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The Braconidae (Hymenoptera) of Taiwan
VI. Charmontinae, Homolobinae and Xiphozelinae[1]

Liang-Yih Chou[2] and Tung-Ching Hsu[3]

Abstract : One species of Charmontinae, 12 species of Homolobinae and 2 species of Xiphozelinae from Taiwan are recognized in this paper. Four species are described as new to science, seven species are new to the fauna of Taiwan, Keys to the Taiwanese species of the genus *Homolobus* Foerster are also Presented.

Key words : Charmontinae, Homolobinae, Xiphozelinae, Taxonomy, Taiwan.

INTRODUCTION

The subfamily Charmontinae contains 5 species worldwide. They are known as parasitoids of lepidopterous larvae with a hidden way of life[2]. This subfamily is new to Taiwan. In this paper one new species is described from Taiwan.

The subfamily Homolobinae contains about 52 species worldwide, including 3 species in Taiwan. They are known as endoparasites of exposed lepidopterous larvae[2]. Twelve species of this subfamily from Taiwan are recognized in this paper, of which 2 species are new to science.

The subfamily Xiphozelinae contains 5 species worldwide, including 1 species in Taiwan. They are known as endoparasites of exposed noctuid larvae[1,14].Two species of this subfamily from Taiwan are recognized in this paper, of which 1 species is new to science.

Van Achterberg[5] provided key to distinguish the subfamilies Charmontinae, Homolobinae and Xiphozelinae from the other subfamilies of Braconidae. The terminology used here mainly follow Huber and Sharkey[9], Wahl and Sharkey[15] and van Achterberg[3]. Others are defined here. The letter OD is the greatest diameter of a posterior ocellus. The tentorial index is tentorio-ocular line over intertentorial line. The specimens used in this study are deposited in the Insect Collection of the Taiwan Agricultural Research Institute, Taichung, Taiwan, ROC.

1. Contribution No. 1805 from Taiwan Agricultural Research Institute.
2. Associate Entomologist of the Department of Applied Zoology, TARI, Wufeng, Taichung, Taiwan, ROC.
3. Professor of the Department of Plant Pathology and Entomology, National Taiwan University, Taipei, ROC.

The specimens used in this study are collected by the following persons : B.H. Chen (BHC), C.C. Chen(CCC), C.C. Chien(CCCh), K.C. Chou(KCC),L.Y. Chou(LYC), S.P. Huang (SPH), K.S. Lin(KSL), S.C. Lin(SCL), T.Lin(TL), C.C. Pang(CCP), J. Sonan(JS), W.S. Tang(WST), C.H. Wang(CHW)and C.H. Yang(CHY).

The county and altitudes of the localities which occur in the text are as follows :

CHIAYI : Chiayi.

HUALIEN : Fuli, Hualien, Tayuling 2560m.

NANTOU : Kuandochi, Lienhuachih 650m, Lushan 1000m, Meifeng 2150m, Sungkang 2100 m, Sunmoonlake, Tsuifeng 2300m, Tungpu 1200m.

TAICHUNG : Anmashan 2275m, Chiapaotai 750m, Wanfeng, Wufeng, Wuling 1900m.

TAIPEI : Taipei.

TAITUNG : Tungho.

YUNLIN : Silo.

Subfamily CHARMONTINAE

The Charmontinae is characterized by the following combination of characters : occipital carina reduced mediodorsally, mandible not twisted apically, antescutal depression present, middle lobe of mesoscutum more or less truncate anteriorly and with a transverse protruding horizontal part, lateral carina of mesoscutum absent, vein r-m of fore wing absent, vein a′ of hind wing present, cell RI of hind wing narrowed apically, and first metasomal tergum sessile. The subfamily contain two genera, *Charmontia* van Achterberg and *Charmon* Haliday[2]. Only the genus *Charmon* occurs in Taiwan.

Genus Charmon Haliday

Charmon Haliday, 1833. Ent. Mag. 1 : 262. Type species : *Charmon cruentatus* Haliday, by monotypy. - van Achterberg, 1979. Tijdschr. Ent. 122 : 263.

Provancheria Ashmead, 1900. Proc. U.S. natn. Mus. 23 : 109. Type species : *Eubadizon gracilis* Provancher, by original designation.

Cyclocormus Cameron, 1911. Ann. Transv. Mus. 2 : 209. Type species : *Cyclocormus luteus* Cameron, by monotypy.

The genus *Charmon* is characterized by the following combination of characters : third segment of labial palp absent or short, much shorter than second segment of labial palp, apex of antenna with spine, vein 1/Rs of fore wing absent; tarsal claws convex ventrally. It contains 4 species in the world[2,13]. In this paper one new species is described from Taiwan.

Charmon taiwanensis sp. n.

(Figs. 1-9, 19, 31, 46)

Female : Head : 1.6-1.7 times as wide as long and 1.3-1.4 times wider than mesonotum. Eye 1.7-1.9 times as long as temple in lateral view. Temples rather roundly narrowed behind

eyes, rather densely punctulate. Frons rather densely punctulate laterally, glabrous medially. POL : OD : OOL= 1 : 1.8-2.0 : 2.8-3.6. Vertex rather sparsely punctulate. Face 0.58-0.72 times as high as wide and 1.0 times as wide as eye height and 0.50-0.55 times as wide as head, densely punctulate, with some rugulosity near toruli; clypeus rather convex, rather densely punctate. Tentorial index 0.59-0.68. Malar sulcus absent ; malar space 0.43-0.56 times basal width of mandible. Antenna 41-47-segmented; first flagellomere 1.1-1.2 times as long as second; length of first, second and penultimate flagellomeres 5.5-6.7, 4.6-5.5 and 1.8-2.3 times their width, respectively.

Mesosoma : 1.6-1.7 times as long as high. Pronotal side largely glabrous, except for some crenulae medioanteriorly and posteriorly. Notauli completely impressed, crenulate; middle lobe of mesoscutum densely punctulate, lateral lobes almost glabrous; scutellum rather densely punctulate. Precoxal sulcus absent. Metanotum with one medial carina; metapleuron rather sparsely punctulate. Propodeum rather densely punctulate, rugulose medially.

Wings : Fore wing : stigma 2.8-3.7 times as long as wide; basal posterior section of stigma 1.5-1.6 times apical posterior section of stigma; r-rs : 3+4/Rs : 2/Rs= 1 : 4.9-5.7 : 1.2-1.5; 1/Cu : 2/Cu=0.10-0.19 : 1. Hind wing : r-m : 1/M=1.0-1.1 : 1; 1/M : Cu&cu-a = 0.67-0.80 : 1.

Hind leg : Coxa punctulate; length of femur, tibia and basitarsus 5.4-6.5, 10.0-13.0 and 8.9-10.9 times their width, respectively; tibial spurs subequal, 0.31-0.34 times as long as basitarsus.

Metasoma : First tergum 1.3-1.8 times as long as wide apically, costate; second tergum smooth to more or less longitudinal rugulose anteriorly. Ovipositor sheath 1.0-1.3 times as long as fore wing.

Color : Blackish brown to black; clypeus dark brown to black, mandible brownish yellow to dark brown, palpi yellow to brownish yellow, tegula yellow to browh, at least posterior of mesoscutum, scutellum, most of mesopleuron, and mesosternum faintly brownish yellow to brown, pronotum, propleuron, anterior of mesoscutum, and metapleuron brownish yellow to black. Antenna dark brown to blackish brown; scape and pedicel more or less lighter. Wings hyaline; stigma pale yellow to faintly brownish yellow, border slightly infuscated; veins brownish yellow to dark brown. Legs yellow to reddish brown; hind tibia at least dark brown apically, hind tarsus at least telotarsus dark brown. Ovipositor sheath dark brown.

Length : Body 3.9-6.5 mm, antenna 6.0-9.1 mm, fore wing 3.9-6.0 mm, ovipositor sheath 4.0-7.0 mm.

Male : Similar to female.

