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## REVISIONARY NOTES ON THE MACROCENTRINAE FROM FAR EAST USSR (HYMENOPTERA: BRACONIDAE)

by

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Key words: Braconidae; Macrocentrinae; Palaearctic genera; *Aulacocentrum*; *Macrocentrus*; East Palaearctic; Primoryan Territory; Magadan Territory.

Five new species of the genus *Macrocentrus* Curtis for Far East USSR are described. Keys to the Palaearctic genera of the Macrocentrinae and of the *Macrocentrus collaris*-group are added.

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## INTRODUCTION

The Braconidae of the East Palaearctic region are still largely unknown, and the Primoryan and Magadan territories are no exception. Therefore, it was not surprising to find several new species of Macrocentrinae among material assembled and sorted by the second author. In addition the first author will publish several new species of *Macrocentrus* from Japan in a forthcoming paper.

The biology of the new species is unknown, but Macrocentrinae are larval endoparasites of several families of Lepidoptera, e.g., Tortricidae, Pyralidae, Sesiidae, Tineidae, Oecophoridae, Gelechiidae, and Lycaenidae.

## KEY TO GENERA OF PALAEARCTIC MACROCENTRINAE

1. Length of inner hind spur 0.5-0.8 times hind basitarsus; length of ovipositor sheath about equal to apical height of metasoma; vein SR of hind wing sinuate ..... *Austrozele* Roman

Note. Several new Palaearctic species will be described in the forthcoming revision of the Macrocentrinae by the first author.

- Length of inner hind spur 0.3-0.5 times hind basitarsus; ovipositor sheath at least 0.7 times as long as of metasoma, much longer than apical height of metasoma; vein SR of hind wing variable ..... 2

2. First metasomal tergite in part distinctly transversely aciculate (fig. 99); length of first tergite 3-6 times its apical width (fig. 99); vein SC + R1 of hind wing strongly bent (figs. 95, 97) ..... *Aulacocentrum* Brues

Note. In the Palaearctic region only *A. philippinense* (Ashmead, 1904) comb. nov.; specimens examined from Japan, Korea, and USSR (Primoryan territory) and the Oriental region.

- First tergite longitudinally or obliquely aciculate or rugose (figs. 13, 28, 63); length of first tergite less than 3 times its apical width (figs. 13, 87); vein SC + R1 of hind wing usually straight or gradually curved (figs. 21, 29), but sometimes strongly (fig. 23) ..... *Macrocentrus* Curtis

KEY TO PALAEARCTIC SPECIES OF THE GENUS *MACROCENTRUS* WITH VEIN SC + R1 OF HIND WING DISTINCTLY BENT TOWARDS ANTERIOR MARGIN OF HIND WING (FIGS. 7, 21).

1. Body largely brownish-yellow; first tergite without median groove (fig. 13); side of scutellum largely smooth (fig. 11); first metasomal tergite shallowly concave basally (fig. 13); vein cu-a of fore wing oblique and posteriorly slender (fig. 6) ..... *spilotus* spec. nov.

- Body largely black: first tergite with median groove (fig. 28); side of scutellum carinate (fig. 26); first tergite depressed basally (fig. 28); vein cu-a of fore wing subvertical and posteriorly slightly widened (figs. 15, 17) .  
..... *alox* spec. nov.

Note. A third species "near *M. alox*", from Japan, will be described in a forthcoming paper on the Macrocentrinae of Japan by the first author.

**Macrocentrus alox** spec. nov.  
(figs. 15-28)

Material. — Holotype, ♀, (Zoological Institute, Leningrad): "Primorye zap. Kedrovaya pad, I.IX(19)76, Berezantzev". Paratype: 1♂, (Rijksmuseum van Natuurlijke Historie, Leiden): same label-data, but 12.VIII.(19)76.

Type-locality: E. USSR, Primoryan Territory, West of Kedrovaya.

Holotype, ♀, length of body 8.5 mm, of fore wing 7.0 mm.

Head. — Antennal segments 57, length of third segment 1.4 times fourth segment, length of third, fourth, and penultimate segments 6.9, 5.0, and 2.0 times their width, respectively (fig. 18), apical segment with spine; length of maxillary palp 2.2 times height of head; length of eye in dorsal view 7.4 times temple (fig. 24); temple directly narrowed posteriorly (fig. 24), punctate; OOL: diameter of ocellus: POL = 18 : 9 : 12; frons smooth, slightly impressed; vertex with some fine setiferous punctures, rather flat, somewhat impressed near stemmaticum; face rather flat, coarse remotely punctate medio-dorsally, with some oblique rugae, medially smooth and medio-ventrally densely finely punctate (fig. 27); clypeus moderately convex (fig. 19), remotely punctate, its ventral margin slightly concave (fig. 27); length of malar space 0.5 times basal width of mandible; mandible strongly twisted apically, its second tooth distinctly shorter than first tooth, robust and both acute apically (fig. 27).

Mesosoma. — Length of mesosoma 1.4 times its height; side of pronotum coarsely crenulate medially, finely crenulate postero-dorsally, remainder punctate, and near medial furrow coarsely punctate (fig. 19); prepectal carina absent ventrally, distinct laterally, and crenulate behind it; mesosternal sulcus deep and finely crenulate posteriorly, absent anteriorly; precoxal sulcus coarsely punctate, but interspaces at least equal to diameter of punctures (fig. 19); remainder of mesopleuron distinctly punctate; pleural sulcus distinctly crenulate; episternal scrobe distinct; metapleural flange large and obtuse; metapleuron coarsely punctate medially, and rugose ventrally; notauli complete, anterior half largely smooth and narrow, posteriorly widely and coarsely transversely rugose (fig. 26); mesocutal lobes sparsely punctulate, setose except middle of lateral lobes; scutellum distinctly punctate, side of scutellum carinate (fig. 26); metanotum with undivided carina anteriorly; surface of propodeum coarsely vermiculate, but anteriorly largely rugulose, its medial carina absent.

Wings. — Fore wing: subbasal cell with large glabrous patch apically (fig. 15), and with obsolescent brownish spot;  $r : 3-SR : SR1 = 15 : 32 : 76$ ;  $r$  as wide as 3-SR; 1-SR + M and SR1 straight; cu-a subvertical, less oblique than

3-CU1, slender anteriorly, and widened posteriorly (fig. 15); 3-CU1 distinctly curved posteriorly (fig. 17); 1-CU1 : 2-CU1 = 1 : 9; 1-CU1 widened and shorter than cu-a; 2-SR : 3-SR : r-m = 19 : 32 : 11; 2A sclerotized basally and membrane basad of it sparsely setose. Hind wing: SC + R1 moderately bent (figs. 21, 23); SR unsclerotized and sinuate, marginal cell narrowed medially and distinctly widened posteriorly, but subparallel-sided apically in paratype; 2-SC + R transverse (fig. 21).

Legs. — Hind coxa punctulate, with some striae apico-dorsally; tarsal claws with acute submedial lobe and yellowish pecten basally (fig. 22); length of femur, tibia and basitarsus of hind leg 7.2, 15.2, and 8.0 times their width, respectively; length of hind tibial spurs 0.3 and 0.4 times hind basitarsus; fore femur slender, distinctly curved; length of fore spur 0.2 times fore basitarsus; fore, middle and hind trochantelli with five, six, and five teeth, respectively (fig. 20).

Metasoma. — Length of first tergite 2.2 times its apical width, its surface coarsely, rather regularly sublongitudinally striate, medio-basally deeply concave, remainder rather convex, but with distinct median groove (fig. 28), its dorsal carinae not discernable among striae; laterope very deep and large; second tergite coarsely longitudinally striate; basal half of third tergite aciculate, remainder smooth; length of ovipositor sheath unknown, because ovipositor and its sheath are broken off.

Colour. — Black or dark brown; palpi, annellus, tegulae, legs (but third-fifth fore and middle tarsal segments and hind telotarsus dark brown), pale yellowish; hind basitarsus ivory; scutellum and mesoscutum posteriorly partly brown; margin of pterostigma and most veins dark brown; remainder of pterostigma, parastigma largely, and vein 1-R1 yellowish-brown; wing membrane subhyaline.

