

## Studies on the Miridae (Heteroptera) of Iran

RAUNO E. LINNAUORI

FIN-21220 Raisio, Saukkokuja 10, Finland

Received: October 25, 1997

Accepted: December 16, 1997

**Abstract:** The following new mirid taxa from Iran are described: Phylinae, Phylini: *Glaucopterum pteropyri* sp.n., *Camptotylidea rubropicta* sp.n., *Chlamydatus sarafrazii* sp.n., *Farsiana pistaciae* gen. et sp.n., *Lepidargyrus nigerrimus* sp.n., and *Psallus amygdali* sp.n. New combination: *Compsidolon (Apsinthophylus) eremobium* PUTSHKOV, 1977 = *Camptotylidea eremobium* (PUTSHKOV). Occurrence of the genus *Chlamydatus* CURTIS, 1873 in Iran is also discussed and a key provided to the species of Iran.

### INTRODUCTION

The present paper is based on the author's expedition to the Khorasan, Kerman and Fars provinces in Iran in 1994 and 1996. The trips were made in cooperation with the Insect Taxonomy and Research Department of the Ministry of Agriculture, Tehran. Financial support was given by the Ministry of Agriculture, Tehran, the Finnish Society of Sciences and Letters and the Entomological Society of Helsinki, Finland.

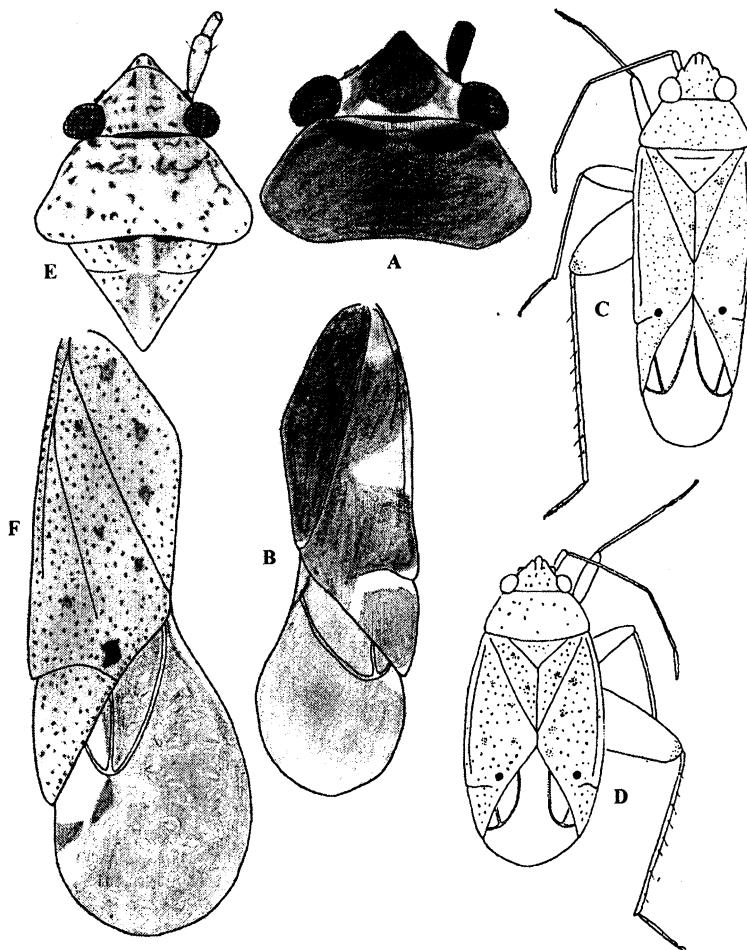
### TAXONOMY

Phylinae

Phylini

***Glaucopterum pteropyri* sp.n. (Figs 1 A–B, 2 A–H)**

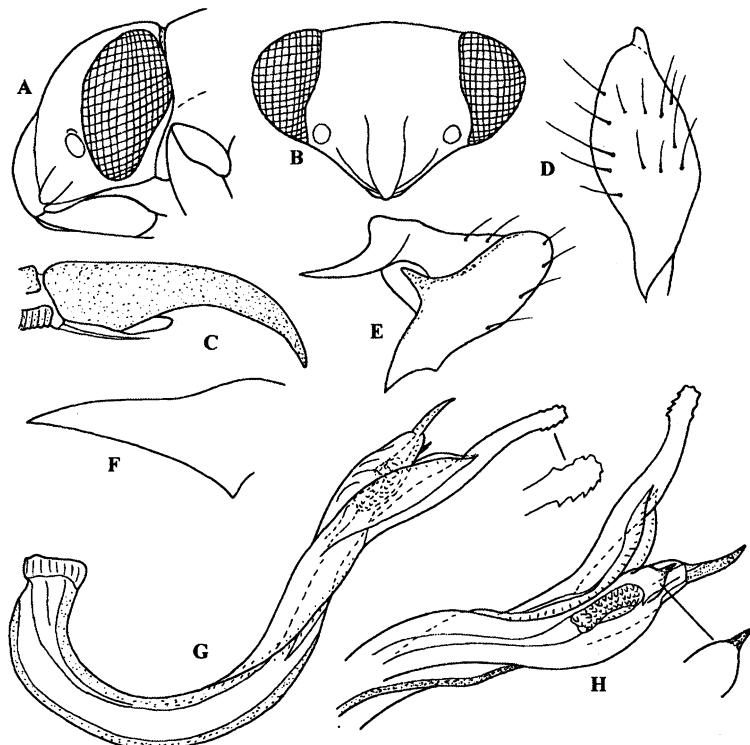
Types: Iran, Khorasan, Can Chiroc 50 km S Tabas, ♂ holotype, 1 ♀ paratype, 17.V.1994, 1 ♂ and 1 ♀ paratype, 18.V.1996; Sorond and Modar 70 km S Tabas, 1 ♀



**Fig. 1.** *Glaucopterum pteropyri* sp.n.: (A) male head and pronotum; (B) hemelytron. – *Camptotylidea eremobia* (PUTSHKOV): (C) male; (D) female; (E) male head and pronotum; (F) male hemelytron. – C–D after PUTSHKOV 1977a.

paratype, 18.V.1994, Linnavuori. Holotype and two paratypes in coll. Linnavuori, a paratype in Plant Pests and Diseases Research Institute, Tehran.

**Description:** Length 3.0–3.25 mm ( $\sigma$ ), 2.5 mm ( $\varphi$ ). Subopaque. General color reddish brown. Head dark reddish brown, bucculae, gula and lateral margins of vertex along eyes pale yellow; eyes grayish brown. Antennae blackish brown, segments 3 and 4 a little paler. Pronotum reddish with callal area dark brown or more or less totally dark brown. Scutellum dark reddish brown. Hemelytra: clavus in  $\sigma$  uniformly dark reddish brown, in  $\varphi$  reddish, apically embrowned; corium dark reddish brown with



**Fig. 2.** *Glaucopterus pteropyri* sp.n.: (A–B) female head in lateral and apical view; (C) claw; (D) right style; (E) left style; (F) theca; (G–H) vesica in slide mount.

reddish pattern as indicated in Fig. 1 B, apical margin of exocorium narrowly whitish; cuneus red with basal margin and extreme tip white; membrane dark gray with a hyaline spot at apex of cuneus, veins of outer cell orangish, of inner cell dark gray. Under surface dark reddish brown, margins of pro- and mesopleura and scent gland orifices whitish. Femora dark reddish brown, immaculate; tibiae reddish brown with small and faint dark setigerous dots, tibial spines pale; tarsi dark reddish brown.

