterior one. Palpi yellow. Proboscis regularly dark brown. 2 strong *vt*, *pvt* relatively weaker. – Scape and pedicel orange-brownish, flagellomere brownish, darkened apically, smaller than in *martineki*, about 0.47–0.49 of cheek height, slightly elongated. Arista longer than height of head, brownish-black with very short pubescence. Eyes round. Face little depressed below antennae, cheek-eye ratio about 0.61–0.615.

Thorax: mesonotum brownish-grey, densely covered with black and relatively long setae, dorsal and pleural parts of thorax with golden pollinosity. Humerus yellowish-orange to orange-brownish with grey pollinosity. Scutellum yellowish-brown, greyish-brown basally. Postscutellum in the same basic colour. Posterior part of anepisternum and anterior part of anepimeron orange-brownish. Chaetotaxy: 1+3 dorsocentral bristles emerge from relatively small dark brown spots, between dorsocentrals a thin and long greyish-brown stripe. Longest postpronotal acrostical bristles 0.225 mm, only 0.172 mm in *caesius* and 0.155 mm in *spectabilis*. Anterior corner of anepisternum with about 20 small hairs, katepisternum fine black haired with 1 katepisternal. Halteres yellowish-brown.

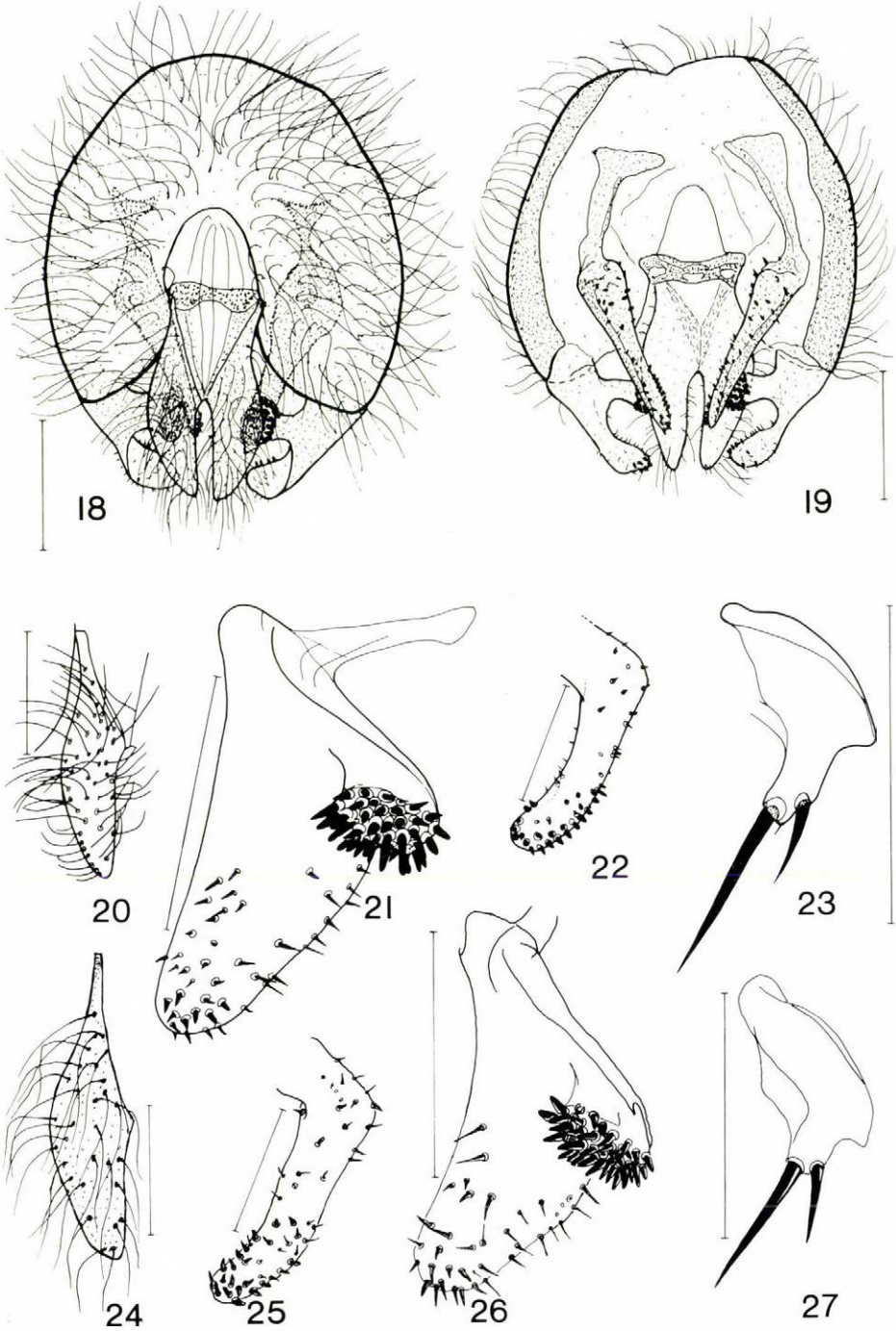
Wings: length 6.4–8.0 mm, width 2.6–2.9 mm. Membrane hyaline, crossveins not darkened. Costal spines strong and longer than width of costa; longest costal bristles 0.21 mm (i.e. approximately same as in *specabilis* but only 0.15–0.16 mm in *caesius*). Veins brownish. Medial vein ratio 1.035–1.166.

Legs reddish-orange, longer haired than in *caesius*. Fore femora darkened with grey pollinosity, mid femora with some dorsolateral bristles, hind femora with 1–2 thin dorsolateral bristles. Fore tarsi dark brown except basitarsus (darkened only in the 1/3 apical part). Two apical tarsomeres of mid and hind tarsi dark brown marginally and apically, other tarsomeres only darkened apically. Hairs in mid tibiae as long as tibial width.

Abdomen: tergites 1–4 brownish-grey with grey pollinosity, marginally with thin brownish stripes. Tergite 5 and epandrium brownish-red. All tergites long haired with strong black marginal bristles.

Male terminalia: epandrium (Figs 18, 19) semiglobular; cerci (Figs 20, 24) extended dorsally and slightly narrowed apically, longer than wide; medial lobe of editum forms a process projecting with black thornlets (spines) grouped on its broad apex, lateral lobe extended with several setae and black thorns (Figs 21, 26), narrowed apically; surstylus (Figs 22, 25) curved distally and thinner than in *martineki*, distally and apically with several black thornlets (more thornlets apically); gonites (Figs 23, 27) similar to those of *martineki*, with two strong bristles, first one longer than half length of second one.

Type material: Holotype male (HNHM): Budakeszi, juhlegelő [sheep pasture], ürgelyukból [from burrows of souslik, *C. citellus*] – 1984. IV. 14., leg. PAPP, L. – Paratypes: Hungary (all in HNHM): 1 ♂: same as for holotype; 2 ♂: Solymár, Solymári barl. – 1960. VI. leg. BAJOMI D.; 1 ♂: idem, 1951. III. 2., leg. KOVÁCS L.; 4 ♂: Simontornya, Hung. occ. 1912, VI. 6. “K.abl.” [on windows] – “Blepharoptera spectabilis Lw.” coll. THALHAMMER; 1 ♂: Százhalombatta, 1979. IV. 5. – fehér színcsapda [white colour plate], leg. DARVAS B.; 1 ♂: Antr. Hárshegy, Buda, leg. BOKOR (reverse side) 1922. II. 28. – “Blepharoptera spectabilis Lw.” coll. THALHAMMER; 1 ♂: Vác, Nagyszálcásúcs [Naszály], SZILÁDY, 1930. IX. 13. – Antrum; 3 ♂: Pécs, THALHAMMER, V. 26./VII. 12./19. – “Blepharoptera spectabilis Lw./caesia Mg.” coll. THALHAMMER; 1 ♂: Bükk hegys., Tard – 1957. IV. 4. leg. TÓTH S.; 1 ♂: Sz.-Fehérvár, Hungaria, THALHAMMER – “Blepharoptera spectabilis Lw.” coll. THALHAMMER; 1 ♂: B.N.P.: Miskolc, Vizes-barlang – 1984. VIII. 22., leg. MERKL O.; 1 ♂: Eplény, Malomréti-v., 1974. VII. 12., Balla-Huszár. – Austria: 1 ♂ (NMW): Amoebaleria ventricosa BECK. L. CZERNY, Goldloch b. Tünnitz r.ö. 14. 02. 1921, WETTSTEIN; 1 ♀ (NMW): Neusiedler See Bernhauer (Austria). – Czechoslovakia: 4 ♂ (VM): Kaniarova Cave, 24. 09. 1976, KOSEL leg.; 1 ♂ (VM): Slov. Cave Podbani, 5. 08. 88, KOSEL leg.; 2 ♂ (VM): Vleie diery, 14. 8. 90, KOSEL; 1 ♂, 1 ♀ (WA): Slovensko, Vlčia, 3. 05. 1976 (WA); 1 ♂ (VM): CS: Medvedia jask., 22. 02. (15–30), KOSEL leg. – Poland: 1 ♀ (HNHM): Polonia, Pongrácz–Olkusz – “A. ventricosa Beck.” Det. CZERNY. – Romania: 1 ♂ (postabdomen missing) (VM): Romania orbor. Valea Putnei nr. Gimpul. – Mold. lgt. I. CEIANU, 1. 11. 61; 14 ♀♀ (HNHM): they probably belong to this species but are not designated as paratypes.



