

A review of the Old World Trigonometopini Becker (Diptera: Lauxaniidae)*

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Abstract – *Shatalkinella* gen. n. (type species: *Shatalkinella marginata* sp. n.) and thirteen new species of the tribe Trigonometopini BECKER, 1905 are described mainly from Southeast Asia: *Diplochasma australis* sp. n. (Australia), *Luzonomyza pseudoforicula* sp. n. (Thailand), *L. sasakawai* sp. n. (Vietnam, Thailand), *L. vietnamensis* sp. n. (Vietnam), *Maquilingia biroi* sp. n. (Papua New Guinea), *M. thaii* sp. n. (Thailand), *Protrigonometopus ornatus* sp. n. (Vietnam), *Protrigonometopus shatalkini* sp. n. (Taiwan), *Shatalkinella marginata* sp. n. (Thailand), *S. punctipennis* sp. n. (Thailand), *S. ronkayi* sp. n. (Taiwan, Thailand), *S. thailandica* sp. n. (Thailand), *Tetroxyrhina peregovitsi* sp. n. (Taiwan). A key for the genera of Trigonometopini of the Old World is given. *Sauteromyia* MALLOCH, 1927 is reinstated as a subgenus of *Diplochasma* KNAB, 1914. *Tetroxyrhina* HENDEL, 1938 is elevated to the generic rank. With 75 figures.

Key words – Lauxaniidae, Trigonometopini, *Shatalkinella* gen. n., new species, taxonomy, Oriental and Australasian regions.

INTRODUCTION

The family Lauxaniidae has classically been divided into two subfamilies, Homoneurinae and Lauxaniinae. While there are some synapomorphies, which underline monophyly of the species of *Homoneura* sensu lato and some other related genera (not necessarily all the genera relegated today to Homoneurinae), there are no true synapomorphies (but negations to the homoneurine characters) for the subfamily Lauxaniinae. We think of a strategy

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to have a better approach: let us try whether we are able to find monophyletic (definitely related) groups of the genera. We may name them as tribes, as it is in the case with Trigonometopini BECKER, 1905. This is not the beginning of the proposed process: SASAKAWA (1995: 150) named Noonamiyini earlier. The family group taxon based on *Trigonometopus* MACQUART, 1835 is Trigonometopinae BECKER, 1905, who created the subfamily within Heteroneuridae (now Clusiidae). There is no reason why not fasten the taxon on BECKER's action (as a tribe here). In view of the richness of the Oriental lauxaniid fauna, also this tribe is rich in species indeed, particularly so for the genus *Tetroxyrhina*. In this paper a part of the new species will be described only. In descriptions we follow SINCLAIR's (2000) terminology. The name "protandrium" is used mostly for tergite 7. SHEWELL's (1987) concept of surstylus seems highly questionable; the ventral lobe of epandrium is called here as surstyler lobe. The types and specimens of the other species below are deposited in the Diptera Collection, Department of Zoology, Hungarian Natural History Museum, Budapest (below: HNHM), in the Muséum d'Histoire naturelle Genève (below: MHNG), or in the Taiwan Forestry Research Institute, Taipei (below: TFRI).

Trigonometopini BECKER, 1905

Remarks – The family group name Trigonometopinae was erected by BECKER (1905: 41), so I regard the tribe as Trigonometopini BECKER, 1905 (cf. SABROSKY 1999: 314).

Characterisation – The tribe can be characterised within the subfamily Lauxaniinae as follow: Body yellow, ochre, seldom dark (*S. okinawanus* SASAKAWA, 1998). Head elongated, in most genera longer than high. Broad, setose fronto-orbital plates present (a strong synapomorphy of the tribe). Anterior orbital seta reclinate, inclinate or absent. Ocellar setae mostly absent or minute, seldom strong (*Neotrigonometopus* MALLOCH). Postocellars normal, minute or absent. Cheek and gena without a separate row of setae (except in *Luzonomyza* MALLOCH). Facial keel distinct or not developed. Scape with or without a strong ventroapical seta. First flagellomere various: short and rounded or long with sharp apex. Thorax more or less elongated. Posthumeral setae present or absent. 0–1 + 2–3 dorsocentral pairs (the consequence of the fact whether anterior *dc* emerge anteriorly or posteriorly to suture). One or 2 pairs of katepisternals. Acrostichals absent, two-seriate, four-seriate or present in two, not well ordered, rows. Wings clear or with diffuse brown spots. Stronger costal fringe restricted to a short proximal part of the R2+3 – R4+5 section, or, this section is completely free of stronger fringe. Abdomen never much flattened. Tergite 7 ("protandrium") fused to epandrium, at least centrally, this is one of the most important synapomorphies of the tribe. In cases tergite 6 also fused to tergite 7 centrally (Fig. 45). Male genitalia surprisingly uniform: no surstylus or distinct

surstylar lobe on epandrium (that is mostly rounded apically). Dorsal wall of the male genital pouch membranous, but a distinct, sclerotized, supragenital (subepandrial) sclerite present in *Protrigonometopus* spp. The homology of this sclerite to/with the bacilliform sclerites of other dipterous families seems rather questionable to me. Gonites (“gonopods” of many authors) are the deterministic part of the genitalia, mostly fused – at least partly – to hypandrium. Phallapodeme (aedeagal apodeme) usually short, looks rod-like in ventral view, but in several genera it forms a lamella sitting on the thicker ventral lath, so in the figures I depicted it in lateral view. Ejaculatory apodeme significant and I think it bears species/genus specific characteristics. Phallus (aedeagus) wholly membranous in the tribe, consequently seldom mentioned below. Female genitalia do not show any peculiarity. Three spermathecae.

A KEY FOR THE OLD WORLD GENERA OF TRIGONOMETOPINI

- 1 Posthumeral seta absent. Male epandrium with or without dorso-caudal pair of appendages 2
- Posthumeral seta present. Male epandrium without dorso-caudal pair of appendages 7
- 2 1+2 *dc* pairs. Ocellars strong, wings clear. Eye as high as long, or nearly so. Anterior orbital seta reclinate and as long as posterior pair. OR, AUS
Neotrigonometopus MALLOCH, 1928
- 0+3 *dc* pairs 3
- 3 Gena with a row of seta above peristomals (other than unaligned setae on posterior part of gena), continued on cheeks (Figs 74–75). Ocellar setae very small. PAL, OR *Luzonomyza* MALLOCH, 1929
- Gena anteriorly and cheek without a separate row of setae 4
- 4 One pair of strong katepisternals, in cases a hair-like anterior *kepst* discernible. First flagellomere rounded apically. Male epandrium mostly with paired dorso-caudal processes. Facial keel restricted mostly to between antennae. PAL, OR, NEA *Tetroxyrhina* HENDEL, 1938
- Two strong pairs of katepisternals. First flagellomere pointed apically or at least with a sharp apical edge. Male epandrium simple. Facial keel high, distinct also below antennae to middle of face 5
- 5 Anterior orbital seta reclinate. Ocellar seta absent or minute but post-ocellars normal. First flagellomere pointed apically. Male epandrium widely rounded ventrally, gonites simple (Fig. 65). PAL
Trigonometopus MACQUART, 1835

- Anterior orbital seta inclinate or absent. Ocellars and also postocellars absent or minute. Palpus long, filiform. OR, AFR, MAD, AUS
Diplochasma KNAB, 1914
- 6 No anterior orbital setae. Acrostichal setae minute (2-seriate). First flagellomere pointed. Postocellars absent, ocellars minute or (mostly) absent. OR, AUS
D. (Diplochasma) KNAB, 1914
- Anterior orbitals distinct and incurved. Acrostichals in 2 or 4 well ordered rows between *dc*-s (anteriorly maybe in 6 less ordered rows). OR, AFR, MAD
D. (Sauteromyia) MALLOCH, 1927
- 7 1+2 *dc* pairs (anterior *dc* well anterior to suture). Wings hyaline 8
- 0+3 *dc* pairs (anterior *dc* in cases just behind suture). Wings hyaline or with darker spots 9
- 8 Scape with a strong ventroapical seta. Acrostichals four-seriate, in cases anteriorly more than 4-seriate. Frons longer than broad. AUS, OR
Maquilingia MALLOCH, 1929
- Scape without strong ventroapical seta, smaller seta may present elsewhere on scape. Acrostichals two-seriate. Frons as long as broad. OR, AUS
Kerteszomyia MALLOCH, 1929
- 9 Scape with a strong ventroapical seta. Acrostichal setae four-seriate. 1–2 pairs of katepisternals. Male tergite 7 (protandrium) with a pair of dark spots. OR **Shatalkinella** gen. n.
- Scape without a strong ventroapical seta, smaller seta may present elsewhere on scape, pedicel with very strong seta both dorsally and ventrally. Two pairs of katepisternals. Male tergite 7 (protandrium) without a pair of dark spots 10
- 10 Eye distinctly longer than high. Male genitalia without sclerotized supragenital (?subepandrial) sclerite. In case of bias (females), anterior fronto-orbital slightly incurved. Acrostichals 2 or 4-seriate. Palpi mostly yellow, rarely black. Facial spots maybe absent, paraantennal spots maybe nearly linear. AUS *Trigonometopsis* MALLOCH, 1925
- Eye as long as high or nearly so. Male genitalia with well-sclerotized supragenital (?subepandrial) sclerite. In case of bias (females), anterior fronto-orbital seta reclinate. Acrostichals two-seriate. Palpi black. Paraantennal and facial spots always strong. PAL, OR
Protrigonometopus HENDEL, 1938

GENERA AND SPECIES OF THE
TRIGONOMETOPUS COMPLEX

The genera and species of the *Trigonometopus* complex, which were studied in the frame of the present project, are given below in alphabetical order of the genera.

Diplochasma KNAB, 1914

Diplochasma KNAB, 1914: 131. Type species: *Trigonometopus monochaeta* HENDEL, 1909 (orig.des.).

subgen. *Sauteromyia* MALLOCH, 1927: 163. Type species: *Sauteromyia alboapicata* MALLOCH, 1927: 163 (orig. des.).

Remarks – *Diplochasma alboapicata* (MALLOCH, 1927), the only Oriental species of *D. (Sauteromyia)* was described from Taiwan (Hokutu). Although I did not find it in the materials in my possession during this project, based on its description, its distinctness is clear to me. Its most important characters are as follow: ocellar setae present but minute, no postocellars, anterior frontoorbitals inclinate, a black spot over ocelli, first flagellomere pointed apically, arista pubescent, only 2 rows of acrostichals between dorso-centrals, 0+3 dc pairs, no posthumeral seta, 2 pairs of katepisternals, abdomen with large brownish spots on each tergite above and a black spot on each lateral margin. MALLOCH (1927) wrote, “it appears to me certain that *Trigonometopus sauteri* HENDEL belongs to this genus”. Of course, the concepts on genera were much different as compared to present ones. I managed to find and study the type in the HNHM. *T. sauteri* belongs unambiguously to *Tetroxyrhina* (see there). As far as I am informed, only species of *Diplochasma (Sauteromyia)* occur in the Afrotropical Region. Indeed, I have prepared a manuscript on them describing seven new species from the sub-Saharan Africa and one new species from Madagascar. They will be published in a separate paper (PAPP 2008).

Diplochasma (Diplochasma) australis sp. n.

(Figs 1–3)

Type material – Holotype male (HNHM): “Australia, Northern Territory, Mt. Bunday, 144 m, 13°13'S 131°08'E, 4–7. XI. 2000, leg. A. Podlussány”. Paratypes (HNHM): 1 male, 1 female: data same as for holotype; 3 males 2 females [genitalia of one male in a plastic microvial with glycerol]: *ibid.*, Bachelor, 143 m, S13°01'548" E131°05'794", 6. XI. 2000.

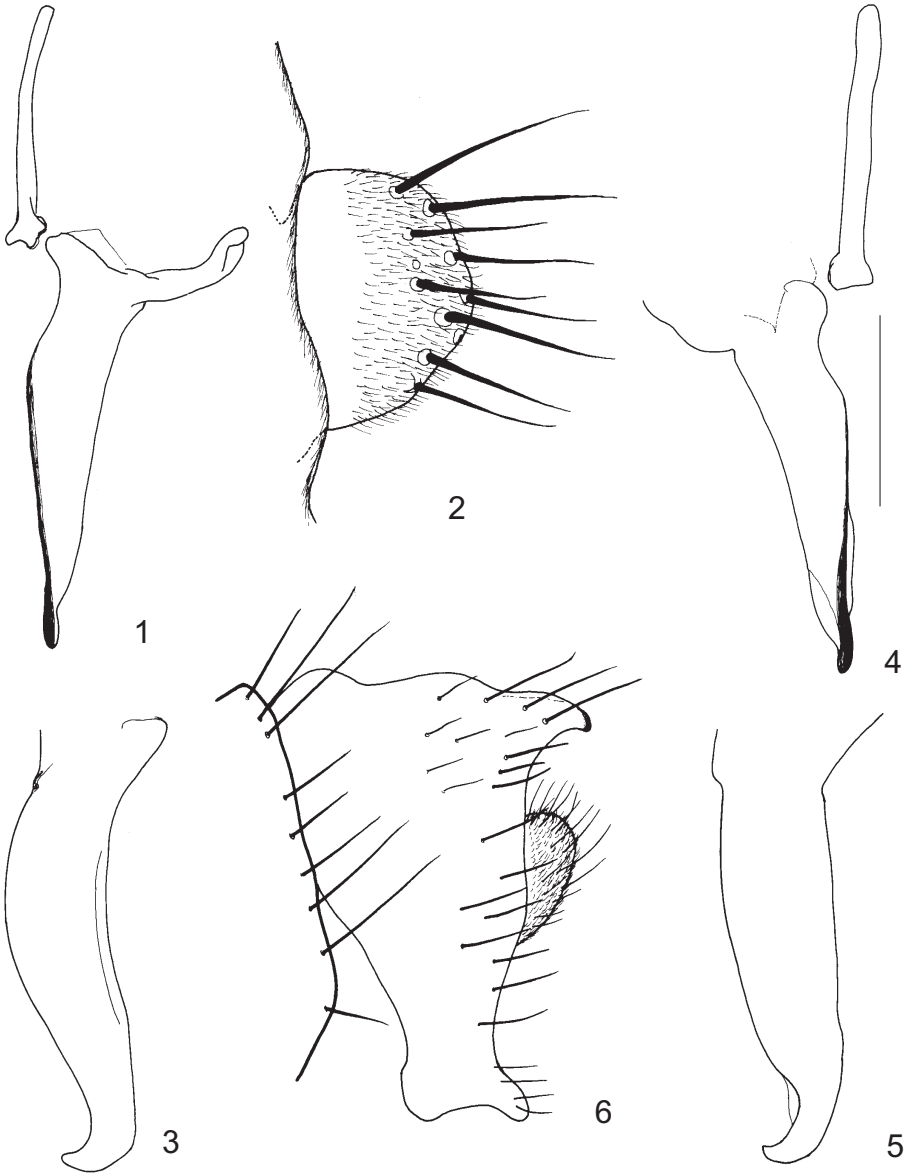
Description – Measurements in mm: body length 3.13 (holotype), 3.30–3.36 (paratypes), wing length 2.89, 3.02–3.26, wing width 1.02, 1.03–1.05. The new sp. is rather similar to *D. (S.) monochaeta* (HENDEL, 1909), so below only the differentiating characters are mentioned. Arisal hairs more dense and longest hairs longer than 0.03 mm in *D. monochaeta*, while *D. australis* has less dense arisal hairs and longest ones shorter than 0.025 mm. Anterior katepisternal seta subequal to posterior one, or at least longer than half-length of the posterior seta in *D. monochaeta*. In the new sp. anterior katepisternal reduced to a hair, at most half as long as posterior katepisternal. Male genitalia (Figs 1–3, *vs* 4–5) are rather small (please compare scale bars of the other figures). The surstylar lobe is not much different in the two species. In *D. australis* male cercal setae (Fig. 2) longer than in *D. monochaeta*. Phallus (aedeagus) indistinct (membranous), phallapodeme (Fig. 1 *vs* Fig. 4) thinner and shorter than in *D. monochaeta*. Gonites symmetrical, in lateral view (Fig. 3 *vs* Fig. 5) more curved than in *D. monochaeta*, but apical (curved) part slightly thicker. In ventral view apical part gradually narrowed (Fig. 1 *vs* Fig. 4), while in *D. monochaeta* apical part of gonite abruptly narrowed.

