

REVISION OF THE NEOTROPICAL PLANTHOPPERS OF  
THE GENUS *BLADINA* (HOMOPTERA: FULGOROIDEA:  
NOGODINIDAE)

BY JAMES P. KRAMER

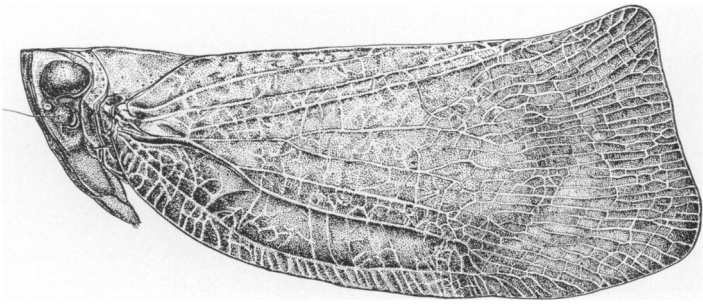
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The economic significance of crop related fulgoroids is relatively poorly known in the Neotropics. Recently, agricultural entomologists and other workers concerned with crop production in Latin America have requested identifications of various fulgoroids collected during the course of their investigations. Collections made on sugar cane, corn and various grasses consumed by livestock yielded large numbers of planthoppers of the genus *Bladina*. Clearly, *Bladina* spp. comprise one of the major components of the fulgoroid fauna associated with agriculturally important plants in the Neotropics. The taxonomic research presented in this paper is a response to the need to provide accurate determinations of species so that investigations can proceed into the biological roles these planthoppers play in crop production.

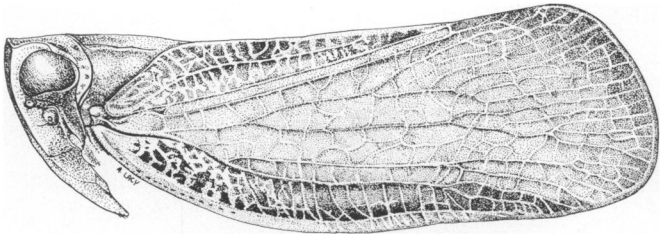
Melichar (1898: 298-301) provided the first taxonomic treatment of *Bladina*, and his key characters were largely based on color and size. He discussed 5 species. Fennah (1952) produced the second study of *Bladina*, and his key characters were also heavily based on color with additional reliance on the number of cells in the tegminal membrane counted transversely slightly distad of the claval apex and the shape of the frons. He included 13 species in his paper. Neither Melichar nor Fennah provided really sharp choices in their couplets because both of them selected indefinite "external" characters for use in their keys to species. It is my opinion that species differentiation cannot be made consistently, with few exceptions, on any basis other than those features found in the concealed male genitalia. In fairness to Fennah, he did acknowledge the significant differences found in the male genital capsules, and he did illustrate in part the males of 8 species.

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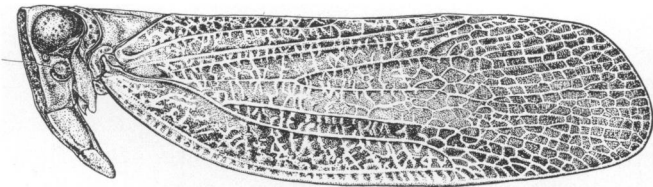
<sup>1</sup> Mail address: c/o U.S. National Museum, Washington, D.C. 20560.



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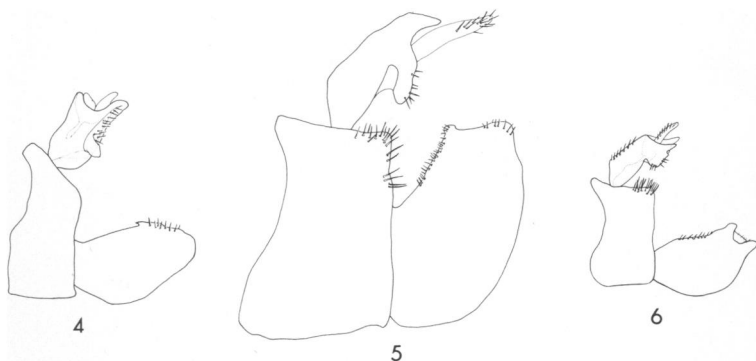
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TEXT FIGS. 1-3. — Lateral habitus views. Fig. 1, *Bladina synavei* Kramer, n. sp. from type. Fig. 2, *Bladina vexans* Kramer, n. sp., specimen from Gamboa, C.Z. Fig. 3, *Bladina anser* Kramer, n. sp., specimen from Nova Teutonia, Brazil.

Genus *BLADINA* Stål

*Bladina* Stål 1859:324. Type-species by original designation *Bladina fuscovenosa* Stål.

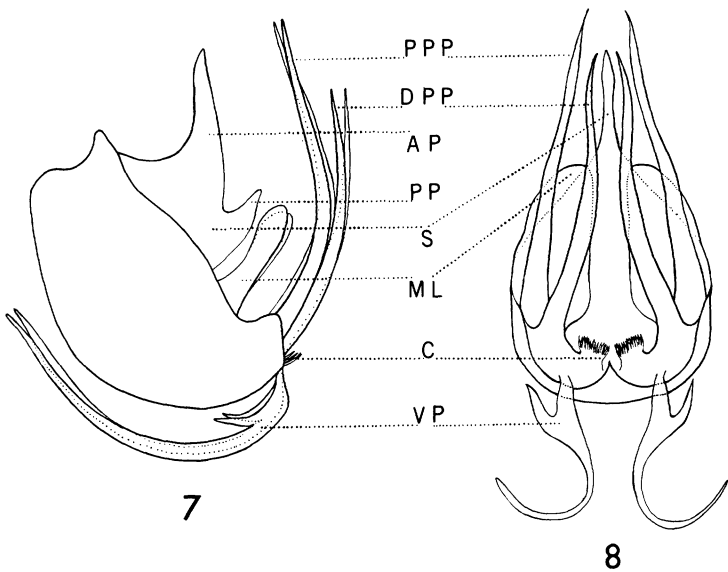
Moderate-sized nogodinids (7.9-14.5 mm.); head about as wide as pronotum, neither conspicuously broader nor narrower; crown shortest at middle with all edges carinate; pronotum longest on longitudinal midline and narrowing declivently behind eyes; mesonotum at middle twice length of crown and pronotum combined, with transverse carina near anterior margin, curve of carina approximating that of the anterior margin, carina ends on each side at a point equal to or just beyond the lateral margin of the crown, mesonotum flattened on disc and declivent laterad, flattened portion of disc with its lateral margins variably carinate; variably distinct carina on midline of crown, pronotum, and mesonotum; frons subquadrate, broad, lateral margins and midline carinate, at times ampliate basally, with irregular row of variously developed pustules along lateral margin on each side, at times each row curves mesad dorsally to approach but not touch the carinate midline; clypeus mesally carinate; forewings vertical, moderately broad, venation quite consistent (figs. 1-3), costal vein close to anterior margin, costal cell large and wide. Coloration ranges from sordid stramineous, various shades of brown, to nearly black; pronotum marked with black spots or punctures; forewings never entirely hyaline, at most only slightly so on discal areas. Male genitalia; pygofer higher than wide, posterior margin straight or nearly so; styles broadly suboval, their dorsal margins often modified with simple processes (figs. 4-6); aedeagus complex (see later discussion).



TEXT. FIGS. 4-6. — Lateral views of male genital capsules. Fig. 4, *Bladina gatunensis* Kramer, n. sp. from type. Fig. 5, *Bladina vexans* Kramer, n. sp., specimen from Colombia. Fig. 6, *Bladina pallidinervis* Fennah, specimen from Rosario Lake, Bolivia.

*Generic diagnosis.* — The following combination of characters will separate *Bladina* from other New World nogodinids: midline of frons and clypeus with unbroken carina, pustules usually present sublaterally on frons, black spots or punctures on the pronotum, and darkened forewings which lack distinct clear spots or other obvious markings but are usually vaguely hyaline or subhyaline on the discal areas.

*The aedeagal complex.* The aedeagus is a complex structure which holds the best characters for distinguishing species of *Bladina*. Names are provided for those parts used in both the key and descriptions so that the user may have a firm idea of



TEXT FIGS. 7-8. — Generalized aedeagal complex. Fig. 7, lateral view, Fig. 8, posterior view. Labeled parts: PPP = proximal posterior processes; DPP = distal posterior processes; AP = anterior protuberance of shaft; PP = posterior protuberance of shaft; S = shaft; ML = middle lobes; C = combs; and VP = ventral processes.

what is being referred to at all times. A generalized drawing of the aedeagal complex with all parts labeled can be seen in Figs. 7-8. A brief discussion of the parts is given below:

S = shaft. The shaft is the structure which occupies the dorsal and proximal portion of the aedeagus. It is often subtriangular; its parts are unpaired.

AP = anterior protuberance of shaft. This portion of the shaft is tapered, rather long, and conspicuous.

PP = posterior protuberance of shaft. This portion of the shaft may or may not be present. When present, it is often similar in shape to the AP but almost always less than half as long. A slight irregularity on the posterior margin of the shaft does not establish a PP.

ML = middle lobes. These paired processes are found directly behind the shaft. They are subject to twisting and turning and are not often reliable structures because their shapes are plastic. Rarely, they are much reduced.

PPP = proximal posterior processes. These paired processes are found directly behind the ML and are usually the most conspicuous component of the dorsal distal portion of the aedeagal complex.

