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Six new species of Skippers from Mexico (Lepidoptera: Hesperiidae: Pyrginae and Heteropterinae

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Abstract

Six new species of Mexican Hesperiidae, three Pyrginae, *Bolla solitaria, B. fenestra* and *Zobera oaxaquena*, from the state of Oaxaca, and three Heteropterinae, *Piruna jonka* and *Dalla kemneri*, also from Oaxaca, and *Piruna millerorum* from the state of Sinaloa, are described.

Introduction

Recent collecting in the state of Oaxaca, Mexico, by John Kemner has disclosed several new skipper taxa as well as many rarely seen forms and new Mexican records. Five of the six new species described below were taken for the first time by Kemner and noted as new or possibly new by Hugh A. Freeman, who sent them to me with a request that I name them and publish their descriptions. The sixth was taken by Drs. Lee D. and Jacqueline Y. Miller in the state of Sinaloa in 1973 and placed in the Allyn Museum collection as "*Piruna* sp." Other new species in the Hesperiinae will be described in a future paper.

In discussion of antennae, wing veins and cells and in genitalic descriptions, I have used the same terminology as in Steinhauser (1989). It should be noted that although the vein and cell terminology is based on Miller, "1969" (1970), a slight change has been made so as to distinguish between the upper and lower portions of cell Cu_2-2A, separated by the faint indication of ancestral vein 1A, using Cu_2-1A and 1A-2A, which combined form Cu_2-2A.

Pyrginae

Bolla solitaria, new species
(Figures. 1, 2, 11)

Male: Upperside: Forewing medium to dark brown with faint paler and darker brown markings which are better expressed in the paler specimens including the holotype upon which this description is based. The ground color results from a mixture of very dark brown and dark ochreous scales; the paler markings are formed by paler ochreous scales; the dark markings result from absence of ochreous scales. The paler markings consist principally of a curved subterminal band from about R_3 to 2A parallel to the termen, distally bordered by faint dark spots. There is a sinuous dark postdiscal spot-band from R_3-R_4, where the spot has a minute white center (subapical dot, missing in one paratype), to Cu_2-2A, inwardly bordering the pale subterminal band except in M_3-Cu_1 and Cu_1-Cu_2, where the spots are offset basad. There are additional vague dark spots at cell end and just basad of mid Cu_2-2A. Fringe dark grey brown. Strong costal fold with pale buff interior. Termen very slightly excavate in Cu_2-2A.

Hindwing same brown as forewing with a poorly defined paler subterminal spot-band from Sc+R_1-Rs, where the spot is detached basad from the rest of the band, to 1A-2A; a very vague terminal pale band; an indistinct dark cell-end spot bordered basad and distad by equally indistinct narrow pale spots; very indistinct pale discal spot-band from M_3-Cu_1 to Cu_2-2A. Fringe dark grey brown. Termen very slightly excavate in M_1-M_3.

Underside: Forewing dull dark matte brown with minor dark ochreous scaling along costa, at apex and in cell; subterminal pale band from above repeated as small separate spots of paler ochreous scales; subapical hyaline spot as above, but no dark spots; anal cell very dark grey. Fringe as above.

Hindwing as upperside, pale spots slightly smaller and better defined. Fringe as above.

Head and thorax dark brown with pale yellow to ochreous scales and hairs; abdomen dark brown above and laterally, with ochreous scaling, paler greyish brown beneath with ochreous scaling. Palpi

dark brown above with pale yellow scales, beneath whitish with black scales and hairs; third segment prominently porrect. Legs brown with ochreous scaling outside, whitish inside; structurally normal for the genus.

Genitalia: Tegumen and uncus subequal; tegumen with narrow lateral processes projecting caudad, appressed to the uncus and about half its length; gnathos entirely membranous. Valvae symmetrical, with prominent long curved harpe extending well dorsad of the ampulla which projects narrowly caudad. Penis straight, slender, long, approximately as long as valva, ending caudally in a slender point; phallobase approximately one quarter total penis length; cornutus a bundle of basally joined rather short spines. Saccus very short, broad. Juxta narrow, ribbon-like.

Female: Unknown.

Wing measurements: Forewing 15 1/2 x 9 mm to 16 1/2 x 10 mm (Holotype 16 x 9 mm) averaging 16.0 x 9.3 mm in type series of 12 males.

Type material: Holotype (M), Mexico: Oaxaca; Sierra Madre del Sur, La Soledad Buena Vista, 5000' 16.iv.1990, leg. John Kemner, bearing the following labels: hand printed white label, Mex: Oax: Sierra Madre del Sur La Soledad Buena Vista 16 Apr. 1990 - 5000' el. John Kemner; printed and hand printed white label, Allyn Museum Acc. 1990-12; printed and hand printed red label, HOLOTYPE (M) Bolla solitaria S. R. Steinhauser; printed and hand printed white label, Allyn Museum Photo No. 900721, 21A/1-2; printed and hand printed white label, SRS Database No. 406. There are 11 male paratypes all collected by John Kemner in Oaxaca: two same data as holotype; eight same locality as holotype, four on 27.viii.1989, two on 5.v.1990, two on 6.v.1990; one from Pluma Hidalgo 4000', 22.xi.1989. The holotype and six paratypes are deposited in the Allyn Museum of Entomology; the other five paratypes are in the collection of H. A. Freeman.

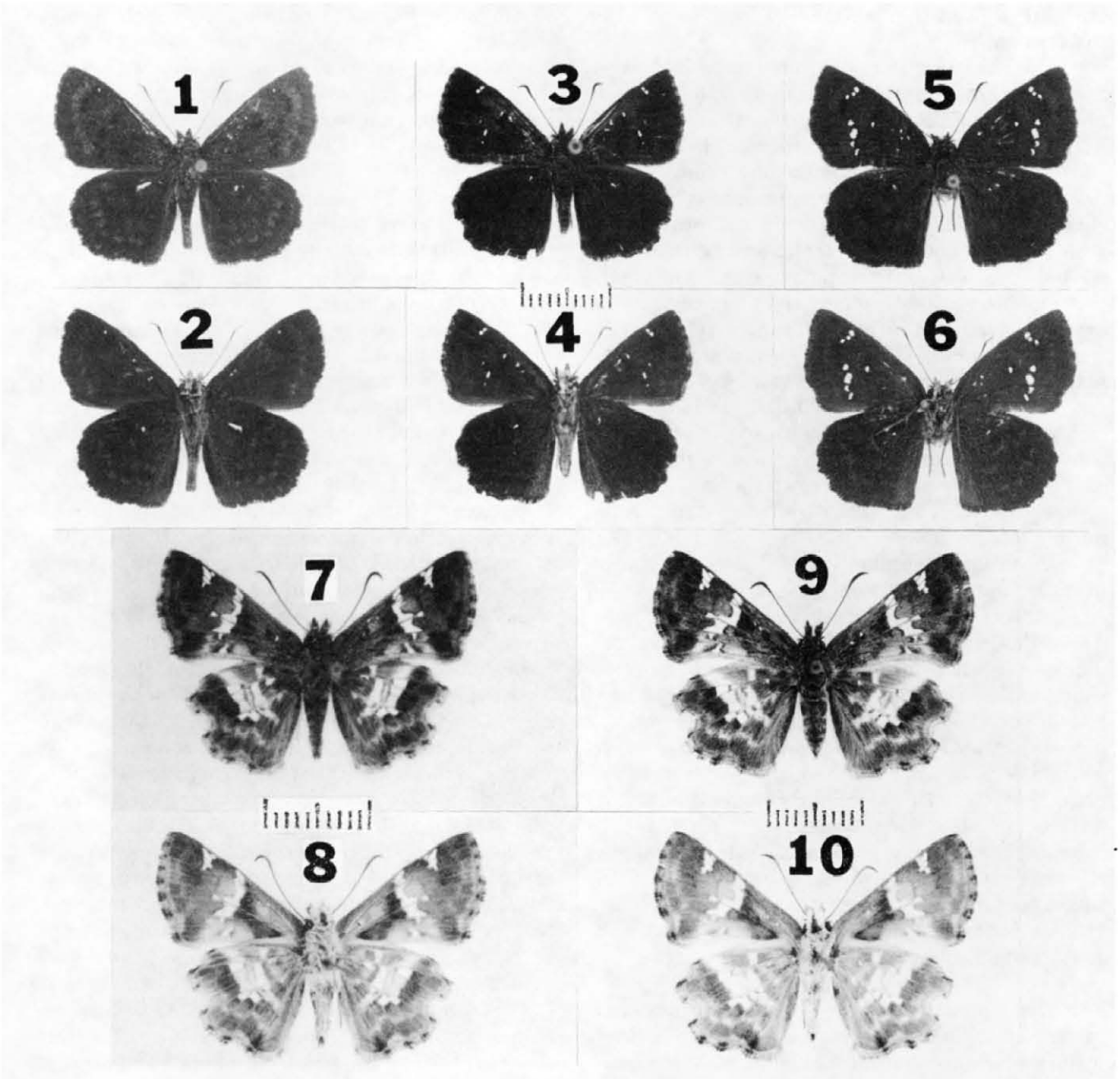
Diagnosis: Following Evans (1953), *solitaria* keys to between *catharina* (Bell, 1937) and *cupreiceps* (Mabille, 1891), differing from *catharina* by its smaller size and presence of a single hyaline subapical spot and from *cupreiceps* by its brown rather than brilliant copper head; it cannot, however, be considered more closely related to these than to other *Bolla* species. Separation from similarly marked species (single or no forewing subapical white spot) with a costal fold such as *catharina* & *boliviensis* (Bell, 1937), *subapicatus* (Schaus, 1902), *orsines*, *evippe* & *brennus* (Godman & Salvin, [1896]), *pullata* Mabille, 1903, *antha* & *vexta* Evans, 1953 and *dorsolaciniae* Steinhauser, 1989, requires only a brief glance at the genitalia, usually without even the need to brush away anal scales, to see the very distinctive harpe of *solitaria*.