***Diplochasma (Diplochasma) monochaeta* (HENDEL, 1909)**

(Figs 4–5)

Material examined – Lectotype male (HNHM): “Formosa Sauter” – “Takao 300 m, 1907.” “V. 3.” – “*monochaeta* det. F. Hendel” [red ink] – “*typus*”. It is in a good state of preservation. Paralectotypes (HNHM): 1 male: same label data (in a good state of preservation); 1 male, 2 females: same labels, but “IV. 21.” Male: left mid and hind legs lost, left antenna but scape and pedicel lost; females in a good state of preservation only right antenna but scape and pedicel lost on both of them. Other specimens in the HNHM: 2 males: same data as for the lectotype (one of them with abdomen and genitalia in a plastic microvial with glycerol); plus another pin with 2 fore legs and left wing only remained, other parts had been eaten by *Anthrenus* larvae before 1971. 6 males, 2 females: *ibid.*, “IV. 21.” (one of the males with abdomen and genitalia in a plastic microvial with glycerol). Male genitalia (Figs 4–5) are characterised by less curved and apically abruptly narrowed gonites and larger phallapodeme.

Remarks – I selected a lectotype from the syntype series, since *D. monochaeta* was repeatedly misidentified, particularly so for the Australian specimens (cf. EVENHUIS & OKADOME 1989). So it was not a formal but a taxonomical reason, why I felt I had to do so.



Figs 1–6. Trigonometopini, male genitalia. 1–3 = *D. (D.) australis* sp. n., paratype male: 1 = left half of inner genitalia with phallapodeme, ventral view, 2 = cercus in lateral view; 3 = left gonite, in broadest extension; 4–5 = *D. (D.) monochaeta* (HENDEL, 1909): 4 = right gonite and phallapodeme, ventral view, 5 = left gonite, lateral view. 6 = *Luzonomyza bakeri* (BEZZI, 1913), epandrium in profile (re-drawn after MALLOCH 1929). Scale = 0.1 mm for Figs 1–5

Kerteszmomyia MALLOCH, 1929

Kerteszmomyia MALLOCH 1929: 39, 35. Type species: *Trigonometopus maculifrons* MALLOCH, 1929 (monotypy).

Remarks – MALLOCH (1929) based the genus on a single species from the Philippines (Luzon). STUCKENBERG (1971) reported on an undescribed species from New Guinea. I did not find any specimens during this project, which would fit to the generic concept. However, *Maquilingia thaii* sp. n. with its very strong peristomals resembles MALLOCH's (1929) fig. 29 (for details see below). *Maquilingia matema* CURRAN, 1936 is also similar in this respect.

Luzonomyza MALLOCH, 1929

Luzonomyza MALLOCH 1929: 34. Type species: *Trigonometopus bakeri* BEZZI, 1913 (monotypy).

Luzonomyza bakeri (BEZZI, 1913) – The type of this species was not seen during this project. However, I think, its identity can be judged by the figure of its genitalia (MALLOCH 1929: fig. 28). In order to make easier its use that was re-drawn as Fig. 6.

Luzonomyza japonica (SASAKAWA, 2002) (*Trigonometopus* (*Luzonomyza*)). – It was described from the Ryukyus (Amami-Oshima) (SASAKAWA 2002). This is a species with male epandrium without dorso-caudal appendages. Although it was not found during this project, I was able to fit it properly in the key below.

Luzonomyza nigripalpis (SHATALKIN, 1997) (*Trigonometopus* (*Tetroxyrhina*)) – Material studied: 1 male: Thailand, Trang Prov., Khao Chong Botanic Garden, rainforest, Nov 18, 2004, No. 36, leg. L. PAPP & M. FÖLDVÁRI; 1 female: *ibid.*, Nov 22, No. 43 (cf. PAPP *et al.* 2006). It was described from Khao Sok, based on a single male. I hope I was able to recognise it properly. As SHATALKIN said, its male epandrium is with “short, nipple-shaped lobes”.

***Luzonomyza pseudoforicula* sp. n.**

(Figs 7–10, 66)

Type material – Holotype male (HNHM): “Thailand Trang Prov., Thung Khai Botanic Garden, primary lowland rainforest on “Nature Trail”, Nov 13, 2004, No. 29, leg. L. Papp & M. Földvári”. A freshly emerged (teneral) specimen, right wing strongly wrinkled, left wing prepared between two small pieces of cover glass, head (otherwise intact) glued under the specimen.

Description – Measurements in mm: body length 3.41, wing length 3.23, wing width 1.12. This is one of the smallest species of the genus. Black spot between eye and antennal base small.

Proclinate frontal setulae emerge back to anterior ocellus. No true ocellars, postocellar setae 0.27 mm, cruciate. Antenna dark. Light dorsocentral lines broader than in *L. sasakawai*. Scutellum with sagittal light area diffuse and not widening posteriorad. Wing (Fig. 66) almost evenly dark, cross-veins slightly more darker (brown) bordered. Veins light brown. Stronger costal fringe of 5 black setulae on section distally to R2+3. Intracrossvein section of vein M 0.57 mm, terminal section 1.055 mm, ratio 1.86. Tibiae and tarsi yellow, 2 apical tarsomeres of fore tarsi black. Femora brownish grey. Male genitalia (Figs 7–10) rather large (please be aware of scales). Epandrium with an extremely large dorso-caudal pair of processes (Figs 8–9). Epandrium rather long, including its base (Fig. 8), epandrial setae thick and long (Figs 8–9). Anus almost dorsal (!). Cerci small, setae concentrated on apical part. Gonites (Figs 7–8) of a very intricate form: with a dorsal and a ventral pair of caudal processes, ventral part with two small lobes. Phallapodeme (Figs 7, 10) very small but rather high in lateral view. Ejaculatory apodeme medium-long, apical processes comparatively long and broad (Fig. 10).

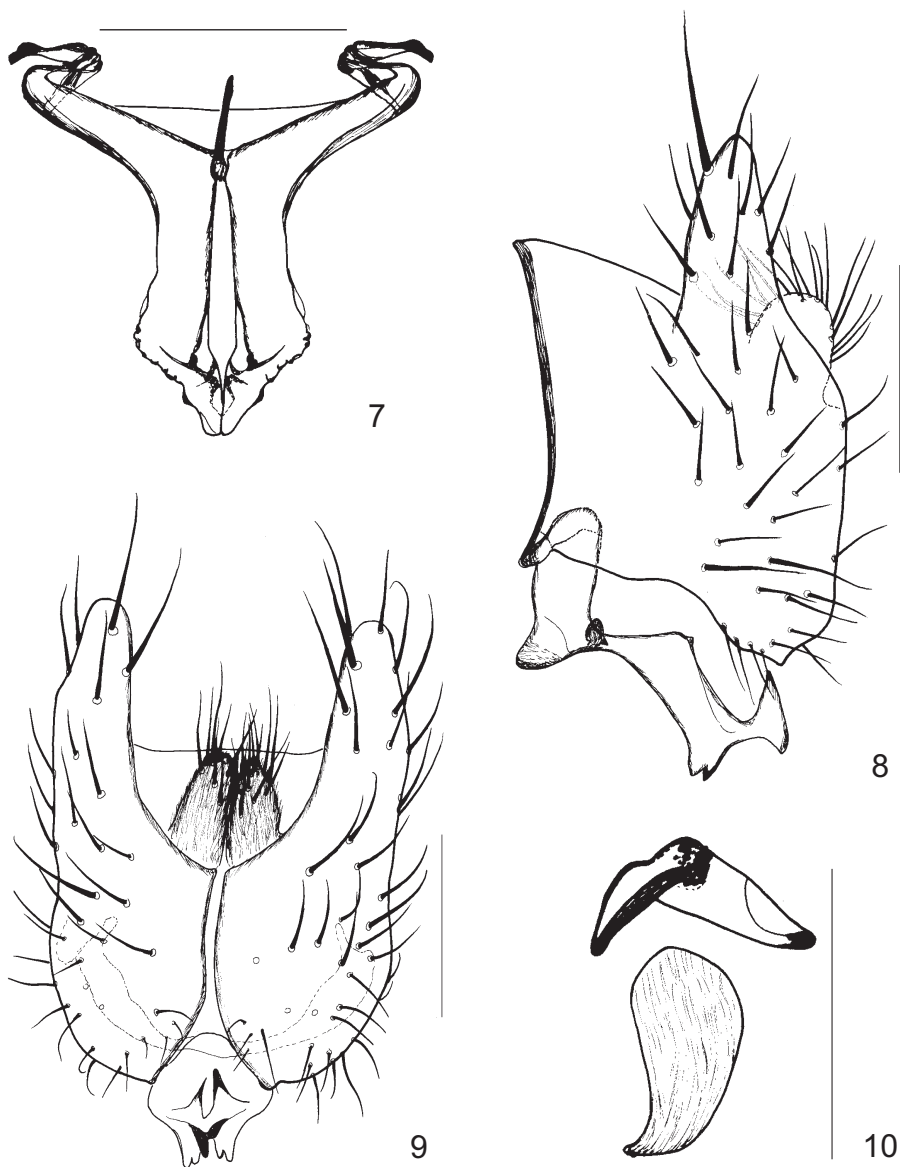
Remarks – Among the known species of *Trigonometopini* *Tetroxyrhina forficula* (SHATALKIN, 1997) has the largest dorso-caudal processes on epandrium. The name of the new species refers to that character and species.

***Luzonomyza sasakawai* sp. n.**

(Fig. 74)

Type material – Holotype male (HNHM, pinned on a No. 1 pin): “Vietnam, Cuc phuong, Ninh binh, 6–18.V.1966, leg. Topál”. Paratype female (HNHM, right wing damaged, glued under the specimen): Thailand, Prachuap Khiri Khan Prov., 25 km S. of Ban Noghin, No. 3, secondary forest, 19. 11. 2003, OROSZ & SZIRÁKI.

Description – Measurements in mm: body length 5.57 (holotype), 4.40 (paratype), wing length 4.78 (holotype), 3.96 (paratype), wing width 1.65, 1.41. Facial keel low and short, almost indistinct (Fig. 74). Contrary to *L. vietnamensis*, basic colour of face, cheeks and genae yellow with a greyish brown genal spot widening posteriorad. Frons greyish yellow, medial stripe narrow, borders diffuse. Ocellar setae thin and very short, postocellars long and cruciate. Antenna all yellow. Thoracic colour similar to that of *L. vietnamensis*. In contrast to *L. vietnamensis*, medial stripe of scutellum narrow to the margin, but lateral light margins broader. Wing with broad brown radial area, apical part of wing only slightly darker than basic colour, both cross-veins brown-bordered. Veins brown. Tibiae and tarsi yellow but tarsomeres 3–5 of fore tarsi black. Male fore basitarsus with a fringe of dense black setulae posteriorly. Male hind basitarsus both anteriorly and posteriorly with fringes of black setulae in whole length, anterior one widens to a longish patch distally. Abdomen darker greyish brown, ventrally curved parts of terga yellowish. Abdominal setae not long. A diffuse yellow sagittal stripe of tergites present. Tergite 6 with a medial yellow triangle on its proximal 3/4. Male epandrium without a pair of dorso-caudal appendages. Female. Not only tarsomeres 3–5 but also fore tarsomere 2 dark. Dark genal spot smaller. Fore and hind basitarsal fringes of shorter setulae, which are not black, consequently less conspicuous. Abdomen without the medial light stripe on tergites.



Figs 7–10. *Luzonomyza pseudoforicula* sp. n. holotype male, genitalia. 7 = inner genitalia, ventral view, 8 = epandrium, cercus and gonite, lateral view, 9 = epandrium, cerci and apical part of gonites, caudal view, 10 = phallapodeme and ejaculatory apodeme (upper), lateral view.

Scales = 0.2 mm for Fig. 7 and Figs 8–9, respectively, 0.1 mm for Fig. 10 (upper scale)

Remarks – This is one of the largest species in the tribe.

Luzonomyza sinica SHATALKIN, 1998 – Material studied: Thailand, 2004, leg. L. PAPP & M. FÖLDVÁRI (HNHM): 1 female: Trang Prov., Khao Chong Botanic Garden, rainforest, Nov 18, No. 36; 1 male 1 female: *ibid.*, Nov 22, No. 43; 1 female: Khao Pu – Khao Ya N. P., along a forest brook below the (Pak Yam) waterfall, Nov 21, No. 42; 1 male 1 female: Trang Prov., Palian District, Nam Tok Nam Pan Forest Park, over streams & vegetation around waterfalls, Nov 17, No. 35; 1 male: Trang Prov., Khao Chong Botanic Garden, along a forest path, Nov 20, No. 41 (cf. PAPP *et al.* 2006). Male genitalia (Figs 11–16) with characteristic features. Epanandrium with strong (though not extremely long) dorso-caudal pair of processes (Fig. 11), surstylar process very distinct and forms a dorso-caudally directed process (Figs 11, 15). Cerci small with medium-long setae only. Gonites (Figs 13–14) with a strong basal part and an intricate apical part with several processes, apex narrow and curved. Phallapodeme (Figs 13, 16) medium-large, and not very high in lateral view. Ejaculatory apodeme (Fig. 16) not long, but apical lamellae large.

