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## THE BLISTER BEETLES OF NORTH CENTRAL MEXICO (COLEOPTERA, MELOIDAE)

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### INTRODUCTION

This is one of a series of papers on the insects collected on the Mexican plateau in the summer of 1947 on the David Rockefeller expedition to north central Mexico (see Spieth, Herman T., 1950, "The David Rockefeller Mexican Expedition of the American Museum of Natural History, Introductory account," Amer. Mus. Novitates, no. 1454).

The family Meloidae was well represented in the region covered by the expedition (Chihuahua, Coahuila, Durango, and Zacatecas), 45 species of 12 genera having been taken. There are 22 additional species reported by Champion in the "Biologia Centrali-Americana" (vol. 4, pt. 2) as occurring in this area.

The collection amassed by the expedition has enlarged the northward or southward range of nearly every species since, aside from the four or five localities in which some of the early collectors worked, this north central area has been virtually untouched until recent years. Eighteen of the species collected are here recorded for the first time in the four above states: *Zonitis megalops*, *piezata*; *Gnathium minimum*; *Epicauta andersoni*, *atrivittata*, *callosa*, *fortis*, *hirsutipubescens*, *linearis*, *longicollis*, *normalis*, *polingi*, *sericans*, *tenella*; *Pleuropompha costata*, *tricrostata*; *Tetraonyx frontalis*; *Pyrota quadrinervata*. The occurrence of half of these species in the southwestern United States would presuppose their occurrence also south of the border. The others either had a more southern range or the present material

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has filled in a distributional gap that formerly existed. Six of these species have been described since 1934 and so could not have been included in the "Biologia," which is about the only reference for the distribution of Mexican species.

Champion's colored figure of *Pleurospasta mirabilis*, a species that he reported in the "Biologia" as from Coahuila, has been found to represent not that species but *P. reticulata* Van Dyke, which is discussed later.

Twenty-one of the 67 species occurring in this plateau region of north central Mexico have not been taken in the United States. Some of these may be Neotropical in origin and reach the northern limit of their range south of the border; some have been described and are known from one locality only; and some may yet prove to be synonyms of United States species. This leaves two-thirds of the species occurring both in the southwestern United States and on the north central Mexican plateau, which comprise, of course, virtually the same region. Only 25, or a little more than a third, of the 67 species continue into southern Mexico, a few being found as far south as Yucatan, Guatemala, or Costa Rica.

Ten of the species have been taken in Sonora, but unfortunately few actual Sonoran localities have been given, so that it is impossible to tell whether these species occur to the east or to the west of the Sierra Madre Occidental which cuts through the eastern part of Sonora. In most cases it would be correct to suppose that they occur to the east of the Sierras since the north central Mexican plateau is continuous faunistically with the eastern Arizona, New Mexico, and the western Texas area. *Epicauta normalis*, however, has been taken in the United States not only in eastern Arizona, but also in southern California, and it would be of interest to know whether or not it moves south into western Sonora as well as south into Chihuahua and eastern Sonora.

Seven species have been reported from the eastern border of the Mexican plateau, at Monterrey in Nuevo León. Two species (*Epicauta segmenta*, *corvina*) have been taken on the western coast of Mexico in the state of Sinaloa.

Included in this study and in the keys are all the species reported by Champion as coming from Chihuahua, Coahuila, Durango, and Zacatecas, whether specimens were available or not. Species reported from the other northern states (Sonora, Sinaloa, Nuevo León, Tamaulipas) were not included unless they occurred also in the above region.

The determination of a number of species about which there was some doubt was kindly made by Floyd G. Werner. These were *Epicauta callosa*, *ferruginea*, *fortis*, *hirsutipubescens*, *lauta*, *linearis*, *polingi*, *sericans*, *stigmata*, and *Lytta quadrimaculata*.

The order of the genera was taken from Denier's revision (1935) which appears also in Blackwelder's two catalogues (1939, 1945); the only changes made were in the genera synonymized by Werner (1945). The *Epicauta* have been arranged according to Werner (1945), with the Mexican species inserted according to Champion. In *Pyrota*, Denier (1934) was followed; in *Lytta*, Champion (1892, under *Cantharis*); in *Meloe*, Van Dyke (1928); in *Zonitis*, Champion (under *Zonitis* and *Nemognatha*).

The localities listed under the recorded distribution of each species are taken from Champion unless otherwise stated. Some of them could not be found, some are ambiguous in that they might be the city or the state of the same name, and some (common names which occur in many states) are of little value because they are not located as to the state. The only locality which was accepted without a state name is the well-known Jalapa of Vera Cruz. Too much reliance cannot be placed on the ranges given by Champion, as they may actually include more than one species.

In order to avoid unnecessary repetition of collectors' names and to simplify the listing of specimens, much of the data on the expedition material has been omitted under the species, but it is presented in tabular form below for reference. Such data, however, from other American Museum specimens examined is given in full in the text. A small amount of material collected by Mr. and Mrs. George Bradt has also been included in this study.

I am indebted to Dr. Mont A. Cazier for his patience in reading this manuscript and for his suggestions of many improvements; to Mr. Floyd G. Werner also for reading the manuscript and for the identification of some specimens; and to Dr. J. Balfour-Browne of the British Museum for comparison of *E. callosa* with the type of *E. candidata*. Thanks are also due to Miss Alice Gray for the genitalic drawings of *Pleurospasta reticulata* and *P. mirabilis*.

#### EXPLANATION OF MAPS

The letters on the maps correspond to the names of the localities given in the text. The recorded distribution is shown by solid circles; new localities (whether from the 1947 expedition or from

DATA ON SPECIMENS FROM THE DAVID ROCKEFELLER  
MEXICAN EXPEDITION

LOCALITY	ALTITUDE IN FEET	DATE
Chihuahua		
Balleza	5200	July 21
Camargo	4900	July 14, 15
Catarinas	5800	July 25, 26
Chihuahua	4600	June 30
Ciudad Juárez	3700	July 1
Delicias	4150	July 11, 13
La Cruz	4000	July 13
Madera	7200	July 6
Matachic	6400	July 7
Ojo Laguna	5000	June 30
Parral	5500	July 15, 16
Parrita	5600	June 27
Primavera	5500-6000	June 30
Samalayuca	4360	June 24
San José Babícora	7100	July 5
Santa Bárbara	6300	July 17, 18
Santa Clara	5000-6000	July 2
Valle de Olivos	5500	July 20
Coahuila		
Cabos	4000	August 21
Guadalupe	3100-3500	August 23
La Gloria	3300	August 24
La Rosa	5300	August 22
Paila	3900	August 21
Piedras Negras	1300	August 25
Saltillo	5100	August 22
San Pedro de Colonias	3700	August 20
Durango		
Coyotes	8300	August 8
Durango	6200	August 14
El Salto	8500	August 10
Encino	6200	July 27
Las Puertes	7000	July 24
Nombre de Dios	5900	August 13
Otinapa	8200	August 11
Palos Colorados	8000	August 5
Pedricena	4500	August 19
San Juan del Río	5200	July 30-August 1
San Lucas	6700	August 2
Villa Madero	6700	August 18
Yerbanís	6700	August 19
Zacatecas		
Fresnillo	7000	August 15
Guadalupe	7400	August 16

Collectors: Mont A. Cazier, Willis J. Gertsch, Charles D. Michener,  
Rudolph Schramel, and Herman T. Spieth

other specimens at the American Museum of Natural History) are indicated by crosses. For species seen or reported from Sonora a question mark has been used to indicate lack of adequate locality. The arrows show that the species occurs or is said to occur in Arizona, New Mexico, Texas, or Guatemala.

