

A revision of the genus *Aulacocentrum* Brues (Hymenoptera: Braconidae: Macrocentrinae) from China

J. He & C. van Achterberg

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The species of the genus *Aulacocentrum* Brues (Braconidae: Macrocentrinae) from China are revised and keyed. Two new species are described and illustrated.

Introduction

The genus *Aulacocentrum* Brues, 1922, of the subfamily Macrocentrinae Foerster, 1862 (Braconidae), is a rather small genus with three species described from the Palaearctic and Oriental regions. A revision of the genus is planned to be published soon by the second author. It can be separated from the closely related genus *Macrocentrus* Curtis, 1833, by the following characters (van Achterberg, 1993): first metasomal tergite (at least partly) distinctly transversely striate; length of first tergite 3-8 times its apical width; vein SR of hind wing moderately to strongly bent; vein SC+R1 of hind wing abruptly bent; fore femur moderately long setose dorsally, somewhat shorter than ventrally; and length of inner hind tibial spur 0.3-0.5 times length of hind basitarsus. Previous records indicate that *Aulacocentrum* species are mainly endoparasites of larvae of Pyralidae (Lepidoptera). In this paper three species of the genus are reported from China; two are new to science.

For the terminology used in this paper, see van Achterberg (1988), and for a key to the genera of Macrocentrinae in the Palaearctic region, see van Achterberg (1993).

Key to the Chinese *Aulacocentrum* species

1. Vein SR of hind wing strongly bent basally, at constriction nearly touching the frontal wing margin (figs 8, 13, 18); marginal cell of hind wing strongly widened basally, basally much wider than apically (figs 8, 18); length of first metasomal tergite 3.0-5.5 times its apical width (figs 12, 23); head black; antenna with pale median segments. China (Guangxi); India; Indonesia; Malaysia; Singapore
..... *A. seticella* spec. nov.
- Vein SR of hind wing moderately bent basally, at constriction distinctly separated from frontal wing margin (figs 24, 29, 37); marginal cell of hind wing moderately widened basally, basally about as wide as apically (fig. 29); length of first tergite usually 3.2-4.5 times its apical width (fig. 36); colour of head and of antenna variable 2

2. Scapus dark brown, similarly coloured as third antennal segment or distinctly darker; hind trochantellus with 5-10 teeth, usually in two or three rows (figs 35, 42); vein SC+R1 hind wing less bent (fig. 37); clypeus basally less convex (fig. 38) and subquadrate (fig. 39); mesoscutum and apex of first metasomal tergite of ♀ completely yellowish; malar space comparatively short (fig. 38). Oriental and Palaearctic China: widespread (fig. 1) *A. confusum* spec. nov.
- Scapus at least partly ivory or pale yellowish ventrally, much paler than dark brown or blackish third antennal segment; hind trochantellus with 3-5 teeth, in one row or nearly so (fig. 41); vein SC+R1 of hind wing more bent (fig. 24); clypeus basally more convex (fig. 26) and more transverse (fig. 25); mesoscutum and apex of first tergite of ♀ at least partly dark brown or blackish; malar space longer (fig. 26). Oriental & East Palaearctic regions; China: widespread (fig. 1) *A. philippinense* (Ashmead)

Aulacocentrum seticella van Achterberg & He, spec. nov.
(figs 2-23, 40)

Material.— Holotype, ♀ (RMNH), "Malaysia-SE. Sabah, nr Danum Valley Field Centre, W0N1, c. 140 m, Mal. trap 13, 24.ii-24.iii.1987, C. v. Achterberg, RMNH". Paratypes: 11 ♀♀ + 4 ♂♂: 1 ♀ (RMNH), with same data as holotype; 2 ♀♀ (RMNH, FRC), "Malaysia-SE. Sabah, nr Long Pa Sia (west), c 1000 m, 25.xi-8.xii.1987, Mal. trap 1b, C. v. Achterberg, RMNH'87"; 1 ♀ (RMNH), "RMNH N. Borneo Exp., Sabah, Tawau Zone, 4°58' N, 117°48' E, 60 km W of Lahad Datu, Danum Valley Field Centre", "edge lowland rainforest, 18-28.x.1987, at light, 150 m, J. Huisman & R. de Jong"; 2 ♀♀ + 1 ♂ (MCZ), "Ditalahab, W. Java, vi., Sternitzky Coll."; 1 ♀ (RMNH), "Pematang Siantar, Sumatra, June'37, C.T. & B.B. Brues"; 1 ♀ (BORIF), "Tlawa [= C Java, near Gedung Jati, 7°10' S, 110°48'E], L.G.E. Kalshoven, V0 1902, 10.ii. [19]36", "gerong bladpeen [= plant-hole of carrot]"; 1 ♀ (USNM), "Singapore, Coll. Baker"; 2 ♀♀ + 2 ♂♂ (USNM, RMNH), "Dehra Dun, U.P., S.N. Chatterjee, 4.vii.1933, 845A", "Parasitic on *Pachyzancla* sp.", "Defoliating *Achyranthes aspera*", "29b"; 1 ♂ (ZAU), "China: Guangxi: Rongshui (25°0' N, 109°2' E), 26.vii.1980, Wei Dai-qun, No. 870154".

Holotype, ♀, length of body 9.7 mm, of fore wing 8.1 mm.

Head.— Antennal segments 51, length of third antennal segment 1.3 times fourth segment, length of third, fourth and penultimate segments 7.0, 5.2, and 3.5 times their width, respectively, apical segment with spine (fig. 6); length of antenna about twice length of fore wing; length of maxillary palp 1.7 times height of head; length of eye in dorsal view 9.0 times temple; temple extremely narrow, directly narrowed posteriorly, punctulate (fig. 9); OOL:diameter of ocellus:POL = 4:7:9; frons very narrow, smooth, shallowly impressed; vertex punctulate; face sparsely punctulate laterally, more densely medially, about as long as wide; clypeus strongly convex (fig. 2), distinctly separated from face and rather transverse (fig. 10), sparsely punctulate, its ventral margin straight; length of malar space 1.1 times basal width of mandible; mandible strongly twisted, both teeth acute and long.

Mesosoma.— Length of mesosoma 1.4 times its height; side of pronotum crenulate medially, remainder sparsely punctulate; prepectal carina very strong, complete; precoxal sulcus slightly impressed, punctate, with interspaces about equal to diameter of punctures (fig. 2); mesopleuron somewhat less densely punctate; metapleuron coarsely punctate, near its anterior margin smooth, with some crenulae, and ventrally nearly reticulate; metapleural flange acute, triangular with some rugae; notauli complete, deep, crenulate, posteriorly with a longitudinal median carina (fig.