Holotype : ♀, Sungkang, IX. 1984 (KSL & KCC). Paratypes : Fuli-Tungho, 1♀, 9-11. XI.1982 (KCC & SPH). Lushan, 1♀, 27-31.V.1980 (KSL & LYC). Meifeng, 1♀, 9-14.V.1979 (KSL); 1♀, 22-26.VI.1983(KSL & SCL); 3♀, V-VI, 1♀, VIII, & 1♀, X.1984 (KSL & KCC); &1♀, XI.1985 (KSL). Sungkang, 1♀2♂, X-XI.1984 (KSL & KCC); & 1♀, XII.1985 (KSL). Tayuling, 1♀, 10-16.VI.1980 (KSL & BHC). Tsuifeng, 1 ♂, 21.VI.1979 (KSL & BHC) ; 1♀, 3.VI.1980 (LYC & CCC) ; 1♂, 25-27.VI.1981 (KSL & WST) ; 1♂, 20.IV.1983 (KCC & SPH

); & 2♀, X-XI.1984 (KSL & KCC). Tungpu, 1♀, XII.1985 (KSL).

Distribution : Taiwan.

Host : Unknown.

Remarks : This species is related to *Charmon cruentatus* Haliday, but differs from it by the ocelli larger.

Etymology : Named after Taiwan.

Subfamily HOMOLOBINAE

The Homolobinae is characterized by the following combination of characters : occipital carina completely developed mediodorsally, mandible twisted apically, antescutal depression present, middle lobe of mesoscutum more or less rounded anteriorly and without a protruding horizontal part, lateral carina of mesoscutum present, vein r-m of fore wing present, vein a′ of hind wing absent, cell Rl of hind wing widened apically, and first metasomal tergum sessile. This subfamily consists of 2 tribes, Homolobini and Westwoodiellini[4]. Only the tribe Homolobini occurs in Taiwan.

Tribe HOMOLOBINI van Achterberg

The tribe Homolobini is characterized by the following combination of characters : malar sulcus absent, apex of antenna with spine, anterior subalar depression with one carina, cell Rl of hind wing widened apically and vein 1/Rs of fore wing absent or obsolescent. It consists of 2 genera, *Exasticolus* van Achterberg and *Homolobus* Foerster[2]. Only the genus *Homolobus* occurs in Taiwan.

Genus Homolobus Foerster

Phylax Wesmael, 1835. Nouv. Mem. Acad. Brux. 9 : 159 (nec Dahl, 1823). Type species : *Rogas annulicornis* Nees, by subsequent designation, designated by Haliday in Westwood, 1840.

Homolobus Foerster, 1862. Verh. naturh. Ver. preuss. Rheinl. 19 : 256. Type species : *Phylax discolor* Wesmael, by original designation. - van Achterberg, 1979.Tijdschr. Ent. 122 : 276. - Maeto, 1982. Kontyu 50 : 314.

Phylacter Reinhard, 1863. Berl. ent. Z. 7 : 248.

Apatia Enderlein 1920 Arch. Naturgesch. 84 A 11 : 219. Type species : *Apatia simillima* Enderlein, by original designation.

The genus *Homolobus* is characterized by the following combination of characters : eye weakly emarginate or almost immarginate at inner side; inner aspect of apex of metatibia without comb of bristles; vein 1/Rs+M of fore wing straight; tarsi without ventral row of setae. This genus contains five subgenera : *Apatia* Enderlein, *Chartolobus* van Achterberg, *Homolobus* Foerster, *Phylacter* Reinhard and *Oulophus* van Achterberg. Only the *Apatia* and *Chartolobus* have been known to occur in Taiwan. In this paper the other 3 genera are recorded from Taiwan for the first time. About 50 species are known worldwide, including

3 species in Taiwan[2,4,6,10-12]. In this papaer 9 species are added to the *Homolobus* fauna of Taiwan, of which 2 species are new to science.

Key to subgenera of the genus *Homolobus* from Taiwan (Modified from van Achterberg[2])

1. At least protarsal claws with minute subapical tooth or lamella 2
-. Tarsal claws simple or nearly so, without tooth or lamella ..... *Apatia* Enderlein
2. Inner hind claw distinctly concave submedioventrally, its shape different from outer claw; antennal ridge of lst-4th flagellomeres strongly developed 3
-. Inner hind claw straight or convex submedioventrally, its shape similar to outer claw; antennal ridge of lst-4th flagellomeres absent or weakly developed 4
3. Vein 1/1A of fore wing curved basally; basal third of vein Rs of hind wing curved and equally sclerotized as 1r-m ..... *Chartolobus* van Achterberg
-. Vein 1/1A of fore wing straight basally; basal third of vein Rs of hind wing straight or weakly curved, much less sclerotized than 1r-m ..... *Homolobus* Foerster
4. Basal third of vein Rs of hind wing distinctly curved and sclerotized as vein 1r-m; vein Rl of hind wing rather strongly curved ..... *Phylacter* Reinhard.
-. Basal third of vein Rs of hind wing straight or rather curved and usually less sclerotized than 1r-m, if well sclerotized, then claws with small subapical tooth; vein Rl of hind wing straight or moderatelly curved ..... *Oulophus* van Achterberg.

Subgenus *Apatia* Enderlein

Apatia Enderlein, 1920. Arch. Naturgesch. 84 A 11 : 219. Type species : *Apatia simillima* Enderlein, by original designation.

Homolobus (*Apatia*) : van Achterberg, 1979. Tijdschr. Ent. 122 : 277. - Maeto, 1982. Kontyu 50 : 426.

The diagnosis of the subgenus *Apatia* see van Achterberg[2]. This subgenus contains 14 species in the world, including 1 species in Taiwan. In this paper one species is added to the fauna of Taiwan.

Key to species of the subgenus *Apatia* from Taiwan

1. Vein r of hind wing present, at least posteriorly; vein 2/Sc+R almost quadrate ; tarsal claws pectinate ..... *elagabalus* (Nixon)
-. Vein r of hind wing absent; vein 2/Sc+R transverse, longer than wide; tarsal claws simple ..... *truncator* (Say)

Homolobus (*Apatia*) *elagabalus* (Nixon) (Figs. 20, 32, 47)

Zele elagabalus Nixon, 1938. Bull. ent. Res. 29 : 417.

Homolobus (*Apatia*) *elagabalus* : van Achterberg, 1979. Tijdschr. Ent. 122 : 280.

Specimens examined : Silo, 1♀2♂,VII.1960 (KSL). Taipei, 2♀, 20.XII.1931 & 7♀1♂, 10.V.1933 ex *Selepta celtis* (JS); & 1♀, 5-10.XI.1960 (KSL).

Distribution : Mainland China, India, Philippines, Taiwan (new record) and Thailand.

Host : *Selepa celtis* Moore.

Homolobus (Apatia) truncator (Say)

(Figs. 33, 48)

Bracon truncator Say, 1828. Contrib. Maclur. Lyc. Philad. 2 : 381.

Phylax calcarator Wesmael, 1835. Nouv. Mem. Acad. Brux. 9 : 161.

Phylax melleus Cresson, 1872. Trans. Am. ent. Soc. 4 : 178.

Zele crassicalcaratus Viereck, 1905. Trans. Kans. Acad. Sci. 19 : 279.

Phylacter fuscitarsis Bengtsson, 1918. Acta Univ. Lund. (2) : 14 : 42.

Zele unicolor Enderlein, 1920. Arch. Naturgesch. 84A : 218.

Apatia simillima Enderlein, 1920. Arch. Naturgesch. 84A : 219.

Zele chlorophthalma Nixon, 1938. Bull. ent. Res. 29 : 420 (nec Spinola, 1808).

Homolobus (Apatia) truncator : van Achterberg, 1979. Tijdschr. Ent. 122 : 285. - Maeto, 1982. Kontyu 50 : 426.

Specimens examined : Taipei, 1♀, 2.III.1978 (KSL). Tungpu, 1♂, 16-20.IV.1984 (KCC & CHY). Wanfeng, 1♀, 9.II.1978 (KSL).

Distribution : Holarctic and Neotropical Regions, Mainland China, India, Philippines and Taiwan.

Hosts : *Agrotis ypsilon* Rottemberg, *Amathes smithii* (Snellen), *Ascotis selenaria* Schiffermuller & Denis, *Hypagyrtis piniata* (Packard), *Lycia zonaria* (Denis & Schiff.), *Porosagrotis orthogonia* (Morrison), *P. tristicula* (Morrison) and *Semiothisa bitactata* (Walker)[2,7].

Subgenus *Chartolobus* van Achterberg

Homolobus (Chartolobus) van Achterberg, 1979. Tijdschr. Ent. 122 : 304. Type species : *Zele infumator* Lyle, by original designation. - Maeto, 1982. Kontyu 50 : 425.

