

STUDIES OF THE MEXICAN DELTOCEPHALINAE:
 NEW SPECIES OF *EUTETTIX* AND TWO
 ALLIED NEW GENERA^{1, 2}
 (HOMOPTERA: CICADELLIDAE)

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ABSTRACT

Two new genera, *Alladanus* and *Cozadanus*, and sixteen new species of Deltocephalinae (leafhoppers) are described from Mexico. Twelve species, all new, are described and placed in the genus *Eutettix* Van Duzee: *E. contorqus*, *E. lanceolatus*, *E. dentatus*, *E. alvadás*, *E. chelatus*, *E. spinus*, *E. pedus*, *E. divergens*, *E. krameri*, *E. guevarai*, *E. transversus*, and *E. ortegai*. Two new species, *A. cephalatus* and *A. mexellus*, are described and placed in the new genus *Alladanus*, of which *A. cephalatus* is the genotype. Two new species, *C. globosus* and *C. serratus*, are described and placed in the new genus *Cozadanus*, of which *C. globosus* is the genotype.

INTRODUCTION

The genus *Eutettix* was described in 1892 by Van Duzee, who designated *Thamnotettix lurida* Van Duzee as the orthotype. Several species were subsequently described and placed in this genus. In 1907 Ball revised the genus and placed the described species into three genera, two of which, *Aligia* and *Mesamia*, he described at that time. In 1942 Hepner revised the genus *Eutettix*, bringing together all the North American species. No species from Mexico were described or treated in any of these revisions, and an examination of the available Mexican material would indicate that none of the described species from the United States had been collected in Mexico. At least sixteen species are represented in this Mexican material, all sixteen of which are being described herein. Twelve of these species are placed in the genus *Eutettix* and two each in two new genera, *Alladanus* and *Cozadanus*, both of which are described in the following discussion.

Most of the material for study was collected by DeLong and his field associates, J. W. Balock, J. S. Caldwell, M. Elliott, E. E. Good, R. V. Hershberger, C. C. Plummer, J. G. Shaw, and W. E. Stone. A few specimens were collected by A. Dampf and some were loaned by J. P. Kramer from the U. S. National Museum collection. The authors wish to express their appreciation to all of those who assisted in collecting material or who have furnished specimens for this study, and also to all of those who have reviewed this manuscript. Several helpful suggestions and criticisms were offered by J. L. Forsyth, J. P. Kramer, and C. A. Triplehorn.

All types, unless otherwise designated, are in the DeLong Collection at The Ohio State University.

KEY TO GENERA OF MEXICAN SPECIES

1. Aedeagus usually without basal processes, but if present, then not reaching apex of shaft, styles not unusually broad at apex..... *Eutettix* Van Duzee
- 1¹. Either aedeagus with basal processes at least reaching apex of shaft, or styles unusually broad at apex..... 2
2. Aedeagal shaft with a pair of long processes arising at base and extending beyond apex of shaft, styles slender at apex, plates narrowed apically..... *Alladanus*, new genus
- 2¹. Aedeagal shaft without processes arising at base, styles broad apically, plates long, broad apically..... *Cozadanus*, new genus

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THE GENUS *Eutettix* VAN DUZEE

The genus *Eutettix* includes species of the Deltocephalinae closely related to *Aligia*, but differing from the species in the latter genus by having only one cross vein between the sectors (the second cross vein is absent), and by having very few cross veinlets in the tegmina. The crown is usually about twice as wide as median length, with the anterior margin rounded or bluntly pointed and with a transverse furrow just above margin.

Type species: *Thamnotettix luridus* Van Duzee.

KEY TO THE MEXICAN SPECIES OF *EUTETTIX*

KEY TO MALES

- 1. Aedeagus with lateral processes arising from shaft, apically (fig. 2) or subapically (fig. 46)..... 2
- 1'. Aedeagus shaft without lateral processes, though apex may bear transverse spines (fig. 42)..... 10
- 2 (1). Pygofer caudal spine bifid or with two terminal processes (fig. 28)..... 9
- 2'. Pygofer caudal spine with a single terminal process (fig. 24)..... 3
- 3 (2'). Pygofer basal spine with apical portion bifid, enlarged, forming additional spines or teeth (fig. 8) or with apex blunt (fig. 4)..... 4
- 3'. Pygofer basal spine simple, pointed (fig. 40)..... 8
- 4 (3). Pygofer basal spine elbowed, slightly enlarged and blunt at apex (fig. 4); aedeagal transverse processes bifid (fig. 2)..... *contorqus*
- 4'. Pygofer basal spine not elbowed or blunt at apex..... 5
- 5 (4'). Aedeagal processes apical, long, and slender; pygofer basal spine bifid or greatly enlarged (fig. 20)..... 7
- 5'. Aedeagal processes arising laterally on dorsal surface, pygofer basal spines slender toothed near apex (fig. 12)..... 6
- 6 (5'). Pygofer basal spine with single tooth near apex, beyond which apical portion is straight (fig. 8)..... *lanceolatus*
- 6'. Pygofer basal spine slightly enlarged near apex, bearing two teeth on ventral margin; apical portion curved and pointed (fig. 12)..... *dentatus*
- 7 (5). Pygofer basal spine slender, bifid on apical half; caudal spine half as long as pygofer (fig. 16)..... *alvadus*
- 7'. Pygofer basal spine greatly enlarged, chelate; caudal spine as long as pygofer (fig. 20)..... *chelatus*
- 8 (3'). Aedeagal lateral processes short, straight, simple (fig. 22)..... *spinus*
- 8'. Aedeagal lateral processes longer, each bifid, with a ventral branch extending basad along shaft (fig. 26)..... *pedus*
- 9 (2). Pygofer caudal spine bifid, with two long diverging apical portions; basal spine slender (fig. 32)..... *divergens*
- 9'. Pygofer caudal spine enlarged at apex, with a slender spur extending anteriorly and a shorter, thicker spur extending caudally and curved dorsally; basal spine thickened to pointed apex (fig. 36)..... *krameri*
- 10 (1'). Pygofer basal spine much shorter than caudal spine (fig. 40), aedeagus shaft slender, simple (fig. 39)..... *guevarai*
- 10'. Pygofer basal spine equal in length or longer than the caudal spine; aedeagus stout, thicker..... 11
- 11 (10'). Aedeagus with transverse spines at tip (fig. 42); pygofer caudal spine broadened on apical half (fig. 44)..... *transversus*
- 11'. Aedeagus without spines at apex (fig. 46); pygofer caudal spine tapered and slender on apical half (fig. 48)..... *ortegai*

KEY TO FEMALES

- 1. Posterior margin of seventh sternite truncate with a slight notch at middle (fig. 66)..... *alvadus*
- 1'. Posterior margin of seventh sternite having a produced tooth or lobe at middle..... 2
- 2 (1'). Posterior margin broadly and shallowly excavated each side of slightly produced median lobe (fig. 68)..... *spinus*
- 2'. Median portion strongly produced and/or notched at middle..... 3
- 3 (2'). Median-produced lobe notched at middle (figs. 65, 69)..... *contorqus, pedus*
- 3'. Median-produced lobe rounded, not notched at middle (figs. 67, 70, 71)..... *chelatus, dentatus, divergens*

Eutettix contorqus n. sp.