Male. — Very similar to female: antennal segments 55, apical half of antenna brown; length of fore wing 6.3 mm, of body 8.3 mm; length of first tergite 2.5 times its apical width; scutellum, metanotum, meso- and metapleuron, and mesosternum partly brown.

Note. — Easily recognizable species because of the median groove of the first tergite and its deep medio-basal depression, and the carinate sides of the scutellum.

**Macrocentrus spilotus spec. nov.**

(figs. 1-14, 32)

Material. — Holotype, ♀, (Zoological Institute, Leningrad): "Primorye Zap, Kedrovaya pad., 15.8. (19)75, Rjabukhin".

Type-locality: E. USSR, Primoryan Territory, West of Kedrovaya.

Holotype, ♀, length of body 9.8 mm, of fore wing 8.0 mm.

Head. — Antennal segments 61, length of third segment 1.5 times fourth segment, length of third, fourth and penultimate segments 8.1, 5.5, and 3.6 times their width, respectively (fig. 5), apical segment with spine; length of maxillary palp 1.8 times height of head; length of eye in dorsal view 7.8 times temple (fig. 10); temple directly narrowed posteriorly (fig. 10); OOL: diameter of ocellus : POL = 9 : 12 : 9; frons smooth, slightly impressed; vertex smooth, and rather flat, not impressed near stemmaticum; face rather flat, spaced punctate, ventrally finer and denser than dorsally (fig. 8); clypeus rather flat (fig. 1), remotely punctate, its ventral margin slightly concave (fig. 9); length of malar space 0.5 times basal width of mandible; mandible strongly twisted apically, its second tooth distinctly shorter than first tooth, robust and both acute apically (fig. 8).

Mesosoma. — Length of mesosoma 1.5 times its height; side of pronotum remotely punctulate, with some crenulae posteriorly (fig. 1); prepectal carina absent ventrally, but distinct laterally (fig. 1); mesosternal sulcus narrow and finely crenulate posteriorly and moderately impressed; precoxal sulcus only remotely punctate (fig. 1); remainder of mesopleuron remotely finely punctate; pleural sulcus largely smooth; episternal scrobe shallow; metapleural flange large and obtuse; metapleuron largely coarsely punctate medially, and rugose ventrally; notauli complete, distinctly crenulate (fig. 11); mesoscutal lobes smooth, and setose; scutellum rather flat, smooth, side of scutellum largely smooth (fig. 11); metanotum with undivided carina anteriorly; surface of propodeum spaced rugulose, but anteriorly punctate only, and its medial carina absent.

Wings. — Fore wing: subbasal cell with large glabrous patch apically (fig. 6), and with an obsolescent yellowish-brown spot (fig. 4);  $r : 3\text{-SR} : \text{SR1} = 16 : 31 : 68$ ;  $r$  wider than 3-SR; 1-SR + M and SR1 straight; cu-a oblique as 3-CU1 but posteriorly vertical, slender anteriorly and posteriorly (fig. 6); 3-CU1 straight posteriorly (fig. 4);  $1\text{-CU1} : 2\text{-CU1} = 1 : 8$ ; 1-CU1 widened (fig. 6);  $2\text{-SR} : 3\text{-SR} : r\text{-m} = 21 : 39 : 9$ ; 2A sclerotized basally and membrane basad of it glabrous. Hind wing: SC + R1 strongly bent (fig. 7); SR unsclerotized and curved basally, marginal cell narrowed medially and slightly widened posteriorly (fig. 4); 2-SC + R transverse (fig. 7).

Legs. — Hind coxa finely punctate; tarsal claws with acute submedial lobe and setose basally (fig. 14); length of femur, tibia and basitarsus of hind leg 8.8, 17.9, and 12.4 times their width, respectively; length of hind tibial spurs 0.3 and 0.4 times hind basitarsus; fore femur slender, distinctly curved; length of fore spur 0.2 times fore basitarsus; fore, middle and hind trochantelli with six, eight, and ten teeth, respectively (fig. 12).

Metasoma. — Length of first tergite 2.6 times its apical width, its surface irregularly longitudinally rugose, more punctate latero-posteriorly, medio-basally shallowly impressed, remainder convex but medio-posteriorly rather flattened (fig. 13), its dorsal carinae present in front of spiracles; laterope very deep and large; second tergite distinctly striate anteriorly, mainly aciculate posteriorly; basal half of third tergite aciculate, remainder smooth; length of ovipositor sheath about 1.6 times fore wing, apex of ovipositor rather slender, with minute notch (fig. 9).

Colour. — Brownish-yellow; face and frons medially, stemmaticum, middle lobe of mesoscutum anteriorly, and ovipositor sheath, dark brown; antenna (except yellowish radix, pedicellus and annellus) and veins brown; metasoma dorsally, propodeum, hind coxa and femur, yellowish-brown; hind tarsus and spurs pale yellowish or ivory; pterostigma and parastigma yellowish; wing membrane subhyaline.

Note. — Resembles *Macrocentrus gigas* Watanabe, 1937 from Taiwan, but *M. gigas* has vein 2-SC + R of hind wing quadrate, base of vein cu-a of fore wing widened, hind coxa transversely striate dorsally, vein SR of hind wing sclerotized basally, precoxal sulcus rugose and pronotal side crenulate medially.

**Macrocentrus mellicornis spec. nov.**  
(figs. 64-74, 90)

*Macrocentrus rhyacioniae*; Papp, 1985: 342.

Material. — Holotype, ♀, (Zoological Institute, Leningrad): "Primorskij Kraj, Barabash – Levada, na svet , 27.vi.(1)978, Belokobylskij". Paratype, 1♀, (Budapest Museum): "Ryang-gang Prov., Hyesan [= N. Korea], room of Hotel Hyesan, 22 July 1975, 20-23, 30 h, no. 276".  
Type-locality: E. USSR, Primoryan Territory, Barabash-Levada.

Holotype, ♀, length of body 7.1 mm, of fore wing 5.4 mm.

Head. — Remaining antennal segments 27, length of third segment 1.3 times fourth segment, length of third, and fourth segments 6.0, and 4.6 times their width, respectively (penultimate segment of paratype 2.4 times), apical segment of paratype with spine (fig. 72); length of maxillary palp 1.7 times height of head; length of eye in dorsal view 4.0 times temple (4.6 times in paratype; fig. 73); temple roundly narrowed posteriorly (fig. 73), punctulate; OOL: diameter of ocellus: POL = 6 : 5 : 9; frons largely flat, smooth, slightly impressed medially; vertex convex, smooth; face rather flat, sparsely finely punctate laterally, medially denser punctate; clypeus strongly convex (fig. 69),

long setose, remotely punctate, its ventral margin rather concave; length of malar space 0.7 times basal width of mandible; mandible twisted apically, its second tooth somewhat shorter than first tooth, both robust and acute apically; upper condyli of mandible near lower level of eyes (fig. 69).

Mesosoma. — Length of mesosoma 1.6 times its height; side of pronotum medially and posteriorly strongly crenulate, remainder largely smooth; prepectal carina present ventrally, distinct laterally and crenulate behind it; mesosternal sulcus rather deep and smooth or nearly so; precoxal sulcus remotely punctate, but interspaces equal to diameter of punctures or wider; remainder of mesopleuron distinctly remotely punctate; pleural sulcus finely crenulate; episternal scrobe deep; metapleural flange large and obtuse; metapleuron remotely punctulate medially, and with some rugae ventrally; notauli complete; mesoscutal lobes smooth, middle lobe setose, lateral lobes glabrous medially; scutellum smooth, side of scutellum largely smooth; metanotum with divided carina anteriorly; surface of propodeum transversely rugose, antero-laterally smooth, its medial carina absent.