The diagnosis of the subgenus *Chartolobus* see van Achterberg[2]. This subgenus contains 3 species in the world, including 2 species in Taiwan.

Key to species of the subgenus *Chartolobus* from Taiwan

1. Vein la' of fore wing widened basally and apically if compared with surrounding veins; vein Rs of hind wing weakly curved basally ..... *undulatus* van Achterberg

-. Vein la' of fore wing slender, not or slightly widened if compared with surrounding veins; vein Rs of hind wing rather strongly curved basally ..... *infumator* (Lyle)

Homolobus (Chartolobus) *infumator* (Lyle)
(Figs. 34, 49)

Zele infumator Lyle, 1914. Entomologist 47 : 288.
Phylacter wesmaeli Bengtsson, 1918. Acta Univ. Lund. (2)14 : 39.
Zele testaceator f. *japonica* Watanabe, 1932. Insecta matsum. 6 : 135.
Homolobus (*Chartolobus*) *infumator* : van Achterberg, 1979. Tijdschr. Ent. 122 : 305. - Maeto, 1982. Kontyu 50 : 425.

Specimens examined : Meifeng, 1♂, 26.VIII.1980 (KSL & CHW); 1♂, 5-9.X.1980 (CCC & CCCh); 1♂, 7.XI.1981 (SCL & WST); 1♂,VI, 1♀, VII, 2♀, VIII, 2♀8♂, IX, & 1♀1♂, X. 1984 (KSL & KCC); & 1♂, X.1985 (KSL). Sungkang, 1♂, 13-15.IX.1984 (KSL & SCL), 2♀ 4♂, IX, 4♀25♂, X, 3♀8♂, XI, & 1♂, XII.1984 (KSL & KCC); & 1♀6♂, X.1985(KSL). Tsuifeng, 1♂,VIII, 4♂, IX.1984(KSL & KCC); 6♂, X, 1♂, XII.1984(KSL & KCC).

Distribution : Holarctic, Neotropical and Oriental Regions.

Hosts : *Agonopterix alstroemeriana* (Clerck), *Alcis repandata* (L.), *Dendrolimus superans* (Butler), *Ematurga atomaria* (L.), *Lambdina fiscellaria* (Guenee), *L. somniaria* (Hulst), *Lycia zonaria* (Denis & Schiff.) and *Nepytia canosaria* (Walker)[2,7].

Homolobus (Chartolobus) *undulatus* van Achterberg
(Figs. 37, 50)

Homolobus (*Chartolobus*) *undulatus* van Achterberg, 1979. Tijdschr. Ent. 122 : 309.

Specimens examined : Chiapaotai, 1♀, 14-18.X.1980 (KSL & CHW). Tungpu, 1♂, 5-8. X.1981 (TL & WST); 3♂, 18-23.XI.1981 (TL & WST); 1♂, 6.XI.1981 (SCL & WST); 1♂, 18-21.X.1982 (KCC & SCL), 1♂, 13-16.XII.1982 (KCC & CCP); & 3♀12♂, XI-XII.1985 (KSL). Wuling, 1♀1♂, 27-29.VI.1979 (KSL & LYC) .

Distribution : Australian and Oriental Regions.

Host : Unknown.

Subgenus *Homolobus* Foerster

Homolobus Foerster, 1862. Verh. naturh. Ver. preuss. Rheinl. 19 : 256. Type species : *Phylax discolor* Wesmael, by original designation. - van Achterberg, 1979. Tijdschr. Ent. 122 : 311.

The diagnosis of the subgenus *Homolobus* see van Achterberg[2]. This subgenus contains 10 species in the world. In this paper 3 species is added to the fauna of Taiwan.

Key to species of the subgenus *Homolobus* from Taiwan

1. Vein r of hind wing present, tarsal claws with subapical tooth 2
-. Vein r of hind wing absent, tarsal claws with ventral lamella .....

..... *watanabei* van Achterberg

2. Vein 2/Sc+R vertical; vein Rl of hind wing straight; head and metasoma brownish yellow ..... *sinensis* Chen

-. Vein 2/Sc+R transverse, longer than wide; vein Rl of hind wing distinctly curved; head and metasoma blackish brown ..... *rufiventralis* Maeto

Homolobus (Homolobus) rufiventralis Maeto
(Figs. 21, 36, 51)

Homolobus (Homolobus) rufiventralis Maeto, 1982. Kontyu 50 : 316.

Specimens examined : Sungkang, 2♀, XI-XII.1984 (KSL & KCC); & 3 ♂, IX-X.1985(KSL).

Distribution : Mainland China, Japan and Taiwan (new record).

Host : Unknown.

Homolobus (Homolobus) sinensis Chen
(Figs. 23, 39, 53)

Homolobus (Homolobus) sinensis Chen, 1991. Ent. Ber., Amst. 51 : 47.

Specimen examined : Tsuifeng, 1♀, XI.1985 (KSL).

Distribution : Mainland China and Taiwan (new record).

Host : Unknown.

Homolobus (Homolobus) watanabei van Achterberg
(Figs. 22, 35, 52)

Zele simplex Watanabe, 1932. Insecta matsum. 6 : 135 (nec Herrich-Schäffer, 1838).

Homolobus (Homolobus) simplex : van Achterberg, 1979. Tijdschr. Ent. 122 : 313. - Maeto, 1982. Kontyu 50 : 322.

Homolobus (Homolobus) watanabei van Achterberg, 1992. Zool. Med. 66 : 363.

Specimens examined : Meifeng, 1♂, 5-9.X.1980 (CCC & CCCh); 1♀, 24-26.VI.1981(KSL & WST) & 2♀, VI-VIII.1984 (KSL & KCC). Sungkang, 5♀2♂, X. 1984 (KSL & KCC); 4♀ 5♂, IX-X.1985 (KSL). Tungpu, 5♀1♂, X-XII.1985 (KSL).

Distribution : Japan and Taiwan (new record).

Host : Unknown.

Subgenus *Oulophus* van Achterberg

Homolobus (Oulophus) van Achterberg, 1979. Tijdschr. Ent. 122 : 327. Type species : *Homolobus armatus* van Achterberg, by original designation. - Maeto, 1982. Kontyu 50 : 428.

The diagnosis of the subgenus *Oulophus* see van Achterberg[2]. This subgenus contains 18 species in the world. In this paper 4 species is added to the fauna of Taiwan, of which 2 species are new to science.

Key to species of the subgenus *Oulophus* from Taiwan

1. Precoxal sulcus rugose-reticulate; vein r of hind wing absent 2
-. Precoxal sulcus smooth; vein r of hind wing present 3
2. Malar space comparatively long, 1.1-1.2 times basal width of mandible; hind coxa rugose-reticulate ..... *sungkangensis* sp. n.
-. Malar space comparatively short, 0.5 times basal width of mandible; hind coxae punctulate ..... *annulatus* van Achterberg
3. Ovipositor sheath short, 0.09-0.12 times fore wing; vein lcu-a of fore wing postfurcal and strongly inclivous ..... *flagitator* (Curtis)
-. Ovipositor sheath comparatively long, 0.35 times fore wing; vein lcu-a of fore wing slightly antefurcal and almost vertical ..... *longus* sp. n.

Homolobus (Oulophus) annulatus van Achterberg
(Figs. 24, 38, 54)

Homolobus (Oulophus) annulatus van Achterberg, 1979. Tijdschr. Ent. 122 : 342. - Maeto, 1982. Kontyu 50 : 430.

Specimen examined : Sungkang, 1♂, XI.1985 (KSL).
Distribution : India, Japan and Taiwan (new record).
Host : Unknown.

Homolobus (Oulophus) flagitator (Curtis)
(Figs. 25, 41, 55)

Zele flagitator Curtis 1837. Guide Br. Insects p. 119.
Zele geminator Lyle, 1914. Entomologist 47 : 289.
Helcon (Zele) chlorophthalmus Haliday, 1836. Ent. Mag. 3 : 142 (nec Spinola, 1808, and Nees, 1834).
Homolobus (Oulophus) flagitator : van Achterberg, 1979. Tijdschr. Ent. 122 : 334. - Maeto, 1982. Kontyu 50 : 428.

