

GENNARO VIGGIANI

Department of Agricultural Entomology and Zoology
University of Naples «Federico II», Portici, Italy

HUI REN

Guangdong Entomological Institute,
Guangzhou, China

New species and records of Aphelinidae (Hymenoptera: Chalcidoidea) from China

The major contributions to the knowledge of aphelinid fauna of China have been made by SILVESTRI (1927; 1930), COMPERE (1925, 1953) and, more recently, by VIGGIANI & REN (1987, 1988), REN (1988), HUANG (1991a, 1991b), HUANG *et al.* (1992).

During several years, one of us (H. Ren) collected interesting Aphelinidae, mainly in Guangdong province; some of them were obtained from hosts of economic importance.

In this paper (*) (**) four new species are described and new records are presented.

The type material of the new species will be preserved at the Guangdong Entomological Institute, Guangzhou, China and at the Dipartimento di Entomologia e Zoologia Agraria, Università di Napoli «Federico II», in Portici.

Genus *Ablerus* Howard

Ablerus Howard, 1894. Insect Life 7: 7.

Type: *Centrodora clisiocampae* Ashmead

Azotus Howard, 1898. Proc. Entomol. Soc. Washington 4: 138.

Type: *Azotus marchali* Howard

Ablerus, Shafee & Rizvi, 1984. Mitt. Sch. Entomol. Gesel. 57: 379-380.

(*) Paper partially supported by a grant from the National Research Council of Italy to the founding «Centro di Studio sulle Tecniche di Lotta biologica contro gli Organismi dannosi alle Piante».

(**) The second author was provided a grant by the State Education Commission P. R. China for «systematic studies of Aphelinidae in Italy».

The present authors accept the synonymy of *Azotus* Howard with *Ablerus* Howard, proposed by SHAFEE & RIZVI (1984).

Two *Ablerus* species are recorded from China, *A. macrochaeta* Silvestri and *A. perspicuosus* (Girault) (LIAO *et al.*, 1987). We add new records and describe a new species.

Ablerus connectens Silvestri

Ablerus connectens Silvestri, 1927. Boll. Lab. Zool. gen. agr. Portici 21: 53-55.

This species was originally described by SILVESTRI (1927) from 1 female specimen obtained from the citrus blackfly *Aleurocanthus woglumi* (Ashby) in Colombo (Sri Lanka). The type specimen (on slide) is preserved in the collection of the Dipartimento di Entomologia e Zoologia Agraria, Università di Napoli «Federico II», Portici.

Material obtained in China from the spiny whitefly, *Aleurocanthus spiniferus* (Quaintance), is referred to this species. The differences from the type, found mainly in antennal coloration, are too slight to serve as a basis for a new species.

Illustrations of female antenna and fore wing are presented as an aid in the identification of this species (Fig. I, 1-2). The male, hitherto undescribed, is very similar to the female. The antenna and the genitalia show the characters depicted in Fig. I, 3-4.

Material examined. 11 ♀ and 11 ♂ on slides. CHINA: Guangzhou, 27.xii.1984, 5.IV.1985, 27.viii.1985, 2.ix.1985, coll. H. Ren, ex *Aleurocanthus spiniferus* (Quaintance); Guangxi, Nanning, 3.vi.1985, 2.ix.1985, same collector and host.

Ablerus promacchia sp. nov.

Female. Dark brown; antennae pale brown, with F3 and club darkish; fore wing with infuscation below the venation; legs yellow. Length: about 1 mm.

Head with frontovertex wider than length of eye, the latter subequal with malar space; mandible with three teeth, the external one more developed (Fig. I, 5); maxillary and labial palpi 2-segmented (Fig. I, 6-7). Antenna (Fig. I, 8) with scape slender, cylindrical; F1 about 1.5 times as long as pedicel; F1 and F2 subequal; F3 slightly longer than wide; F4 about as long as F2, but thicker; club 1.8-2.0 times as long as F4. Setae and linear sensilla as in Fig. I, 8.

Thorax with mid lobe of mesoscutum about 1.4 times as long as wide with 2 setae; scutellum about 2 times as wide as long, with 4 setae; distance between the two anterior scutellar setae about the same as that between placoid sensilla on scutellum; propodeum about 5 times as wide as median length; thorax, propodeum and petiolar tergite strongly sculptured. Mid-tibial spur about as long

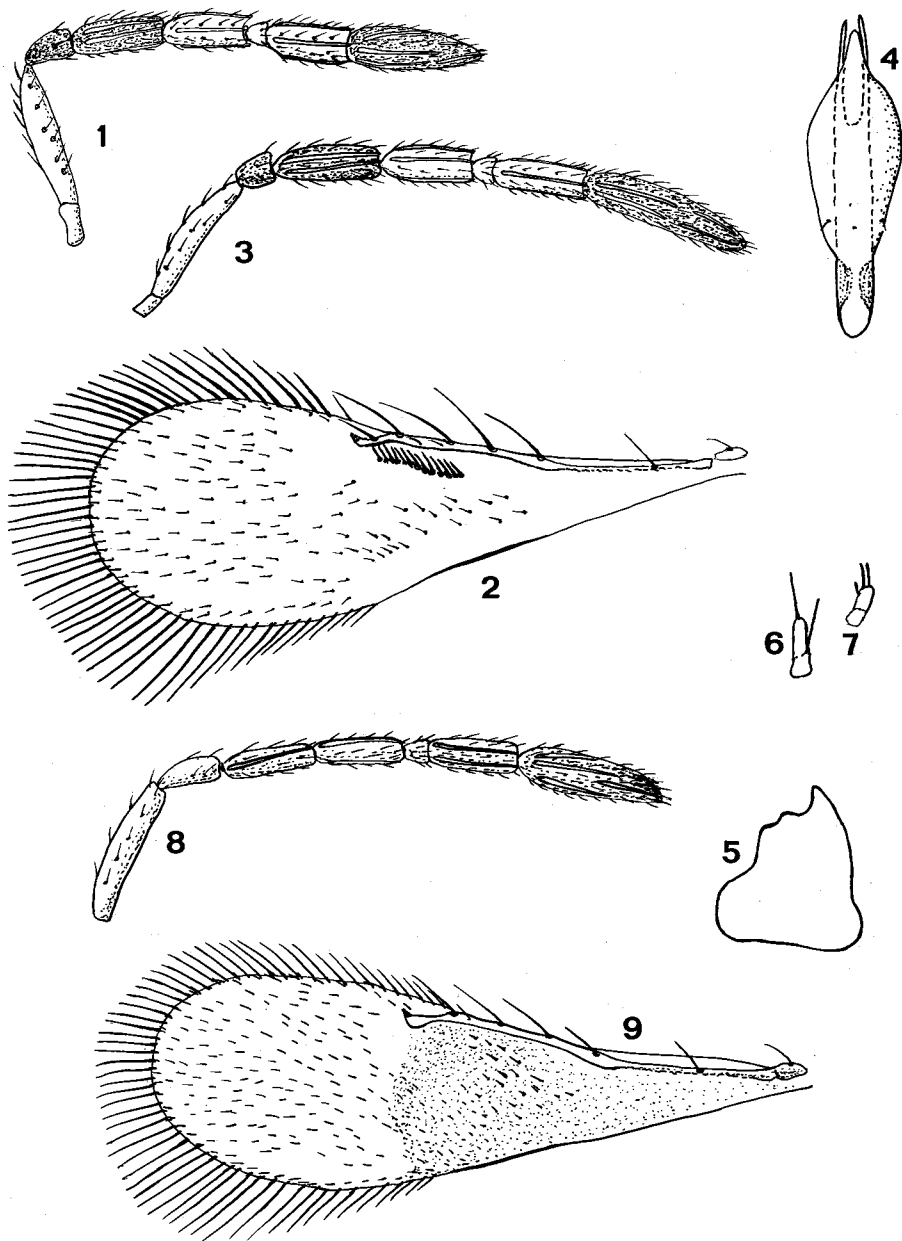


Fig. 1 - *Ablerus connectens* Silvestri. - Female. 1. Antenna. 2. Fore wing. - Male. 3. Antenna. 4. Genitalia. - *Ablerus promacchia* sp. nov. Female. 5. Mandible. 6. Maxillary palpus. 7. Labial palpus. 8. Antenna. 9. Fore wing.

as the corresponding basitarsus. Fore wing (Fig. I, 9) with marginal fringe 0.4-0.6 as long as discal width.