Wings. — Fore wing: subbasal cell evenly setose apically (figs. 65, 74), and with very faint yellowish spot;  $r : 3-SR : SR1 = 10 : 15 : 47$ ;  $r$  as slender as 3-SR; 1-SR + M curved; SR1 almost straight; cu-a straight, inclivous and parallel to 3-CU1 (fig. 65); 3-CU1 slightly bent posteriorly (fig. 65); 1-CU1 : 2-CU1 = 1 : 13; 1-CU1 widened; 2-SR : 3-SR : r-m = 16 : 15 : 7; 2A sclerotized basally and membrane basad of it setose. Hind wing: SC + R1 slightly curved (fig. 64); SR unsclerotized and slightly curved, marginal cell parallel-sided apically (fig. 64); 2-SC + R transverse (fig. 64); 1-M slightly bent basally (fig. 64), stronger in paratype (fig. 70).

Legs. — Hind coxa remotely punctate, with a few oblique striae apico-dorsally; tarsal claws with acute submedial lobe and setose basally (fig. 67); length of femur (fig. 90), tibia and basitarsus of hind leg 6.7, 14.4, and 9.0 times their width, respectively; length of hind tibial spurs 0.4 and 0.5 times hind basitarsus; fore femur slender, distinctly curved; length of fore spur 0.3 times fore basitarsus; fore, middle and hind trochantelli with three, five, and six teeth, respectively.

Metasoma. — Length of first tergite 2.0 times its apical width (as paratype, fig. 66), surface of posterior half largely smooth, with striae anteriorly and laterally, medio-basally concave, remainder convex (fig. 66), its dorsal carinae absent; laterope very deep and large; second tergite aciculate anteriorly, remainder smooth; basal half of third tergite largely smooth, with some aciculae anteriorly, remainder smooth; length of ovipositor sheath 1.71 times fore wing, apex of ovipositor rather robust, with notch (fig. 71).

Colour. — Black or dark brown; antenna, legs and tegulae yellowish (but

scapus, pedicellus and antennal segments apically dark brown); mesopleuron medially, metapleuron, propodeum orange-brown; first tergite and base of second tergite brown; hind tibia (except base) and tarsus slightly infuscated; palpi brownish; para- and pterostigma brown, but base of pterostigma yellowish-brown, wing membrane slightly infuscated.

Note. — This species differs from *M. rhyacioniae* Watanabe, 1970 from Japan by the shape of the claws (fig. 100), the colour of the antenna and body, the sculpture of three basal metasomal tergites, and the length of the malar space. We based our interpretation of *M. rhyacioniae* on the original description and on a specimen sent to the British Museum by Watanabe as *M. "giber"*.

Variation. — Paratype: length of fore wing 6.3 mm, length of third antennal segment 1.4 times fourth segment; tegulae whitish; length of ovipositor sheath 1.98 times fore wing.

Resembles *M. townesi* Van Achterberg & Haeselbarth, 1983 except for the colour of the palpi, antenna medially, mesosoma and first tergite, the longer ovipositor, the more slender third, fourth and penultimate antennal segments (figs. 72, 84), upper condylus of mandible near lower level of eyes (distinctly below lower level in *townesi*, fig. 80) and clypeus more protruding in lateral view.

The new species can be separated from the related species with yellowish(-brown) palpi as follows:

1. Spot of subbasal cell of fore wing usually distinctly pigmented, brown (fig. 79); length of eye in dorsal view 3 times temple or less (fig. 78); pterostigma unicolorous dark brown; face rather coarsely punctate, often somewhat rugose medially (fig. 77); length of fore wing 5.5-7.5 mm; length of ovipositor sheath 1.6-1.8 times fore wing; hind femur (fig. 92) and first metasomal tergite (fig. 82) usually more robust; palpi dark brown to yellowish; upper mandibular condylus distinctly below lower level of eyes (fig. 77) ..... *marginator* (Nees)
- Spot of subbasal cell of fore wing less pigmented, yellowish or pale brown (figs. 74, 89); length of eye in dorsal view 3.0-4.6 times temple (figs. 73, 86); pterostigma variable, frequently paler medially or basally than distally or anteriorly; face variable (fig. 85); length of fore wing 3.5-6 mm; length of ovipositor sheath 1.4-2 times fore wing; hind femur variable (figs. 90, 91); first tergite less robust (figs. 66, 87); palpi pale yellowish; upper condylus of mandible rather close to lower level of eyes (figs. 69, 76, 85) ..... 2
2. Third and fourth antennal segments of ♀ dark brown; length of fore wing



- usually less than 5 mm; second and (base of) third tergites finely aciculate; first tergite black, its length more than twice its apical width (fig. 87); length of ovipositor sheath 1.4-1.5 times fore wing; clypeus less convex (fig. 76); first tergite usually with medio-longitudinal impression anteriorly (fig. 87); hind femur slender (fig. 91); apical third of subbasal cell of fore wing usually partly glabrous (fig. 89) . . . . . *nitidus* (Wesmael)
- Third and fourth antennal segments of ♀ yellowish; length of fore wing about 6 mm; second tergite only basally finely aciculate, remainder and third tergite smooth (fig. 66); first tergite brownish, its length about twice its apical width (fig. 66); length of ovipositor sheath 1.7-2 times fore wing; clypeus strongly convex (fig. 69); first tergite without medio-longitudinal impression anteriorly (fig. 66); hind femur less slender (fig. 90); apical third of subbasal cell evenly setose (figs. 65, 74) . . . . .  
 . . . . . *mellicornis* spec. nov.

**Macrocentrus retusus spec. nov.**

(figs. 29-31, 33-37)

Material. — Holotype, ♀, (Zoological Institute, Leningrad): "Primorye, Oktjabrskij rajon, 6 km Z Chernjatino, 13.VIII.(19)82, Shalygina".

Type-locality: E. USSR, Primoryan Territory, Oktjabrsk region, 6 km West of Chernjatino.

Holotype, ♀, length of body 10.1 mm, of the fore wing 7.0 mm.

Head. — Antennal segments 50, length of third segment 1.4 times fourth segment, length of third, fourth, and penultimate segments 5.5, 3.9, and 2.1 times their width, respectively (fig. 36), apical segment with short spine (fig. 36); length of maxillary palp 1.6 times height of head; length of eye in dorsal view 2.4 times temple (fig. 30); temple roundly narrowed posteriorly (fig. 30), punctulate; OOL: diameter of ocellus: POL = 18 : 9 : 29; frons smooth, narrowly impressed; vertex rather convex, punctulate near stemmaticum; face rather flat, largely smooth, remotely punctulate; clypeus distinctly convex, smooth, except for some punctures, its ventral margin nearly straight; length of malar space 1.3 times basal width of mandible; mandible strongly twisted apically, its second tooth somewhat shorter than first tooth, robust and both acute apically (fig. 31).

Mesosoma. — Length of mesosoma 1.3 times its height; side of pronotum smooth with groove and some crenulae posteriorly; prepectal carina reduced ventrally, absent behind fore coxae, distinct laterally; mesosternal sulcus distinct and crenulate; precoxal sulcus deeply impressed, only remotely punc-

tulate; remainder of mesopleuron punctulate, and denser dorsally; pleural sulcus finely crenulate; episternal scrobe very deep; metapleural flange large and obtuse; metapleuron punctulate medially, and rugose ventrally; notauli complete, narrow and smooth; mesoscutal lobes largely smooth, rather setose; scutellum finely punctate, side of scutellum smooth; surface of propodeum with transverse rugae medially, remainder largely smooth, its medial carina absent.

Wings. — Fore wing: subbasal cell largely glabrous apically and without differentiated spot;  $r : 3\text{-SR} : \text{SR1} = 14 : 20 : 64$ ;  $r$  as wide as 3-SR; 1-SR + M sinuate, SR1 straight; cu-a nearly vertical, parallel to 3-CU1, slender anteriorly, and slightly widened posteriorly; 3-CU1 curved posteriorly; 1-CU1 : 2-CU1 = 1 : 17; 1-CU1 widened; 2-SR : 3-SR : r-m = 15 : 20 : 9; 2A sclerotized basally and membrane basad of it glabrous. Hind wing: SC + R1 nearly straight; SR unsclerotized and slightly sinuate, marginal cell subparallel-sided apically (fig. 29); 2-SC + R short (fig. 29).