Specimens examined: Anmashan, 1♂, 6-9.VII.1979 (LYC). Lienhuachih, 1♀, XII.1984 (KSL & KCC). Meifeng, 3♀,VIII, 1♀1♂, IX. 1984 (KSL & KCC); 1♀, X, 2♀, XI, & 1♀, XII. 1985 (KSL). Sungkang, 1♂, IX, 3♀16♂, X, 14♀12♂, XI, & 70♀4♂, XII.1984 (KSL & KCC); & 4♀1♂, IX, 3♀13♂, X, 10♀11♂, XI, & 8♀, XII.1985 (KSL). Tayuling, 1♂, 12-15.IX. 1980 (KSL & CHW); 1♂, 18-23.XI.1981 (TL & WST). Tsuifeng, 1♀, VII, 8♀ 1♂, IX, 4♀ 10♂, X, 1♀1♂, XI, & 1♀, XII.1984 (KSL & KCC); 1♀, 5.VIII. 1984 (KSL), & 5♀, IX, 3♀ 1♂,X, & 5♀, XI.1985 (KSL).

Distribution: Holarctic region, Mainland China and Taiwan (new record).

Hosts: *Alcis repandata* (L.), *Campaea perlata* (Guenee), *Caripeta divisata* Walker, *Entephria caesiata* Lang, *Eupithecia longipalpata* Packard, *E. placidata* Packard, *E. unicolor* Hulst, *E. annulata* Hulst, *E. olivaceae* Taylor, *E. harrisonata* MacK., *Melanolophia* sp., *Nyctobia limitata* (Walker), *N. nigroangulata* Strecker, and *Oporinia pulchraria* (Minot)[2].

Homolobus (Oulophus) longus sp. n.

(Figs. 26, 40, 56)

Female: Head: 1.7 times as wide as long and 1.3 times wider than mesonotum. Eye 1.8 times as long as temple in lateral view. Temples directly narrowed posteriad, punctulate. Frons coriaceous laterally. POL: OD: OOL = 1 : 2.1 : 1.9. Vertex punctulate. Face rather flat 0.74 times as high as wide and 0.79 times as wide as eye height and 0.44 times as wide as head, punctulate, obliquelly or transversely rugose dorsally, coriaceous laterally; clypeus convex, remotely punctulate, apical margin almost straight medially, differentiated. Tentorial index 0.46. Malar space 0.60 times basal width of mandible. Antenna 47-segmented; first flagellomere 1.3 times as long as second; length of first, second and penultimate flagellomeres 3.6, 2.8 and 2.5 times their width, respectively. Occipital carina narrowly interrupted medially.

Mesosoma: 1.7 times as long as high. Pronotal side largely smooth, crenulate medioanteriorly and posteriorly, costate ventrally. Notauli well impressed, rather finely crenulate; mesonotum and mesopleuron punctulate. metapleuron largely smooth, but with some rugae ventrally; metapleural flange large, wide, with carina and rounded apically. Propodeum largely smooth, with some rugae medially; medial carina present anteriorly, areola irregularly developed.

Wings: Fore wing: Stigma 3.8 times as long as wide; basal posterior section of stigma 1.1 times apical posterior section of stigma; r-rs: 3/Rs : 4/Rs= 1 : 2.2 : 8.3; 4/Rs curved anteriad; 2/Rs : 3/Rs : r-m : 2/M= 1 : 1.1 : 0.46 : 1.4; m-cu : 2/Rs+M=2.4 : 1; 1cu-a almost vertical, almost interstitial, not parallel to 3/Cu; 1/Cu: 2/Cu=0.08 : 1. Hind wing: r present, reclivous; 2/Sc+R transverse; R1 distinctly curved; basal third of Rs distinctly curved and unsclerotized; r-m : 1/M=0.84 : 1; 1/M subequal to Cu&cu-a; 1/Rs : 2/Rs=0.63 : 1.

Hind leg: Coxa smooth; tarsal claws with subapical tooth, setose basally. Length of femur, tibia and basitarsus 7.7, 11.7 and 10.3 times their width, respectively; tibial spurs 0.48 and 0.35 times as long as basitarsus.

Metasoma: First tergum 2.4 times as long as wide apically, smooth to superficially rugulose; dorsal carinae present in front of spiracles. Ovipositor sheath 0.35 times as long as fore wing.

Color: Reddish brown; stemmaticum black, apex of mandible dark brown, palpi brownish yellow, metasoma dark brown to black. Antenna reddish brown. Wings faintly brown; stigma and veins dark brown. Fore and middle leg brownish yellow; hind leg reddish brown, tarsus faintly brownish yellow. Ovipositor sheath dark brown.

Length : Body 9.0 mm, antenna 12.0 mm, fore wing 9.8 mm, ovipositor sheath 3.4 mm.

Male: Unknown.

Holotype: ♀, Tsuifeng, XI.1984 (KSL & KCC).

Distribution: Taiwan.

Host: Unknown

Remarks: This species resembles *H.* (*Oulophus*) *nepalensis* van Achterberg, *H.* (*O.*) *nipponensis* van Achterberg, and *H.* (*O.*) *occidentalis* van Achterberg[2] in having the vein r of the hind wing present and the ovipostior sheath long. This species, however, differs from the three species mentioned above in having the the following combination of characters: Ovipositor sheath much shorter than metasoma, its length 0.35 times fore wing; length of vein 3/Rs of fore wing 2.2 times vein r-rs; face reddish brown; length of malar space 0.6 times basal width of mandible.

Etymology: *Longus* means long in Latin, refers to its longer ovipositor sheath.

Homolobus (Oulophus) sungkangensis sp. n.

(Figs. 10-18, 27, 44, 57)

Female : Head: 1.5-1.7 times as wide as long and 1.1-1.2 times wider than mesonotum, in dorsal view with occipital region deeply excavate. Eye 1.9-2.3 times as long as temple in lateral view. Temples directly narrowed posteriad, punctulate. Frons largely glabrous medially, punctulate laterally. POL : OD : OOL=1 : 1.0 : 1.7-1.8. Vertex punctulate. Face weakly convex 0.67-0.75 times as high as wide and 1.0 times as wide as eye height and 0.54-0.55 times as wide as head, densely punctate, striate dorsally; clypeus convex, rather sparsely punctate, apical margin almost straight medially, not differentiated, but weakly to strongly depressed ventrally, punctures denser and larger, sometimes with strigate. Tentorial index 0.67-0.78. Malar space 1.1-1.2 times basal width of mandible. Antenna 46-47-segmented; first flagellomere 1.2-1.3 times as long as second; length of first, second and penultimate flagellomeres 3.1-3.7, 2.7-2.9 and 1.3 times their width, respectively.

Mesosoma: 1.5 times as long as high. Pronotal side rather smooth dorsally, crenulate medially and posteriorly, costate ventrally. Notauli will impressed, crenulate; mesonotum punctulate. Precoxal sulcus rugose-reticulate, disc of mesopleuron above precoxal sulcus rather densely punctate. Metapleuron largely rugose-reticulate, rather smooth dorsally; metapleural flange large, wide, without carina and rounded apically. Propodeum largely coarsely rugose-reticulate medially, anteriorly and posteriorly almost smooth; medial carina present anteriorly, areola irregularly developed, with weak tubercles laterally.

Wings: Fore wing: Stigma 3.9-4.1 times as long as wide; basal opsterior section of stigma 1.2 times apical posterior section of stigma; r-rs : 3/Rs : 4/Rs=1 : 0.72-0.94 : 4.9-5.5; 4/Rs almost straight; 2/Rs : 3/Rs : r-m: 2/M=1 : 0.68-0.78 : 0.63-0.68 : 1.3; m-cu: 2/Rs+M=1.4-1.8 : 1 : 1cu-a straight, postfurcal; 1/Cu: 2/Cu= 0.13-0.16 : 1. Hind wing: r absent; 2/Sc+R transverse; Rl weakly curved; basal third of Rs slightly curved and unsclerotized; r-m: 1/M =0.59-0.67 : 1; 1/M : Cu&cu-a=1.0-1.1 : 1.

Hind leg: Coxa rugose-reticulate; tarsal claws with truncate, large subapical tooth. Length of femur, tibia and basitarsus 6.8-7.9, 10.6-10.7 and 8.5-9.4 times their width,

respectively; tibial spurs 0.58-0.62 and 0.32-0.36 times as long as basitarsus.