***Luzonomyza vietnamensis* sp. n.**

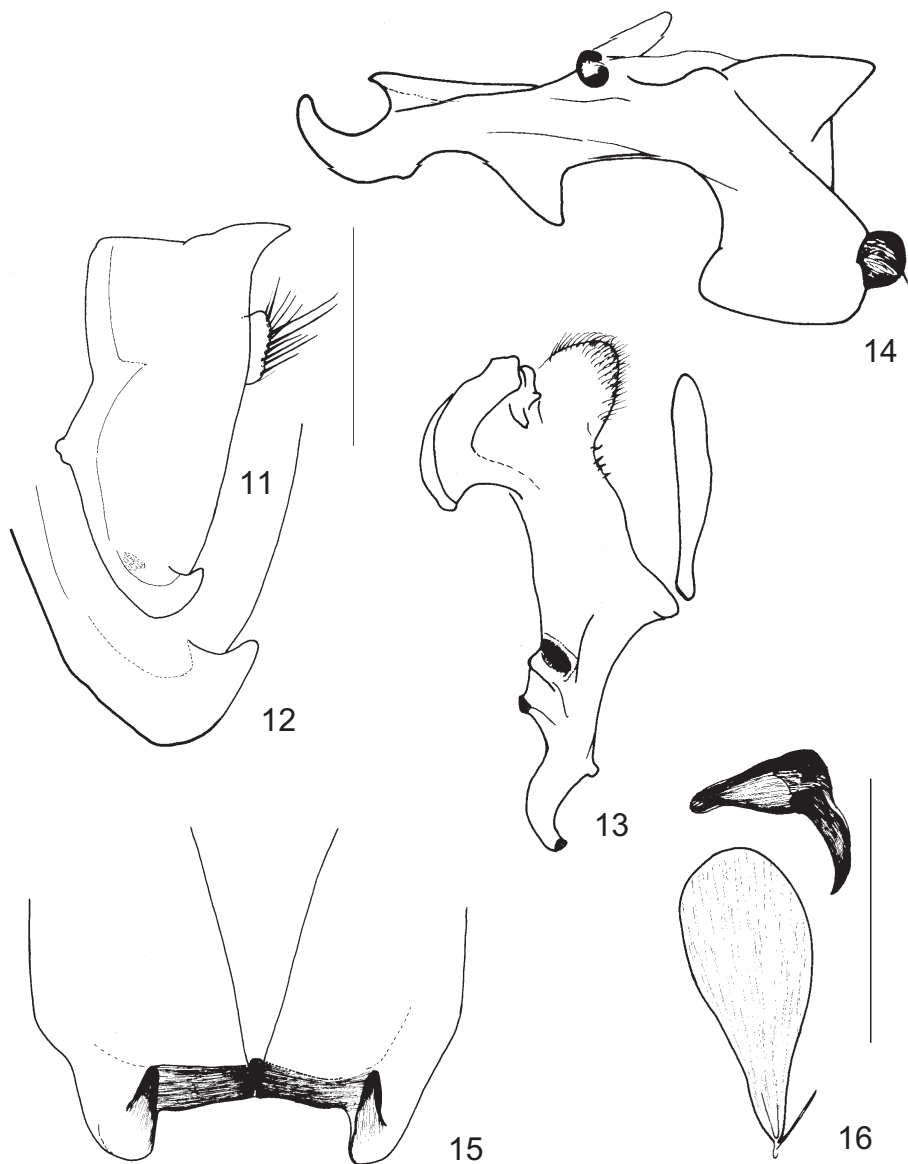
(Fig. 75)

Type material – Holotype female (HNHM): “Vietnam, Huong Son, 19. 8. 1963., leg. Pócs T”.

Description – Measurements in mm: body length 4.18, wing length 3.60, wing width 1.32. Face, cheeks and genae dark greyish brown, antennal grooves and a pair of vertical stripes medially to ptilinal suture (above mouth opening) lighter. A similarly lighter stripe discernible from cheek to ventral margin of posterior gena. Facial keel high and sharp (Fig. 75). Frons covered with dense proclinate setae. Frons with a dark median stripe between ocellar triangle and lunule. Anterior fronto-orbital pair emerges posteriorly to middle of frons, both *ors* pairs short. No ocellar setae, postocellars medium-long, cruciate. Clypeus dark greyish brown. Palpi very thin, all black. Mesonotum and pleura dark greyish brown, mesonotum with a sagittal and 2 dorsocentral light grey stripes. Scutellum with a medial, posteriorly widening light grey stripe, lateral borders also light. Only 1 strong katapisternal seta. Wing similar to *L. sinica*: broad brown radial and apical colour (latter diffusely margined), both cross-veins broad brown bordered. Veins brown. Only 2 stronger black setae distally to R2+3 on costal vein. All tibiae and tarsi yellow. Femora greyish brown. Hind tibia with a curved ventral spur of 0.09 mm. Female abdomen basically ochre, tergites with broad greyish brown distal margins. Last abdominal sternites dark. Cercal setae short and fine.

Male unknown.

Remarks – *L. vietnamensis* sp. n. is similar to *L. nigripalpis* SHATALKIN, 1997, but its all tarsi are yellow, its facial keel sharp and protruding (see also key below).



Figs 11–16. *Luzonomyza sinica* SHATALKIN, 1998, male genitalia. 11 = epandrium and cercus, lateral view, 12 = ventral part of epandrium, i.e. surstylar lobe, in higher magnification, 13 = gonite and phallapodeme, ventral view, 14 = gonite in lateral view, 15 = surstylar lobe, caudal view, 16 = phallapodeme and ejaculatory apodeme, broadest (lateral) view. Scale = 0.2 mm for Figs 12–16, 0.4 mm for Fig. 11

A KEY FOR THE SPECIES OF
LUZONOMYZA MALLOCH

- 1 Male surstylar lobe with broad, slightly bifid apex, which is concave in lateral view (Fig. 6). Male epandrium dorsally (caudally) with a pair of short dorsal appendages. The Philippines *L. bakeri* (BEZZI, 1913)
- Male genitalia different 2
- 2 Whole tarsi yellow. Facial keel sharp and protruding (Fig. 75). Palpi black *L. vietnamensis* sp. n.
- At least fore tarsomeres 4–5 black 3
- 3 Wing unicolorous (Fig. 66) 4
- Wing patterned (Fig. 67) 5
- 4 Wing hyaline, very faintly yellow-tinged along anterior margin. Halter yellow with knob faintly brown-tinged. Colour of palpi not known to me. Male epandrium without dorso-caudal pair of appendages, gonopods simple, long. Ryukyu Is. (Amami Oshima)
L. japonica (SASAKAWA, 2002)
- Wing brown unicolorous (Fig. 66). Knob of halter rather dark. Palpi black. Male epandrium with extremely long dorso-caudal appendages (Figs 8–9), gonopods short with characteristic apex (Fig. 7). Thailand
L. pseudoforicula sp. n.
- 5 Palpi black. Fore tarsomeres 4–5 black. Male epandrium with strong dorsal (caudal) appendages. Thailand
L. nigripalpis (SHATALKIN, 1997)
- Palpi yellow. At least fore tarsomeres 3–5 black 6
- 6 Fore tarsomeres 2–5 black. Male epandrium without dorso-caudal pair of appendages. Vietnam, Thailand *L. sasakawai* sp. n.
- Fore tarsomeres 3–5 black. Male epandrium with strong dorso-caudal pair of appendages. Hainan, S Thailand *L. sinica* SHATALKIN, 1998

Maquilingia MALLOCH, 1929

Maquilingia MALLOCH 1929: 35. Type species: *M. hirticeps* MALLOCH, 1929 (orig. des.).

Maquilingia facialis MALLOCH, 1929 – Material studied: 1 female: Thailand: Fang, Mae Fang National Park, Doi Pha Hom Pok, 2000 m, 22–23. XI., UV light, No. 12, leg. L. PEREGOVITS, M. FÖLDVÁRI, Á. KÖRÖSI, A. SZAPPANOS & B. MAKLÁRI-KIS (cf. PAPP *et al.* 2006). SHEWELL (1977) listed it from the Philippines (type locality: Luzon) and from New Guinea.

Maquilingia hirticeps MALLOCH, 1929 – Material studied: 1 female: TAIWAN: Pingtung Hsien, Kenting, Heng-Chun Tropical Botanical Garden, light traps, October 4–6, 2000. No. 15, leg. L. PEREGOVITS & L. PAPP. It was described from the Philippines (Luzon). SASAKAWA (1998: 60) reported it also from Malaya.

Maquilingia malaita CURRAN, 1936 and *Maquilingia matema* CURRAN, 1936 – Both species were described from the Solomon Islands, and they are not known elsewhere. CURRAN'S (1936) description, and particularly his key, is proper for the identification of the species.

Maquilingia serristylis SASAKAWA, 2003 – It was described from Laos. In any case, this is a peculiar species with body black, tibiae yellow with brown subapical rings. Male genitalia (SASAKAWA 2003: fig. 4) are rather alien to the whole tribe with long and serrate surstylar lobe and long setae on gonites. However, since it was described as a *Maquilingia* and it was easy to involve it in the key of the genus, I included it also in this paper.

Maquilingia biroi sp. n.

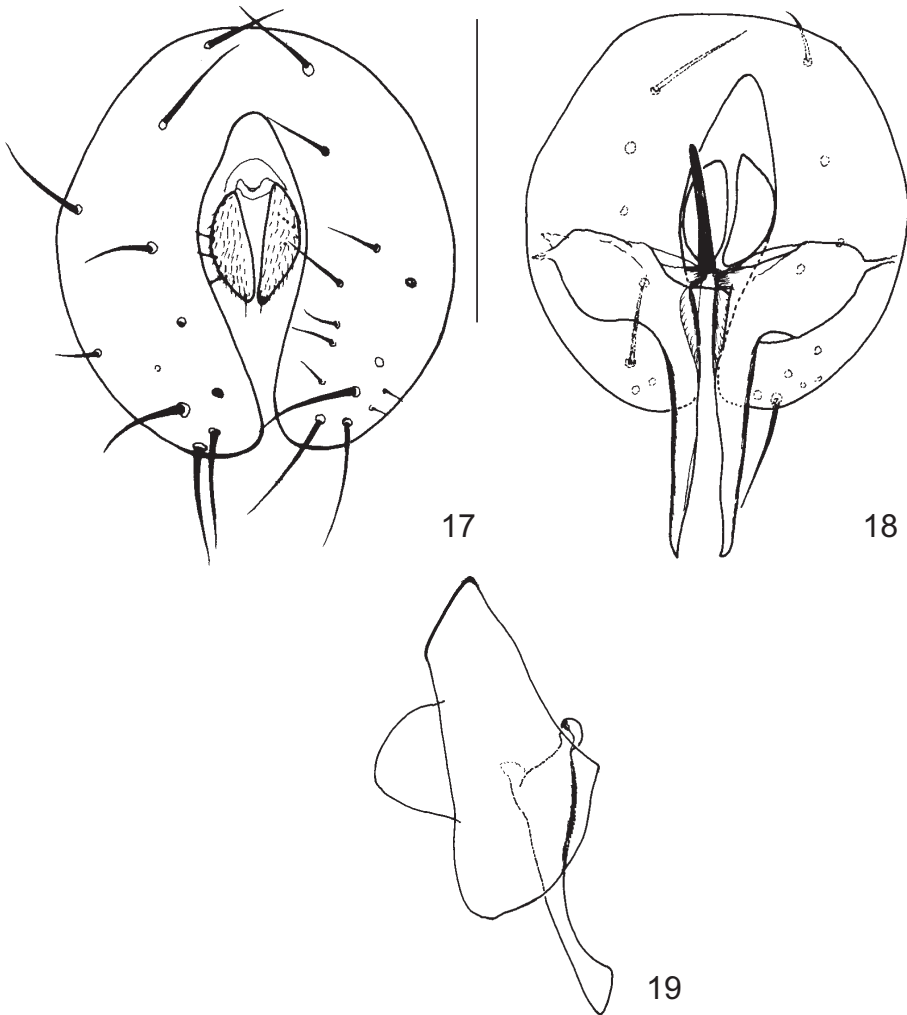
(Figs 17–19)

Type material – Holotype male (HNHM): “N Guinea, BIRÓ 1898” “XI.” – “Sattelberg, Huon Golf” – “*Maquilingia* Det. Shewell 1985”. Paratypes (HNHM): 1 male (genitalia in a plastic microvial with glycerol): *ibid.*, but without the label 3rd; 1 female: *ibid.*, but without “XI.”

Description – Measurements in mm: body length 2.35 (holotype), 2.25 (paratype male), 2.30 (paratype female), wing length 2.40, 2.20, 2.83, wing width 0.90, 0.84, 0.99. A small species, colour basically yellow, mesonotum light brownish, abdomen brown. Only a light brown stripe between eye and antennal base. Anterior *ors* rather close to lunule. Ocellar setae short (0.09 mm) and thin, postocellars long and cruciate. Eye much longer than high (0.46 mm vs 0.36 mm). Cheek with a protruding seta of 0.12 mm, genal setae: a strong pair anteriorly, ca. 5 shorter pairs on area below eye. Palpi short, thin and yellow. Anterior dorsocentral pair very long (0.385 mm), emerges anteriorly to posthumeral seta. 2 katepisternal pair of subequal length. Four rows of acrostichals. Wing yellowish, veins yellow. Stronger costal fringe distally to R2+3 on 2/5 of the costal section. Medial vein sections: intra-crossvein section 0.405, terminal section 0.945 mm, ratio 2.32. Legs all yellow, ventral spur of hind tibia indistinct. Male genitalia (Figs 17–19) rather small. Epandrium rather short dorsally (Fig. 19), widely rounded apically (Fig. 17), cerci with short setae only. Gonite (Figs 18–19) seems pointed in ventral view, but actually broadened subapically (Fig. 19). Phallapodeme comparatively short (Fig. 18) and not high in lateral view.

Female with setae on cheek much shorter, stronger costal fringe only on 1/3 on costa distally to R2+3. Female cerci very small and finely haired.

Etymology – I named this new species to LAJOS BIRÓ, the collector of the type specimens, who enriched our Museum so much with his collections in Papua New Guinea, Eritrea, Tunisia and in Hungary.



Figs 17–19. *Maquilingia biroi* sp. n. paratype male, genitalia. 17 = epandrium and cerci, caudal view, 18 = genitalia in anterior view, 19 = in lateral view (setae omitted). Scale = 0.2 mm for all

Maquilingia thaii sp. n.

(Fig. 73)

Type material – Holotype female (HNHM): “Thailand: Fang, Mae Fang National Park, Doi Pha Hom Pok, 1560 m, 21. XI., UV light, No. 10, leg. L. Peregovits, M. Földvári, Á. Kőrösi, A. Szappanos & B. Maklári-Kis”. Paratype female (HNHM): Thailand: Doi Phuka National Park, headquarters, 26–27. XI., UV light, No. 18, leg. L. PEREGOVITS, M. FÖLDVÁRI, Á. KÖRÖSI, A. SZAPPANOS & B. MAKLÁRI-KIS.

Description – Measurements in mm: body length 3.02 (holotype), 2.64 (paratype), wing length 3.26, 3.20, wing width 1.18, 1.22. A small yellow fly, even abdomen yellow. Fore tarsomeres 2–5 darkened but not black. A brown stripe (i.e. not a spot) between eye and antennal base. Actually no ocellar setae: ocellars thin and only 0.06 mm, postocellars distinct, cruciate. Scape ventral seta 0.08 mm long. Frons with proclinate setulae on anterior half of orbitalia (4–5 in one row) and ca. 25 setulae on a triangular area over lunule, back to posterior *ors*. Only 2 short pairs of setae on cheeks, genal setae (Fig. 74) conspicuous: 2 pairs of extremely long (3 setae on right side on holotype, 4 on the right side of paratype), plus several pairs of long, more caudal setae ventrally, and, some 5 shorter setae below eye. All thoracic setae comparatively long. Posthumeral seta extremely long (Fig. 74), 0.44 mm (holotype). Anterior katepisternal pair short (half length of posterior pair). Wing yellowish with yellow veins. Stronger costal fringe of 8 setae on 1/3 of costal section distally to R2+3. Medial vein sections: intra-crossvein section 0.64, terminal section 1.225 mm, ratio 1.90. Long marginal setae on abdominal tergites, particularly so on tergites 3 to 5. Female cerci very small, finely haired.