Bolla fenestra, new species
(Figures. 3-6, 12, 13)

Male: Upperside: Forewing dark brown with rufous overscaling forming vague paler brown markings as follows: subterminal spot-band from costa distad of subapical hyaline spots where it is very faint to Cu_2-2A where it is more prominent; lower cell spot just before cell end; discal spots in Cu_1-Cu_2 near its base (very faint) and mid Cu_2-2A; sub-basal spot in Cu_2-2A. There are a few scattered ochreous scales in the apical area. Small to minute semihyaline white spots as follows: two subapical spots in R_3-R_4 and R_4-R_5; upper cell spot near cell end (present only in the holotype but at least suggested on the underside in three of four paratypes); Cu_1-Cu_2 slightly distad of fork of Cu_1 from cell; dot in M_3-Cu_1 slightly distad of spot in Cu_1-Cu_2 (present in holotype and faintly visible in two paratypes where it is better marked on the underside); similar dot in Cu_2-1A behind spot in Cu_1-Cu_2 (present only in holotype, suggested on underside of one paratype). There is a vague darker brown area across the cell just basad of the pale cell-end spot and another in Cu_2-2A between the discal and sub-basal pale spots. Fringe dark brown at vein ends, slightly grey tinged between, giving a weakly checkered appearance. Termen very slightly excavate in Cu_2-2A. Prominent costal fold.

Hindwing same dark brown as forewing with faint suggestion of paler discal and postdiscal spot-bands. Fringe dark brown, a few paler scales in Sc+R_1-Rs. Termen somewhat excavate in M_1-M_3.

Underside: Forewing dark brown as above but duller, somewhat greyish near dorsum. Rufous and ochreous overscaling much reduced and paler markings much fainter than above. Semihyaline white spots as above, but more prominent, may show as opaque white dots when not present above. Costal area and outer half of wing with scattered ochreous scales. Fringe dark brown, uncheckered,



Figures 1-10. New species of Pyrginae in the genera *Bolla* and *Zobera*: 1,2) *B. solitaria*, male holotype, upper (1) and under (2) surface (Allyn Museum Photo Nos. 900721-1,2); 3-6) *B. fenestra*; 3,4) male holotype, upper (3) and under (4) surface (Allyn Museum Photo Nos. 900721-3,4); 5,6) female paratype, upper (5) and under (6) surface (Allyn Museum Photo Nos. 900721-5,6); 7-10) *Z. oaxaquena*; 7,8) male holotype, upper (7) and under (8) surface (Allyn Museum Photo Nos. 901016-16,17); 9,10) female paratype, upper (9) and under (10) surface (Allyn Museum Photo Nos 900721-9,10).

but with a faint whitish median line parallel to the termen.

Hindwing as above, but spot-bands narrower. Scattered ochreous scaling becoming rather whitish and denser behind 2A and in tornal area. Fringe dark brown, whitish median line very faint.

Head, thorax and abdomen dark brown with a few scattered rufous and ochreous scales; abdomen slightly paler beneath. Palpi dark brown above with ochreous and whitish scales and hairs, mostly whitish beneath, third segment prominently porrect. Antennae slightly longer than half costa, dark brown above, prominently checkered yellowish in front and beneath, yellowish beneath arcuate club; nudum light brown, 11 1/2 to 13 (holotype) in three specimens with complete club, averaging 12.3. (Since the basal nudum segments of two paratypes were scaled for about half their width, they were counted as half segments.) Legs dark brown, hairy, overscaled ochreous and whitish, structurally normal for the genus.

Genitalia: Tegumen long, 1.25 x length of uncus, without lateral appendages; uncus undivided, distally slender in dorsal view, with prominent dorsal flanges on either side in its basal part, the flanges slightly overlapping the tegumen; gnathos short, entirely membranous. Valvae symmetrical, basally broad with relatively narrow harpe projecting well caudad, terminally dentate and sharply pointed dorsally; ampulla rounded, very small, not projecting caudad. Penis slightly longer than valva, distally pointed; phallobase long, prominently curved dorsad, ductus ejaculatorius approximately at penis midpoint; cornutus a bundle of basally joined spines, progressing from short to long in an arrangement like that of the tubes in panpipes. Juxta simple, ribbon-like. Saccus very short.

Female: Upperside: Forewing brown, somewhat paler than male due to heavy dark ochreous overscaling. Marked essentially as male but the subterminal pale band is broader, more compact and distally bordered by a vague darker band that fades toward the termen before the fringe. The subterminal pale band is inwardly bordered by a narrow sinuous band of dark brown spots from R_3-R_4 to 1A-2A, all the spots except those in M_1-M_2 and M_2-M_3 with prominent semihyaline white centers, the largest in Cu_1-Cu_2; the vague pale cell-end spot extends across the cell and is inwardly bordered by by a narrow dark brown spot with a prominent semihyaline white center in its lower half. Fringe dark brown. Termen slightly excavate in Cu_2-2A.

Hindwing same brown as forewing with dense dark ochreous overscaling forming vague pale subbasal, discal, postdiscal and subterminal bands. Fringe dark brown. Termen slightly excavate in M_1-M_3.

Underside: Forewing as above but the ochreous overscaling much less dense in the outer half, the pale and dark markings very vague; semihyaline spots as above, prominent; anal cell slightly greyish. Fringe dark brown.

Hindwing as above, pale bands fainter except for the postdiscal band and cell-end spot of discal band, which are narrower than above and more prominent. Fringe dark brown.

Palpi, head, thorax, abdomen, legs and antennae as male; nudum 13.

Genitalia: Lamella postvaginalis with broad "U"-shaped central indentation caudally, covered with microtrichia; lamella antevaginalis consisting of two narrow lateral lobes of the 8th sternite developed on the ventral side into a pair of long slender, sharply pointed processes, somewhat divergent and extending caudad well past the lateral lobes. The caudal portion of the ductus bursae is surrounded by a wrinkled "fleshy" mass extending from the ostium about one fifth the way to the cephalad end of the corpus bursae. This "fleshy" mass is typical of most *Bolla* females. The ductus seminalis is connected to the ductus bursae mid dorsally just cephalad of the ostium. There is no clearcut division between ductus bursae and corpus bursae; the ductus just gradually expands.

Wing measurements: male forewing 13 x 8 mm to 15 x 9 mm (holotype), averaging 14.2 x 8.8 mm in the type series of five males; female forewing 16 x 10 mm.

Type material: Holotype (M), Mexico: Oaxaca; 5 mi. E. Ixtlan de Juarez, 20.v.1990, leg. John Kemner, bearing the following labels: hand printed white label, Mex: Oaxaca River 5 mi. E. Ixtlan de Juarez 20 May 1990 John Kemner; printed and hand printed white label, Allyn Museum Acc. 1990-12; printed and hand printed red label, HOLOTYPE (M) Bolla fenestra S. R. Steinhauser; printed and hand printed white label, Allyn Museum Photo No. 900721,21A/3-4; printed and hand printed white label, Genitalia Vial SRS-3739; printed and hand printed white label, SRS Database No. 418. There are four male and one female paratypes all taken by John Kemner in Oaxaca: three (M) and

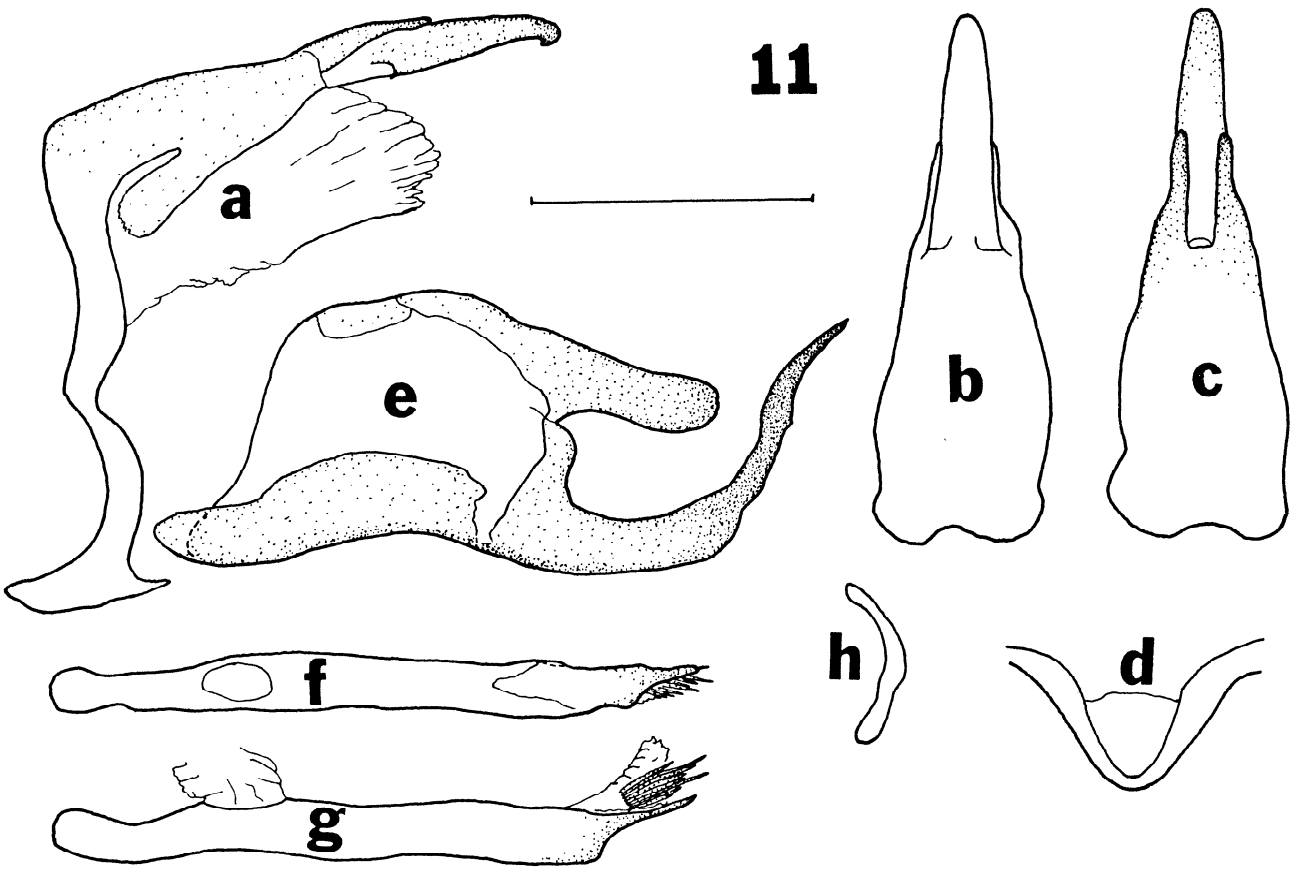


Figure 11. *Bolla solitaria*, new species, genitalia male paratype: a) tegumen, uncus and associated structures - lateral view; b) tegumen, uncus - ventral view; c) same - dorsal view; d) saccus - ventral view; e) right valva (interior) - lateral view; f) penis and cornutus - dorsal view; g) same - lateral view; h) juxta - ventral view (Genitalia Vial SRS-3331).

one (**F**) from Sierra Madre del Sur, La Soledad Buena Vista, 5000', one (**M**) 14.iv.1990, two (**M**) 16.iv.1990 and one (**F**) 6.v.1990; one (**M**) from Hwy. 175 ca. 5 mi N. of Oaxaca, 22.viii.1988. The holotype, one (**M**) and one (**F**) paratypes are deposited in the Allyn Museum of Entomology; two (**M**) paratypes are in the H. A. Freeman collection and one in the G. T. Austin collection.