Metasoma: First tergum narrowed posteriad, 3.8-4.1 times as long as wide apically, rugose-reticulat; dorsal carinae only distinct at extreme base. Ovipositor sheath 0.14-0.15 times as long as fore wing.

Color: Black; mandible dark brown, palpi dark brownish yellow. Antenna dark brown. Wings hyaline; stigma and veins dark brown. Legs dark brown; coxae black; hind leg darker, hind tarsus pale yellow, basal 0.4 of basitarsus blackish brown, telotarsus brown. Ovipositor sheath brownish yellow to dark brown.

Length: Body 7.5-8.5 mm, antenna 9.2-9.5 mm, fore wing 7.3-7.5 mm, ovipositor sheath 1.1 mm.

Male: Similar to female. Antenna 44-48-segmented.

Holotype: ♀, Sungkang, X. 1984 (KSL & KCC). Paratypes: Meifeng, 1♂, 25-27.VIII. 1980 (KSL & CHW); 1♂, 5-9.X.1980 (CCC & CCCh); & 1♂, IX.1984 (KSL & KCC). Sungkang, 10♂, IX, 1♀82♂, X, & 4♂, XI.1984 (KSL & KCC); 1♀19♂, IX, & 38♂, X. 1985 (KSL). Tsuifeng, 1♂, IX.1984 (KSL & KCC).

Distribution: Taiwan.

Host: Unknown.

Remarks: This species related to *Homolobus* (*Oulophus*) *carbonator* (Shestakov)[2], but differs from it by the head in dorsal view with occipital region deeply excavate.

Etymology: Named after the type locality, Sungkang.

Subgenus *Phylacter* Reinhard

Phylax Wesmael, 1835. Nouv. Mem. Acad. Brux. 9 : 159 (nec Dahl, 1823). Type species: *Rogas annulicornis* Nees, by subsequent designation, designated by Haliday *in* Westwood, 1840).

Phylacter Reinhard, 1863. Berl. ent. Z. 7:248.

Homolobus (*Phylacter*): van Achterberg, 1979. Tijdschr. Ent. 122 : 321. - Maeto, 1982. Kontyu 50 : 427.

The diagnosis of the subgenus *Phylacter* see van Achterberg[2]. This subgenus contains 4 species in the world. In this paper one species is added to the fauna of Taiwan.

Homolobus (*Phylacter*) *bifurcatus* van Achterberg (Figs. 28, 42, 58)

Homolobus (*Phylacter*) *bifurcatus* van Achterberg, 1979. Tijdschr. Ent. 122 : 322.

Specimens examined: Meifeng, 1♀, 23.IX-2.X.1979 (KSL); 1♂, X.1985 (KSL). Sungkang, 2♀1♂, X, & 1♀, XI.1984 (SKL & KCC); 2♂, X.1985 (KSL).

Distribution: Burma, Mainland China, India, Nepal and Taiwan (new record).

Host: Unknown.

Subfamily XIPHOZELINAE

The Xiphozelinae is characterized by the following combination of characters: laterope round, deep and far removed from base of first metasomal tergum; and vein Cu&cu-a of hind wing very long and strongly inclivous. The subfamily contains two genera, *Distilirella* van Achterberg and *Xiphozele* Cameron[1]. Both two genera occur in Taiwan, of which the *Distilirella* are new to Taiwan.

Key to genera of Xiphozelinae

1. Occipital carina far removed from hypostomal carina ventrally; vein lr-m of hind wing straight; vein lcu-a of fore wing with sclerome; scutellum without lateral carina ..... *Xiphozele* Cameron

-. Occipital carina reaching hypostomal carina ventrally; vein lr-m of hind wing strongly curved; vein lcu-a of fore wing without sclerome; scutellum with lateral carina ..... *Distilirella* van Achterberg

Genus *Distilirella* Cameron

Distilirella van Achterberg, 1979. Tijdschr. Ent. 122 : 38. Type species: *Distilirella curvinervosa* van Achterberg, by original designation. - He, 1985. Acta. Agr. Univ. Zhejiangensis 11 : 327.

The genus *Distilirella* is characterized by the following combination of characters: occipital carina reaching hypostomal carina ventrally; scutellum with lateral carina; vein lcua of fore wing straight, without sclerome; vein r-m and Rl of hind wing strongly curved; tarsal claws of female with submedial lamella at which another subapical lobe situated. It contains 2 species in the world[1,8]. In this paper one new species is described from Taiwan.

Distilirella taiwanensis sp. n.

(Figs. 29, 43, 59)

Female: Head: 2.0 times as wide as long and 1.6 times wider than mesonotum. Eye 2.7 times as long as temple in lateral view. Temples roundly narrowed posteriad, punctulate. Frons punctate-reticulate laterally. POL: OD: OOL = 1 : 1.0 : 0.95. Vertex punctulate, rather densely punctate between ocelli and eye. Face rather flat 0.67 times as high as wide and 1.1 times as wide as eye height and 0.48 times as wide as head, densely punctate and rather superficially rugulose medially and dorsally; clypeus convex, punctulate, apical margin almost straight. Tentorial index 0.65. Malar space 0.88 times basal width of mandible; malar sulcus absent. Antenna 55-segmented; first flagellomere 1.4 times as long as second; length of first, second and penultimate flagellomeres 5.0, 3.6 and 3.3 times their width, respectively. Occipital carina present laterally, absent dorsally.

Mesosoma: 1.5 times as long as high. Pronotal side largely smooth, ventrally superficially costulate. Notauli well impressed, smooth anteriorly, superficially crenulate posterior-

ly; mesoscutum densely punctulate; scutellum costulate submedially; side of scutellum rugose posteriorly. Epicnemial carina far removed from anterior margin of mesopleuron; precoxal sulcus reticulate anteriorly, punctate posteriorly; rest of mesopleuron largely punctulate. Metanotum with weakly developed medial carina and pair of sub-parallel carinae submedially. Metapleuron smooth dorsally, rugose-reticulate ventrally. Propodeum with longitudinal median carina, but broken medially; anteriorly densely punctate; mediolaterally with oblique rugosity; posteriorly rather smooth, with submedial and lateral carinae.

Wings: Fore wing: Stigma 5.0 times as long as wide; basal posterior section of stigma 0.6 times apical posterior section of stigma; r-rs: 3/Rs : 4/Rs=1 : 1.1 : 3.6; 4/Rs curved anteriad; 2/Rs : 3/Rs: r-m: 2/M=1 : 1.1 : 1.0 : 2.0; m-cu: 2/Rs+M=1.5 : 1; 1cu-a slightly inclivous, interstitial. Hind wing: r present; 2/Sc+R vertical; Rs curved basally and sclerotized; r-m: 1/M=0.50 : 1; 1/M : Cu&cu-a=1.2 : 1; 1/Rs : 2/Rs=1.3 : 1.

Hind leg: Coxa punctulate. Length of femur, tibia and basitarsus 9.7, 14.9 and 12.5 times their width, respectively; tibial spurs 0.68 and 0.56 times as long as basitarsus.

Metasoma: First tergum 6.2 times as long as wide apically, largely smooth; dorsal carinae absent; flat in front of spiracles and convex behind spiracles, spiracle slightly protruding. Ovipositor sheath 0.09 times as long as fore wing.

Color: Brownish yellow; stemmaticum and tips of mandible blackish brown, mesoscutal lobes medially more of less dark brown. Antenna brownish yellow. Wings hyaline; stigma yellowish brown, veins dark brown. Legs brownish yellow, basal three hind tarsal segments whitish yellow. Ovipositor sheath blackish brown.

Length: Body 15.0 mm, antenna 18.5 mm, fore wing 12.9 mm, ovipositor sheath 1.1 mm.

Male: Unknown.

Holotype: ♀, Tsuifeng, VI.1984 (KSL & KCC).

Distribution: Taiwan.

Host: Unknown.

Remarks: This species differs from *D. curvinervosa* van Achterberg[1] by the scutellum costulate submedially, side of scutellum rugose posteriorly, and the sculptures of the propodeum.

Etymology: Named after Taiwan.

Genus *Xiphozele* Cameron

Xiphozele Cameron, 1906. Entomologist 39 : 204. Type species: *Xiphozele compressiventris* Cameron, by monotypy. - van Achterberg, 1979. Tijdschr. Ent. 122 : 34.