Male unknown.

A KEY FOR THE SPECIES OF
MAQUILINGIA MALLOCH

- 1 Body black, tibiae yellow with brown subapical rings. Male genitalia peculiar (SASAKAWA 2003: fig. 4) *M. serristylis* SASAKAWA, 2003
- Body yellow, at most with brown mesonotal stripes. Tibiae without brown subapical rings 2
- 2 Facial grooves below antennae clear yellow, without any sign of diffuse brown spot or stripe 3
- Facial grooves below antennae with a pair of distinct diffuse brown spots, or at least with diffuse brown stripes along suture 4
- 3 Posthumeral (presutural) seta extremely strong, definitely longer than notopleurals (Fig. 73). Mesonotum without brown vittae. Scutellum unicolorous yellow. Ventral part of cheeks and anterior part of genae with 3 or more long setae. Thailand **M. thaii** sp. n.

- Posthumeral (presutural) seta weak. Mesonotum with a pair of dorsocentral, as well as a pair of sublateral vittae. Scutellum with a brown vitta on each side. Apical 1/3 of abdominal terga 2–5 brown. Solomon Is. *M. malaita* CURRAN, 1936
- 4 Frons without a sagittal vitta. A round chocolate brown spot present between eye and antenna. Gena with several long setae. Only 1 strong *kepst.* Philippines, Thailand *M. facialis* MALLOCH, 1929
- Frons with a sagittal – in cases only linear – brown vitta. A stripe (not a round spot) present between eye and antenna. Two pairs of strong *kepst* 5
- 5 Ventral part of cheeks and anterior part of genae with 4 or 5 long setae. Posthumeral seta strong. Solomon Is. *M. matema* CURRAN, 1936
- Ventral part of cheeks and anterior part of genae with only 1 pair of strong setae. Posthumeral seta weak 6
- 6 Frontal sagittal vitta strong. Mesonotal stripes dark. Gena below eye slightly broader than 1/3 height of eye. Wing veins ochre. Philippines, Taiwan *M. hirticeps* MALLOCH, 1929
- Frontal sagittal vitta faint, linear. Gena below eye only as broad as 1/4 height of eye. Wing veins yellow. Papua New Guinea **M. biroi** sp. n.

Neotrigonometopus MALLOCH, 1928

Neotrigonometopus MALLOCH 1928: 319; MALLOCH 1929: 34 (again as “new subgenus”).
Type species: *Trigonometopus fuscifrons* MALLOCH, 1926 (orig. des.).

Remarks – The type species was described from Australia (Queensland) and another species (*Trigonometopus albibasis* MALLOCH, 1928: 319, also from Queensland) was described together with the genus (that time a subgenus of *Trigonometopus*). There is only one species in the Oriental region: *Neotrigonometopus breviceps* (HENNIG, 1948), which HENNIG (1948) described accurately with the key for the three known species of the genus. No specimen of this genus was found during this project. But I believe, one can correctly judge the characters and position of the genus based on HENNIG’s correct description and fine figures (HENNIG 1948: figs 80–82).

Protrigonometopus HENDEL, 1938

Protrigonometopus HENDEL 1938: 2. Type species: *Protrigonometopus maculifrons* HENDEL, 1938 (monotypy).

Remarks – Male genitalia are rather characteristic: epandrium very short dorsally, rather long and flat ventrally, epandrium bears long setae. At the base of epandrium a well sclerotized, more or less spoon-shaped supragenital sclerite present. I do not think it homologous with subepandrial sclerite (bacilli-form sclerites) (cf. SINCLAIR 2000). Hypandrium with large, cranially directed (and possibly ventrally curved) processes. Gonites more or less asymmetrical. Phallapodeme very large (particularly high). Ejaculatory apodeme comparatively small.

Protrigonometopus maculifrons HENDEL, 1938 – 1 male: Japan. Dr. MATSUMURA; 1 male: S Korea, Kangwon P., Hwancheon, 476 m, Heasan ryung, 30. 08. 2003 – 38°12'43.8"N 127°54'4.3"E, UV light, No. 1742, leg. KUN & FÖLDVÁRI. New for South Korea.

***Protrigonometopus ornatus* sp. n.**

(Figs 20–24)

Type material – Holotype male (HNHM): “Vietnam, Sin Chai, “Legendary place”, 10.11.2003, No. 1 – along forest path & creek, leg. Földvári, Peregovits, Kőrösi”. Paratypes (HNHM): 3 females: same as for holotype; 3 males, 2 females: *ibid.*, 15.11., No. 6.

Description – Measurements in mm: body length 3.74 (holotype), 3.41–4.23 (paratypes), wing length 4.18, 3.63–4.24, wing width 1.54, 1.45–1.54. Head conspicuous: broad whitish microtomentose grey orbital plates, vertex and occiput, light yellow face, cheeks and genae with round large velvety black spots filling the space between eye and antennal base. Facial plate with a pair of smaller dark spots on middle of face. Palpi black. Antenna greyish yellow, pedicel greyish medially. First flagellomere 0.33 mm long, with narrowly rounded apex. Pedicel greyish medially. Arista with dense black setulae of 0.03–0.04 mm all around. Thorax bluish grey, pleura ventrally yellowish grey. Two broad darker grey stripes between acrostichal and dorsocentral lines. Scutelum darker grey with whitish blue margin. Anterior katapisternal seta more than 2/3 length of posterior one. Posthumeral seta 0.40 mm on holotype. Wing light yellowish, veins yellow. Stronger costal fringe on 1/2 of the section distally to R2+3. Medial vein sections: R-M–dM–Cu 1.05 mm, terminal section 1.26 mm, ratio 1.20. Halteres yellow, apex of knob black. Legs yellow, all fore tarsus darkened though not black. Setae on legs long, e.g. preapical seta of fore tibia 0.23 mm. Abdomen yellow. Male genitalia (Figs 20–24) larger than that of *P. maculifrons*. Epandrium (Figs 20, 24) characteristic with comparatively short dorsal part, very long base and large anal emargination. Surstyler lobe not peculiar. Epandrial setae scarce and medium-long. Cercal setae of almost uniform length. Inner genitalia wholly ventral

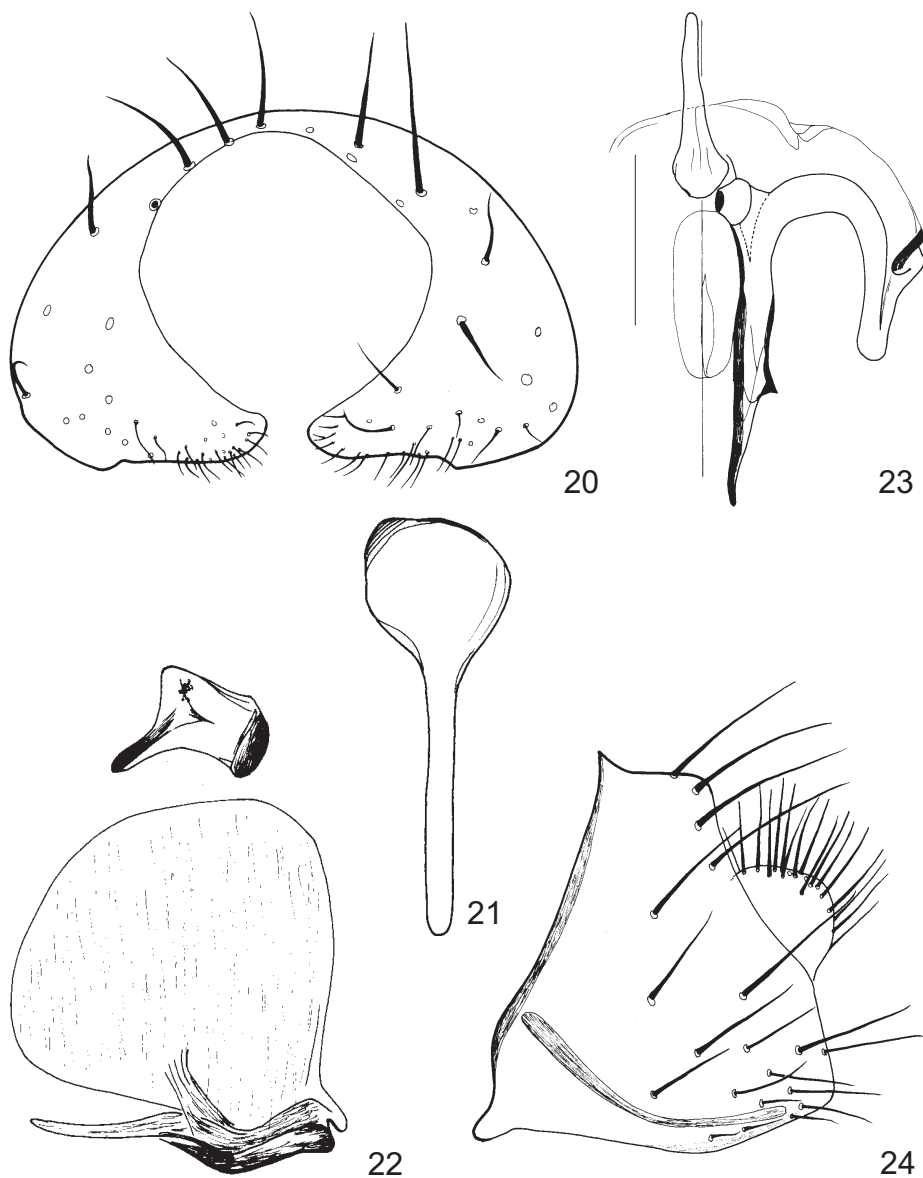
to epandrium. Supragenital (subepandrial) sclerite (Fig. 21) positioned close to the ventral edge of epandrium in profile (Fig. 24), slightly asymmetrical with long and narrow caudal part. Hypandrium with large, cranially directed lateral process (Fig. 23). Gonite (Fig. 23) narrow with medial lateral process. Phallus rather small. Phallapodeme (Fig. 22) not long but extremely high. Ejaculatory apodeme small, incl. its apical processes. Female cerci small with medium-long fine setae (hairs).

Protrigonometopus sexlituris (SHATALKIN, 1992) – This is a rather characteristic species (described as *Sapromyza*). Its facial plate with six spots, i.e. apart from subantennal pair there is also a pair of spots above mouth margin. It has been reported from the Russian Far East and Japan (SHATALKIN 1992, 2000).

***Protrigonometopus shatalkini* sp. n.** (Figs 25–30)

Type material – Holotype male (HNHM): “Taiwan, Nantou Co., Yuanfeng, 2760 m, SW Hohuan Mountain – 24 07 24 N, 121 14 55 E, 29. XI. 99., Ronkay, Kun, Peregovits”. Paratypes: 3 males: same data; 1 female: Taiwan, Taichung Hsien, Anmashan Mts, Tashueshan Forest Recreation Area – 2650 m, Jan 26, 2002, leg. L. RONKAY.

Description – Measurements in mm: body length 3.52 (holotype), 3.24–3.52 (paratypes), wing length 4.06 (holotype), 4.00–4.45 (paratypes), wing width 1.64 (holotype), 1.56–1.60 (paratypes). Head. Basic colour yellow, orbital plates grey (not too broad), similarly to occiput, eyes yellow-bordered. Spots between eye and antennal base much smaller than in *P. ornatus*. Facial spots oblique. Both ocellars and postocellar strong. Anterior *ors* seta very anterior, only 0.10–0.12 mm from lunule. Male antennae all dark, arista finely ciliate of sparse, 0.02 mm long cilia. Palpi black. Mesonotum bluish grey stripes between acrostichal and dorsocentral lines faint, hardly discernible on some specimens. Pleura whitish tomentose grey, not lighter ventrally. Scutellum with rather narrow light lateral rim only. Two acrostichal rows of setae. Anterior katepisternal seta slightly more than 1/2 length of posterior one. Wings light greyish-yellowish, veins ochre. Stronger costal fringe on third costal section of 8 setae on 1/4 of the section. Intracrossvein section of vein M 0.85 mm, terminal section 1.55 mm, ratio 1.83 (holotype). Fore tarsi and apical 2–3 tarsomeres of mid and hind tarsi darkened (dirty yellow to greyish brown). Abdomen dark grey, subshiny, terga with narrow lighter distal margin (on some specimens not discernible on tergites 2–3(4)), and a diffuse narrow lighter sagittal stripe present. Tergite 6 with a triangular yellow spot centrally and caudally. Male genitalia (Figs 25–30) are similar to that of *P. ornatus*, as regards its basic structures. Protandrium fused to epandrium, latter very short dorsally and comparatively long ventrally. Epandrium bears very long dorsal and medial setae (Fig. 25). Supragenital (?subepandrial) sclerite much broader than that of *P. ornatus* (Fig. 27 vs Fig. 21). Hypandrium with large, cranially directed and ventrally curved lateral processes (Figs 28–30). Phallapodeme (Fig. 26) extremely large, ejaculatory apodeme small. Gonites (Figs 28–30) strongly asymmetrical, rather intricately formed, much narrowed in ventral view, left gonite much larger in lateral view (Fig. 29, cf. Fig. 30). Female antennae yellow. Female cerci short (small) with numerous medium-long fine setae.



Figs 20–24. *Protrigonometopus ornatus* sp. n., paratype male, genitalia. 20 = epandrium, caudal view, 21 = supragenital (subepandrial) sclerite, ventral view, 22 = phallapodeme and ejaculatory apodeme (upper), lateral view, 23 = left half of inner genitalia with phallus and phallapodeme, ventral view, 24 = epandrium, cercus and supragenital (subepandrial) sclerite, lateral view. Scale = 0.2 mm for all

A KEY FOR THE IDENTIFICATION OF
PROTRIGONOMETOPUS HENDEL

- 1 Head slightly triangular in profile. Arista thickened, with thick black setulae all around. Facial plate with a pair of large dark spots at middle 2
- Head normal. Arista not thickened 3
- 2 Fore tarsi black. First flagellomere with sharp apex. Male genitalia smaller. Japan, N Korea, China *P. maculifrons* HENDEL, 1938
- Fore tarsomeres only slightly darkened. First flagellomere with narrowly rounded apex. Pedicel greyish medially. Male genitalia larger. Vietnam
***P. ornatus* sp. n.**
- 3 Facial plate with 6 spots: apart from subantennal pair there is also a pair of spots above mouth margin. Russian Far East, Japan
P. sexlituris (SHATALKIN, 1992)
- Face with only one pair of central subantennal dark spots. Taiwan
***P. shatalkini* sp. n.**

Protrigonometopus okinawanus SHATALKIN, 1998 is surely not a *Protrigonometopus* species (palpi yellow, acrostrichals 4(6)-seriate, etc.). SHATALKIN (2000) thought it to be a *Trigonometopsis*, which I cannot corroborate, since I do not know any *Trigonometopsis* (including the undescribed ones), which would have a stump vein on M. Most probably it belongs to *Shatalkinella* (see below).

***Shatalkinella* gen. n.**
(Figs 31–56, 68–71)

Type species – *Shatalkinella marginata* sp. n. Gender: feminine.