(figs. 1, 2, 3, 4, 65)

Resembling *E. dentatus* in form and appearance, but with different male genital structures. Length of female 5.75 mm, male 5.5 mm.

Crown broadly rounded, more than half as long at middle as basal width between eyes.

Color.—Crown, pronotum, and scutellum straw colored with faint brownish markings on crown. Forewings with claval veins pale, others dark brown. Three brown spots on clavus along commissure, a few dark areas along costa. Female paler than male.

Genitalia.—Female seventh sternite with posterior margin sloping basad from lateral angles to a median rounded black tooth which is notched at middle. Male plates more than twice as long as basal width, apices bluntly pointed. Style long and slender, apex narrowed and blunt. Aedeagus shaft terminating on each side with a projecting process which bears a spur on its inner margin. A bifid lateral process arises subapically on each side, whose inner portions extend along shaft toward base and with two arms extending laterally and basally. Pygofer spine with two long slender processes. Anterior portion extends ventrally, then is abruptly bent at right angles and extends caudally with a slightly enlarged, blunt apex. Caudal process extends caudally and ventrally, enlarged near apex on dorsal margin, then tapers to a pointed tip.

Holotype male.—Uruapan, Mich., Mexico, X-1-41, DeLong, Good, Caldwell, and Plummer.

Allotype female.—Same as holotype. *Paratypes*.—three females, Guadalajara, Mexico, VI-20-34, are placed here; one male, Jacala, Mex., 8-17-36, E. D. Ball. Holotype, allotype, and paratypes in the DeLong Collection, paratype in the U. S. National Museum.

***Eutettix lanceolatus* n. sp.**

(figs. 5 6, 7, 8)

Resembling *E. southwicki* in form and appearance, but with different male genital structures. Length of male 5 mm.

Crown broad, broadly rounded, more than half as long at middle as basal width between eyes.

Color.—Crown yellow, ocelli and transverse markings darker. Pronotum yellowish with irregular straw-colored markings. Scutellum dark yellow on anterior portion, apical portion paler. Forewings hyaline, with veins of anterior costal area dark brown; claval and apical veins pale bordered with brown.

Genitalia.—Male plates more than twice as long as basal width, with base sloping from apex at inner margin to form an even sharper apex at outer margin. Style long and narrow, almost three times as long as broad. Aedeagus shaft terminating in a central slender portion, with a longer narrow projection on each side, each bearing a spur on its inner margin. A pair of lateral processes arise subapically, extending laterally and basally more than one-third the distance to base. Pygofer spine with two long slender processes, the anterior one more narrow with a long sharp, pointed apex, the caudal process enlarged near apex, then tapered to form a sharp pointed tip.

Holotype male.—Puebla, Pue., Mexico, 10-18-1941, DeLong, Good, Caldwell, and Plummer.

Allotype female.—Same as holotype.

***Eutettix dentatus* n. sp.**

(figs. 9, 10, 11, 12, 71)

Resembling *E. lanceolatus* in form and appearance, but with different genital characters. Length of female 5.5 mm, male 5 mm.

Crown broadly rounded, more than half as long at middle as basal width between eyes.

Color.—Crown yellow with faint darker markings above margin. Pronotum yellow anteriorly; disc and posterior portion gray. Scutellum yellow. Forewings white and subhyaline, with dark brown veins and markings. Three brown spots occur along costal margin, a spot on outer apical cell, and a spot on either side of commissure just anterior to junction of each claval vein.

Genitalia.—Female seventh sternite with posterior margin sloping basally from the lateral angles to a broad, rounded, median, black tooth, slightly notched at middle. Male plates more than twice as long as broad at base, apices narrowed, rounded to form bluntly pointed tips. Style long and narrow with a narrower blunt apex. Aedeagus narrow, shaft terminating in two projecting portions, each bearing a terminal lateral spur. A pair of lateral processes insert subapically, extending laterally and basally, about one-third the distance to base. Pygofer

spine with two long slender processes. Anterior process enlarged near apex and bearing two ventral teeth, each ending in a long, slender spur. Caudal process enlarged near apex, bearing a dorsal tooth, then tapering to a pointed apex.

This species is closely related to *E. laceolatus*.

Holotype male.—Carapan, Mich., Mexico, K-432, X-2-41, DeLong, Good, Caldwell, and Plummer. *Allotype female*.—Same as holotype. *Paratypes*.—five males and five females, same as holotype; eight males and three females, Zitacuaro, Mich., Mexico, K-160, IX-29-41; one female, Zacapu, Mich., Mexico, X-4-41, all by DeLong, Good, Caldwell, and Plummer; one male, Mexico City, D. F., Mexico, W., 18 Km., IX-1-39, C. C. Plummer.

***Eutettix alvadás* n. sp.**

(figs. 13, 14, 15, 16, 66)

Resembling *E. dentatus* in general form and appearance, but with different male genital structures. Length of female 5 mm, male 5 mm.

Crown broadly rounded, more than twice as wide between eyes at base as median length.

Color.—Vertex yellowish with faint brown transverse markings on anterior portion. Pronotum brownish, margin paler with two round brown spots behind each eye. Scutellum brown. Forewings pale subhyaline; veins brown.

Genitalia.—Female seventh sternite with posterior margin almost truncate, broadly and slightly notched at middle. Male plates triangular, apex narrow and blunt. Style elongate, triangular, apical portion narrow, blunt at tip. Aedeagus narrow, bearing a pair of slender, terminal, laterally directed spines about one-third the length of shaft. Pygofer with a long, narrow, ventral spine slightly enlarged at apex and sharp pointed on ventral margin. A long spur about one-third the length of spine arises at one-third its length on ventral side and parallels spine (fig. 16). Dorsal spine narrow, half length of pygofer, and extending along dorsal margin.