Legs. — Hind coxa only finely punctate; tarsal claws without acute submedial lobe, but with small setose protuberance basally (fig. 37); length of femur, tibia and basitarsus of hind leg 6.4, 13.5, and 9.4 times their width, respectively; length of hind tibial spurs 0.4 and 0.5 times hind basitarsus; fore femur slender, distinctly curved; length of fore spur 0.3 times fore basitarsus; fore, middle and hind trochantelli with two, three, and two teeth, respectively.

Metasoma. — Length of first tergite 2.3 times its apical width, its surface smooth, medio-basally distinctly concave, remainder rather convex, but medio-posteriorly flat (fig. 35), its dorsal carinae absent; laterope very deep and large; second and third tergites smooth; length of ovipositor sheath 2.66 times fore wing, apex of ovipositor robust, with distinct notch; hypopygium strongly emarginate and sclerotized (figs. 33, 34).

Colour. — Black; legs, mandibles, tegulae, annellus, third-fifth antennal segments reddish-brown; hind tibia dorsally, and hind tarsus somewhat infuscated, remainder of antenna dark brown or black; pterostigma largely dark brown (paler basally); veins brown; wing membrane brownish.

Note. — Related to *Macrocentrus gibber* Eady & Clark, but *M. retusus* has hypopygium emarginate and strongly sclerotized, wing membrane darkened, fewer antennal segments, vein SR of hind wing somewhat curved, and body less sculptured. Differs from *M. hungaricus* Marshall e.g. by the straight ventral margin of clypeus, subbasal cell with glabrous part, and black metasoma. The only East Palaearctic *Macrocentrus* species with normal mandibles and long malar space is *M. bengtssoni* (Fahringer), but this species has first and second metasomal tergites distinctly sculptured and vein 2-SR longer than vein 3-SR.

**Macrocentrus oriens** spec. nov.

(figs. 43-51)

Material. — Holotype, ♀, (Zoological Institute, Leningrad): "Magadanskaja obl., 12 km S. Seimchana, Marshakov, 31.VII.1975. Paratype: 1♀, (Rijksmuseum van Natuurlijke Historie, Leiden), same label-data, but 30.VII.1975.

Type-locality: E. USSR, Magadan Territory, 12 km North of Seimchana.

Holotype, ♀, length of body 4.5 mm, of the fore wing 4.0 mm.

Head. — Antennal segments 34, length of third segment 1.5 times fourth segment, length of third, fourth, and penultimate segments 5.3, 3.7 and 2.0 times their width, respectively, apical segment without spine; length of maxillary palp 1.1 times height of head; length of eye in dorsal view 1.8 times temple; temple parallel-sided behind eyes, roundly narrowed posteriorly; OOL: diameter of ocellus: POL = 9 : 4 : 10; frons rather wide, flat; vertex punctulate, convex, somewhat flattened near stemmaticum; face rather flat, remotely finely punctate, medially slightly depressed; clypeus distinctly convex (fig. 44), remotely finely punctate, its width 3 times its height (fig. 51), its ventral margin nearly straight; length of malar space 0.8 times basal width of mandible; mandible twisted apically, its second tooth about half as long as first tooth, robust and both acute apically (figs. 49, 50).

Mesosoma. — Length of mesosoma 1.6 times its height; side of pronotum remotely rugose ventrally and medially, with distinct groove posteriorly, remainder largely smooth; prepectal carina complete; mesosternal sulcus rather deep and largely smooth; precoxal sulcus densely punctate-rugose, above sulcus partly rugose (fig. 48); remainder of mesopleuron remotely finely punctate; pleural sulcus distinctly crenulate dorsally, obsolescent ventrally; episternal scrobe wide and shallow; metapleural flange large and obtuse; metapleuron largely smooth medially, and rugose ventrally; notauli complete, widely crenulate, posterior third widely reticulate; mesoscutal lobes sparsely setose and punctulate; scutellum convex and smooth, side of scutellum largely smooth; surface of propodeum moderately rugose and medio-anteriorly depressed, its medial carina absent.

Wings. — Fore wing: subbasal cell evenly setose apically and without pigmented spot;  $r : 3\text{-SR} : \text{SR1} = 10 : 12 : 56$ ;  $r$  as wide as 3-SR; 1-SR + M and SR1 slightly curved; cu-a interstitial, inclivous, more oblique than 3-CU1, straight, narrow; 3-CU1 nearly straight posteriorly; 1-CU1 absent;  $2\text{-SR} : 3\text{-SR} : r\text{-m} = 15 : 10 : 8$ ; 2A sclerotized basally and membrane basad of it sparsely setose. Hind wing: SC + R1 slightly bent; SR unsclerotized and weakly curved, marginal cell parallel-sided medially and apically; 2-SC + R long transverse.

Legs. — Hind coxa punctulate, with strong transverse rugae baso-dorsally, and some striae apico-dorsally; tarsal claws without trace of submedial lobe and setose basally (fig. 45); length of femur, tibia and basitarsus of hind leg 6.3, 13.2 and 8.4 times their width, respectively; length of hind tibial spurs 0.35 and 0.4 times hind basitarsus; fore femur moderately slender, hardly curved; length of fore spur 0.3 times fore basitarsus; fore, middle and hind trochantelli all with two teeth; hind femur slightly narrowed apically (fig. 46).

Metasoma. — Length of first tergite 2.3 times its apical width, its surface distinctly finely longitudinally and regularly striate, apically smooth, medio-basally concave, remainder rather convex (fig. 47), its dorsal carinae absent; laterope deep and large; second tergite aciculate, but apical third smooth; medio-basal half of third tergite sparsely aciculate, obsolescent, remainder smooth; length of ovipositor sheath 0.78 times fore wing and 1.3 times metasoma, apex of ovipositor without notch, gradually tapering.

Colour. — Black(ish); mesoscutum, scutellum largely, pronotal sides dorsally, mandibles and clypeus reddish-brown; mesopleuron dark reddish-brown medially; two basal segments of maxillary palp and labial palp, scapus, pedicellus (largely) rather dark brown; annellus, tegulae, apex of pedicellus and legs, brownish-yellow; tarsi somewhat infuscated; veins largely brown; pterostigma medially and posteriorly and parastigma dark brown, remainder of pterostigma pale yellowish; wing membrane subhyaline.

Variation. — The paratype has 34 antennal segments, mesosternal sulcus rather shallow, transverse sculpture of hind coxa obsolescent, length of body 4.1 mm, of fore wing 3.9 mm, length of ovipositor sheath 0.73 times fore wing, and length of first tergite 2.1 times its apical width.

Note. — *Macrocentrus oriens* spec. nov. belongs to the *collaris*-group: tarsal claws without lobe, fore tibial spur about 0.3 times fore basitarsus, fore femur slender, length of ovipositor sheath 0.8 times fore wing or less, and ovipositor without distinct subapical notch. *M. oriens* can be separated from the other Palaearctic species of that group as follows:

1. Fourth tarsal segment very slender (fig. 41); claws very large (fig. 41); metasoma almost completely smooth; prepectal carina largely absent; clypeus transverse (fig. 42); antennal segments about 27 .....  
..... *amphigenes* Alexeev
- Fourth tarsal segment normal, robust (figs. 47, 59); claws medium-sized (figs. 45, 59); metasoma more or less finely aciculate (fig. 63); prepectal carina (almost) complete; clypeus variable, if strongly transverse (fig. 61) then number of antennal segments exceeding 29 ..... 2
2. Clypeus comparatively flat (fig. 60) and transverse (fig. 61); second tooth