## CLASSIFICATION

### KEY TO THE GENERA OF MELOIDAE IN NORTH CENTRAL MEXICO

1. Front femora on inner side with an excavation at middle or near apex that is usually filled with silky patch of contrasting golden hairs turned at an angle from other hairs on femora ..... 2<sup>1</sup>  
Front femora on inner side without excavation or such a patch of hairs ... 3
2. Elytra strongly costate ..... *Pleuropompha*  
Elytra not costate, or with three fine, slightly elevated lines ..... *Epicauta*
3. Tarsal claws cleft to base with serrations on upper blade; maxillae prolonged beyond the mandibles ..... 4  
Tarsal claws either cleft to base without serrations on upper blade, or claws with distinct tooth; maxillae not prolonged beyond the mandibles ..... 5
4. Thorax with hind angles prominent; antennae with segments 5 to 10 twice or more than twice as long as wide; head at base much wider than the space between the eyes ..... *Zonitis*<sup>2</sup>  
Thorax with hind angles indistinct, not prominent, and rounded beneath; antennae with segments 5 to 10 only one-third longer than wide; head at base not wider than the space between the eyes ..... *Gnathium*<sup>2</sup>
- 5.(3). Head deeply sulcate from base to apex; head red, elytra bright green. ...  
..... *Eupompha*  
Head, if at all sulcate, not sulcate from base to apex; coloring not as above. .... 6
6. Claws cleft to base, not toothed ..... 7  
Claws not cleft to base, but strongly toothed, tooth shorter than claw .... 10
7. Elytra overlapping at suture immediately behind scutellum, elytra divergent; scutellum slightly or not evident ..... *Meloe*  
Elytra not overlapping at suture immediately behind scutellum, elytra not divergent; scutellum well developed ..... 8
8. Thorax strongly transverse, twice as broad as long, hind angles sharp, prominent ..... *Tetraonyx*  
Thorax either longer than broad, or rounded, or hexagonal, not transverse, hind angles rounded, not prominent. .... 9
9. Thorax much longer than broad, usually bell shaped, narrowed at apex and often with transverse depression near apex; antennal segments decreasing in thickness to apex, slender, filiform (almost bead-like in *quadrinervata*) ..... *Pyrota*  
Thorax scarcely longer than broad and either rounded or hexagonal; an-

<sup>1</sup> In four species (*Epicauta callosa*, *ferruginea*, *fortis*, *sericans*) this character, though present, is weak, the silky hairs being not so sharply delimited and being the same color as the other hairs on the femora.

<sup>2</sup> See discussion under the genus.

- tennal segments increasing in thickness to apex (female), or 3 to 6 greatly enlarged (male), segments robust, bead-like.....*Lytta*
- 10.(6). Elytra costate; winged species.....*Pleurospasta*  
 Elytra not costate; wingless species.....11
11. Elytra large, entire, united along suture, covering all but the extreme apex of the abdomen.....*Cysteodemus*  
 Elytra small, abbreviated, divergent, usually covering only small part of the enlarged abdomen.....*Megetra*

#### GENUS *ZONITIS* FABRICIUS

*Zonitis* FABRICIUS, 1775, *Systema entomologiae*, p. 126.

*Apalus* OLIVIER, 1789, *Encyclopédie méthodique*, vol. 4, p. 165.

*Nemognatha* ILLIGER, 1807, *Mag. für Insektenk.*, vol. 6, p. 333.

*Megatrachelus* MOTSCHULSKY, 1845, *Bull. Soc. Imp. Moscou*, vol. 18, p. 1, pp. 83-84.

*Nematognatha* GEMMINGER AND HAROLD, 1870, *Catalogus coleopterorum*, vol. 7, p. 2163.

Although he retained *Nemognatha* as a separate genus, Champion (1892, p. 373) stated that the sole character separating it from *Zonitis*, the longer maxillae, failed to hold in a transition species he was describing. Casey (1891, p. 170) had already considered the two congeneric, and Denier (1935, p. 135, and footnote 13) supported him by suppressing *Nemognatha*, though he did so provisionally. Blackwelder's two catalogues (1939, 1945) follow Denier.

There are 24 species of *Zonitis* and *Nemognatha* recorded by Champion, three of which he reported from the region covered in this paper (*zonitoides*, *lurida*, *immaculata*) and two of which were found in the material collected in 1947 (*lutea*, *megalops*). This group, however, is in such a chaotic condition taxonomically that the attempt to identify the majority of specimens was abandoned, and even the above five species are here offered with reservations.

One of these species, *megalops*, is worthy of further mention as it possesses certain seemingly fundamental differences from others of the genus: the eyes nearly touching under the head and but narrowly separated above, and the antennae nearly as long as the body and exceedingly attenuate. These characters might warrant placing *megalops* in a separate genus, but to do this would mean further study of other genera in the same tribe as *Zonitis* and the examination of much additional material from other parts of the world, and this is beyond the scope of the present paper. Specimens with the same eye and antennal characters as *megalops* (Guatemala, north central Mexico) have been examined, not only

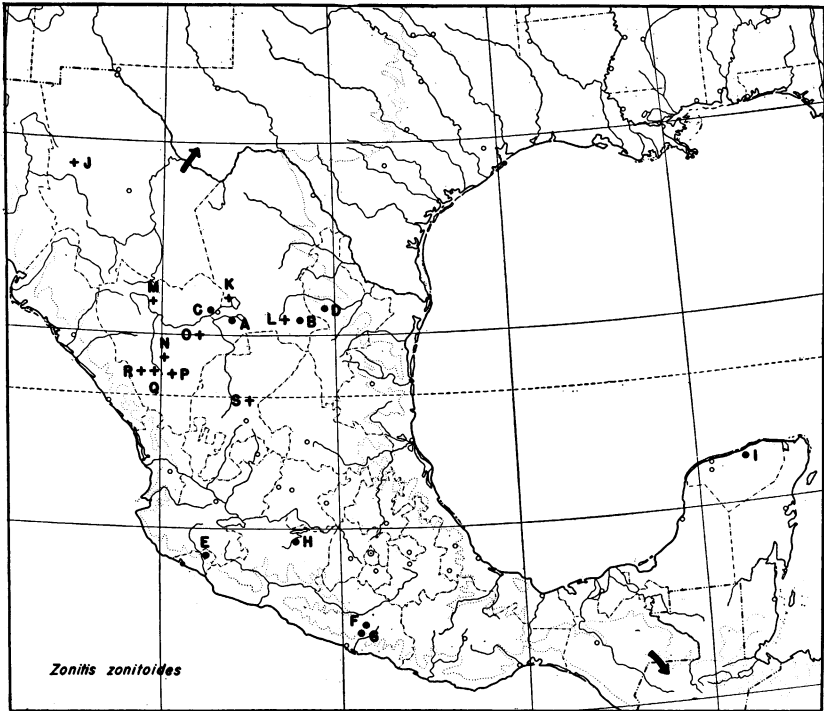


FIG. 1. Distribution of *Zonitis zonitoides* (Dugès).

from California, Arizona, and Florida in the United States, but also (a subspecies ?) from Puerto Rico, Haiti, and the Dominican Republic and a different species from Papua, New Guinea. (See further discussion under *megalops*.)

Instead of a key to *Zonitis*, a short description of essential characters has been given at the end of each species.

### *Zonitis zonitoides* (Dugès)

Figure 1

*Nemognatha zonitoides* DUGÈS, 1877, La Naturelle, vol. 3, pp. 47-48, pl. 2 fig. 1.

TYPE LOCALITY: Guanajuato.

RECORDED DISTRIBUTION: *Mexico*. Coahuila: San Pedro [not located], Parras (A), Saltillo (B). Durango: Villa Lerdo (C). Nuevo León: Monterrey (D). Guanajuato. Colima: Tonila (E). Guerrero: Chilpancingo (F), Rincón (G). Michoacán: Morelia (H). Yucatán: Temax (I). *Guatemala*: San Jerónimo.

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: 2 miles west of Matachic (J), one. Coahuila: San Pedro de Colonias (K), one; La Rosa (L), one. Durango: Encino (M), three; San Lucas (N), 17; Yerbánis (O), Cuencamé District, one; Durango (P), three; Palos Colorados (Q), one; Otinapa (R), one. Zacatecas: Fresnillo (S), two.

OTHER SPECIMENS EXAMINED: *Guatemala*: San Jerónimo (Champion), two.

Champion (1892, p. 379) says that this species is quite variable in coloration, and the above material supports his statement. Ten specimens have the thorax more or less clear yellow, while 16 have it yellow with vague piceous spots in the center and on each side of the center, five have the thorax well marked with two elongate spots as described by Dugès. In nine specimens the abdomen is partially or entirely yellow instead of black. A few have the front of the scutellum suffused with yellow. Champion mentions some with yellow legs, but all the above specimens have black legs. The color variations do not seem to be correlated with geographical distribution.

DESCRIPTION: Head and elytra black, thorax yellow or yellow with piceous spots; maxillae as long as from the tip of the mandibles to the front of the eye, or slightly longer; hind tibiae with rather broad, equal, blunt spurs; antennae with first two segments about equal, third slightly longer. Length: 6–8 mm.

### *Zonitis piezata* Fabricius

*Zonitis piezata* FABRICIUS, 1798, Supplementum entomologiae systematicae, p. 104.

*Zonitis vittata* FABRICIUS, 1801, Systema eleutheratorum, vol. 2, p. 24.