11); mesocutal lobes sparsely punctulate, nearly smooth; middle lobe more convex than lateral lobes; scutellum sparsely punctulate; scutellar sulcus deep, with three carinae; surface of propodeum anteriorly densely punctate (rugose-)reticulate, mainly transversely rugose posteriorly (fig. 2).

Wings.— Fore wing: subbasal cell glabrous apically, and with elongate pale yellowish spot; $r:3-SR:SR1 = 15:43:83$; $m-cu:2-SR+M = 14:8$; $2-SR:3-SR:r-m = 25:43:15$; $cu-a$ vertical, distinctly postfurcal, $1-CU1$ 0.8 times $cu-a$; first subdiscal cell about twice as long as wide, with some setae (fig. 14). Hind wing: marginal cell strongly widened basally, its maximum subbasal width 9 times its minimum width (figs 8, 13); SR nearly reaching frontal margin of hind wing; marginal cell evenly sparsely setose (fig. 13); $1r-m:1-M:cu-a = 15:17:18$; $cu-a$ vertical, slightly bent towards wing base posteriorly; $2-SC+R$ vertical (fig. 13).

Legs.— Hind coxa punctulate; tarsal claws with basal lobe (fig. 5); trochantelli with two teeth in a row (figs 7, 40); length of femur, tibia and basitarsus of hind leg 8.4, 17.0 and 11.4 times their width, respectively (fig. 40); length of hind tibial spurs 0.35 and 0.4 times hind basitarsus; length of fore femur 12.4 times its width (fig. 7).

Metasoma.— Length of first tergite 5.0 times its apical width, its surface densely, finely and transversely striate, with some punctures, but in front of spiracles largely smooth, and apically slightly obliquely striate (fig. 12); second tergite finely obliquely striate, its length about 3 times its apical width; basal half of third tergite finely, longitudinally striate, remainder smooth; length of ovipositor sheath 1.24 times fore wing; hypopygium densely setose.

Colour.— Yellowish-brown; head, 12 basal antennal segments (but scapus and pedicellus partly pale brownish), 21st and following antennal segments, humeral plate, pterostigma (but basally and narrowly anteriorly yellowish-brown), veins (but vein $1-R1$ of fore wing yellowish), hind femur apically, apical 0.6 of first metasomal tergite, second and following tergites dorsally, apical quarter of metasoma ventrally, and ovipositor sheath, dark brown or blackish; palpi infusate basally, remainder yellowish; 13th-20th antennal segments, tegula, fore and middle legs largely, base of first tergite, basal 0.7 of metasoma ventrally, base and apical third of hind tibia, hind tarsus and spurs, pale yellowish or whitish; wing membrane slightly infusate, without distinct patch near vein $CU1a$ of fore wing.

Variation.— Antennal segments of ♀ 50(1), 51(1) or 52(1); length of body 7.2-10.3 mm, of fore wing 6.8-10.0 mm; length of eye in dorsal view 9-12 times temple; length of first metasomal tergite [3.3]-4.6-5.8 times its apical width; length of ovipositor sheath 1.22-1.33 times fore wing. The specimens from India are rather aberrant; the mesoscutum is infusate, vein $2A$ of fore wing is less sclerotized, the first tergite is yellowish apically and 3.3-3.8 times its apical width (in other paratypes 4.6-5.8 times). The latter may be related to the comparatively small size of the specimens.

Cocoon.— Dark brown, spindle-shaped, with some loose silken threads.

Biology.— Parasite of *Pachyzancla* spec. (Pyrallidae: Pyraustinae).

Notes.— This new species is similar to the Oriental *A. pedicellatum* Brues, 1922, and the Indian *A. longitergiae* Sharma, 1978, but can be separated as follows:

1. Widened subbasal part of marginal cell of hind wing completely setose (fig. 13); length of first tergite 3-6 times its apical width; wing membrane hyaline; mesosoma reddish-brown (but may be infusate); length of body usually less than 11 mm

- Widened subbasal part of marginal cell of hind wing largely glabrous, rarely only medially glabrous (figs 24, 37); length of first tergite 5-8 times its apical width; apical half of wing membrane infusate; mesosoma dark reddish-brown; length of body frequently more than 11 mm *A. pedicellatum* Brues
 - 2. Flagellum with pale segments; length of first metasomal tergite 3.0-5.8 times its apical width; head black; hind tibia partly dark brown or blackish *A. seticella* spec. nov.
 - Flagellum unicoloured, without pale segments (only ♂ known); length of first tergite about 6 times its apical width; head and hind tibia reddish-brown *A. longitergiae* Sharma
- Note. The description of *Aulacocentrum longitergiae* by Sharma (1978) is incomplete, the holotype is unavailable (according to the author severely damaged by herself) and the ♀ is unknown; so the interpretation of this species is provisional.

Aulacocentrum confusum He & van Achterberg, spec. nov.
(figs 27-39, 42)

Macrocentrus japonicus; Chu, 1935: 19 (host: *Diaphania pyloalis*).

Macrocentrus philippinensis; Shenefelt, 1969: 168 (China: Northeast China; Taiwan (in part)); Chu et al., 1978: 61 (♀ ♂, description, fig. China: Inner Mongolia; Jiangsu; Zhejiang. Hosts: *Diaphania pyloalis*; *Botyodes diniasalis*); He & Wang, 1987: 410 (China: Hebei, etc. Additional host: *Diaphania nigropunctalis* (in part)).

Aulacocentrum philippinensis; You & Zhou, 1990: 256 (♀ ♂. Syn., description, figs. China: Hunan: Yue yang; Guangxi: Rongshui. Host: *Botyodes diniasalis*); You et al., 1990: 42 (♀ ♂, description, figs, host. China: Hunan; Guangxi); He et al., 1992: 1256 (♀, description, fig., hosts. China: Heilongjiang; Liaoning; Inner Mongolia; Hubei; Jiangsu; Zhejiang; Jiangxi; Hubei; Sichuan; Taiwan (in part)).