Gaster longer than thorax; ovipositor extending from base of gaster to well beyond apex and twice as long as middle tibia; third valvulae a little shorter than hind tarsus, about 0.3 length of ovipositor.

Male. Unknown.

Material examined. Holotype, 1 ♀. CHINA: Guangzhou, Baiyun, 28.iv.1987, coll. H. Ren. Paratype: 1 ♀, same data as holotype. Another female, not considered paratype, following data: Guangxi, Nanning, 3.vi.1985. coll. H. Ren.

Comment. The new species appears allied to *Ablerus* (= *Azotus*) *macchiaie* (ANNECKE & INSLEY, 1970), but can be distinguished by having F1 not longer than F2, mesoscutum with only 2 setae, narrower fore wings and longer fringe.

Key to identification of the *Ablerus* Howard (females) recorded from China

- 1 - Fore wing with a row of strong setae below marginal vein 2
- Fore wing lacking a row of strong setae below marginal vein 3
- 2 (1) - Mid lobe of mesoscutum with at least 4 normal setae; fore wing of normal shape, with fringe shorter than one-half of discal width *connectens* Silvestri
- Mid lobe of mesoscutum with 2 strong setae; fore wing rather narrow, with fringe one-half or longer than half of the discal width *macrochaeta* Silvestri
- 3 (1) - Fore wing with a patchy distribution of discal setae *perspeciosus* (Girault)
- Fore wing lacking a patchy distribution of discal setae ... *promacchiaie* Viggiani & Ren

Genus *Bardylis* Howard

Bardylis Howard, 1907. Tec. Ser., Bur. Entomol. U. S. Dep. Agr. 12: 84

Type: *Bardylis australiensis* Howard

The genus *Bardylis* Howard, including 4 species, has been recently synonymized with *Pteroptrix* Westwood (NOYES & VALENTINE, 1989). POLASZEK & HAYAT (1992) apparently did not recognize the above synonymy. Our opinion is the same. Beside the different antennal formula, the male genitalia of *B. australiensis* Howard are of Coccophaginae type. In *B. parvipennis* (Gahan) (Fig. III, 1), the phallobase is very narrow, bacilliform, slightly enlarged only at the distal one-fourth, without parameres, digiti or arms, and the aedeagus shows two bacilliform apodemes as long as its body.

Bardylis parvipennis (Gahan)

Casca parvipennis Gahan, 1927. Bull. Entomol. Res. 18: 151-153.

This species, described from Java, is rather well-known as a parasitoid of

Temnaspidiotus destructor (Signoret) (TAYLOR, 1935). It is reported for the first time from China.

Material examined. 17 ♀ and 8 ♂. CHINA: Guangdong, Lianjiang, 19.iii.1986, coll. H. Ren, ex *Parlatoria proteus* (Curtis) and *Temnaspidiotus destructor* (Signoret) on mango.

Genus *Encarsia* Förster

Encarsia Förster, 1878. Verh. naturh. ver. Preuss. Rhein. 35: 65.

Type: *Encarsia tricolor* Förster

Up to now 18 species of *Encarsia* have been recorded from China. We add 3 new records and describe a new species.

Encarsia diaspidicola (Silvestri)

Prospaltella diaspidicola Silvestri, 1909. R. R. Acc. Lincei 19: 564-565.

This species originally described from South Africa, has been introduced into several countries for biological control of the white peach scale, *Pseudaulacaspis pentagona* (Targioni Tozzetti).

Material examined. 1 ♀. CHINA: Guangzhou, 22.vi.1988, coll. H. Ren, ex *Pseudaulacaspis pentagona* (Targioni Tozzetti) on *Prunus persica*.

Encarsia longifasciata Subba Rao

Encarsia longifasciata Subba Rao, 1984. Proc. Indian Acad. Sci. (An. Sc.) 93: 260.

Encarsia longifasciata, Hayat, 1989. Oriental Insects 23: 29-30.

This peculiar species was known only from India, where it was reared from an unknown blackfly on *Murraya* sp. The present record confirms that this parasitoid is linked to whiteflies.

Material examined. 4 ♀. CHINA: Nanning, 8.viii.1984, coll. H. Ren, ex *Aleurolobus marlatti* (Quaintance).

Encarsia lutea (Masi)

Prospaltella lutea Masi, 1910. Boll. Lab. Zool. gen. agr. Portici 4: 25.

Encarsia lutea, Viggiani & Mazzone, 1980. Boll. Lab. Ent. agr. Filippo Silvestri 37: 51-53.

The material reported below is attributed to *E. lutea*, in spite of some chromatic variations.

Material examined. 1 ♀. CHINA: Nanning, 5.x.1985, coll. H. Ren, ex whitefly. 2 ♀, Guangxi, 5.xi.1985, coll. H. Ren; 1 ♀ Shixing, 5.xi.1985, coll. H. Ren, ex *Aleurolobus marlatti* (Quaintance).

Encarsia sinica sp. nov.

Female. Body largely yellow; head brown; face pale brown with a brown cross-band above toruli between eyes; antennae pale brown yellow, with basal half of scape brown. Anterior parts of pronotum, mid lobe of mesoscutum, axillae, mesopleura, sides of propodeum, sides of gaster, tergum VII and third valvulae black brown; legs yellow, hind coxae largely brown; wings hyaline. Length: 0.9 mm.

Head dorsum narrower than thorax; POL about 0.6 of OOL in length. Mandibles distinctly tridentate. Antenna (Fig. II, 1) with radicle 2 times as long as wide; scape narrow, slightly more than 4 times as long as wide; pedicel about one-third shorter than F1; flagellum slender, with club not clearly separate from the other segments; F1 3 times as long as wide; subsequent segments of the same shape, but gradually shorter. Flagellar segments each with 1-3 linear sensilla each, except on F1.

Thorax (Fig. II, 2) 0.4 times as long as gaster, with 4+2+2 setae on mid lobe of mesoscutum, 2 setae on scapulae, 1 seta on axilla; scutellum with 4 setae, distance between the first pair about half that between posterior pair; scutellar placoid sensilla very close to each other. Fore wing (Fig. II, 3) about 2.4 as long as wide, with costal cell slightly shorter than marginal vein; 2 setae on submarginal vein; 3-4 setae anterior to parastigma; discal ciliation rather sparse below marginal vein; fringe short, about one-fifth of greatest discal width. Legs with tarsi 5-segmented; mid-tibial spur a little shorter than the corresponding basitarsomere.

Gaster conical, longer than head and thorax combined, syntergum triangular slightly longer than wide; ovipositor powerful, originating at base of gaster, clearly extruded and 2 times as long as middle tibia; third valvulae about 0.3 of entire ovipositor.

Male. Unknown.

Material examined. Holotype, ♀. CHINA: Guangdong, 1.xi.1988, coll. H. Ren, ex *Dialeurodes* sp. Paratypes: 4 ♀, same data as holotype.

Comment. The new species can be included in the *strenua*-group. It is allied to *E. perstrenua* Silvestri from which it may be separated by the longer antennae with an indistinct club, mid lobe of mesoscutum with 4 pairs of setae, and body coloration.

Encarsia transvena (Timberlake)

Prospaltella transvena Timberlake, 1926. Proc. Hawaii Entom. Soc. 6: 312.