*Nemognatha piezata*, LeCONTE, 1853, Proc. Acad. Nat. Sci. Philadelphia, vol. 6, p. 347.

*Nemognatha texana* LeCONTE, 1853, *loc. cit.*

TYPE LOCALITY: "Carolina."

RECORDED DISTRIBUTION: *Mexico*. Vera Cruz: Jalapa, Atoyac.

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: Delicias, 23.

This series represents the most northern record for the species in Mexico. There is a wide gap of territory between Vera Cruz and Chihuahua which should yield further specimens.

Fourteen of the above specimens are entirely tan above, seven



have a black stripe on each elytron, and two have the elytra black except for a narrow tan border. The two dark ones are also black below, but the lighter colored ones are either tan or black below.

DESCRIPTION: Head and thorax tan, elytra tan or tan with black stripes, or all black; maxillae as long as the body; hind tibiae with spurs about equal but the outer one truncate, the inner one pointed. Surface with short hairs. Length: 12–15 mm.

### *Zonitis lutea* (LeConte)

*Nemognatha lutea* LeConte, 1853, Proc. Acad. Nat. Sci. Philadelphia, vol. 6, p. 346.

*Nemognatha pallens* LeConte, 1853, *loc. cit.*

TYPE LOCALITY: "Missouri Territory."

RECORDED DISTRIBUTION: *Mexico*. Northern Sonora.

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: 92 kilometers north of Chihuahua, one; 239 kilometers south of Ciudad Juárez, five.

These specimens are yellow except for the dark antennae and maxillary lobe. The thorax is somewhat darker than the elytra, being more red yellow than yellow.

DESCRIPTION: Head and elytra yellow, thorax red yellow; maxillae as long as the body; hind tibiae with spurs about equal but the outer one truncate, broader, the inner one pointed, narrower. Surface with short hairs. Length: 9–14 mm.

### *Zonitis lurida* (LeConte)

*Nemognatha lurida* LeConte, 1853, Proc. Acad. Nat. Sci. Philadelphia, vol. 6, p. 345.

*Nemognatha decipiens* LeConte, 1853, *ibid.*, vol. 6, p. 347.

*Nemognatha rufa* Dugès, 1889, Ann. Mus. Michoacano, vol. 2, p. 111.

TYPE LOCALITY: Platte River, "Missouri Territory," and Texas.

RECORDED DISTRIBUTION: *Mexico*. Northern Sonora. Coahuila: Monclova. Durango: Villa Lerdo.

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: Delicias, five. Coahuila: San Pedro de Colonias, six. Guadalupe, one.

OTHER SPECIMENS EXAMINED: *Mexico*. Coahuila: Monclova (Dr. Palmer), one.

Four of the Chihuahua specimens are tan above, and one has the elytra dark brown. One of the tan ones has the scutellum black and is all black below except for the last two abdominal

segments (*decipiens* of LeConte); the others are yellow below except for the black tibiae and tarsi. The Coahuila specimens are all tan above and like the majority of Delicias specimens below.

The Monclova specimen is one of Godman's.

DESCRIPTION: Head and thorax tan, elytra tan to dark brown; maxillae as long as half the body; hind tibiae with spurs unequal, the outer one four or five times larger and concavely truncate, the inner one more or less stick-like. Surface with short hairs. Length: 10–15 mm.

### *Zonitis megalops* Champion

*Zonitis megalops* CHAMPION, 1892, *Biologia Centrali-Americana*, vol. 4, pt. 2, pp. 386–387, pl. 17, fig. 26.

TYPE LOCALITY: Guatemala; Volcan de Atitlán (3000 feet).

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: Delicias, three. Durango: Pedricena, three.

One of the Delicias specimens is only 9 mm.; the others are all about 20 mm. The Durango specimens are darker than those from Chihuahua, appearing nearly black to the naked eye. The thorax in all has a dark red suffusion in the center and on the sides; the impressed median line seems to be lacking in the small specimen from Delicias. Below, the three Chihuahua and one of the Durango specimens are yellow except for the black tips of the femora, the apical three-fourths of the tibiae and the tarsi; the other Durango specimens have the abdomen dark brown to black, and one of them has some dark brown on the metasternum.

This species, with its large eyes nearly touching beneath the head and only narrowly separated above, with its antennae nearly as long as the body and much thinner at the apex, does not resemble others of the genus *Zonitis*, although the tarsal claws and slightly prolonged maxillae place it in that genus. The above characters might well be sufficient for the erection of a new genus (see above under *Zonitis*). *Zonitis megalops* may, however, be a synonym of Horn's *longicornis* (1870, pp. 93–94), described from central Illinois, the description of which agrees with the lighter colored Mexican specimens. Three other similar specimens from the American Museum collection have been examined from Blythe, California, the Baboquivari Mountains, Arizona, and Biscayne Bay, Florida. If these all should prove to be the same

species, the geographical range is quite extensive, but since *Zonitis* are parasitic in the nests of bees their distribution can be expected to be both wide and erratic.

Also examined are four specimens, labeled *Zonitis annulicornis* (Chevrolat), from Puerto Rico, Haiti, and the Dominican Republic. These agree in the essential characters with the above, but differ in being all yellow except for darker suffusions at the base and near the apex of the elytra and in the antennal segments' being more clearly ringed with yellow. Chevrolat described his species as an *Epicauta* (1877), and it is interesting to note that Horn had seen his *longicornis* in collections also under *Epicauta*. Neither of these authors in his description mentioned the eyes, but the other characters and the specimens examined are sufficient for identification.

Two additional specimens (from the Fly River, Papua, New Guinea) appear to be a different species in that the eyes are even larger and more approximate above and below; they are entirely yellow and as large as the largest Mexican specimens.

DESCRIPTION: Head and thorax yellow, thorax with red suffusions, elytra yellowish or very dark brown, with the side and sutural margins and a sinuous line on each elytron of a lighter color; maxillae scarcely as long as the palpi; hind tibiae with spurs nearly equal, but outer one slightly shorter, broader, and with the tip less pointed; antennae longer than half the body and attenuate; eyes nearly contiguous beneath. Surface with short hairs. Length: 9 (one specimen only)—20 mm.

### *Zonitis*, species unknown

Thirteen specimens from Samalayuca, Chihuahua. These are about the same size as *lutea* and similar in appearance to that species, but differ from it in having shorter maxillae, and in the fact that the outer tibial spur on the hind legs is not truncate, the thorax is not square but longer than wide, and the elytra have larger, sparser punctures.

DESCRIPTION: Yellow above and below except the tarsi which are black (one specimen has the abdomen and metasternum piceous), the thorax more red yellow than the elytra; maxillae very short, scarcely as long as the palpi; hind tibiae with spurs about equal in length, but the outer one twice as broad as the inner and less pointed at the tip, the inner one narrow, pointed, stick-like. Surface with short hairs. Length: 10–13 mm.

**Zonitis, species unknown**

Three specimens, two from Palos Colorados, one from Coyotes, both in Durango. Somewhat similar to *lurida* but more hairy, with the eyes broader, more prominent, and the hind tibial spurs both narrow and equal.

DESCRIPTION: Tan above and below except for the black tips of the femora, and the tibiae and tarsi; maxillae nearly as long as half the body; hind tibiae with spurs equal in length and thickness, thin, pointed, stick-like. Surface with short black hairs; eyes bulging on the sides; second antennal segment very short, shorter than first, third segment longer than the following. Length: 9-12 mm.

**Zonitis immaculata (Say)**

*Nemognatha immaculata* SAY, 1817, Jour. Acad. Nat. Sci. Philadelphia, vol. 1, p. 22.

TYPE LOCALITY: "Plains of the Missouri."

RECORDED DISTRIBUTION: *Mexico*. Chihuahua: Santa Clara. No specimens examined.

**Zonitis, species unknown**

Twenty-three specimens from Palos Colorados, one from Otinapa, one from Nombre de Dios, two from 6 miles northeast of El Salto, all in Durango, and one from Temax, northern Yucatán (Gaumer).

The above are all shining, hairless specimens, entirely tan or yellow above, black or yellow or a mixture of the two colors below. The maxillae are about as long as the head, the hind tibial spurs are rather slender, the inner one narrow, pointed, the outer somewhat broader. The Godman specimen from Yucatán is labeled "*Nemognatha tarasca* Dugès" and also "sp.? near *immaculata*." It seems the same as the others. Length: 9-12 mm.

**Zonitis, species unknown**

Two specimens from Balleza, Chihuahua, and five from Encino, Durango.