Material.— Holotype, ♀ (ZAU), "China: Zhejiang: Hangzhou (30°2' N, 120°1' E), 28.v.1957, Zhou Zheng-nan, ex *Ostrinia furnicalis* Guenée, No. 5702.14". Paratypes (59 ♀♀ + 50 ♂♂): 1 ♀ (ZAU), "Heilongjiang: Liangshui (46°5' N, 131°8' E), 24.vii.1977, He Jun-hua, No. 770510"; 2 ♀♀ + 3 ♂♂ (ZAU, 1 ♀ RMNH) "Liaoning: Tieling (43°3' N, 123°8' E), 18.viii.1977, He Jun-hua, No. 771008, 771022, 771025, 771037, 771068"; 1 ♀ (ZAU), "Jiangsu: Nanjing (32°0' N, 180°7' E), 29.vii.1936, Chu Joo-tso, ex *Diaphania pyloalis* (Walker)"; 1 ♀ (ZAU), "Jiangsu: Nanjing, 1981, Peng Qu-xian, ex *Ostrinia furnicalis* Guenée, No. 824917"; 2 ♀♀ + 1 ♂ (ZAU), "Jiangsu: Nanjing, 1981, Peng Qu-xian, ex leaf roller, No. 824918"; 2 ♀♀ (ZAU), "Jiangsu: Rugao (32°4' N, 120°5' E), 1991, Huang Min, No. 816267"; 5 ♀♀ + 2 ♂♂ (ZAU), "Zhejiang: Hangzhou, 19.vi.1933, 25.viii.1935, 24.ix.1935, 9.vi.1947, Chu Joo-tso, No. 65021.5, 65023.4"; 1 ♀ (RMNH), "PRC, Hangzhou in Zhejiang, 10.v.1956, He Jun-hua", "Host: *Diaphania pyloalis* (Walker), No. 5633.8"; 4 ♀♀ + 20 ♂♂ (ZAU, 1 ♀ + 2 ♂♂ RMNH), "Zhejiang: Hangzhou, vii.1954, 23.viii.1956, 16-29.v.1950, He Jun-hua, Zhou Zheng-nan, No. 5702.2, 5721.5, 5770.11"; 4 ♀♀ + 2 ♂♂ (ZAU), "Zhejiang: Hangzhou, v.1962, 15.vii.1965, 22.vii.1974, and 4.ix.1979, He Jun-hua, Rui Kai-ning, Zhu Kun-yan, No. 65047.2, 65047.17, 740387, 790987, 800130, 844828"; 2 ♀♀ + 1 ♂ (ZAU, RMNH), "Zhejiang: Hangzhou, 10.ix.1956, Xia Ye-yang, No. 5622.30"; 2 ♀♀ (ZAU), "Zhejiang: Hangzhou, 16.iv.1958, Zhou Zheng-nan, No. 5831.2"; 1 ♀ (ZAU), "Zhejiang: Changhua (30°1' N, 119°2' E), 29.v.1957, Xu Xing-sheng"; 1 ♂ (ZAU), "Zhejiang: Yuhang (30°4' N, 120°3' E), 1.ix.1972, Xu Tian-sen, ex *Algedonia coclisalis* Walker, No. 72011.12"; 1 ♀ (ZAU), "Zhejiang: Zhenghai (29°9' N, 121°7' E), 2.viii.1975, He Jun-hua, No. 750336"; 1 ♀ (ZAU), "Anhui: Anqing (30°5' N, 117°0' E), 1981, 1984, Chen Rong-hai, No. 845750, 845754, 871138"; 2 ♀♀ + 1 ♂ (ZAU), "Anhui: Yuexi (30°8' N, 116°3' E), 25.vii.1981, Yang Fuan, No. 820538"; 10 ♀♀ (ZAU, 2 ♀♀ RMNH), "Jiangxi: Jiujiang (29°7' N, 115°9' E), 7.ix.1978, Zhang Jin-guang, No.790581, 816197; 1 ♀ (ZAU), "Hubei: Enshi (30°2' N, 109°4' E), 1975, Huazhong, Agric. Univ., No. 750031"; 1 ♀ (ZAU), "Hubei: Fang Xian (30°2' N, 101°7' E), 28.vi.1980, Mao Xiao-yuan, No. 870204"; 2 ♀♀ (ZAU), "Hubei: Jiangling (30°3' N, 112°1' E), 1979, Zong Liang-bing, No. 870120"; 8 ♀♀ + 2 ♂♂ (ZAU; 2 ♀♀ + 2 ♂♂ in RMNH), "Jiangling, 20.ix.1981, Chen Ming-feng, No. 824688"; 2 ♀♀ + 2 ♂♂ (ZAU), "Hubei: Lichuan (30°3' N, 108°9' E),

1979, Min Guang-pei, No. 870409, 870425, 870427"; 1 ♀ (ZAU), "Hubei: Mianyang (30°3' N, 113°4' E), 2.viii.1965, Mao Xiao-yuan, No. 870205"; 1 ♀ (ZAU), "Hubei: Shennongjia (31°7' N, 110°6' E), 18.vii.1980, Mao Xiao-yuan, No. 870207"; 2 ♀ ♀ + 2 ♂ ♂ (ZAU), "Hubei: Wuchang (30°5' N, 114°3' E), 21.vi.1974, 1.vii.1987, Shi Shang-bai, No. 750014, 750028, 870092"; 2 ♂ ♂ (ZAU), "Hubei: Zhijiang (30°4' N, 111°7' E), 19.vi.1979, Zong Liang-bing, No. 870115, 870119"; 1 ♂ (ZAU), "Hubei: Zhushan (32°2' N, 110°3' E), 22.ix.1983, Mao Xiao-yuag, No. 870206"; 1 ♀ (ZAU), "Hunan: Liuyang (28°1' N, 113°6' E), viii.1984, Tong Xin-wang, No. 896361"; 1 ♀ (ZAU), "Sichuan: Wan Xian (30°8' N, 108°3' E), 1958, Wan Xian Agric. Experiment Station, ex *Ostrinia furnicalis* Guenée, No. 5824.4; 1 ♀ + 1 ♂ (ZAU), "Guangxi: Lipu (24°5' N, 110°4' E), 16.v.1980, x.1982, Mei Yi, No. 826516, 870152"; 1 ♂ (ZAU), "Guangxi: Xing'an (25°6' N, 110°6' E), 2.vii.1980, Zhou Zhi-hong, No. 870153"; 2 ♀ ♀ (ZAU), "Guizhou: Guiyang (26°6' N, 106°7' E), 24.vii.1982, Song Xue-pei, No. 834925" & id., iv.1991, Du Yu-zhou, No. 940438..

Holotype, ♀, length of body 10.3 mm, of fore wing 6.9 mm.

Head.— Antennal segments 45, length of third, fourth, and penultimate segments 6.4, 4.6 and 3.3 times their width, respectively, apical segment with spine; length of antenna 1.9 times length of fore wing; length of maxillary palp 1.9 times height of head; temple very narrow, length of eye in dorsal view 11 times temple (fig. 31); OOL:diameter of ocellus:POL = 9:8:5; frons smooth, shallowly impressed; vertex smooth; length of face 0.9 times its width, its surface slightly longitudinally impressed dorso-medially, sparsely and shallowly punctulate, medio-ventrally more densely punctulate; clypeus moderately convex (fig. 38), remotely punctate, its ventral margin straight; malar space as long as basal width of mandible; mandible robust, its second tooth distinctly longer than first tooth, both teeth acute apically.