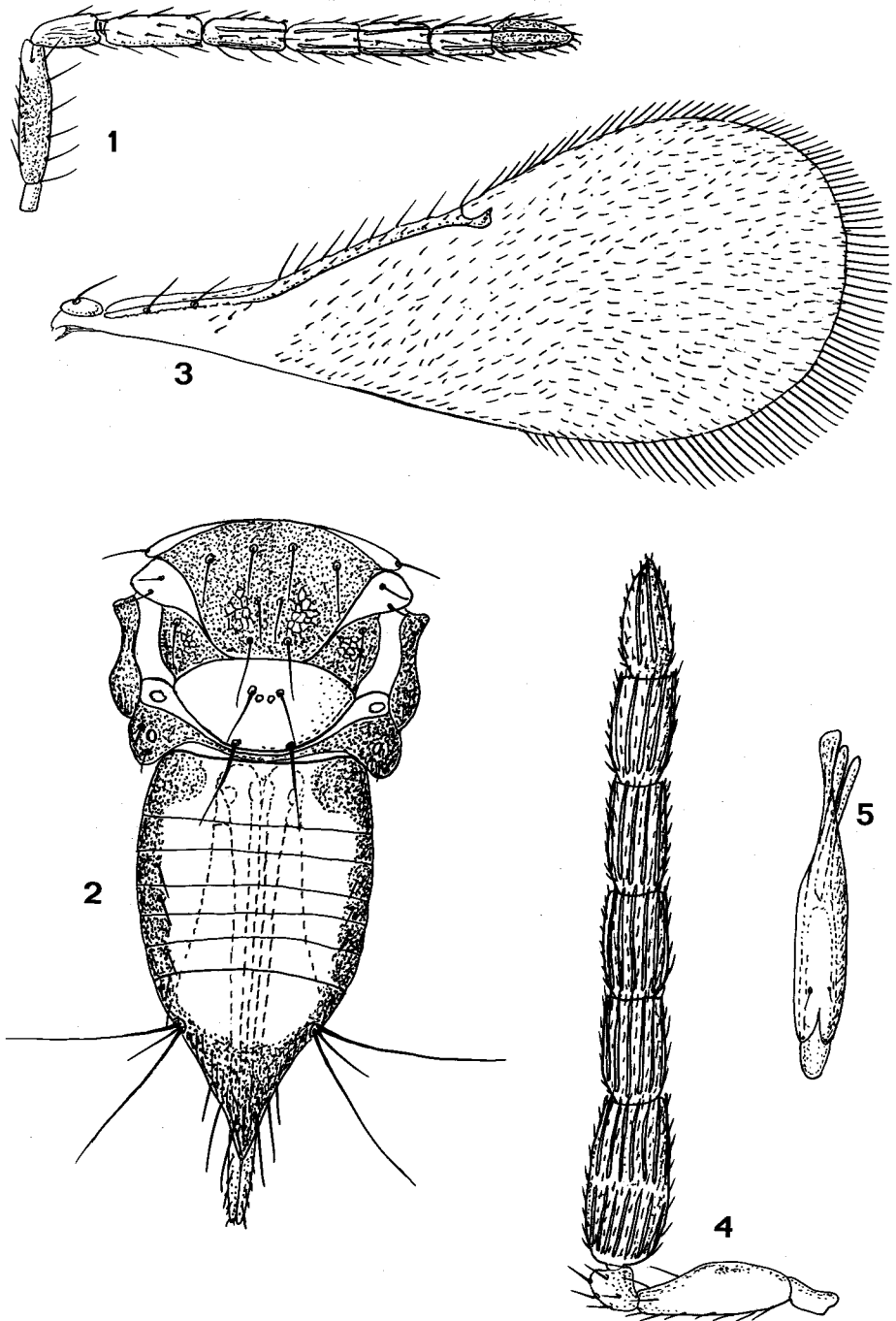


Fig. II - *Encarsia sinica* sp. nov. - Female. 1. Antenna. 2. Thorax and gaster. 3. Fore wing. - *Physcus flavicornis* Compere & Annecke. - Male. 4. Antenna. 5. Genitalia.

This cosmopolitan and polyphagous species has not been hitherto recorded from China.

Material examined. 1 ♀. CHINA: Guangdong, Dianpai, 10.x.1983, coll. H. Ren, ex whitefly;
1 ♀ Guangdong, Xinhui, 20.xi.1986, coll. H. Ren, ex *Dialeurodes citri* (Ashmead).

Key to the identification of the *Encarsia* Förster (females) recorded from China

- 1 - Body flattened; hind femur enlarged; discal setae very small and scattered *plana* Viggiani & Ren
- Body, hind femur and discal ciliation, normal 2
- 2 (1) - Antenna with funicle not clearly distinct from club 3
- Antenna with funicle well distinct from club 7
- 3 (2) - Body brown with yellow 4
- Body entirely yellowish; F1 slightly longer than F2; mid lobe of mesoscutum with 4 setae *lahorensis* (Howard)
- 4 (3) - Front margin of the clypeus with a median, small, tooth-shaped projection *clypealis* (Silvestri)
- Clypeus without a median, small projection 5
- 5 (4) - F1 longer than F2, mid lobe of mesoscutum with 8 setae *sinica* Viggiani & Ren
- F1 shorter than F2, mid lobe of mesoscutum with 10 setae 6
- 6 (5) - F1 at least subsquared, slightly longer half the length of F2; fore wing infuscated below marginal vein *smithi* (Silvestri)
- F1 transverse, at most half the length of F2 *ishii* (Silvestri)
- 7 (2) - Antenna with 4-segmented funicle and 2-segmented club 8
- Antenna not as above 11
- 8 (7) - Mid-tarsus 4-segmented; head and thorax dark brown, gaster yellowish *formosa* Gahan
- Mid-tarsus 5-segmented 9
- 9 (8) - Fore wing with an asetose area around the stigmal vein 10
- Fore wing without an asetose area around the stigmal vein; body yellowish; F1 subequal to F2; mid lobe of mesoscutum with 8 setae *citrofila* (Silvestri)
- 10 (9) - Mid lobe of mesoscutum with 8-9 normal setae *nipponica* Silvestri
- Mid lobe of mesoscutum with 2 setae *longifasciata* Subba Rao
- 11 (7) - Antenna with 3-segmented funicle and 3-segmented club 12
- Antenna with 2-segmented funicle and 4-segmented club 25
- 12 (11) - Ovipositor at least as long as mid-tibia and tarsus combined 13
- Ovipositor shorter than mid-tibia and tarsus combined 15
- 13 (12) - Pedicel longer than F1 *opulenta* (Silvestri)
- Pedicel not longer than F1 14
- 14 (13) - Mid lobe of mesoscutum with 10 setae *strenua* (Silvestri)
- Mid lobe of mesoscutum with 4 setae *perstrenua* (Silvestri)
- 15 (12) - F1 longer than F2 *armata* (Silvestri)
- F1 shorter or as long as F2 16
- 16 (15) - Fore wing almond-shaped, with long fringe 17
- Fore wing normal 19
- 17 (16) - Fore wing with asetose area around stigmal vein; mid-tarsus 5-segmented 18
- Fore wing without asetose area around stigmal vein; mid-tarsus 4-segmented *lilyingae* Viggiani & Ren