Figs 18–27. *Gymnomus europaeus* sp. n., paratypes, male genitalia: 18–19=epandrium with external genitalia: 18=caudal view, 19=cranial view; 20, 24=cercus, caudal view, 21, 26=editum, medial view, 22, 25=surstylus, medial (sublateral) view, 23, 27=gonite laterally (upper line: a male from Hungary, lower line: a male from Slovakia). – Scales: 0.2 mm (all)

Distribution: Austria, Croatia, Czecho-Slovakia, Hungary, Poland, Romania.

Remark: *G. europaeus* sp. n. was mentioned by COLLART (1940) from Transsylvania (Romania) also from caves and a drawing on male genitalia was presented. Specimens of *G. europaeus* sp. n. are distinguished from congeners by the characters given in the key below, p. 208.

Gymnomus gorodkovi sp. n.
(Figs 28–33)

Measurements (in mm): body length 5.52, wing length ca. 5.93, width of wing 1.95, longest costal bristles 0.225.

Head in lateral view somewhat higher than long (ratio 1.05). Anterior part of frons back to posterior *ors* yellow orange, posterior part brownish. Face yellowish orange. Ocellar triangle dark brown. One strong oral vibrissa. Two *ors*, anterior one thinner than posterior one and about half length of the posterior bristle. Peristomal setae in one irregular row. Cheek-eye ratio 0.625. Arista dark brown, short pubescent. – Flagellomere dark brown, length about 0.63 of cheek height. Scape and pedicel reddish brown.

Thorax: pleural and dorsal parts of thorax brownish grey, humerus yellowish brown. Katepisternum finely long haired, scutellum greyish brown, brown marginally. Chaetotaxy: 1+3 dorsocentral bristles emerge from small brown spots. Anterior corner of anepisternum (mesopleuron) with less than 10 (about 7) hairs. Halteres yellowish.

Wings: veins yellowish brown, medial vein ratio 1.201.

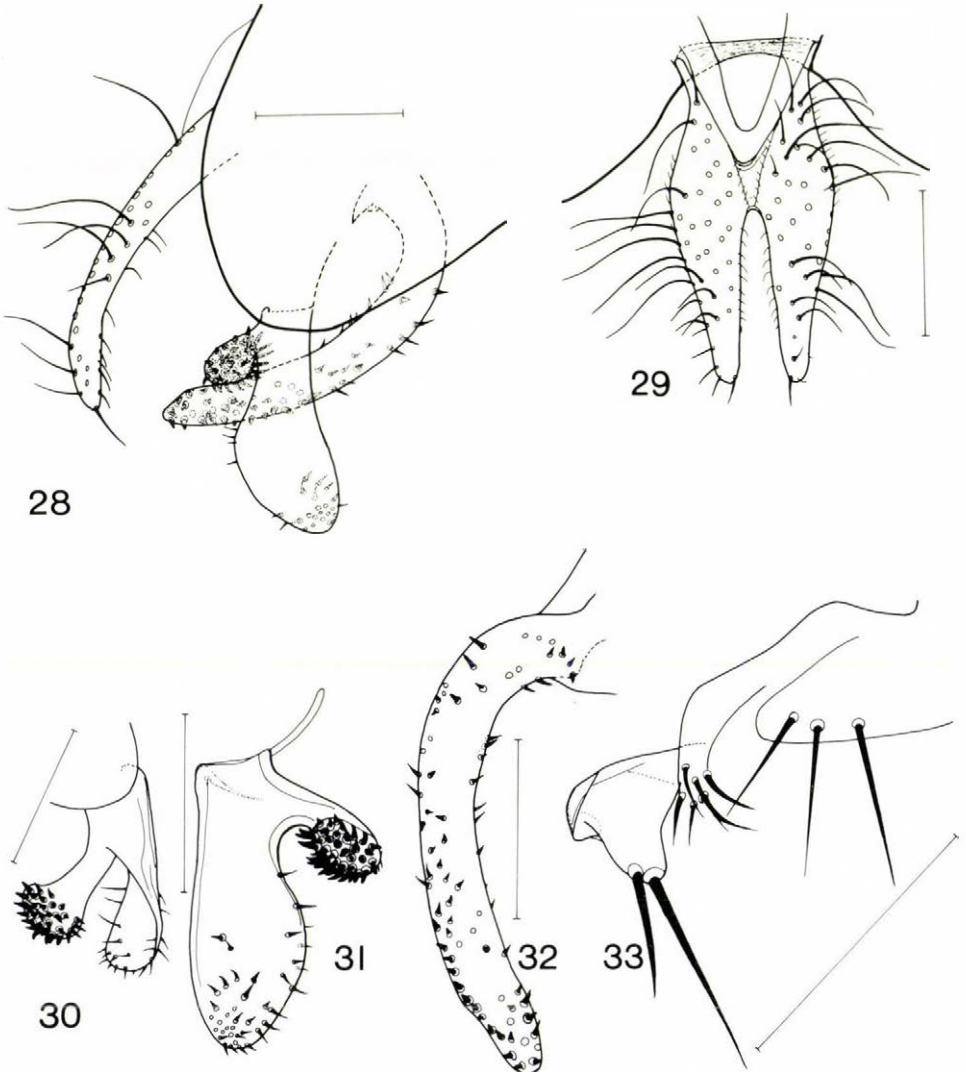
Legs: yellowish brown, as long as in troglodytes. Fore tarsi (except basitarsus) dark brown. Two basal tarsomeres of mid and hind tarsi yellow, only darkened apically, other parts dark brown. Only 2 bristles longer but not thicker than others on hind femur dorsally and subapically.

Abdomen: tergites 1–5 brownish, postabdomen reddish.

Male genitalia: cerci (Fig. 28) much shorter than in *mongolicus* sp. n., their free apical part not longer than half of total length, apex rounded, cercal bristles sparse and somewhat longer than in *mongolicus*, cerci in profile (Fig. 29) thin and apically curved; editum (Figs 30, 31) with lateral lobe narrow but spatulate, apex broadly rounded, apical part medially with several short thorns, in general with weak armature like in *mongolicus*, medial lobe as long but thinner than in *mongolicus*, apex similarly knob-like; surstylus (Fig. 32) extremely narrow and curved, its medial surface with not very numerous thornlets; gonite (Fig. 33) short (like in *mongolicus*), its anterior bristle more than half as long as posterior one.

Holotype male (HNHM): Mongolia: Chövsgöl aimak, 3 km SW von Somon Burenchaan, 1650 m, Exp. DR. Z. KASZAB, 1968 – No. 993, 21. VI.–16. VII. 1968.

This species is dedicated to DR. K. B. GORODKOV (Zoological Institute, Academy of Sciences, Sankt-Petersburg, Russia) in recognition of all his contributions to the knowledge of Heleomyzidae.



Figs 28–33. *Gymnomus gorodkovi* sp. n., holotype, male genitalia: 28 = cercus, editum and surstylus in lateral view, 29 = cerci, caudal view, 30–31 = editum: 30 = in caudal view, 31 = in medial (sublateral) view; 32 = surstylus, widest extension (sublateral view), 33 = gonite with a part of hypandrium laterally. – Scales: 0.2 mm (all)

Gymnomus mariei (SÉGUY, 1934)
(Figs 34–35, 37–41)

Amoebaleria Mariéi SÉGUY, 1934: Faune de France 28: 343. – *Scoliocentra (Gymnomus) mariei*: GORODKOV, 1984: 29.

Total length of body (without antennae) 8.8–9.0 mm.

Head in lateral view about 1.1 times higher than long, anterior part of frons rather yellow rust, posterior part behind anterior *ors* orange-brownish. Stripes near eyes with white-silvery pollinosity like parts of ocellar triangle and occiput. Ocellar triangle dark brown. One strong vibrissa with 1–2 small black hairs above. Peristomal setae in several rows. 2 strong *ors*, anterior one about 0.75 times as long as posterior one. Palpi orange-brownish like scape and pedicel. Proboscis regularly dark brown. 2 strong *vt*, *pvt* relatively weaker. – Flagellomere small, about 0.48 of cheek height, almost rounded (slightly elongated) and dark brown. Arista blackish-brown, very short pubescent, longer than height of head. Eyes nut-brown with metallic pollinosity. Face under antennae more depressed, cheek-eye ratio about 0.8–0.82.