These seven specimens are rather similar to those discussed above in being shining and hairless, but the maxillae are even shorter and the hind tibial spurs seem somewhat broader. One of the Balleza specimens is yellow and one has the elytra black,

and both are yellow below except for the dark tibiae and tarsi. The Durango specimens are similar below to those from Balleza, and above, one has the elytra black, two have it yellow with black stripes, and two have it immaculate. These, as well as the specimens above, are probably close to *immaculata* (Say), but the thorax is not impunctate as in that species. Length: 10–12 mm.

### GENUS *GNATHIUM* KIRBY

*Gnathium* KIRBY, 1818, Trans. Linnean Soc. London, vol. 12, p. 425.

This appears to be a very weak genus, and I believe it should be united with *Zonitis*. Casey (1891, p. 170) listed both *Nemognatha* and *Gnathium* as synonyms of *Zonitis*, though without giving reasons. The former was accepted, provisionally, by Denier (1935) in his revision of the Meloidae and has so been considered since. But *Gnathium* is still listed as a separate genus, in spite of the fact that a number of workers have shown its weakness, and even Kirby stated that it was more or less intermediate between *Nemognatha* and *Zonitis*. Horn, as early as 1870, (p. 94), said that the discovery of more species had eliminated most of the characters separating *Gnathium* from *Zonitis* except the slight thickening of the antennae towards the apex, which is a rather poor generic character. Other characters were found for use in the generic key to the north central Mexican species, and these were checked with specimens of some United States species, but it is doubtful if they would hold with all members of the variable genus *Zonitis*, as now constituted.

Three of the five species of this genus have been reported from north central Mexico.

#### KEY TO THE SPECIES OF *Gnathium* IN NORTH CENTRAL MEXICO

1. Elytra piceous, thorax yellow..... *francilloni*  
Elytra yellow, thorax yellow..... 2
2. Elytra sparsely hairy; maxillae longer than head but not half the length of the body; elytra and thorax shining..... *nitidum*  
Elytra densely hairy; maxillae longer than half the body; elytra and thorax more opaque..... *minimum*

### *Gnathium francilloni* Kirby

*Gnathium francilloni* KIRBY, 1818, Trans. Linnean Soc. London, vol. 12, p. 426, pl. 22, fig. 6.

*Nemognatha flavicollis* LeCONTE, 1858, Jour. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 4, p. 23.

TYPE LOCALITY: Georgia.

RECORDED DISTRIBUTION: *Mexico*. Durango: Durango City.  
No specimens examined.

### **Gnathium nitidum** Horn

*Gnathium nitidum* HORN, 1870, Trans. Amer. Ent. Soc., vol. 3, p. 95.

TYPE LOCALITY: Owen's Valley, California.

RECORDED DISTRIBUTION: *Mexico*. Durango: Villa Lerdo.

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Coahuila: Guadalupe, 58; La Gloria, south of Monclova, four.

Some of these specimens are more or less piceous below and even have piceous areas at random on the thorax and elytra. The disc of the elytra, seen from above, often appears to be without pubescence, but the short dark hairs can always be seen at the margins of the elytra.

### **Gnathium minimum** (Say)

*Nemognatha minima* SAY, 1824, Jour. Acad. Nat. Sci. Philadelphia, vol. 3, p. 306.

*Gnathium walckenaeri* CASTELNAU, 1840, Histoire . . . insectes coléoptères, vol. 2, p. 281.

*Nemognatha longicollis* LECONTE, 1858, Proc. Acad. Nat. Sci. Philadelphia, vol. 10, p. 77.

TYPE LOCALITY: Arkansas "near the Rocky Mountains."

RECORDED DISTRIBUTION: *Mexico*. Northern Sonora. Vera Cruz.

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Coahuila: San Pedro de Colonias, one.

The elytra in this specimen are not paler than the head and thorax, as described by Say, but of the same color. The suture, however, is slightly darker than the rest of the elytra, which Champion (1892, p. 381) said was true of the Sonoran specimens he had seen. San Pedro de Colonias is in southwestern Coahuila.

### GENUS **EPICAUTA** DEJEAN

*Epicauta* DEJEAN, 1833, Catalogue des coléoptères, ed. 2, p. 224.

*Causima* DEJEAN, 1837, *op. cit.*, ed. 3, p. 248.

*Henous* HALDEMAN, 1852, in Stansbury, Exploration and survey of the valley of the Great Salt Lake, p. 377.

*Isopentra* MULSANT, 1858, Opuscules entomologiques, vol. 8, p. 106.

*Macrobasis* LECONTE, 1858, Jour. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 4, p. 39.

*Apterospasta* LECONTE, 1858, *loc. cit.*

*Nomaspis* LECONTE, 1866, Smithsonian Misc. Coll., vol. 6, no. 167, p. 156.

*Gnathospasta* HORN, 1875, Trans. Amer. Ent. Soc., vol. 5, p. 154.

This is one of the largest genera in the Meloidae and is cosmopolitan except that it does not occur in Australia. Thirty-three of the 60 odd species reported from Mexico have been taken in north central Mexico.

#### KEY TO THE SPECIES OF *Epicauta* IN NORTH CENTRAL MEXICO

1. Elytra with only a small black spot on each elytron near apex; general pubescence gray.....*punctum*  
Elytra not so marked.....2
2. Elytra with base and apex only broadly black, also head and two spots on thorax; general pubescence gray.....*tripartita*  
Elytra not so marked.....3
3. Second antennal segment half as long as third or shorter.....4  
Second antennal segment two-thirds as long as third or longer.....25
4. Elytra with pattern of denuded spots of varying extent.....5  
Elytra without denuded spots.....8
5. Elytral spots distinct, not run together; if hairs worn off, thorax with dense, fine punctures.....6  
Elytral spots indistinct, run together; if hairs worn off, thorax smooth, with a few scattered deep punctures.....7
6. Male with first segment of front tarsi with hairy pad reaching from base to apex; male with last segment of maxillary palpi much enlarged, round in outline.....*maculata*  
Male with first segment of front tarsi with hairy pad at apical third or half only; male with last segment of maxillary palpi but slightly enlarged, elongate in outline.....*normalis*
7. Male with last segment of labial palpi much enlarged, round in outline; male with last segment of maxillary palpi only slightly enlarged.....*andersoni*  
Male with last segment of neither palpi enlarged, both elongate in outline...*pardalis*
- 8.(4). Pubescence black.....9  
Pubescence white, tan, or yellow.....12
9. Elytra somewhat bulbous, broadly exposing the abdomen; wings absent ...*conferta*  
Elytra normal, exposing apex of abdomen only, if at all; wings present...10
10. Hind tibiae with inner spur one-third longer than outer.....*corvina*  
Hind tibiae with inner spur about the same length as outer.....11
11. Small, 6-12 mm.; elytra black; hind tibiae with outer spur somewhat broader than inner.....*pennsylvanica*  
Large, 13-24 mm.; elytra dark rufous; hind tibiae with spurs equal in width.....*jimenezii*
- 12.(8). Suture with line of white or dense pubescence and/or a similar line on each elytron.....13  
Suture and elytra without lines of white or dense pubescence.....14