- 18 (17) – Submarginal vein of fore wing with 2 setae; fore wing almost parallel-sided beyond venation and with apex broadly rounded, without an inflection at level of retinaculum *citrina* (Craw)
 – Submarginal vein of fore wing with 1 seta; fore wing abruptly narrowed beyond venation and with apex narrowly rounded, with an inflection at level of retinaculum *lounsburyi* (Berlese & Paoli)
- 19 (16) – F1 longer than wide 20
 – F1 subsquared or transverse 21
- 20 (19) – Body brown with yellow; not more than 3 setae before parastigma; scutellum with placoid sensilla not placed close together *affectata* (Silvestri)
 – Body yellowish; 4-11 setae before parastigma disposed in a curved row; scutellum with placoid sensilla placed close together *transvena* (Timberlake)
- 21 (19) – Body yellowish, only third valvulae of ovipositor black *lutea* (Masi)
 – Body mostly brown with some yellow 22
- 22 (21) – Syntergum two-third as long as wide; ovipositor longer than hind tibia, inserted at level of T2; third valvulae 2 times as long as hind basitarsus *amicula* Viggiani & Ren
 – Others combinations of characters 23
- 23 (22) – Ovipositor very short, originating from T6 level, not more than three-quarters the length of mid-tibia *aurantii* (Howard)
 – Ovipositor longer, originating anterior from T6 level 24
- 24 (23) – F1 subsquared; fringe of fore wing about one-fourth of the discal width *perniciosi* (Tower)
 – F1 transverse; fringe of fore wing about half as long as discal width *herndoni* (Girault)
- 25 (11) – Maxillary palpi 2-segmented; F1 subequal F2; mid lobe of mesoscutum with 6 setae; fringe of fore wing one-third of discal width *berlesei* (Howard)
 – Maxillary palpi 1-segmented; mid lobe of mesoscutum with 4 setae; fringe longer 26
- 26 (25) – F1 and F2 subsquared, without linear sensilla; fringe of fore wing about one-half the discal width *inquirenda* (Silvestri)
 – F1 shorter than F2, the latter with some linear sensilla; fringe of the fore wing about three-quarters as long as the discal width *diaspidicola* (Silvestri)

Genus *Physcus* Howard (*)

Physcus Howard, 1895. Tech. Ser. Div. Entomol., U.S.D.A. 1: 43.

Type: *Physcus varicornis* Howard

Physcus flavicornis Compere & Annecke

Physcus flavicornis Compere & Annecke, 1961. J. Ent. Soc. S. Africa 24: 26.

Coccobius flavicornis, Hayat, 1984. Oriental Insects 18: 299.

This species was described on 5 females, obtained from *Pseudaonidia duplex* (Cockerell) in China. The male, hitherto unknown, is described here.

Male. Body completely dark brown; legs brown, basal end of femora, distal end of tibia and tarsi, pale. Antenna (Fig. II, 4) with scape, pedicel and F1

(*) The opinion nr. 1646 of the International Commission on Zoological Nomenclature (Bull. Zool. Nom. 48, 2: 183-184) has not accepted by the senior author for the reasons given in Bull. Zool. Nom. 45: 288-291.

brown, F2-F6 pale brown; scape 2.5 as long as wide and subequal to F1 in length; F1 about 1.5 as long as wide and about 1.3 times as long as F2; F2-F6 subequal in length, F2 about 1.4 times as long as wide; F6 narrower. Genitalia as in Fig. II, 5.

Material examined. 4 ♀ and 4 ♂. CHINA: Guangdong, Shaoguan, 10.ix.1987, coll. H. Ren, ex *Pseudaonidia duplex* (Cockerell) on *Camellia*.

Genus *Proaphelinoides* Girault

Proaphelinoides Girault, 1917. Descriptiones Stellarum Novarum (Priv. publ.): 4.

Type: *Proaphelinoides elongatiformis* Girault

Bestiola Nikolskaja, 1963. Entomol. Obozr. 42: 187.

Type: *Bestiola mira* Nikolskaja

This genus includes 5 described species, but 4 of them, *P. australis* Girault, *P. bendovi* Tachikawa, *P. mirus* (Nikolskaja) and *P. elongatiformis* Girault, are very closely related and may well represent variations of the same species, *P. elongatiformis* Girault.

The only species reported from China is *P. bendovi* Tachikawa (TACHIKAWA, 1984).

Proaphelinoides elongatiformis Girault

Proaphelinoides elongatiformis Girault, 1917. Descriptiones Stellarum Novarum (Priv. publ.): 4.

To this species are attributed most of the few specimens obtained in China from *Odonaspis* sp.

Material examined. 4 ♀. CHINA: Guangzhou, 8-11.x.1986, 28.iv.1987, coll. H. Ren, ex *Odonaspis* sp. on bamboo. 2 ♀, same data, except: Guangxi, Nanning, 15.vii.1985.

Proaphelinoides prope anomalus Hayat

The only specimen available shows features very similar to *P. anomalus* Hayat (HAYAT, 1984), but has the prelinea calva area largely devoid of setae.

Material examined. 1 ♀. CHINA: Guangxi, Nanning, 15.vii.1985, coll. H. Ren.

Genus *Promuscidea* Girault

Promuscidea Girault, 1917. New Javanese Hymenoptera (Priv. publ.): 6.

Type: *Promuscidea un fasciativentris* Girault

This genus is apparently recorded here for the first time from China.

Promuscidea aphelinoides (Compere)

Eurymyiocnema aphelinoides Compere, 1947. Bull. Entomol. Res. 38: 384.

This species has been reported from Java, India and Egypt.

Material examined. 3 ♀ and 3 ♂. CHINA: Guangdong, Shenzhen, 14.xi.1985, coll. H. Ren, ex *Nipaeococcus viridis* (Newstead), probably as hyperparasitoid; 1 ♀ and 1 ♂, same data, 31.vii.1986.

Genus *Pteroptrix* Westwood

Pteroptrix Westwood, 1833. Philos. Mag. 3: 344.

Type: *Pteroptrix dimidiata* Westwood

Archenomus Howard, 1898. Proc. Entomol. Soc. Wash. 4: 136.

Type: *Archenomus bicolor* Howard

Casca Howard, 1907. Tech. Ser., Bur. Entomol. U. S. Dep. Agr. 12: 83.

Type: *Casca chinensis* Howard

Artas Howard, 1907. Tech. Ser., Bur. Entomol. U. S. Dep. Agr. 12: 85.

Type: *Artas koebelei* Howard

Hispaniella Mercet, 1911. Bol. R. Soc. Esp. Hist. Nat. 11: 511.

Type: *Archenomus lauri* Mercet

Pteroptrichoides Fullaway, 1913. Rep. Hawaii Agr. Sta. 1912: 27.

Type: *Pteroptrichoides perkinsi* Fullaway

Apteroptrix Girault, 1915. Mem. Queens. Mus. 4: 65.

Type: *Apteroptrix albifemur* Girault

Pseudopteroptrix Fullaway, 1918. Proc. Hawaii. Entomol. Soc. 3: 464.

Type: *Pseudopteroptrix imitatrix* Fullaway

Oa Girault, 1929. New Pests from Australia. VI.: 4.

Type: *Archenomus biguttatus* Girault

Aphelosoma Nikolskaja, 1963. Entomol. Obozr. 42: 186.

Type: *Aphelosoma plana* Nikolskaja

Archenomiscus Nikolskaja, 1966. Opred. Fauni SSSR 91: 249.

Type: *Pteroptrix maritimus* Nikolskaja

The genus *Pteroptrix* Westwood is here defined as Viggiani & Garonna (1993). It includes 53 species, of which 13 are recorded from China.

Pteroptrix bisetae sp. nov.

Female. General color blackish brown; antennae pale brown, with scape darker; head with frons yellow and lower part of face blackish brown. Thorax with side of mid-lobe of mesoscutum and scutellum yellow. Legs brown, with ends of tibiae and tarsi paler. Fore wing pale infusate below entire length of marginal vein. Length: 0.6-0.7 mm.

Head in frontal view about 2.5 times as wide as vertex; eyes fairly large, about 1.5 times as long as malar space; toruli slightly above lower level of eyes; posterior aspect with a transverse sulcus extending across the entire occiput to meet the frontal sulcus below the eyes. Mandibles with three teeth, the internal one less distinct (Fig. III, 2). Maxillary and labial palpi 1-segmented. Antenna (Fig. III, 3) with scape 3.2-3.7 times as long as wide; pedicel a little shorter than basal two funicle segments combined; F1 and F2 very similar and slightly longer than wide, F3 a little longer and wider than F2; club about 2.4 times as long as funicle, with basal segment about 1.2 times as long as wide and slightly longer than pedicel; subsequent club segments gradually narrower and longer; funicle segments without linear sensilla; club segments each with 2-3 linear sensilla.