Body small and relatively robust, 2.6–2.7 ( $\sigma$ ) or 2.4 ( $\varphi$ ) x as long as broad at base of pronotum. Upper surface with long semi-erect and short appressed yellowish hairs. Head remarkably broad, 0.76–0.80 ( $\sigma$   $\varphi$ ) x as broad as basal width of pronotum, in dorsal view 2.6–2.7 ( $\sigma$   $\varphi$ ) as broad as long, in lateral view higher than long, in apical view about 1.6 x as broad as high; ocular index 1.7 ( $\sigma$ ) or 2.33–2.64 ( $\varphi$ ), basal margin of vertex bluntly keeled. Proportions between antennal segments 11:50:31:21 ( $\sigma$ ), 12:45:30:20 ( $\varphi$ ), 2nd segment 1.02–1.04 ( $\sigma$ ) or 0.88–0.96 ( $\varphi$ ) x as long as diatome, 0.80 ( $\sigma$ ) or 0.67–0.73 ( $\varphi$ ) x as long as basal width of pronotum. Rostrum extending to middle coxae. Pronotum 2.3–2.4 ( $\sigma$ ) or 2.43–2.68 ( $\varphi$ ) as broad as long in middle.

Hemelytra longer than abdomen. Hind tibia 1.34 ( $\sigma$ ) or 1.3 ( $\varphi$ ) x as long as basal width of pronotum, tibial spines gracile, longer than breadth of tibia. Proportions between hind tarsomeres 10:12:15. Claws long and gracile, pulvilli small.

Male genitalia: Pygofer gracile, narrowly conical. Styles and theca as in Fig. 2 D–F. Vesica broadly curved, provided with three apical processes, two of them short, claw-like, the third one long, apically dentate and provided with two upcurved basal lamellae; secondary gonopore near apex.

Habitat: On *Pteropyrum aucheri* in gravelly valleys in slopes of a hill.

Differential diagnosis: The genus *Glaucopterum* WAGNER, 1963 has been treated by KERZHNER 1984: 41–62, LINNAVUORI 1986: 175 and 1993: 262–265, and PUTSHKOV 1975 and 1977. *P. pteropyri* is easily recognized by the very broad head, variegated color pattern of the upper surface, dark extremities, and shape of the vesica. It is apparently related to *G. deserticola* (WAGNER, 1951) (redescription as *Psallus deserticola* in LINNAVUORI 1993a: 262–265), which also has a variegated general coloring. But that species is much longer, length 3.25–4.0 mm. The general color is pale grayish or orangish, the antennal segments 2–4 are yellowish, the legs are pale ochraceous with only the hind femora darkened, and the head is much narrower.

### *Camptotylidea rubropicta* sp.n. (Figs 3 A–J, 5 D)

Types: Iran, Fars, 15 km E Sa'adatshahr, alt. 1680 m,  $\sigma$  holotype, 2  $\sigma$  and 2  $\varphi$  paratypes, 6–7.VI.1996, LINNAVUORI, in Plant Pests and Diseases Research Institute, Tehran, 2 paratypes in coll. LINNAVUORI.

Description: Length ( $\sigma$   $\varphi$ ) 2.75–3.0 mm. Pale ochraceous with sanguineous pattern. Genae and sides of tylus sanguineous, frons with faint reddish transverse lateral arcs; eyes reddish gray. Antennae pale yellow, 1st segment sanguineous. Pronotum with sanguineous irroration as indicated in Fig. 3 A. Base of scutellum sanguineous. Clavus and corium with faint fulvous or reddish dotting, a spot in inner basal angle of cuneus and the adjacent mesocorium and irroration on other parts of cuneus sanguineous or orangish; membrane dark gray with hyaline irroration, lateral margin with major basal and subbasal hyaline spots, veins reddish. Under surface largely sanguineous. Fore and middle femora pale ochraceous with apical thirds red-spotted. Hind femora dark purplish, ventral surface somewhat paler with reddish spots and irroration. Tibiae pale ochraceous with small setigerous red dots diminishing in size towards the apex, basal half of hind tibiae with purplish tinge; tibial spines pale and tarsi pale.

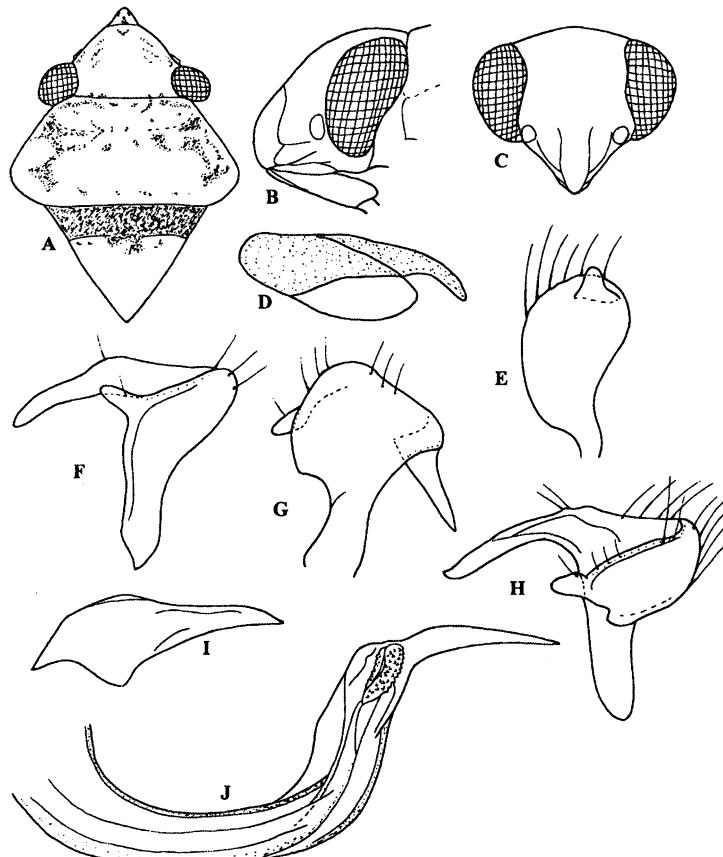
Body parallel-sided ( $\sigma$ ) or elongately ovate ( $\varphi$ ), about 3 ( $\sigma$ ) or 2.7x ( $\varphi$ ) as long as broad at base of pronotum. Upper surface with longish pale hair-covering. Head 0.7 ( $\sigma$ ) or 0.64–0.7 ( $\varphi$ ) x as broad as basal width of pronotum; ocular index 1.5–1.7 ( $\sigma$ ), 2.5–2.8 ( $\varphi$ ). Antennae gracile, proportions between segments 12:50:34:21 ( $\sigma$ ), 13:45:31:20 ( $\varphi$ ), 2nd segment 1.28–1.3 ( $\sigma$ ) or 1.25–1.28 ( $\varphi$ ) x as long as diatome,

0.86–0.91 ( $\sigma$ ) or 0.80–0.88 ( $\varphi$ )  $\times$  as long as basal width of pronotum. Rostrum extending to hind coxae. Pronotum 2.3–2.6  $\times$  as broad as long in middle. Hemelytra longer than abdomen, costal margins subparallel in  $\sigma$ , weakly curved in  $\varphi$ . Legs racile; proportions between hind tarsomeres 7:11:11; claws elongate, pulvilli large, extending beyond the middle of claw.