Mesosoma.— Length of mesosoma 1.5 times its height; side of pronotum crenulate medially and posteriorly, remainder largely smooth; prepectal carina complete; precoxal sulcus densely punctate (fig. 27); mesopleuron and metapleuron rather densely punctate; metapleural flange large and obtuse; notauli deep, crenulate, posteriorly with a longitudinal median carina; mesocutal lobes sparsely punctulate, nearly smooth, middle lobe strongly convex; scutellum sparsely punctate; scutellar sulcus deep, with seven longitudinal carinae; basal half of propodeum finely reticulate, finely and transversely rugose medially and subapically, finely longitudinally carinate apically.

Wing.— Fore wing: subbasal cell glabrous and with a pale yellowish elongate spot subapically (fig. 30); r:3-SR:SR1=8:19:42; m-cu:2-SR+M=23:9; 2-SR:3-SR:r-m = 12:19:7; cu-a slightly inclivous, slightly postfurcal; length of first subdiscal cell 2.8 times its width. Hind wing: marginal cell moderately narrowed medially (figs 29, 37); 2-SC+R vertical; 1r-m:1-M:cu-a=15:19:21; cu-a vertical, slightly bent towards wing base posteriorly.

Legs.— Hind coxa superficially punctate; tarsal claw with basal lobe; trochantellus with nine teeth in three rows (fig. 35); hind femur with 14 teeth basally; length of femur, tibia and basitarsus of hind leg 7.7, 15.1 and 11.0 times their width, respectively; length of hind tibial spurs 0.35 and 0.40 times hind basitarsus; hind basitarsus as long as second-fifth segments of hind tarsus combined.

Metasoma.— Length of first tergite 4.5 times its apical width, 3.3 times its maximum width, slightly widened apically, its surface densely and transversely striate, laterally obliquely striate, apically longitudinally striate; second tergite densely longitudinally striate, its length 1.7 times its apical width, basal half of third tergite finely and longitudinally rugose-striate, length of third tergite 1.2 times its

apical width; length of ovipositor sheath about 1.2 times fore wing, apex of ovipositor rather acute, with distinct notch (fig. 34).

Colour.— Head black; clypeus, face ventrally and mandible (except apex) reddish-yellow; palpi yellowish-white; antenna blackish-brown, medially yellowish-brown; mesosoma and metasoma reddish-yellow, tegulae and metasoma (especially basally) paler; apical margins of first-third tergites blackish-brown; 4th tergite and its following tergites dark brownish; legs reddish-yellow, trochanters and tibiae of fore and middle legs paler; apices of hind femur and of hind tibia blackish-brown, hind tibia basally and hind tarsus yellowish-white; wing membrane hyaline; pterostigma and veins blackish-brown, base of pterostigma, parastigma and vein 1-R1 of fore wing yellowish-brown.

Male.— Similar to female (holotype), but length of second and third metasomal tergites 2.1-2.3 and 2.0 times their apical width, respectively.

Variation.— Length of body 7.0-11.0 mm, of fore wing 5.5-8.9 mm antennal segments of ♀ 45(2), 46(5), 47(5), 48(2), and 49(5), of ♂ 44(3), 45(6), 47(4), and 49(1); length of first metasomal tergite 3.3-4.5 times its apical width.

Cocoon.— Long, elliptical, 9.5-10.5 mm long, 3.2-3.5 mm in diameter, reddish-brown, shiny (cocoon of *A. philippinense* is brown, its surface with fine whitish silk and dull).

Biology.— Solitary parasite of (economically important) Pyralidae: *Ostrinia furnicalis* Guenée (Jiangsu, Zhejiang and Sichuan), *Algedonia coclisalis* Walker (Zhejiang), *Diaphania pyloalis* (Walker) (Jiangsu), and a leafroller (Jiangsu). According to literature also of *Botyodes diniasalis* Walker, and *Diaphania nigropunctalis* (Bremer).

Notes.— The new species is very similar to *Macrocentrus japonicus* Watanabe, 1932, if only the original description of *M. japonicus* is used (e.g., body size and ground colour). However, the holotype of *M. japonicus* has been examined and confirmed as a junior synonym of *A. philippinense* (already indicated by Watanabe (1939), and accepted by van Achterberg (1993)).

Aulacocentrum philippinense (Ashmead, 1904)
(figs 24-26, 41)

Macrocentrus philippinensis Ashmead, 1904: 145 (♀); Chu, 1935: 19 (China: Jiangsu: Wuxi; Zhejiang: Hangzhou. Host: *Diaphania pyloalis*); Shenefeld, 1969: 168 (China: Northeast China; Taiwan (in part)); Chou, 1981: 75 (China: Taiwan. Host: *Diaphania pyloalis*); Zhu et al., 1982: 55 (China: Sichuan. Host: *Diaphania pyloalis*); He & Wang, 1987: 410 (China: Hebei, Inner Mongolia, Jiangsu, Zhejiang, Taiwan. Additional host: *Diaphania nigropunctalis* (in part)); Wang, 1987: 1338 (key, fig., host. China: Inner Mongolia, Jiangsu, Zhejiang, Taiwan, Yunnan; in part).

Aulacocentrum philippinense; van Achterberg & Belokobylskij, 1987: 244; You & Zou, 1990: 258-259; van Achterberg, 1993: 6-8, figs 1-11, 103, 411, 414, 415.

Aulacocentrum philippinensis; He et al., 1991: 41 (China: Sichuan. Host: *Cnaphalocrocis medinalis*); He et al., 1992: 1256 (♀, description, fig., hosts. China: Heilongjiang; Liaoning; Inner Mongolia; Hubei; Jiangsu; Zhejiang; Jiangxi; Hubei; Sichuan; Taiwan (in part).

Macrocentrus japonicus Watanabe, 1932: 133 (♀♂); Watanabe, 1937: 157 (key. China: Taiwan: Horisha, Ranrun, Taihoku. Host: *Diaphania pyloalis*).