Diagnosis: The nearest relative to *fenestra* is *Bolla cylindus* (Godman & Salvin, [1896]), based on the close similarity of the genitalia in both sexes. In Evans' (1953) key, however, it would come out at 18, near *saletas* (Godman & Salvin, [1896]). The key could be modified as follows: change **1**a(20a) to **1**a(21a), maintaining the same language. After couplet **18**a(15b), substitute
the following:

18b(20). male with costal fold.

18(19). Above, rufous brown. Upf with 2 hyaline apical spots only. Uncus not produced dorsally where it joins tegumen. Male F 15 mm.
saletas (Godman & Salvin, [1896]): (**M**) Guatemala: type B.M.: figured, male and genitalia.
B.M. Only the type.

19(18). Above and below dark brown. (**M**) upf 2 hyaline apical spots and one in space 2 at least; may also be an upper cell spot and spots in 1b and 3. (**M**) F 13-15 mm. (**F**) slightly paler, 3 apical hyaline spots, a lower cell spot

and spots in 1b (two), 2 (largest) and 3. (F) F 16 mm.

fenestra Steinhauser: (M) Mexico (Oaxaca): type A.M.E.

Leaving the language the same, change the remaining numbers as follows: **19**(18) to **20**(18b); **20a**(1a) to **21a**(1a); 20(21a) to 21(22a); **21a**(20) to **22a**(21); 21b(23) to 22b(24); 21(22) to 22(23); **22**(21) to **23**(22); **23**(21b) to **24**(22b).

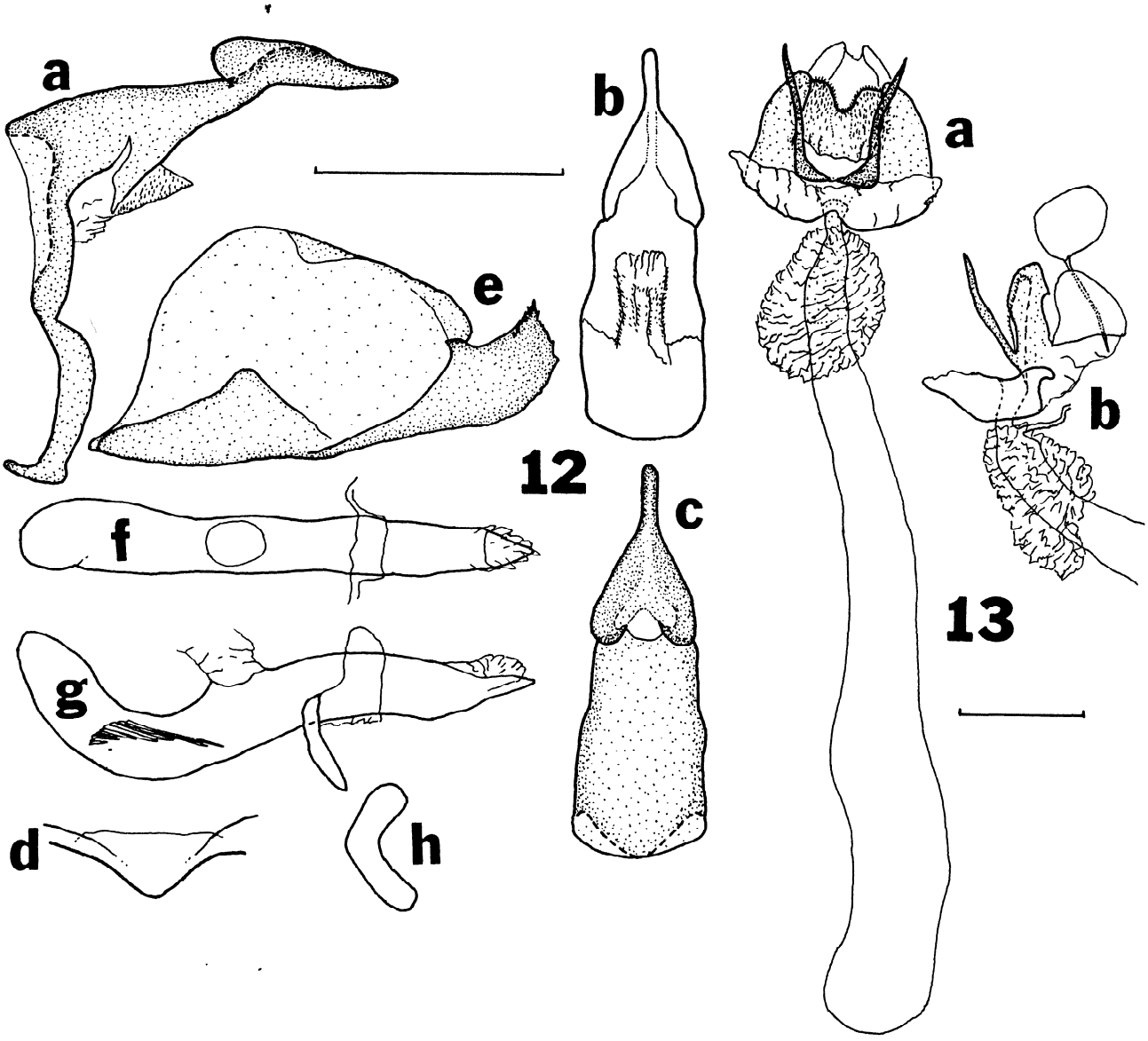
The principal differences between *fenestra* and *cylindus* are: *cylindus* is larger, (M) forewing 20 mm; forewing apex of *cylindus* is more pointed; the underside forewing of *cylindus* in both sexes is prominently paler toward the termen. In the male genitalia, *cylindus* lacks the prominent dorsal flanges of the uncus found in *fenestra*; the valvae are very similar. In the female genitalia the long slender processes of the lamella antevaginalis are shorter and less divergent in *cylindus* and the "fleshy" mass surrounding the ductus bursae starts well cephalad of the ostium in *cylindus*.

Zobera oaxaquena, new species

(Figures. 7-10, 14, 15)

Male: Upperside: Forewing grey brown more or less densely overlaid with white scales and hair scales, with hyaline white spots forming subapical and irregular discal bands, and with darker brown and opaque whitish markings. The subapical band consists of four spots, the largest in R_3-R_4, elongate, rhomboidal; a small spot forward of it in R_2-R_3 (may be semi-opaque); an elongate spot in R_4-R_5 (these three spots have their inner edges approximately in line); a small spot in R_5-M_1 approximately centered behind the spot in R_4-R_5. The irregular narrow discal band is continuous from mid costa (the elongate, rhomboidal spot in Sc-R_1 has its inner edge just distad of the fork of R_1 from the cell) to vein Cu_2; there are usually two small spots with inner and outer dark brown borders in Cu_2-2A, but the one in Cu_2-1A may be faint or missing, except for its dark border, and that in 1A-2A is offset basad; there is a small, distally detached spot in the base of M_3-Cu_1. There are poorly defined dark brown markings as follows: subterminal spot-band parallel to the termen from the apex where it reaches the termen, becoming very narrow in M_1-M_3 then broadening to its widest in Cu_2-2A where the spot is more or less square; a vague quadrate area in M_1-M_3 just distad of the subapical hyaline band and extending forward indistinctly into R_5-M_1 and beyond; a thin cell-end bar; a cell spot inwardly bordering the hyaline band; behind this dark cell spot is an oblique smudge from the base of Cu_1-Cu_2 into Cu_2-2A; the wing base somewhat darkened. There are indistinct whitish markings as follows: a small spot, barely paler than ground color, distad of the hyaline centered spot in Cu_2-1A; an elongate spot in 1A-2A distad of the hyaline centered dark spot and a still longer one basad of that spot and extending to the prediscal dark spot. Fringe grey brown at vein ends, paler between, inwardly bordered black at vein ends, accentuating the checkered appearance. Moderately strong costal fold. Dorsum slightly concave and termen slightly excavate in Cu_2-2A, resulting in a slightly produced tornus.

Hindwing same grey brown as forewing, with same overscaling. There is an irregular broad white discal band of combined hyaline and opaque spots extending from the costa near the apex where the band is narrow to Cu_2-2A where it is again narrow and indistinct. The broad central portion is crossed by two parallel narrow brown lines surrounding a narrow white line, the outer brown line coinciding with the discocellular veins. The hyaline spots of this discal band are as follows: in Rs-M_1, a trapezoidal spot; in the cell, a spot across the cell, forming the innermost part of the band and distally bordered by the inner brown line; in M_3-Cu_1, a trapezoidal spot projecting distad from the band; in Cu_1-Cu_2, a small spot near the base, its inner edge in line with the inner edge of the hyaline cell spot, and an outer quadrate spot whose outer edge is in line with the inner edge of the hyaline spot in M_3-Cu_1. There is an indistinct, small, detached, opaque white, sub-basal spot in Cu_2-2A. In Sc+R_1-Rs, there is a narrow, opaque white sub-basal spot, its outer edge in line with the inner edge of the discal band in the cell. The costal cell forward of the sub-basal spot in Sc+R_1-Rs is white, continued to the base, and white forward of the outer portion of the discal band. There is a vague, narrow preterminal, opaque whitish line from the costa to 3A, distally bordered by a thin, dark brown terminal line which is more pronounced at vein ends except for M_2, and obsolete in M_1-M_3. Joining this preterminal whitish line at M_3 is a more distinct, irregular postdiscal whitish line paralleling the termen to 2A. In M_1-M_3, distad of the white discal band is a vague darker brown spot extending forward into Rs-M_1.