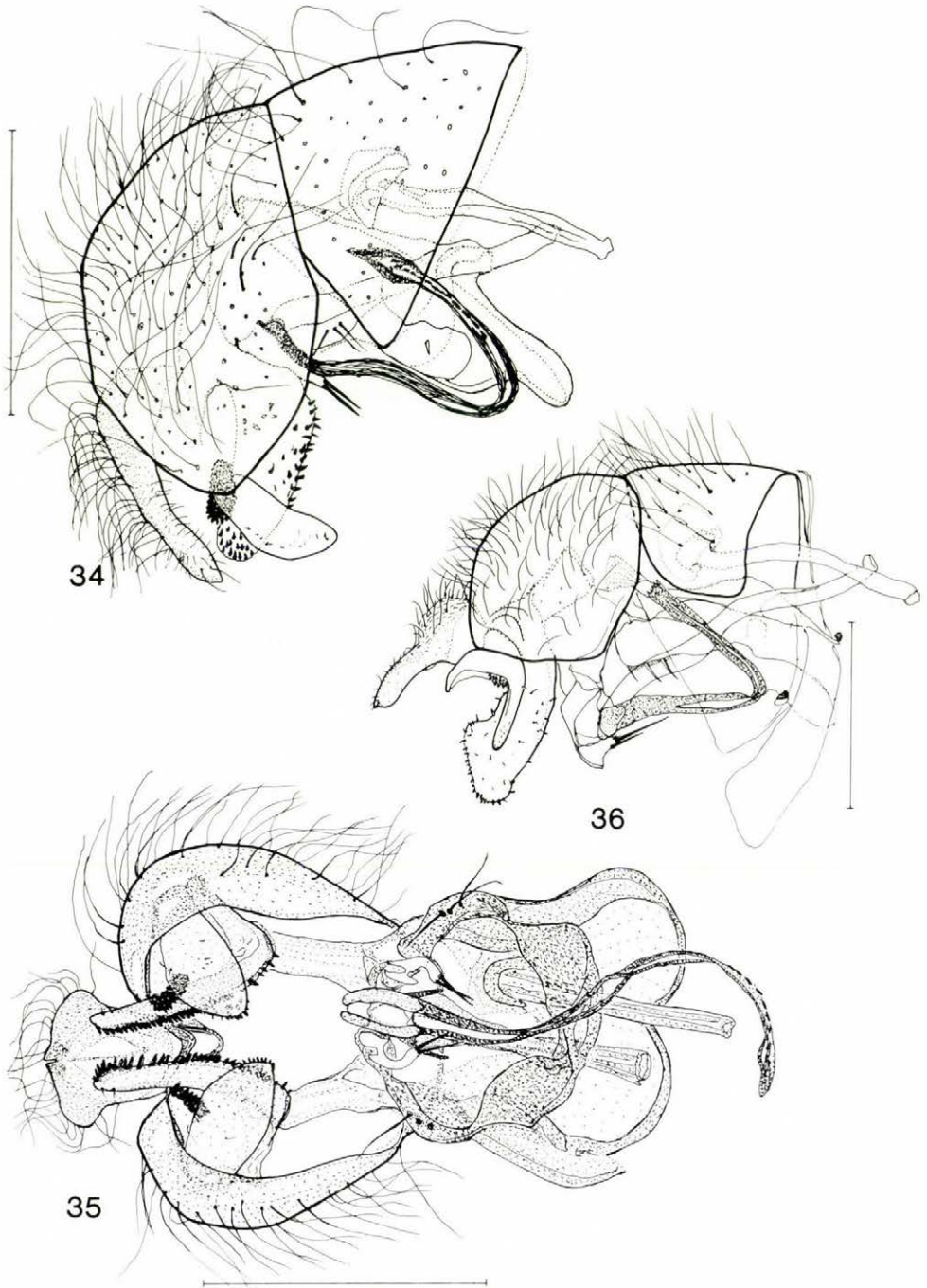
Thorax: mesonotum brownish-grey, dorsal and pleural parts of thorax with white-grey pollinosity. Humerus brownish-grey, densely covered with black, thin and long setae dorsally. Scutellum greyish-brown, brown marginally. Postscutellum in the same basic colour. Posterior part of anepisternum and anterior part of anepimeron brownish. Chaetotaxy: 1 + 3 dorsocentral bristles on relatively large black spots, anepisternum behind propleuron with more than 20 thin small hairs (24–28), katepisternum long black-haired with 1 katepisternal. Halteres yellowish brown.

Wings: length 9.1–9.3 mm, width 3.0–3.2 mm. Membrane hyaline, crossveins not darkened. Costal spines strong and longer than costal width. Basal parts of veins yellowish, remaining parts brownish. Medial vein ratio 1.145 (holotype), 1.160.

Legs: rust coloured, long-haired. Mid and hind femora without dorsolateral bristles. Two apical tarsomeres of fore and mid tarsi dark brown, other tarsomeres only darkened apically. Two apical tarsomeres of hind tarsi darkened marginally and apically, tarsomeres 2–3 darkened only apically. All tibiae and tarsi long-haired.

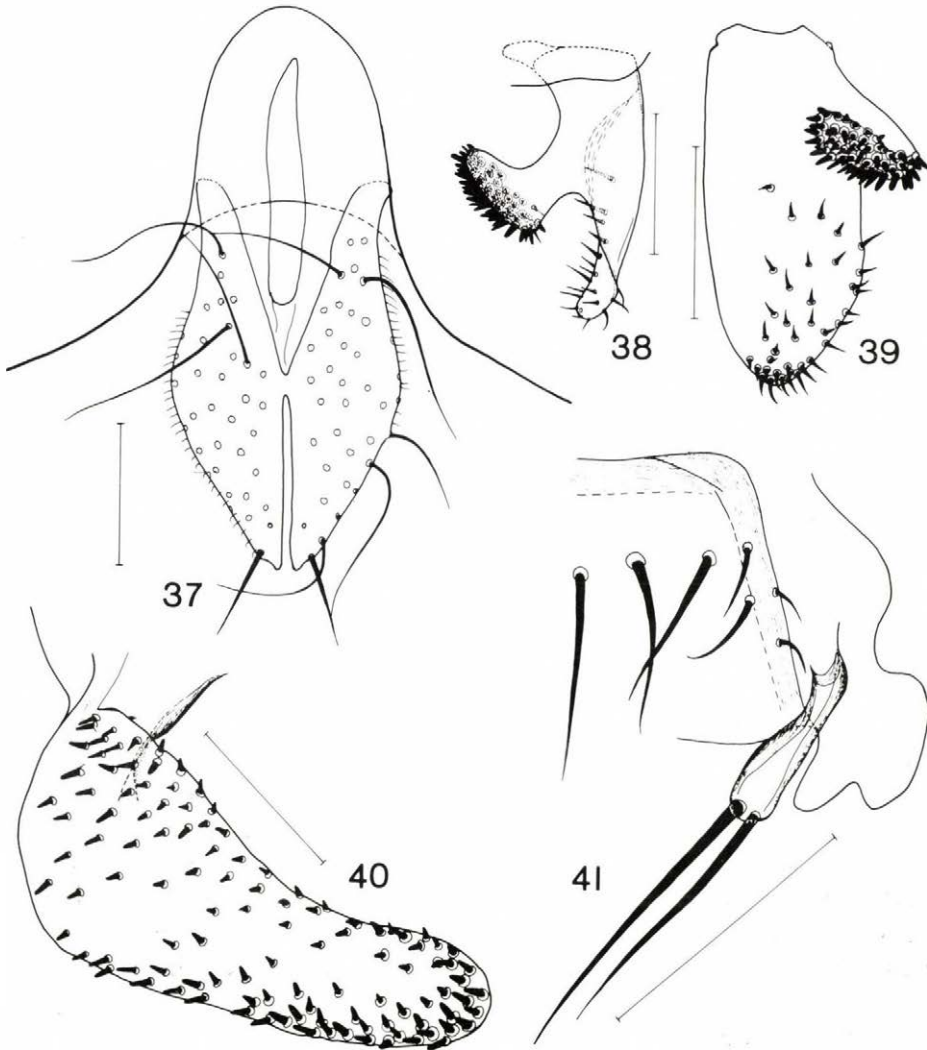
Abdomen: tergites 1–4 grey, tergites 2–3 on the edges with small rust coloured stripes. Tergite 4 in the apical half, tergite 5 and epandrium rust coloured. All tergites long-haired with strong black marginal bristles.

Redescription of the male terminalia: epandrium long-haired (Figs 34, 35), extended medially; cerci (Fig. 37) extended dorsally and narrowed apically, longer than wide; medial lobe of editum (Figs 38, 39)



Figs 34–36. 34–35 = *Gymnomus mariei* (SÉGUY), male: 34 = postabdomen seen from the right (laterally), 35 = male genitalia in ventral view; 36 = *Gymnomus sabroskyi* (GILL) holotype, male postabdomen seen from the right (laterally). – Scales: 0.5 mm (all)

forms a projecting process with black thornlets (spines) grouped on its broad apex, medial lobe shorter than width of editum, lateral lobe with several black thorns and setae; surstylus (Fig. 40) broad, distally curved, marginally and apically with several black thornlets; gonites (Fig. 41) thin with two strong and relatively long bristles, distally with a membranous lobe; ejaculatory apodeme with comparatively broad basal part, aedeagus of



Figs 37–41. *Gymnomus mariei* (SEGUY), male genitalia: 37=cerci, caudal view, 38–39=editum: 38=in caudal view, 39=in medial (sublateral) view, 40=surstylus, medial surface at widest, 41=gonite with a part of hypandrium, sublateral view. – Scales: 0.2 mm (all)

medium length (as long as height of epandrium + editum), curved to the right apically.

Female: Unknown.

Type material: Holotype male (MHNN): Type (red label), Amoebaleria Mariéi. Type. SÉGUY (white) (wings a little destroyed, two flagellomeres missing).

Other specimen examined: 1 ♂ (MNHZ): Dischmatal Gr, (Suisse), 30. 05–24. 07. 1979, B. WARTMANN leg.

Distribution: France and Switzerland.

Remark: Specimens of *G. mariei* are distinguished from congeners by their mid and hind femora without dorsal subapical bristles.

Gymnomus martineki sp. n.

(Figs 42–47)

Total length of body (without antennae) 5.6–5.9 mm.

Head at side view about 1.2–1.25 times higher than long, anterior part of frons mostly orange-yellow, posterior part behind anterior *ors* orange-brownish. Stripes near eyes with grey pollinosity like parts of ocellar triangle and occiput. Ocellar triangle dark brown. Ocelli reddish-brown. One strong vibrissa with 1 small hair above. Peristomal setae in a single, sometimes irregular row. 2 strong *ors*, anterior one about 0.66 length of posterior one. Palpi yellow orange. Proboscis regularly dark brown. 2 strong *vt*, *ptv* relatively weaker. – Flagellomere large, about 0.66 of cheek height, round and orange like scape and pedicel. Arista brownish-black, very short pubescent, longer than height of head. Eyes round. Facial plate under antennae a little depressed, cheek-eye ratio about 0.625–0.635.