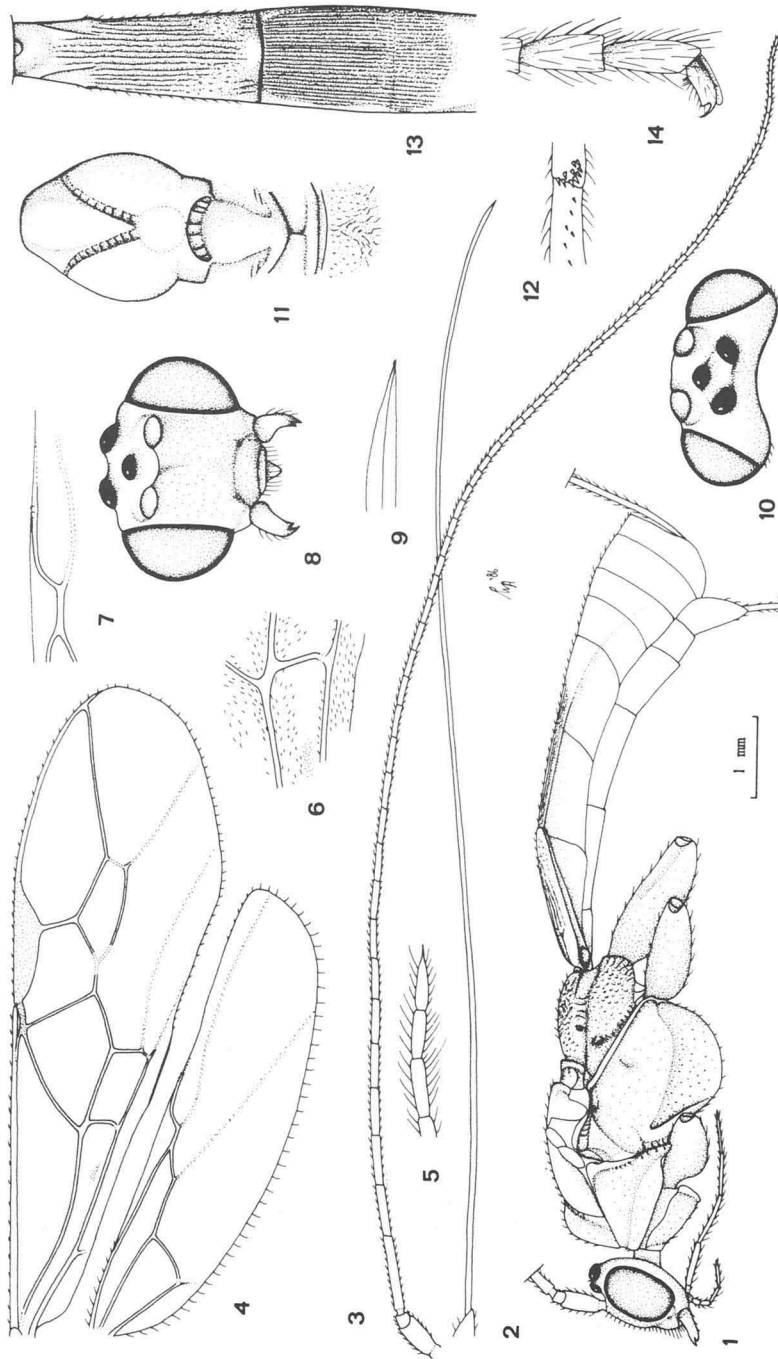
- of mandible short, its length about  $\frac{1}{3}$  times length of first tooth (fig. 57); third metasomal tergite smooth, at most with some faint rudimentary sculpture (fig. 63); hind trochantellus infuscated basally; mesosternal sulcus largely absent or obsolescent; maxillary palp about as long as height of head or shorter; hind femur slender (fig. 62) . . . . . *collaris* (Spinola)
- Clypeus convex (figs. 44, 52) and less transverse (figs. 51, 56); second tooth of mandible medium-sized, its length about half length of first tooth (figs. 50, 55); third tergite at least with some aciculation; hind trochantellus yellowish; mesosternal sulcus present, usually largely rather deep; length of maxillary palp 1.1-1.3 times height of head (unknown for *brevicaudifer*); hind femur variable . . . . . 3
3. Length of first metasomal tergite about 3 times its apical width (fig. 38); precoxal sulcus only punctate; first-third tergites (except apex of third) rather strongly striate (fig. 38); ovipositor sheath about as long as metasoma . . . . . *brevicaudifer* Van Achterberg
- Length of first tergite 2.3 times its apical width or less (figs. 47, 63); precoxal sulcus densely rugose (fig. 48) or largely smooth and at most faintly rugose; first – third tergites weaker, and less sculptured (fig. 47); length of ovipositor sheath about 0.7 or about 1.3 times length of metasoma . . . . . 4
4. Length of ovipositor sheath about 0.4 times fore wing and about 0.7 times length of metasoma; precoxal sulcus largely smooth, at most faintly rugose; scapus and pedicellus yellowish; vein 2-SR of fore wing comparatively short (fig. 53); vein cu-a of fore wing similarly oblique as vein 3-CU1; hind femur more slender (fig. 54); (West Palaearctic) . . . . .
- . . . . . *equalis* Lyle
- Length of ovipositor sheath about 0.8 times fore wing and about 1.3 times length of metasoma; precoxal sulcus densely rugose (fig. 48); scapus and pedicellus brown; vein 2-SR of fore wing longer (fig. 43); vein cu-a of fore wing distinctly more oblique than vein 3-CU1; hind femur less slender (fig. 46); (East Palaearctic) . . . . . *oriens* spec. nov.