Figures 12,13. *Bolla fenestra*, new species, genitalia: 12) male holotype: a) tegumen, uncus, gnathos and associated structures - lateral view; b) tegumen, uncus, gnathos - ventral view; c) tegumen, uncus - dorsal view; d) saccus - ventral view; e) right valva (interior) - lateral view; f) penis, transtilla - dorsal view; g) same, including juxta and cornutus - lateral view; h) juxta - ventral view (Genitalia Vial SRS-3739). 13) female paratype: a) ventral view; b) lateral view (Genitalia Vial SRS-3727).

The termen is excavate in Sc+R_1-Rs, deeply so in M_1-M_3 and slightly in Cu_2-2A. Fringe whitish brown, checkered brown at vein ends except M_2; hairy, white on inner margin.

Underside: Forewing mottled pale yellowish grey brown, dark grey, white and pale yellowish. The varied coloration results from varying intensities of white and pale yellow overscaling on a generally grey brown background. The overscaling

in the basal half of the cell and in the anal cell is white, most of the remainder pale yellow. Hyaline spots repeated from above. The costal cell is pale yellowish grey. The dark brown spots of the upperside in the cell and the base of Cu_1-Cu_2 are repeated as a dark grey spot becoming dark yellowish grey in Cu_2-2A; basad of the dark cell spot, the cell and basal 2/3 of Sc-R_1 are whitish; there is a round yellowish white spot in the cell end between the hyaline cell spot and the narrowly dark grey discocellular veins, distad of which, in M_1-M_3, is an indistinct yellowish spot behind the subapical hyaline band. In Cu_2-2A, the area between the dark sub-basal spot and the discal hyaline spots is pale yellowish, somewhat grey in Cu_2-1A, more whitish in 1A-2A; distad of the hyaline spots is an indistinct broad whitish spot distally bordered by an equally broad yellowish grey spot shading to dark grey in its outer rear corner and distally bordered by a narrow whitish terminal spot, broader at Cu_2, a mere line at 2A. This whitish spot is the end of a whitish terminal line extending from the apex. The anal cell is white except for a small yellowish grey area behind the yellowish grey tornal spot in Cu_2-2A. Fringe pale grey, prominently checkered dark grey at vein ends; white on inner margin.

Hindwing same color scheme as forewing; hyaline spots as above; discal band and other white markings from above repeated but with less contrast, due to the paler ground color. There are additional indistinct opaque white markings as follows: forward half of costal cell; in Sc+R_1-Rs, basal and terminal spots; in the cell, a basal spot and a prediscal spot narrowly separated from the discal band (the discocellular veins not, or only faintly darkened); in Cu_2-1A, a sub-basal spot behind the fork of Cu_2 from the cell; 2A-3A and anal cell mostly white. There is a more or less prominent dark brown, triangular tornal spot at the end of vein 2A. Fringe as upperside.

Head, thorax and abdomen brown with grey and white scaling, abdomen white beneath. Palpi hairy, dark brown with white scales and hairs above, white beneath; third segment porrect, protrudes forward the length of the head. Antennae about half costa, shaft dark brown behind, prominently checkered white and pale ochreous in front; club slender, arcuate, tip of apiculus narrowly rounded; nudum brown, 17 in holotype and two paratypes, 16 in four paratypes. Legs white, mid and hind tibiae smooth, mid tibiae with single pair of spurs, hind tibiae with two, no hair tuft.

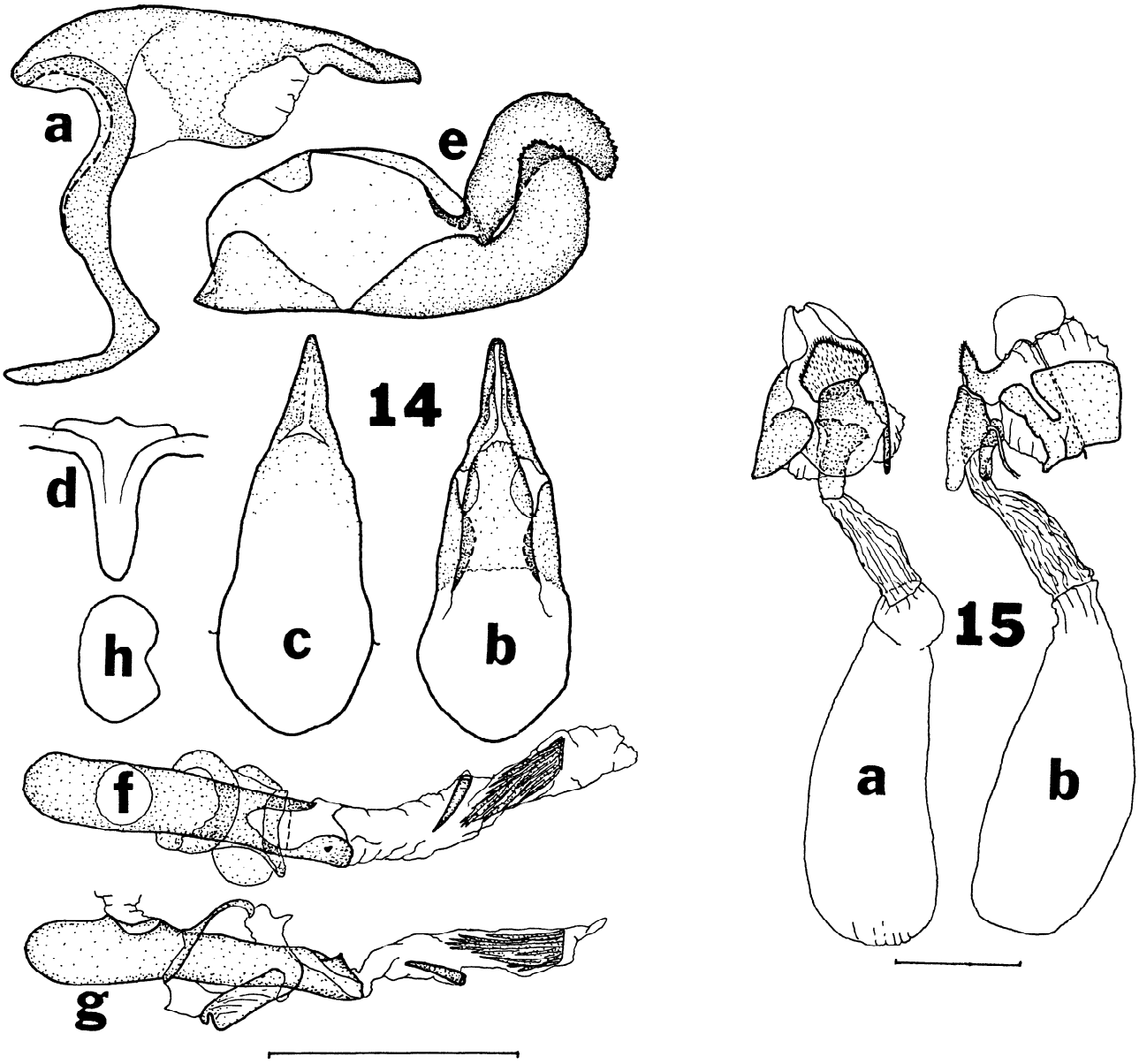
Genitalia: Tegumen long, uncus short, less than half length of tegumen, evenly tapered distally in dorsal view to a slender rounded point, hooked slightly ventrad in lateral view; gnathos short, poorly developed. Valvae symmetrical, slightly longer than combined length of tegumen and uncus; harpe prominently curved dorsad, terminally dentate, broadly rounded,slightly overlapping ampulla which is prominently curved ventrad, terminally dentate, broadly rounded but narrower than harpe and projecting caudad beyond harpe; sacculus a prominent rounded triangle. Penis short, straight, stout, about 0.85 x combined length of tegumen and uncus, with small dorsal tooth on left side at distal end; phallobase about one quarter total phallus length; cornutus a single stout thorn-like spine separate from a bundle of short slender spines loosely conjoined basally. Juxta a simple lightly sclerotized plate, transtilla membranous, manica sclerotized where it attaches to penis. Saccus moderately short, slender.

Female: Very slightly larger than male; upperside and underside as male; in one specimen the upperside white markings are broader and more prominent. Head, thorax, abdomen, palpi, legs and antennae as male; nudum brown, 17 in two paratypes, 16 in one.

Genitalia: Lamella postvaginalis bluntly triangular, covered with microtrichia; lamella antevaginalis a rather small evenly rounded plate, sometimes slightly indented centrally on its caudal edge, extending somewhat cephalad to conceal the antrum when viewed ventrally; antrum moderately sclerotized, skewed slightly left; ductus bursae striated longitudinally, with some weak internal sclerotization, skewed right; corpus bursae long, slender, with no internal spicules; ductus seminalis connected dorsally to caudal end of antrum at ostium.