Thorax: mesonotum bluish-grey, dorsal and pleural parts of thorax with white-grey pollinosity. Humerus brownish-grey, dorsal parts of mesonotum densely covered with black thin and short setae. Scutellum grey, dark brown marginally. Postscutellum in the same basic colour. Posterior part of anepisternum and anterior part of anepimeron brownish. Chaetotaxy: 1 + 3 dorsocentral bristles emerge from relatively small diffuse black spots, sometimes 1 small additional bristle. Anterior corner of anepisternum with about 10 small hairs, katepisternum black-haired. Halteres yellowish.

Wings: length 5.8–6.4 mm, width of wings 1.8–1.9 mm. Membrane hyaline, crossveins not darkened. Costal spines strong and longer than width of the costa. Basal parts of veins yellowish, remaining parts brownish. Medial vein ratio 1.135–1.160 (paratypes).

Legs: honey yellow, short haired. Fore femora darkened with grey pollinosity. Hind femora with 2–3 dorsolateral bristles (if 3, third one as thin as hairs). All fore tarsomeres dark brown except basitarsus (darkened only in the 1/3 apical part). Two apical tarsomeres of mid and hind tarsi dark brown marginally, other tarsomeres darkened only apically, mid tibia with hairs as long as width of tibia.

Abdomen: tergites 1–4 brownish red with grey pollinosity, marginally with small rust coloured stripes. Tergites 5 and epandrium brownish red. All tergites less densely haired than in *europaeus*, with strong black marginal bristles.

Male terminalia: epandrium (Figs 42, 43) elongated and extended medially; cerci (Fig. 44) like in *caesius* but not narrowed apically, longer than wide; medial lobe of editum (Fig. 45) forms a projecting process with black thornlets (spines) grouped distally on its broad apex, medial lobe shorter than width of editum, lateral lobe broad with several black thornlets and setae; surstylus (Fig. 46) distally gradually curved and wider than in *europaeus*, distally and apically with several black thornlets; gonites (Fig. 47) short and high, with two bristles, first one shorter than half length of second one.

Female: Unknown.

Type material: Holotype male (NMW): Badgastein (Austria), 1800 m., 14. 06. 1977., H. STOCKNER leg. – Paratypes: 1 ♂ (MHNN): Neuchâtel (Suisse), La Sclera, Nardetum, 2100 m., 14. 07. 1980.; 1 ♂ (WA): Badgastein (Austria), 1800 m., 17. 06. 1977., H. STOCKNER leg.; 1 ♂ (HNHM): Badgastein (Austria), 1800 m., 16. 06. 1977., H. STOCKNER leg.; 1 ♂ (HNHM): Badgastein (Austria), 1800 m., 18. 06. 1977., H. STOCKNER leg. The specimens are in a poor state of preservation as a consequence of their storage in alcohol for a long time. The type-series was minutia-pinned during this study.

Distribution: Austria, Switzerland (Alps). This is a mountain species smaller than most other species in the genus.

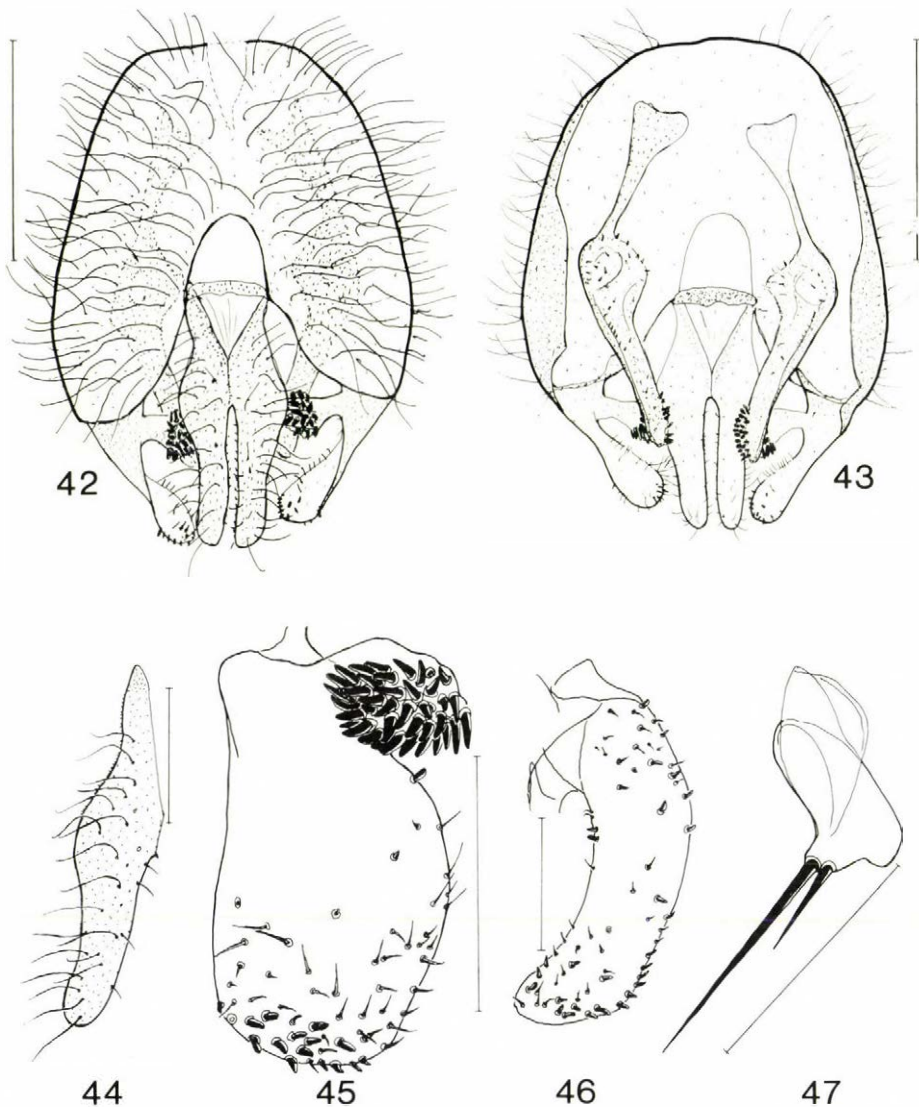
Derivatio nominis: *G. martineki* sp. n. is named in honour of DR. ING. V. MARTINEK (Dobruška, Czecho-Slovakia), who also published excellent works on the heleomyzid species and who promoted our present work in various ways (by sending us all his invaluable specimens, etc.).

Gymnomus mongolicus sp. n.

(Figs 48–52)

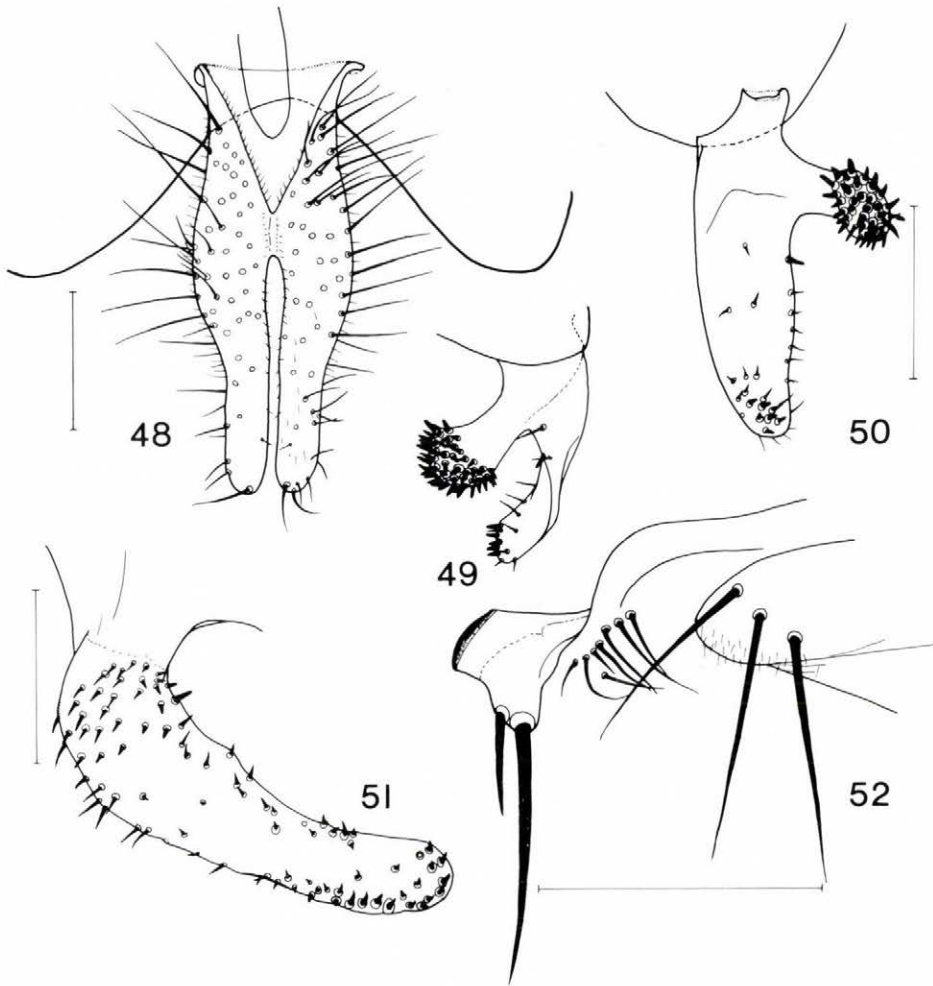
Scoliocentra (Amoebaleria) ventricosa: GORODKOV (1969): 257; GORODKOV (1972): 896. – *Scoliocentra (Gymnomus) ventricosa*: GORODKOV (1974): 358.