DPP = distal posterior processes. These paired processes are found directly behind the PPP but are at times much reduced or entirely absent.

C = combs. These paired structures are found between the bases of the posterior processes; usually they are more closely associated with the DPP. Each comb consists of clustered and closely set spines which usually arise from a slight eminence. The combs are best observed in a posterior view of the aedeagal complex.

VP = ventral processes. These paired processes arise from or near the distal ventral margin of the aedeagal complex and typically extend basad. They are highly deciduous, ribbonlike, usually branched, and often twisted. Drawing them presents a problem because the least change in the angle of observation alters the shape, width, and length of the parts.

*Notes on the key to species.* In the key which follows, I have

tried to use those characters which appear to be most consistent and subject to the least misunderstanding. Because the structures referred to are complicated and complex, there will no doubt be specimens found which are not quite typical, but I have tried to illustrate the extremes in variation in cases where confusion might arise. As previously noted, the ventral processes are difficult to illustrate because of their shapes. Further, they are often entirely missing from otherwise normal males. Even though I have no proved explanation for this condition, it seems likely that the ventral processes are lost in copulation. In other cases, the proximal posterior processes are deciduous, and the explanation for their absence is the same as that offered above. The ventral processes are little used in the key and then only to supplement other characters. Only 2 species, *fraterna* Stål and *anser* Kramer, n. sp., were found to have deciduous proximal posterior processes. Incomplete males of these species (figs. 17-18, 21-22) will not trace through the key successfully, but the figures provided should clear up any mystery as to their identity. Females are not keyed because no consistently distinctive characters were found in most of the species. However, the pregenital sterna of those distinctive species are illustrated (figs. 68-74).

The couplet which might cause initial difficulty is 2; the point to remember here is that the posterior protuberance of the shaft is unpaired, whereas the middle lobes are paired. If this is not kept in mind, the middle lobes could be misinterpreted as a posterior protuberance in those species where they are closely associated with a shaft which lacks a posterior protuberance. One last note, the proximal posterior and distal posterior processes are referred to collectively as the posterior processes in couplet 3.

#### KEY TO THE SPECIES OF BLADINA

1. Each forewing at rest distinctly elevated triangularly on dorsal distal margin (fig. 1); proximal posterior processes in lateral view (fig. 9) slender, twisted, and irregularly undulated .... *synavei* Kramer, n. sp.  
Without the above combination of characters ..... 2
2. Shaft without posterior protuberance (fig. 38) ..... 3  
Shaft with posterior protuberance (fig. 54) ..... 11

3. Aedeagal complex with one pair of posterior processes (fig. 13) ..... 4  
 Aedeagal complex with two pairs of posterior processes (fig. 38) .... 7
4. Posterior processes broadest apically, with pair of moderately long spines originating on proximal dorsal margin (fig. 11) .....  
 ..... *bispinata* Kramer, n. sp.  
 Posterior processes not broadest apically, without paired spines as above ..... 5
5. Posterior processes slender for entire length, shaft broad, apex of ventral process reaching or exceeding base of aedeagus (fig. 13) .....  
 ..... *dlabolai* Kramer, n. sp.  
 Posterior processes much broadened at least at middle, shaft slender, apex of ventral process falling far short of base of aedeagus ..... 6
6. Posterior processes in lateral view (fig. 15) with sharp hook on distal ventral margin and sharp, subtriangular extension on distal dorsal margin; ventral processes J-shaped ..... *fraterna* Stål  
 Posterior processes in lateral view (fig. 19) quadrately extended on distal ventral margin and moderately long, posteriorly curved extension on distal dorsal margin; ventral processes not J-shaped .....  
 ..... *anser* Kramer, n. sp.
7. Distal posterior processes shagreened in apical half (fig. 24) ..... 8  
 Distal posterior processes not shagreened in apical half ..... 9
8. Dorsal margin of shaft with large bump, anterior protuberance of shaft not capitate at apex (fig. 23) ..... *fowleri* Fennah  
 Dorsal margin of shaft without large bump, anterior protuberance of shaft subovally capitate at apex (fig. 25) .... *subovata* Kramer, n. sp.
9. Distal posterior processes smooth and extending anteriorly beyond base of shaft (fig. 27) ..... *gatunensis* Kramer, n. sp.  
 Distal posterior processes forked, branched, or toothed and at most slightly curved anteriorly ..... 10
10. Middle lobes broadly subquadrate with their dorsal proximal angles variably produced in lateral view (figs. 29, 31, 33) .....  
 ..... *pallidinervis* Fennah  
 Middle lobes digitiform or linear with their dorsal margins rounded or acute in lateral view (figs. 35, 38, 40) ..... *mimica* Fennah
11. Posterior protuberances of shaft short, about one-third length of middle lobe (fig. 46) ..... *lacydes* Fennah  
 Posterior protuberance of shaft longer, at least one-half as long as middle lobe ..... 12
12. Distal posterior processes in posterior view (figs. 49, 55) forked, branched or toothed ..... 13  
 Distal posterior processes in posterior view (figs. 61, 65) essentially smooth ..... 15
13. Combs in posterior view (figs. 49, 51) extensive and blending with short distal posterior processes ..... *rudis* (Walker)

- Combs in posterior view normal and not blending with long distal posterior processes ..... 14
14. Distal posterior processes fused with proximal posterior processes except apically (fig. 53); apical portion of proximal posterior processes in lateral view (fig. 52) broadly expanded before acute apex ..... *molorchus* Fennah
- Distal posterior processes not fused with proximal posterior processes (fig. 55); apical portion of proximal posterior processes in lateral view (fig. 56) smoothly tapered to acute apex ..... *magnifrons* (Walker)
15. Proximal posterior processes in lateral view (fig. 58) usually twisted to appear broadened in distal portions, apices narrowed and hooked ..... *fuscovenosa* Stål
- Proximal posterior processes in lateral view (fig. 62) tapered from bases, apices narrow and straight ..... *vexans* Kramer, n. sp.

**Bladina synavei** Kramer, n. sp.

(Figs. 1, 9-10)

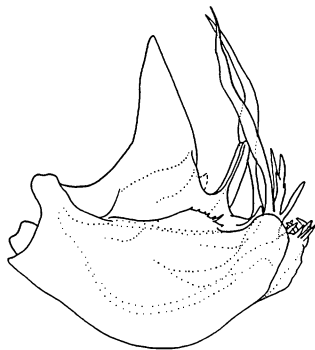
*Salient features.*—Length of male 12.5 mm. This is one of the larger members of the genus. The ground color is fusco-testaceous. The discal portions of the crown, pronotum, and mesonotum are darker, as is the face. The forewings appear bicolored because the costal margins and the portions near and beyond the claval apices are broadly dark brown. The forewings are broad and the distal portions on the anal margins are triangularly produced (fig. 1). The frons is slightly ampliate basally.

*Male genitalia.*—Aedeagal complex in lateral view (fig. 9): shaft with anterior protuberance broadly subtriangular, posterior protuberance reduced to minute weakly sclerotized projection; middle lobes elongate oval; proximal and distal posterior processes fused basally and not clearly differentiated from each other; each proximal process long, slender, twisted or irregularly undulated, with apex sharply acute; each distal process with two or three short forks or branches; ventral processes absent. Aedeagal complex in posterior view (fig. 10): shaft slender; middle lobes bluntly subtriangular; proximal posterior processes slender, roundly curved outward, then subobliquely directed dorsad to narrow and sharp apices; distal posterior processes with two to four short irregular branches or forks.

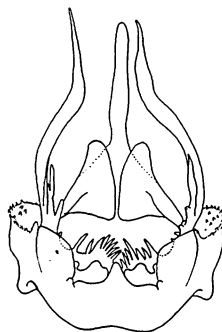
*Female genitalia.*—Female unknown.

TEXT FIGS. 9-14.—*Bladina synavei* Kramer, n. sp. from type. Fig. 9, aedeagal complex in lateral view; fig. 10, same in posterior view. *Bladina bispinata* Kramer, n. sp. from type. Fig. 11, aedeagal complex in lateral view; fig. 12, same in posterior view. *Bladina dlabolai* Kramer, n. sp. from type. Fig. 13, aedeagal complex in lateral view; fig. 14, same in posterior view.

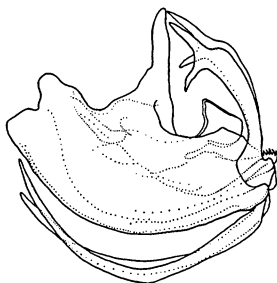




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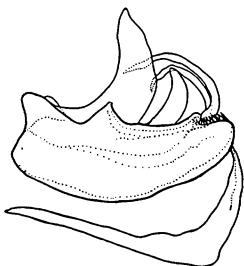
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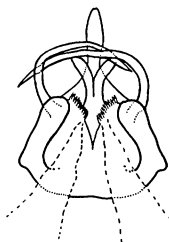
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*Type.* — Male (USNM 73415) Hacienda Maria, Cusco, Peru, 25 March 1952, F. L. Woytkowski. Taken in tropical jungle along Cosnipata River.

*Notes.* — The triangularly produced dorsal distal margins of the forewings at rest immediately distinguish this species from its congeners. The bicolored forewings also appear distinctive. The species is named for Dr. H. Synave of the Belgian Royal Institute of Natural Sciences in Brussels in recognition of his many contributions to our knowledge of the African Fulgoroidea.