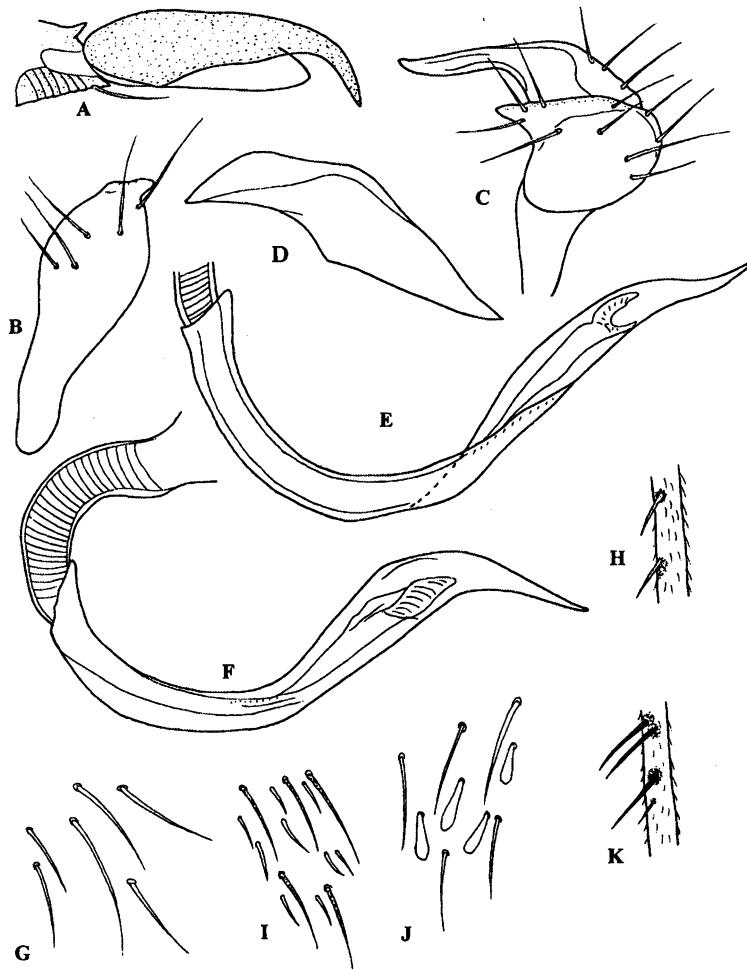
Male genitalia: Pygofer elongately conical. Styles and theca as in Fig. 3 E–I. Vesica (Fig. 3 J) shallowly S-shaped, ending in a falcate apical process.

Habitat: On *Pteropyrum aucheri* in hilly habitats.

Differential diagnosis: *Camptotylidea rubropicta* differs from all other known representatives of the genus (revision in LINNAUORI 1990, 1993b: 145–146, and 1997: 343–345) in the sanguineous 1st antennal segments and the purplish hind femora.



**Fig. 3.** *Camptotylidea rubropicta* sp.n.: (A) female head, pronotum and scutellum; (B) female head in lateral view; (C) male head in apical view; (D) claw; (E) right style; (F–H) left style in different views; (I) theca; (J) vesica in slide mount.



**Fig. 4.** *Camptotylidea eremobia* (PUTSHKOV): (A) claw; (B) right style; (C) left style; (D) theca; (E-F) vesica in dry and slide mount. — *Yotvata picticornis* (HORVÁTH): (G) vestiture of hemelytra; (H) spinulation of hind tibia. — *Y. albocunealis* LINNAUORI: (I) vestiture of hemelytra. — *Farsiana pistaciae* gen. et sp.n.: (J) vestiture of hemelytra; (K) spinulation of hind tibia.

***Camptotylidea eremobium* (PUTSHKOV), comb.n. (Figs 1 C-F, 4 A-F)**

*Compsidolon (Apsinthophylus) eremobium* PUTSHKOV 1977b: 460.

**Material:** Iran, Khorasan, near Parvand, 80 km W Sabzevar, numerous males, 14–15.V.1996, Linnavuori. Turkmenistan: Akhtsa–Kujma, 2 topotypic females, 28.V.1976, Putshkov, in coll. Linnavuori.

**Description:** Male. Macropterous. Length 3.5–3.75 mm (according to PUTSHKOV 2.7–3.1 mm). Pale grayish or yellowish ochraceous with abundant brown mottling on

head, pronotum and scutellum as indicated in Fig. 1 E. Eyes reddish. Antennae pale yellowish, 1st segment with two faint setigerous brown dots. Basal margin and middle of scutellum, except a pale midline, more or less embrowned. Clavus, corium and cuneus whitish gray, densely ornamented with small setigerous brown dots, inner apical angle of corium with conspicuous blackish spot, clavus and corium also with a few faint brownish spots; membranes brownish with abundant hyaline irroration, basal part of lateral margin with two largish hyaline areas separated from each other by two fuscous spots; veins pale yellow. Under surface brownish. Legs pale ochraceous, hind femora embrowned; tibiae with very faint and small brownish setigerous dots; tibial spines pale.