Measurements (in mm): body length ca. 6.90, 7.31 (paratype), length of wing 6.76, 7.66, width of wing 2.21, 2.58, longest costal bristles 0.258.



Figs 42–47. *Gymnomus martineki* sp. n., paratype, male genitalia: 42–43 = epandrium with external genitalia: 42 = in caudal view, 43 = in cranial view; 44 = cercus, caudal view, 45 = editum, medial (sublateral) view, 46 = surstylus, medial surface at widest, 47 = gonite laterally.
 – Scales: 0.5 mm for Figs 42–43, 0.2 mm for Figs 44–47

Head in lateral view about 1.2 times higher than long. Anterior part of frons back to the anterior *ors* yellow, posterior part brown. Face yellow brownish. Stripes near eyes with silver pollinosity. 2 *ors*, the anterior one about half length of the posterior one. Peristomal setae in two rows.



Figs 48–52. *Gymnomus mongolicus* sp. n., holotype, male genitalia: 48 = cerci, caudal view, 49–50 = editum: 49 = in caudal view, 50 = in medial (sublateral) view, 51 = surstylus, widest extension (sublateral view), 52 = gonite with a part of hypandrium laterally. – Scales: 0.2 mm (all)

Cheek-eye ratio ca. 0.8. – Flagellomere orange, slightly elongated, length about 0.5 of cheek height, a little darkened apically. Arista as in *gorodkovi*.

Thorax: mesonotum brownish grey, humerus concolorous with disc of mesonotum. Propleuron and posterior part of anepisternum brownish. Anepisternum with 10–12 hairs near propleuron. Scutellum brownish with grey pollinosity. Chaetotaxy: 1 + 3 dorsocentrals emerge from brown spots. Halteres yellowish brown.

Wings: Medial vein ratio 1.250.

Legs: Hind femora with 1–2 thick dorsal (anterodorsal) subapical bristles; this dorsal subapical bristles in female stronger than in male.

Male genitalia: cerci (Fig. 48) comparatively long, free part longer than half of total length, apex narrowly rounded, cerci covered by medium long bristles; editum (Figs 49, 50) very characteristic: lateral lobe extremely narrow, its apex though blunt very narrow, medial surface apically with some distinct thornlets, lateral lobe otherwise with weak armature; medial lobe of editum rather long and robust apically knob-like with numerous, comparatively long thornlets; surstylus (Fig. 51) of medium length and width, apex rather broad and widely rounded, surstylus with comparatively few thornlets; gonite (Fig. 52) short, its anterior spine less than half length of the posterior one; hypandrium lateroventrally with 3 pairs of robust bristles.

Holotype male (HNHM): Mongolia: Chentej aimak, 7 km NO von Somon Mörön, 120 m, Exp. DR. Z. KASZAB, 1965 – Nr. 323., 28. VII.–21. VIII. 1965. – *Scoliocentra* “ventricosa sensu Czerny” GORODKOV det. 1967. – Paratype female (HNHM): same as for the holotype.

An additional female, in all probability a female of *mongolicus*: 1 ♀ (HNHM): Mongolia, Baruun-Urt ÉNy[NW] 120 km – 1972. VIII. 5–18., leg. MÉSZÁROS. Other specimen examined: Mongolei, 10. VI. 1926 KOSLOV, female (NMW).

***Gymnomus sabroskyi* (GILL, 1962)**

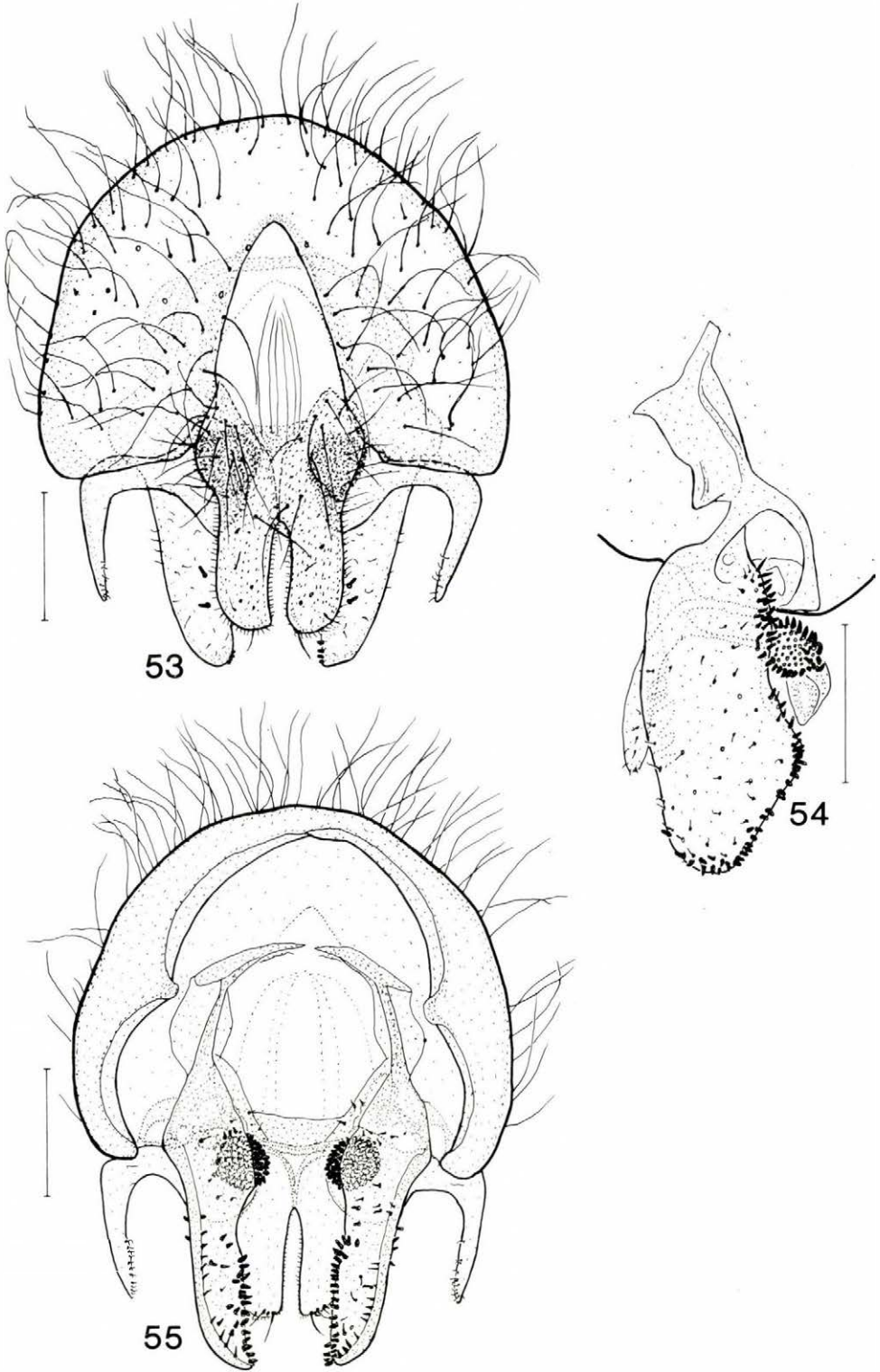
(Figs 36, 53–55, 56–59)

Amoebalaria sabroskyi GILL, 1962: 587. – *Scoliocentra sabroskyi* (GILL): MARTINEK 1982: 77; 1986: 140; 1987: 241.

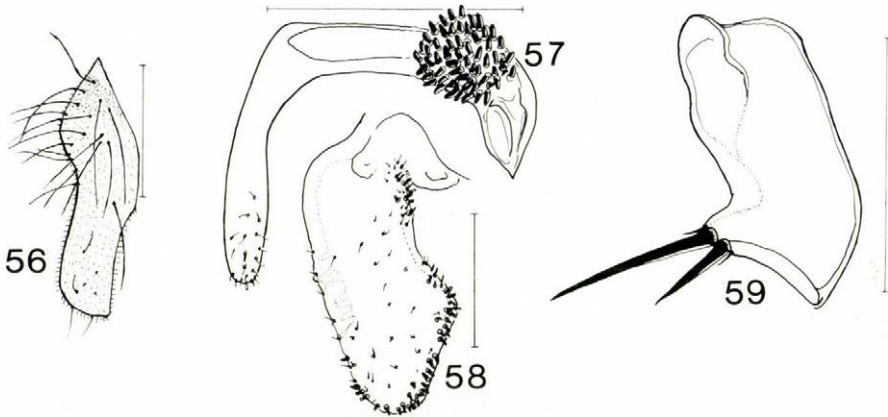
Total length of body (without antennae) 5.5–5.9 mm.

Head in lateral view about 1.15 times higher than long. Frons yellow anteriorly, posterior part orange. Stripes near eyes with greyish pollinosity like parts of ocellar triangle and occiput. Ocellar triangle dark brown. Ocelli reddish-brown. One strong vibrissa. Peristomal setae in a single sometimes irregular row. 2 strong *ors*, anterior fronto-orbital bristle as long as or shorter than one-half length of the posterior bristle. Palpi yellow. Proboscis regularly brown. 2 strong *vt*, *pvt* relatively weaker. – Flagellomere relatively large, about 0.66 of cheek height, round and reddish yellow. Arista brownish, very short pubescent, longer than height of head. Eyes round, facial plate under antennae slightly depressed, cheek-eye ratio about 0.58–0.59.