Holotype male.—Tulancingo, Hdg., Mexico, K-129, X-25-45, Stone, DeLong, Hershberger, and Elliott. *Allotype female and paratype male*.—Same as holotype.

***Eutettix chelatus* n. sp.**

(figs. 17, 18, 19, 20, 67)

Resembling *E. guevarai* in form and appearance, but with different male genital structures. Length of female 6.5 mm, male 5 mm.

Crown produced, rounded, two and one-half times as broad between eyes at base as median length.

Color.—Crown yellow with faint markings above margin; pronotum pale gray, paler behind eyes, with two small round brown spots just behind each eye. Scutellum pale with darker basal angles. Forewings pale and subhyaline, with brown veins. Dark brown spot of pigment in anterior axis of each claval vein and commissure junction.

Genitalia.—Female seventh sternite with lateral angles produced and rounded, between which the posterior margin slopes basad to a broad, median, rounded tooth, which is produced beyond the lateral angles. Male plates more than twice as long as broad; inner margins straight; outer margins tapering to form pointed apices. Style triangular, apical half slender, apex bluntly pointed. Aedeagus shaft rather narrow, apex with a V-shaped notch and bearing a pair of apical, laterally directed processes. Pygofer with two spines. Anterior spine broadened, deeply notched on ventral margin, narrowed and sharp pointed at apex. Caudal spine long and narrow, as long as pygofer, and extended along dorsal margin.

EXPLANATION OF PLATE 1

FIGURES 1-20. *Eutettix contorqus* n. sp. 1. Style, ventrally; 2. Aedeagus, ventrally; 3. Aedeagus, laterally; 4. Male pygofer, laterally. *Eutettix lanceolatus* n. sp. 5. Style, ventrally; 6. Aedeagus, ventrally; 7. Aedeagus, laterally; 8. Male pygofer, laterally. *Eutettix dentatus* n. sp. 9. Style, ventrally; 10. Aedeagus, ventrally; 11. Aedeagus, laterally; 12. Male pygofer, laterally. *Eutettix alvadás* n. sp. 13. Style, ventrally; 14. Aedeagus, laterally; 15. Aedeagus, ventrally; 16. Male pygofer, laterally. *Eutettix chelatus* n. sp. 17. Style, ventrally; 18. Aedeagus, ventrally; 19. Aedeagus, laterally; 20. Male pygofer, laterally.

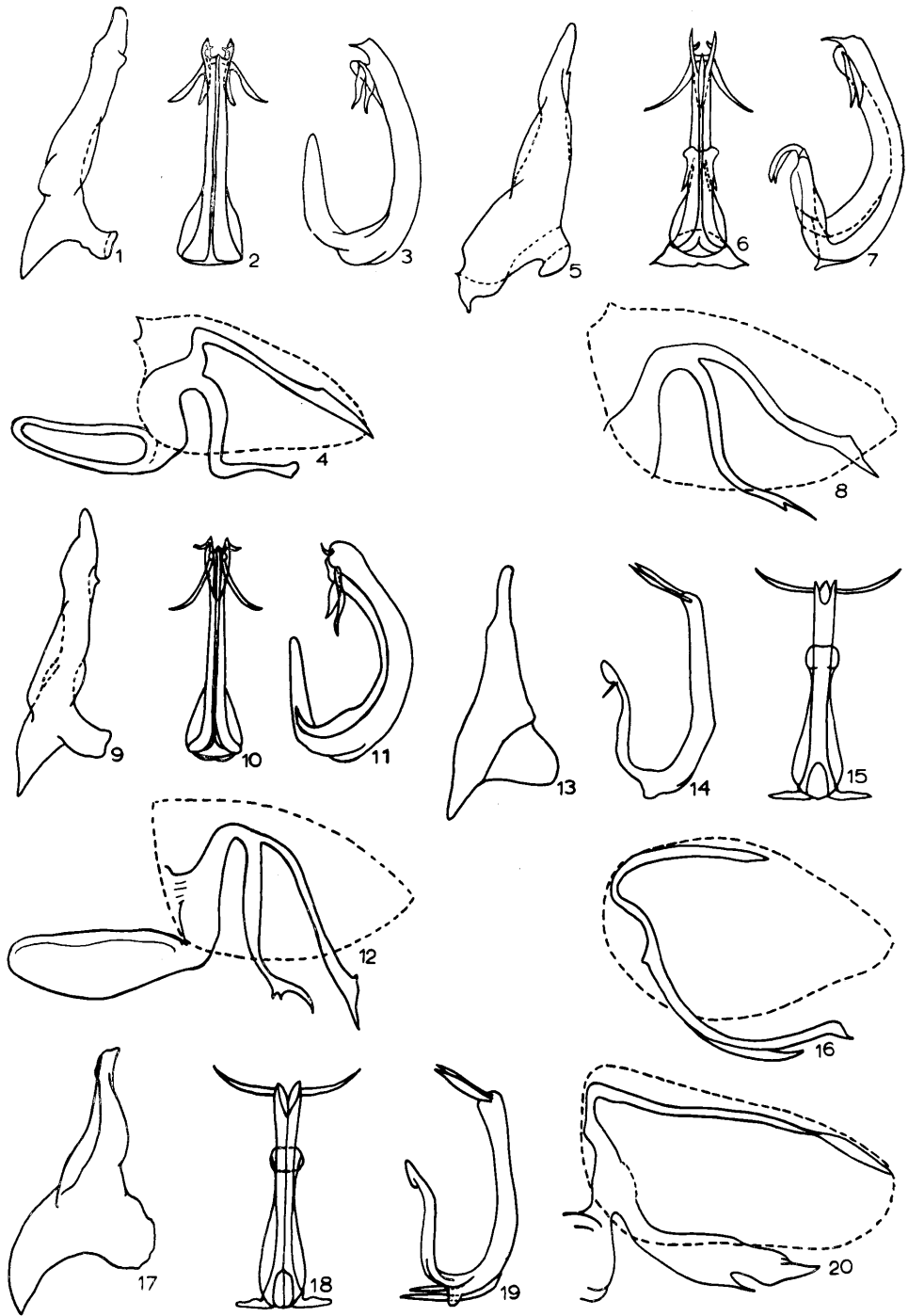


PLATE I

Holotype male.—Rio Frio, D. F., Mexico, X-18-41, DeLong, Good, Caldwell, and Plummer. *Allotype female*.—Same as holotype. *Paratypes*.—Five males, same as holotype; one male, Mexico City, D. F., W., 18 Kms., IX-1-39, DeLong; one male and four females, Jalapa Rd., Ver., Mexico, K-241, 10-15-45, Shaw, DeLong, Hershberger; one male, Mexico City-Cuernavaca Rd., 8-20-36, Ball and Stone. Holotype and paratypes in the DeLong Collection. Paratype in the U. S. National Museum.