Thorax a little shorter than gaster (about 1:1.4); mid lobe of mesoscutum and scutellum each with 4 setae. Fore wing (Fig. III, 4) about 3.2 times as long as wide; submarginal vein with 2 setae; marginal vein about 0.8 times as long as costal cell, rather enlarged near the stigmal vein and with 4 primary setae; stigmal vein sessile; discal ciliation rather scanty; fringe about 0.6 times as long as discal width. Hind wing 9 times as long as wide; the longest marginal cilia 2.7 times as long as the discal width.

Ovipositor about 1.4 times as long as mid-tibia; third valvulae about equal in length to mid-tibial spur; the latter 1.6 times as long as the corresponding basitarsus.

Male. Colour as in the female. Antenna (Fig. III, 5) with scape about 3.6 times as long as wide; pedicel about as long as the first flagellar segment and slightly narrower; second flagellar segment a little longer than wide; flagellar segments 3-5 subequal, about 2.5 times as long as wide; last flagellar segment about 3.5 times as long as wide. All flagellar segments, except the second, provided with a whorl of long seta-like sensilla. Genitalia about 0.12 mm in length, as in Fig. III, 6. Type of genitalia appears unique, mainly because of presence of one ventral phallobase lobe, distally divided.

Material examined. Holotype, ♀. CHINA: Hainan, Qiongsan, 22.xi.1985, coll. H. Ren, ex *Cornuaspis* sp. on *Citrus*. Paratypes: 12 ♀ and 3 ♂, same data; 10 ♀, Szechwan, Chengdu, 21.iv.1983, 25.v.1984, coll. Li Zhong.

Comment. The new species cannot be placed with certainty in any group

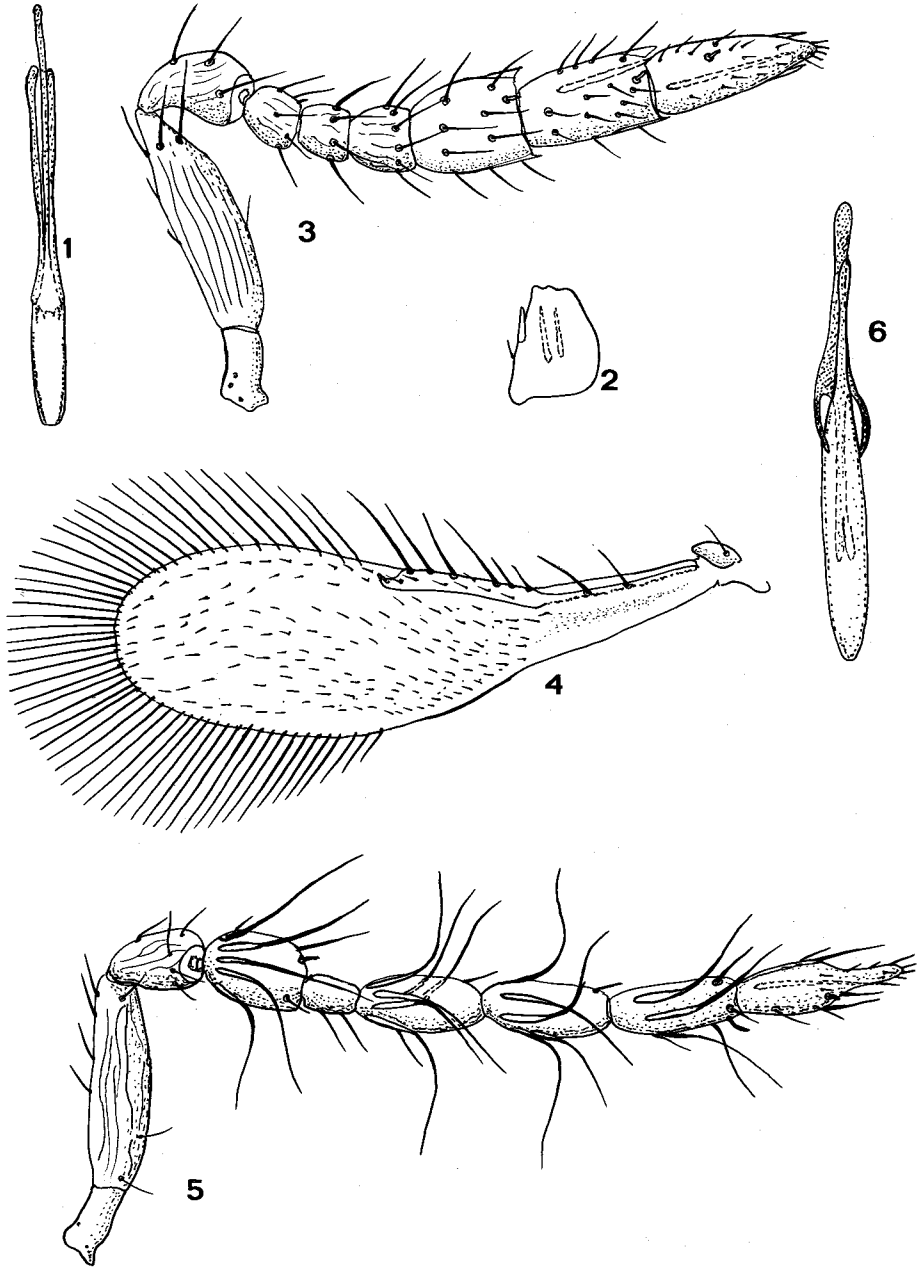


Fig. III - *Bardylis parvipennis* (Gahan) - 1. Male genitalia. - *Pteroptrix bisetae* sp. nov. - Female.
2. Mandible. 3. Antenna. 4. Fore wing. - Male. 5. Antenna. 6. Genitalia.

proposed by PRINSLOO & NESER (1990). It is unique for the combination of characters shown by the antennae of both sexes and the fore wings.

Pteroptrix chinensis (Howard)

Casca chinensis Howard, 1907. Tech. Serv. U. S. Dept. Agr. Bur. Entomol. 12 (Part IV): 83-84.

This species was originally described on two female specimens reared in California from *Cornuaspis beckii* (Newman), collected in China. COMPERE (1936) misidentified the species based on material received by Silvestri in 1924-1925 (SILVESTRI, 1929) and regarded its original host record as questionable. Subsequently the same author (COMPERE, 1953) gave some corrections on his previous *Pteroptrix* (= *Casca*) identifications, but confirmed the opinion, based on Flanders' data, that *P. chinensis* should be considered a parasitoid of *Aonidiella aurantii* (Maskell) and not of *C. beckii*.

The second author of the present work collected *Pteroptrix* several times from *C. beckii* on *Cycas revoluta* in Guangzhou, the original host and locality of *P. chinensis*. This *Pteroptrix* population was constantly uniparental and can be assigned to *P. chinensis* sensu COMPERE (1953).

Another *Pteroptrix* population, this time biparental, was reared from *Phenacaspis cockerelli* (Cooley) on *Aleurites moluccana*, *Cycas revoluta*, *Mangifera indica* and *Michelia alba*. The females of this populations are apparently indistinguishable from *P. chinensis*. The male is characterized by a typical antennal scape, which is enlarged, with the ventral margin truncate and basally with a probable sensorial structure (Fig. IV, 1). The genitalia (Fig. IV, 2) show, as in the *dimidiata* and *maritima* groups, a rather short phallobase, lacking dorsal arms, with ventral lobes as long as its body. The male here attributed to *P. chinensis* differs from that of *P. smithi* (Compere) mainly by the shape of antennal scape (Fig. IV, 3). The male genitalia (Fig. IV, 4) are very similar, but the phallobase and the aedeagal apodemes appear slightly narrower at base.