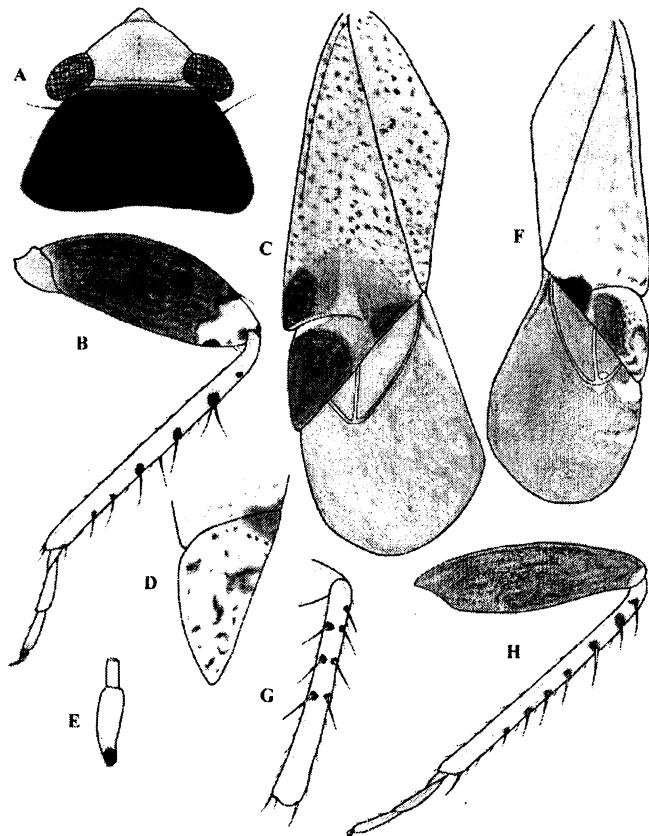
Body parallel-sided, very gracile, 3.6–4.0 x as long as broad at base of pronotum. Hair-covering on upper surface long, dense and pale. Head 0.64–0.67 x as broad as basal width of pronotum; eyes small, ocular index 2.12–2.35. Antennae gracile, with short semi-erect pale pubescence; proportions between segments 11:51:37:23, 2nd segment 1.36–1.54 x as long as diatone, about 0.9 x as long as basal width of pronotum. Rostrum extending to hind coxae. Pronotum about 2.5 x as broad as long in middle, lateral margins straight, strongly diverging caudad. Hemelytra long, about 5 x as long as broad at the level of apical part of clavus, 3.2 x as long as broad at the broadest point of membrane; cuneus 0.34 x as long as costal margin, 1.7 x as long as broad basally. Legs gracile; hind tibia about 1.8–2.0 x as long as basal width of pronotum; proportions between hind tarsomeres 7:14:13. Claws long and gracile, pulvilli long, extending to apical part of claw.

Male genitalia (Fig. 4 B–F) of the usual type in the genus.

Female. Brachypterous. Length 2.0–2.25 mm. Like the male but much smaller, with hemelytra extending only to apex of abdomen. Body elongately ovate, 2.5 x as long as broad at base of pronotum. Head 0.73 x as broad as basal width of pronotum, ocular index 2.8–3.2. Proportions between antennal segments 10:40: ?, 2nd segment 1.08 x as long as diatone, 0.78 x as long as basal width of pronotum. Pronotum 2.6 x as broad as long in middle.

Habitat: Collected at light trap in a dune and steppe area at Parvand near Sabzevar. In Turkmenistan found on *Artemisia santolina*.

Differential diagnosis: The species was originally described as a member of *Compsidolon* REUTER. It differs from that genus, however, in the simple hair-covering of the upper surface, the presence of a conspicuous blackish spot in the inner angle of the corium, hyaline irroration of the membrane, indistinct dark dots on the tibiae, and the shallowly S-shaped vesica, which are the principal characters of the genus *Camptotylidea* WAGNER. Consequently, eremobium has been transferred into that genus. *C. eremobium* is easily recognized by the characteristic coloring and the sexual dimorphism in wing development.



**Fig. 5.** *Chlamydatus sarafrazii* sp.n.: (A) female head and pronotum; (B) hind leg. – *Farsiana pistaciae* gen. et sp.n.: (C) hemelytron. – *Camptotylidea rubropicta* sp.n.: (D) cuneus). – *Psallus amygdali* sp.n.: (E) 1st antennal segment; (F) hemelytron; (G) fore tibia; (H) hind leg.

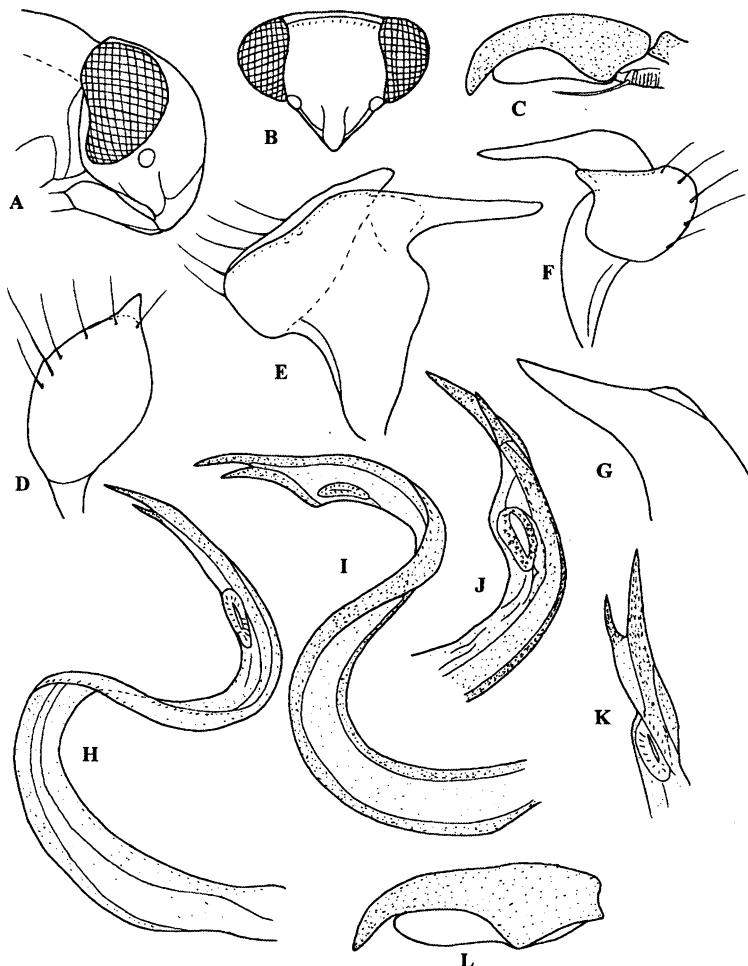
#### The genus *Chlamydatus* CURTRIS, 1833 in Iran

The genus *Chlamydatus* has a Holarctic distribution. Although several species of the genus are known from adjacent areas in Turkey, Caucasia and Middle Asia, no previous records exist from Iran. During my stay, four *Chlamydatus* species were found, one of them new to science.