***Eutettix spinus* n. sp.**

(figs. 21, 22, 23, 24, 68)

Resembling *E. lanceolatus* in form and appearance, but with different male genital structures. Length of female 6 mm, male 4.5 mm.

Crown blunt, rounded, almost twice as wide between eyes at base as median length.

Color.—Crown, pronotum, and scutellum yellow without definite markings. Forewings pale, subhyaline; veins dark on anterior portion, pale on posterior half and margined with brown.

Genitalia.—Female seventh sternite with posterior margin broadly, shallowly excavated on each side of a broad median lobe, which is produced equal to the length of the lateral angles. Male plates more than two and one-half times as long as broad; slender, tapered to narrow pointed tips. Style elongate, triangular, tip curved outwardly and bluntly pointed. Aedeagus with rather broad shaft, terminating in two projecting lateral portions. A pair of lateral processes arise subapically and extend laterally, each being more than one-third the length of shaft. Pygofer spines long and slender, apical half of both spines broadened, then tapered to a sharp pointed apex. The anterior process arises near the base of pygofer and is shorter than the posterior process.

Holotype male.—Tulancingo, Hdg., Mexico, (K-129), 10-25-45, Stone, DeLong, Hershberger, and Elliott. *Allotype female*.—Mexico City, D. F., Toluca Rd., 9-26-45, DeLong. *Paratypes*.—One female, Rio Frio, D. F., Mexico, K-65, 10-10-45, DeLong; one female, Mexico City, D. F., S., 43 Kms., 9-5-39, DeLong.

***Eutettix pedus* n. sp.**

(figs. 25, 26, 27, 28, 69)

Resembling *E. dentatus* in form and appearance, but with different male genital structures. Length of female 5.5 mm, male 5 mm.

Crown broad, bluntly produced, more than half as long at middle as basal width between eyes.

Color.—Crown, pronotum, and scutellum yellow. A brown spot behind each eye on pronotum, disc gray with yellow crescent along either side of anterior margin. Forewings hyaline; veins, except clavus, brown. Four brown spots along commissure on clavus; small brown spots on veins at costa.

Genitalia.—Female seventh sternite with posterior margin broadly, roundly produced. Male plates twice as long as wide; apex bluntly pointed. Style elongate, broadened at base; apex narrow and blunt. Aedeagus shaft terminating in two slender, divergent, pointed processes. A pair of lateral bifid processes arise subapically, inner portion of each process extending basally along shaft, outer portion extending laterally and basally more than one-third the length of shaft. Pygofer spine bears two long slender processes; anterior process shorter, with a pointed apex; caudal process expanded near apex to form a foot-like portion which is sharp pointed at tip.

Holotype male.—Bosoncheve, Mexico, K-118, X-28-45, Plummer, DeLong, Hershberger,

EXPLANATION OF PLATE 2

FIGURES 21-40. *Eutettix spinus* n. sp. 21. Style, ventrally; 22. Aedeagus, ventrally; 23. Aedeagus, laterally; 24. Male pygofer, laterally. *Eutettix pedus* n. sp. 25. Style, ventrally; 26. Aedeagus, ventrally; 27. Aedeagus, laterally; 28. Male pygofer, laterally. *Eutettix divergens* n. sp. 29. Style, ventrally; 30. Aedeagus, ventrally; 31. Aedeagus, laterally; 32. Male pygofer, laterally. *Eutettix krameri* n. sp. 33. Style, ventrally; 34. Aedeagus, ventrally; 35. Aedeagus, laterally; 36. Male pygofer, laterally. *Eutettix guevarai* n. sp. 37. Style, ventrally; 38. Aedeagus, ventrally; 39. Aedeagus, laterally; 40. Male pygofer, laterally.