Material.— China: 1 ♀ (ZAU), Shanxi: Taigu (37°4' N, 112°5' E), 11.viii.1980, Cao Ke-cheng, No. 870079"; 1 ♀ + 2 ♂♂ (ZAU), "Zhejiang: Hangzhou (30°2' N, 120°1' E), 20.vii.1931, 21.v.1932, 21.vi.1933, Chu Joo-tso, ex *Diaphania pyloalis* (Walker)"; 1 ♀ (ZAU), "Hubei: Zigui (31°0' N, 110°7' E), v.1983, Shi Shang-bai, No. 870093"; 1 ♂ (ZAU), "Hunan: You Xian, (27°0' N, 113°3' E), viii.1929, Chu Joo-tso"; 1 ♀ (ZAU), "Sichuan: Chongqing (29°5' N, 106° 5' E), 2.v.1982, Zhu Wen-bing, ex *Chilo*

suppressalis (Walker)"; 4 ♀♀ + 6 ♂♂ (ZAU, 1 damaged ♀ + 1 ♂ in RMNH), "Sichuan: Chongqing, vi.1988, Zhang Jian-jiang, ex *Diaphania pyloalis* (Walker) No. 880629"; 1 ♀ (ZAU), "Sichuan: Jiangyang (30°3' N, 104°8' E), vii.1980, Li Qiong-fang, No. 802691"; 1 ♂ (ZAU), "Sichuan: Lu Xian (28°9' N, 105°4' E), 31.vii.1980, He Rong-rong, No. 816325"; 1 ♀ (ZAU), "Sichuan: Mi Yi (26°8' N, 102°2' E), 11.xi.1980, He Rong-rong, No. 816324"; 3 ♀♀ + 4 ♂♂ (ZAU, 1 ♂ RMNH), "Sichuan: Xichong (31°0' N, 105°8' E), 30.v.1939, 18.vii.1939, vi.1940, Chu Joo-tsu, ex *Diaphania pyloalis* (Walker), No. 65017.24"; 3 ♀♀ (ZAU), "Guangxi: Longzhou (22°3' N, 106°8' E), 20.v.1982, He Jun-hua, No. 824426"; 1 ♀ (ZAU), "Guangxi: Pingle (22°5' N, 110°2' E), 1980, Zhou Zhi-hong, No. 870158"; 4 ♀♀ + 1 ♂ (ZAU, 1 ♀ RMNH), "Yunnan: Tengchong (25°0' N, 98°5' E), viii-ix.1981, Wan Tong, No. 820287-820289, 821426"; 1 ♂ (USNM), "China, Hangchow, 2.vi.1932, J.T. Chu", "ex *Margaronia pyloalis* Walker"; 1 ♀ (TMA), "Formosa, Sauter", "Fuhosho, x.1909".

Description.— See van Achterberg, 1993 (p. 6-8).

Biology.— In China found to parasitize economically important Pyralidae: *Diaphania pyloalis* (Walker) (Sichuan), *Cnaphalocrocis medinalis* (Guenée) (Hangzhou, Sichuan, Zhejiang), and *Chilo suppressalis* (Walker) (Sichuan).

Acknowledgments and abbeviations

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The following abbreviations have been used: BORIF = Central Research Institute for Food Crops, Bogor; FRC = Forest Research Centre, Sandakan, East Malaysia; MCZ = Museum of Comparative Zoology, Cambridge, U.S.A.; RMNH = Nationaal Natuurhistorisch Museum, Leiden; TMA = Természettudományi Múzeum Allattára, Budapest; USNM = National Museum of Natural History, Washington; ZAU = Zhejiang Agricultural University, Hangzhou.