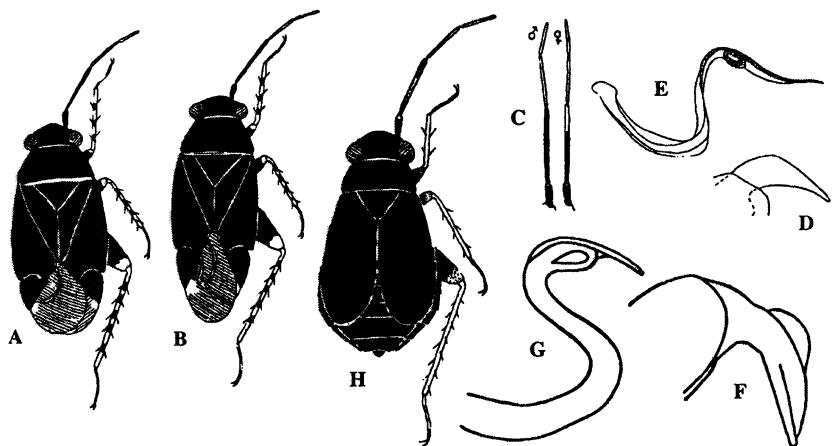
#### Key to the Iranian species

- 1 Opaque, usually brachypterous species (Fig. 7 H). Tibiae pale, immaculate ..... *C. evanescens* (BOHEMAN, 1852)
- Shiny species. Hemelytra at least as long as abdomen. Tibiae pale, with black setigerous spots ..... 2

- 2 Head golden ..... *C. sarafrazii* sp.n.
- Head black ..... 3
- 3 Antennae distinctly bicolored, 1st and 2nd segments black, segments 3 and 4, in females, and also apex of 2nd segment pale. Eyes large, ocular index ( $\sigma$  ♀) 2.0–2.1. Apex of vesica (Fig. 7 E) long ..... *C. pullus* REUTER, 1870
- Antennae either totally pale yellow or 1st and 2nd segments more or less embrowned. Eyes small, ocular index 2.2–2.6 ( $\sigma$ ), 2.7–2.8 (♀). Apex of vesica (Fig. 7 G) claw-like ..... *C. eurotiae* KERZHNER, 1962



**Fig. 6.** *Chlamydatus sarafrazii* sp.n.: (A–B) female head in lateral and apical view; (C) claw; (D) right style; (E–F) left style; (G) theca; (H–I) vesica in dry and slide mount; (J–K) apex of vesica. – *C. eurotiae* KERZHNER: (L) claw.



**Fig. 7.** *Chlamydatus pullus* REUTER: (A–B) pseudobrachypterous and macropterous male; (C) male and female antenna; (D) theca; (E) vesica. – *C. eurotiae* KERZHNER: (F) theca; (G) vesica. – *C. evanescens* (BOHEMAN): (H) brachypterous female. – After KERZHNER 1962 and WAGNER 1975.

#### *Chlamydatus (Euattus) pullus* REUTER, 1870 (Fig. 7 A–E)

**Material:** Iran, numerous specimens from Gilan, Deylaman, 16–20.VII.1996; Rustam Abad–Salan Sar, 24.VII.1996. E Azerbaijan, Khalkhal, 30.VII.1996; 20–30 km E Khalkhal, 1–21.VII.1996, Linnavuori.

**Habitat:** Among herbaceous plants in mountain meadows.

**Distribution:** Euro–Siberian.

#### *Chlamydatus (Euattus) eurotiae* KERZHNER, 1962 (Figs 6 L, 7 F–G)

**Material:** Iran, Khorasan, near Parvand, 80 km W Sabzevar, 1 ♂, 14–15.V.1996, Linnavuori.

**Habitat:** Collected at light trap in a dune and steppe area near Parvand. In Kazakhstan found on *Eurotia ceratoides*.

**Distribution:** Previously known from Kazakhstan.

#### *Chlamydatus (Euattus) sarafrazzi* sp.n. (Figs 5 A–B, 6 A–K)

**Types:** Iran, Fars, Estahban, male holotype, many paratypes (♂ ♀), 10–11.VI.1997, Linnavuori. Holotype and paratypes in the Plant Pests and Diseases Research Institute, Tehran, paratypes also in coll. Linnavuori.

Description: Length ♂ ♀ 2.25 mm. Shiny. Head golden yellow, eyes reddish gray. Antennae uniformly pale yellow. Rest of body black. Membranes of hemelytra dark grayish brown. Fore and middle legs whitish ochraceous, tibiae with small setigerous black dots. Hind femora blackish brown, apex whitish ochraceous with black setigerous spots as indicated in Fig. 5 B. Hind tibiae and tarsi pale ochraceous, the former with distinct setigerous black spots. Tibial spines black.

Macropterous. Body 2.2–2.3 (♂) or 2.0–2.1 (♀) x as long as broad in middle of hemelytra. Hair-covering of upper surface blackish. Head (♂ ♀) 0.80–0.82 x as broad as basal width of pronotum, basal margin of vertex distinctly keeled; ocular index (♂ ♀) 1.82–1.91. Antennae gracile with short pale hair-covering, proportions between segments 10:35:25:21 (♂), 10:30:28:23 (♀), 2nd segment in ♂ thicker than in ♀, 0.78–0.83 (♂) or 0.70–0.73 (♀) x as long as diatone, 0.63–0.70 (♂) or 0.56–0.60 (♀) x as long as basal width of pronotum. Rostrum extending to hind coxae. Pronotum trapezoidal, about 2.5 x as broad as long in middle. Hemelytra as long as abdomen, costal margins subparallel in ♂, broadly curved in ♀; membrane with two cells. Hind femur incrassate, 2.4 x as long as broad, hind tibia about 1.42 x as long as femur. Proportions between hind tarsomeres 7:11:10. Claws with large pulvilli.

Male genitalia as in Fig. 6 D–K. Vesica S-shaped, apex bifid owing to a claw-like subapical spine.

Habitat: On *Phlomis olivieri* in gravelly slopes of a hill.

Etymology: The species is dedicated to my colleague and excellent guide Mr. Ali Sarafrazi, of the Insect Taxonomy and Research Department, Ministry of Agriculture, Tehran.

Differential diagnosis: A distinctive species, which is easily recognized by the golden yellow head and uniformly pale antennae. In all other known species the head is black and the 1st and 2nd antennal segments are at least partially dark. Only in females of *C. eurotiae* the antennae may be totally pale, but in that species the eyes are much smaller, ocular index 2.2–2.6 (♂) or 2.7–2.8 (♀). Moreover, the apex of the vesica in all other known species is simple, falcate.

#### *Chlamydatus (Eurymerocoris ) evanescens* (Bohemian, 1852) (Fig. 7 H)

Material: Gilan, Masuleh, several specimens, 3.VII.1996, Linnavuori.

Habitat: Among *Sedum stoloniferum* and dry mosses on a large stone in a mountain meadow. In Europe found on *Sedum album*.

Distribution: Known from Sweden, Norway, Central and South Europe, Ukraine, and Russia.

## ***Farsiana* gen.n.**

Description: Small pale grayish species with abundant purplish pattern. Antennae bicolored, pale, with 1st segment and base and apex of 2nd black. Membranes of hemelytra dark gray with hyaline irroration. Femora with abundant purplish dotting, fore and hind margins also with black spots. Tibiae with black setigerous spots, spines black.