***Bladina bispinata* Kramer, n. sp.**

(Figs. 11-12)

*Salient features.* — Males 11-11.5 mm. Females 11.5-12 mm. This is one of the middle-sized members of the genus. The ground color is fusco-ferruginous. The forewings are nearly uniformly dark with only a small portion of the discal areas in line with the claval apex vaguely subhyaline. Females tend to be darker than males. The shape of the forewing is subtriangular. The frons is not ampliate basally.

*Male genitalia.* — Aedeagal complex in lateral view (fig. 11): shaft without posterior protuberance, anterior protuberance tapering to acute or subacute apex; middle lobes distant from shaft, subquadrangular, their dorsal margins oblique; each proximal posterior process slightly recurved, gradually widening from base to apex, proximal dorsal margin with pair of moderately long spines, one spine porrect and other erect; distal posterior processes wanting; ventral processes long, slender, and unbranched. Aedeagal complex in posterior view (fig. 12): shaft narrowed distally; lateral lobes subtriangular; each proximal posterior process roundly expanded on distal inner margin, with pair of spines at or near apex, one spine directed laterally, the other erect.

*Female genitalia.* — Pregenital sternum similar to that of *osborni* (fig. 68) but with a variably distinct transverse groove across distal third and projected portion of hind margin more acute.

*Type.* — Male (USNM 73416) St. Laurent, French Guiana, Le Moul.

*Specimens studied.* — FRENCH GUIANA: 11 males and 12 females collected along the Maroni River.

*Notes.* — This species is immediately recognized by the two spines at the apex of each proximal posterior process of the aedeagal complex. The unusual distance between the shaft and the middle lobes in lateral view and the absence of the distal posterior processes provide additional differentiating characters.

**Bladina dlabolai** Kramer, n. sp. (Figs. 13-14)

*Salient features.* — Males 8.5-9.75 mm. This is one of the smaller members of the genus. The ground color is ochreous. Except for the discal areas and pale costal edges, the membranous portions of the forewings are infuscated. The shape of the forewing is much like that of *vexans* except it is slightly narrower. The frons is scarcely or not at all ampliate basally.

*Male genitalia.* — Aedeagal complex in lateral view (fig. 13): shaft without posterior protuberance, anterior protuberance broadly and somewhat irregularly tapered to apex; middle lobes moderately broad with apical portions turned toward shaft; proximal posterior processes slender and strongly bent toward shaft; distal posterior processes wanting; ventral processes almost forming right angle, each broadest at angle. Aedeagal complex in posterior view (fig. 14): shaft tapering from broad base; middle lobes touching at their bases; proximal posterior processes strongly bent and crossed.

*Female genitalia.* — Female unknown.

*Type.* — Male (USNM 73417) Espinilla, Formosa, Argentina, October 1950, J. Daguerre.

*Specimens studied.* — One additional male from Rio Carraquata, Matto Grosso, Brazil, March 1953, F. Plaumann.

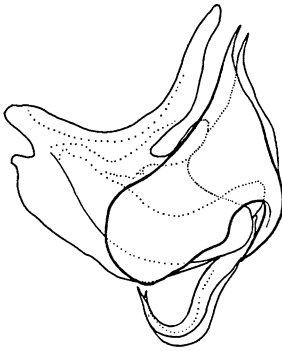
*Notes.* — In addition to its small size, this species is readily distinguished by the recurved and crossed proximal posterior processes and the comparatively large ventral processes of the aedeagal complex. At present the known distribution is limited to southern Brazil and northern Argentina. The species is named for Dr. J. Dlabola of the Prague Museum in Czechoslovakia in tribute to his many contributions to our knowledge of the Palearctic homopterous fauna.

**Bladina fraterna** Stål (Figs. 15-18)

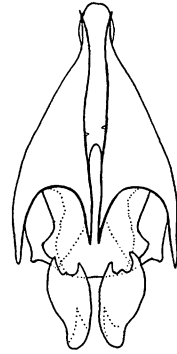
*Bladina fraterna* Stål, 1862:13.

*Salient features.* — Males 12.5-13.5 mm. Females 13-14 mm. This is one of the larger members of the genus. The ground color is testaceous. The costal margins of the forewings posteriorly to the nodes are often distinctly green or greenish; at times the claval veins are similarly colored. Except for the semihyaline discal areas, the rest of each forewing is variously infuscated. The shape of the forewing is subtriangular. The frons is not ampliate basally, and the pustules are weakly developed.

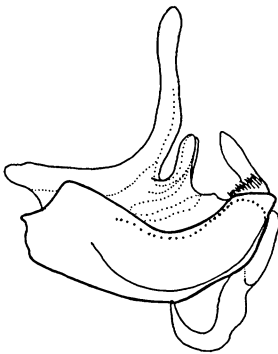
*Male genitalia.* — Aedeagal complex in lateral view (fig. 15): shaft without posterior protuberance, anterior protuberance slender and rounded



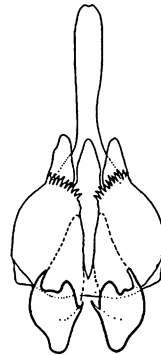
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TEXT FIGS. 15-18.—*Bladina fraterna* Stål. Specimen from Corupa, Brazil. Fig. 15, aedeagal complex in lateral view; fig. 16, same in posterior view. From type lacking PPP. Fig. 17, aedeagal complex in lateral view; fig. 18, same in posterior view.

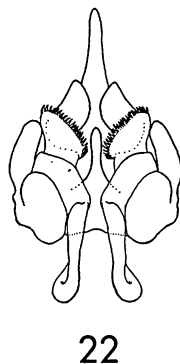
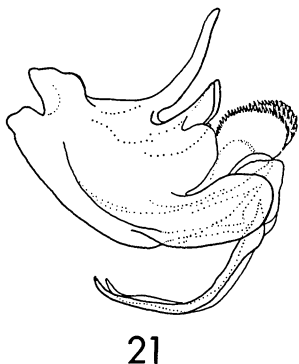
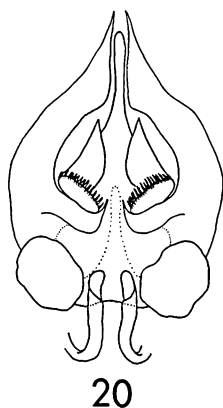
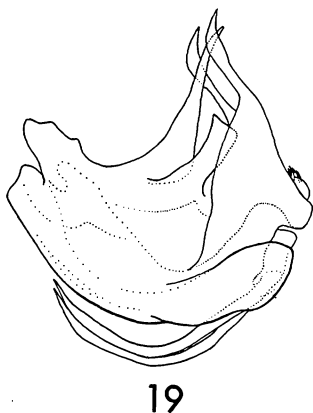
apically; middle lobes moderately short and rounded apically; proximal posterior processes massive, each strongly hooked on distal ventral margin and weakly hooked on distal dorsal margin; distal posterior processes wanting; ventral processes strongly J-shaped. Aedeagal complex in posterior view (fig. 16): shaft slender; middle lobes separated at bases; proxi-

mal posterior processes subtriangular with each angle narrowly produced and acute; distal posterior processes wanting.

*Female genitalia.*—The pregenital sternum is not distinguishable from that of *B. osborni* (fig. 68).

*Type.*—Male, Rio de Janeiro, Brazil in Stockholm Museum.

*Specimens studied.*—BRAZIL: (Santa Catarina) Corupa, Hansa Humbolt, Nova Teutonia. Total specimens studied: 5 males and 4 females.



TEXT. FIGS. 19-22. — *Bladina anser* Kramer, n. sp. From type. Fig. 19, aedeagal complex in lateral view; fig. 20, same in posterior view. Specimen from Corupa, Brazil lacking PPP. Fig. 21, aedeagal complex in lateral view, fig. 22, same in posterior view.

*Notes.* — The aedeagal complex of the type was studied and was found to lack the proximal posterior processes (fig. 17-18), so a complete male is shown (figs. 15-16) from Corupa. Even with an incomplete male, as is the case with the type, the J-shaped ventral processes are distinctive. Although not always obvious, the greenish coloration of the costal margins of the forewings provides another distinctive character of the species. *B. fraterna* is presently known only from southern Brazil.

***Bladina anser* Kramer, n. sp.**

(Figs. 3, 19-22)

*Salient features.* — Males 10.4-11 mm. Females 11.5-11.8 mm. This is one of the middle-sized members of the genus. The ground color is brown or yellowish brown. The discal portions of the forewings are not or only very slightly more hyaline or subhyaline than the other portions. The membranous areas of the forewings are lightly infuscated. The shape of the forewing is somewhat similar to that of *vexans*, but it is distinctly narrower, especially distally (fig. 3). The frons is not ampliate basally.

*Male genitalia.* — Aedeagal complex in lateral view (fig. 19): shaft without posterior protuberance, anterior protuberance narrowly subtriangular; middle lobes moderately long and subquadrate; proximal posterior processes resembling the outline of a goose; distal posterior processes wanting; ventral processes slender, somewhat irregular, and sharply acute apically. Aedeagal complex in posterior view (fig. 20): shaft tapered in distal half; middle lobes suboval and sharply acute apically; proximal posterior processes broad, each with projection on inner margin near base, each curved dorsally to meet other with truncated edge, their extreme apices slender and sharply acute; distal posterior processes wanting.

*Female genitalia.* — The pregenital sternum is similar to that of *molorchus* (fig. 71) but lacks transverse groove.

*Type.* — Male, Cauna, Santa Catarina, Brazil, Dec. 1945, A. Maller, Coll., Frank Johnson, donor, in American Museum of Natural History.