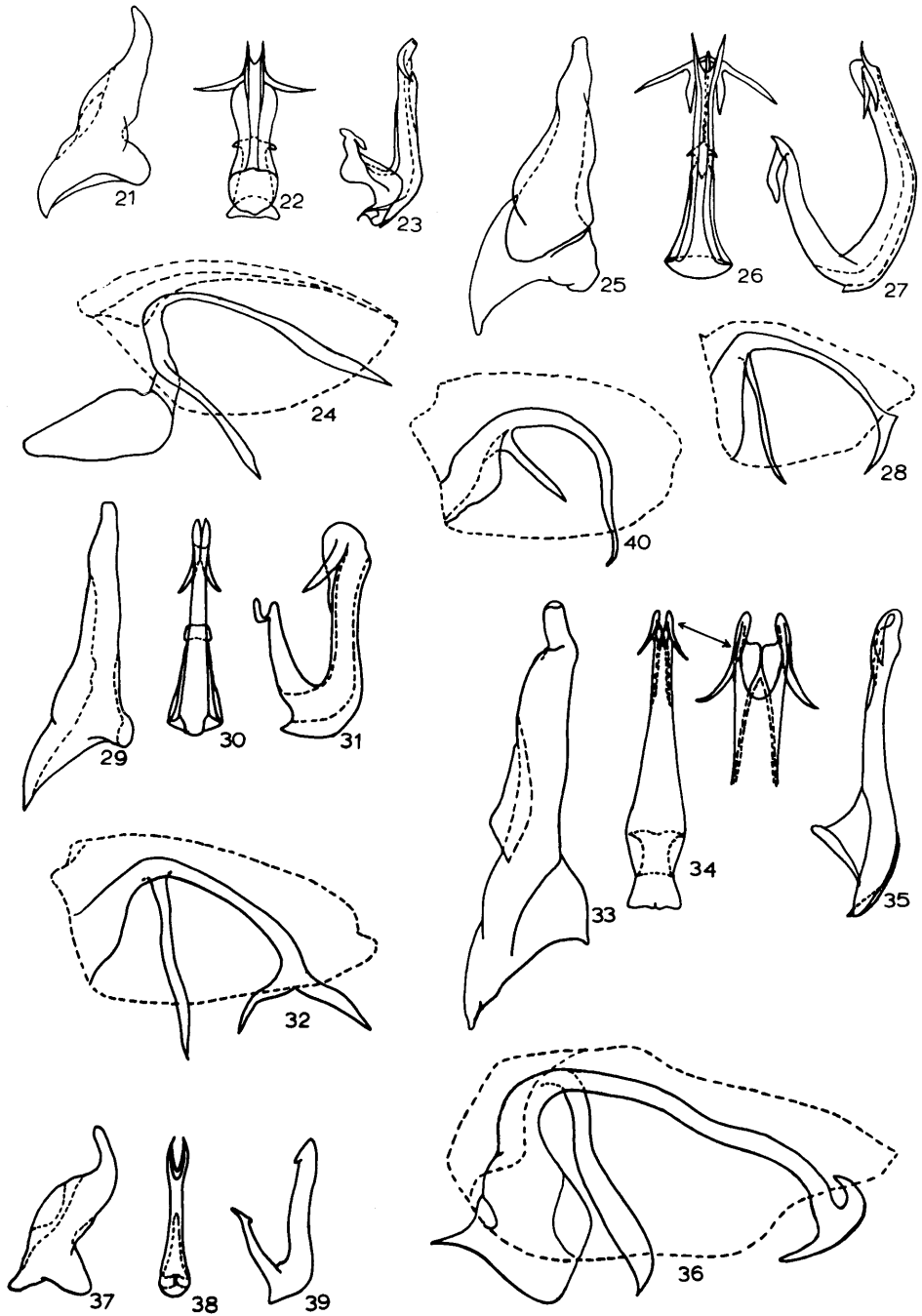


PLATE II

and Elliott. *Allotype female*.—Huauchinango, Pue., Mexico, K-170, X-25-45, Stone, DeLong, Hershberger, and Elliott. *Paratypes*.—One female, same as allotype; three males and one female, Laguna de Zempoala, Mor., Mexico, 10-21-45, Plummer, DeLong, Hershberger, and Elliott; three females, Mexico City, D. F., Mexico, Toluca Rd., 9-26-45, DeLong; four males, Zitacuara, Mich., Mexico, K-159, 9-28-45, Plummer, DeLong, Hershberger, and Elliott; one male, Desierto de Los Leones, D. F., Mexico, 10-9-45, same collectors; six males and three females, Rio Frio, D. F., Mexico, K-65, 10-10-45, Plummer, DeLong, Hershberger, and Elliott; one male, Mex., Cuernavaca Rd., D. F., Mexico, K-66, 8-17-26, Ball and Stone; one male, Cuernavaca, Mexico, 11-17-33, Stone; one male and two females, Cuernavaca Morelos, Mexico, 2-20-32, A. Dampf. Holotype, allotype, and paratypes in the DeLong Collection. Paratypes in the U. S. National Museum.

***Eutettix divergens* n. sp.**

(figs. 29, 30, 31, 32, 70)

Resembling *E. lanceolatus* in general form and appearance, but with different male genitalia. Length of female 6 mm, male 5.5 mm.

Crown broadly rounded, about twice as broad between eyes at base as median length.

Color.—Crown, pronotum, and scutellum dull yellow. Pronotum having disc mottled with gray; basal angles of scutellum orange. Veins of forewings brown, except claval veins, which are subhyaline and bordered with brown.

Genitalia.—Female seventh sternite with produced, rounded, lateral angles, between which posterior margin slopes basad and is notched on each side of a median, broadly rounded tooth, which is produced posteriorly beyond the lateral angles. Male plates twice as long as broad, rounded from inner margin to form a blunt apex. Style elongate, narrow, triangular; apex narrow, blunt. Aedeagus shaft long and narrow, thicker dorso-ventrally. Shaft terminating in a pair of flattened, rounded lobes, which are directed posteriorly and are divergent along their apical margins. A pair of short lateral processes arise subapically, extending laterally and anteriorly. Pygofer spines differing; anterior spine long and slender with sharp-pointed apex; caudal spine long, bifid at two-thirds its length, the bifid portions divergent, long, and sharp pointed.

Holotype male.—Chapultepec, Mexico City, D. F., May 27, 1938, A. Dampf. *Allotype female*.—Same as holotype. *Paratypes*.—One male and two females, same as holotype.

***Eutettix krameri* n. sp.**

(figs. 33, 34, 35, 36)

A bicolored species with distinct male genital structures. Length of male 6 mm.

Crown broadly rounded, more than half as long at middle as basal width between eyes.

Color.—Crown, pronotum, and scutellum orange-yellow; disc of pronotum gray. Forewings pale subhyaline, veins brown.

Genitalia.—Male plates triangular, apices rounded. Style long and narrow, almost four times as long as wide, abruptly narrowed near apex to form a slender cylindrical tip, which is bluntly terminated. Aedeagus shaft long, tapered toward apex, with two protruding lateral lobes, each of which gives rise to a terminal process which curves basad and laterally; central portion excavated (fig. 34). Pygofer with two stout spines, the anterior spine sharp pointed at apex, the caudal spine broad and rounded at apex, forming a long, anteriorly directed, pointed spur and a shorter caudal dorsally curved portion.

Holotype male.—Jacala, Mexico, 8-17-36, E. D. Ball, in the U. S. National Museum.

We take pleasure in naming this species in honor of Dr. James P. Kramer.

***Eutettix guevarai* n. sp.**

(figs. 37, 38, 39, 40)

Resembling *E. transversus* in form and appearance, but with different male genital structures. Length of male 5.5 mm.

Crown broadly rounded, more than twice as broad between eyes at base as median length.

Color.—Crown yellow; pronotum pale gray with three small brown spots behind each eye on anterior margin. Scutellum pale ocher with darker brown basal angles. Forewing subhyaline, veins pale brown.

Genitalia.—Male plates almost three times as long as broad, outer margin sloping to form bluntly pointed apex at inner margin. Style three times as long as broad, apical third quite narrow, blunt at apex. Aedeagus a simple straight slender shaft, terminating in pointed, laterally flattened lobes, with the tip deeply excavated between the two lobes. Pygofer spines slender, pointed at apex; anterior spine less than half the length of caudal spine, which is greatly narrowed on apical one-fifth of its length.

Holotype male.—Necaxa, Pue., Mexico, X-27-45, DeLong, Hershberger, Stone, and Elliott. This species is named in honor of Jose Guevara.

***Eutettix transversus* n. sp.**

(figs. 41, 42, 43, 44)

Resembling *E. ortegai* in form and appearance, but with different male genitalia. Length of male 6 mm.