13. Antennal segments 1 and 3 about equal in length; apex of elytra usually with fine fringe of dense or white hairs; male with first tarsal segment on front legs longer than second segment and antennal segments flat, broad. . . . . *rufipedes*  
 First antennal segment at least half longer than third; apex of elytra without fringe of dense or white hairs; male with first tarsal segment on front legs shorter than second segment and antennal segments cylindrical, slender. . . . . *hirsutipubescentis*
- 14.(12). At least 15 mm. long, usually 20 mm. or more. . . . . *longicollis* (in part)  
 Less than 15 mm. long. . . . . 15
15. Thorax with a pair of denuded callosities. . . . . 16  
 Thorax without denuded callosities. . . . . 17
16. Smaller, with tawny pubescence, hind tibial spurs shorter. . . . . *callosa* (in part)  
 Larger, with gray pubescence, hind tibial spurs longer. . . . . *candidata*
17. Elytra gray (ground color black, pubescence white) and thorax reddish. . . . . *tenella* (in part)  
 Elytra, head, and thorax same color. . . . . 18
18. Thorax with disc transversely raised in middle in front, front angles prominent. . . . . *singularis*  
 Thorax with disc convex or flattened, not transversely raised, front angles rounded. . . . . 19
19. Penultimate antennal segments as broad as long. . . . . *fortis*  
 Penultimate antennal segments longer than broad. . . . . 20
20. Antennae long, well surpassing base of thorax. . . . . 21  
 Antennae short, just reaching to or slightly beyond base of thorax. . . . . 22
21. Hind tibiae straight; antennal segments of same thickness, first segment as long as, or longer than, third. . . . . *stigmata* (in part)  
 Hind tibiae slightly curved or strongly bowed; antennae tapering towards apex, first segment much shorter than third. . . . . *auricomans*
22. Labrum broadly, deeply, semicircularly emarginate. . . . . *emarginata*  
 Labrum slightly, if at all, emarginate. . . . . 23
23. Hind tibiae with outer spur broad, broader than inner one; small, not over 8 mm. . . . . *ferruginea*  
 Hind tibiae with outer spur slender, same size as inner one; larger. . . . . 24
24. Thorax almost square, bulging, arched in profile; eyes large, reaching nearly two-thirds of the way to back of head, subovate, scarcely indented behind antennae; color usually gray or dull brown. . . . . *sericans*  
 Thorax longer than wide, flat or concave, nearly straight in profile; eyes smaller, reaching about halfway to back of head, narrower, more indented behind antennae; color usually tawny or golden yellow. . . . .  
 . . . . . *callosa* (in part)
- 25.(3). Elytra with black or white stripes. . . . . 26  
 Elytra uniformly colored. . . . . 28
26. Elytra with four dark lines on pale background. . . . . *sublineata*  
 Elytra with pale lines on dark background. . . . . 27
27. Thorax nearly square, median suture denuded; female with first antennal segment reaching to hind margin of eye, male with it reaching beyond eye but not beyond head; abdominal segments with sparse white hairs. . . . . *purpurea*



- Thorax much longer than broad, median line with long white pubescence; female with first antennal segment reaching beyond the eye, male with it reaching beyond the head; abdominal segments with bands of dense white hairs.....*atrivittata*
28. Pubescence above black except for narrow line of white hairs around thoracic margins, sometimes incompletely margined.....*segmenta*  
 Pubescence above not black.....29
29. Elytra with ground color black.....30  
 Elytra with ground color not black.....32
30. Legs with ground color black.....31  
 Legs with ground color reddish.....*tenella* (in part)
31. Large, usually 20 mm. or more; male with first antennal segment longer than head, female with it surpassing the eye...*longicollis* (in part)  
 Smaller, usually less than 15 mm., male and female with first antennal segment shorter than, or just reaching the back of, the eye...*stigmata* (in part)
32. General color dark brown to black; margins of elytra and thorax fringed with pale pubescence.....*beckeri*  
 General color tan or yellowish; no pale pubescence on margins of elytra or thorax.....33
33. Head, thorax, and abdomen with ground color black.....34  
 Head, thorax, and abdomen with ground color tan or red, except for black band at apex of each abdominal segment.....*lauta*
34. Male with first antennal segment longer than head and not excavated at apex.....*polingi*  
 Male with first antennal segment shorter than head and excavated at apex on outer side (rare).....*linearis*

### ***Epicauta rufipedes* (Dugès)**

#### Figure 2

*Cantharis rufipedes* DUGÈS, 1870, La Natureza, vol. 1, p. 163, pl. 2, fig. 4.

*Cantharis cinctella* DUGÈS, 1877, *ibid.*, vol. 4, p. 59, pl. 2, fig. 3.

*Lytta subvittata* HAAG, 1880, Deutsche Ent. Zeitschr., vol. 24, p. 47.

*Epicauta vittula*, BEAUREGARD, 1889, Ann. Soc. Ent. France, Bull. Séances, p. ccxii. New name for *L. subvittata* Haag.

TYPE LOCALITY: Michoacán.

RECORDED DISTRIBUTION: *Mexico*. Durango: Ventanas (A). Michoacán: Huétamo (B). Jalisco: Sayula (C). Puebla: Atlixco (D), Matamoros Izúcar (E). Colima: Tonila (F). Guerrero: Iguala (G), Chilpancingo (H), Dos Arroyos (I), Mochitlán (J), Acapulco (K), Rincón (L), Amula (M), Morelos: Cuernavaca (N). Vera Cruz: Jalapa (O), San Andres Tuxtla (P). Oaxaca: Tehuantepec (Q), Oaxaca (R). Yucatán: Temax (S). Chiapas: Tapachula (T). *Guatemala*. San Jerónimo. *Nicaragua*. Chontales.

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Guer-

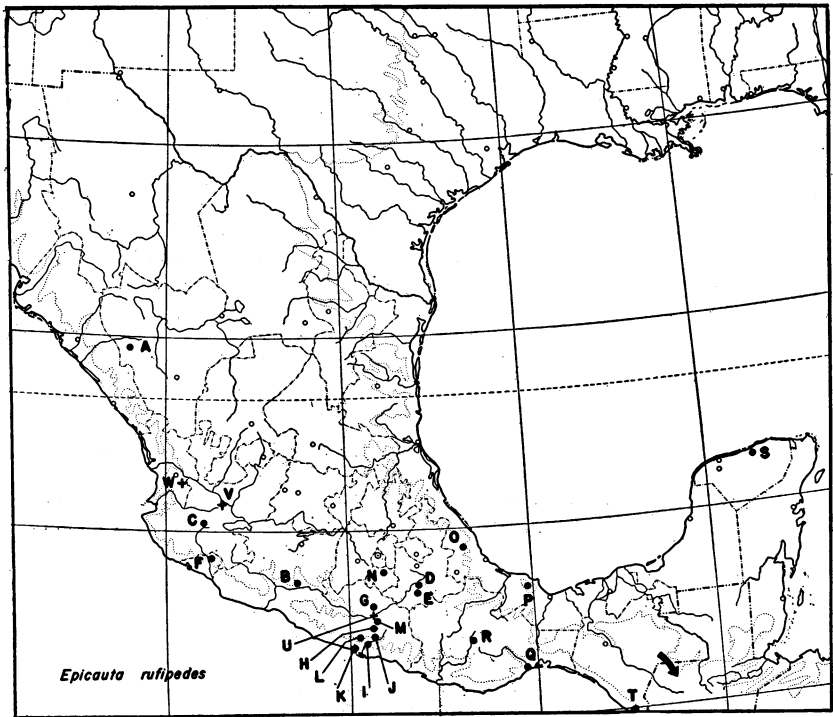


FIG. 2. Distribution of *Epicauta rufipedes* (Dugès).

rero: Xalitla (U), June 4, 1946 (J. and D. Pallister), three; Jalisco: Guadalajara (V), September, 1903 (W. L. Tower), four. Nayarit: Ixtlan del Rio (W), 3800 feet, June 14, 1949 (Bradt), one.

OTHER SPECIMENS EXAMINED: *Mexico*. Guerrero: Mochitlán (J) (Baron), one; Chilpancingo (H), October (H. H. Smith), 4600 feet, one; Iguala (G), June 2, 1946 (J. and D. Pallister), two. Jalisco: Sayula (C) (Höge), one. Morelos: Cuernavaca (N), July–August, 1903 (W. L. Tower), one. Vera Cruz: Jalapa (O) (W. Schaus), two. Oaxaca: Oaxaca (R) (Höge), one. Yucatán: Temax (S) (Gaumer), one. *Guatemala*. Baja Vera Paz: San Jerónimo (Champion), one. The following specimens taken July–August, 1947 (C. and P. Vaurie): Baja Vera Paz: San Jerónimo, 3000 feet, one; Salamá, 3000 feet, 15; Rabinal, 3000 feet, one. Zacapa: Zacapa, 600 feet, three. Quiché: Sacapulas, 4500 feet, two.

The median line of white or dense pubescence on each elytron is present in only two of the Guatemala specimens, also in the seven from Guerrero, four from Guadalajara in Jalisco, one from Oaxaca. The white line on the suture and at the apex is present in all except a few worn examples. The last segment of the maxillary palpi in the male is more dilated than in the female. The legs in all are red.

Six of these are Godman specimens seen by Champion (Mochitlán, Chilpancingo, Sayula, Temax, Oaxaca, and San Jerónimo in Guatemala).

### ***Epicauta punctum* (Dugès)**

*Cantharis punctum* DUGÈS, 1870, La Naturaleza, vol. 1, pp. 158–159, pl. 2, fig. 9.

TYPE LOCALITY: Mexico.

RECORDED DISTRIBUTION: *Mexico*. Durango: Ventanas. Jalisco: Guadalajara. Puebla: Matamoros Izúcar. Guerrero: Mochitlán. Vera Cruz. Parada [not located].

No specimens examined.

### ***Epicauta maculata* (Say)**

Figure 3

*Lytta maculata* SAY, 1824, Jour. Acad. Nat. Sci. Philadelphia, vol. 3, p. 298.