Material examined. 12 ♀ on slide. CHINA: Guangzhou, Whuadi, 12.x.1990, coll. H. Ren, ex *Cornuaspis beckii* (Newman) on *Cycas revoluta*. 12 ♀ and 11 ♂, Guangzhou, 4.iv.1986, viii.1989, 10.v.1990, coll. H. Ren, ex *Phenacaspis cockerelli* (Cooley) on *Cycas revoluta*.

Pteroptrix calva (Viggiani & Ren), n. comb.

Archenomus calvus Viggiani & Ren, 1987. Boll. Lab. Ent. agr. Filippo Silvestri 43 (1986): 35-37.

The actual host of *P. calva*, originally described from *Aulacaspis* sp. on *Prunus persica*, is the white peach scale *Pseudaulacaspis pentagona* (Targioni Tozzetti). From the same host, the new species *Pteroptrix processa* (Huang), n. comb., has been recently described from China (HUANG, 1991b). The validity of the latter species needs to be confirmed.

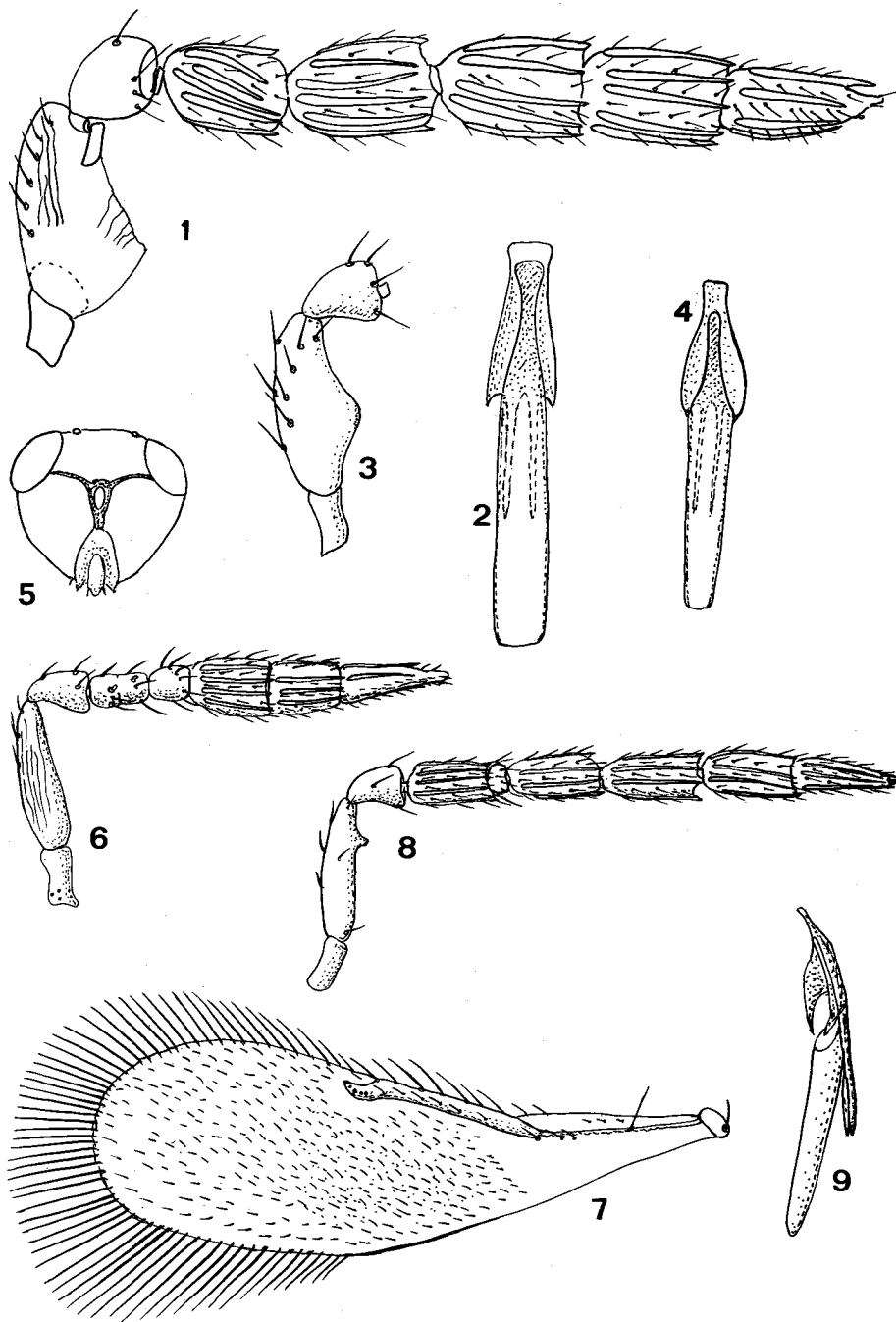


Fig. IV - *Pteroptrix chinensis* (Howard). - Male. 1. Antenna. 2. Genitalia. - *Pteroptrix smithi* (Compere). - Male. 3. Scape and pedicel of the antenna. 4. Genitalia. - *Pteroptrix confuniculata* (Huang). - Female. 5. Head, posterior aspect. 6. Antenna. 7. Fore wing. - Male. 8. Antenna. 9. Genitalia.

Pteroptrix confuniculata (Huang), n. comb.

Archenomus confuniculatus Huang, 1992. J. Fujian Agric. College 21 (2): 166-167.

This species has been recently described (in Chinese), but the host was unknown (HUANG *et al.*, 1992). The following redescription is given to clarify some characters.

Female. General colour blackish brown; head with vertex and frons yellow; antennae brown; mid-lobe of mesoscutum yellow with a basal brown round pattern; side lobes of mesoscutum, middle of metanotum and propodeum yellow; scutellum yellowish white; legs pale brown, middle of femur and tibia dark. Fore wing with a slight infuscation below anterior part of marginal vein. Length: 0.7 mm.

Head with a transverse sulcus on occipital surface placed well above lower eye margins and not continuous with the sulcus on the frontal aspect of the head (Fig. IV, 5); toruli with their upper limits below lower level of eyes; mandibles with three teeth, the internal one only slightly distinct. Antenna (Fig. IV, 6) with radicle 2 times as long as wide; scape narrow, 4 times as long as wide; pedicel as long as basal two funicle segments combined; F1 and F2 partially fused; F1 quadrate, slightly shorter than F2; F3 just longer than wide; entire funicle 1.3 times longer than basal two club segments combined; club conical, basal segment 1.7 times as long as wide, a little wider than F3; second club segment slightly smaller than the first; distal segment about one-third longer than the basal one. Funicular segments devoid of linear sensilla, which are present on each club segment as follows: 4-6; 4-5; 3-4.

Mid-lobe of mesoscutum with 6 setae; scutellum with 4 setae. Fore wing (Fig. IV, 7) about 3.2 times as long as its greatest width; marginal vein about 0.8 times length of costal cell; submarginal vein with a single seta in its middle; longest marginal cilia about 0.6 times as long as greatest width of disc. Legs normal; mid-tibial spur 1.4 times as long as the corresponding basitarsus.

Ovipositor 1.4 times as long as middle tibia, about 4 times as long as third valvulae; the latter 1.3 times as long as mid-tibial spur.

Male. Colour as in the female. Antenna (Fig. IV, 8) with scape about 3.5 times as long as wide, provided with a conical process (tuberculiform sensillum?) on the distal one-fifth of its ventral margin; pedicel shorter than F1, the latter slightly shorter than F3; other characters as in Fig. IV, 8.

Genitalia (Fig. IV, 9) very small; same type as is found in species of *dimidiata* and *maritima* groups.

Material examined. 3 ♀ and 8 ♂. CHINA: Guangdong, 15.vi.1988, coll. H. Ren, ex *Hemiberlesia pitysophila* Tagaki on *Pinus*.

Comments. This species can be placed in the *maritima* group (Viggiani & Garonna, 1993). It appears allied to *P. incola* (Annecke), n. comb., but can be easily distinguished by the antennal features, in particular, the basal two funicular segments being partially fused. In this respect the species represents an intermediate form between typical «*Archenomus*» and «*Pteroptrix*». The male antenna is unique because of the peculiar scape process.