Description – Scape with a strong ventroapical seta. Head rather triangular in profile, eyes much longer than high (e.g. *S. marginata* sp. n.), or more quadratic with eyes not much longer than high (e.g. *S. deceptor* (MALLOCH)). Prosternum bare. 0+3 *dc* pairs (anterior *dc* in cases just behind suture). Posthumeral seta present. Other thoracic chaetotaxy: 1 *pprn*, 2 *np*, 2 *sa*, 1 *pa*, medium-long or long *prsc*, 2 *sc* pairs. Acrostichals four-seriate. Proepisternal thin but distinct, 1 strong anepisternal seta, but anepisternum with some additional setulae. 1–2 pairs of strong

katapisternals. Wings clear (hyaline), broadly margined on the radial (and possibly also on the apical) area, or also with definite brown spots. The wing is definitely sapromyziform, so number and/or extension of the spinules on the 3rd costal section (distal to R2+3) are mentioned when describing species. Medial vein may have a short vein appendage on middle of its terminal section (Figs 69, 71). Legs without peculiarities. Male tergite 7 (protandrium) with a pair of dark spots. Male protandrium fused to epandrium. Epandrium short, without dorso-caudal processes, ventral edge more or less rounded. Cerci small, at most with medium-long setae. Gonites large, dorso-ventrally curved, species-specific. Phallus membranous. Phallapodeme medium-long but not high. Ejaculatory apodeme with large perpendicular apical part, and a medial trabecule on (the longer) main part.

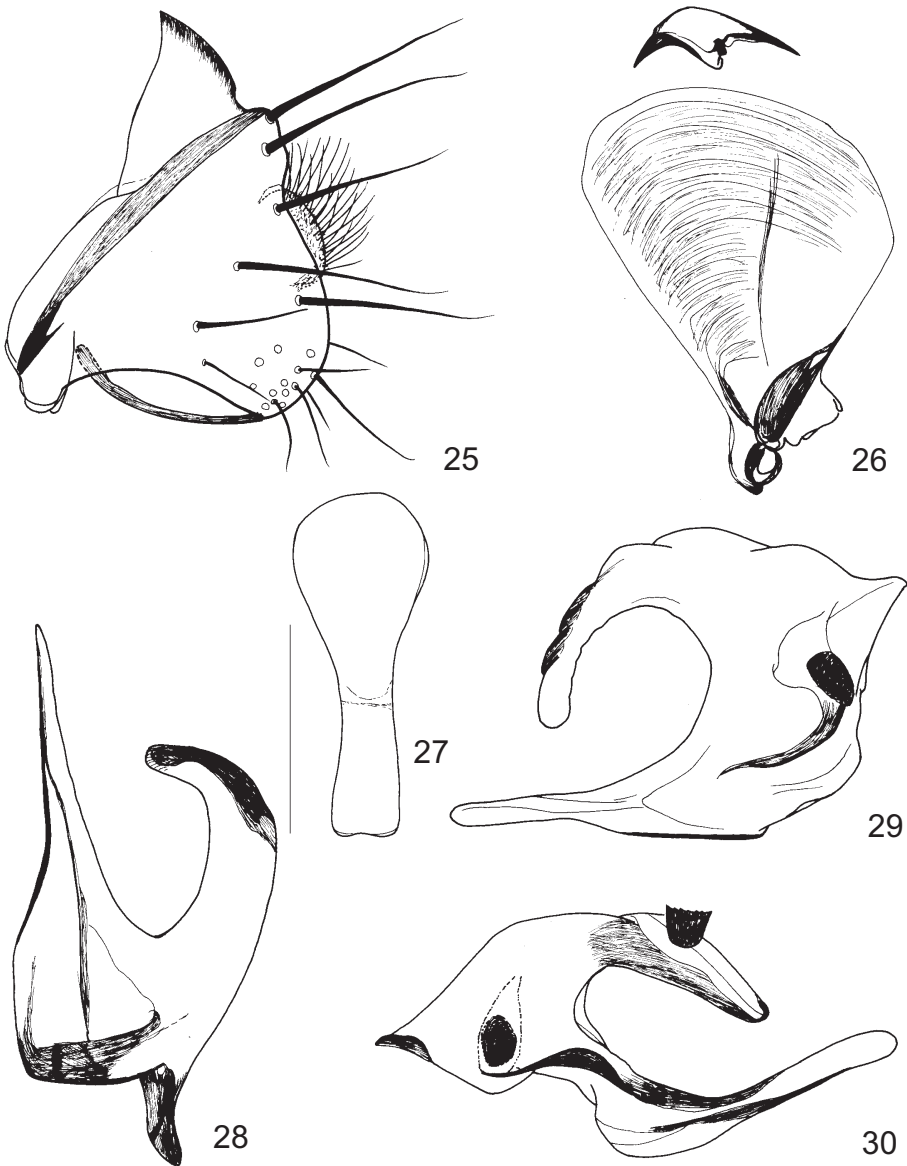
Etymology – I name this new genus to the honour of Professor A. I. SHATALKIN (Moscow State University) as a sign of my appreciation.

Shatalkinella deceptor (MALLOCH, 1927) – Material studied: Taiwan: 12 males, 4 females (3 males, 2 females with black antennae): Ilan Hsien, Fu-Shan Bot. Garden, LTER Site, 700 m – 2454'02"N 12145'27"E, Jan. 21, 2002, leg. RONKAY L.; 2 males: *ibid.*, UV light trap, 22–23. XI. 2004, RONKAY [L.]; 1 male (black antennae) 1 female: 2003, No. 7, leg. PAPP L. & FÖLDVÁRI. *Sapromyza deceptor* MALLOCH, 1927 must not belong to the true *Trigonometopus*, since it possesses 1 posthumeral seta, see SHATALKIN (1997: 167). Indeed, it is definitely a species of this new genus, although contrarily to its type species, its head is more quadratic in profile, eyes are not much longer than high. I found two forms, which fit well to the description of *S. deceptor*: most of the specimens have yellow antennae, while four males and two females have completely black antennae. Much to my surprise, I did not manage to find definite differences in the male genitalia. So for the time being, I did not describe the black antennal form as a new taxon. Actually I have not seen formerly any similar case in the lauxaniids. Its wing (Fig. 68) is clear. In order to facilitate later identifications, I made genitalia preparations and five figures (Figs 31–35) are published here. Epandrium high but not long, dorsally with 1, ventrally with 2 long pairs of setae. No surstylar lobe, i.e. epandrium broadly rounded ventrally. Gonites (Figs 34–35) long thin and slightly S-shaped in lateral view, with as fine, much narrowed apex (as seen in ventral view). Phallapodeme small (Fig. 34). Ejaculatory apodeme not bicornute as in *thailandica*, but lamellate with a medial ridge (perpendicular to the long axis); contrarily, similar to that of *thailandica* in lateral view (Fig. 40–41, cf. Fig. 55).

***Shatalkinella marginata* sp. n.**

(Figs 36–42, 69)

Type material – Holotype male (HNHM): “Thailand, Trang Prov., Thung Khai Botanic Garden, primary lowland rainforest, Nov 19, 2004, No. 38, leg. L. Papp & M. Földvári”. Paratypes (HNHM): 1 male: data same as for the holotype; 2 males: Trang Prov., Palian District, Nam Tok Nam Pan Forest Park, over streams & vegetation around waterfalls, Nov 17, 2004, No. 35, leg. L. PAPP & M. FÖLDVÁRI; 1 male: Trang Prov., Khao Chong Botanic Garden, rainforest, Nov 22, 2004, No. 43, leg. L. PAPP & M. FÖLDVÁRI; 1 male: Trang Prov., Khao Chong Reserve, nr Ton Prew Waterfall, 24. 11. 2003, No. 21, black light, leg. OROSZ & SZIRÁKI; 1 male: *ibid.*, Khao



Figs 25–30. *Protrigonometopus shatalkini* sp. n., paratype male, genitalia: 25 = protandrium, epandrium, cercus and supragenital (subepandrial) sclerite, lateral view, 26 = phallapodeme and ejaculatory apodeme (upper), lateral view, 27 = supragenital (subepandrial) sclerite, ventral view, 28 = left half of hypandrial complex, ventral view, 29 = left half of hypandrium with left gonite, broadest (sublateral) view, 30 = right half of hypandrium with right gonite, broadest (sublateral) view. Scale = 0.2 mm for all

Chong Bot. Garden, by light at center, 27. 11. 2003, No. 33.

Description – Measurements in mm: body length 2.87 (holotype), 2.69–3.14 (paratypes), wing length 2.23, 2.20–2.49, wing width 0.95, 0.92–0.96. Dorsal 4/9 to 1/2 of face brown, rest yellow. Facial keel distinct between and just below antennae. Not 1 but 2 brown stripes between eye and antennal base. Eye much longer than high (0.59 mm, vs 0.46 mm). Ocellars only 0.07 mm long. Cheeks with 2 short pairs, genae with 6 medium-long pairs of setae, plus 2 similar setae on genae below eye. Antennae brown. Mesonotal colour similar to that of *S. punctipennis* but medial stripes slightly broader, intra-alar stripes indistinct, lateral stripes broad but diffusely bordered. Pleura yellow. Posthumeral seta ca. 0.2 mm long. Anterior katepisternal seta about 1/2 length of posterior one, but much thinner. Wing (Fig. 69) light brownish, veins light brown (darker on areas of dark hue). A broad brown radial margin on wing, including a part of the cell r2+3 (diffusely) and subapical parts. Apex of wing light. Stronger costal fringe of 7–8 black setulae on 1/3 of section distal to R2+3. Both cross-veins with brown spots, R4+5 medially with a brown spot. Distal section of M with a smaller brown spot around a 0.05–0.06 mm long perpendicular stump vein. Intracrossvein section of vein M 0.24 mm, terminal section 1.03 mm, ratio 4.27, dM-Cu 0.26 mm (a paratype). Legs all yellow. Abdomen brown with narrow dark brown caudal margins. Lateral (downcurved) parts of terga yellow. Male sternites 4–6 modified to make space for the long gonites. Male abdominal tergites (2)3–5 with narrow brown margin, which dilated to longish spots laterally, tergites 6 and 7 fused sagittally on a transverse section of 0.14 mm, protandrium comparatively long (Fig. 38) fused to epandrium (but suture easily discernible), except for a narrow sagittal section.

Protandrial pair of dark spots medium-large, lateral margin's distance 0.27 mm, medial margin's distance 0.07–0.08 mm. Epandrium rather high, no long epandrial setae, but rather numerous shorter setae present. Cerci small with fine setae. Gonites (Figs 37, 42) long with narrow apical part; gonites double-edged like an ice-skate. Phallapodeme (Fig. 39) comparatively long (if compared to other species of *Shatalkinella*), only apical part slightly dilated. Ejaculatory apodeme (Figs 40–41) with a thickened trabecule sagittally, distal part with 2 broad lamellae but seems dentate in lateral view. Female unknown.

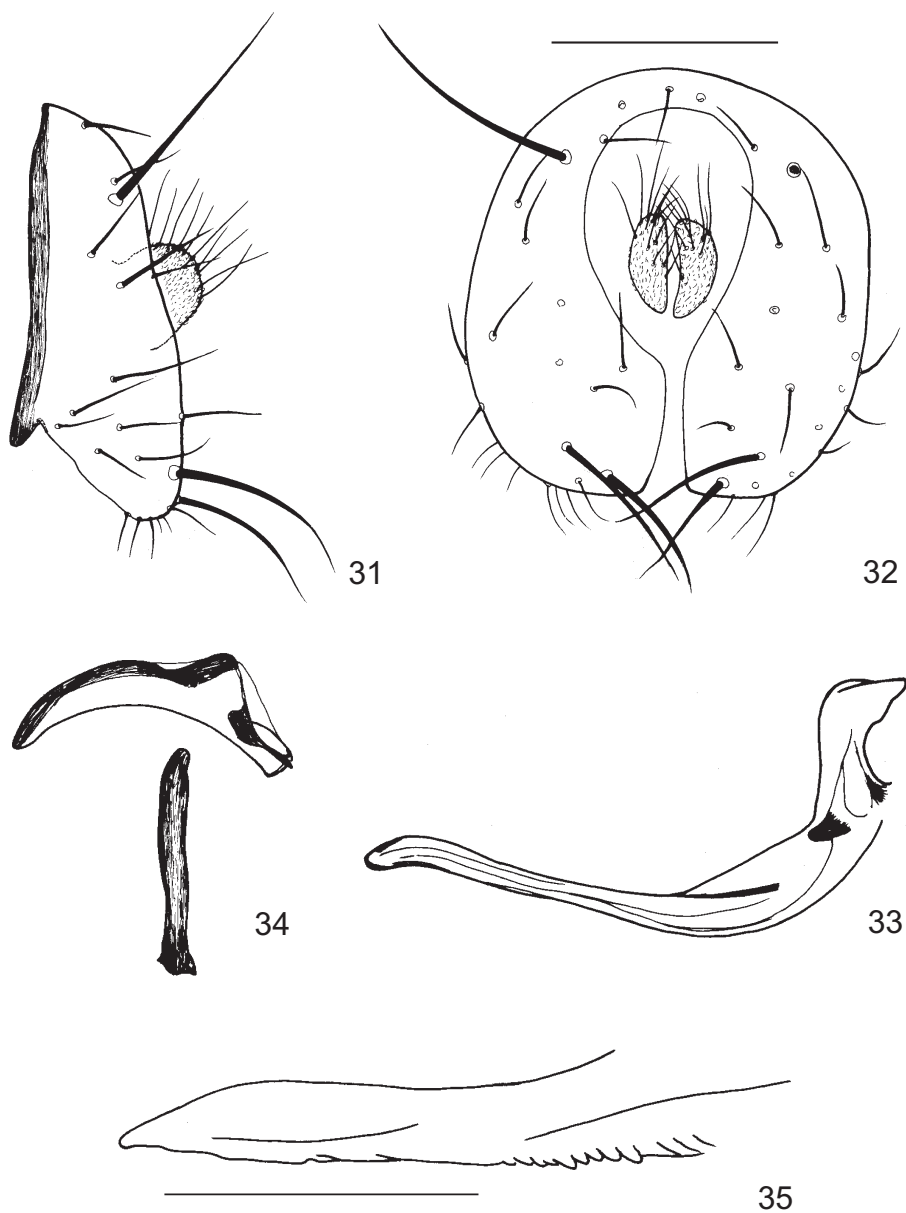
Etymology – The new species is named after its broad dark margin of wing.

***Shatalkinella punctipennis* sp. n.**

(Fig. 70)

Type material – Holotype female (HNHM): “Thailand, No. 47, Trang Prov., Khao Chong Bot. Garden – by light at centre, 01. 12. 2003, Orosz & Sziráki”. Its left wing prepared on a slide.