Cerotopia Enderlein, 1918. Arch. Naturgesch. 84A (11) : 219. Type species: *Cerotopia corneimacula* Enderlein, by original designation.

The genus *Xiphozele* is characterized by the following combination of characters: occipital carina far removed from hypostomal carina ventrally; epicnemial carina reach anterior margin of mesopleuron; scutellum without lateral carina; vein lcu-a of fore wing

abruptly bent distad and with sclerome; vein lr-m of hind wing straight; vein Rl of hind wing weakly curved; tarsal claws of female with only one submedial lamella. It contains 3 species in the world, including 1 species in Taiwan[1,16].

Xiphozele compressiventris Cameron
(Figs. 30, 45, 60)

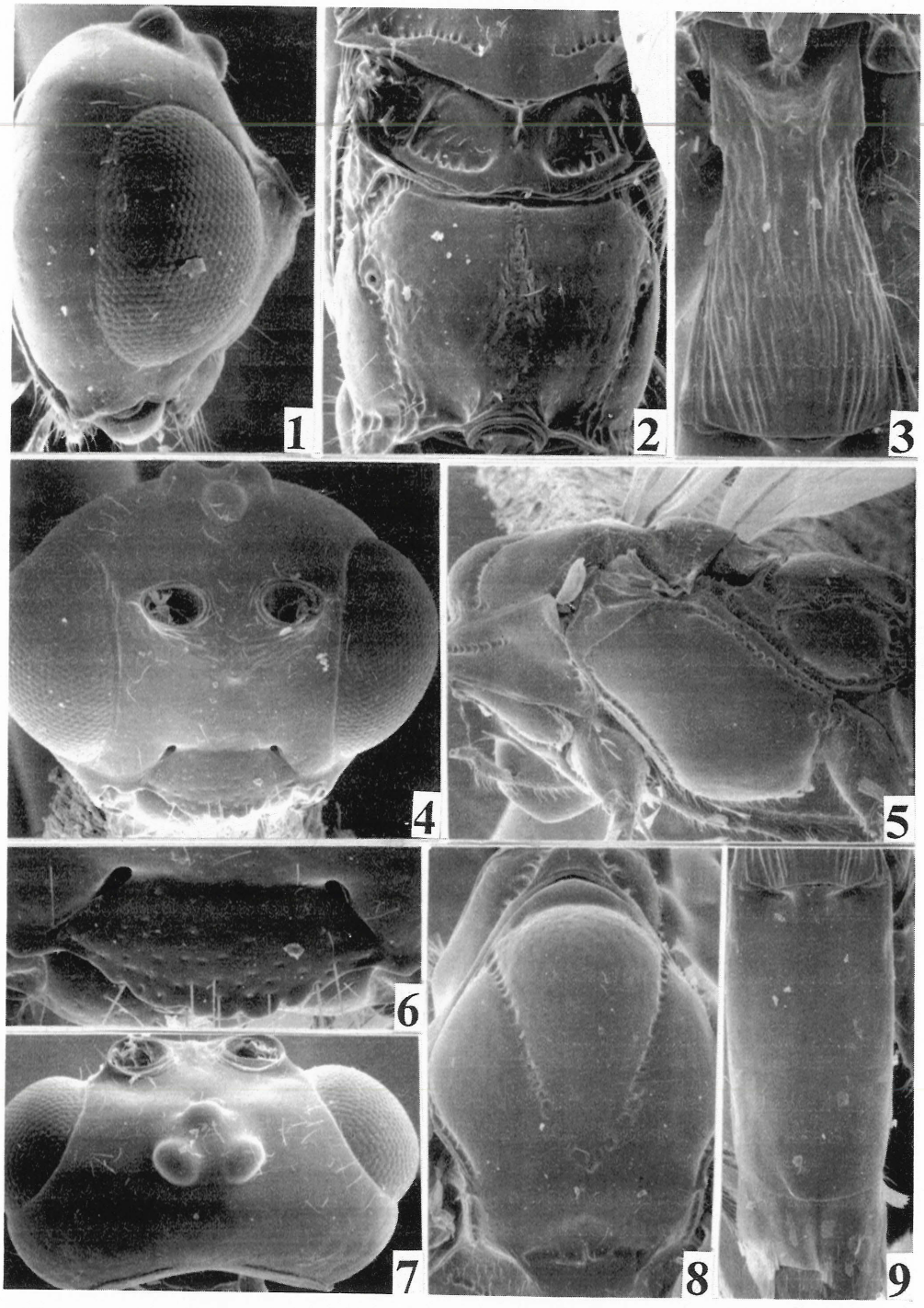
Xiphozele compressiventris Cameron, 1906. Entomologist 39 : 205. - van Achterberg, 1979. Tijdschr. Ent. 122 : 35.

Cerotopia corneimacula Enderlein, 1918. Arch. Naturgesch. 84A (11) : 220.

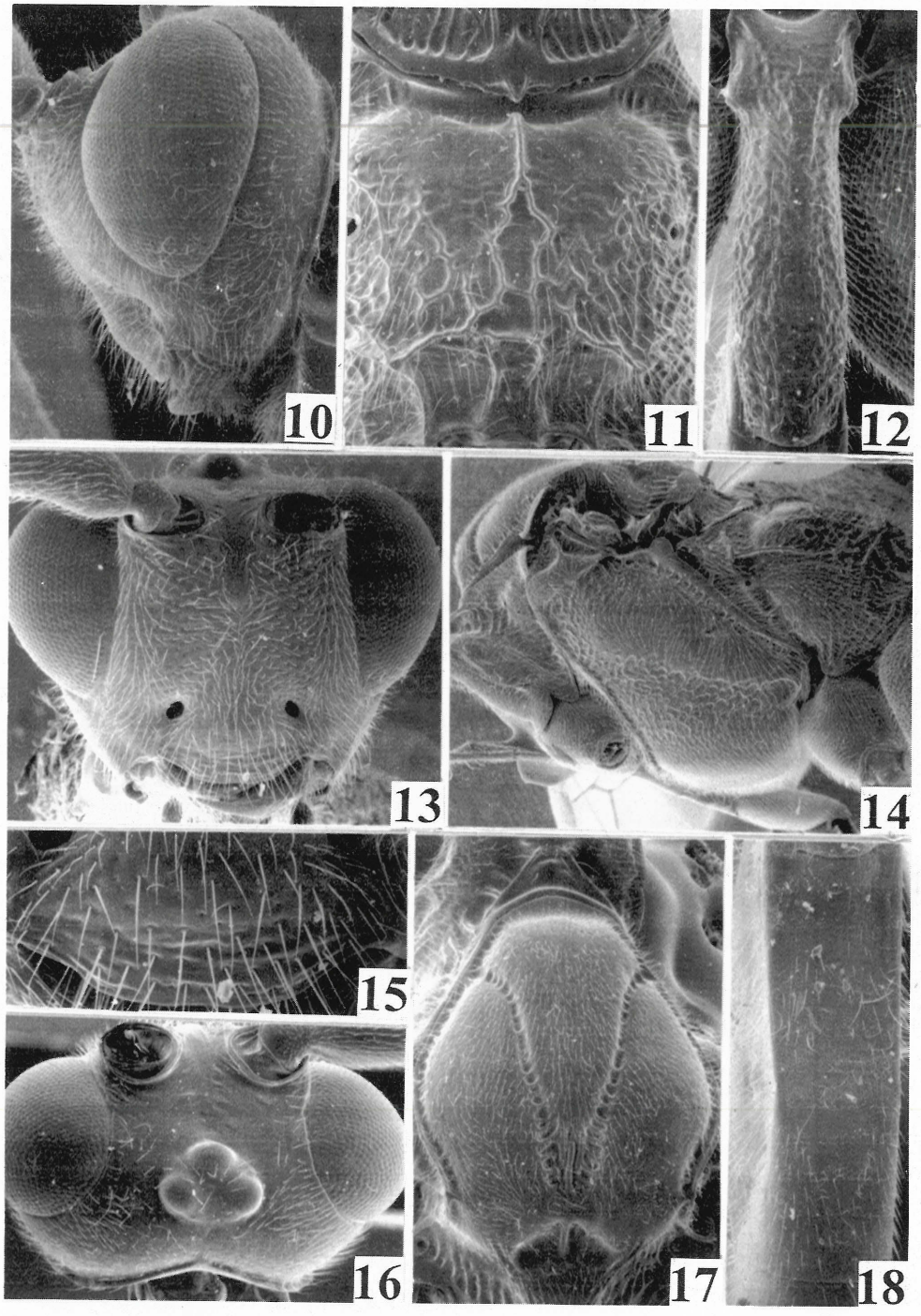
Specimens examined: Chiayi, 2♀, X.1973 (Malaise trap). Hualien, 1♀, XI.1972 (Malaise trap). Kuandouchi, 1♀1♂, IX.1970 (Malaise trap). Lienhuachih, 1♀, IX.1984 (KSL & KCC). Sungkang, 1♀, X.1984 (KSL & KCC). Sunmoonlake, 2♀, VIII, & 1♀1♂, IX. 1970 (Malaise trap). Wanfeng, 5♀1♂, VIII. 1984 (KCC). Wufeng, 1♂, VII, 4♀, VIII, 6♀, IX, 3 ♀, X, 3♀, XI, & 1♀, XII.1979 (KCC).