Crown produced and rounded, twice as broad between eyes at base as median length.

Color.—Crown dull yellow; pronotum gray, anterior margin paler. Scutellum pale with brown basal angles and apex. Forewings hyaline, with veins brown, a paler spot at middle on commissure.

Genitalia.—Male plates almost three times as long as broad, sloping from outside margins to form bluntly pointed apices on inner margins. Style long, rather slender; apical fourth curved outward, blunt at apex, with serrate inner margin. Aedeagus with central portion of shaft shorter, the dorsal portion broader and longer than central portion, and truncate at apex, with a lateral spine projecting on each side. Pygofer spines long and slender; anterior spine narrow and tapered to a pointed apex; caudal spine wider on apical half, then tapered to a pointed apex.

Holotype male.—Carapan, Mich., Mexico, X-2-41, Km. 432, DeLong, Good, Caldwell, and Plummer. *Paratypes*.—one male, Morelia, Mich., Mexico, 9-30-45, Plummer, DeLong, Hershberger, Elliott; one male, Mazaclan, Gro., 10-3-45, Balock, DeLong, Hershberger.

***Eutettix ortegai* n. sp.**

(figs. 45, 46, 47, 48)

Resembling *E. lanceolatus* in form and appearance, but with different male genital structures. Length of male 6 mm.

Crown blunt, rounded, more than half as long at middle as basal width between eyes.

Color.—Dull pale yellow body. Crown yellow with two brown ocelli and two faint, pale brown spots between them and above margin of vertex; brown transverse band on vertex broken at middle by yellow. Pronotum yellow with darker gray mottling. Scutellum orange on basal half, paler at apex. Forewings hyaline, with brown veins on anterior costal area, other veins pale, brown bordered.

Genitalia.—Male plates more than two and one-half times as long as wide, tapered to bluntly pointed apices. Style short and broad, apical fourth narrowed, curved outward, and bluntly pointed. Aedeagus short, dorso-ventrally thickened; central portion of shaft extending beyond the lateral portions. A pair of short lateral processes arise subapically. Pygofer spines long and slender, both gradually tapered and sharp pointed.

Holotype male.—Puebla, Pue., Mexico, 10-18-41, DeLong, Good, Caldwell, and Plummer. This species is named in honor of Dr. Alejandro Ortega.

The genus ***Alladanus***, n. gen.

Allied to *Eutettix*, with similar head and tegmina. Crown without transverse furrow above margin. Aedeagal shaft with a pair of long processes arising at base and extending beyond apex of shaft. Pygofer spine with a single main branch.

Type-species.—*Alladanus cephalatus* n. sp.

KEY TO SPECIES OF *ALLADANUS*

1. Aedeagal basal processes slender at base, broadened on apical half (fig. 51); aedeagal shaft without lateral processes (fig. 50). Pygofer spine greatly enlarged at apex (fig. 52)..... *cephalatus*
- 1'. Aedeagal basal processes long, slender, not broadened apically (fig. 55); aedeagal shaft with lateral processes (fig. 54). Pygofer spine branched on apical two-thirds (fig. 56)..... *mexellus*

***Alladanus cephalatus* n. sp.**

(figs. 49, 50, 51, 52)

Head blunt and rounded, crown and scutellum so pale yellow as to appear white. Length of male 5 mm.

Crown rounded, more than half as long at middle as basal width between eyes.

Color.—Crown very pale yellow with a brown spot just above each ocellus and two proximal brown spots just above margin at middle. Pronotum yellow mottled with brown; a series of irregular brown spots on anterior margin and behind eyes; humeral angles pale. Scutellum very pale yellow, tinted with pale brown on anterior half, basal angles brown, and posterior third shading from pale yellow to white. Forewings pale, subhyaline; veins pale except apical veins. Base of wing smoky; diagonal brown stripe from middle of costa to middle of inner apical cell.

Genitalia.—Male plates rather narrow, triangular, apex sharp pointed. Style elongate, triangular, apical eighth narrow, apex blunt. Aedeagus shaft curved dorsally, apex pointed, in ventral view appearing more narrowed. A pair of processes arise at base of shaft, each of which is bifid; basal branch almost straight, slender, extending laterally and pointed apically; the larger portion curved apically, extending beyond apex of shaft, broadened on apical half, tips blunt. Pygofer spine broad with a short, narrow, basal spur, the main portion extending three-fourths length of pygofer with a greatly inflated, serrated apex.

Holotype male.—Jalapa, V. C., Mexico, 3-28-33, E. D. Ball Collection, U. S. National Museum.

***Alladanus mexellus* n. sp.**

(figs. 53, 54, 55, 56, 72)

Resembling *E. spinus* in general form, but with distinct color markings and different male genitalia. Length of female 6 mm, male 5.5 mm.

Crown broadly rounded, more than twice as wide between eyes at base as median length.

Color.—Crown white, with a dark brown spot above each ocellus and two paler marginal spots between them; a small brown spot on disc; a brown spot at base behind each ocellar spot. Pronotum brown, a white spot at middle behind each eye and lateral margins white. Scutellum pale brown anteriorly, with two median white spots; apical half white. Forewings pale brown, paler on costal area; veins alternately brown and white; claval veins ending in white at commissure.

Genitalia.—Female seventh sternite with lateral angles rounding to form a truncate posterior margin with a deep, V-shaped notch either side of a median rounded produced lobe, one-fourth the width of segment and produced slightly beyond the posterior margin. Male plates triangular, apices bluntly pointed. Style elongate, apical half narrow, almost parallel margined, apex bluntly pointed. Aedeagus with rather stout shaft, bent dorsally and bifid at apex, a pair of lateral processes arising on ventral portion at three-fourths its length; processes extending laterally, broadened at base and tapered to ventrally curved narrow tips. A pair of long slender processes arise at base of shaft and extend on ventral side beyond tip of shaft. Pygofer spine bifid, basal portion curved slightly cephalad and extending beyond ventral margin of pygofer; apical portion thicker and longer, extending caudad, curved at half its length, bent ventrally, and tapered to a sharp pointed apex.

Holotype male.—Carapan, Mich., Mexico, K-430, IX-30-41, DeLong, Good, Caldwell, and Plummer. *Allotype female*.—Uruapan, Mich., Mexico, X-1-41, DeLong, Good, Caldwell, and Plummer. *Paratypes*.—One male, same as allotype; one female, Cordoba, V. C., Mexico, X-8-41, DeLong, Good, Caldwell, and Plummer; one female, Eloxochitlan, Oax., Mexico, 6-27-32, D. Quirox.