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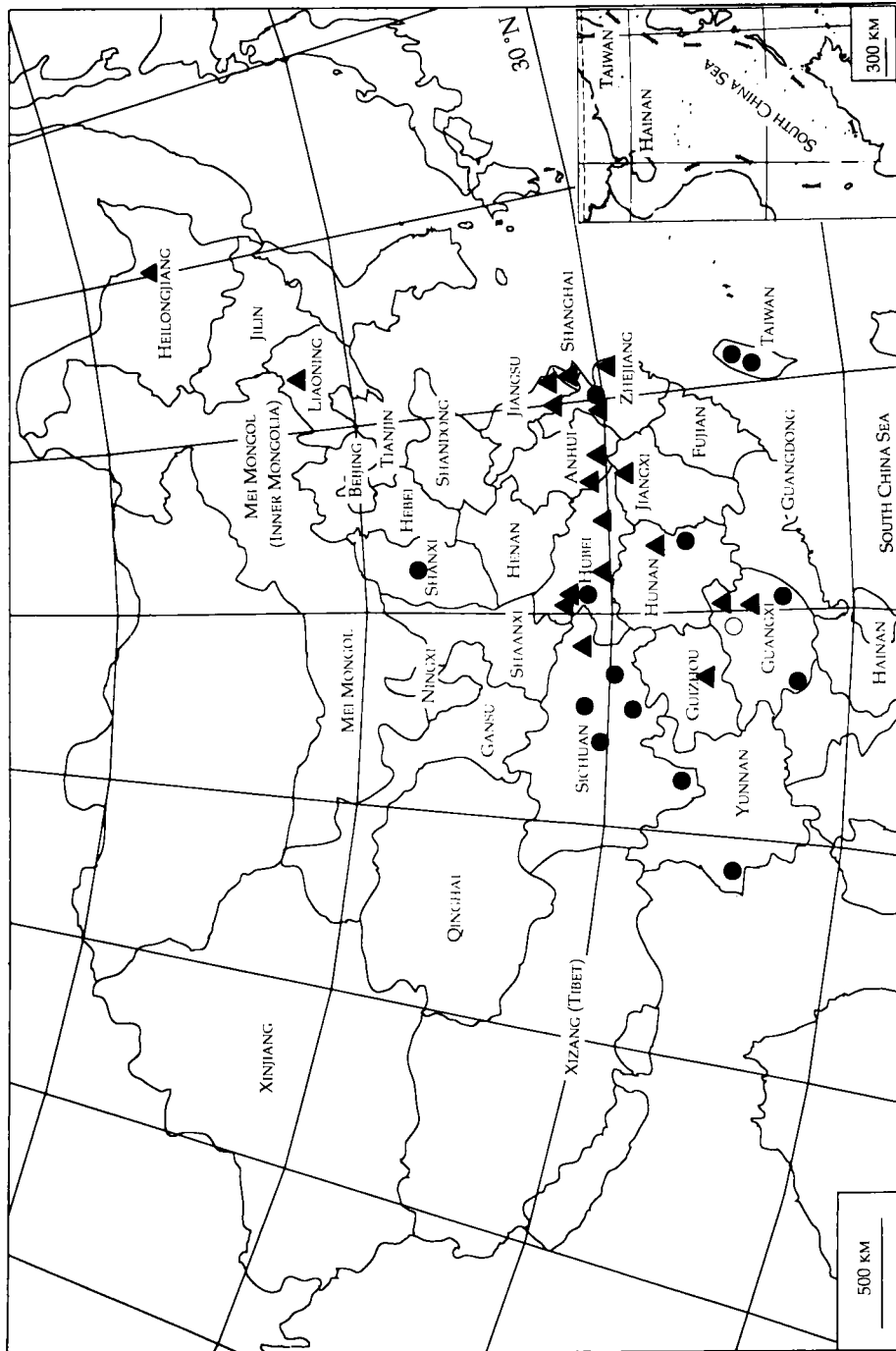
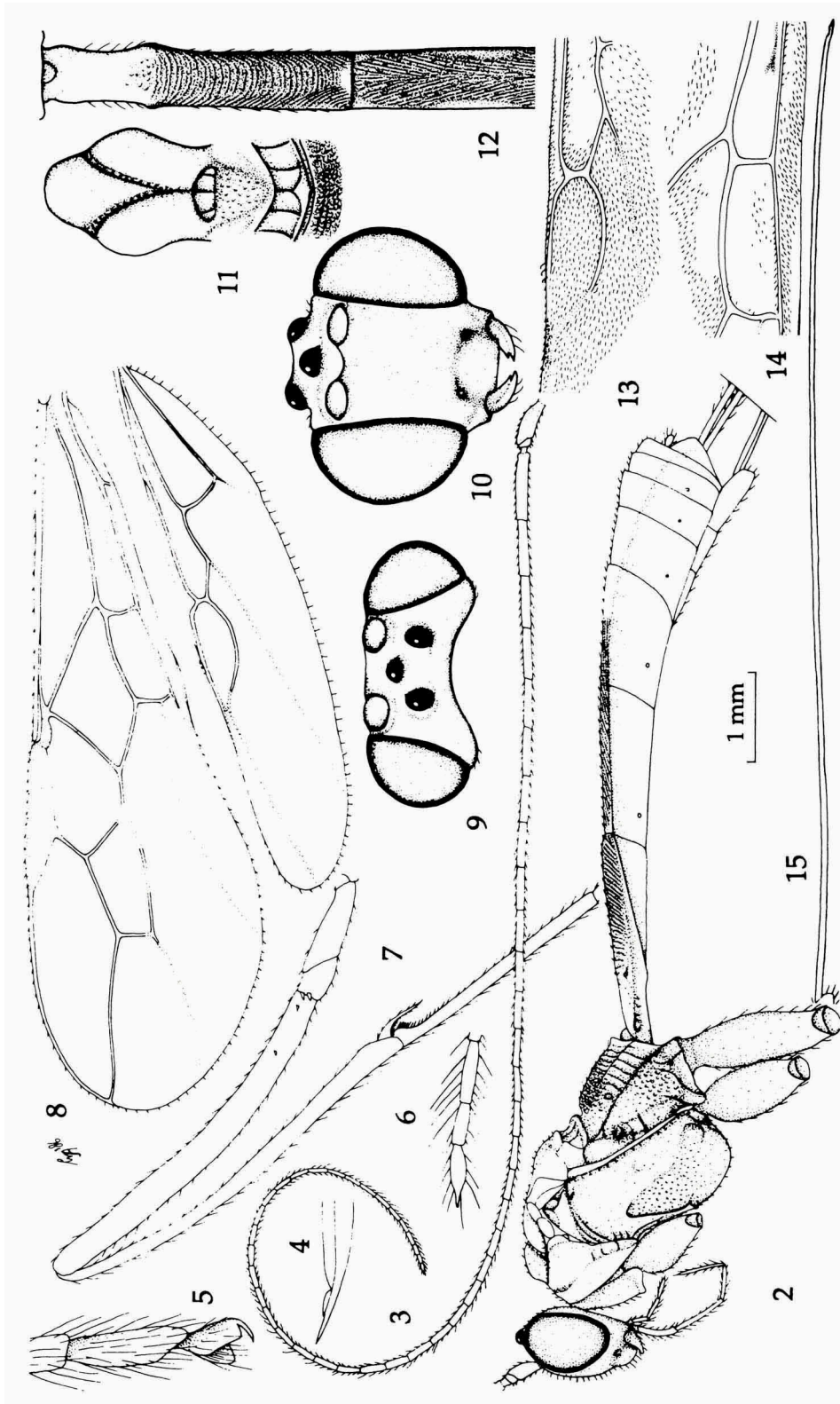
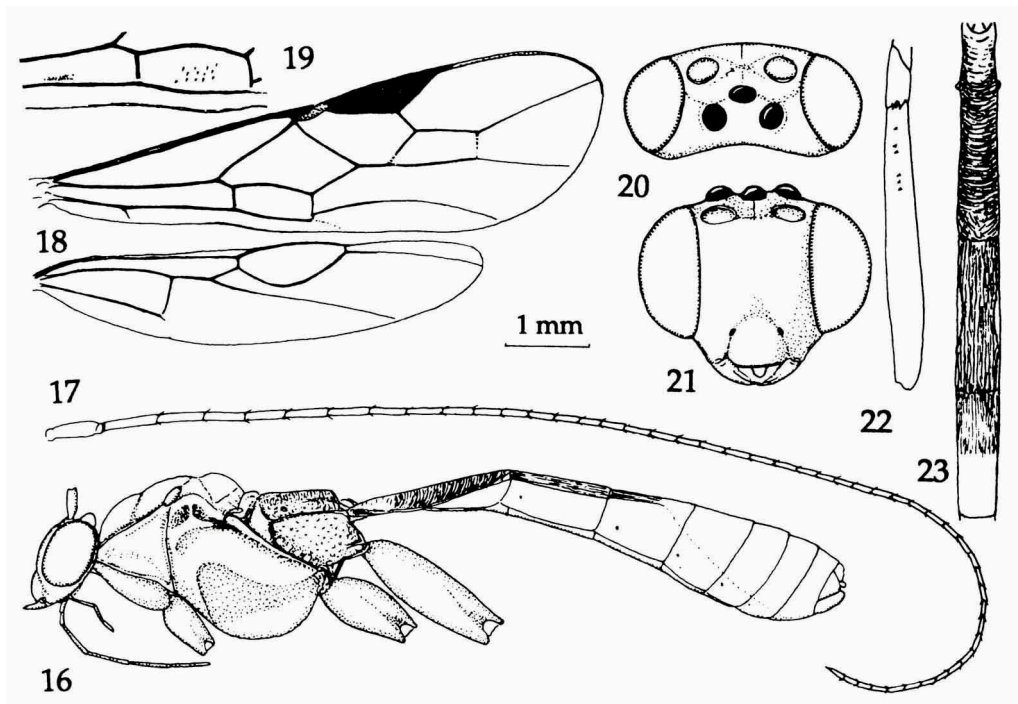