Body relatively robust, 2.3–2.6 x as long as broad in middle of hemelytra. Hair-covering of upper surface double, with long semi-erect pale hairs and abundant appressed scale-like whitish pubescence. Head about 0.65 x as broad as basal width of pronotum, in dorsal view about 2.3 x as broad as long, conically produced apicad, in apical view about 1.2 x as broad as high, part below eyes bluntly conical, lora extending to lateral margins, antennal pits close to lower corners of eyes; head in lateral view higher than long, frons strongly declining ventrad, merging without notch into the base of the prominent tylus. Vertex moderately convex, basal margin ecarinate. Antennae gracile, hair-covering short, 2nd segment slightly narrowed in middle, shorter than basal width of pronotum. Rostrum extending beyond hind coxae. Pronotum about 2.3 x as broad as long in middle, strongly broadening caudad, lateral margins nearly straight, hind margin shallowly insinuated, calli faintly elevated. Hemelytra longer than abdomen, costal margins subparallel in male, slightly curved in female. Hind femora incrassate. Tibial spines black and long, about 1.75–2.0 x as long as diameter of tibia. Proportions between hind tarsomeres 6:12:10. Claws distinctly curved, pulvilli extending beyond middle of claw, parempodia hair-like.

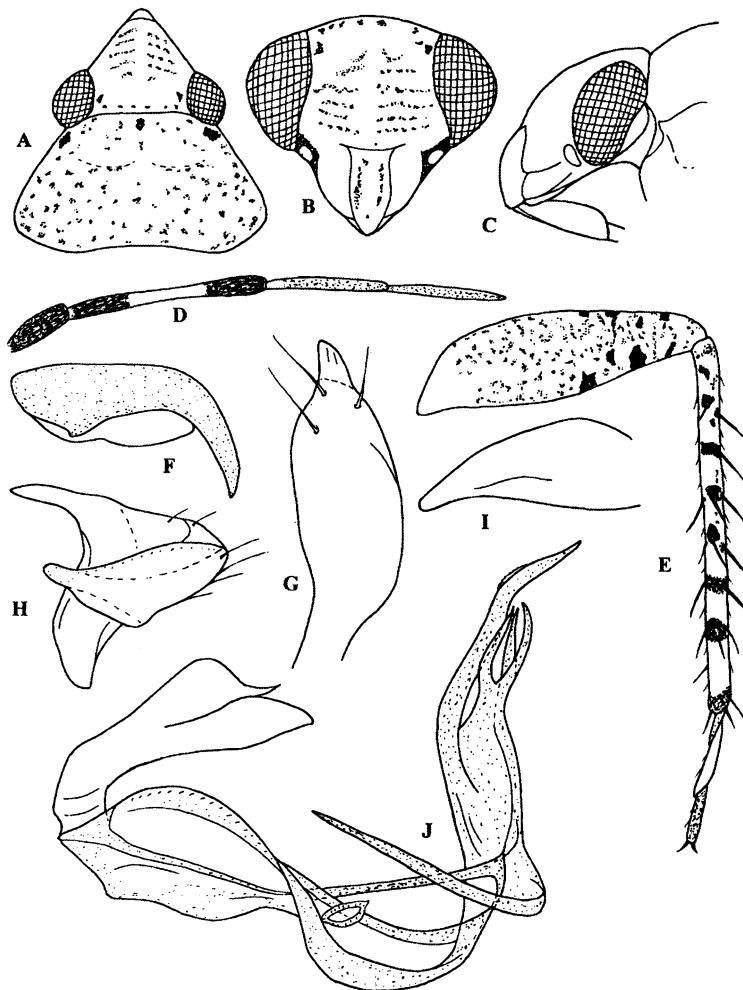
Male genitalia: Pygofer conical. Right style elongate. Left style of usual Phylin-type with gracile hypophysis and digitate sensory lobe. Theca slender. Vesica distinctive, large and robust, strongly curved, provided with several long appendages, one long semicircularly curved process arising from middle of stem, three long falcate subapical appendages directed apicad, apex of vesica also long and falcate, provided with a small dentate ridge; secondary gonopore well-delimited and located in the basal portion of the stem.

Type species: *F. pistaciae* LINNAUORI

Habitat: On *Pistacia mutica* in hilly valleys.

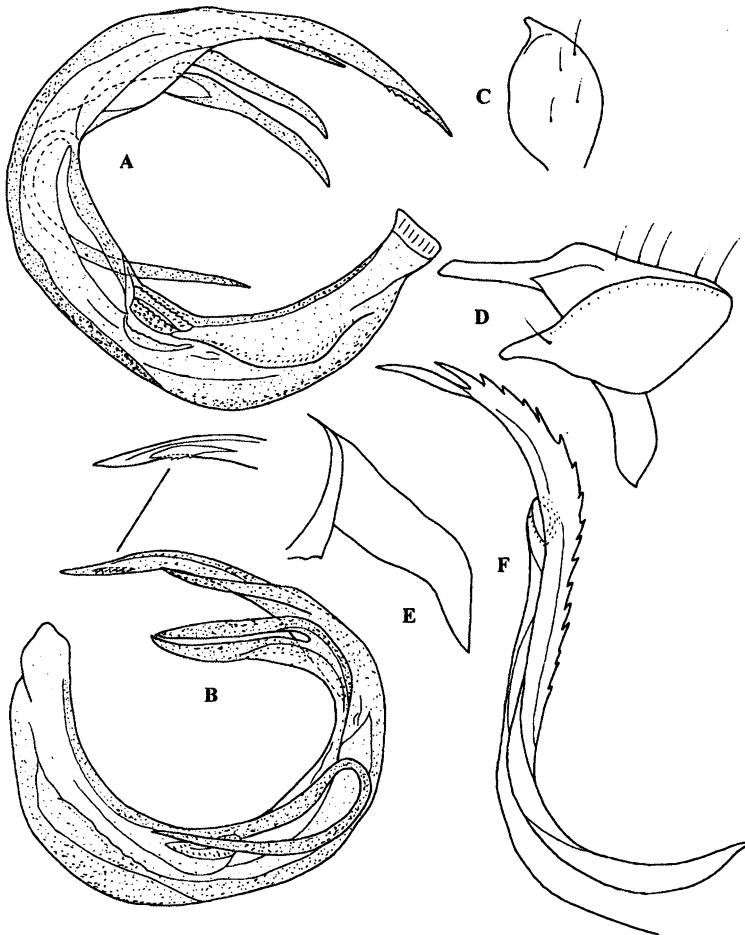
Etymology: Named after the Fars Province in Iran.

Differential diagnosis: The genus is closely related to *Yotvata* LINNAUORI, 1964 (type species *Compsidolon acacicola* LINNAUORI, 1961, a junior synonym of *Atomophora picticornis* HORVATH, 1913; revision in LINNAUORI 1984: 43–45 and 1993: 197–206; distribution: Eremian and Sudanese subregions) sharing its principal characters, the characteristic coloring of the body and extremities and the structure of the body. In contrast, the male genitalia are very different. In *Yotvata* (genitalia of *Y. picticornis*



**Fig. 8.** *Farsiana pistaciae* gen. et sp.n.: (A) female head and pronotum; (B-C) female head in apical and lateral view; (D) antenna; (E) hind leg; (F) claw; (G) right style; (H) left style; (I) theca; (J) vesica in glycerine.

illustrated in Fig. 10 A-E) the left style is large, either cap- or belt-like, with 2-3 long appendages. The theca usually has 1-2 long basal processes, if simple, then the apical part is coarsely dentate. The vesica is simple, slender and arcuate, with the apical portion falcate and sometimes dentate. Moreover, in *Yotvata* the head is shorter and the tibial spines (Fig. 4 H) are much shorter, about 1.3-1.4 x as long as the diameter of the tibia. The hair-covering of the upper surface is simple (Fig. 4 G) consisting of long semi-erect hairs. Only in *Y. albocunealis* LINNAVUORI, 1986 the vestiture (Fig. 4 I) also consists of appressed gracile silvery hairs. As in *Farsiana* the species of *Yotvata* are arboreal.