*Lytta conspersa* LECONTE, 1853, Proc. Acad. Nat. Sci. Philadelphia, vol. 6, p. 340.

*Cantharis punctuata* DUGÈS, 1870, La Naturaleza, vol. 1, p. 161, pl. 2, fig. 1.

*Epicauta media* DUGÈS, 1889, Ann. Mus. Michoacano, vol. 2, p. 82.

TYPE LOCALITY: "Missouri Territory."

RECORDED DISTRIBUTION: *Mexico*. Durango: Villa Lerdo (A). San Luis Potosí: Huasteca Potosina [not located]. Guanajuato: Irapuato (B). Michoacán: Morelia (C), Quiroga (D). Morelos: Yautepec (E). Distrito Federal: Mexico City (F). Querétaro: Querétaro (G). Hidalgo: Tula (H). Oaxaca: Oaxaca (I). *Guatemala*. Quiché Mountains.

No specimens examined.

The above recorded distribution of *maculata* probably includes more than one species, since recently found characters used by Werner to separate the *maculata-normalis* group in the United States were not mentioned by former authors. Werner, in fact, believes that the two Dugès species synonymized by Champion may be distinct species. It is possible also that some of the speci-

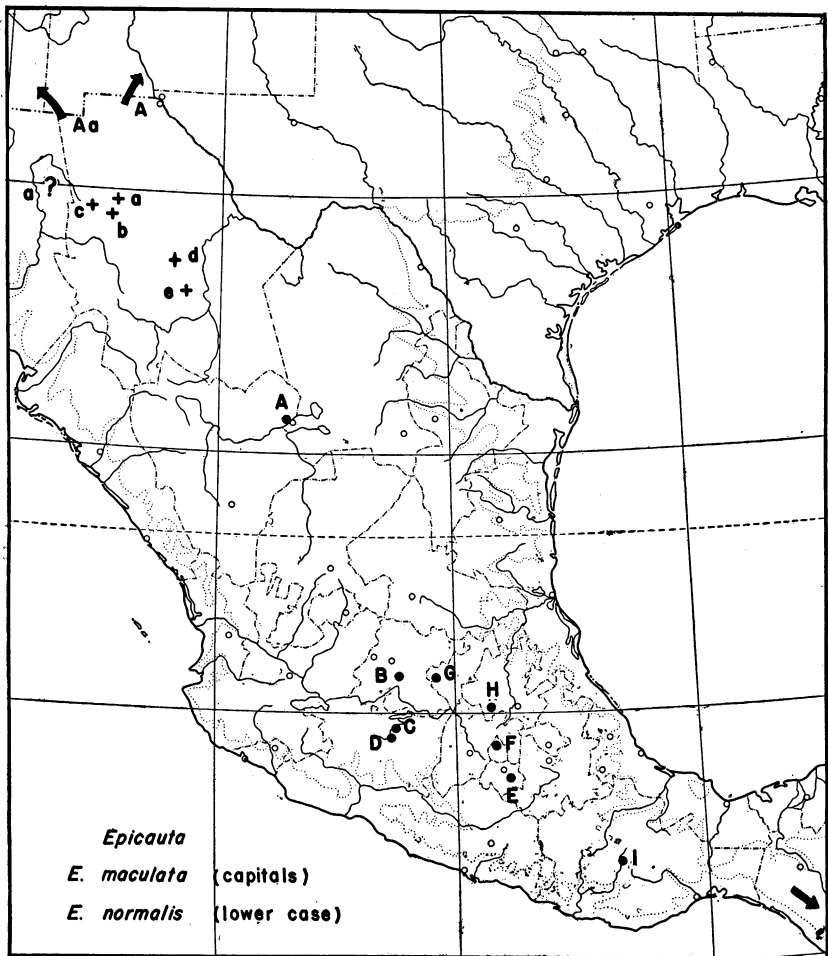


FIG. 3. Distribution of *Epicauta normalis* Werner and *E. maculata* (Say).

mens discussed below in the text of *normalis* could be referable to *maculata*.

### ***Epicauta normalis* Werner**

#### **Figure 3**

*Epicauta normalis* WERNER, 1943, Psyche, vol. 50, pp. 65-66.

TYPE LOCALITY: Bridgeport, California.

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chi-

huahua: San José Babícora (a), 353; Matachic (b), four; Madera (c), two; 16 miles southeast of Chihuahua (d), one; Delicias (e), three. Sonora: (C. Lumholtz), one.

This large series was at first thought to be *maculata*, but the apical segments of the male palpi are not enlarged or rounded, and the male front tarsi (first segment) have the pad at the apical third only. This represents the first record of *normalis* in Mexico. Unfortunately there is no adequate material from Sonora, which intervenes between Chihuahua and the Arizona and California localities where *normalis* has been taken. (For an account of the similar species of this group, see Werner, 1949b, pp. 95-99.)

Not included in this species are one specimen from La Rosa, Coahuila, three from Guadalupe, Coahuila, 40 from Guadalajara, Jalisco, 1901 (M. Diguët), and 119 from Guadalupe, Distrito Federal, July 27, 1903 (W. L. Tower). These specimens not only present some slight differences from *normalis* in the shape and expansion of the male palpi and in the pad on the front first tarsal segment in the male, but they also are more southern in distribution. There are two Dugès species, synonymized by Champion with *maculata*, which Werner believes may be good species and to which all or some of these specimens may eventually be referred. The Dugès species were described from the states of Guanajuato, Michoacán, and San Luis Potosí.

Although there are many small specimens in the Chihuahua *normalis*, there are no large ones in the Distrito Federal specimens which, as a whole, are smaller and darker (the latter may be due to the age of the specimens).

It is a very difficult species (or perhaps subspecies) group and probably cannot be resolved, as Werner said, until more material with host plant records is available.

### ***Epicauta pardalis* LeConte**

Figure 4

*Epicauta pardalis* LECONTE, 1866, Smithsonian Misc. Coll., vol. 6, no. 167, p. 157.

TYPE LOCALITY: Valley of the Gila.

RECORDED DISTRIBUTION: *Mexico*. Northern Sonora. Coahuila: Saltillo (A) (Werner, 1945, p. 443). Durango: Descubridora (B) (Werner, *loc. cit.*).

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: 80 and 92 kilometers north of Chihuahua (C), 21; Ojo

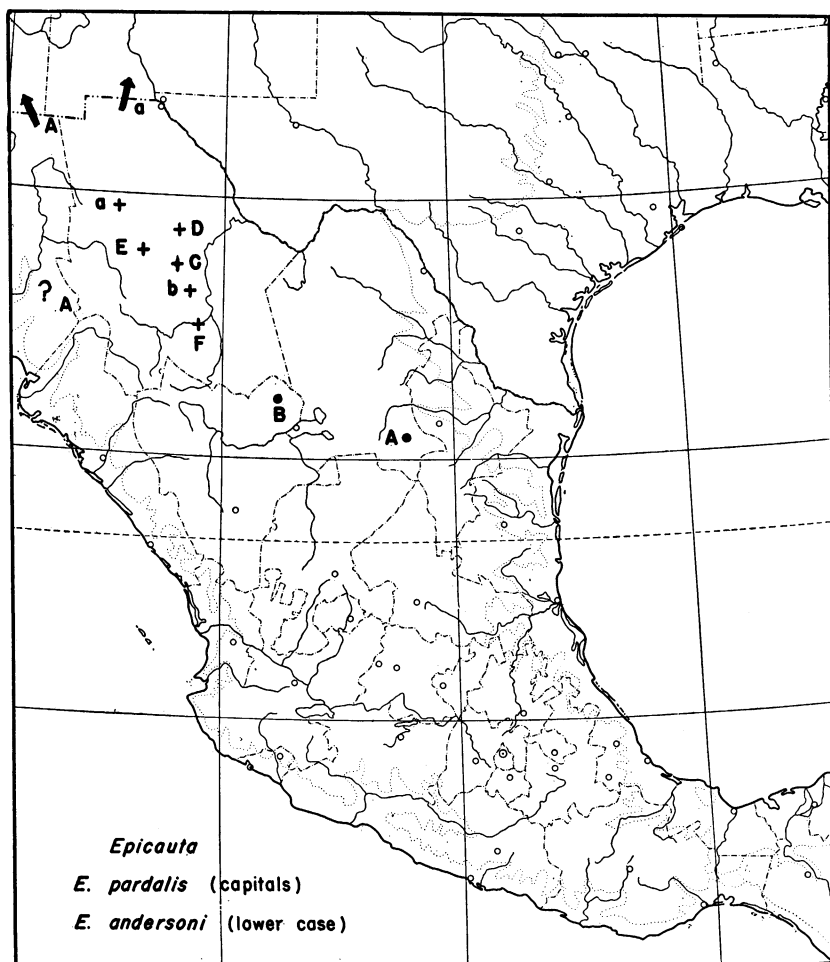


FIG. 4. Distribution of *Epicauta pardalis* LeConte and *E. andersoni* Werner.