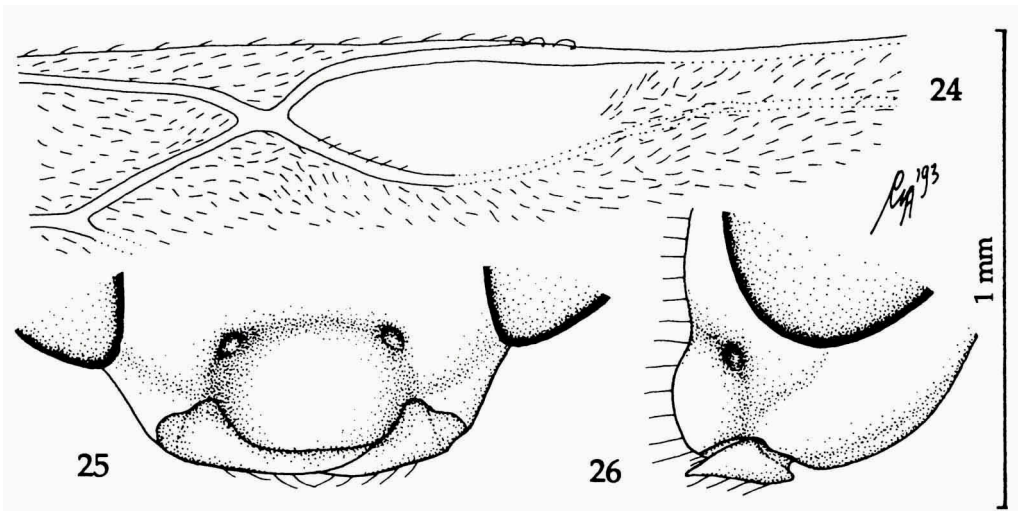
Fig. 1. Distribution of the genus *Aulacocentrum* in China. The part of China below 30°N is considered to belong to the Oriental region. ○ = *Aulacocentrum seticella* spec. nov.; ● = *A. confusum* spec. nov.; ▲ = *A. philippinense* (Ashmead).



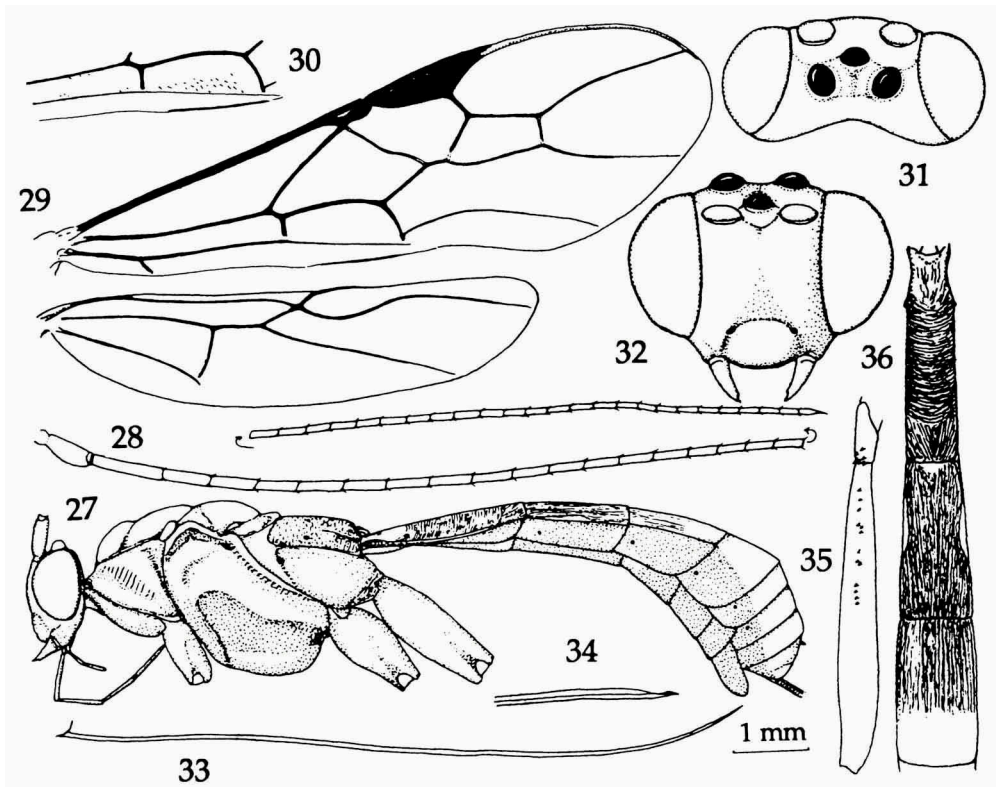
Figs 2-15, *Aulacocentrum seticella* spec. nov., ♀, paratype, Indonesia, Java, Tlawa, but 13 and 14 of holotype. 2, habitus, lateral aspect; 3, antenna; 4, apex of ovipositor; 5, inner hind claw; 6, fore leg; 7, fore leg, dorsal aspect; 8, wings; 9, head, dorsal aspect; 10, head, frontal aspect; 11, mesosoma, dorsal aspect; 12, first and second metasomal tergites, dorsal aspect; 13, detail of basal half of marginal cell of hind wing; 14, detail of first subdiscal cell of fore wing; 15, ovipositor. 2, 3, 8, 15: 1 × scale-line; 4-6: 5 ×; 7, 9, 10: 2 ×; 11, 12: 1.5 ×; 13, 14: 1.7 ×.