Pteroptrix japonica (Huang), n. comb.

Archenomus japonicus Huang, 1991. J. Fujian Agric. Coll. 20 (3): 281-285.

This species has been described (in Chinese) from introduced material from Japan as a parasitoid of *Hemiberlesia pitysophila* Takagi (Huang, 1991a). This aphelinid is redescribed from material obtained in China from the same host.

Female. General colour brown. Head with frontovertex orange; most of mid-lobe of mesoscutum yellow; scutellum same colour; legs pale brown. Length: about 0.9 mm.

Head with a transverse sulcus extending across the entire occiput to meet the sulcus of the frontal aspect below eyes; mandibles with 3 teeth, the internal one less marked. Antenna (Fig. V, 1) with radicle about 3 times as long as broad; scape narrow, about 4 times as long as wide; pedicel longer than basal two funicle segments combined; F1 short, trapezoidal, ventral margin the longest, a little longer than wide; F2 very small, disk-shaped; F3 about 2 times wider than long, as wide as basal club segment; club conical, first segment about as long as wide; second segment cylindrical, about 1.3 times as long as wide; distal segment about one-third longer than the second. Linear sensilla only on club segments, as follows: 2, 2, 3.

Thorax with mid-lobe of mesoscutum and scutellum with 6-7 and 4 setae, respectively. Fore wing (Fig. V, 2) about 3.6 times as long as its greatest width; marginal vein about 0.8 times as long as costal cell; submarginal vein with 1 seta in its middle; discal ciliation rather scanty, with a glabrous area along discal margin; fringe about 0.7 times as long as greatest width of disc.

Ovipositor about 1.5 times as long as middle tibia; third valvulae about 1.6 times as long as mid-tibial spur; the latter about 1.8 times as long as the corresponding basitarsus.

Male. Colour similar to female, but the brown pattern on the mid-lobe of mesoscutum wider than in female. Antenna (Fig. V, 3) with radicle about 3 times as long as wide; scape about 4 times as long as wide; pedicel short, about 0.5 times as long as F1; the latter about 1.5 times as long as wide; second flagellar segment very short and transverse; third flagellar segment about 2 times as long as wide; subsequent segments about same length as F3. Flagellar

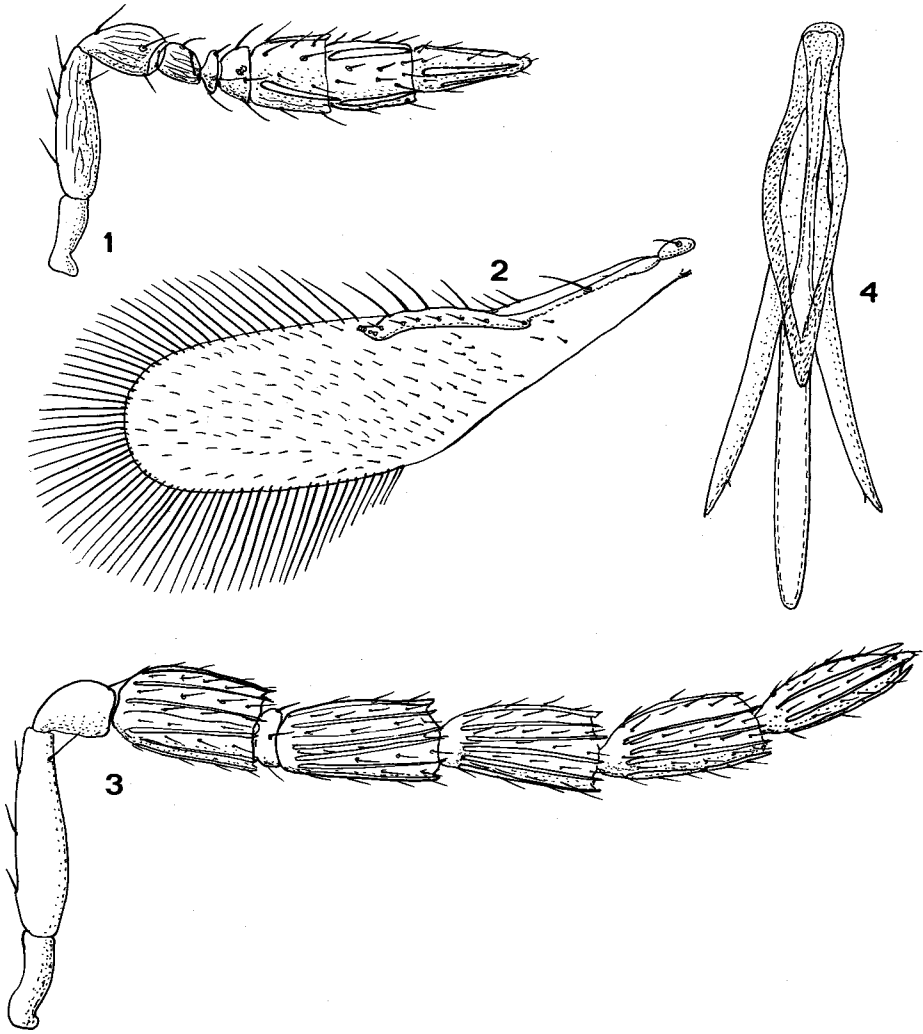


Fig. V - *Pteroptrix japonica* (Huang). - Female. 1. Antenna. 2. Fore wing. - Male. 3. Antenna. 4. Genitalia.

segments, except the second, with 6-8 linear sensilla. Genitalia same type as in *bicolor* group (Fig. V, 4).

Material examined. 3 ♀ and 3 ♂. CHINA: Guangdong, 26.iv.1988, coll. H. Ren, ex *Hemiberlesia pitysophila* Takagi on *Pinus massoniana*.

Comment. This species belongs to the *bicolor* group, as proposed by Huang (1991, a), but it seems more allied to *P. perkinsi* (Fullaway) than to *P. aethiopica* (Anneck).

Pteroptrix smithi (Compere)

Casca chinensis Compere & Smith (nec Howard), 1927. Univ. Cal. Publ. Entomol. 4: 71-73.

Of this species, originally confused by COMPERE (1936) with *P. chinensis* (Howard), have been described the main features of the adult female. The male has drawn very little attention up to now. In Fig. IV, 3-4 illustrations of the antennal scape and male genitalia are presented.

Material examined. 16 ♀ and 6 ♂. CHINA: Guangdong, 17.vi.1985, 25.xi.1985, 11.iii.1987, 28.v.1988, 1.xi.1988, coll. H. Ren, ex *Chrysomphalus aonidum* (L.) on *Buxus*, *Citrus* and *Cycas revoluta*.