Thorax: mesonotum brownish grey to bluish grey, dorsal part densely covered with black short setae, dorsal and pleural parts of thorax



Figs 53–55. *Gymnomus sabroskyi* (GILL), male genitalia: 53 = epandrium with external genitalia, caudal view, 54 = editum and surstylus in lateral view, 55 = epandrium with external genitalia, cranial view. – Scales: 0.2 mm (all)



Figs 56–59. *Gymnomus sabroskyi* (GILL, male genitalia: 56 = cerci, caudal view, 57 = editum in medial (sublateral) view, 58 = surstylus, widest extension (medial and sublateral view), 59 = gonite laterally. – Scales: 0.2 mm (all)

whith grey pollinosity. Humerus yellowish brown. Scutellum yellowish brown, postscutellum in the same basic colour. Katepisternum, posterior part of anepisternum and anterior part of anepimeron brownish yellow. Chaetotaxy: 1 + 3 dorsocentral bristles on relatively small brownish black spots. Anterior corner of anepisternum with several small hairs. Halteres light yellow.

Wings: length 5.7–6.1 mm, width of wings 2.0–2.1 mm. Membrane hyaline, cross-veins not darkened. Costal spines strong and longer than width of costa. Veins yellowish brown. Medial vein ratio 1.07 (holotype), 1.06–1.145.

Legs: yellowish brown, short haired. Fore femora with greyish pollinosity. Hind femora with 2–3 dorsolateral bristles. Fore tarsi dark brown. Two apical tarsomeres of mid and hind tarsi dark brown marginally and apically. Tibiae darkened only apically.

Abdomen: tergites and epandrium reddish orange sometimes with grey pollinosity.

Redescription of the male terminalia: epandrium (Figs 36, 53, 55) relatively small; cerci (Fig. 56) flat, editum (Fig. 57) appears to be much narrowed and shape like an inverted J in lateral view; surstylus (Fig. 58) much broader than edita and marginally with black thornlets; gonites (Fig. 59) shorter than high, apically sharpened, with two strong bristles and two small hairs above, first bristle shorter than double length of second one.

Type material: Holotype male (USNM, genitalia in microvial): *Amoebaleria sabroskyi* Gill Holotype (red), type No. 65447 USNM (red), White Pine Hollow, Dubuque Co. IOWA, July 4, 1949, JEAN LAFFOON (lost: left antenna, right mid tarsus, two katepisternals, 5th tarsomere of hind right tarsus).

Other specimens examined: 1 ♀ (USNM): *Amoebaleria* sp. near *spectabilis* Lw; det. SABROSKY, A. DE SAUSSURE A. 105, Northumberland Cave, NyeCo. Nev. 8. 18. 52. — Poland: 1 ♂ (ISEA, genitalia diss.); PL: Tatry, J. SZCZELINA, 2. [illegible] 1952. Czechoslovakia: 3 ♂, 4 ♀ (HNHM): CS: Vleciá j. [cave], 31. 10. 76., KOSEL leg.; 1 ♂ (HNHM): idem, 3. 2. 77; 2 ♂, 1 ♀ (HNHM, VM): idem, 4. 12. 1976; 3 ♂ (VM); idem, 16. 08. 1988; 2 ♂ (WA): Slow., Koniárova cave, 24. 09. 1976., KOSEL leg.

Distribution: Holarctic Region; Czechoslovakia, Romania, Poland (Carpathian Mts), North America: USA.

***Gymnomus soosi* sp. n.**

(Figs 60–64)

Measurements (in mm): body length 8.07, ca. 7.5 (paratype), length of wing 7.79, ca. 7.0, width of wing 2.75, 2.54, longest costal bristles 0.258.

Head in lateral view about 1.4 times higher than long. Anterior part of frons reddish like scape and pedicel, posterior part brownish. Palpi orange, proboscis dark brown. Anterior *ors* about 0.66 length of posterior bristle. Paratype on its right with 3 *ors*. Peristomal setae in 2 irregular rows. Cheek-eye ratio 0.603. — Flagellomere length about 0.55 of cheek height.

Thorax: pleural and dorsal parts of mesonotum brownish with grey pollinosity. Humeri brownish grey. About 15 hairs behind the propleuron. Chaetotaxy: 1 + 3 dorsocentral bristles emerge from large brown spots. Scutellum brownish with grey pollinosity, brown marginally.

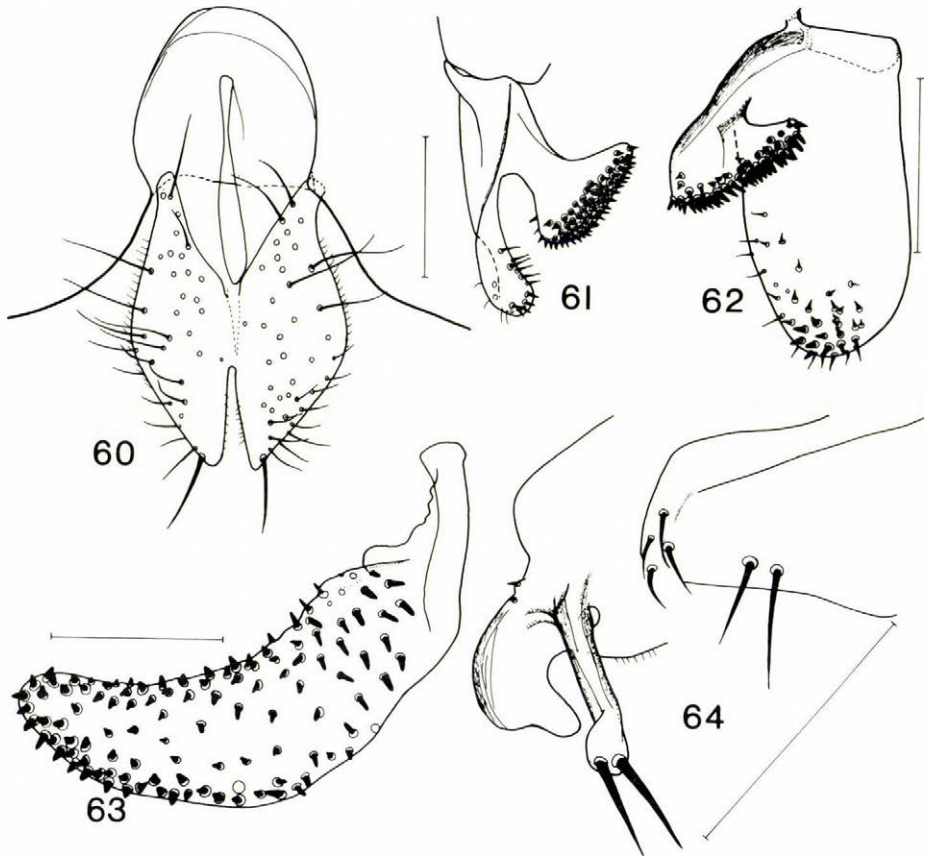
Wings: Medial vein ratio not precisely measurable, about 1.05.

Legs: not elongated, hind femora with 5–7 strong dorsal subapical bristles.

Male genitalia: cerci short and broad (Fig. 60), apex narrow and narrowly rounded but not sharp, cercal bristles comparatively sparse and only moderately long; editum (Fig. 62) with very wide medial lobe better seen in caudal view (Fig. 61), lateral lobe rather broad and widely rounded apically, its medial surface with 15–16 distinct short thornlets, medial lobe with rather flat medial apex and with numerous black thornlets; surstylus (Fig. 63) rather broad and curved with comparatively long but blunt black thornlets on its whole medial surface; gonite (Fig. 64) of a very characteristic and intricate shape: anteriorly with a large, ventrally directed process, gonite itself stalked (pedunculate) apically with two bristles of medium length; hypandrium laterally with only 2 long bristles.

Female unknown.

Holotype male (HNHM): “Trebević” [Bosnia] — “*Blepharoptera caesia* Mg.” coll. THALHAMMER. — **Paratype male (HNHM, gen. prep.):** same labels.



Figs 60–64. *Gymnomus soosi* sp. n., paratype, male genitalia: 60=cerci, caudal view, 61–62=editus: 61=in caudal view, 62=in medial (sublateral) view, 63=surstylus, widest extension (sublateral view), 64=gonite with a part of hypandrium laterally. – Scales: 0.2 mm (all)

Distribution: Bosnia.

Remark: *G. soosi* sp. n. is dedicated to the late DR. ÁRPÁD SOÓS, the greatest Hungarian dipterist, in order to commemorate all his invaluable activity for the dipterology and for the dipterists.

***Gymnomus spectabilis* (LOEW, 1862)**
(Figs 65–68)

Blepharoptera spectabilis LOEW, 1862: Z. ent., Breslau 13 (1859): 58, a second publication in Wien. ent Mschr. 6 (4): 128. – *Amoebaleria spectabilis*: CZERNY, 1924: 134. – *Scoliocentra (Gymnomus) spectabilis*: GORODKOV, 1984: 29. – *Scoliocentra spectabilis*: MARTINEK, 1987: 241; WOŹNICA, 1991: 209.

Length of body (without antennae) 6.0 to 8.5 mm.