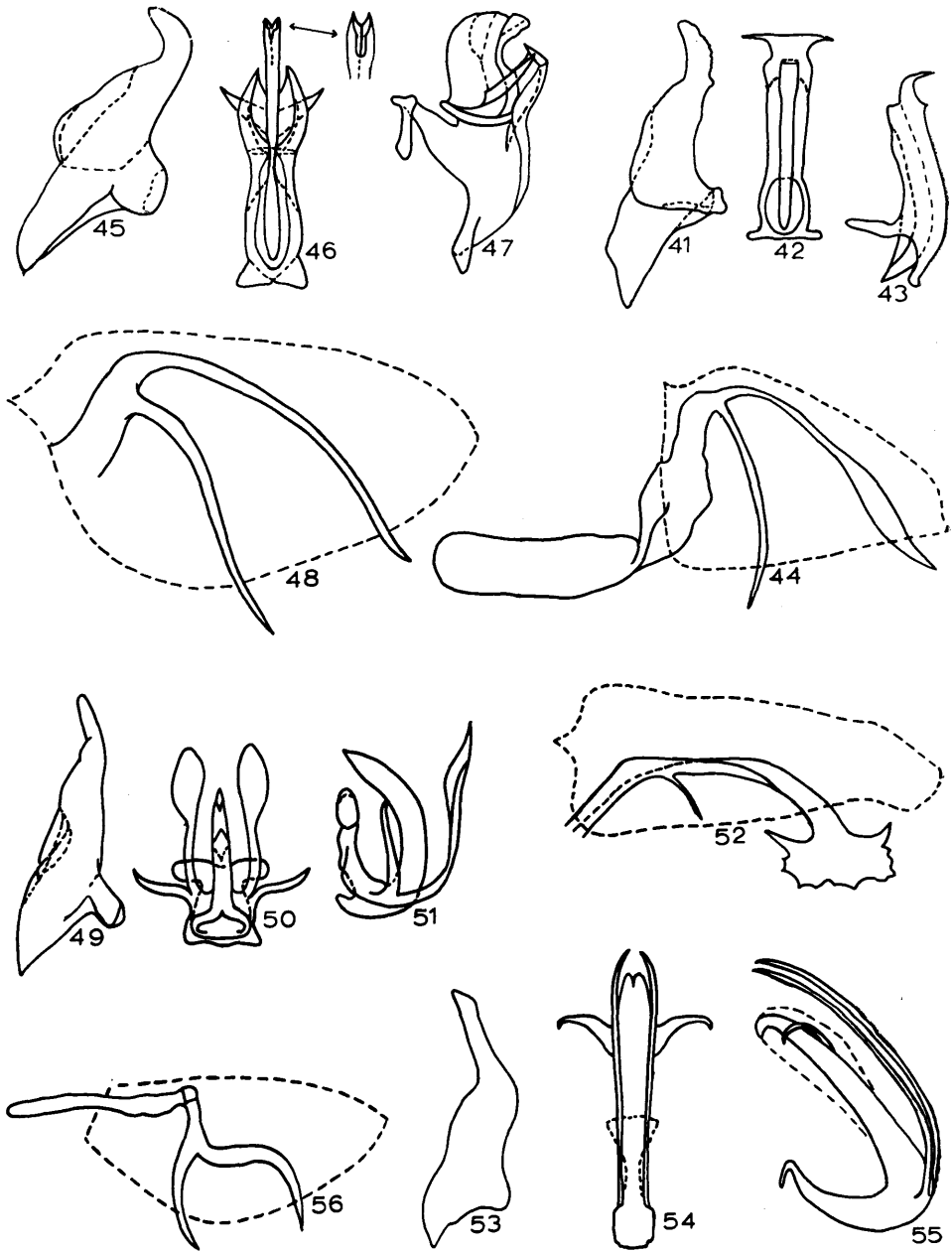


PLATE III

FIGURES 41-56. *Eutettix transversus* n. sp. 41. Style, ventrally; 42. Aedeagus, ventrally; 43. Aedeagus, laterally; 44. Male pygofer, laterally. *Eutettix ortegai* n. sp. 45. Style, ventrally; 46. Aedeagus, ventrally; 47. Aedeagus, laterally; 48. Male pygofer, laterally. *Alladanus cephalatus* n. sp. 49. Style, ventrally; 50. Aedeagus, ventrally; 51. Aedeagus, laterally; 52. Male pygofer, laterally. *Alladanus mexellus* n. sp. 53. Style, ventrally; 54. Aedeagus, ventrally; 55. Aedeagus, laterally; 56. Male pygofer, laterally.

The genus *Cozadanus* n. gen.

Related to *Eutettix*, but larger and more robust than the Mexican species of that genus. Crown without furrow above margin. Styles broad throughout, curved, and blunt at apex. Aedeagus elongate, simple. Pygofer spine single, stout or elongate.

Type-species.—*Cozadanus globosus* n. sp.

KEY TO SPECIES OF *COZADANUS*

1. Pygofer spine broad on basal two-thirds (fig. 60); aedeagus with short lateral processes (fig. 59)..... *globosus*
- 1'. Pygofer spine long, narrow, and serrate on apical two-thirds (fig. 64); aedeagal shaft without lateral processes (fig. 63)..... *serratus*

***Cozadanus globosus* n. sp.**

(figs. 57, 58, 59, 60, 73)

Resembling *C. serratus* in form and appearance, but with different male genitalia. Length of female 7 mm, male 6.5 mm.

Crown broadly rounded, more than twice as wide between eyes at base as median length.

Color.—Crown yellow; pronotum yellow with gray disc; scutellum yellow, basal angles darker. Forewings pale, subhyaline; veins on apical portion brown, with scattered brown pigment between veins.

Genitalia.—Female seventh sternite having lateral angles rounded to a produced posterior margin which slopes caudally and mesally to a pair of prominent rounded teeth, one on either side of a deep V-shaped notch extending more than half way to base of plate. Male plates long and broad, more than twice as long as broad, width near tip more than half basal width; apices rounded. Style twice as long as broad, apical two-thirds broad; apex blunt, almost rounded. Aedeagus shaft broad and straight, apex excavated, lateral portions pointed. A pair of lateral pointed processes arise at half length of shaft and extend apically along shaft. Pygofer spine broad on basal two-thirds, then curved abruptly ventrally, narrowed, apically pointed, and extending ventrally beyond margin of pygofer.