Laguna (D), nine; Primavera (E), three; 20 and 25 miles southwest of Camargo (F), three; 42 miles southwest of Camargo, one.

OTHER SPECIMENS EXAMINED: *Mexico*. Sonora (C. Lumholtz), 25.

The specimens from Camargo are females and they might possibly be *andersoni*, but the antennae seem a little thicker than in that species and three of them are larger than most *andersoni*.

The Sonora specimens do not seem to differ from those of Chihuahua.

***Epicauta andersoni* Werner**

Figure 4

*Epicauta andersoni* WERNER, 1943, Psyche, vol. 50, pp. 66-67.

TYPE LOCALITY: Gallo Springs, New Mexico.

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: San José Babícora (a), 17; Delicias (b), one.

Since this species has been so recently described, it is not surprising that no specimens have been reported from Mexico. Some of the specimens of *pardalis* recorded by Champion, however, might have been *andersoni*.

Only three or four of the series are well marked, the rest having most of the pubescence worn off the upper surface. The abraded males can be distinguished from equally abraded males of the *maculata-normalis* group by the labial palpi; abraded females can be distinguished by the thorax, which in *andersoni* is smooth between the scattered deep punctures, whereas in *maculata* and *normalis* the entire surface is set with dense fine punctures with here and there a larger puncture. When the pubescence is present the sculpture cannot be seen.

The only way to separate females of *andersoni* and *pardalis* is by associating them with males from the same locality, though in general *andersoni* is a smaller species, and the antennae, if both species are present for comparison, are somewhat more slender.

***Epicauta jimenezi* Dugès***Epicauta jimenezi* DUGÈS, 1889, Ann. Mus. Michoacano, vol. 2, p. 73.

TYPE LOCALITY: Guadalajara.

RECORDED DISTRIBUTION: *Mexico*. Durango: Ventanas, Canelas. Jalisco: Guadalajara.

No specimens examined.

***Epicauta corvina* (LeConte)**

Figure 5

*Lytta corvina* LECONTE, 1858, Jour. Nat. Sci. Philadelphia, ser. 2, vol. 4, p. 21  
*Cantharis nigerrima* DUGÈS, 1870, La Nature, vol. 1, p. 162.

TYPE LOCALITY: Valley of the Gila.

RECORDED DISTRIBUTION: *Mexico*. Chihuahua: Santa Clara (A). Durango: Villa Lerdo (B), Canelas (C). Guanajuato:

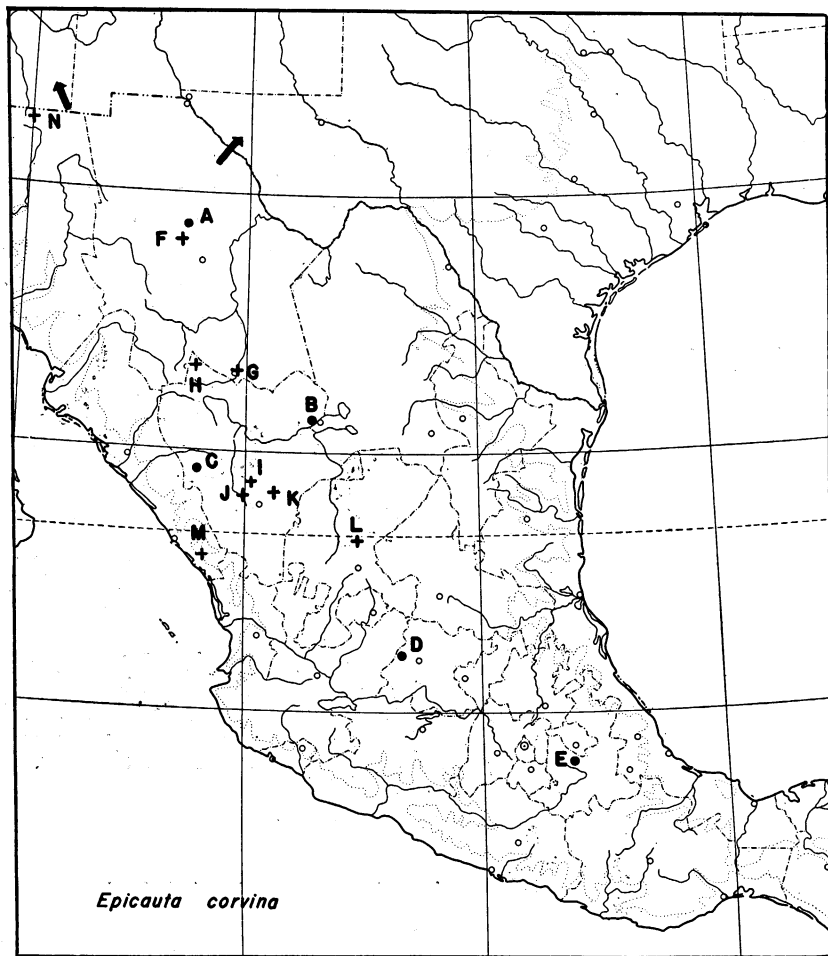


FIG. 5. Distribution of *Epicauta corvina* (LeConte).

León (D), Mineral del Cedro [not located]. Puebla: Puebla (E). Vera Cruz.

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: Santa Clara Canyon, 5 miles west of Parrita (F), one; Catarinas (G), eight. Durango: Las Puente (H), eight; San Juan del Río (I), five; Palos Colorados (J), one; Providencia (K), three. Zacatecas: Fresnillo (L), one. Sinaloa: Escuinapa (M) (J. H. Batty), 129. Sonora: Naco (N), 5000 feet, August 16, 1949 (Bradt), 50.



There is considerable variation in the thorax in *corvina*; by actual measurement it is usually only slightly wider than long (it may appear longer than wide to the eye), but a few individuals have it very much wider than long. The more or less round median depression at the base of the thorax is much more marked in some specimens, but occasionally it is scarcely evident.

### ***Epicauta pennsylvanica* (DeGeer)**

*Cantharis pennsylvanica* DEGEER, 1775, Mémoires . . . l'histoire des insectes, vol. 5, p. 16, pl. 13, fig. 1.

*Meloe nigra* WOODHOUSE, 1800, Med. Repos., vol. 3, p. 213.

*Lytta pennsylvanica*, LECONTE, 1853, Proc. Acad. Nat. Sci. Philadelphia, vol. 6, p. 329.

*Lytta morio* LECONTE, 1853, *ibid.*, vol. 6, p. 447.

*Epicauta potosina* DUGÈS, 1889, Ann. Mus. Michoacano, vol. 2, p. 89.

TYPE LOCALITY: Pennsylvania.

RECORDED DISTRIBUTION: *Mexico*. Coahuila: Monclova. Durango: Villa Lerdo. San Luis Potosí: Huasteca [not located].

No specimens examined.

### ***Epicauta conferta* (Say)**

*Meloe conferta* SAY, 1824, Jour. Acad. Nat. Sci. Philadelphia, vol. 3, pp. 281-282.

*Henous techanus* HALDEMAN, 1852, in Stansbury, Exploration and survey of the valley of the Great Salt Lake, p. 377, pl. 9, figs. 12-14.

*Henous confertus*, LECONTE, 1853, Proc. Acad. Nat. Sci. Philadelphia, vol. 6, p. 330.

TYPE LOCALITY: "In vicinity of Council Bluffs and near the Rocky Mountains." Neotype locality: Dallas, Texas, designated by Werner (1945, p. 449).

RECORDED DISTRIBUTION: *Mexico*. Coahuila: San Pedro.  
No specimens examined.

### ***Epicauta tripartita* Champion**

*Epicauta tripartita* CHAMPION, 1892, Biologia Centrali-Americana, vol. 4, pt. 2, p. 421, pl. 19, fig. 20.

TYPE LOCALITY: Ventanas in Durango.

Type examined in British Museum.