Head in lateral view about 1.2 times higher than long. Frons yellow orange. Ocellar triangle dark brown. Ocelli reddish-brown. Peristomal setae in a single sometimes irregular row. 2 strong *ors*, anterior fronto-orbital bristle about 0.66–0.75 of the length of posterior bristle. Palpi yellow. Proboscis brown. 2 strong *vt*, *pvt* relatively weaker. – Antennae: scapus and pedicel yellow orange, flagellomere round, about 0.76–0.78 of cheek height and darkened (brown) near the arista. Arista black, pubescent, longer than height of head. Eyes round. Face under antennae more depressed, cheek-eye ratio about 0.55.

Thorax: mesonotum grey, dorsocentrals emerge on relatively large round black spots, humeri brownish-grey with grey pollinosity. Scutellum brownish grey, sometimes yellowish apically, postscutellum grey with a brown stripe marginally. Chaetotaxy: 1+3 dorsocentral bristles, sometimes a small thin black stripe between them. Anterior corner of anepisternum with several small hairs. Halteres light yellow.

Wings: length 6.3 to 8.8 mm, width of wings 2.2 to 2.6 mm. Membrane hyaline, crossveins not darkened. Costal spines strong and longer than width of the costa. Veins yellowish brown. Medial vein ratio 1.195 (lectotype), 1.175–1.183.

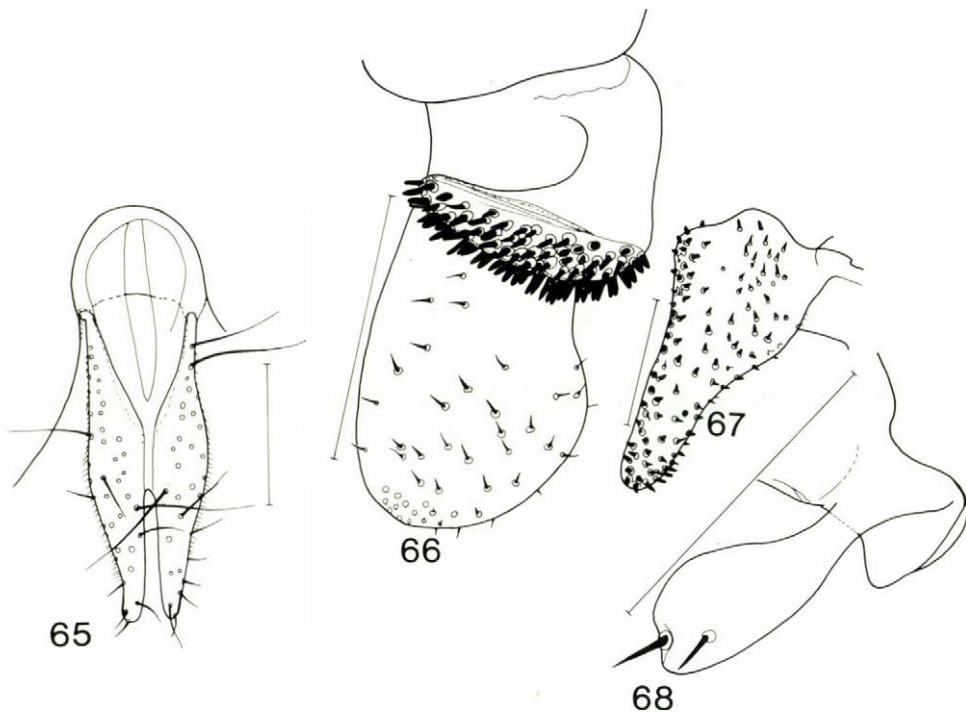
Legs: yellow, mid and hind femora with stronger bristles. Fore tarsi and two apical tarsomeres of mid tarsi dark brown, other tarsomeres darkened apically. Two apical tarsomeres of hind tarsi brown, tarsomeres 2–3 only darkened apically. Hind femora with 2–3 dorsolateral bristles.

Abdomen: yellow, tergites with fine black bristles (not longer than hairs).

Male terminalia: epandrium long-haired, cerci (Fig. 65) elongated but not sharply pointed apically, their free apical section less than half of the total length; edita (Fig. 66) wider than the distal portion of surstylus, medial lobe with black thornlets (spines) grouped on its broad apex, where as wide as lateral lobe, lateral lobe narrowed medially, widely rounded apically, with some small thin bristles and with some dense black thornlets on medial surface; surstylus (Fig. 67) trapezoidal, basal part much wider than apical part and covered by dense black thornlets; gonites (Fig. 68) thinner basally than apically, with two small and thin bristles shorter than width of gonites.

Type material: Lectotype female (by present designation) (ZMB): *Lagosta* Zeller (white label) – coll. H. Loew (white label) – Type (red label) (hind right leg lost).

The junior author has studied the male of the Laybach types and he found that the specimen is a male of *caesius*. However, we must regard the Laybach specimens as paralectotypes (cf. Gorodkov & Schumann 1980).



Figs 65–68. *Gymnomus spectabilis* (LOEW), male genitalia: 65=cerci, caudal view, 66=edutum, medial view, 67=surstylus at its broadest (sublateral-medial view), 68=gonite, lateral view. – Scales: 0.2 mm (all)

Other material studied: Austria: 1 ♀ (HNHM): Tyrolis, Stilfser Joch – “*H. spectabilis* Lw.” Det. CZERNY. – Croatia: 1 ♀ (HNHM): Spilja Pustinja bei Delnice. (Croat.) STILLER (on the reverse side) “VII. 1914”. – Hungary (all in HNHM): 1 ♂: Bükk-hg. [mountains], Középb[érc] – erdő [forest] – 1962. X. 4., leg. TÓTH S., 1 ♀: Mátra hg., Galyatető – 1970. X. 12., leg. PAPP L.; 1 ♂, 1 ♀: B.N.P.: Nagyvisnyó, Bánkúti víznyelő barlang 500 m, 1981. VIII. 26., leg. ÁDÁM–PAPP L., 4 ♂: B.N.P.: Nagyvisnyó, Diabáz-barlang, 1982. IX. 15., leg. ÁDÁM–PAPP. – Romania: 1 ♂ (HNHM): Hu.Bihar, Vidarét, E. BOKOR (on the reverse side) “Mihók b.[arlang]” – “*H. spectabilis* Lw.” Det. CZERNY.; 2 ♂ (HNHM): Hu.Bihar, Vizevölgy, BOKOR – “*A. spectabilis* Lw.” Det. CZERNY.; 2 ♂ (HNHM): “Feritse” [Ferice Cave] – “*H. spectabilis* Lw.” Det. CZERNY. – Switzerland: 1 ♂, 2 ♀ (ZMZ): Alp Flix GR (Suisse), 4.–8. 8. 1975, G. BÄCHLI coll.; 1 ♂, 2 ♀ (MHNG): Gr. de Vers-chez-le Brandt, Suisse, NE, 27. 08. 80, Scoliocentra *spectabilis* det. L. PAPP 1981.

Distribution: Czecho-Slovakia, Germany, Hungary, Italy, Poland, Romania, Switzerland.

Remark: Specimens of *G. spectabilis* are distinguished from congeners by their wholly yellow abdomen and the characters given in the key below, p. 208.

Gymnomus troglodytes LOEW, 1863
(Figs 69–72)

Gymnomus troglodytes LOEW, 1863: Wien. ent. Zschr. 7: 37. – *Scolio-centra (Gymnomus) troglodytes* LOEW: Gorodkov, 1984: 29.

Total length of body (without antennae) 6.0–8.5 mm.

Head in lateral view about 1.15 times higher than long, anterior part of frons mostly yellow, posterior part behind anterior *ors* reddish-orange. Stripes near eyes with white-grey pollinosity like parts of ocellar triangle and occiput. Ocellar triangle dark brown. One strong vibrissa with 1–2 small black hairs above. Peristomal setae in two irregular rows. 2 *ors*, anterior one small, about 0.3 as long as posterior one. Palpi yellow. Proboscis regularly red-yellow. 2 strong *vt*, *pvt* relatively weaker. – Antennae: scapus and pedicel reddish-yellow, flagellomere round, less than half of cheek height (ratio 0.44) and dark brown. Arista black with white pollinosity, longer than height of head. Eyes round and small with metallic pollinosity. Face under antennae more depressed, cheek-eye ratio more than 1.0 (about 1.25).