Description – A small variegate species. Measurements in mm: body length 2.96, wing length 2.46, wing width 0.98. Basic colour of head yellow, a triangular dark spot below eye on gena posteriorly. A brown stripe between eye and antennal base. Sagittal stripe of frons faint and less than 0.05mm broad. Ocellar setae very thin and only 0.07 mm long, posthumerals 0.21 mm. Eye much longer than high: 0.55 mm vs 0.43 mm. Antennae greyish yellow, scape seta 0.09 mm long. Arista with fine, sparse 0.01 mm long cilia. Palpi yellow. Mesonotum with 2 narrow brown stripe



Figs 31–35. *Shatalkinella deceptor* (MALLOCH, 1927), male genitalia: 31 = epandrium and cercus, lateral view, 32 = epandrium and cerci, caudal view, 33 = gonite, lateral view, 34 = ejaculatory apodeme in lateral, phallapodeme in ventral view, 35 = gonite, broadest (subventral) view. Scale = 0.2 mm for Figs 31–34, 0.1 mm for Fig. 35

just mesal to *dc* lines, which continued on scutellum towards apical scutellar setae. Also a shorter postsutural pair of brown intra-alar stripes plus a suprahumeral to postalar stripes present. Pleura clear yellow. Wing (Fig. 70) light brownish, veins yellow but brown on areas of darker spots. Apical part of R2+3 with a diffuse brown spot, R-M and dM-Cu with brown spots each. Vein R4+5 with 2 brown spots, also a brown spot on distal section of M. Subapical area of both R4+5 and M with diffuse brown hue. Stronger fringe of black setulae on ca. 1/3 of section distal to R2+3. Intracrossvein section of vein M 0.285 mm, terminal section 0.93 mm, ratio 3.27 (N. B.: dM-Cu 0.215 mm). Vein M without a vein appendage. Legs all yellow. Abdominal terga dark with diffuse light sagittal stripe.

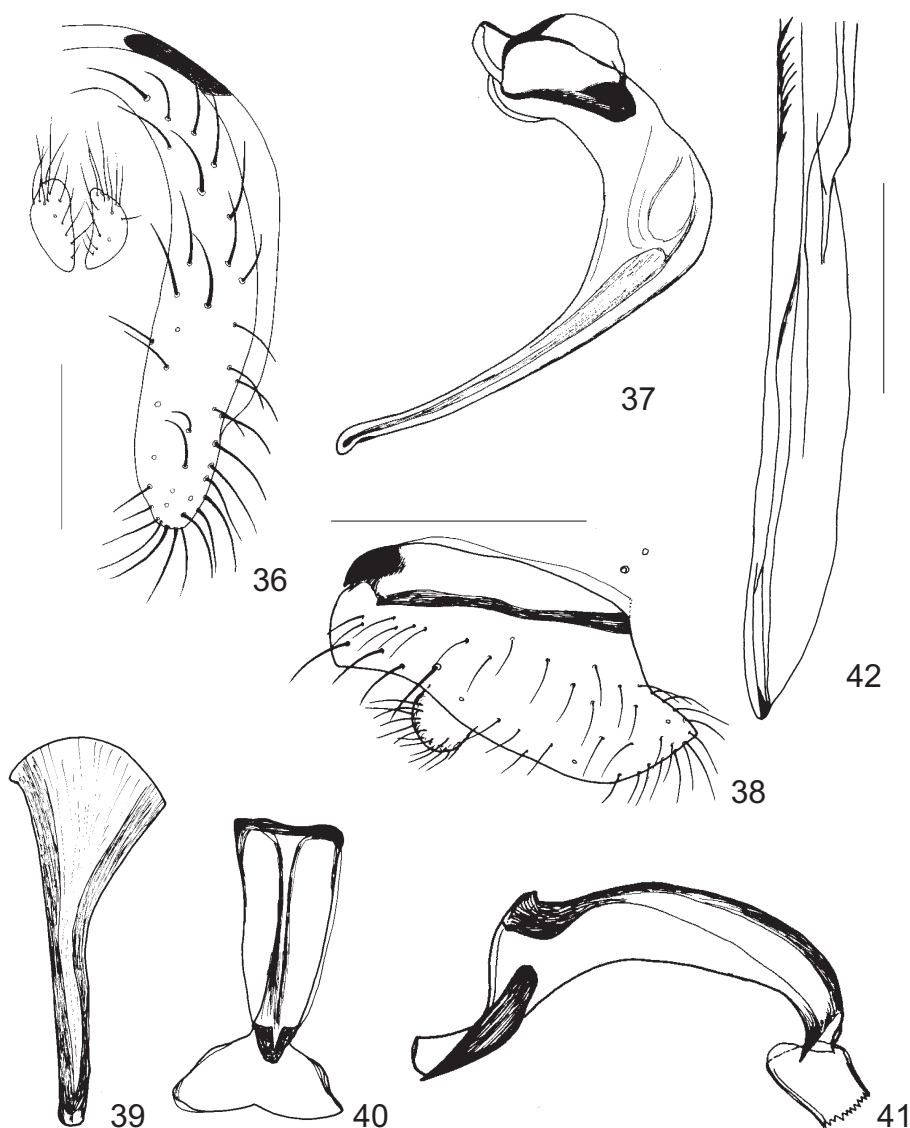
Male unknown.

***Shatalkinella ronkayi* sp. n.**

(Figs 43–50, 71)

Type material – Holotype male (HNHM): “Ilan Hsien, Fu-Shan Bot. Garden, LTER Site, 700 m – 2454' 02"N 12145' 27"E, Jan. 21, 2002, leg. Ronkay L.". The holotype was broken, when dissected: wings prepared on a slide, abdomen with genitalia prepared and kept in a plastic microvial with glycerol. Paratypes (HNHM): 1 female: data same as for holotype; 1 male: Thailand, ca. 5 km NE from the intersection of roads No 1081 and No 1307 towards Ban Nam Lee Pattana, 28. XI., UV light, No. 20, leg. L. PEREGOVITS, M. FÖLDVÁRI, Á. KÖRÖSI, A. SZAPPANOS & B. MAKLÁRI-KIS.

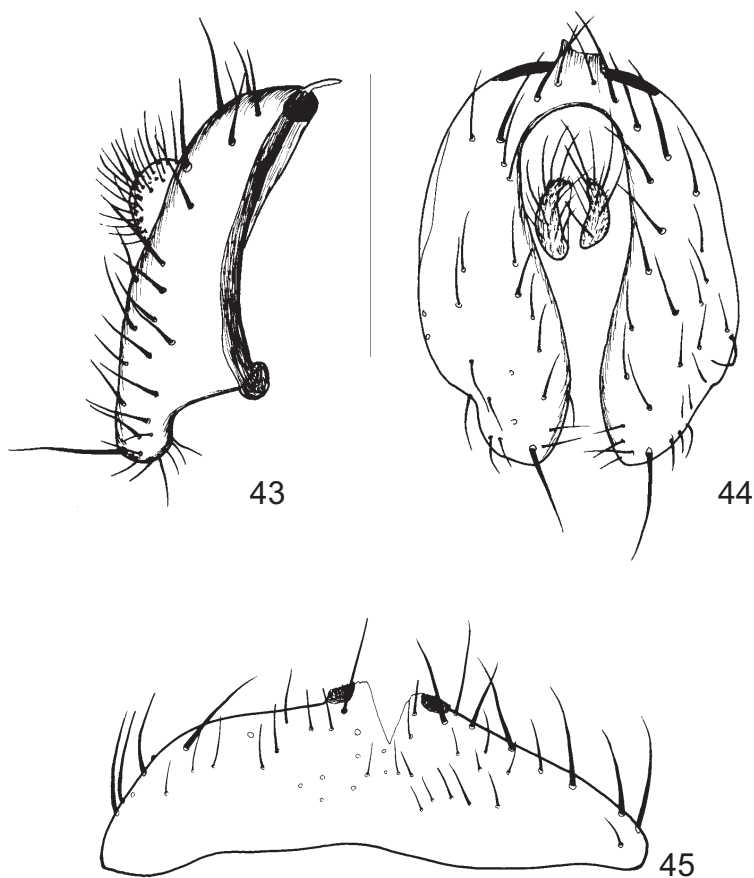
Description – Measurements in mm: body length 3.24 (holotype), 3.08–3.76 (paratypes), wing length 2.97, 2.76–3.42, wing width 1.08, 1.05–1.30. Only a brown linear spot between eye and antennal base. Sagittal stripe of frons faint and narrow. A darker grey triangular spot below eye posteriorly on gena. Ocellar setae 0.14 mm long, postocellars thicker, 0.21 mm. Antennae yellow, upper 1/3 of face brown, rest yellow. 1–2 medium-long pairs of setae on cheeks, 5–6 longer pairs on genae peristomally plus 3 or so setae below eye. Palpi thin, yellow. Mesonotum of holotype similar to that of *S. punctipennis*, that of the paratype female and the Thailand paratype male darker brown throughout with sagittal stripe from anterior *dc* to scutellum (stripes confluent). Anterior katepisternal seta almost as long as posterior one (male), 2/3 as long on female. Wings light yellowish, veins yellow. Vein R2+3, R4+5 and M brown apically but no brown spots around. Cross-veins narrowly brown bordered (or only veins thicker and darker). Costa basally with 2 long (0.17–0.18 mm) setae. Stronger costal fringe of 7 black setulae on 1/3 of section distal to R2+3. M vein with a 0.07 mm long perpendicular stump vein on middle of its distal section. Intracrossvein section of vein M 0.45, distal section 1.01 mm, ratio 2.24, dM-Cu 0.29 mm. Legs all yellow. Male genitalia (Figs 43–50) very characteristic. Tergite 7 (protandrium) fused to epandrium and dorsally (sagittally) also to tergite 6, with a pair of black spots (Fig. 43). Epandrium with medium-long setae, plus a pair of long ventral subapical setae. A distinct surstylar lobe visible, particularly so in lateral view (Figs 43–44). Cerci (Figs 43–44) small. Gonites (Figs 47, 50) extremely long medially with numerous perpendicular ridges, which look teeth in ventral view. Phallapodeme (Fig. 48) very narrow, rather rod-like. Ejaculatory apodeme (Figs 48–49) similar to that of *S. marginata*, though lateral edges of distal lamellae more incurved.



Figs 36–42. *Shatalkinella marginata* sp. n., paratype, male genitalia: 36 = cerci and right half of protandrium and epiandrium, caudal view, 37 = hypandrium and gonite, lateral view, 38 = protandrium, epiandrium and cercus, lateral view, 39 = phallapodeme, lateral (broadest) view, 40 = ejaculatory apodeme, in broadest ventral view, 41 = same, lateral view, 42 = apical part of gonite, broadest (ventral) view. Scale = 0.2 mm for Figs 36–37, 39–41, 0.4 mm for Fig. 38, 0.1 mm for Fig. 42

Remarks – It must be a rare but widespread species. The holotype and the male paratype are from broadly distant areas, but genitalia are the same.

Etymology – I named this new species after my colleague, Dr. LÁSZLÓ RONKAY, the famous lepidopterist, collector of the holotype, who helped us very much during our 2000 collection trip to Taiwan, and enriched the Diptera Collection, HNHM, with numerous invaluable specimens.



Figs 43–45. *Shatalkinella ronkayi* sp. n., paratype, postabdomen. 43–44 = epandrium, protandrium and cerci, with broken connection to tergite 6: 43 = lateral view, 44 = caudal view, 45 = tergite 6 extended, sagittally broken, with the broken connecting part to protandrium.

Scale = 0.4 mm for all

Shatalkinella thailandica sp. n.

(Figs 51–56)

Type material – Holotype male (HNHM): “THAILAND, Fang, Mae Fang NP, Doi Pha Hom Pok, 22. 11. 2003 – 2000 m, along road and creek, leg. A. Szappanos”. Its abdomen with genitalia prepared and kept in a plastic microvial with glycerol.

Description – A small yellow species, rather similar to *S. deceptor*. Measurements in mm: body length 3.08, wing length 2.99, wing width 0.92. Head and antennae vivid yellow, only spots between eyes and antennal bases as well as ocellar triangle dark. Eye rather round, not much longer than high (0.51 mm vs 0.44 mm). Cheeks protruding (i.e. before the facial plate), face flat without any sign of facial keel. Frontal setae in a row over lunule (longer), in a row each on anterior part of orbits plus ca. 12 proclinate setae anteriorly on frons.

Ocellar setae 0.14 mm long postocellars 0.20 mm, cruciate. Cheeks with 1 short pair of setae, genae with 5 longer pairs, plus several shorter ones posteriorly. Palpi thin and yellow. Mesonotum with 2 brown stripes just mesally to dorsocentral lines. Intra-alar stripes faint. Lateral parts of mesonotum slightly darker but no stripe found there. Pleura clear yellow. Four acrostichal rows. Anterior katepisternal seta minute and only 0.08 mm, posterior one 0.30 mm. Wing area around apex of vein R2+3 brown darkened, i.e. diffusely browned around apical part (also vein darker on that section). Otherwise wing light yellowish, almost clear, veins yellow. Stronger costal fringe of 6 black setulae on 1/4 of section distal to R2+3. Intracrossvein section of vein M 0.55 mm, terminal section 1.09 mm, ratio 1.98. Legs all yellow. Abdominal terga 2–5 with a pair of subtriangular black spots each, which occupy almost all the tergal length. Male protandrial spots minute. Male genitalia (Figs 51–56) define the species. It is very much against my way to dissect unique specimens (holotypes). However, in the case of *S. thailandica* sp. n. I had to do so. Although differences to *S. deceptor* involved in the key below seem distinct, it was necessary to dissect postabdomen (N.B.: epandrium, its armature and cerci are very similar in the two species). Ventral part of epandrium less rounded than in *S. deceptor* (Fig. 52, cf. Fig. 32). Apex of gonites rather spoon-shaped (Figs 54, 56), contrarily to *S. deceptor*. Phallapodeme (Fig. 55) rather similar to that of *S. deceptor*. Ejaculatory apodeme (Fig. 55) seems bicornute on distal part (perpendicular lamellae well separated from main part).