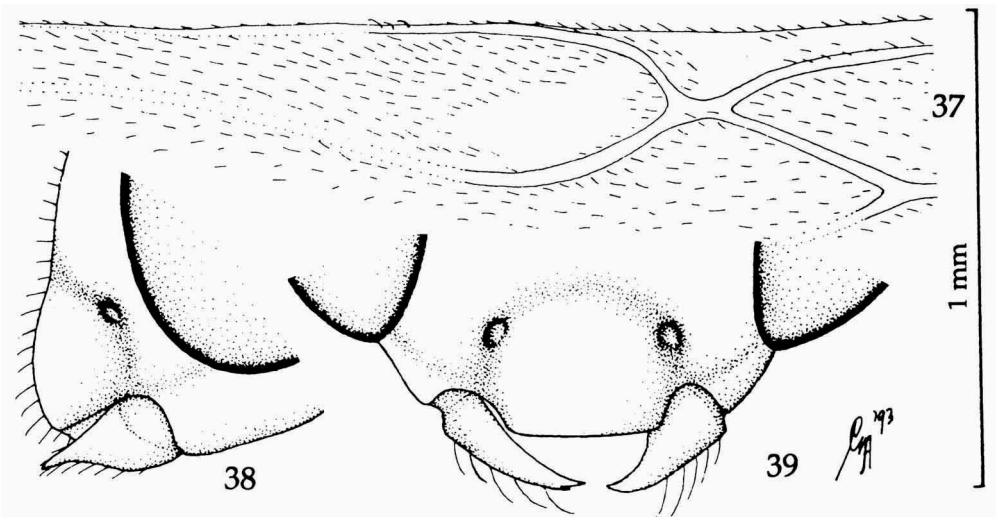
Figs 16-23, *Aulacocentrum seticella* spec. nov., ♂, paratype, China, Rongshui. 16, habitus, lateral aspect; 17, antenna; 18, wings; 19, detail of subdiscal cell and apical half of subbasal cell of fore wing; 20, head, dorsal aspect; 21, head, frontal aspect.; 22, hind trochantellus and femur; 23, first-third metasomal tergites, dorsal aspect. All 1 × scale-line, but 19: 1.4 ×, 22: 2 ×, and 23: 2.8 ×.



Figs 24-26, *Aulacocentrum philippinense* (Ashmead), ♀, China, Chongqing. 24, basal half of marginal cell of hind wing; 25, clypeus, frontal aspect; 26, clypeus, lateral aspect. All 1 × scale-line.



Figs 27-36, *Aulacocentrum confusum* spec. nov., ♀, holotype. 27, habitus, lateral aspect; 28, antenna; 29, wings; 30, detail of subdiscal cell and apical half of subbasal cell of fore wing; 31, head, dorsal aspect; 32, head, frontal aspect; 33, ovipositor; 34, apex of ovipositor; 35, hind trochantellus and hind femur; 36, first-third metasomal tergites, dorsal aspect. All 1 × scale-line, but 31, 32: 2 ×, and 36: 2.8 ×.



Figs 37-39, *Aulacocentrum confusum* spec. nov., ♀, paratype, China, Jiangling. 37, basal half of marginal cell of hind wing; 38, clypeus, lateral aspect; 39, clypeus, frontal aspect. All 1 × scale-line.

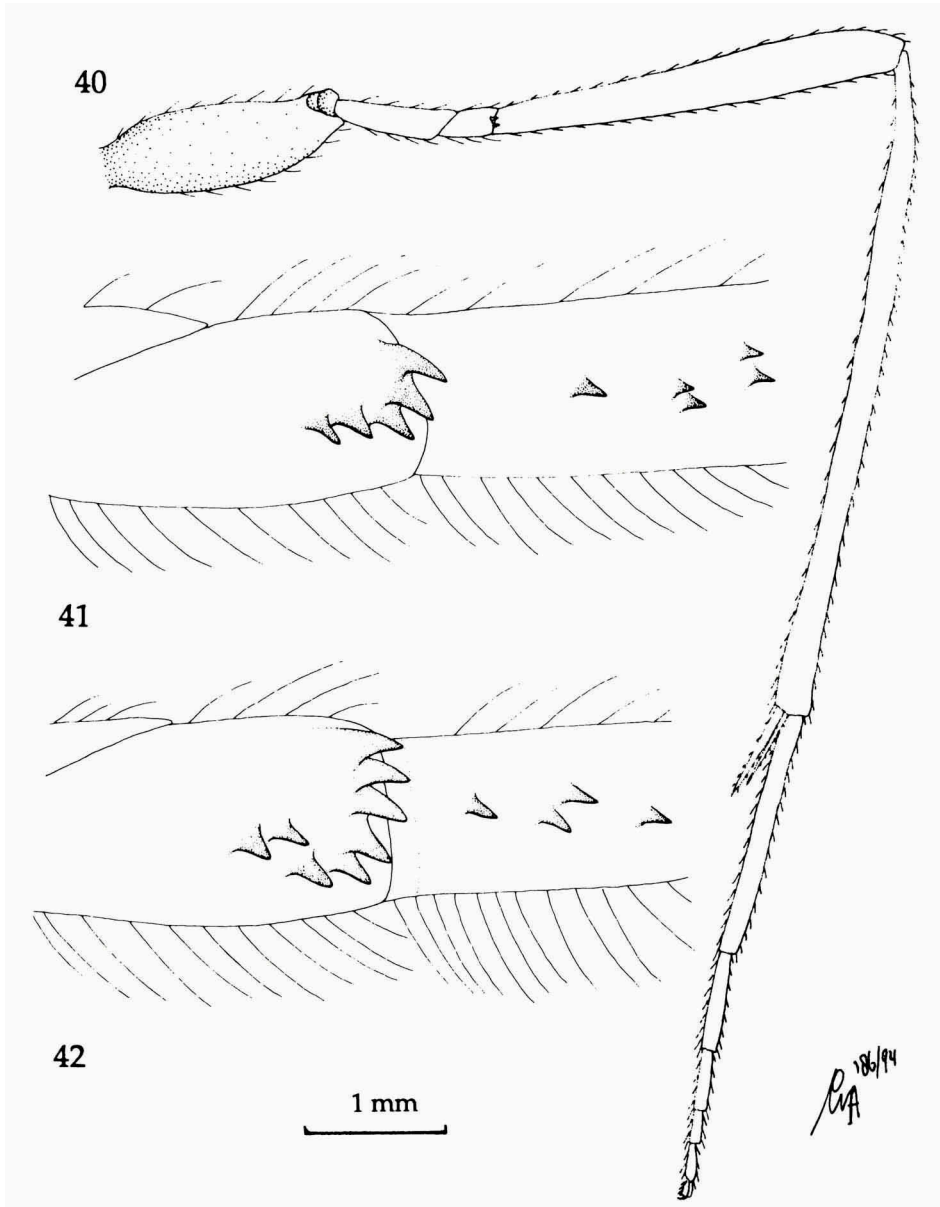


Fig. 40, *Aulacocentrum seticella* spec. nov., ♀, paratype, Indonesia, Java, Tlawa; fig. 41, *A. philippinense* (Ashmead), ♀, China, Chongqing; fig. 42, *A. confusum* spec. nov., ♀, paratype, China, Jiangling. 40, hind leg; 41, 42, hind trochantellus and base of hind femur, lateral aspect. 40: 1 ×; scale-line; 41, 42: 5.5 ×.