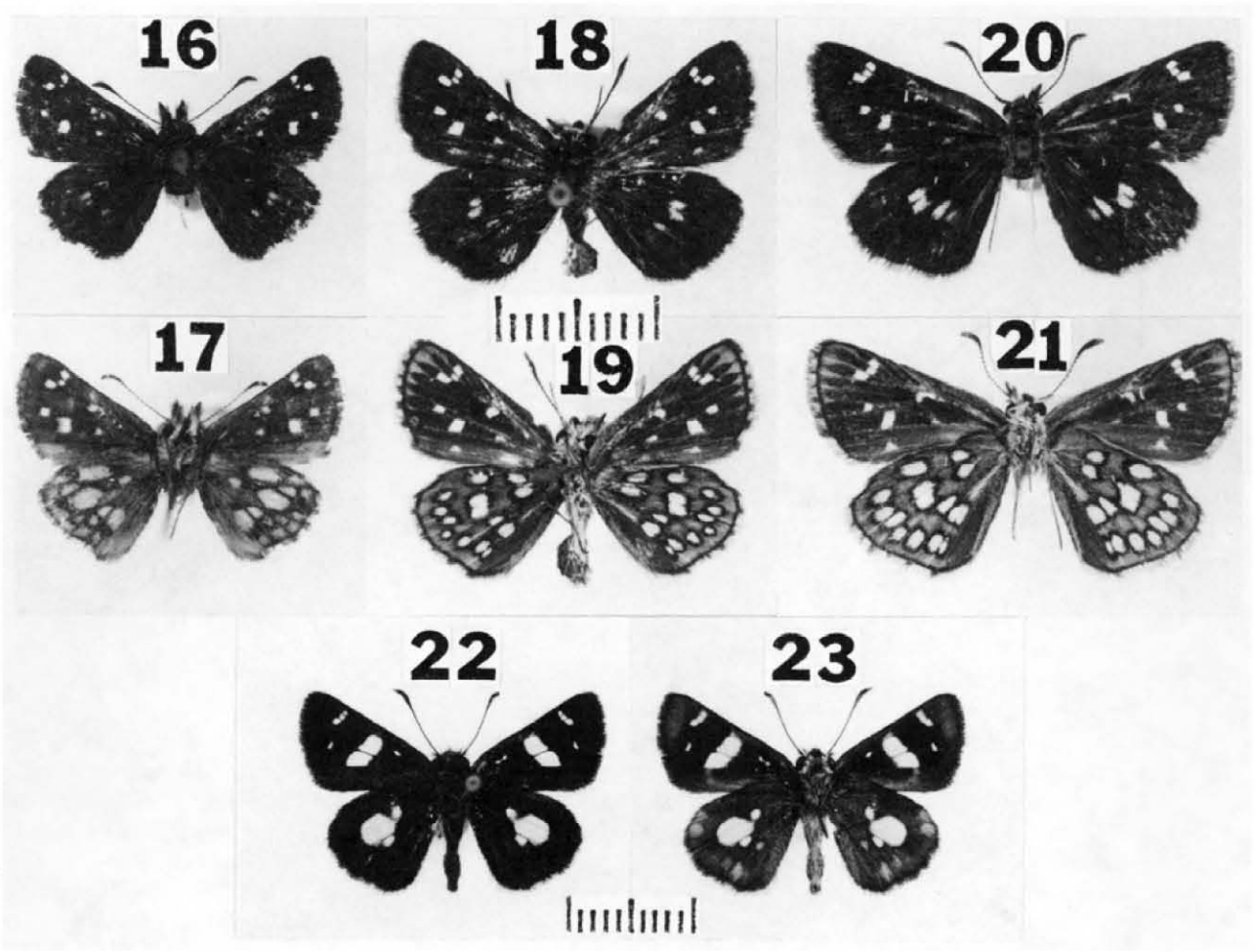
Wing measurements: (M) forewing 16 x 9 to 17 1/2 x 10 mm (holotype 17 1/2 x 9 1/2 mm), averaging 17.0 x 9.3 mm in the type series of seven males; (F) forewing 17 1/2 x 10 to 18 x 10 mm, averaging 17.8 x 10.0 mm in type series of three females.

Type material: Holotype (M), Mexico: Oaxaca; 10 mi. N. of Oaxaca, 0.25 mi. S. of El Estudiante, 6800', 16.v.1990, leg. John Kemner, bearing the following labels: hand printed white label, Mex:



Figures 14,15. *Zobera oaxaquena*, new species, genitalia: 14) male paratype: a) tegumen, uncus, gnathos and associated structures - lateral view; b) tegumen, uncus - ventral view; c) same - dorsal view; d) saccus - ventral view; e) right valva (interior) - lateral view; f) penis, transtilla, juxta, cornutus - dorsal view; g) same - lateral view; h) juxta - ventral view (Genitalia Vial SRS-3430); 15) female paratype: a) ventral view; b) lateral view (Genitalia Vial SRS-3730).

Oax: Hwy. 175: 10 mi. N. Oaxaca - 1/4 mi. S. El Estudiante 16 May 1990 - el. 6800' John Kemner; printed and hand printed white label, Allyn Museum Acc. 1990-12; printed and hand printed red



Figures 16-23. New species of Heteropterinae in the genera *Piruna* and *Dalla*: 16,17) *P. jonka*, male holotype upper (16) and under (17) surface (Allyn Museum Photo Nos. 900105-19,20); 18-21) *P. millerorum*; 18,19) male holotype upper (18) and under (19) surface (Allyn Museum Photo Nos. 900105-23,24); 20,21) female paratype upper (20) and under (21) surface (Allyn Museum Photo Nos. 900105-21,22); 22,23) *D. kemneri* male holotype upper (22) and under (23) surface (Allyn Museum Photo Nos. 900721-23,24).

label, HOLOTYPE (**M**) Zobera oaxaquena S. R. Steinhauser; printed and hand printed white label, Allyn Museum Photo Nos. 901016/16,17 & 901016A/1,2; printed and hand printed white label, SRS Database No. 427. There are six male and three female paratypes, all taken in Oaxaca by John Kemner: three (**M**) and two (**F**) same data as holotype; two (**M**) 5 mi. N. of Oaxaca, 17.v.1988 and 19.vii.1988; one (**M**) and one (**F**) 5-10 mi. N. of Oaxaca, 24.v.1990. The holotype, four (**M**) and two (**F**) paratypes are deposited in the Allyn Museum of Entomology, the rest are in the collection of H. A. Freeman.

Diagnosis: The general maculation pattern of *oaxaquena* is similar to that of the two other known *Zobera* species, *albopunctata* Freeman, 1970 (type species) and *marginata* Freeman, 1979, differing from both in several ways, the most prominent as follows: the forewing subapical hyaline spots of *oaxaquena* are grouped into a compact short triangular band and do not extend into M_1-

M_2 and M_2-M_3 whereas in the other two species these spots are separate, staggered and continued into M_1-M_2 and M_2-M_3; the forewing discal hyaline band of *oaxaquena* is narrow and irregular but more or less continuous, in the others the band is wider but discontinuous. In the male genitalia, the ampulla of both *albopunctata* and *marginata* is longer, less curved, strongly produced dorsad and widely separated from the harpe which is much less curved dorsad than in *oaxaquena*. The principal external morphological difference is the absence of a hind tibial hair tuft in *oaxaquena*, so prominent in the others. This could indicate a different genus for *oaxaquena*, but the great similarity of genitalia, wing shape and maculation led me to place it in *Zobera*.

Key to *Zobera* species

1. Male with prominent hind tibial hair tuft; forewing with hyaline spots in M_1-M_2 and M_2-M_3; female unknown 2
1'. Male without hind tibial hair tuft; male and female forewing no hyaline spots in M_1-M_2 nor M_2-M_3 ..... *oaxaquena*

2. Male upper and underside hindwing with large whitish discal area .... *marginata*
2'. Whitish spots of hindwing discal area in male more or less separated, not forming prominent white area .... *albopunctata*

Heteropterinae

Piruna jonka, new species
(Figures: 16, 17, 24)

Male: Upperside: Forewing dark brown with a few scattered pale ochreous scales. Small semihyaline to opaque white spots as follows: three subapical in R_3-R_4, R_4-R_5 and R_5-M_1, the central spot minute and offset slightly basad; an upper cell spot between the origins of R_1 and R_2; mid M_3-Cu_1; two in Cu_1-Cu_2, small in the base and large (largest of all) slightly distad of the fork of M_3 and Cu_1; a faintly suggested, minute opaque postdiscal spot in 1A-2A behind the spot in Cu_1-Cu_2. Fringe rather worn, dark brown with some paler brown and whitish scales distally, apparently restricted to inter vein areas, giving a vague checkered appearance.

Hindwing same dark brown as forewing, paler along costa. Vague opaque whitish discal spots in M_1-M_3 (double), just distad of cell, and near base of Cu_1-Cu_2. Fringe as forewing, whitish at tornus.

Underside: Forewing ochreous brown, paler and greyish at tornus, pale grey in anal cell. Spots from upperside repeated, larger, mostly opaque; the subapical spots and that in M_3-Cu_1 pale yellowish white, the others somewhat more ochreous. There are, in addition, a poorly defined pale ochreous spot in R_1-R_2 forward of the cell spot, a faint pale ochreous smudge at cell end and a very vague pale ochreous subterminal spot-band, most prominent at the apex. Fringe slightly paler ochreous brown except at vein ends, vaguely whitish at tornus.

Hindwing ochreous brown, distal half of 2A-3A and of anal cell ochreous. There are prominent, but not sharply defined, discal, postdiscal and subterminal spot-bands as follows: discal band of large ochreous white spots from Sc+R_1-Rs to Cu_2-2A becoming more ochreous in 1A-2A; the cell-end spot is merged with the postdiscal spot in M_1-M_3 to form a single large spot; postdiscal band from base of Rs-M_1 to Cu_1-Cu_2, becoming more ochreous tornally; subterminal pale ochreous band from Sc+R_1-Rs to 1A-2A, behind which it merges with the ochreous distal half of 2A-3A. The base of the costal cell and of Sc+R_1-Rs is indistinctly ochreous and there is a prominent ochreous white sub-basal spot in the cell. Fringe greyish ochreous, darker at vein ends.

Head, thorax and abdomen dark brown, some whitish and ochreous scales on head; abdomen brown beneath with vague lateral white stripes. Palpi hairy, long (twice length of head), porrect, dark brown above with whitish hairs, mixed dark brown, ochreous and white beneath. Antennae slightly longer than half costa, shaft prominently checkered black and white, yellowish white beneath club base; club stout, arcuate, tip of apiculus broadly rounded; nudum 8, pale yellow in basal two segments, darkening distally to dark brown at tip. Legs dark brown with white and ochreous scaling; fore tibiae with very small central epiphyses, no apparent spines; mid tibiae spined, with single pair of spurs; hind tibiae sparsely spined, with two pairs of spurs.

Genitalia: Tegumen broad, rounded; uncus broad, narrowing caudally, rather shallowly bifurcate, the arms slightly divergent, separated by slightly less than their width, forward end of uncus projects prominently cephalad over (dorsad) tegumen, bearing a very dense dorsal hair tuft; gnathos centrally membranous between two smooth, promi-

nently sclerotized lateral arms. Valvae symmetrical, narrow, long, about twice combined length of tegumen and uncus; harpe narrow, curving gently dorsad to slightly overlap the smoothly rounded ampulla, hooked prominently inward distally in dorsal view. Penis slender, long, slightly longer than valva, curved (concave dorsally), terminally broadened; no phallobase, ductus ejaculatorius at extreme cephalad end; cornutus a small dentate plate. Juxta and transtilla well sclerotized, prominent. Saccus slender, long, longer than combined tegumen and uncus.