**Fig. 9.** *Farsiana pistaciae* gen. et sp.n.: (A–B) vesica in slide mount.—*Lepidargyrus nigerrimus* sp.n.: (C) right style; (D) left style; (E) theca; (F) vesica in dry mount.

***Farsiana pistaciae* sp.n. (Figs 4 I–K, 5 C, 8 A–J, 9 A–B)**

Types: Iran, Fars, 16 km E Sa'adatshar, alt. 1680 m, female holotype, 1 ♂ and several ♀ paratypes, 6–7.VI.1996, Linnavuori. Holotype and paratypes in the Plant Pests and Diseases Research Institute, Tehran, paratypes also in coll. Linnavuori.

Description: Length 2.5–2.75 mm. Subopaque, pale grayish ochraceous with purplish pattern. Two stripes on tylus, spots around antennal pits, broken lateral arcs on frons, and minute spots on vertex purplish; eyes grayish brown. 1st antennal segment and apex and basal ring of 2nd blackish brown, extreme base and middle ring on 2nd segment and base of 3rd whitish, rest of antennae pale brownish. A spot in each anterolateral angle

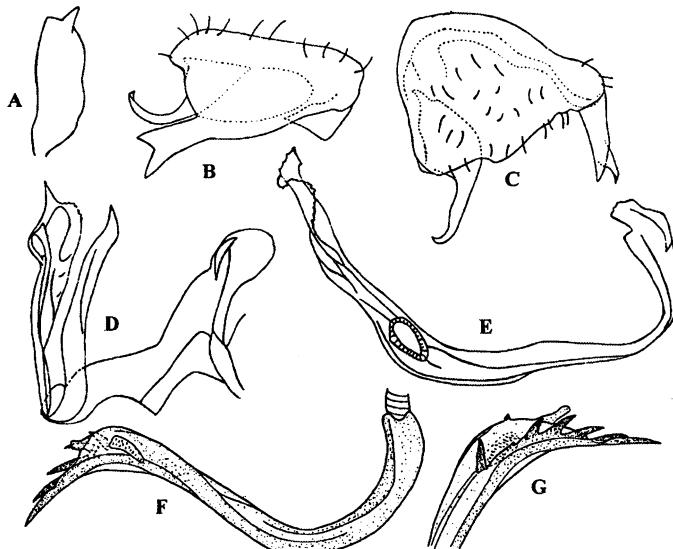
of pronotum and minute spots on disk purplish. Base of scutellum dark brown, apical part, like clavus and basal two-thirds of corium with dense purplish dotting. Apical part of corium uniformly purplish, lateral and inner angles and most of cuneus blackish purple, basal margin of cuneus and the adjacent margin of exocorium narrowly whitish; membrane brownish with abundant pale irroration, veins pale. Undersurface of head and thorax pale, mesosternum purplish. Venter with dense confluent purplish irroration. Legs pale ochraceous. Femora with abundant purplish irroration and blackish spots as indicated in Fig. 8 E. Tibiae with black setigerous spots, tarsi embrowned with 2nd tarsomeres pale.

Body relatively robust, 2.3–2.6 x as long as broad in middle of hemelytra. Head ( $\sigma$  ♀) 0.6 x as broad as basal width of pronotum, ocular index 2.11 in  $\sigma$ , 2.30–2.67 in ♀. Proportions between antennal segments 14:40:24:18 in  $\sigma$ , 13:40:29:22 in ♀, 2nd segment 1.03 ( $\sigma$ ) or 0.95–0.98 (♀) x as long as diatome, 0.67 ( $\sigma$ ) or 0.60–0.63 (♀) x as long as basal width of pronotum. Rostrum extending beyond hind coxae. Pronotum about 2.4 x as broad as long in middle. Hind femur about 3 x as long as broad, hind tibia 1.4 x as long as femur.

Male genitalia in Figs 8 G–J and 9 A–B.

#### *Lepidargyrus nigerrimus* sp.n. (Figs 9 C–F, 11 A–B)

Types: Iran, Fars, Estahban, alt. 1710 m, male holotype, several paratypes ( $\sigma$  ♀), 10–11.VI.1996, Linnavuori, in the Plant Pests and Diseases Research Institute, Tehran, paratypes also in coll. Linnavuori.



**Fig. 10.** *Yotvata picticornis* (HORVÁTH): (A) right style; (B–C) left style; (D) theca; (E) vesica. – *Lepidargyrus seidenstueckeri* (WAGNER): (F–G) vesica. – After LINNAVUORI 1961 and 1994.



**Fig. 11.** *Lepidargyrus nigerrimus* sp.n. (A–B) vesica in slide mount and glycerine. – *Psallus amygdali* sp.n.: (C) male head and pronotum; (D–E) female head in apical and lateral view; (F) claw; (G) theca; (H) right style; (I) left style; (J) vesica in slide mount; (K) apex of vesica in slide mount.

**Description:** Length ♂ 4.0 mm, ♀ 3.5 mm. Shiny black. Basal margin of vertex dark ochraceous, eyes dark brownish gray. Antennae and legs uniformly black. Membranes of hemelytra dark smoky.

Body in ♂ parallel-sided, 2.6–2.8 x, in ♀ elongately pyriform, 2.3 x as long as broad in middle of hemelytra. Upper surface with semi-erect black hairs and appressed silvery scales. Head (♂ ♀) 0.70–0.75 x as broad as basal width of pronotum; ocular index

1.60–1.93 ( $\sigma$ ), 2.0–2.3 ( $\varphi$ ). Antennae gracile, proportions between segments 16:65:39:27 ( $\sigma$ ), 15:59:37:23 ( $\varphi$ ), 2nd segment 1.07–1.14 ( $\sigma$ ) or 0.86–1.02 ( $\varphi$ ) x as long as diatone, 0.80 ( $\sigma$ ) or 0.65–0.77 ( $\varphi$ ) x as long as basal width of pronotum. Rostrum extending to middle coxae. Pronotum about twice as broad as long in middle.

Male genitalia in Figs. 9 C–F, 11 A–B. Vesica distinctive, long and gracile, with a long apical spine and a longitudinal row of numerous spines extending basally beyond the middle of stem.

Habitat: On *Astragalus* sp. in a dry gravelly slope of a hill.