*Specimens studied.* — BRAZIL (all State of Santa Catarina): Cauna, Corpa (Hansa Humbolt), Nova Teutonia. Total specimens studied: 3 males and 2 females.

*Notes.* — This species has the narrowest forewings of any in the genus. Because the forewings are rather evenly tapered and asymmetrically round distally, they much resemble those of the issid genus *Neocolpoptera* Dozier. However, the venational details are not similar. The aedeagal complex of a complete male,

the type, can be seen in figs. 19-20 and that of an incomplete male, lacking proximal posterior processes, in figs. 21-22. Even with an incomplete male, the shape of the shaft and middle lobes distinguish this species. The specific name, a Latin noun in apposition meaning goose, is an illusion to the outline of the proximal posterior processes of the aedeagal complex in lateral view. All present distributional records are from the southern Brazilian state of Santa Catarina.

**Bladina fowleri** Fennah

(Figs. 23-24)

*Bladina fowleri* Fennah, 1952:923.

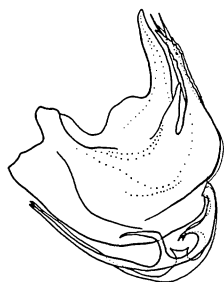
*Salient features.* — Males 9-10 mm. Females 9.8-11 mm. This is one of the middle-sized members of the genus. The ground color is ochreous to light brown. The discal portion of the mesonotum is usually edged laterally with a darker shade. The longitudinal veins of the forewings are typically darkened. The discal areas of each forewing are usually distinctly hyaline or subhyaline. The rest of the forewing may be scarcely or clearly darker. The shape of the forewing is similar to that of *vexans*. The frons is distinctly ampliate basally.

*Male genitalia.* — Aedeagal complex in lateral view (fig. 23): shaft with large bump on dorsal margin, anterior protuberance slender and subacute apically, posterior protuberance wanting; middle lobes fingerlike, often weakly sclerotized; proximal posterior processes long, thin, sublaminar, poorly sclerotized; distal posterior processes broad in basal half, then narrowed, shagreened, and acute apically; ventral processes slender with 2 or 3 irregular branches in basal half. Aedeagal complex in posterior view (fig. 24): shaft unusually broad; middle lobes broadly subtriangular; proximal posterior processes moderately broad, tapered distally to sharp apices; distal posterior processes irregularly tapered from bases, shagreened distally, apically sharply acute.

*Female genitalia.* — Posterior margin of pregenital sternum (fig. 73) with a distinct longitudinal sulcus at middle. Sulcus extends anteriorly.

*Type.* — Male, Teapa, Tabasco, Mexico, in British Museum (Nat. Hist.).

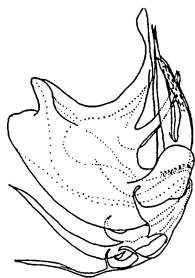
*Specimens studied.* — MEXICO: (Chiapas) Huixtla, La Zacuapala; (Oaxaca) Palomares, Tehuantepec; (San Luis Potosi) Tamazunchale; (Tabasco) Teapa; (Vera Cruz) Acayucan, Coat-zacoalcas, Cotaxtla, El Palmar, La Buena Ventura, Paso Nacional, Tres Zapotes; BRITISH HONDURAS, Cayo Dist., Rio Temas; GUATEMALA, Alta Vera Pas, Caaltepaque, Escuintla, Neuva Concepcion, San Sebastian, Variedades; EL SALVADOR, San



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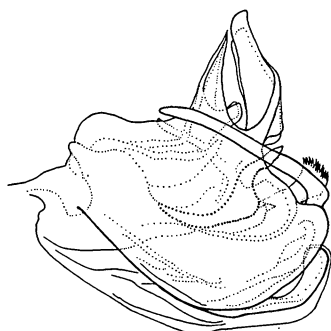
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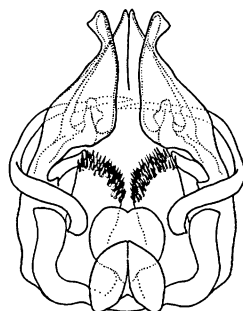
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Salvador, Santa Tecla; HONDURAS, La Ceiba, Melcher, Tela; NICARAGUA, Chichigalpa, San Rafael; COSTA RICA, Bataan, Cairo, Fortuna, Hamburg Farm, Puerto Vieja. Total specimens studied: 81 males and 72 females.

*Notes.* — Both males and females of this species are highly distinctive. The males can be recognized immediately by the large bump on the dorsal margin of the shaft and the shagreened apical portions of the distal posterior processes of the aedeagal complex. The median longitudinal sulcus on the pregenital sternum of the females is unique in the genus. This is the most commonly collected species of *Bladina* in southern Mexico and most of Central America. I have records for all Central American countries except Panama.

***Bladina subovata* Kramer, n. sp.** (Figs. 25-26)

*Salient features.* — Length of male 9.9 mm. This is one of the middle-sized members of the genus. The ground color is fusco-testaceous. The discal portion of the mesonotum is irregularly edged laterally with dark brown to black. Except for the semihyaline discal area and pale edge of the anal margin to the claval apex, each forewing is darkened. The shape of the forewing is similar to that of *vexans*. The frons is ampliate basally.

*Male genitalia.* — Aedeagal complex in lateral view (fig. 25): shaft without posterior protuberance, anterior protuberance tapering to subovally enlarged apex; middle lobes long, slender, tapering from bases, acute apically; proximal posterior processes moderately wide, strongly tapered distally to slender acute apices; distal posterior processes broadest in basal portions, then narrowed to acute apices, narrowed portions weakly shagreened; each ventral process slender with three or four irregular forks in basal half. Aedeagal complex in posterior view (fig. 26): shaft moderately wide; middle lobes subtriangular; proximal posterior processes slender with their apical portions crossing; distal posterior processes irregularly tapered, not crossing, weakly shagreened.

*Female genitalia.* — Female unknown.

*Type.* — Male (USNM 73418) Bogota, Colombia, L. Richter.

TEXT FIGS. 23-28. — *Bladina fowleri* Fennah, specimen from Honduras. Fig. 23, aedeagal complex in lateral view; fig. 24, same in posterior view. *Bladina subovata* Kramer, n. sp. from type. Fig. 25, aedeagal complex in lateral view; fig. 26, same in posterior view. *Bladina gatunensis* Kramer, n. sp. from type. Fig. 27, aedeagal complex in lateral view; fig. 28, same in posterior view.

The specimen is damaged and lacks the left forewing except for the clavus and basal portion. There is also a piece missing from the right forewing in the distal costal region.

*Notes.* — This species is readily distinguished from all its congeners by the suboval apex of the anterior protuberance of the shaft and by the weakly shagreened distal posterior processes. The single species, known from females only, with which it might be compared is *malaisei*. It differs from *malaisei* by having the base of the frons ampliate and the forewings narrower.

***Bladina gatumensis* Kramer, n. sp.** (Figs. 27-28)

*Salient features.* — Male 14.5 mm. This is the largest species in the genus which is known from the male only. The ground color is fusco-testaceous. The discal portions of the crown, pronotum, and mesonotum are darker. Each forewing, except for the dark veins, is hyaline or semi-hyaline on the discal area. The shape of the forewing is subtriangular. The frons is distinctly ampliate basally.

*Male genitalia.* — Aedeagal complex in lateral view (fig. 27): shaft without posterior protuberance, anterior protuberance triangular and sharply acute at apex; middle lobes short, rounded and closely associated with the shaft; proximal posterior processes subrectangular; distal posterior processes long, smooth, and extending anteriorly beyond base of shaft. Aedeagal complex in posterior view (fig. 28): shaft broadly triangular and slightly notched at apex; middle lobes bluntly angular; proximal posterior processes broadly subtriangular and produced dorsally as rather blunt lobes; distal posterior processes slender, curving laterad and eventually partly crossing anterior to shaft.

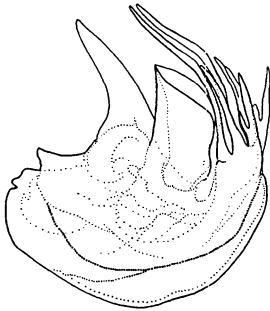
*Female genitalia.* — Female unknown.

*Type.* — Male (USNM 73419) Cano Saddle, Gatun Lake, Panama, 14 May 1923, R. C. Shannon.

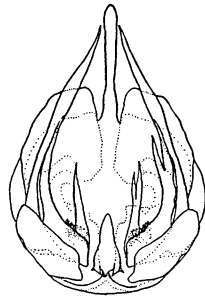
*Notes.* — The parts of the aedeagal complex present many distinctive features. Perhaps the most obvious one, immediately distinguishing this species from its congeners, is the partial crossing of the distal posterior processes anterior to the shaft. The

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TEXT FIGS. 29-34. — *Bladina pallidinervis* Fennah. Specimen from Rosario Lake, Bolivia. Fig. 29, aedeagal complex in lateral view; fig. 30, same in posterior view. Specimen from Venezuela. Fig. 31, aedeagal complex in lateral view; fig. 32, same in posterior view. Specimen from Cachumbo, Brazil. Fig. 33, aedeagal complex in lateral view. Specimen from Surinam. Fig. 34, aedeagal complex in posterior view.