A KEY FOR THE SPECIES OF *SHATALKINELLA* L. PAPP

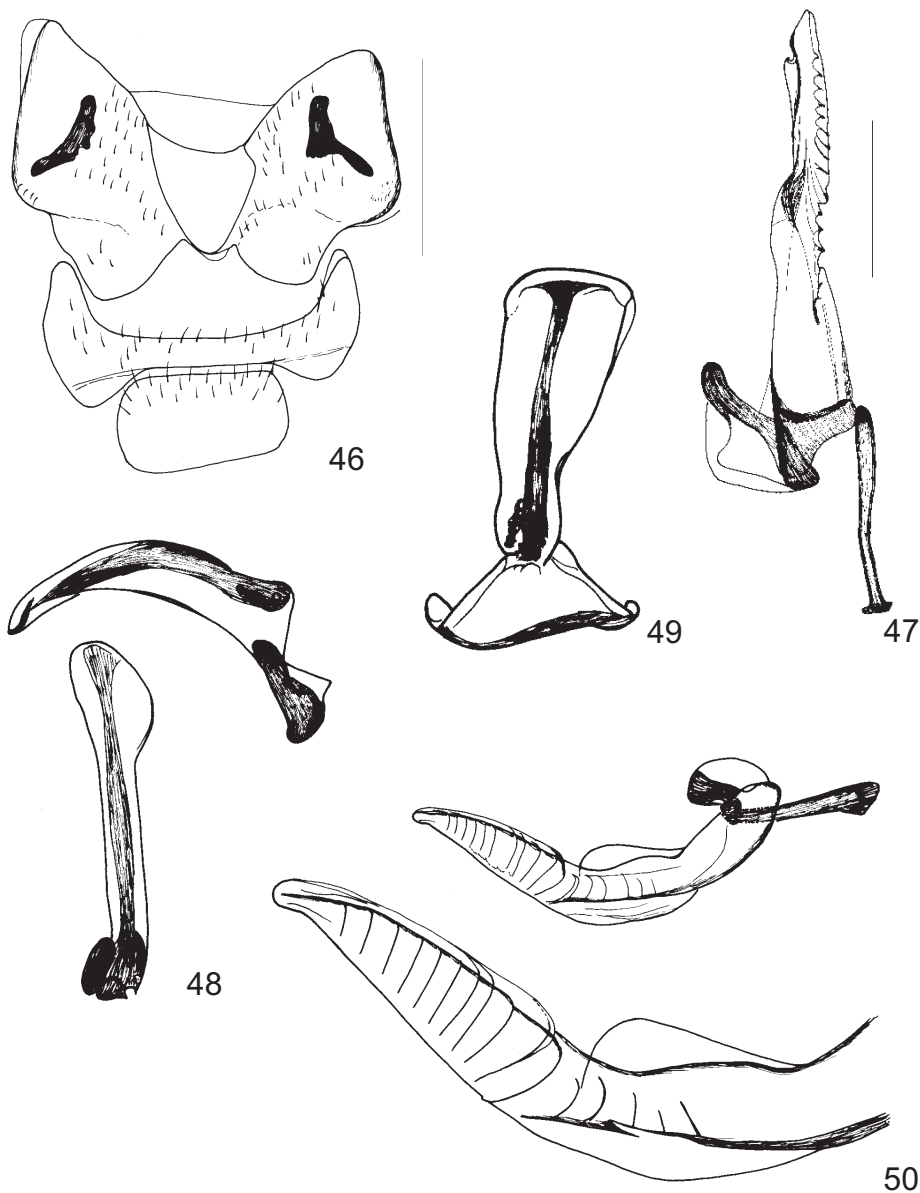
- 1 Wing clear, no vein appendage on vein M (Fig. 68). Head more quadratic in profile, anterior fronto-orbital seta closer to lunule than to posterior fronto-orbital. Two pairs of *kepst*, although anterior one much weaker than posterior seta 2
- Wing patterned, with a short vein appendage on middle of the ultimate section of M (Fig. 69). Head rather triangular in profile, anterior fronto-orbital seta closer to posterior one than to lunule. One pair of *kepst* 3

- 2 Abdominal terga without black spots. Wing all clear. Male protandrial spots large. Male genitalia as on Figs 31–35. Taiwan, ?Vietnam
S. deceptor (MALLOCH, 1927)
- Abdominal terga 2–5 with a pair of subtriangular black spots each, which occupy almost all the tergal length. Wing area around apex of vein R2+3 brown darkened. Male protandrial spots minute. Male genitalia as on Figs 51–56. Thailand ***S. thailandica* sp. n.**
- 3 Costal and apical part of wing with broad dark brown colour (between costa and vein R4+5, Fig. 69), also cross-veins and vein appendage with dark spots (if *Protrigonometopus okinawanus* SASAKAWA is a species of *Shatalkinella*, it keys here) 4
- Dark spots present on cross-veins, on apex of R and on vein appendage of M, but no darkening between costa and vein R4+5 (Fig. 70) 5
- 4 Also vein R4+5 medially with a dark spot (Fig. 69), ultimate apex of wing light, clear. Legs all yellow. Genal setae weaker, none of them is longer than genal diameter below eye. Thailand ***S. marginata* sp. n.**
- Vein R4+5 medially without a dark spot, apex of wing concolorous. Three apical fore tarsomeres brown-tinged. Genal setae stronger, some of them longer than genal diameter below eye (SASAKAWA 1998: fig. 18). Japan (Okinawa) *S. okinawanus* (SASAKAWA, 1998)
- 5 Vein R4+5 without spots (Fig. 71). Taiwan ***S. ronkayi* sp. n.**
- Vein R4+5 with 2 dark spots (other than on R+M) (Fig. 70). Thailand ***S. punctipennis* sp. n.**

Tetroxyrhina HENDEL, 1938

Tetroxyrhina HENDEL 1938: 5, as a subgenus of *Trigonometopus* MACQUART, 1835. Type species: *Trigonometopus submaculipennis* MALLOCH, 1927. Rank elevated to genus here.

Remarks – *Tetroxyrhina* HENDEL seems the most speciose genus of the tribe. I did not try to revise, or even to review, the species during this project. Below I give only a list and publish the new record of the known species in my possession. I will describe a new species only, which shows a special adaptation to the high mountain climate through its enlarged wings (Taiwan).



Figs 46–50. *Shatalkinella ronkayi* sp. n., paratype, male genitalia. 46 = male sternites 4–6, ventral view, 47 = left half of inner genitalia with phallapodeme, 48 = phallapodeme and ejaculatory apodeme (upper), lateral view, 49 = ejaculatory apodeme, dorsal view, 50 = left gonite, lateral view (lower one in higher magnification). Scale = 0.2 mm for Figs 47–50, 0.4 mm for Figs 46, 50

- T. albiseta* (BEZZI, 1913), new combination
T. alboapicalis (SHATALKIN, 1997), new combination
T. brevicornis (DE MEIJERE, 1911), new combination
T. brunneicosta (MALLOCH, 1927), new combination
T. cuneata (SHATALKIN, 1997), new combination
T. forficula (SHATALKIN, 1997), new combination
T. gressitti (SASAKAWA, 2002), new combination (a questionable species)
T. interrupta (SASAKAWA, 2005) (*Luzonomyza* (*Tetroxyrhina*)), new combination
T. peregovitsi sp. n.
T. sauteri (HENDEL, 1912), new combination
T. submaculipennis (MALLOCH, 1927), new combination
T. tinctipennis (DE MEIJERE, 1924), new combination
T. zeylanica (SENIOR-WHITE, 1921), new combination

Tetroxyrhina brunneicosta (MALLOCH, 1927) – 27 males, 14 females (HNHM, TFRI): Taiwan: Pingtung Hsien, Kenting, Heng-Chun Tropical Botanical Garden, light traps, October 4–6, 2000. No. 15, leg. L. PEREGOVITS & L. PAPP. Vietnam: 1 male, 2 females (HNHM): Thanh Loc, 12–19. X. 1988, leg. MAHUNKA, VÁSÁRHELYI. – I did not see the type but I have no doubt about the identity of this species. Its male genitalia were depicted by SASAKAWA & THO (1990: figs 3–4).

***Tetroxyrhina peregovitsi* sp. n.** (Figs 57–60, 72)

Type material – Holotype male (HNHM): “Taiwan, Nantou Co., Yuanfeng, 2760 m, SW Hohuan Mountain – 24 07 24 N, 121 14 55 E, 29. XI. 99., Ronkay, Kun, Peregovits”. Paratypes (HNHM): 3 males (one of them with abdomen and genitalia in glycerol), 7 females: same data.

Description – A large species with very large wings. Measurements in mm: body length 4.42 (holotype), 4.23–4.67 (paratypes), wing length 5.25, 4.95–5.41 (paratypes), wing width 1.97, 1.87–1.98 (paratypes). A large triangular grey area between eye and antennal base, which includes a brown linear spot ventrally. Frons greyish yellow with a diffusely bordered sagittal stripe. Face cheeks and genae yellow. Occiput, and a large triangular posterior area below eye on gena, dark grey. Eye much longer than high: 0.57 mm vs 0.46 mm. Ocellar setae thin, 0.14–0.15 mm long, postocellars 0.24–0.25 mm. Frontal proclinate setae on orbitalia, beside sagittal stripe and anteriorly scattered from lunule backwards to anterior fronto-orbital seta. A long row (10 setae on holotype) of cheek and genal setae from the level of lower edge of facial keel to below eyes. Antennae yellow but scape grey (at least ventrally). Mesonotum ochre with 2 acrostichal lines over lateral acrostichal rows, which continued on scutellum to apical scutellars. An intra-alar pair of dark stripes from pronotum to scutellum. In some specimens all parts lateral to dorsocentral light stripes dark greyish brown. Propleural sclerites, anterior and ventral part of anepisternum and most of katepisternum dark grey, mid coxa grey. Wings extremely large (Fig. 72), alula minute. Wing light brownish, with diffuse brown stripes medially in r2+3 and in r4+5 cells. Cross-veins brown bordered. Costa, apical part of R1 and A1 yellow, other veins brown.

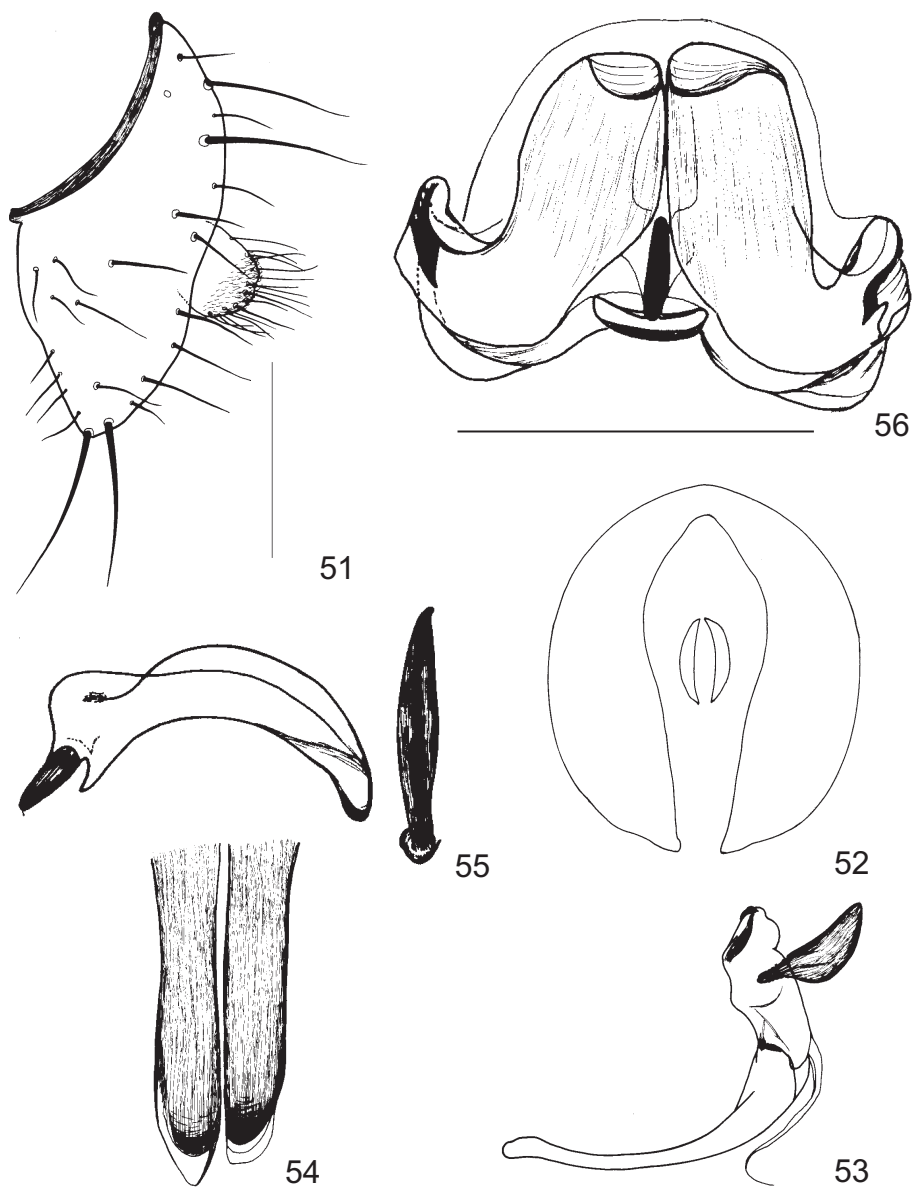
Stronger costal fringe of 9–10 black setulae on 1/4 of section distal to R2+3. Intracrossvein section of vein M 0.92 mm, terminal section 1.81 mm, ratio 1.96. dM-Cu arcuate (convex), 0.60 mm long. Alula only 0.62–0.63 mm long. Halteres dark except basal half of stalk (yellow). Legs yellow, fore tarsomeres darkened (greyish yellow to grey). Abdominal tergites dark grey dorsally, yellow laterally Tergite 5 and tergite 6 medially with a triangular light part each. Tergite 7 completely fused to epandrium, tergite 7 area of the complex bare. Dorsal outline of epandrium (actually that of epandrium plus protandrium) long (Fig. 58). Dorsocaudal appendages of epandrium short (Fig. 58). Cerci small with comparatively long setae, anus supra-ventral (Fig. 58). Hypandrium robust, gonites broadly rounded in lateral view (Fig. 60) with a backwards directed large process (Fig. 57). Phallapodeme wholly asymmetrical (Fig. 57), rather small and not high in lateral view. Ejaculatory apodeme actually V-shaped, small (looks different in lateral view, Fig. 59).

Remarks – *Tetroxyrhina peregovitsi* sp. n. is a species of a tropical-subtropical genus, which has been adapted to the cold high-mountain climate. Its wings are extremely large. Wing surface is ca. 1.85 times larger than that of the paratype of *L. sasakawai*, i.e. a comparable specimen by body length. A similarly well-known phenomenon is the number of species of Heleomyzidae s.str., where boreal and winter species have so large wings compared to their body size.

Etymology – I named this new species after my colleague, LÁSZLÓ PEREGOVITS, one of the collectors of the type series, who was my partner during our 2000 collection trip to Taiwan, and enriched the Diptera Collection, HNHM, with numerous invaluable specimens.

Tetroxyrhina sauteri (MALLOCH, 1927) – Holotype male (HNHM): 1) Formosa Sauter – 2) Chip Chip 09. II. – 3) “Trigonometopus” det. F. Hendel “Sauteri H.” [red] “typus” (damaged, right wing lost (except for its base), apex of left wing also lost). Additional specimen: 1 male (HNHM): Formosa Sauter – Sokotsu, 1912. V. – “Sauteri Hend.” det. Kertész. It is a species with dorso-caudal epandrial processes. Thorax dark brown with sagittal, 2 dorsocentral and another humeral to wing base light yellow stripes. Wing similar to that of *T. brunneicosta* but male dorso-caudal epandrial appendages different, their apex black. Almost all abdomen dark brown. *Trigonometopus sauteri* HENDEL was misplaced in the Catalog of the Oriental Diptera (SHEWELL 1977) as *Diplochasma*. I am afraid, *T. sauteri* was described again by SHATALKIN as *T. (Tetroxyrhina) alboapicalis* SHATALKIN, 1997.

Tetroxyrhina submaculipennis MALLOCH, 1927 – 1 male: Taiwan: Taipei, Nanshih Chiao, Han-Lo-Da, S of Taipei, 450 m, rocky forest undergrowth, September 23, 2000, leg. L. PAPP, No. 1. This is a species without dorso-caudal epandrial appendages (cf. SASAKAWA 2002). Although this is the type species of the genus, I do not consider this feature as a synapomorphy for this or any other genus. It may have emerged in two or more different times in the evolution of the Trigonometopini species; there are species also in *Luzonomyza* with (and without) such appendages.