Holotype male.—Mazaclan, Gro., Mexico, X-3-45, Balock, DeLong, and Hershberger.

Allotype female.—Same as holotype. *Paratypes*.—Two males, same as holotype.

***Cozadanus serratus* n. sp.**

(figs. 61, 62, 63, 64, 74)

A large, very wide-headed species with broadly rounded anterior margin. Length of female 7 mm, male 6.5 mm.

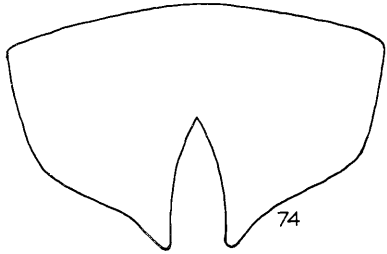
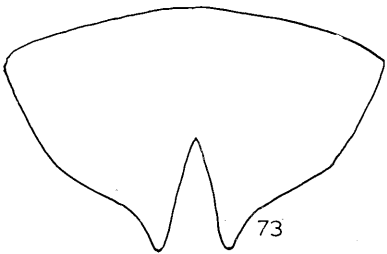
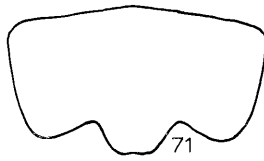
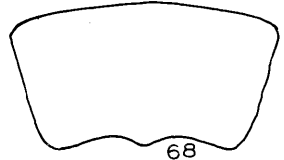
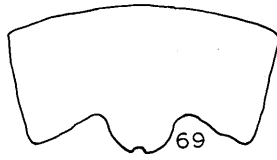
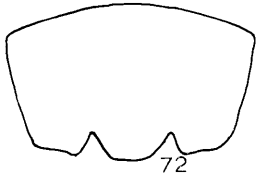
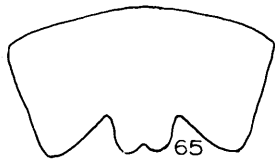
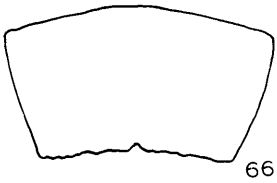
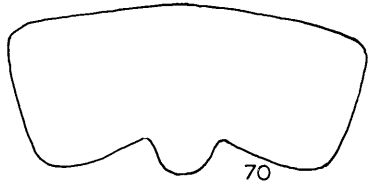
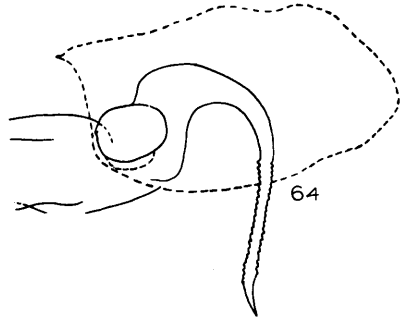
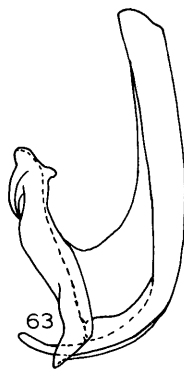
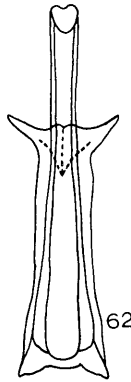
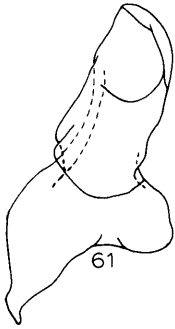
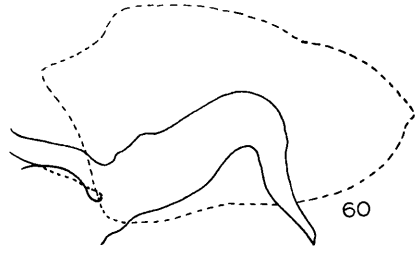
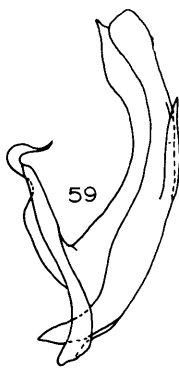
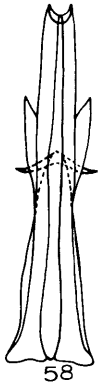
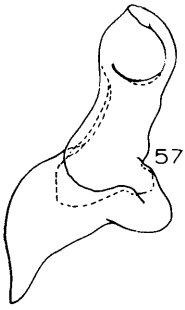
Crown broadly rounded, more than twice as wide between eyes at base as median length, with a median transverse furrow on the vertex between the ocelli.

Color.—Crown yellow; pronotum yellow with gray disc; scutellum yellow, basal angles darker. Forewings pale subhyaline; veins dark brown; claval veins yellow and lined with dark brown on both sides. Brown pigment on caudal costal veinlets and irregularly between veins. Face yellow with brown arcs on lateral portions.

Genitalia.—Female seventh sternite having lateral angles rounded, forming a produced, posterior margin, which slopes to two prominent rounded teeth, one on either side of a deep V-shaped notch which extends more than half way to base of the sternal plate. Male plates more than twice as long as broad; width near tip more than half basal width; apices rounded. Style twice as long as broad, apical half broad near apex, tip blunt. Aedeagus with shaft long, almost straight; apex blunt. Pygofer spine broad at base, narrowed at one-third its length,

EXPLANATION OF PLATE 4

FIGURES 57-74. *Cozadanus globosus* n. sp. 57. Style, ventrally; 58. Aedeagus, ventrally; 59. Aedeagus, laterally; 60. Male pygofer, laterally. *Cozadanus serratus* n. sp. 61. Style, ventrally; 62. Aedeagus, ventrally; 63. Aedeagus, laterally; 64. Male pygofer, laterally. Female seventh sternum. 65. *E. contorqus*; 66. *E. alvadius*; 67. *E. chelatus*; 68. *E. spinus*; 69. *E. pedus*; 70. *E. divergens*; 71. *E. dentatus*; 72. *A. mexellus*; 73. *C. globosus*; 74. *C. serratus*.



bent ventrally; apical half narrow, serrated on both margins; apex sharply pointed and extending considerably beyond ventral margin of pygofer.

Holotype male.—Carapan, Mich., Mexico, K-432, X-2-41, DeLong, Good, Caldwell, and Plummer. *Allotype female*.—Same as holotype. *Paratypes*.—Two males and five females, same as holotype.

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