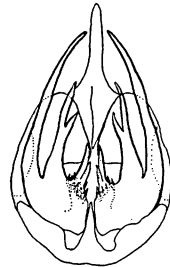
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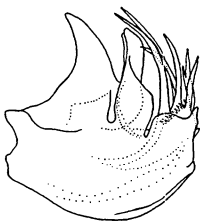
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ventral processes are either absent or missing from the only known specimen. Because it is so large, the only described species with which it might be compared is *B. osborni*, known only from the female type collected in Bahia, Brazil. *B. gatunensis* is slightly darker and the frons is distinctly ampliate basally, whereas *B. osborni* is lighter in color and the frons is not ampliate basally.

**Bladina pallidinervis** Fennah (Figs. 29-34)

*Bladina pallidinervis* Fennah, 1952:925.

*Salient features.* — Males 7.9-9.2 mm. Females 7.9-9.6 mm. This is one of the smaller members of the genus. The ground color varies from ochreous to brown. Each forewing is hyaline or subhyaline and the darker suffusion is variable. In well-marked specimens, there are two dark longitudinal stripes on each forewing. One follows the anal margin, and the other is limited to the costal margin beyond the claval apex. At times the two stripes meet when the dark coloration continues around the distal margin of the forewing. The shape of the forewing is similar to that of *vexans*. The frons is not ampliate basally.

*Male genitalia.* — Aedeagal complex in lateral view (figs. 29, 31, 33): shaft without posterior protuberance, anterior protuberance subtriangularly produced; middle lobes broad and subquadrate, dorsal margins subtruncate, each proximal angle of dorsal margin variably produced; proximal posterior processes slender, unbranched, and usually slightly recurved; distal posterior processes forked near bases; ventral processes slender, twisted, with several irregular branches. Aedeagal complex in posterior view (figs. 30, 32, 34): shaft slender; middle lobes broadest basally, variably rounded distally; proximal posterior processes slender, unbranched, and apically acute; each distal posterior process forked near base and with or without additional subdivisions or modifications of these forks.

*Female genitalia.* — Posterior margin of pregenital sternum produced at middle with pair of well-defined rounded projections (fig. 72).

*Type.* — Male, El Castano, near Maracay, Venezuela, 6 August 1949, in British Museum (Nat. Hist.).

*Specimens studied.* — BRAZIL, (Minas Gerais), Alpinopolis, (Parana), Cachimbo, Vila Velba, (Mato Grosso) Chapada; BOLIVIA, Rosario Lake near Rogagua; GUYANA, Kaieteur; SURINAM, Kraka, Republiek; VENEZUELA, El Castano, Esmeralda. Total specimens studied: 7 males and 6 females.

*Notes.* — This is one of the few species in *Bladina* which has both highly distinctive males and females. Even though subject to considerable variation, the wide middle lobes of the aedeagal

complex and their produced proximal dorsal angles in lateral view provide distinctive features of the male. The pair of well-defined rounded projections on the hind margin of the pregenital sternum makes females unique in the genus. The distribution of the species is extensive and includes localities from Venezuela south to Bolivia and adjacent parts of Brazil.

**Bladina mimica** Fennah

(Figs. 35-45)

*Bladina mimica* Fennah, 1952:924.

*Salient features.* — Males 9.6-11 mm. Females 9.8-11 mm. This is one of the middle-sized members of the genus. The ground color ranges from ochreous to fuscous with variable contrasting darker shading on the crown and thoracic dorsum. The longitudinal veins of the forewings are variably darkened. The discal areas of the forewings are hyaline or subhyaline; the rest is usually strongly darkened. The shape of the forewing is similar to that of *vexans*. The frons is slightly ampliate basally.

*Male genitalia.* — Aedeagal complex in lateral view (figs. 35, 38, 40, 42): shaft without posterior protuberance, anterior protuberance subtriangular, apex at times slightly bent; middle lobes variable, each either with sides slightly tapered and apex rounded to sides tapered and apex acute; proximal posterior processes usually broader at base, then tapered to narrow apices, apical portions usually bent toward shaft; distal posterior processes, each variably forked or branched; ventral processes long, slender, somewhat irregular, and twice branched. Aedeagal complex in posterior view (figs. 36, 37, 39, 41, 43, 44, 45): shaft slender, slightly expanded preapically; middle lobes bluntly suboval; proximal posterior processes, each irregularly tapering from base to narrow apex, apical portion usually bent inward, sometimes crossing on midline; distal posterior processes with variable number of forks or branches.

*Female genitalia.* — Pregenital sternum like that of *molorchus* (fig. 71) except transverse groove obscure or absent.

*Type.* — Male, Venezuela, 601, in British Museum (Nat. Hist.).

*Specimens studied.* — MEXICO (Veracruz) Coataucualcus, (Quintana Roo) Allen Point in Ascension Bay; BRITISH HONDURAS, Hattievill; HONDURAS, Choluteca; COSTA RICA, Osa Pen., Puntarenas Prov., Rincon, San Isidro; PANAMA, Portrerillos; VENEZUELA; ECUADOR, La Mana, Playas. Total specimens studied 18 males and 6 females.

*Notes.* — This species can be distinguishable by the multiple

forks or branches of the distal posterior processes, the moderately wide middle lobes, and the wanting posterior protuberance of the shaft. This is the most structurally variable species of *Bladina*. The males from southern Mexico tend to have shorter posterior processes with fewer branches on the distal pair; males from Central America tend to have the branches restricted to the inner margins of the distal posterior processes; and males from South America tend to have more branches and forks on the distal processes than those from more northern localities.

Three subspecies may be separated by the following key:

KEY TO SUBSPECIES OF *BLADINA MIMICA* FENNAH

1. Distal posterior processes palmate or dendriform with many branches (figs. 36-37) (Ecuador, Venezuela) ..... *m. mimica* Fennah  
    Distal posterior processes linear with fewer branches ..... 2
2. Distal posterior processes longer with row of branches on inner margins (figs. 39, 41) (Costa Rica, Panama, Ecuador) .....  
    ..... *m. ramosa* Kramer, n. subsp.  
    Distal posterior processes shorter and once-branched apically (figs. 43-45) (Mexico, British Honduras, Honduras) .....  
    ..... *m. cymula* Kramer, n. subsp.

***Bladina mimica ramosa* Kramer, n. subsp.** (Figs. 38-41)

As in nominate subsp. except as noted in above key. Type: Male (USNM 73462) San Isidro, El General, Costa Rica, 28 Feb. 1936, C. H. Ballou, taken on grass.

***Bladina mimica cymula* Kramer, n. subsp.** (Figs. 42-45)

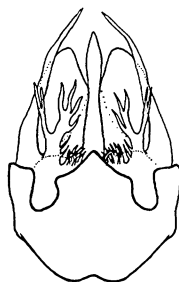
As in nominate subsp. except as noted in above key. Type: Male (USNM 73463) 14 miles east of Choluteca, Honduras, 12 August 1972, G. F. and S. Hevel.

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TEXT FIGS. 35-39. — *Bladina mimica mimica* Fennah. From type. Fig. 35, aedeagal complex in lateral view; fig. 36, same in posterior view. Specimen from Ecuador. Fig. 37, same. *Bladina mimica ramosa* Kramer, n. subsp. From type. Fig. 38, aedeagal complex in lateral view; fig. 39, same in posterior view.



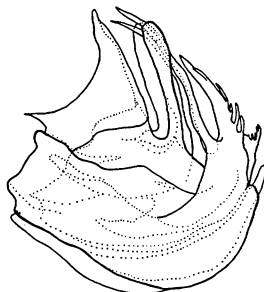
35



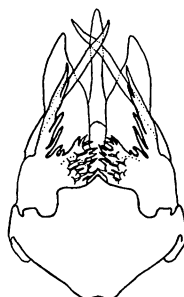
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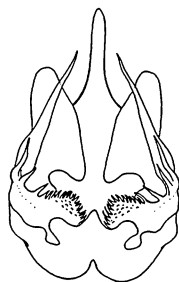
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**Bladina lacydes** Fennah

(Figs. 46-47)

*Bladina lacydes* Fennah, 1952:922.

*Salient features.*— Males 11-11.3 mm. Females 11.5-12.5 mm. This is one of the middle-sized members of the genus. The ground color varies from ochreous to nearly fuscous. The mesonotum is usually darker. Except for the hyaline or subhyaline discal areas, the forewings are darkened. Each forewing usually has a small dark patch on the fork of M and postbasally on Cu 1. The shape of the forewing is similar to that of *vexans*. The frons is weakly ampliate basally, and the pustules are not well developed.

*Male genitalia.*— Aedeagal complex in lateral view (fig. 46): shaft with anterior protuberance narrowly subtriangular, its apex usually slightly bent distad, posterior protuberance greatly reduced and subtriangular; middle lobes tapering, slightly recurved, apically acute; proximal posterior processes slender, sharply acute apically, slightly expanded preapically; distal posterior processes shorter and stouter, not as acute apically, sides slightly shagreened distally; ventral processes long, slender, with 4 or 5 branches or acute angles in basal half. Aedeagal complex in posterior view (fig. 47): shaft slender; middle lobes subtriangular; proximal and distal posterior processes as in lateral view; ventral processes ribbon-like with 4 or 5 irregular branches or acute angulations.

*Female genitalia.*— Posterior margin of pregenital sternum (fig. 70) produced at lateral margins and strongly produced at middle as a long blunt lobe. Transverse groove and variable number of striae at base of middle lobe.

*Type.*— Female, Santarem, Brazil, in British Museum (Nat. Hist.).

*Specimens studied.*— BRAZIL (State of Para), Belem and Santarem. Total specimens studied: 7 males and 15 females.

*Notes.*— This is one of the few species in the genus which has both structurally distinct males and females. The greatly reduced posterior protuberance of the shaft distinguishes males. Females are unique in the genus because of the long blunt lobe at the middle of the hind margin of the pregenital sternum.