Distribution: Mainland China, Indonesia, Japan, New Guinea, Sarawak, Sri Lanka, Taiwan.

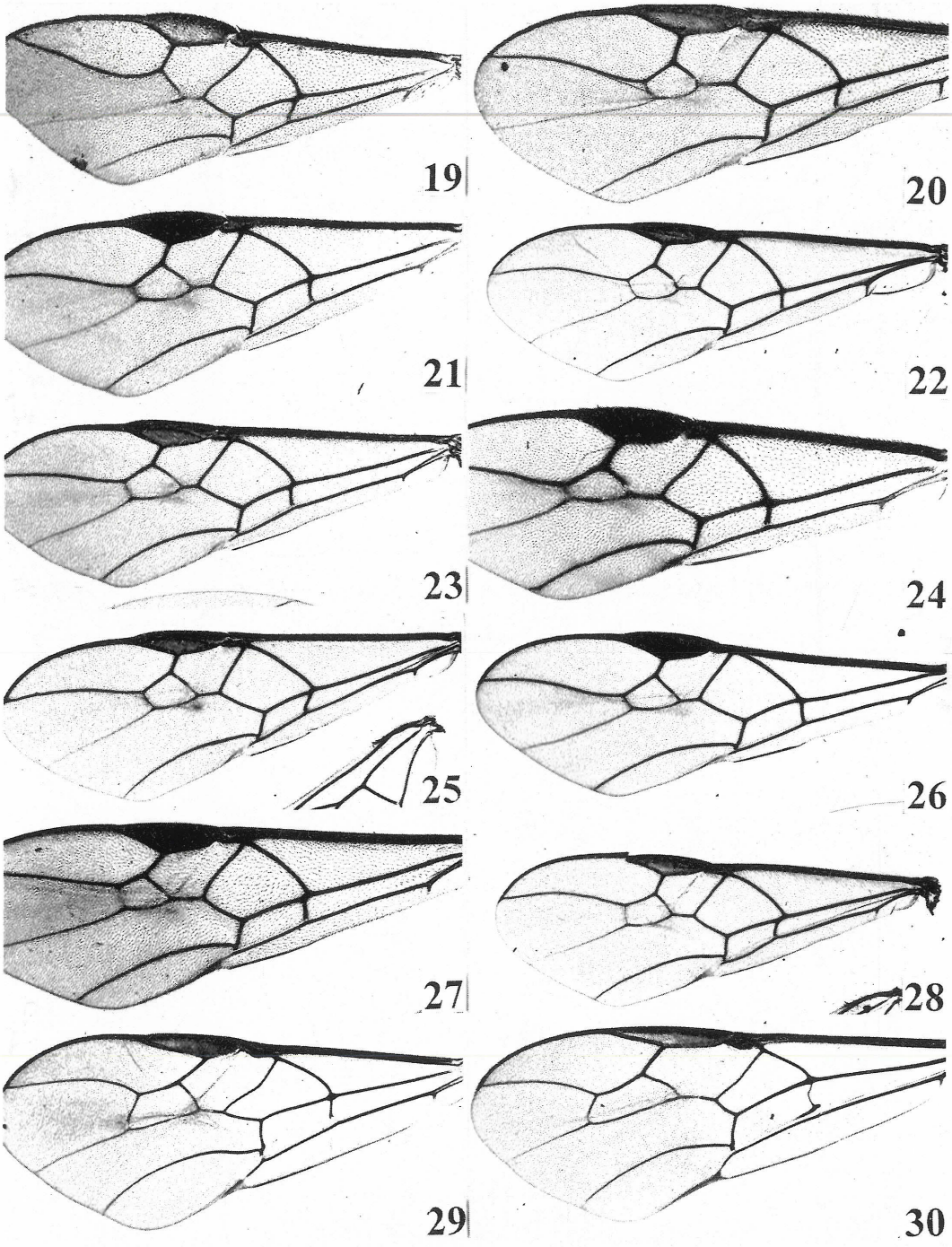
Host: *Ophiusa simillima* Guenee[1].



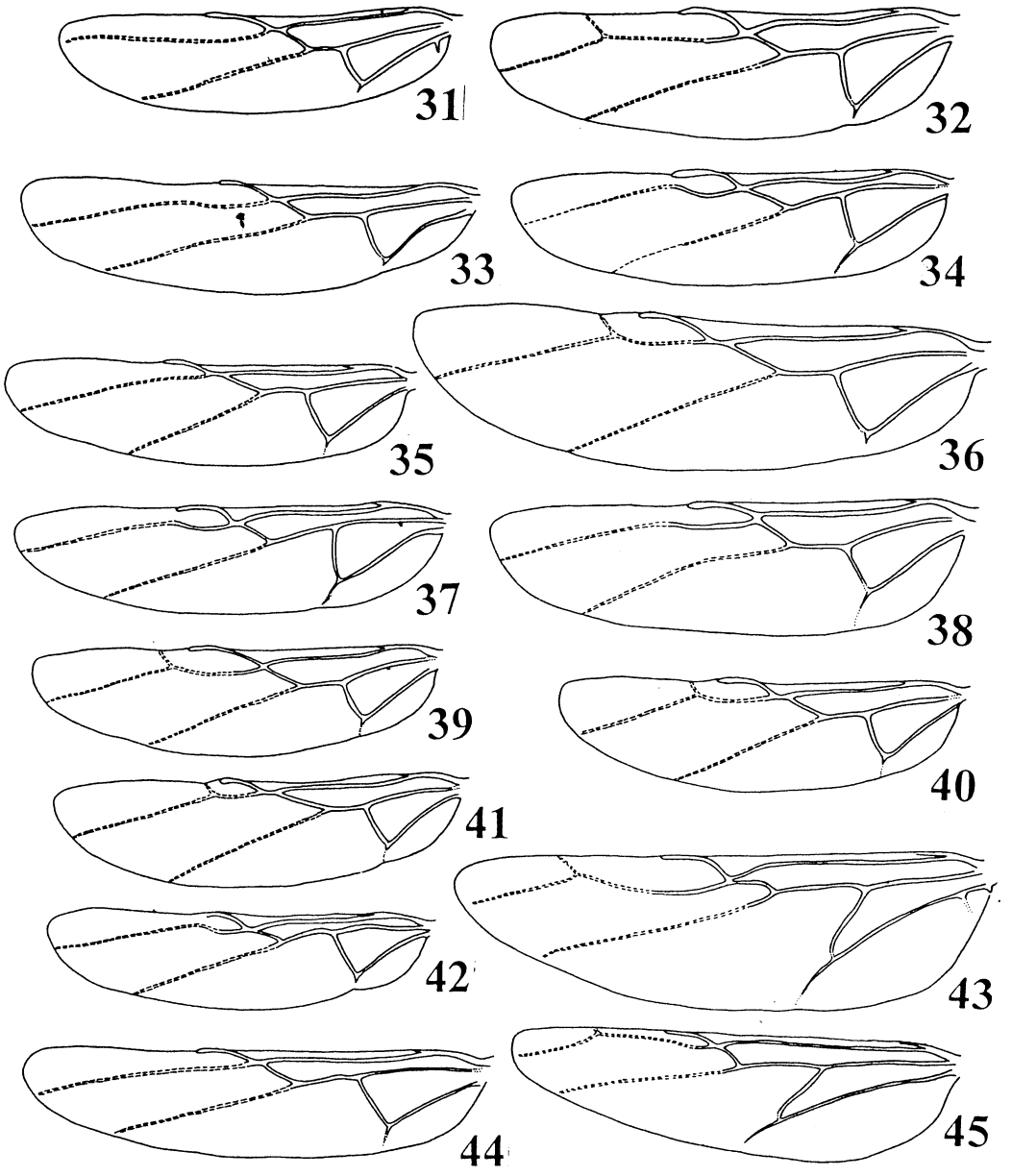
Figs. 1-9. *Charmon taiwanensis* sp. n. (♀) : 1, lateral view of head; 2, dorsal view of metanotum and propodeum; 3, dorsal view of first metasomal tergum; 4, frontal view of head; 5, lateral view of mesosoma; 6, frontal view of clypeus; 7, dorsal view of head; 8, dorsal view of mesoscutum; 9, dorsal view of second and third metasomal terga.