Key to identification of the *Pteroptrix* Westwood (females) recorded from China

- 1 - Funicle 3-segmented 2
- Funicle 2-segmented 15
- 2 (1) - All segments of funicle well divided 3
- F2 partially fused with F1 *confuniculata* (Huang)
- 3 (2) - All segments of funicle longer than wide 4
- At least one segment of funicle subsquared 5
- 4 (3) - F1 as long as F2, F3 subcylindrical; marginal vein normal; fringe about one-third
 of the discal width *leptocera* (Huang) n. comb.
- F2 clearly shorter than F1; marginal vein enlarged; fringe about one-half of the discal
 width *longiclava* (Girault)
- 5 (3) - Fore wing normally setose, lacking glabrous areas on the disc or linea calva 6
- Fore wing with very scattered setae or glabrous areas or linea calva on the disc ... 8
- 6 (5) - Fore wing with 2 setae on the submarginal vein *bisetae* Viggiani & Ren
- Fore wing with 1 seta on the submarginal vein 7
- 7 (6) - F2 subsquared *orientalis* (Silvestri)
- F2 transverse *bicolor* (Howard)
- 8 (5) - Fore wing with linea calva 9
- Fore wing without linea calva 10
- 9 (8) - Mid-lobe of mesoscutum with 2 pairs of setae *calva* (Viggiani & Ren)
- Mid-lobe of mesoscutum with 1 pair of setae *processa* (Huang) n. comb.
- 10 (8) - Disc of fore wing with sparse setae 11
- Disc of fore wing with a wide area devoid of setae .. *sparsiciliata* (Huang), n. comb.
- 11 (10) - F2 and F3 transverse *japonica* (Huang), n. comb.
- No segments of the funicle transverse 12
- 12 (11) - All segments of the funicle subsquared *nudicella* (Huang), n. comb.
- Only F1 and F2 subsquared 13
- 13 (12) - Fringe of the fore wing shorter than the discal width *sunae* (Huang), n. comb.
- Fringe of the fore wing about as long as the discal width 14
- 14 (13) - Fore wing with 2 setae on the submarginal vein *stenoptera* (Huang), n. comb.
- Fore wing with 1 seta on the submarginal vein .. *xanthothoracalis* (Huang), n. comb.
- 15 (1) - Club 3-segmented 16
- Club 4-segmented *lauri* (Mercet)
- 16 (15) - F1 with linear sensilla *smithi* Compere
- F1 lacking linear sensilla 17
- 17 (16) - Mid-lobe of mesoscutum with blackish coloration produced posteriorly in the form
 of a V *wanhsiensis* Compere

- Mid-lobe of mesoscutum with blackish coloration not produced posteriorly in the form of a V 18
18 (17) – Black axillae *chinensis* (Howard)
– White axillae *albocincta* Flanders

SUMMARY

Three new species of Aphelinidae (*Ablerus promacchia*, *Encarsia sinica* and *Pteroptrix bisetae*) are described from China. Notes and illustrations on the undescribed males of *Ablerus connectens* Silvestri, *Physcus flavicornis* Compere & Annecke and *Pteroptrix chinensis* (Howard) are given. *Pteroptrix japonica* (Huang), n. comb., and *P. confuniculata* (Huang), n. comb., are re-described. Eight new records of aphelinids from China are reported. Key to the identification of the recorded *Ablerus* Howard, *Encarsia* Förster and *Pteroptrix* Westwood (females) are given.

RIASSUNTO

Tre nuove specie di Aphelinidae (*Ablerus promacchia*, *Encarsia sinica* e *Pteroptrix bisetae*) sono descritte per la Cina. Sono date note e illustrazioni sui maschi non descritti di *Ablerus connectens* Silvestri, *Physcus flavicornis* Compere & Annecke e *Pteroptrix chinensis* (Howard). Sono ridescritte *Pteroptrix japonica* (Huang), n. comb., e *P. confuniculata* (Huang), n. comb. Otto nuovi Aphelinidi sono segnalati per la Cina. Sono fornite chiavi per la identificazione di *Ablerus* Howard, *Encarsia* Förster e *Pteroptrix* Westwood (femmine).

REFERENCES

- ANNECKE, D.P. & P. INSLEY – 1970 – New and little known species of *Azotus* Howard, *Ablerus* Howard and *Physcus* Howard (Hym. Aphelinidae) from Africa and Mauritius. – Bull. entomol. Res. 60: 237-251.
- COMPERE, H. – 1925 – A new genus and species of Aphelinidae (Hymenoptera) from China. – Trans. Amer. Entomol. Soc. 51: 129-134.
- COMPERE, H. – 1936 – Notes on the classification of the Aphelinidae. – Univ. Cal. Publ. Entomol. 6: 277-322.
- COMPERE, H. – 1953 – An appraisal of Silvestri's work in the Orient for the University of California, some misidentifications corrected, and two forms of *Casca* described as new species. – Boll. Lab. Zool. gen. agr. Filippo Silvestri 33: 35-46.
- HAYAT, M. – 1984 – The genus *Proaphelinoidea* from India (Hymenoptera: Aphelinidae). – Oriental Insects 18: 73-78.
- HUANG, J. – 1991a – Systematic Studies of Aphelinidae. I. On a new species of *Archenomus* Howard and *Coccobius azumai* Tachikawa (Hymenoptera, Aphelinidae). – J. Fujian Agric. College 20 (3): 281-285.
- HUANG, J. – 1991b – Systematic Studies of Aphelinidae. II. Descriptions of Four New Species of *Archenomus* Howard from China (Hymenoptera, Aphelinidae). – J. Fujian Agric. College 20 (4): 391-397.
- HUANG, J., LIN, X. & C. LIN – 1992 – Systematic Studies of Aphelinidae. III. The Species of *Archenomus* Howard from China (Hymenoptera, Aphelinidae). – J. Fujian Agric. College 21 (2): 163-171.
- LIAO, D., LI, X., PANG, X. & T. CHEN – 1987 – Economic insect fauna of China. Fasc. 34. Hymenoptera Chalcidoidea. – Ed. Com. Fauna Sinica, Academia Sinica. Sciences Press: 241 pgs.
- NOYES, J.S. & E.W. VALENTINE – 1989 – Chalcidoidea (Insecta: Hymenoptera) – Introduction and review of genera in smaller families. – Fauna of New Zealand 18: 1-91.

- POLASZEK, A. & M. HAYAT - 1992 - A revision of the genera *Dirphys* Howard and *Encarsiella* Hayat (Hymenoptera: Aphelinidae). - Syst. Entom. 17: 181-197.
- PRINSLOO, G.L. & O.C. NESER - 1990 - The southern African species of *Archenomus* Howard (Hymenoptera: Aphelinidae) with a key to the species of the world. - Entomol. Mem. Rep. Sth. Afr., Dep. Agric. Dev. 79: 1-26.
- REN, H. - 1988 - Two new species of *Aphytis* from China (Hymenoptera: Aphelinidae). - Entomotaxonomia 10: 219-223.
- SHAFEE, S.A. & S. RIZVI - 1984 - Taxonomic notes on some Indian Aphelinidae (Hymenoptera: Chalcidoidea). - Mitt. Schweiz. Entomol. Gesell. 57: 379-381.
- SILVESTRI, F. - 1927 - Contributi alla conoscenza degli Aleurodidae (Insecta: Hemiptera) viventi su *Citrus* in Estremo Oriente e dei loro parassiti. - Boll. Lab. Zool. gen. agr. Portici 21: 1-60.
- SILVESTRI, F. - 1929 - Preliminary report on the citrus scale-insects of China. - Fourth Internat. Congr. of Entomol., Ithaca, Trans. 2. Eds. K. Jordan & W. Horn: 897-904.
- SILVESTRI, F. - 1930 - Contributo alla conoscenza delle specie orientali del genere *Prospaltella* (Hym. Chalcididae). - Boll. Lab. Zool. gen. agr. Portici 25: 49-68.
- TACHIKAWA, T. - 1984 - Notes on the genus *Proaphelinoidea* Girault (Hymenoptera: Chalcidoidea-Aphelinidae). - Trans. Shik. Entomol. Soc. 16: 49-53.
- TAYLOR, H.C. - 1935 - The campaign against *Aspidiotus destructor*, Sign., in Fiji. - Bull. Entomol. Res. 26: 1-102.
- VIGGIANI, G. & A.P. GARONNA - 1993 - Le specie italiane del complesso *Archenomus* Howard, *Archenomiscus* Nikolskaja, *Hispaniella* Mercet e *Pteroptrix* Westwood, con nuove combinazioni generiche (Hymenoptera: Aphelinidae). - Boll. Lab. Ent. agr. Filippo Silvestri 43 (1991):
- VIGGIANI, G. & H. REN - 1987 - Two new aphelinids from China (Hymenoptera: Chalcidoidea). - Boll. Lab. Ent. agr. Filippo Silvestri (1986) 43: 35-39.
- VIGGIANI, G. & H. REN - 1988 - New species of *Encarsia* Förster (Hymenoptera: Aphelinidae) from China. - Boll. Lab. Ent. agr. Filippo Silvestri 44 (1987): 25-31.