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TEXT FIGS. 40-45.— *Bladina mimica ramosa* Kramer, n. subsp. Specimen from Ecuador. Fig. 40, aedeagal complex in lateral view; fig. 41, same in posterior view. *Bladina mimica cymula* Kramer, n. subsp. From type. Fig. 42, aedeagal complex in lateral view; fig. 43, same in posterior view. Specimen from British Honduras. Fig. 44, aedeagal complex in posterior view. Specimen from Quintana Roo, Mexico. Fig. 45, same.

**Bladina rudis** (Walker)

(Figs. 48-51)

*Flatoides rudis* Walker, 1851:421.

*Salient features.* — Males 12-12.5 mm. Females 12-13 mm. This is one of the larger members of the genus. The ground color is yellowish brown to reddish brown. The discal portion of each forewing is variably hyaline to subhyaline. The costal, subcostal, claval, and distal portions of the forewings are usually darker. The color demarcation between the discal and distal portions of each forewing is sharper than usual. This darker area, between the apices of the clavus and subcostal cell, is broadly V-shaped. The shape of the forewing is similar to that of *vexans*. The frons is ampliate basally, and the pustules are sometimes poorly defined.

*Male genitalia.* — Aedeagal complex in lateral view (figs. 48, 50): shaft with anterior protuberance broadly subtriangular, posterior protuberance similar in shape, but short; middle lobes long with parallel sides; proximal posterior processes moderately long, slender, and gently curved toward shaft; distal posterior processes much reduced and forked or branched; ventral processes comparatively wide, sides irregular, branched at middle on dorsal margin, apically acute. Aedeagal complex in posterior view (figs. 49, 51): shaft slender; middle lobes broad and rounded dorsally; proximal posterior processes slender and acute apically; distal posterior processes short, variably forked or branched, and blending with unusually extensive combs.

*Female genitalia.* — Pregenital sternum similar to that of *molorchus* (fig. 71) but lacking transverse groove.

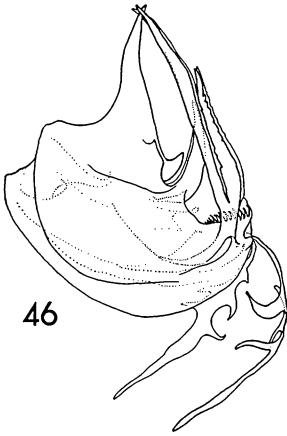
*Type.* — Female, Venezuela (Dyson 1847) in British Museum (Nat. Hist.).

*Specimens studied.* — TRINIDAD, Arima Valley, St. Augustine; VENEZUELA, Carrizal Guarico. Total specimens studied: 11 males and 4 females.

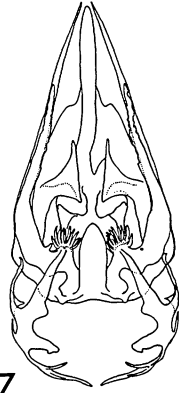
*Notes.* — This species can be recognized at once by the extensive combs which blend with the much reduced distal posterior processes of the aedeagal complex. Some of the specimens from Trinidad were collected under cacao trees. This species is only known from Trinidad and Venezuela.

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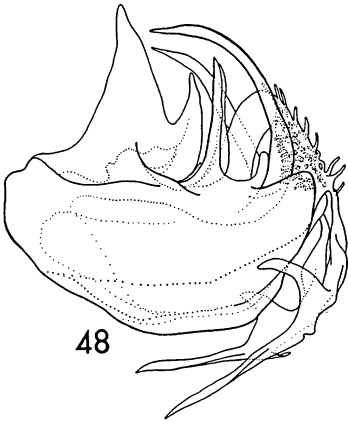
TEXT FIGS. 46-51. — *Bladina lacydes* Fennah. Specimen from Belem, Brazil. Fig. 46, aedeagal complex in lateral view; fig. 47, same in posterior view. *Bladina rudis* (Walker). Specimen from Trinidad. Fig. 48, aedeagal complex in lateral view; fig. 49, same in posterior view. Specimen from Venezuela. Fig. 50, aedeagal complex in lateral view; fig. 51, same in posterior view.



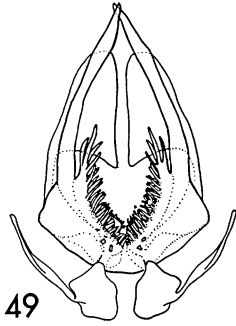
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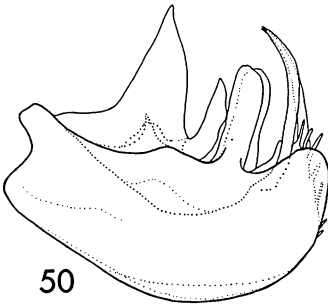
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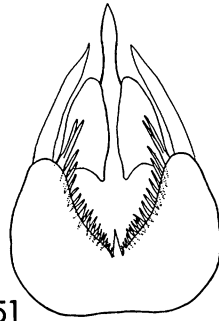
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**Bladina molorchus** Fennah

(Figs. 52-53)

*Bladina molorchus* Fennah, 1952:920.

*Salient features.*—Males 10-10.5 mm. Females 10.5-11 mm. This is one of the middle-sized members of the genus. The ground color is brown or yellowish brown. The discal portion of the mesonotum is edged laterally with darker brown to almost black. The discal portion of each forewing is semihyaline, whereas the claval areas and apical portions of each forewing are darkened. The shape of the forewing is much like that of *vexans*, except it is broader. There is a small blackish spot on or near the fork of M and postbasally on Cu 1. The frons is barely ampliate basally.

*Male genitalia.*—Aedeagal complex in lateral view (fig. 52): shaft with anterior protuberance subtriangular and posterior protuberance similar, but short; middle lobes moderately long and rounded apically; proximal posterior processes long, moderately stout, expanded apically, with long acute tooth on distal apical edge; distal posterior processes narrow and barely visible. Aedeagal complex in posterior view (fig. 53): shaft with anterior protuberance narrowly rounded apically and posterior protuberance acute apically; proximal and distal posterior processes fused except distally, their common inner margin serrated.

*Female genitalia.*—Posterior margin of pregenital sternum bluntly produced mesally and laterally; discal portion of pregenital sternum tumid with transverse groove behind middle (fig. 71). Drawing prepared from type.

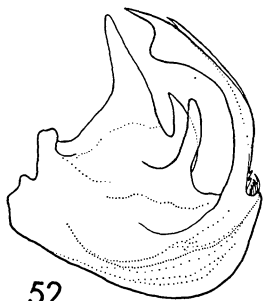
*Type.*—Female, Bogota, Colombia in Stockholm Museum.

*Specimens studied.*—COLOMBIA: 4 males and 6 females from Palmira, collected on sugar cane and maize.

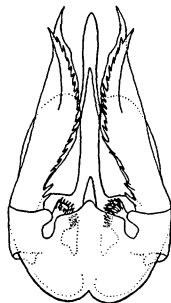
*Notes.*—This species is distinguished at once from all its congeners by the fusion of the posterior processes of the aedeagal complex and their serrated common inner margin. In none of the males examined were ventral processes found. This species is reported by agricultural entomologists in Colombia as a frequent pest on sugar cane and maize.

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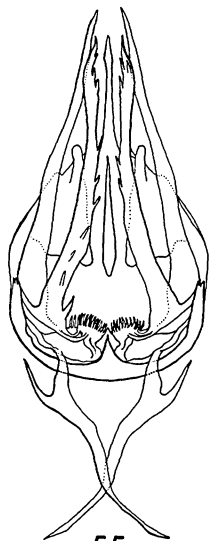
TEXT FIGS. 52-57.—*Bladina molorchus* Fennah. Specimen from Palmira, Colombia. Fig. 52, aedeagal complex in lateral view; fig. 53, same in posterior view. *Bladina magnifrons* (Walker). Specimen from Pernambuco, Brazil. Fig. 54, aedeagal complex in lateral view; fig. 55, same in posterior view. Specimen from Bolivia. Fig. 56, aedeagal complex in lateral view; fig. 57, same in posterior view.



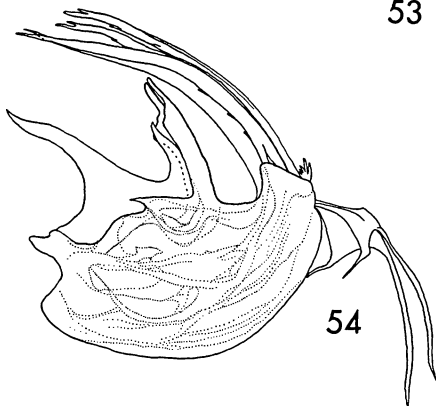
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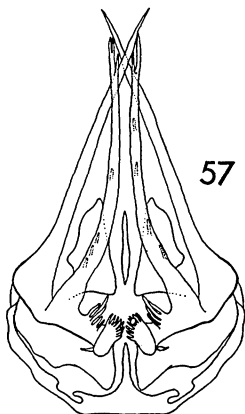
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**Bladina magnifrons** (Walker)

(Figs. 54-57)

*Poeciloptera magnifrons*, Walker 1858:56.*Bladina fusca* Stål, 1862:13. N. Syn.