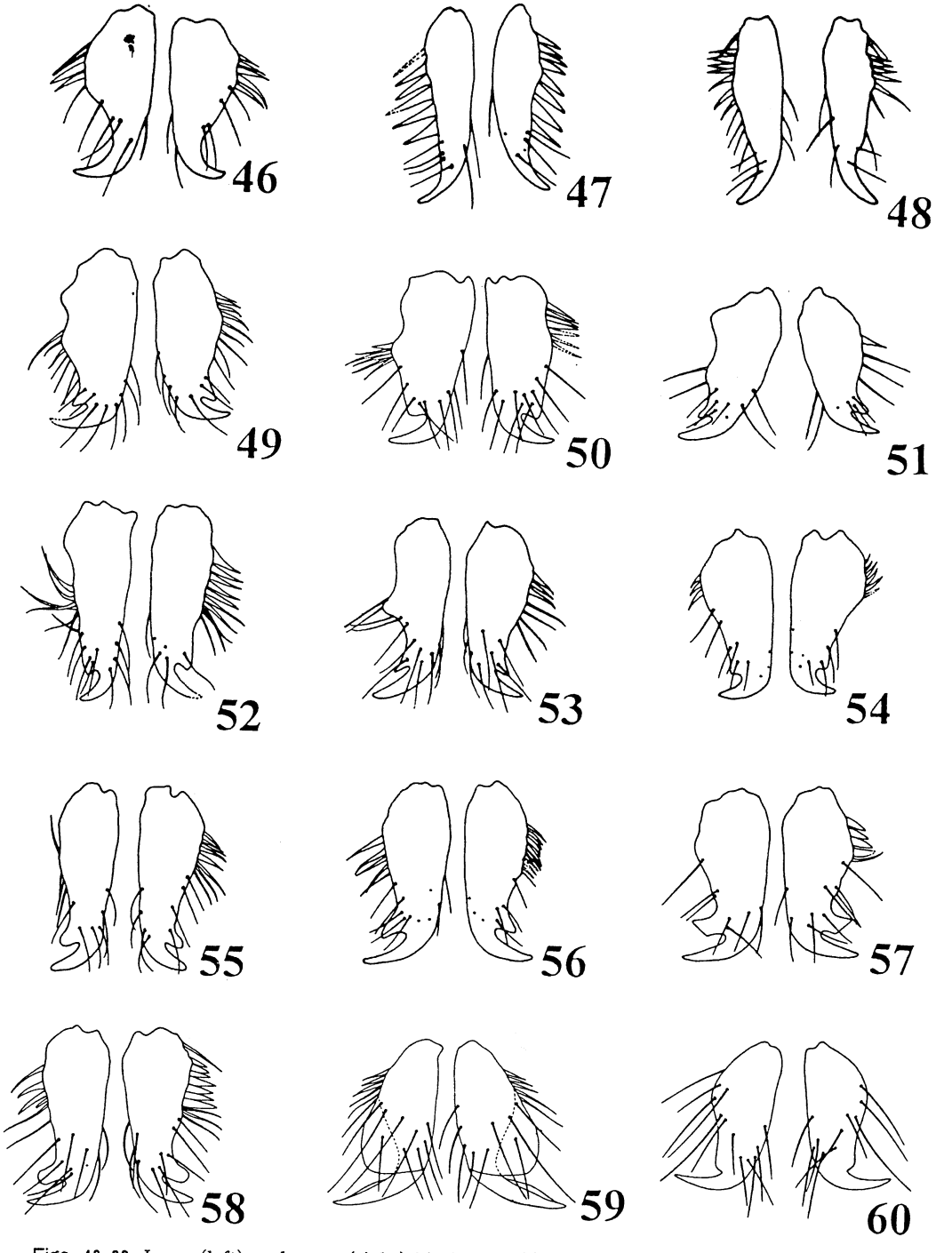
Figs. 10–18. *Homolobus* (*Oulophus*) *sungkangensis* sp. n. (♀): 10, lateral view of head; 11, dorsal view of metanotum and propodeum; 12, dorsal view of first metasomal tergum; 13, frontal view of head; 14, lateral view of mesosoma; 15, frontal view of clypeus; 16, dorsal view of head; 17, dorsal view of mesoscutum; 18, dorsal view of second and third metasomal terga.



Figs. 19–30. Fore wings (♀): 19, *Charmon taiwanensis* sp. n.; 20, *Homolobus elagabalus* (Nixon); 21, *H. rufiventralis* Maeto; 22, *H. watanabei* van Achterberg;23, *H. sinensis* Chen; 24, *H. annulatus* van Achterberg; 25, *H. flagitator* (Curtis);26, *H. longus* sp. n.; 27, *H. sungkangensis* sp. n.;28, *H. bifurcatus* van Achterberg;29, *Distilirella taiwanensis* sp. n.; 30, *Xiphozele compressiventris* Cameron.



Figs. 31–45. Hind wings (♀): 31, *Charmon taiwanensis* sp. n.; 32, *Homolobus elagabalus* (Nixon); 33, *H. truncator* (Say); 34, *H. infumator* (Lyle); 35, *H. watanabei* van Achterberg; 36, *H. rufiventralis* Maeto; 37, *H. undulatus* van Achterberg; 38, *H. annulatus* van Achterberg; 39, *H. sinensis* Chen; 40, *H. longus* sp. n.; 41, *H. flagitator* (Curtis); 42, *H. bifurcatus* van Achterberg; 43, *Distilirella taiwanensis* sp. n.; 44, *H. sungkangensis* sp. n.; 45, *Xiphozele compressiventris* Cameron.



Figs. 46-60. Inner (left) and outer (right) hind claws (♀): 46, *Charmon taiwanensis* sp. n.; 47, *Homolobus elagabalus* (Nixon); 48, *H. truncator* (Say); 49, *H. infumator* (Lyle); 50, *H. undulatus* van Achterberg; 51, *H. rufiventralis* Maeto; 52, *H. watanabei* van Achterberg; 53, *H. sinensis* Chen; 54, *H. annulatus* van Achterberg; 55, *H. flagitator* (Curtis); 56, *H. longus* sp. n.; 57, *H. sungkangensis* sp. n.; 58, *H. bifurcatus* van Achterberg; 59, *Distilirella taiwanensis* sp. n.; 60, *Xiphozele compressiventris* Cameron.

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臺灣小繭蜂科（膜翅目）之分類

VI.喜悅繭蜂亞科、滑胸繭蜂亞科及刀腹繭蜂亞科[1]

周 樑 鎰[2] 許 洞 慶[3]

摘 要

喜悅繭蜂亞科(Charmontinae)、滑胸繭蜂亞科(Homolobinae)及刀腹繭蜂亞科（Xiphozelinae）隸膜翅目、小繭蜂科，乃鱗翅目昆蟲之天敵。本文共記錄臺灣產之 1 種喜悅繭蜂、12種滑胸繭蜂及 2 種刀腹繭蜂，其中有 4 新種與 7 臺灣新記錄種。文中並附分屬與種檢索表，及形質圖。

關鍵詞：喜悅繭蜂亞科、滑胸繭蜂亞科、刀腹繭蜂亞科、分類、臺灣。

1. 臺灣省農業試驗所 研究報告第 1805 號。
2. 本所應用動物系副研究員。臺灣省 臺中縣 霧蜂鄉。
3. 國立臺灣大學植物病蟲害學研究所教授。臺北市羅斯福路四段。