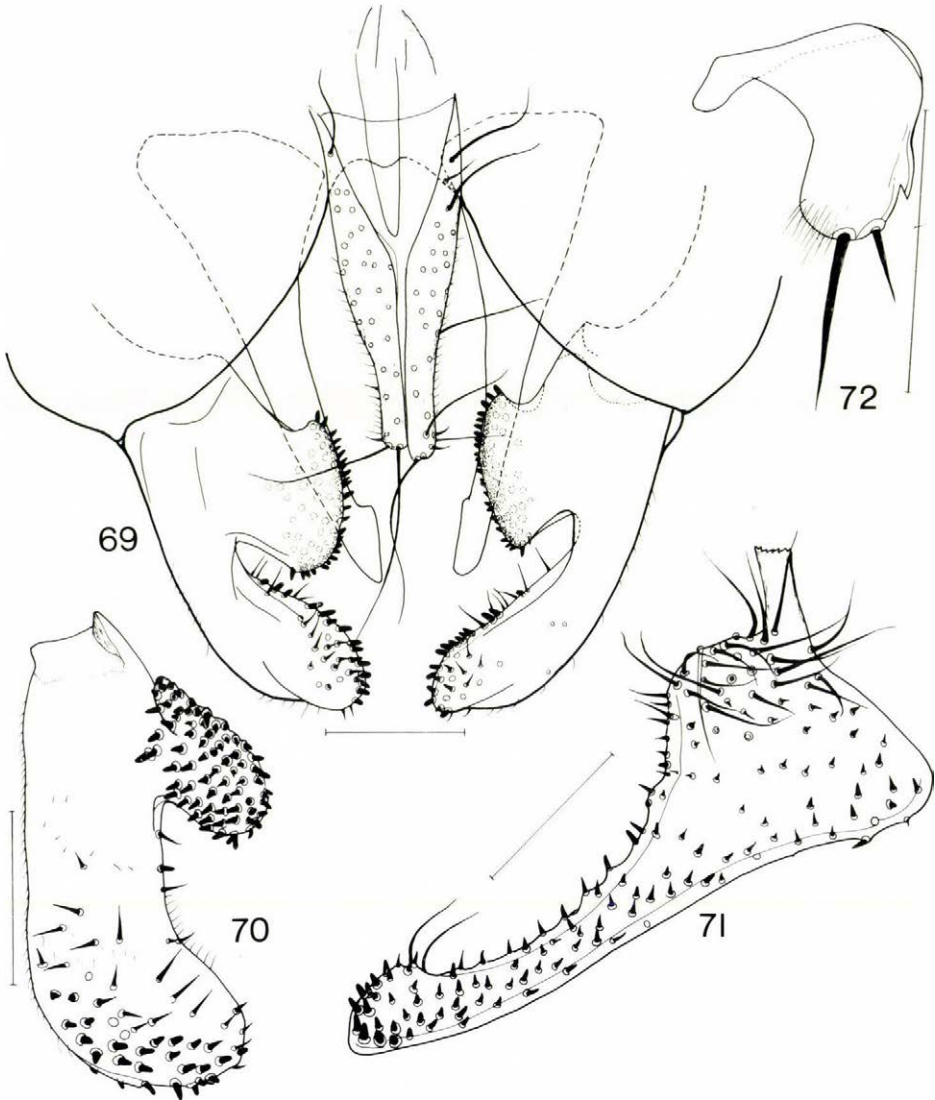
Thorax: mesonotum blackish-grey with white pollinosity and with 2–3 more or less clearly visible stripes, dorsal part densely covered with black short setae, dorsal and pleural parts of thorax with white-grey pollinosity. Humerus brick-red. Scutellum flat and grey, reddish-yellow marginally. Postscutellum in the same basic colour. Posterior part of anepisternum brick-red. Chaetotaxy: (0)–1+3 dorsocentral bristles, no humeral. Anterior corner of anepisternum with some small hairs, katepisternum black haired with 1 katepisternal. Halteres yellowish.

Wings: Membrane regularly light brown clouded, crossveins not darkened. Costal spines strong and longer than width of costa. Hind crossvein curved. Medial vein ratio 1.107–1.128.

Legs: longer than in other species, yellow. Mid and hind femora with strong bristles. Two apical tarsomeres of fore and mid tarsi dark brown. Two apical tarsomeres of hind tarsi darkened marginally and apically, other tarsomeres darkened only apically. Hind femora with 2–3 dorsolateral bristles, in male reduced to hairs.

Abdomen: Tergites brick-red with grey pollinosity, with slightly yellow stripes on the borders. Tergite 5 and epandrium rust coloured. All tergites long and thick haired with strong black marginal bristles.

Redescription of the male terminalia: epandrium semiglobular covered by dense but thin bristles; cerci short and thin (Fig. 69), cereal bristles sparse but long; editum (Figs 69, 70) comparatively large and robust, both lobes thick, lateral lobe not broad and inclinate, all its apical



Figs 69–72. *Gymnomus troglodytes* (LOEW), male genitalia: 69 = cerci, edita and surstyli in caudal view, 70 = editum, medial (sublateral) view, lateral lobe at its broadest, 71 = surstylus at its broadest (sublateral-medial view), 72 = gonite, lateral view. – Scales: 0.2 mm (all)

parts medially with dense but not wholly darkened thornlets, medial lobe extremely broad even at base, covered by dense and rather long thornlets not only apically; surstylus (Fig. 71) very characteristic: long and thin but with a spatulate apex, subapically with 2 thin bristles and basally with several thin bristles, ventral edges and medial surface with thornlets as

given in Fig. 71; gonites (Fig. 72) peculiar again: short and blunt, i.e. with a small subapical process but widely rounded apically, it bears not only one short and one medium long bristles but several thin trichia; aedeagus comparatively very short, i.e. not coiled.

Female: Dorsolateral subapical bristles on hind femora stronger than in male.

Type material: Holotype female (ZMB): *Gymnomus troglodytes* m. (handwriting), Type (red label), coll. H. LOEW (lost: right oral vibrissa, right ors, 2 posterior left dorsocentrals; 1 flagellomere glued on a white label); cf. GORODKOV & SCHUMANN 1980.

Other specimens examined: Croatia: 3 ♂, 1 ♀ (HNHM): second label on all: "G. troglodytes Lw." Det. CZERNY; 1 ♂: "Vel [illeg., ?Otu] Gr.[otte], Aug 9[?]; 1 ♂: no locality label; 1 ♂: Raduc. "(antra) 25. VII."; 1 ♀: Pazariste, "12. VIII."

Distribution: Bosnia and Croatia.

Remark: *G. troglodytes* is a unique species in this genus: there is no close relative among the known species (see in the key below).

***Gymnomus ventricosus* (BECKER, 1907)**

Blepharoptera ventricosa BECKER, 1907: Annu. Mus. zool. Acad. Sci. St.-Petersb. 12(3): 258. – *Amoebalaria ventricosa*: CZERNY, 1924: 135. – *Scoliocentra ventricosa*: PAPP, 1981: 64; and other authors. – *Scoliocentra (Gymnomus) ventricosa*: GORODKOV, 1984: 29.

BECKER (1907) says in its original description: "ohne Streifung und ohne Fleckung an der Wurzelpunkten der Borsten . . . Mit der Legeröhre 8 mm lang." That is why we think none of the specimens from Mongolia belongs to this species described from East Tibet. No specimens of our above material would fit to BECKER's description. We are not sure whether this species does belong to this genus at all; this is why *ventricosus* was not included in the key below.

Type material: Holotype female preserved in the Zoological Department, Academy of Sciences, St. Petersburg (not studied).

Distribution: East Tibet (China).

Doubtful species / records

GORODKOV, 1977: 84: *sabroskyi*: (Kamchatka i Primorie); sp. n. (probably *ceianui* (Rila, Tatra Mts); sp. group *caesia* (distr. Krasnojarsk, left bank of Yenisey river.)

KEY TO THE IDENTIFICATION OF THE PALAEARCTIC SPECIES
OF *GYMNOMUS* LOEW, 1863

- 1 (2) Humeral bristle absent. Cheek-eye ratio more than 1.0, arista longer than head
troglodytes LOEW
- 2 (1) Humeral bristle present. Cheek-eye ratio less than 1.0, arista shorter than head.
- 3 (4) Hind femora without dorsal (anterodorsal) subapical bristles **mariei** (SÉGUY)
- 4 (3) Hind femora with dorsal (anterodorsal) subapical bristles.
- 5 (10) Humeri yellow to yellowish-brown, in contrast to bluish grey disc of mesonotum.
- 6 (7) Peristomal setae in two or more rows **europaeus** sp. n.
- 7 (6) Peristomal setae in a single row.
- 8 (9) Flagellomere brown, darker than scape and pedicel; scutellum greyish brown, legs lengthened **gorodkovi** sp. n.
- 9 (8) Flagellomere orange and scutellum yellowish brown, legs as in caesius
sabroskyi (GILL)
- 10 (5) Humeri brownish to bluish grey, concolorous with the disc of mesonotum.
- 11 (14) Peristomal setae in a single row. Flagellomere round and orange.
- 12 (13) Humeri and scutellum are distinctly brownish yellow. Abdomen completely yellowish red, male editum not reduced (Fig. 66), wider than distal part of surstylus, surstylus (Fig. 67) trapezoidal **spectabilis** (LOEW)
- 13 (12) Humeri bluish grey, concolorous with the disc of mesonotum. Abdominal tergites 1-3 darkened, editum apically rounded (Fig. 45), surstylus (Fig. 46) digitiform, curved gradually **martineki** sp. n.
- 14 (11) Peristomal setae in 2 or more rows or irregularly placed so as not appearing in a single row. Flagellomere various.
- 15 (16) Abdomen completely orange. Editum (Figs 6, 7) with very long medial lobe bearing a round setose plot apically **ceianui** (MARTINEK)
- 16 (15) Abdomen darkened (at least tergites 1-4 discally).
- 17 (18) Cheek-eye ratio 0.8. Male cerci not pointed apically. Only 1 or 2 dorsal subapical bristles on hind femora. Smaller, body length 6.9-7.31 mm. Cerci (Fig. 48) digitiform **mongolicus** sp. n.
- 18 (17) Cheek-eye ratio 0.65 or less.
- 19 (20) Cerci (Fig. 60) widely triangular, 5 to 7 dorsal subapicals on hind femora. Bigger, body length 7.5-8.07 mm. **soosi** sp. n.
- 20 (19) Male cerci pointed apically (e.g. Fig. 1), 2 to 5 dorsal subapicals on hind femora.
- 21 (22) Flagellomere round and yellow-orange. Male cerci (Figs 1, 13) much longer than wide **caesius** (MEIGEN)
- 22 (21) Flagellomere brownish-black, slightly elongated. Male cerci (Fig. 14) only as long as wide **czernyi** sp. n.

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