Female: Unknown.

Wing measurements: Forewing (**M**) holotype 10 1/2 x 6 mm.

Type material: Only the holotype, Mexico: Oaxaca; 6 mi. W. of Yanhuitlan, 8400', 12.viii.1989, leg. John Kemner, bearing the following labels: hand printed white label, Mex: Oaxaca: Hwy. 190 6 mi. W. Yanhuitlan 12 Aug. 1989 - el. 8400' John Kemner; printed and hand printed white label, Allyn Museum Acc. 1989-7; printed and hand printed red label, HOLOTYPE (**M**) Piruna jonka S. R. Steinhauser; printed and hand printed white label, Genit. Vial SRS-3334; printed and hand printed white label, Allyn Museum Photo No. 900105, 05A/19,20. The holotype is deposited in the Allyn Museum of Entomology.

Diagnosis. The only *Piruna* species likely to be confused with *jonka* is the new species described below. The diagnosis for each will be given there, along with a modification of Evans' key for the genus *Piruna*.

Piruna millerorum, new species
(Figures: 18-21, 25, 26)

Male: Upperside: Forewing dark brown, leading edge of costa white. Small opaque white spots as follows: three subapical in R_3-R_4, R_4-R_5 and R_5-M_1, the latter larger and extending distad beyond the others; upper cell spot just distad of origin of R_1; postdiscal in mid M_3-Cu_1, mid Cu_1-Cu_2 (larger, quadrate), 1A-2A (small and indistinct) behind quadrate spot in mid Cu_1-Cu_2; prediscal in Cu_1-Cu_2 near base (small and indistinct), 1A-2A (very small, may be just a few scales), the prediscal spots and cell spot in a straight line oblique to wing. Fringe brown, becoming pale grey distally, not checkered.

Hindwing same dark brown as forewing with three poorly defined, small opaque discal white spots: two, more or less conjoined, in M_1-M_2 and M_2-M_3 and extending into cell; one, a narrow streak in Cu_1-Cu_2, slightly basad of the others. Fringe whitish.

Underside: Forewing same dark brown as upperside, slightly paler and greyish behind Cu_2. Opaque white spots as upperside with addition of a minute fourth subapical spot in M_1-M_2 (holotype only) and a small spot in R_1-R_2 forward of cell spot. Base of costal cell ochreous; apical/terminal ochreous band extending inwardly along veins nearly to subapical spots and tapering caudad to disappear just behind Cu_1; this ochreous band distally bordered by a prominent dark brown terminal line. Fringe distally white, inwardly brown at apex and at vein ends, giving checkered appearance.

Hindwing ochreous, greyish brown in 2A-3A; prominent, opaque white spots, bordered dark brown, as follows: seven postdiscal spots in a curved band between Rs and 2A, the spots in Cu_2-1A and 1A-2A nearly conjoined, that in M_2-M_3 offset slightly basad; four discal spots in a band between Sc+R_1 and 2A, no spot in Rs-M_1, only the dark brown border, the spot in M_1-M_3 large and extending into cell; two prediscal spots in Sc+R_1-Rs and cell. Fringe and dark brown terminal line as forewing.

Head, thorax and abdomen dark brown with white and grey hairs; abdomen white beneath with one median and two lateral dark brown stripes. Palpi hairy, long, about 1.5 times length of head, dark brown above with white hairs, whitish beneath with dark brown hairs, third segment porrect. Antennae about half costa, shaft prominently checkered black and white, yellowish white beneath stout arcuate club, end of apiculus blunt, rounded; nudum ochreous, 9 in holotype and the one paratype. Legs brown, scaled ochreous outside, pale ochreous to whitish inside; fore tibiae with small central epiphyses and one or two small spines; mid tibiae spined, one pair spurs; hind tibiae smooth, two pairs spurs.

Genitalia: Tegumen short, broad, dorsally hollowed; uncus broad, bifurcate, the arms deeply and widely separate; uncus extends cephalad as a narrower process fitted into the hollowed-out tegumen and bearing a prominent but not very dense dorsal hair tuft; gnathos sclerotized, broadly

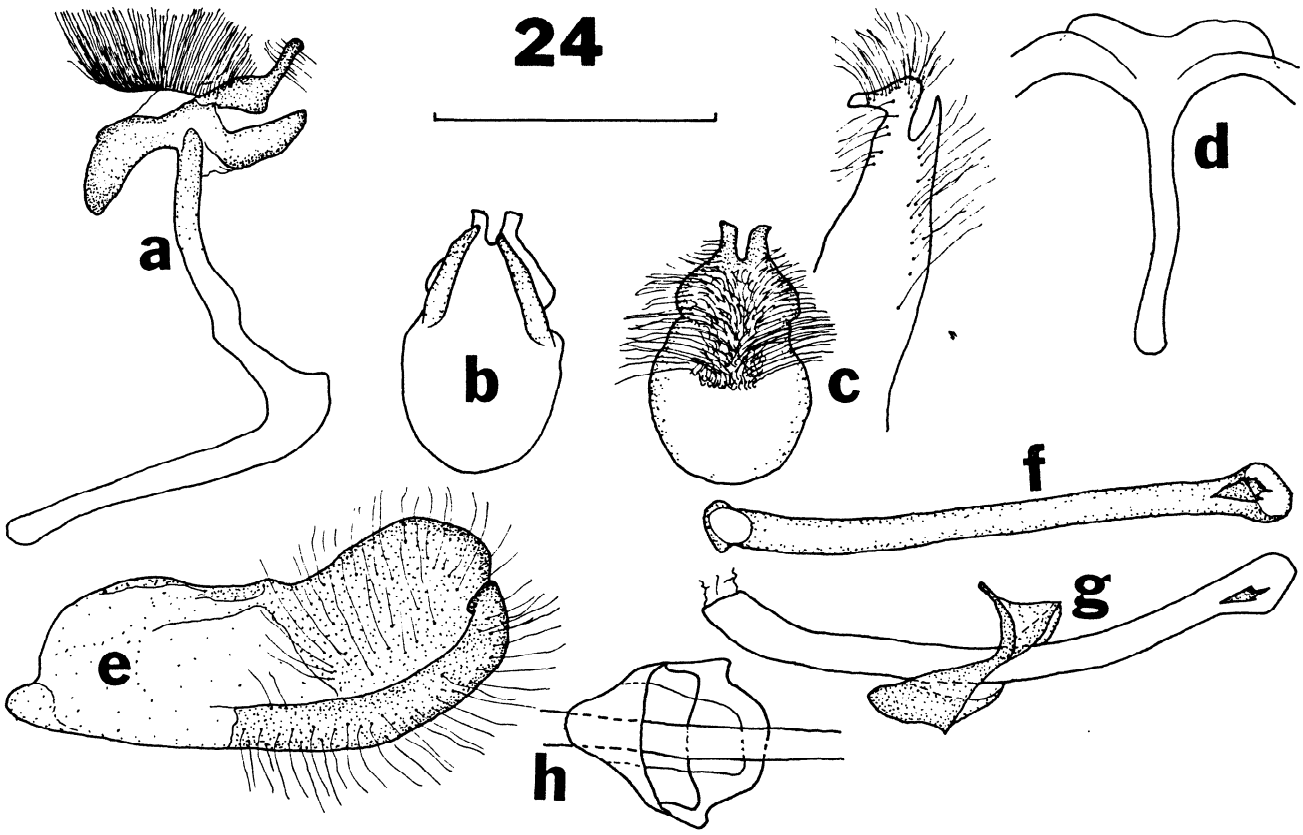


Figure 24. *Piruna jonka*, new species, genitalia male holotype:a) tegumen, uncus, gnathos and associated structures - lateral view; b) tegumen, uncus and gnathos - ventral view; c) tegumen, uncus and left valva-dorsal view; d) saccus - ventral view; e) right valva (interior) - lateral view; f) penis and cornutus - dorsal view; g) penis, cornutus, juxta and transtilla - lateral view; h) juxta and transtilla - ventral view (Genitalia Vial SRS-3334).

and deeply bifurcate. Valvae symmetrical, narrow, long, nearly twice combined length of tegumen and uncus; harpe narrow, curving dorsad, the terminal portion dentate and projecting inward; ampulla smoothly rounded, overlapped by harpe, but extends slightly caudad of it. Penis slender, long, slightly longer than valva, expanded terminally in dorsal view, in lateral view somewhat sinuous, concave dorsally in cephalad third; phallobase very short; cornutus a very small, weakly sclerotized dentate plate. Juxta and transtilla well sclerotized, prominent. Saccus long, slender.

Female: As male, but upperside hindwing has an additional faint white discal spot in Cu_2-1A; fore tibiae without spines; antennal nudum 8.

Genitalia: The female genitalia follow the general pattern of the Heteropterinae, *i.e.* double corpus bursae in tandem; ductus seminalis connected at cervix (caudal end of corpus). Lamella postvaginalis deeply indented centrally on its "cupid's-bow-shaped", caudal margin; lamella antevaginalis comprising two lateral lobes of eighth sternite and a central process with centrally indented caudal margin; both lamellae smoothly sclerotized, without microtrichia. Ductus bursae membranous with vaguely formed, weakly sclerotized internal struc-

ture; caudal portion of corpus bursae prominently spiculose internally, extends somewhat caudad of cervix which forms a distinct unit connecting ductus and corpus bursae; ductus seminalis entering cervix ventrally at its caudal end; cephalad portion of corpus bursae spherical, without spicules, connected to caudal portion by a short, narrow, membranous tube. The ductus and corpus bursae, as used here may not be exactly homologous to those same structures in other Hesperiid subfamilies; it might be more correct to consider the caudal, spiculose part of the corpus bursae and the connecting tube as parts of the ductus bursae, and only the cephalad, spherical portion as the true corpus bursae.

Wing measurements: male forewing 12 1/2 x 6 mm (holotype) to 13 1/2 x 6 mm, averaging 13.0 x 6.0 mm in type series of two males; female forewing 13 1/2 x 6 1/2 mm.