## ACKNOWLEDGEMENTS

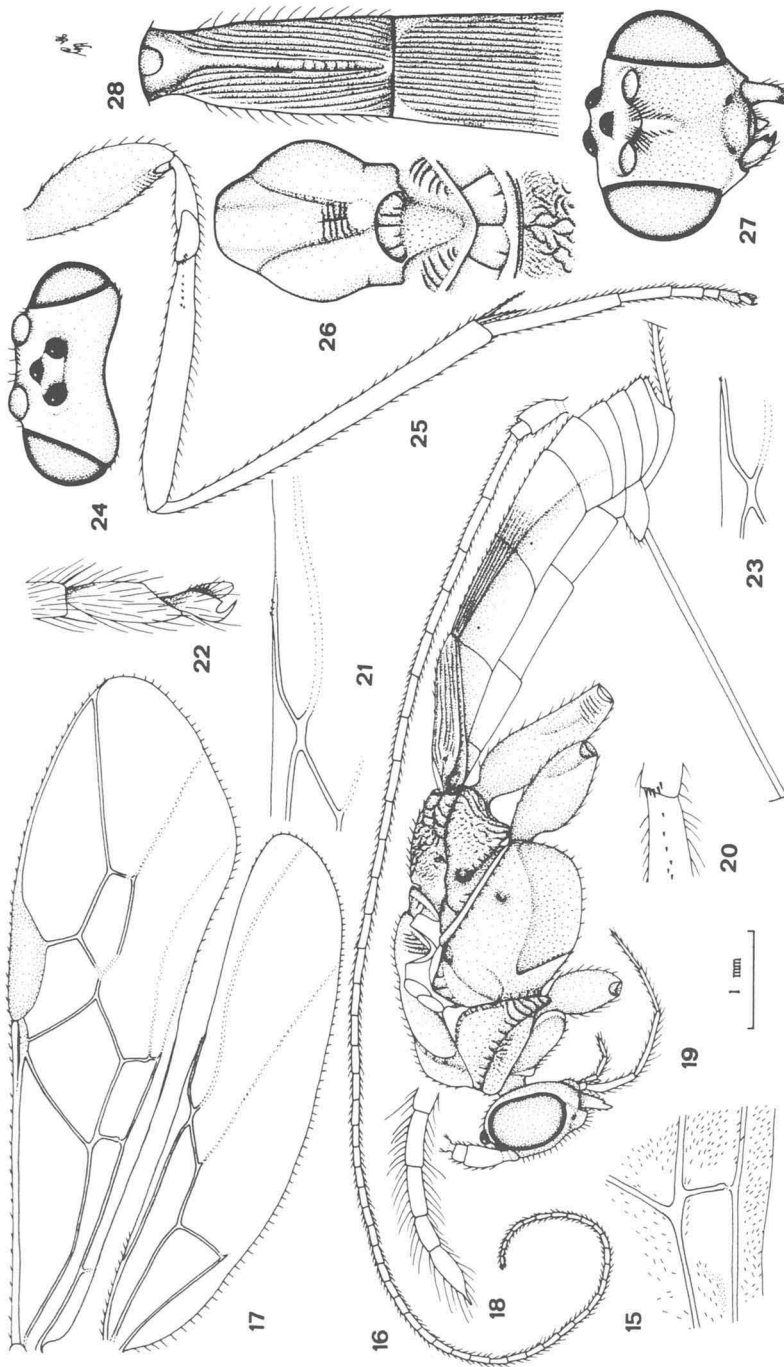
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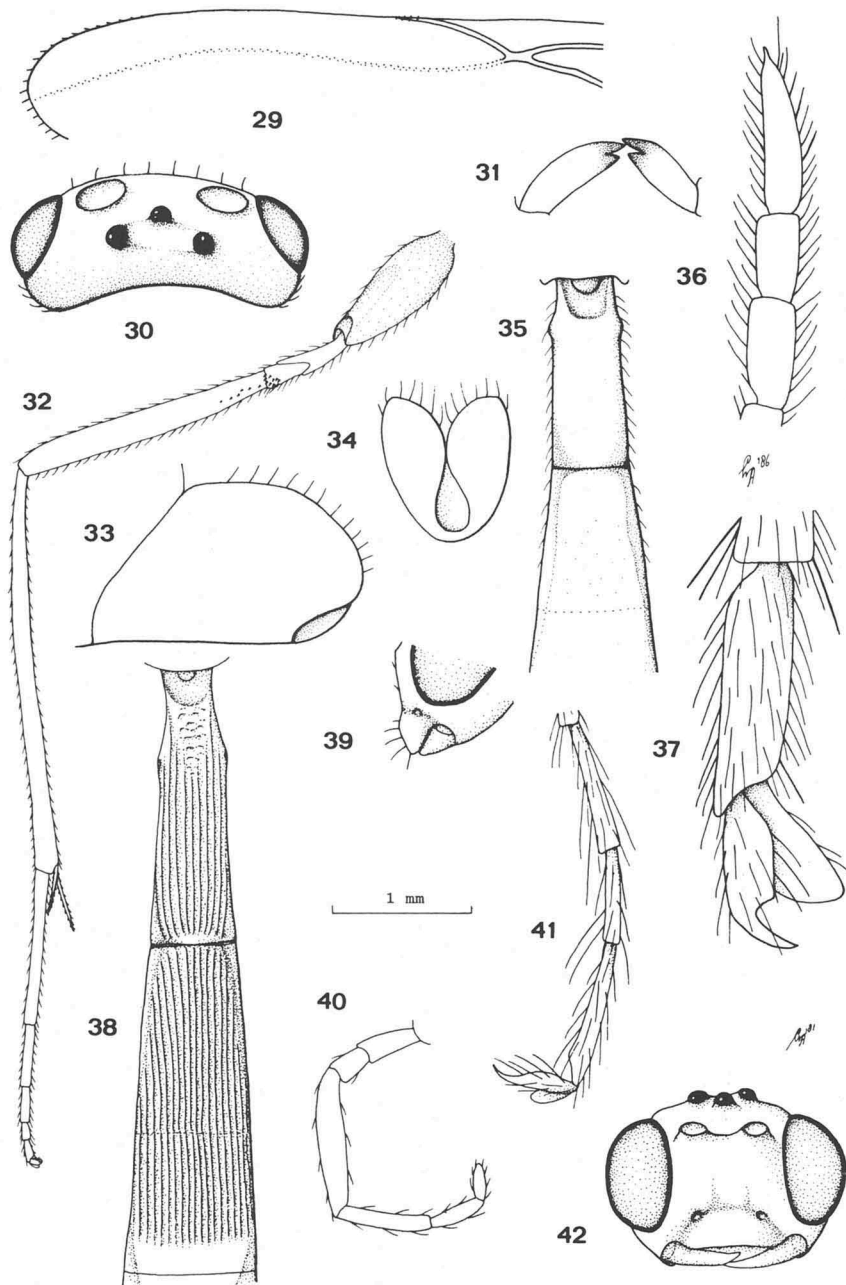
Papp, J., 1985. Braconidae (Hym.) from Korea VII. – Acta Zool. Hung. 31: 341-365, figs. 1-37.



Figs. 1-14. *Macrocentrus spilotus* spec. nov., ♀, holotype, 1, habitus, lateral aspect; 2, ovipositor; 3, antenna; 4, wings; 5, apex of antenna; 6, detail of apical quarter of subbasal cell of fore wing; 7, detail of vein SC + R1 of hind wing; 8, head, frontal aspect; 9, apex of ovipositor; 10, head, dorsal aspect; 11, mesosoma, lateral aspect; 12, hind trochantellus; 13, first-third metasomal tergites, dorsal aspect; 14, inner hind claw. 1-4: scale-line (= 1 ×); 5, 9, 14: 5 ×; 6, 7, 12: 2 ×; 8, 10, 11, 13: 1.5 ×.