*Salient features.* — Males 10.2-11.5 mm. Females 11-11.8 mm. This is one of the larger members of the genus. The ground color varies from ochreous to fuscous with contrasting shading. The longitudinal veins of the forewings are darkened. The discal areas of the forewings are hyaline or subhyaline; the rest is lightly to heavily darkened. The shape of the forewing is similar to that of *vexans*. The frons is not usually distinctly ampliate basally.

*Male genitalia.* — Aedeagal complex in lateral view (figs. 54, 56): shaft with anterior protuberance slender, acute, with posterior protuberance similar in shape but much shorter; middle lobes each varying from parallel-sided with slender extension on distal dorsal margin to triangular; proximal posterior processes long, slender, with narrow acute apices, apices sometimes weakly hooked; distal posterior processes similar but shorter, with highly variable number of small toothlike projections on margins; each ventral process broadest basally with short dorsal branch and long ventral branch. Aedeagal complex in posterior view (figs. 55, 57): shaft slender; each middle lobe suboval to subtriangular with a variably developed extension on inner distal margin; proximal posterior processes smooth, tapering somewhat irregularly to acute apices; distal posterior processes, each with one or more branchlets at base of inner margin, with highly variable number of irregularly placed toothlike projections along length, projections usually most abundant near apex, apical portion often bowed.

*Female genitalia.* — Pregenital sternum like that of *molorchus* (fig. 71) except lacking transverse groove on disc.

*Type.* — Male, Para, Brazil in British Museum (Nat. Hist.).

*Specimens studied.* — ARGENTINA, (Formosa) Espinilla, (Salta) R. de La Frontera; BOLIVIA, Guajara, Mirim; BRAZIL, (Espírito Santo) Guarapari; (Goias) Gadella Farm, S. Isabel do Morro; (Matto Grosso) Barra de Tapirape, Porto Vehlo, Rio Caraguata; (Minas Gerais) Jacui, Passos; (Para) Belem; (Pernambuco) Bonito; (Rio de Janeiro) D. de Caxia, Imbarie, N. Iguasso, Pagueta Island; (Sao Paulo) Piracicaba; PARAGUAY, Aceval. Total specimens studied: 36 males and 22 females.

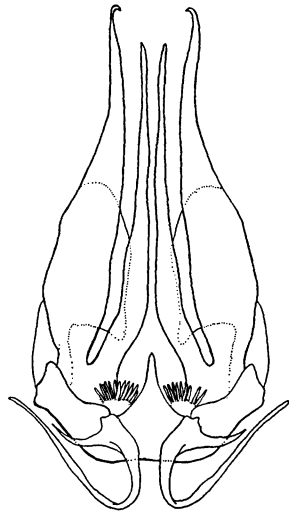
*Notes.* — This species can be recognized by the presence of the

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TEXT FIGS. 58-61. — *Bladina fuscovenosa* Stål. Specimen from Venezuela. Fig. 58, aedeagal complex in lateral view; fig. 59, same in posterior view. From type of *quadratifrons*. Fig. 60, aedeagal complex in lateral view; fig. 61, same in posterior view.



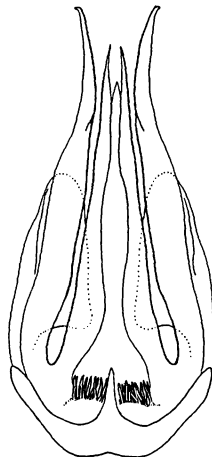
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59



60



61

well-developed posterior protuberance of the shaft and the long distal posterior processes which have irregularly placed toothlike projections on their surfaces. There is a fair amount of variation of a minor nature in the aedeagal complex. The lateral lobes are subject to twisting which changes their shapes. Fennah (1952: 917) illustrated the male genitalia of the type of *fuscana*; here the distal posterior processes are twisted so that the apical portions are directed outward rather than inward, the usual condition. The shape of the frons also varies; in some specimens it is narrower than in others. Rarely the frons is vaguely ampliate basally. The species has an extensive range from the state of Para in northern Brazil south to Rio de Janeiro and west to the adjacent countries of Bolivia, Paraguay, and northern Argentina.

***Bladina fuscovenosa* Stål**

(Figs. 58-61)

*Bladina fuscovenosa* Stål, 1859:324.

*Bladina quadratifrons* Fennah, 1952:927. **N. Syn.**

*Salient features.*— Males 9.5-10.5 mm. Females 10-11.5 mm. This is one of the middle-sized members of the genus. The ground color is ferruginous to light brown. The discal portion of the mesonotum is often edged laterally with a darker shade. Except for the variably darkened claval areas and basal portions of the costal areas, the membranous portions of the forewings are essentially hyaline or subhyaline. In each forewing the longitudinal veins in the clavus, corium, and all veins in the distal portion are darkened, whereas the crossveins of the clavus, corium, costal, and subcostal areas are typically pale. The shape of the forewing is similar to that of *vexans*. The frons is strongly ampliate basally.

*Male genitalia.*— Aedeagal complex in lateral view (figs. 58, 60): shaft with anterior protuberance subtriangular and moderately slender, posterior protuberance similar in shape, but short, its apex somewhat variable; middle lobes stout, bulging at middle on proximal margins, apices bluntly rounded; proximal posterior processes long, each slender in basal half, extreme apex narrowed with posteriorly directed hook at tip; distal posterior processes slightly shorter, uniformly slender, with apices acute; ventral processes slender and each once branched near base. Aedeagal complex in posterior view (figs. 59, 61): anterior protuberance of shaft acute apically; middle lobes broadly oval; proximal posterior processes narrowest in distal half, apices variably hooked; each distal posterior process tapered to slender apex.

*Female genitalia.*— Pregenital sternum not distinguishable from that of *molorchus* (fig. 71).



*Type.* — Lectotype male here selected with 7 labels: "5032" and "Columb Mor" (green label) and "Columbien Moritz" (blue-green label) and "Bladina fuscovenosa Stål" (Stål's handwriting) and "Bladina fuscovenosa Stål" and "Typus" (red label) and "Zool. Mus. Berlin" (yellow label) in the Zoological Museum of the Humboldt University in Berlin, D. D. R. Two females with similar labels were also seen with the male. The lectotype is mounted with the wings spread, and the apical portion of the right forewing is missing.

*Specimens studied.* — COLOMBIA; Puerto Lopez, Dept. Meta; SURINAM, Afobaka, Brokopondo, S. Kraka; TRINIDAD, Waterloo; VENEZUELA, San Fernando de Apore. Total specimens studied: 26 males and 27 females.

*Notes.* — This species can be recognized at once by the strongly ampliate base of the frons and by the long and apically hooked proximal posterior processes of the aedeagal complex. These processes are subject to twisting and turning so that the apical hooks may appear to be variably well developed at different angles. The series of specimens from Puerto Lopez, Colombia, collected on a grassland savannah, agree genitally with those from other localities; but the frons in this series, even though ampliate basally, is distinctly less ampliate than in the other series at hand. The aedeagal complex of the lectotype agrees well with figs. 58-59. Specimens from Trinidad were collected on grasses near sugar cane fields. The distribution of the species appears to be northern South America and Trinidad.

***Bladina vexans* Kramer, n. sp.** (Figs. 2, 62-67)

*Salient features.* — Males 9.15-10.3 mm. Females 10-11.5 mm. This is one of the middle-sized members of the genus. The ground color ranges from ochreous to dark yellowish brown to nearly fuscous. The dorsum of the head and thorax is variably shaded with darker hues. The longitudinal veins of the forewings are darkened. The discal areas of the forewings are hyaline; the rest is either hyaline, subhyaline, or variously darkened. The shape of the forewing can be seen in fig. 2. The frons is ampliate basally.

*Male genitalia.* — Aedeagal complex in lateral view (figs. 62, 64, 66): shaft with anterior protuberance usually recurved, tapering from base to

narrow or sharp apex, posterior protuberance similar in shape, but shorter, tapering from base or only in distal half to narrow or sharp apex; middle lobes irregularly oval; proximal posterior processes usually somewhat recurved, tapering from bases to narrow, acute apices; distal posterior processes similar but shorter, sometimes slightly crooked in distal third; ventral processes long, slender, and branched near base. Aedeagal complex in posterior view (figs. 63, 65, 67): shaft slender; middle lobes irregularly oval; proximal posterior processes slender, acute, straight or slightly bowed; distal posterior processes similar but shorter, sometimes with crook in apical portion.

*Female genitalia.*—Pregenital sternum (fig. 69) bluntly produced at middle of hind margin and without transverse groove on discal area.

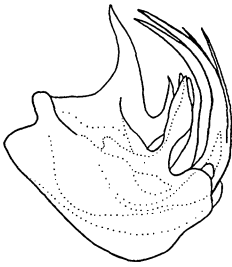
*Type.*—Male (USNM 73420) Gamboa, Canal Zone, Panama, 1 May 1972, R. and E. Froeschner.

*Specimens studied.*—CANAL ZONE, Ancon, Balboa, Barro Colorado Island, Cristobal, Curundu, Ft. Clayton, Ft. Kobbe, Ft. Sherman, Gamboa, Gatun Lake, Paraiso, Summit, Tabernilla; COLOMBIA, Armero Tolima, Buenaventura, Coduzzi, Medellin, Palmira, Puerto Araujo, Rio Frio, Sevilla; COSTA RICA, Osa Peninsula, Piedras Blancas, Villa Neily; EL SALVADOR, San Salvador; PANAMA, Aguadulce, Cabima, Chiriqui, David, Heimita, La Chorrera, Las Cumbres, Mojinga Swamp, Nata, Palm Beach, Penonome, Port Armuellas, Portrerillos, Rio Serreno, Santa Fe, Tocumen; VENEZUELA, Borborata, Lara. Total specimens studied 144 males and 253 females.