Type material: Holotype (**M**), Mexico: Sinaloa; Loberas Summit, 5 mi. NE of Potrerillos, 1820 m, 23.viii.1973, leg L.D. & J.Y. Miller, bearing the following labels: printed white label, MEXICO: SINALOA Loberas Summit, 5mi. NE Potrerillos 1820 m.; parkland forest; 23.viii.1973 L.D. & J.Y. Miller Sta. No. 1973-42; printed white label, A.C. Allyn Acc. 1973-38; printed and hand printed red label, HOLOTYPE (M) Piruna millerorum S.R. Steinhauser; printed and hand printed white label, Allyn Museum Photo No. 900105,05A/23,24; printed and hand printed white label, Genitalia Vial SRS-3841. There are one male and one female paratypes, same data as holotype, all deposited in the Allyn Museum of Entomology.

Diagnosis: Superficially, *millerorum* and *jonka* are quite similar, differing principally in size and in the clarity of the underside hindwing markings: rather blurred, part white, part ochreous in *jonka*; clear white, sharply bordered dark brown on an ochreous ground in *millerorum*. Both are readily distinguished from all other presently known *Piruna* species by the much larger size of the underside hindwing spots, which are small to minute in the others. In the male genitalia, the widely separated uncus arms of *millerorum* immediately distinguish it from *jonka* with its narrow, shallow separation.

In order to include these two new species in Evans' (1955) key it could be enlarged, modifying couplet **7**a(1a) by changing "postdiscal white dots" to "postdiscal white spots", inserting a couplet between **7**a(1a) and 7b(9) as follows:

"**7**aa(10a). Unh postdiscal white spots small to minute." and adding the following couplets:

10a(7aa). Unh spots large and prominent.
10(11). Unh spots white, sharply defined, prominently bordered dark brown, (**M**) forewing 12 1/2 - 13 1/2 mm.

millerorum Steinhauser: (**M**) Mexico (Sinaloa): Type AME.

11(10). Unh spots poorly defined, white to ochreous, not prominently bordered dark brown, (**M**) forewing 10 1/2 mm.

jonka Steinhauser: (**M**) Mexico (Oaxaca): Type AME.

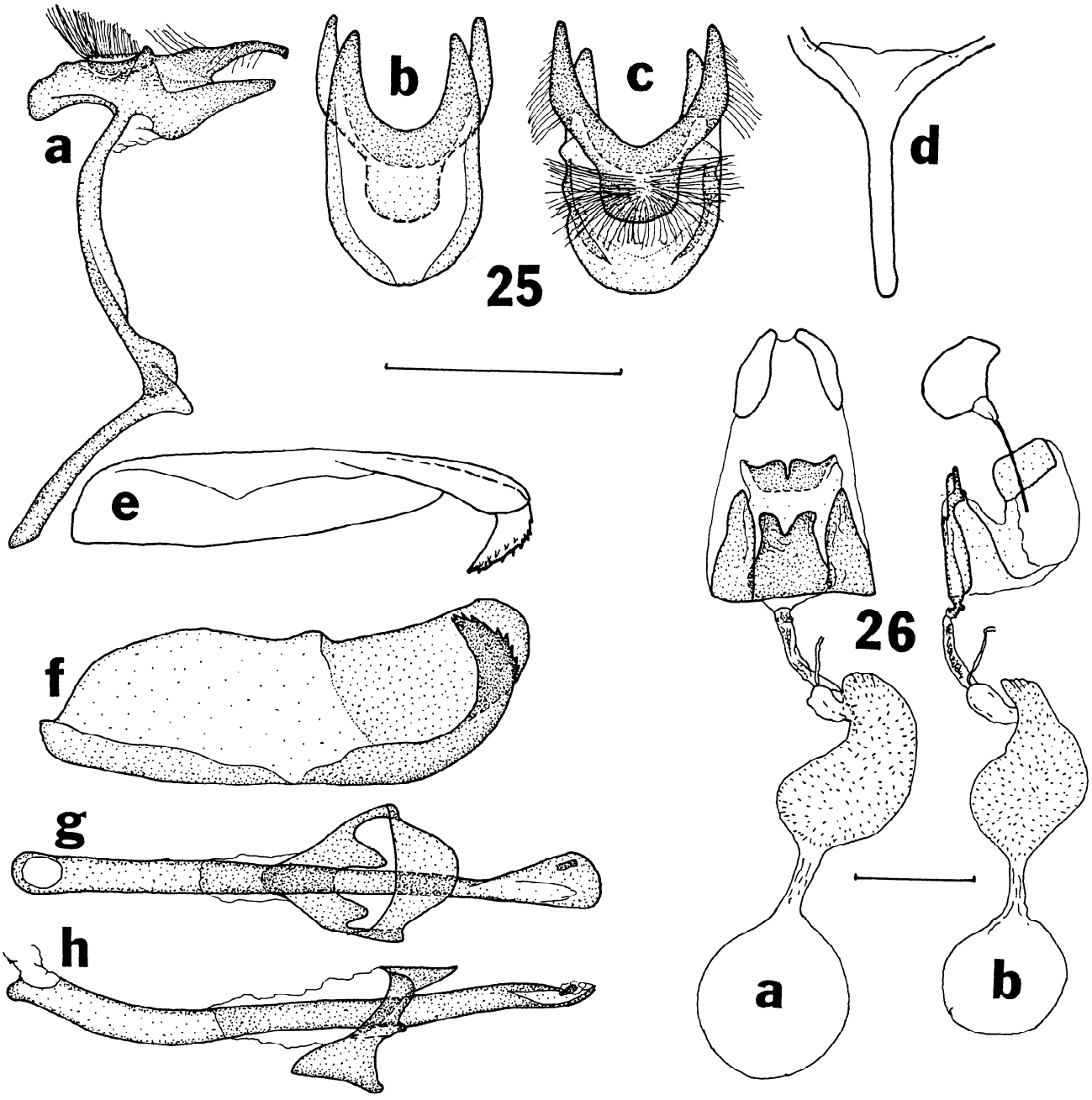
Dalla kemneri, new species

(Figures: 22, 23, 27)

Male: Upperside: Forewing dark brown, nearly black, with minor scattered yellow scaling in basal area. Shining pale yellow semi-hyaline spots as follows: small conjoined subapical spots in R_3-R_4, R_4-R_5 and R_5-M_1 in a straight line directed toward mid termen and separated only by the dark veins; large, subequal conjoined quadrate spots in discal cell and Cu_1-Cu_2; small spot in M_3-Cu_1 separated distad from spot in Cu_1-Cu_2 by about the width of that spot; in one paratype there is an additional small spot in Cu_2-1A behind the center of the spot in Cu_1-Cu_2. Fringe concolorous.

Hindwing same dark brown as forewing, very slightly paler on the costa. Shining pale yellow, rather opaque spots as follows: large, roughly quadrate spot about 3/5 in cell and 2/5 in M_1-M_3; basad of this spot is a small, semi-detached upper cell spot, which may be more completely fused with the cell spot in some specimens, leaving only a small "V"-shaped nick where the dark ground color invades the forward edge of the combined cell spots; behind the large quadrate spot and separated from it only by the dark vein is a small ovoid spot in Cu_1-Cu_2, its outer corner directly behind the discocellular veins. Fringe dark brown from M_3 to Cu_2, pale ochreous from M_1 to M_3, mixed brown and ochreous forward of M_1, pale yellow behind Cu_2.

Underside: Forewing same dark brown as above, paler brown in costal cell, fulvous in apical area distad of subapical spots and extending



Figures 25,26. *Piruna millerorum*, new species, genitalia: 25) male holotype: a) tegumen, uncus, gnathos and associated structures - lateral view; b) tegumen, uncus and gnathos - ventral view; c) same - dorsal view; d) saccus - ventral view; e) right valva - dorsal view; f) same (interior) - lateral view; g) penis, cornutus, transtilla and juxta - dorsal view; h) same - lateral view (Genitalia Vial SRS-3841); 26) female paratype: a) ventral view; b) lateral view (Genitalia Vial SRS-3333).

caudad to Cu_1; anal cell paler and greyish. Semihyaline spots as above, more or less rimmed with opaque golden yellow scales. A small spot of opaque golden scales in Cu_2-1A behind outer edge of spot in Cu_1-Cu_2 extending to vein 2A as more or less scattered yellowish white scaling. There is a poorly defined area of greyish white scaling in 1A-2A approximately centered behind origin of Cu_2. Fringe dark brown.

Hindwing rather mottled fulvous and dark brown with scattered yellowish scales. Pale yellow spots as above, sharply defined; additional, less sharply defined pale yellow spots as follows: discal spot in Cu_2-1A slightly basad of spot in Cu_1-Cu_2 (absent in one paratype); terminal spots in Sc+R_1-Rs, Rs-M_1 and Cu_2-1A, merely suggested in M_3-Cu_1 and Cu_1-Cu_2. Fringe as above but dark sections paler and pale sections darker.

Palpi hairy (missing in holotype) yellowish white with a few dark brown hairs in front, dark brown above with admixed yellowish hairs, third segment porrect, black brown above, yellowish white beneath, barely protruding beyond long hairs of second. Antennae barely extending past mid costa, shaft prominently checkered black and yellow, club stout, arcuate, black above, yellowish beneath, checkered in front; nudum 13, basal half black (seven segments in holotype and one paratype, six in two paratypes) distal half pale fulvous, terminal segment bluntly pointed. Head and thorax dark brown, clothed in long hairs with greenish reflection. Abdomen black brown above with scattered ochreous scales increasing caudally, more or less ochreous beneath. Legs dark brown, heavily overscaled ochreous on outside; fore tibiae with long slender epiphyses projecting over tarsi and three or four spines opposite the epiphysis; mid tibiae spined, bearing one pair of spurs; hind tibiae spined with two pairs of spurs.

Genitalia: Tegumen short, about 2/3 as long as the moderately slender uncus which is divided but with the arms fused except at the caudal end where they are very narrowly separated; uncus with moderately dense hair tuft; gnathos short, very weakly sclerotized. Valvae symmetrical, narrow and long (1.5 to 1.6 x combined length of tegumen and uncus; harpe broadly rounded, extends caudad slightly beyond distal end of ampulla which it overlaps broadly; ampulla about as broad as harpe, its ventral half projecting caudad beyond dorsal half. Penis long and slender (1.1 x length of valva), bearing a single small dentate cornutus; phallobase very short. Juxta and transtilla prominent, well sclerotized. Saccus long, slender, about half length of penis.