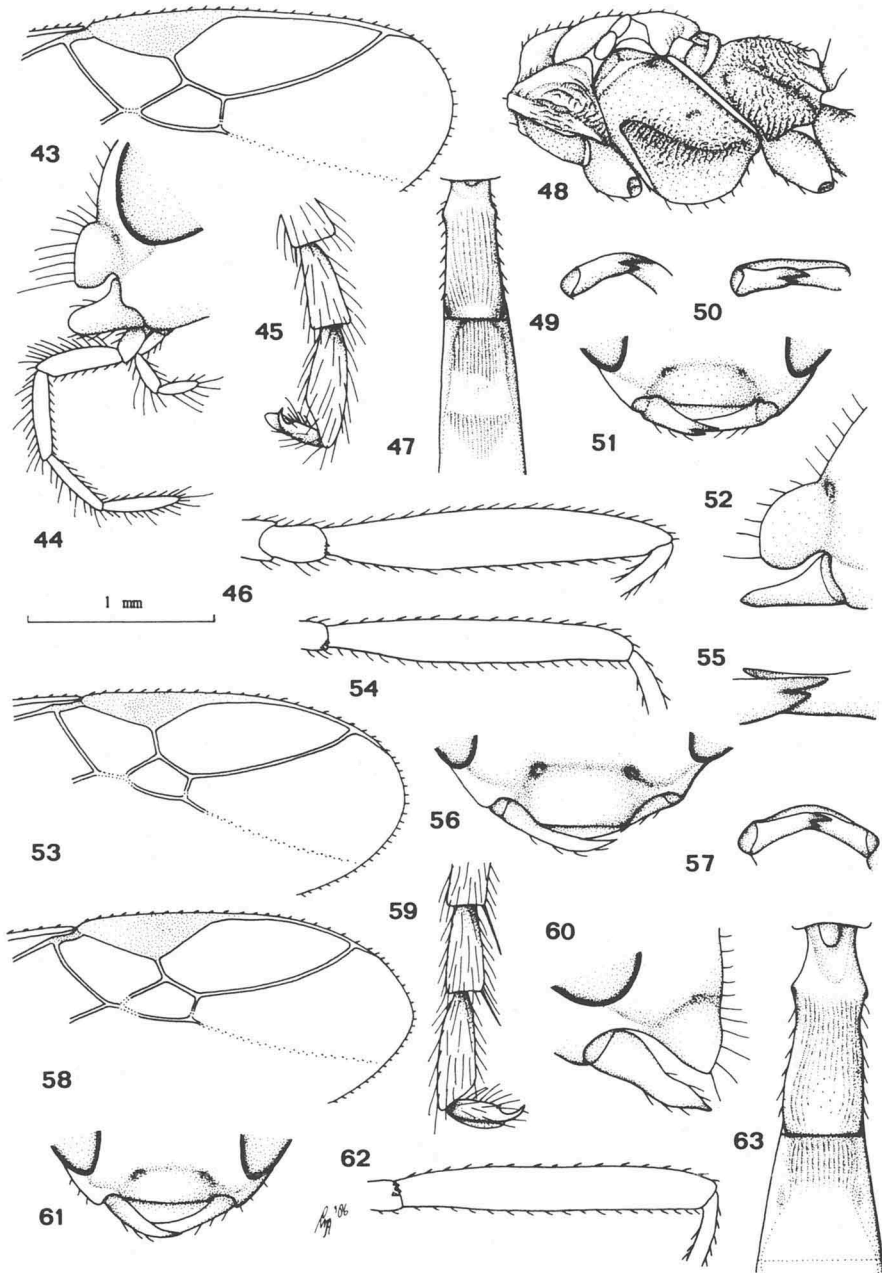


Figs. 15-28, *Macrocentrus alox* spec. nov., ♀, holotype. 15, detail of apical quarter of subbasal cell of fore wing; 16, antenna; 17, wings; 18, apex of antenna; 19, habitus, lateral aspect; 20, part of hind trochantellus; 21, detail of vein SC + R1 of right hind wing; 22, outer hind claw; 23, detail of vein SC + R1 of left hind wing; 24, head, dorsal aspect; 25, hind leg; 26, mesosoma, dorsal aspect; 27, head, frontal aspect; 28, first and second metasomal tergites, dorsal aspect. 16, 17, 19, 25: scale-line (= 1 ×); 18, 22: 5 ×; 24, 26-28: 1.5 ×.

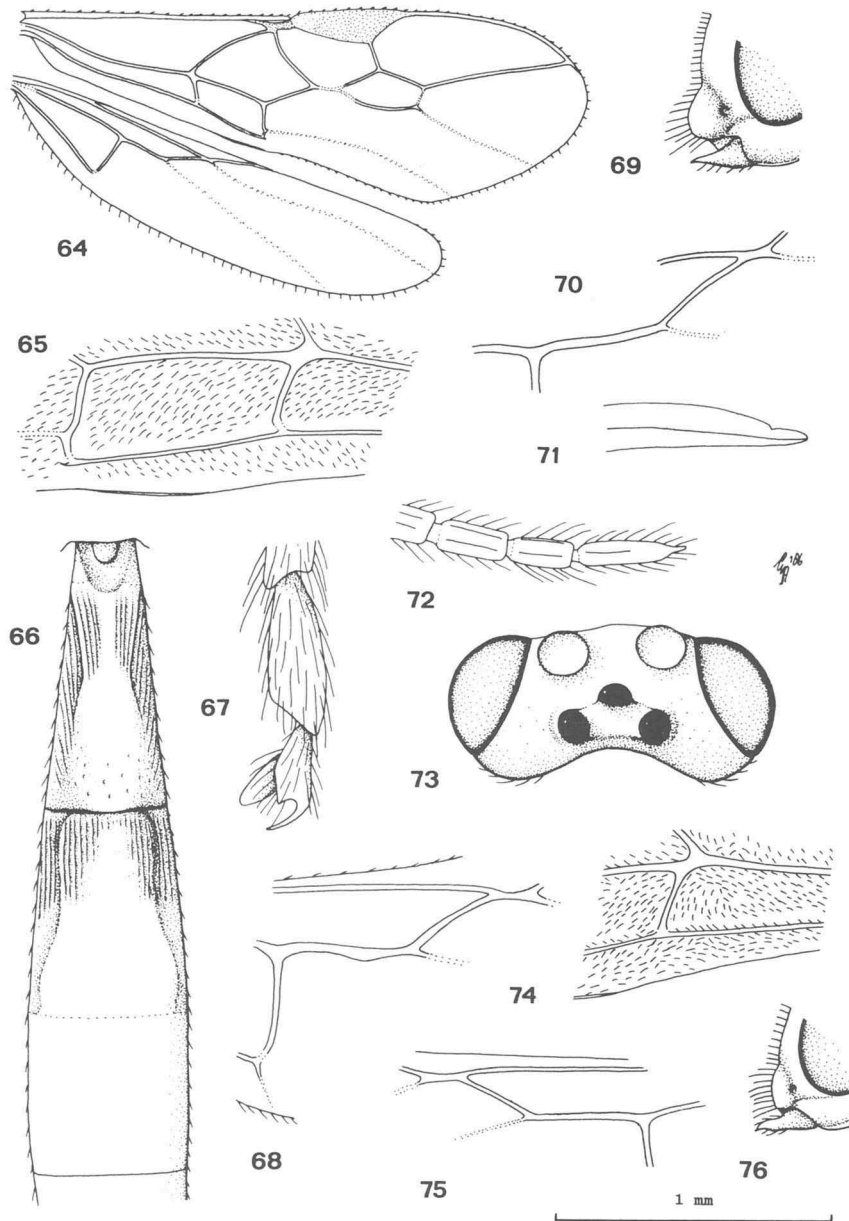


Figs. 29-31, 33-37, *Macrocentrus retusus* spec. nov., ♀, holotype, 29, detail of marginal cell of hind wing; 30, head, dorsal aspect; 31, mandibles, ventral aspect; 33, hypopygium, lateral aspect, 34, hypopygium, posterior aspect; 35, first and second metasomal tergites, dorsal aspect; 36, apex of antenna; 37, outer hind claw. Fig. 32, *Macrocentrus spilotus* spec. nov., ♀, holotype, hind leg. Fig. 38, *Macrocentrus brevicaudifer* Van Achterberg, ♀, holotype, first-third metasomal tergites, dorsal aspect. Figs. 39-42, *Macrocentrus amphigenes* Alexeev, ♀, paratype. 39, clypeus, lateral aspect; 40, maxillary palp; 41, third-fifth hind tarsal segments; 42, head, frontal aspect. 29, 30: scale-line (= 1 ×); 31, 33, 34, 38, 39, 42: 2 ×; 32: 0.6 ×; 35: 0.7 ×; 36, 37, 40, 41: 5 ×.