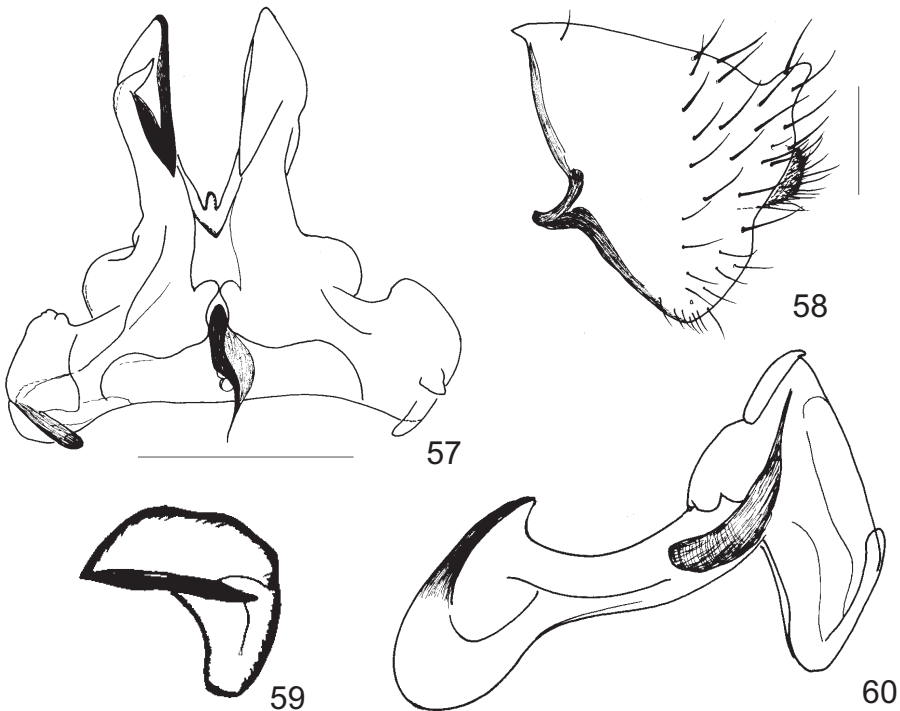


Figs 51–56. *Shatalkinella thailandica* sp. n., holotype, male genitalia. 51 = epandrium and cercus, lateral view, 52 = contour of epandrium and cerci, caudal view, 53 = gonite and phallapodeme, lateral view, 54 = apex of gonites, in broadest (subanterior) view, 55 = ejaculatory apodeme in lateral, phallapodeme in anterior view, 56 = gonites and hypandrium in ventral view (gonites directed towards us). Scale = 0.2 mm for Figs 51–55, 0.1 mm for Fig. 56

Trigonometopsis MALLOCH, 1925

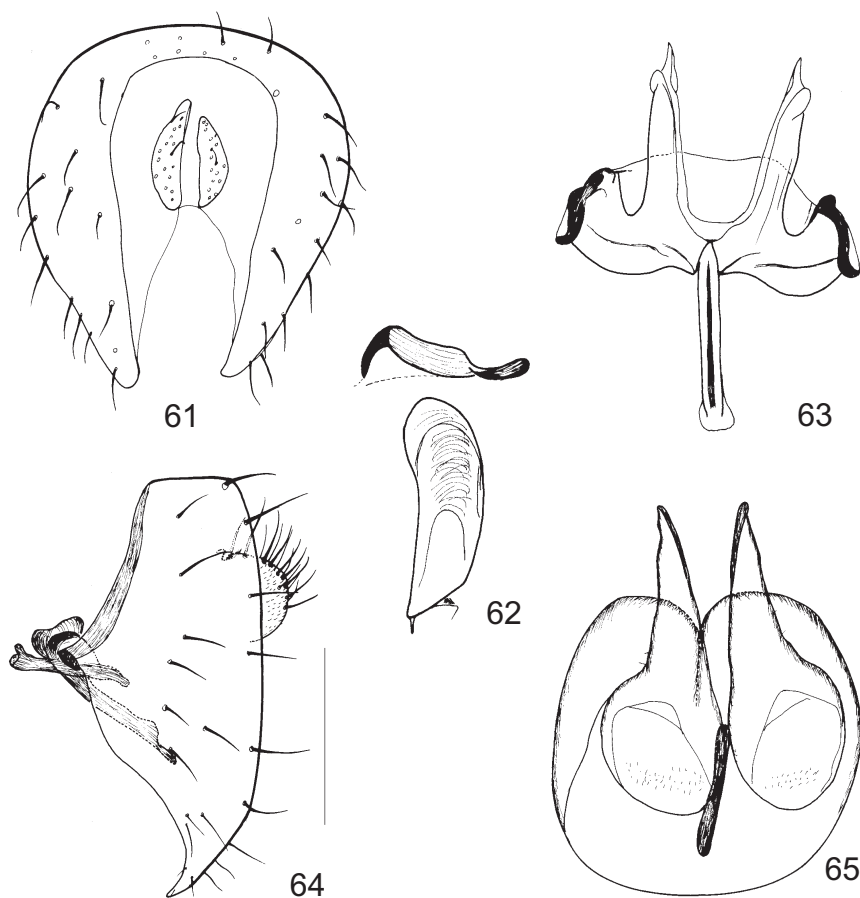
Trigonometopsis MALLOCH, 1925: 82. Type species: *Oxyrhina binotata* THOMSON, 1869 (orig. des.).

Trigonometopsis binotata (THOMSON, 1869) – Material studied: Australia: 1 male 3 females (HNHM): 1 male: Qld, Queen Mary Falls NP, camp ground, M. FÖLDVÁRI, 19. 10. 2002; 1 female: N.S.W., Cassilis. “Kuloo” Station, 710 m, S31°50,988 E150°08,047, 25. X. 2000, leg. A. PODLUSSÁNY; 1 female: Victoria, Healesville, 1965. II. 20., leg. BALOGH J.; 1 female (without head): Australia BIRÓ 1900, N.S.W., Parramatta [on the reverse side] “X. 28.”, Australia, leg. B. MERZ, 2002: 82 indiv. (MHNG, 21 indiv. in the HNHM): 36 males 23 females (10 m 7 f in the HNHM): AUSTR. NSW, Royal National Park, E Waterfall rail stat., 12. X./10, 34.09S/ 151.01E, ♂10, diff. types forest; 2 females: ibid., AUDLEY, 20 m, 10. X./7, leg. B. MERZ & B. DAY, shrub, grass; 8 males 4 females (2 m 1 f in the HNHM): ACT, Canberra, Summit WK, Black Mountain NR, 15. X./12, 35.16S/ 149.06E, dry sclerophyll forest; 4 females (1 f HNHM): ibid., 17.X./13, hilltop, ruderal dry sclerophyll forest; 1 male 2 females: ibid., 20. X./16, dry sclerophyll forest; 1 male 1 female: AUSTR. SE QLD, Mt Coot-tha (E Brisbane), 28. X./26, 27.29S/152.57 E, dry sclerophyll forest, leg. MERZ, FÖLDVÁRI & MCNEIL.



Figs 57–60. *Tetroxyrhina peregovitsi* sp. n., paratype, male genitalia. 57 = hypandrial complex with gonites and phallapodeme, ventral view, 58 = epandrium and cercus, lateral view, 59 = ejaculatory apodeme, lateral view, 60 = hypandrial complex, lateral view. Scales = 0.2 mm for Figs 57, 59–60, and for Fig. 58, respectively

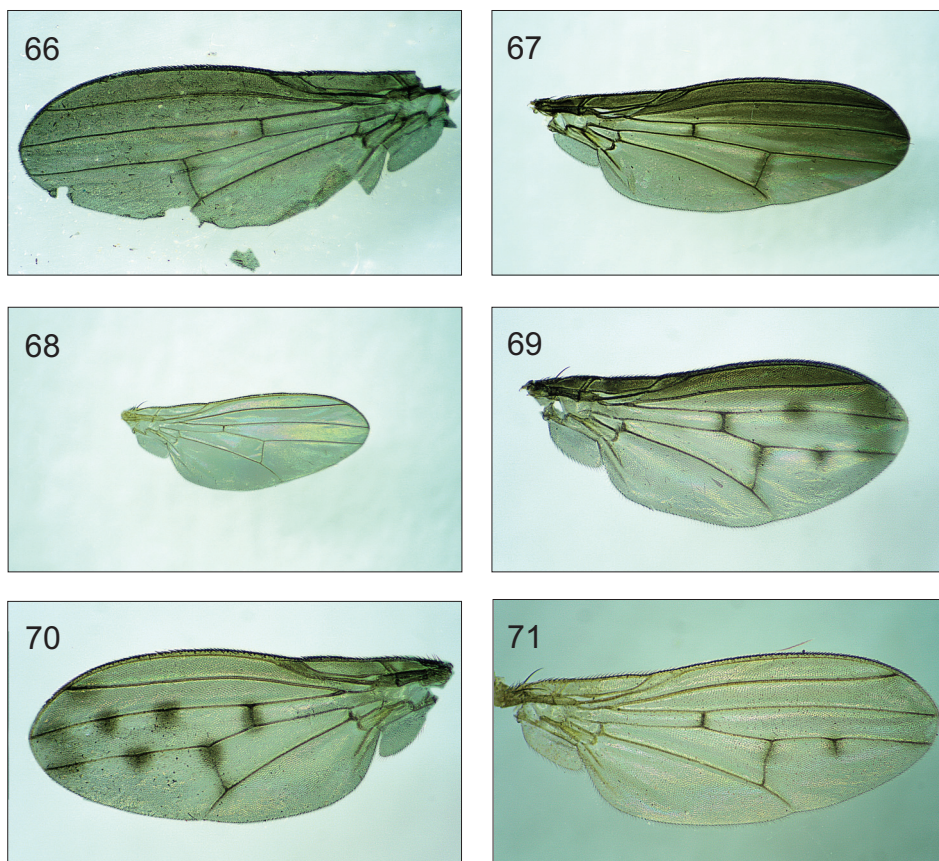
It must be a common and widespread species in Australia (type locality Sydney). The species was identified through the information I had received from Dr. THOMAS PAPE on the type in the Swedish Museum of Natural History. It is an easily recognisable species: 2 small black dots on facial plate, 2 large dark spots between eyes and antennal bases, dark sagittal line on frons, anterior fronto-orbital setae slightly medioclinate but definitely reclinate, postocellars distinctly thicker than ocellars, rather strong and cruciate; mesonotum with one broad grey sagittal stripe and 2 dorsocentral brown stripes, 0 + 3 dorsocentral pairs, no intra-alar seta, acrostichals in 2 well-ordered rows, 2 katapisternals, 1 strong anepisternal seta; for other features see in the generic key. Male genitalia (Figs 61–64) very characteristic.



Figs 61–65. *Trigonometopini*, male genitalia. 61–64 = *Trigonometopsis binotata* (THOMSON, 1869): 61 = epandrium and cerci, caudal (nearly ventral) view, 62 = phallapodeme and ejaculatory apodeme (upper), lateral view, 63 = inner genitalia, ventral view, 64 = genitalia, lateral view. 65 = *Trigonometopus frontalis* (MEIGEN, 1830), male epandrium and gonites, anterior view. Scale = 0.2 mm for all

Epandrium high, surstylar lobe long and proclinate in lateral view (Figs 61, 64). Epandrial setae not long or thick. Cerci small. Inner genitalia are rather small. Gonite with intricate apex. Phallapodeme (Figs 62–64) not large in itself, but almost as long as gonite, not high in lateral view. Ejaculatory apodeme longish, apical processes not large (Fig. 62). Genital pouch widely open ventrally. No supragenital (subepandrial) sclerite in the genitalia.

Trigonometopsis punctipennis MALLOCH, 1929 – It was described from the Philippines (Luzon), based on a single female. It must be a peculiar species with rather numerous dark spots on the wing. I do not know its relegation based just on the description. This is why I mention it under this name; it will be necessary to study the type for a decision. I have seen *Trigonometopsis* specimens from Australia in the collections of the MHNG and HNHM, which represent several new species, but they can be described in the frame of another project.



Figs 66–71. Wings: 66 = *Luzonomyza pseudoforficula* sp. n., holotype, left wing dorsally; 67–69 = right wings dorsally: 67 = *Luzonomyza sinica* SHATALKIN, 1998, 68 = *Shatalkinella deceptor* (MALLOCH, 1927), 69 = *S. marginata* sp. n., 70 = *S. punctipennis* sp. n., holotype, left wing dorsally; 71 = *S. ronkayi* sp. n., right wings dorsally

Trigonometopsis abnormis (SHATALKIN, 1999), which is a species with questionable generic relegation, see below.

Trigonometopus MACQUART, 1835

Trigonometopus MACQUART, 1835: 419. Type species: *Tetanocera frontalis* MEIGEN, 1830 (monotypy).

Remarks – This once very inclusive genus has been much restricted in the last two decades through SHATALKIN's and SASAKAWA's works, which I strongly support also here. In my opinion, it involves only two Palearctic species. Although I did not see *T. eborifacies* SHATALKIN, 1997, I am convinced that it is a good species. Below I give a short key for the identification of the two species, which is based on SHATALKIN's (1997) key.



Figs 72–75. 72 = *Tetroxyrhina peregovitsi* sp. n., right wings dorsally, 73 = *Maquilingia thaii* sp. n., holotype, head and thorax, lateral view; 74–75 = head in lateral view: 74 = *L. sasakawai* sp. n., holotype, 75 = *L. vietnamensis* sp. n., holotype

Trigonometopus frontalis (MEIGEN, 1830) – Material studied: 90 specimens in the collection of the HHNM from Hungary and Germany. Its male genitalia (Fig. 65) are rather simple: epandrium widely rounded ventrally, base of gonite robust but apex much narrowed, phallopodeme rather short. The species has already been reported also from Mongolia and Japan (see SASAKAWA 2005), but I am afraid, those specimens need a later revision.

A KEY FOR THE IDENTIFICATION OF *TRIGONOMETOPUS* MACQUART

- 1 Cross-veins of wing with brownish bordering: R-M posteriorly, dM-Cu anteriorly. All the facial plate yellow. No brown spot between antennal base and eye. A trans-Palaeartic species *T. frontalis* (MEIGEN, 1830)
- Cross-veins of wings clear. Facial plate with a whitish stripe. A very small dark brown spot present between antennal base and eye. Russian Far East *T. eborifacies* SHATALKIN, 1997

Trigonometopus canus DE MEIJERE, 1916, a questionable species, not known to me. Most probably it does not belong to *Trigonometopus*.

Remarks – *Paranomina* HENDEL, 1907 (with *P. unicolor* HENDEL, 1907, as type species; Australia) was not included in the tribe, since 1) it has no facial keel; 2) frontal anterior setae scarce and minute. There is another *Trigonometopini* species known from the Oriental region (incl. China and Japan) and not yet revised: *Trigonometopsis abnormis* SHATALKIN, 1999. As SHATALKIN (pers. comm.) said, he thought it close to *Protrigonometopus okinawanus* SASAKAWA, 1998. Consequently, if I am right positioning *P. okinawanus* as a species of *Shatalkinella*, also *Trigonometopsis abnormis* may be a *Shatalkinella* sp.

*

Acknowledgements – I am grateful to Dr. BERNHARD MERZ (Muséum d'Histoire naturelle Genève), for a loan of the *Trigonometopini* specimens of his Muséum and for his patience towards me on extending it; to Dr. A. THOMAS PAPE (Swedish Museum of Natural History, now Copenhagen) for the very detailed and highly useful information on the type of *Oxyrhina binotata* THOMSON, 1869. I would like to thank Professor A. I. SHATALKIN (Moscow State University) for the advice and detailed information he sent me in letters. My most sincere thanks are due to my colleague, Dr. MIHÁLY FÖLDVÁRI, for his help with taking photos (Figs 66–75). This study was supported by the Hungarian National Scientific Research Fund (OTKA Nos T-042540 and K-60593).

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