Female: Unknown.

Wing measurements: Forewing 12 1/2 x 6 mm to 13 1/2 x 6 1/2 mm (Holotype 13 x 6 1/2 mm) averaging 13.1 x 6.5 mm in type series of four.

Type material: Holotype (**M**), Mexico: Oaxaca; Sierra Juarez 3 mi. E. of La Trinidad 7500' 20.v.1990 leg. John Kemner, bearing the following labels: hand printed white label, Mex: Oax: Sierra Juarez 3 mi. E. La Trinidad 20 May 1990 - el 7500' John Kemner; printed and hand printed white label, Allyn Museum Acc. 1990-12; printed and hand printed red label, HOLOTYPE (**M**) Dalla kemneri S.R. Steinhauser; printed and hand printed white label, Allyn Museum Photo No. 900721,21A/23,24; white paper triangle with left foreleg glued on; printed and hand printed white label, Genitalia Vial SRS-3736. There are three (**M**) paratypes from Oaxaca, Mexico, all taken by John Kemner: one from La Esperanza 19.v.1988 deposited with the holotype in the Allyn Museum of Entomology and two from Cerro Pelon, Km. 104-105, 9000', 12.v.1990 in the collection of H. A. Freeman.

Diagnosis. Evans' (1955) key to the species of *Dalla*, being based largely on superficial characters, often results in phylogenetically dissimilar species being lumped together into species groups. Similarly, ambiguities in the key sometimes result in superficially (and worse yet, genitalically) similar species becoming widely separated. Thus *ligilla* (Hewitson, 1877) and *mentor* Evans, 1955 were placed in different groups in spite of their close resemblance, both superficial and genitalic. Evans had treated *dividuum* (Dyar, 1913) as a synonym of *ligilla*, an error corrected by Freeman (1967) and further discussed by Steinhauser (1990). He placed *ligilla*/*dividuum* in his *polycrates* group, whereas he included *mentor* in the *cypselus* group.

The use of genitalia in Hesperiid classification above the species level has progressed slowly since its first limited application by Scudder (1889); most of the genera he dealt with involved only one or two species. This is not the proper place for a history of this subject; suffice it to say that as genitalia were used increasingly in specific deter

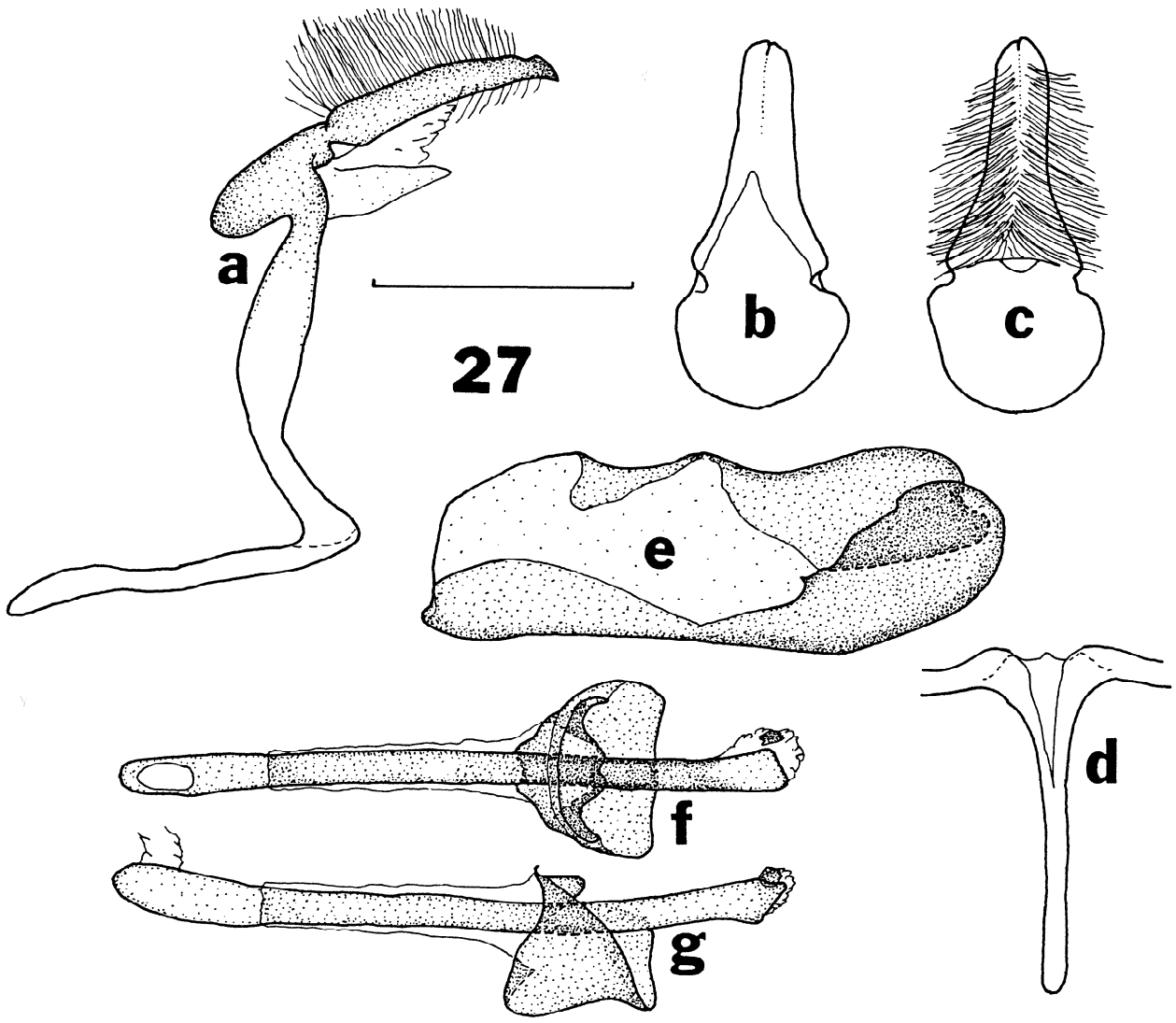


Figure 27. *Dalla kemneri*, new species, genitalia male holotype: a) tegumen, uncus, gnathos and associated structures - lateral view; b) tegumen, uncus, gnathos - ventral view; c) tegumen, uncus - dorsal view; d) saccus - ventral view; e) right valva (interior) - lateral view; f) penis, transtilla, juxta, cornutus - dorsal view; g) same lateral view (Genitalia Vial SRS-3736).

minations, data were gradually accumulated indicating their usefulness in higher categories. Today it is entirely normal for species to be generically reassigned primarily on the basis of the genitalia (*e.g. Ridens telegonoides* (Mabille & Boullet, 1912) and *R. miltas* (Godman & Salvin, [1893]), new combinations by Steinhauser, 1983). Genitalia are frequently the main basis for the erection of new genera (*e.g. Thessia* Steinhauser, 1989), and even for the removal of species from their historically assigned genera without reassignment, as in Burns' (1990) treatment of *Amblyscirtes simius* Edwards, 1881. On the basis of male genitalia, the four species, *ligilla, dividuum,*

mentor and *kemneri* fall into a single species group, different from both *cypselus* and *polycrates*. This grouping coincides beautifully with their superficial similarity.

It makes little sense to attempt a modification of Evans' *Dalla* key at this time, just to include this one new species, when this would require a complete revision of the key (and the genus, based largely on genitalia), a task much beyond the scope of this paper. However, we can isolate the group (call it the *ligilla* group), based on common genitalic characters: a) long, rather slender bifurcate uncus with the arms fused for nearly their entire length and terminally tapered, rather than widened; b) short gnathos; c) long saccus, more or less equal in length to combined tegumen and uncus; d) long slender valvae with harpe more or less equal to ampulla; e) very long, slender penis, more or less 1.5 times valva length. Then a key can be constructed to distinguish between the four species of the *ligilla* group as follows:

1. Forewing hyaline spot in Cu_1-Cu_2 elongate, contiguous with elongate spot in M_3-Cu_1, which reaches base of that space . *ligilla*
1'. Forewing hyaline spot in Cu_1-Cu_2 quadrate, widely separated from small spot in M_3-Cu_1 2

2. Underside hindwing with four pale spots in Sc+R_1-Rs, sub-basal, discal, postdiscal and terminal ..... *dividuum*
2'. Underside hindwing with at most two pale spots in Sc+R_1-Rs 3

3. Upper and underside hindwing, small prediscal cell spot widely separated from discal cell spot ..... *mentor*
3'. Hindwing prediscal and discal cell spots more or less conjoined ..... *kemneri*

Other superficial differences separating *kemneri* from *mentor* are the absence of a pale subbasal spot on the upperside forewing in Cu_2-2A which is always present in *mentor* and by the absence or mere suggestion of a prediscal pale spot on the underside hindwing in Sc+R_1-Rs, prominent in *mentor*. From *dividuum*, *kemneri* differs on the upperside in lacking a prominent forewing discal spot in Cu_2-1A, and on the hindwing lacking spots behind Cu_2.

In the male genitalia, the harpe of *kemneri* is much broader than in *mentor* and not prominently produced dorsad as in *dividuum* and even more prominently in *ligilla*; the ampullae of both *ligilla* and *dividuum* are evenly rounded caudally, not projecting caudad in the ventral half as they do so prominently in *mentor* and less prominently in *kemneri*. The unci of all four species are very similar and apparently unique to the group; those of *mentor* and *dividuum* are identical, that of *ligilla* more tapered, that of *kemneri* slightly broader.

I am pleased to name this skipper for its discoverer, John Kemner, who has found so many new and interesting skippers in Oaxaca.

Acknowledgements

I wish to thank Hugh A. Freeman for sending me the specimens collected by John Kemner, some as donations to the Allyn Museum and some on loan, and for his interest and concern, Carol Kienzle and Dr. Jacqueline Y. Miller for printing the photographs used and special thanks to Drs. Lee D. and Jacqueline Y. Miller for their critical review of this paper; most of their suggested improvements have been incorporated.

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