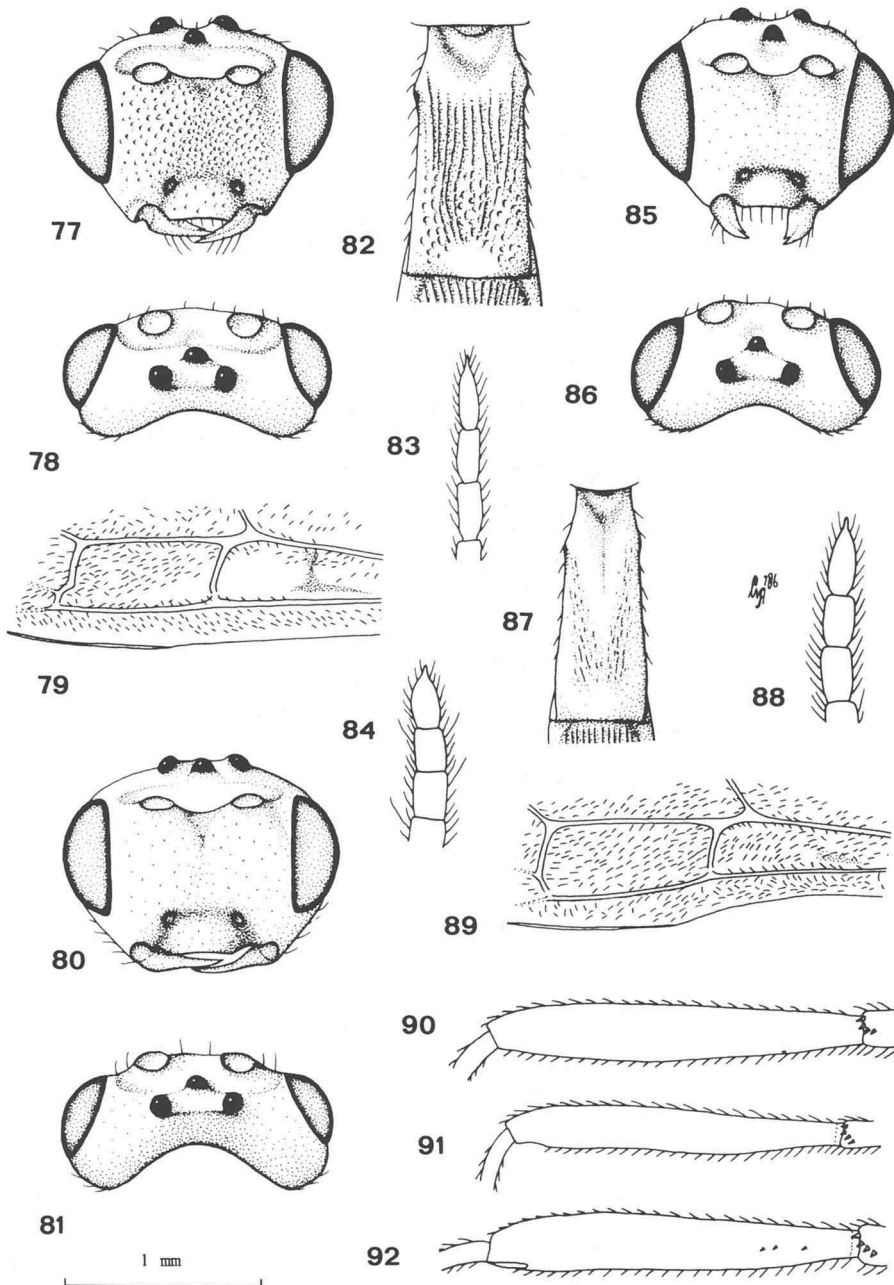




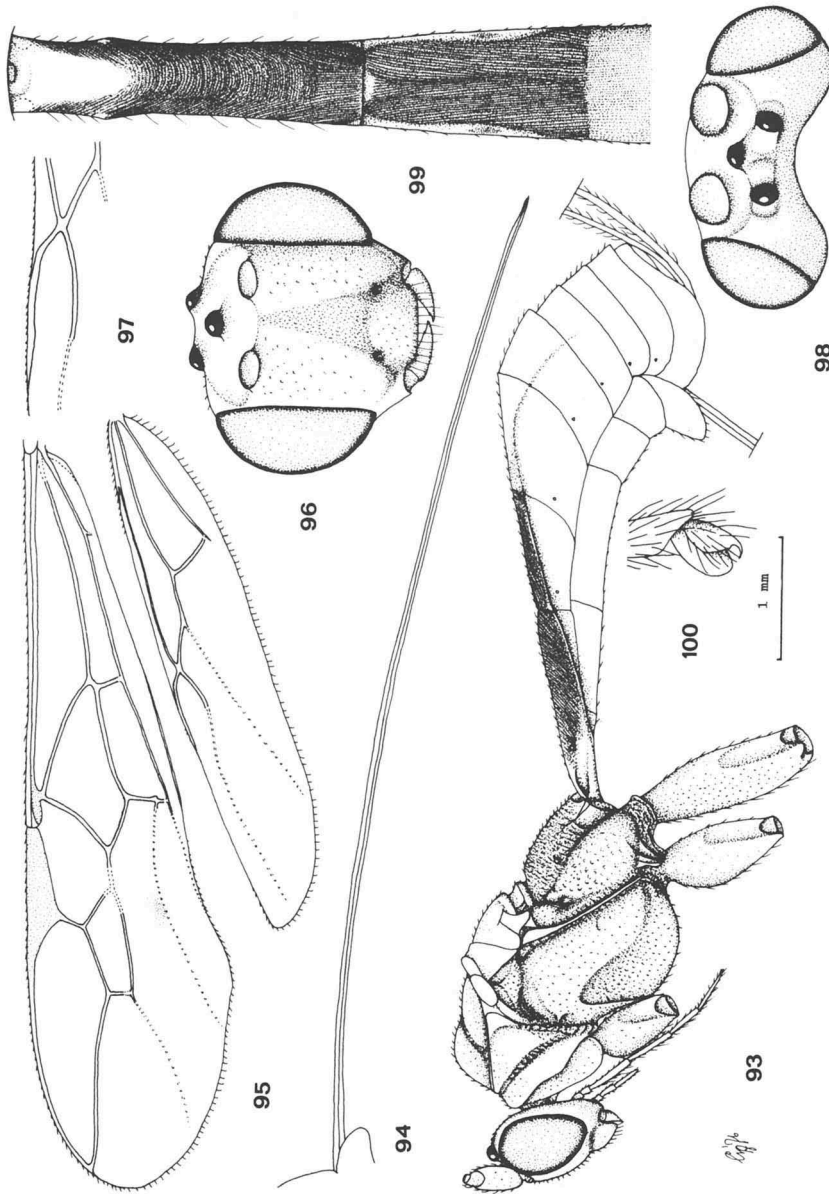
Figs. 43-51, *Macrocentrus oriens* spec. nov., ♀, holotype (but 50 of paratype). Figs. 52-56, *Macrocentrus equalis* Lyle, ♀, Germany. Figs. 58-63, *Macrocentrus collaris* (Spinola), ♀, Italy, Gargnano. 43, 53, 58, detail of second submarginal cell of fore wing; 44, 52, 60, lateral aspect of clypeus; 45, 59, inner and outer hind claw, respectively; 46, 54, 62, hind femur; 47, 63, first and second metasomal tergites, dorsal aspect; 48, mesosoma, lateral aspect; 49, 50, 55, 57, mandibles, ventral aspect; 51, 56, 61, clypeus, frontal aspect, 43, 47, 48, 53, 58: scale-line (= 1 ×); 44, 56, 60: 2.5 ×; 45: 3.8 ×; 46, 49-51, 54, 57, 61-63: 1.5 ×; 52, 55, 59: 2.8 ×.



Figs. 64-75, *Macrocentrus mellicornis* spec. nov., ♀, 64, 65, 67, 69-71 of holotype, 66, 68, 72-74 of paratype. Figs. 75, 76, *Macrocentrus nitidus* (Wesmael), ♀, Netherlands, Asperen; 64, wings; 65, 74, detail of vein cu-a and apex of subbasal cell of fore wing; 66, first-third metasomal tergites, dorsal aspect; 67, outer hind claw; 68, 70, 75, detail of vein 1-M of hind wing; 69, 76, clypeus, lateral aspect; 71, apex of ovipositor; 72, apex of antenna; 73, head, dorsal aspect, 64: 0.3 ×; 65, 69, 70, 75, 76: scale-line (= 1 ×); 66: 0.7 ×; 68, 73, 74: 0.9 ×; 71: 2.5 ×; 72: 2.3 ×.



Figs. 77-79, 82, 83, 92, *Macrocentrus marginator* (Nees), ♀, Netherlands, Wijster. Figs. 80, 81, 84, *Macrocentrus townesi* Van Achterberg & Haeselbarth, ♀, holotype. Figs. 85-89, 91, *Macrocentrus nitidus* (Wesmael), ♀, Netherlands, Wijster, but 91 from Asperen. Fig. 90, *Macrocentrus mellicornis* spec. nov., ♀, holotype, 77, 80, 85, head, frontal aspect; 78, 81, 86, head, dorsal aspect; 79, 89, detail of vein cu-a and apex of subbasal cell of fore wing; 82, 87, first metasomal tergite, dorsal aspect; 83, 84, 88, apex of antenna; 90-92, hind femur, lateral aspect. 77-82, 90, 92: scale-line (= 1 ×); 83, 84, 88: 2.5 ×; 85-87, 89, 91: 1.5 ×.



Figs. 93-99, *Aulacocentrum philippinense* (Ashmead), ♀, holotype. 93, habitus, lateral aspect; 94, ovipositor; 95, wings; 96, head, frontal aspect; 97, detail of vein SC + R1 of hind wing; 98, head, dorsal aspect; 99, first and second metasomal tergites, dorsal aspect. Fig. 100, *Macrocentrus rhyacioniae* Watanabe, ♀, Japan, Hirakura, outer hind claw. 93-95: scale-line (= 1 ×); 96-98: 2 ×; 100: 5 ×.