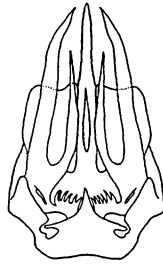
*Notes.*—This species can be recognized by the well-developed posterior protuberance of the shaft and the long, slender, unbranched, and unhooked posterior processes of the aedeagal complex. This is the most commonly collected species of *Bladina* in Panama, where it seems to replace the common but more northern *fowleri*. However, the ranges of the two species do overlap in Costa Rica and perhaps elsewhere. This is the species one frequently finds in collections determined in error as *fuscovenosa*.

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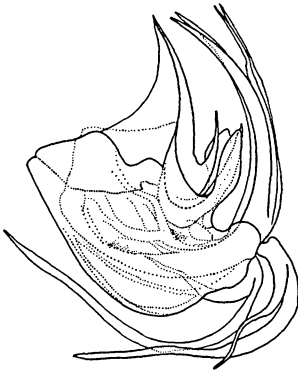
TEXT FIGS. 62-67.—*Bladina vexans* Kramer, n. sp. From type. Fig. 62, aedeagal complex in lateral view; fig. 63, same in posterior view. Specimen from Colombia. Fig. 64, aedeagal complex in lateral view; fig. 65, same in posterior view. Specimen from Borborata, Venezuela. Fig. 66, aedeagal complex in lateral view; fig. 67, same in posterior view.



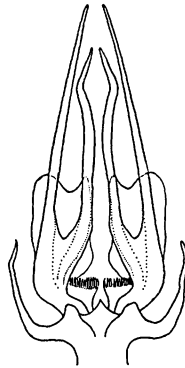
62



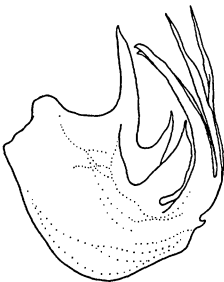
63



64



65



66



67

## SPECIES KNOWN FROM FEMALES ONLY

**Bladina malaisei** Fennah

*Bladina malaisei* Fennah, 1952:919.

This species is only known from the female holotype in the Stockholm Museum. It is from Pebas in northeastern Peru. The pregenital sternum is more angular at the middle than shown by Fennah (1952: fig. 7D), and the details he shows are not as clear on the specimen. The distal portion of the abdomen is flexed which prevents a normal view. The greatest length is about 12 mm. In the absence of additional specimens, especially males, nothing can be added to Fennah's description at this time.

**Bladina osborni** Melichar

(Fig. 68)

*Bladina osborni* Melichar, 1898:397.

This species is only known from the female holotype in the Copenhagen Museum. It is from Bahia, Brazil. The pregenital sternum is not correctly shown by Fennah (1952: figs. 6C, 6D) and is here redrawn (fig. 68). The greatest length is about 14.5 mm. Each forewing has a small black or deeply fuscus patch on the fork of M and postbasally on Cu 1. *B. osborni* is the largest species known from the female only thus far described, but males are needed before its position within the genus can be ascertained.

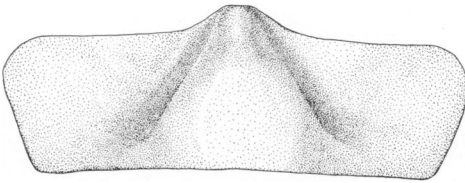
**Bladina loisae** Kramer, n. sp.

(Fig. 74)

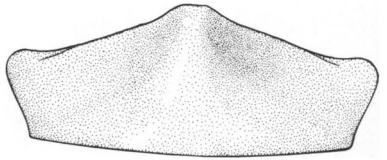
*Salient features.*—Female 14 mm. This is the second largest species in the genus known from females only. The ground color is fusco-rufous. The discal portion of the mesonotum is darker than the lateral portions. The discal portion of each forewing is not more hyaline or subhyaline than the other portions, but the clavus and distal portion tend to be darker.

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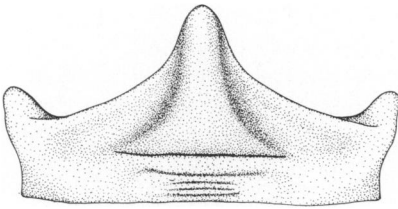
TEXT FIGS. 68-74.—Female pregenital sterna. Fig. 68, *Bladina osborni* Melichar, from type. Fig. 69, *Bladina vexans* Kramer, n. sp., specimen from Panama. Fig. 70, *Bladina lacydes* Fennah, specimen from Para, Brazil. Fig. 71, *Bladina molorchus* Fennah, from type. Fig. 72, *Bladina pallidinervis* Fennah, specimen from Parana, Brazil. Fig. 73, *Bladina fowleri* Fennah, specimen from Nicaragua. Fig. 74, *Bladina loisae* Kramer, n. sp., from type.



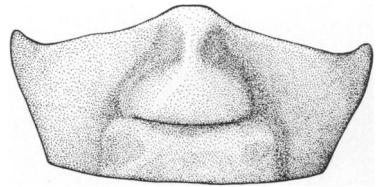
68



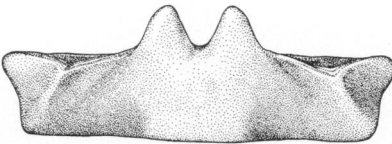
69



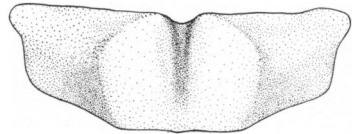
70



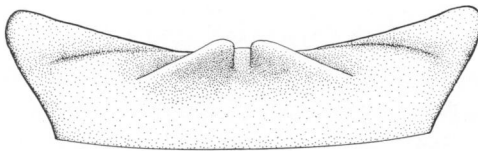
71



72



73



74

The shape of the forewing is subtriangular. The frons is ampliate basally, but the pustules are almost obsolete.

*Male genitalia.* — Male unknown.

*Female genitalia.* — Pregenital sternum (fig. 74) with posterior lateral angles produced and separated by a transverse groove; hind margin concave with pair of subtriangular, oblique elevations at middle.

*Type.* — Female (USNM 73421) Manaus, Amazonas, Brazil, August 1959, C. Elias. The outer basal portion of the left forewing is missing.

*Notes.* — The shape of the female pregenital sternum is unique in the genus. Because of its large size, this species can be compared only with *osborni* and *gatunensis*. The pregenital sternum of *osborni* (fig. 68) lacks both the lateral transverse grooves and the paired elevations at the middle of the hind margin. In *gatunensis* the pustules on the frons are well developed and the discal portion of each forewing is clearly more hyaline or subhyaline than the rest of the forewing. The species is named for Dr. Lois B. O'Brien, an ardent collector and devotee of the Fulgoroidea.

#### DISTRIBUTIONAL CONSIDERATIONS

Except for Chile, where its occurrence is highly unlikely, and Uruguay, where it may yet be found, the genus *Bladina* is known from all countries of Central and South America. Two species, *fowleri* and *mimica*, are found in southern Mexico. The genus is not known in the West Indies, but two mainland species, *fuscovenosa* and *rudis*, occur on the continental island of Trinidad. Four species are found in Central America, but only *fowleri* is apparently widespread. *B. gatunensis* is known only from Panama, but *mimica* and *vexans* also occur in northern South America. Of the South American species, *pallidinervis* and *magnifrons* have the greatest north-south distribution. Three species, *anser*, *dlabolai*, and *fraterna*, are essentially south Brazilian. The rest of the species, including *mimica* and *vexans*, are northern South American. Of these, *fuscovenosa* is the most widespread, occurring from Colombia to Surinam and Trinidad.

## CHECKLIST OF SPECIES AND SUBSPECIES

1. *anser* Kramer, n. sp. S. Brazil.
2. *bispinata* Kramer, n. sp. French Guiana.
3. *dlabolai* Kramer, n. sp. N. Argentina, S. Brazil.
4. *fowleri* Fennah, 1952:923. S. Mexico south to Costa Rica.
5. *fraterna* Stål, 1862:13. S. Brazil.
6. *fuscovenosa* Stål, 1859:324. Colombia, Venezuela, Trinidad, Surinam.  
*quadratifrons* Fennah, 1952:927. N. Syn.
7. *gatunensis* Kramer, n. sp. Panama.
8. *lacydes* Fennah, 1952:922. N. Brazil.
9. *loisae* Kramer, n. sp. N. Brazil.
10. *magnifrons* (Walker), 1858:56. Brazil, Bolivia, Paraguay, N. Argentina.  
*fuscana* Stål, 1862:13. N. Syn.
11. *malaisei* Fennah, 1952:919. NE. Peru.
12. *mimica mimica* Fennah, 1952:924. Venezuela, Ecuador.
13. *mimica cymula* Kramer, n. subsp. S. Mexico, British Honduras, Honduras.
14. *mimica ramosa* Kramer, n. subsp. Costa Rica, Panama, Ecuador.
15. *molorchus* Fennah, 1952:920. Colombia.
16. *osborni* Melichar, 1898:397. NE. Brazil.
17. *pallidinervis* Fennah, 1952:925. Venezuela, Guyana, Surinam, Brazil, Bolivia.
18. *rudis* (Walker), 1851:421. Venezuela, Trinidad.
19. *subovata* Kramer, n. sp. Colombia.
20. *synavei* Kramer, n. sp. Peru.
21. *vexans* Kramer, n. sp. El Salvador south to Colombia, Venezuela.

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