Differential diagnosis: The genus *Lepidargyrus* MUMINOV, 1962 has been treated by DRAPOLYUK (1993), LINNAUORI (1994) and LINNAUORI & HOSSEINI (1998). *L. nigerrimus* is easily recognized by the uniformly black coloring and the structure of the vesica. The closest relative, *L. seidenstueckeri* (WAGNER, 1956), which is also a black species, differs in the considerably smaller head, about 0.6–0.62 x as broad as basal width of pronotum, the proportionally longer 2nd antennal segment, 1.25–1.28 ( $\sigma$ ) or 1.13–1.25 ( $\varphi$ ) x as long as diatone, and in the shape of the vesica (Fig. 10 F–G), in which only the apex is provided with a row of long spines. Moreover, the legs, especially the femora, often have a dark reddish tinge.

#### *Psallus (Psallus) amygdali* sp.n. (Figs 5 E–H, 11 C–K)

Types: Iran, Fars, 16 km E Sa'adatshahr, alt. 1680 m, male holotype, 7 paratypes ( $\sigma$  ♀), 6–7.VI.1996, Linnavuori, in the Plant Pests and Diseases Research Institute, Tehran, paratypes also in coll. Linnavuori.

Description: Length 2.5–2.75 mm. Pale yellow. Genae and sides of tylus red, frons with faint orangish lateral arcs, eyes reddish brown. Antennae pale ochraceous, base of 1st segment red, segments 3 and 4 slightly embrowned. Pronotum with faint orangish irroration. Base of scutellum with two orangish middle spots. Clavus and corium with traces of orangish irroration, apical margin of mesocorium with conspicuous dark fuscous spot near base of cuneus, apex of costal margin and base of cuneus white, inner part of cuneus contrastingly purplish, lateral margin yellowish with purplish irroration; membrane dark brownish gray, lateral margin with white basal and subapical spot, veins whitish. Under surface purplish. Coxae and legs, excluding the purplish hind femora, whitish ochraceous; tibiae with distinct setigerous black spots diminishing in size towards apex, tibial spines pale.

Body small, parallel-sided, 2.5–2.7 x as long as broad at base of pronotum. Upper surface with long semi-erect yellow hairs and pale appressed pubescence. Head ( $\sigma$  ♀) 0.63–0.67 x as broad as basal width of pronotum; ocular index ( $\sigma$  ♀) 1.8. Antennae gracile, with short appressed pale hairs, proportions between segments 12:40:21:20 ( $\sigma$ ), 10:35:20:17 ( $\varphi$ ), 2nd segment 1.05–1.08 ( $\sigma$ ) or 0.92–0.97 ( $\varphi$ ) x as long as diatone,

about 0.7 (♂) or 0.63–0.65 (♀) x as long as basal width of pronotum. Rostrum extending to hind coxae. Pronotum about 2.3 x as broad as long in middle. Hemelytra longer than abdomen, costal margins parallel. Hind femur 3 x as long as broad, hind tibia about 1.3 x as long as femur. Proportions between hind tarsomeres 7:12:10. Claws curved, pulvilli extending to middle of claw, parempodia hair-like.

Male genitalia in Fig. 11 G–K. Pygofer elongately conical. Vesica long, bow-like, apex provided with a broad marginally dentate lobe and a claw-like subapical spine; secondary gonopore near apex.

**Habitat:** On *Amygdalus lycioides* v. *horrida* in a valley of a hill.

**Differential diagnosis:** A distinctive species, which easily differs from all previously known representatives of the genus in the small size, coloring, pale tibial spines, and the structure of the vesica.

#### ACKNOWLEDGEMENTS

I am greatly indebted to Dr. H. Bayat-Assadi of the Ministry of Agriculture in Tehran, the Finnish Society of Sciences and Letters and the Entomological Society of Helsinki, Finland, for financial support of my expedition to Iran. I also want to express my gratitude to Mr. Eng. Ali Pazuki and Mr. Ali Sarafrazi of the Insect Taxonomy and Research Department of the Ministry of Agriculture, Tehran, for their excellent advice and guidance in planning and realizing my trips to previously little known areas of Iran.

#### REFERENCES

- DRAPOLYUK I. S. 1993: Review of the capsid bugs of the genus *Lepidargyrus* (Heteroptera: Miridae). *Zoosyst. Rossica* 2: 107–119.
- KERZHNER I. M. 1962: New species of Heteroptera in the fauna of the USSR. *Trudy Zool. Inst. Akademii Nauk SSSR* 30: 139–155. (In Russian).
- 1984: New and little known Heteroptera from Mongolia and adjacent regions of the USSR. IV. Miridae I. *Nasekomye Mongoli* 9: 35–72. (In Russian).
- LINNAVUORI R. E. 1961: Hemiptera of Israel II. *Ann. Zool. Bot. Fenn. Vanamo* 22: 1–51.
- 1984: New species of Hemiptera Heteroptera from Iraq and the adjacent countries. *Acta Entomol. Fennica* 44: 1–59.
- 1986: Heteroptera of Saudi Arabia. *Fauna of Saudi Arabia* 8: 31–197.
- 1990: Revision of the Atomophora complex (Heteroptera, Miridae) of the Eremian subregion. *Entomol. Fennica* 1: 45–64.
- 1993 a: Hemiptera of Iraq III. *Entomol. Fennica* 4: 253–271.
- 1993 b: The Phylinae (Hemiptera: Miridae) of West, Central and North East Africa. Garcia de Orta, Sér. *Zool. Lisboa* 18: 115–296.
- 1994: Studies on the Mediterranean Miridae fauna (Hemiptera, Heteroptera). *Biol. Galloellenica* 21 (1): 5–34.

- 1997: Taxonomic studies on the Miridae (Heteroptera) of Africa and the Middle East. *Acta Univ. Carol. – Biol.* 40 (1996): 321–350.
  - LINNAURO R. E. & HOSSEINI R. 1998: New species of the Miridae (Heteroptera) from Iran. *Acta Univ. Carol. – Biol.* 42: 3–15.
  - PUTSHKOV V.G. 1975: Species of the genus *Glaucopterus* WAGNER 1963 (Heteroptera, Miridae) of the Soviet Union fauna. *Dokl. Akad. Nauk Ukrain. SSR, Ser. B* 1975 (11): 1037–1042.
  - 1977 a: New species of the genus *Compsidolon* Reut. (Heteroptera, Miridae) from Turkmenian SSR. *Dokl. Akad. Nauk Ukrain. SSR, Ser. B* 1977 (5): 462–466.
  - 1977 b: New and little known mirid bugs (Heteroptera, Miridae) from Mongolia and Soviet Central Asia. *Entomol. Obozr.* 56: 360–374.
- WAGNER E. 1975: Die Miridae Hahn, 1831, des Mittelmeerraumes und der Makaronesischen Inseln (Hemiptera, Heteroptera). Teil 3. *Entomol. Abhandl. Staatl. Mus. Tierkunde Dresden* 39, Supplement, 483 pp.