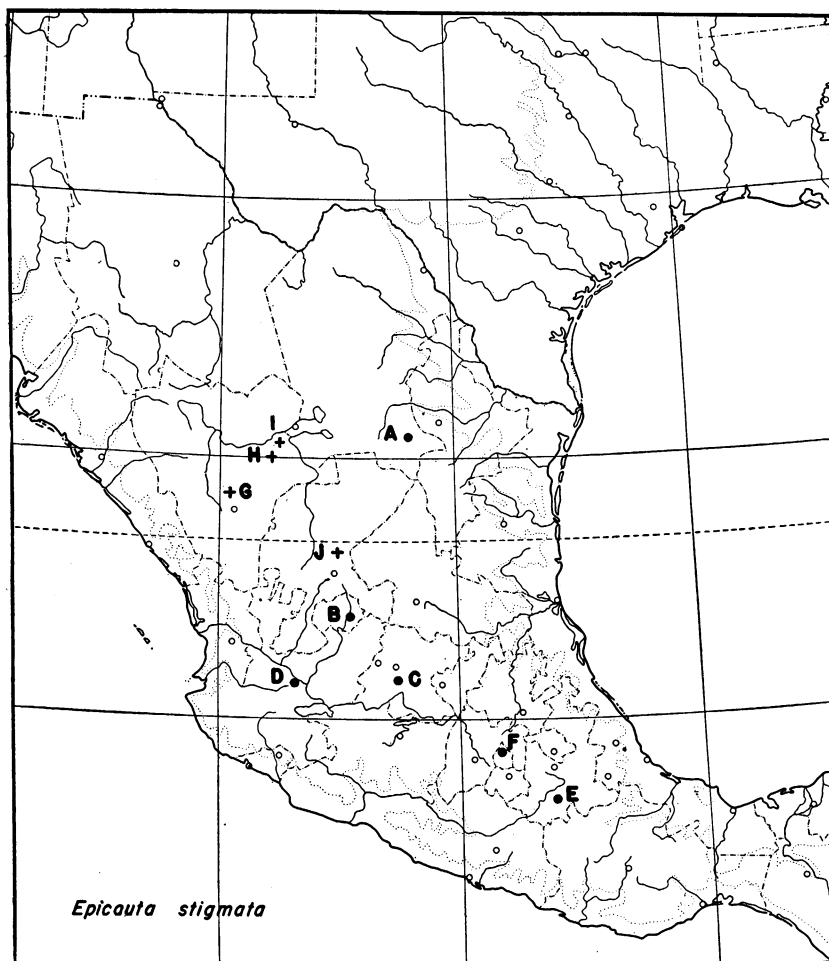


FIG. 6. Distribution of *Epicauta stigmata* (Dugès).

***Epicauta stigmata* (Dugès)**

Figure 6

*Cantharis stigmata* DUGÈS, 1870, La Natureza, vol. 1, p. 159, pl. 2, fig. 8.

*Epicauta nigratarsis* DUGÈS, 1877, *ibid.*, vol. 3, p. 48.

*Epicauta intermedia* DUGÈS, 1889, Ann. Mus. Michoacano, vol. 2, p. 68.

TYPE LOCALITY: Guanajuato.

RECORDED DISTRIBUTION: *Mexico*. Coahuila: Saltillo (A).  
Aguascalientes: Aguascalientes City (B). Querétaro. Guana-

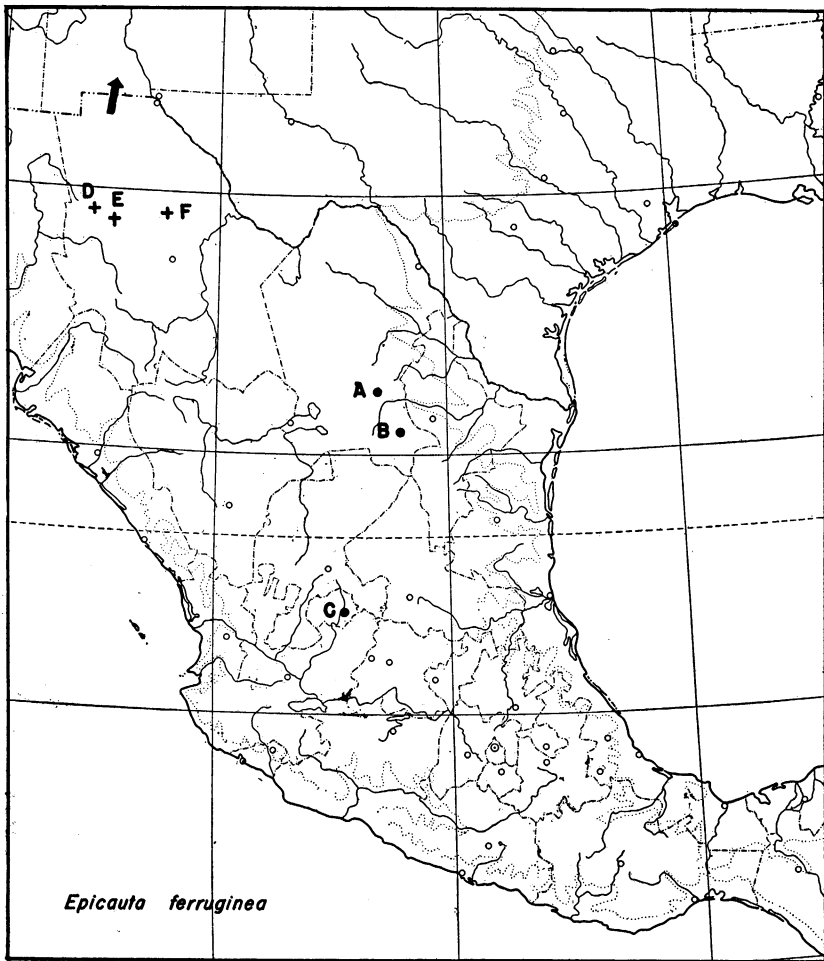


FIG. 7. Distribution of *Epicauta ferruginea* (Say).

juato: Irapuato (C). Jalisco: Guadalajara (D). Michoacán. Puebla: Matamoros Izúcar (E). Distrito Federal: Volcan Ixtaccihuatl (F). Vera Cruz.

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Durango: San Lucas (G), two; Cuencamé District, Verbanís (H), one; Pedricena (I), one. Zacatecas: Fresnillo (J), 24.

OTHER SPECIMENS EXAMINED: *Mexico*. Distrito Federal: Guadalupe (F), August 31, September 7, 1903 (W. L. Tower), 21.

All these specimens have the ground color black and the pubes-

cence either grayish white or tan; in one or two it is more tawny. The Guadalupe series seems grayer, but these are older specimens and may be dulled.

### ***Epicauta auricomans* Champion**

*Epicauta auricomans* CHAMPION, 1892, Biologia Centrali-Americana, vol. 4, pt. 2, pp. 424-425, pl. 19, figs. 22, 22a.

TYPE LOCALITY: Not given; here designated as Oaxaca, from original label on type.

RECORDED DISTRIBUTION: *Mexico*. Coahuila: Saltillo. Oaxaca: Almolonga.

Type examined in British Museum.

### ***Epicauta ferruginea* (Say)**

Figure 7

*Lytta ferruginea* SAY, 1824, Jour. Acad. Nat. Sci. Philadelphia, vol. 3, p. 298.

? *Lytta sartorii* HAAG, 1880, Deutsche Ent. Zeitschr., vol. 24, p. 56.

TYPE LOCALITY: "On the Missouri." Neotype locality, designated by Werner (1945, p. 466): Cambridge, Nebraska.

RECORDED DISTRIBUTION: *Mexico*. Coahuila: Monclova (A), Saltillo (B). Guerrero: Alvarez Mountains. Aguascalientes: Aguascalientes City (C). Mirador [not located].

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: Madera (D), five; 2 miles west of Matachic (E), one; Santa Clara (F), two.

One of the Madera specimens and the two from Santa Clara have the pubescence yellower, not so gray as in the others. These specimens are not so tawny as the majority of a series seen from Colorado.

### ***Epicauta fortis* Werner**

*Epicauta fortis* WERNER, 1943, Psyche, vol. 50, p. 69.

TYPE LOCALITY: Phoenix, Arizona.

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Coahuila: Guadalupe, two; La Gloria, south of Monclova, one.

This is the first record in Mexico of this small gray species. It somewhat resembles *ferruginea* but is broader and has the penultimate antennal segments as broad as long.

***Epicauta candidata* Champion**

*Epicauta candidata* CHAMPION, 1892, *Biologia Centrali-Americana*, vol. 4, pt. 2, p. 426.

TYPE LOCALITY: Villa Lerdo in Durango.

Type examined in British Museum.

***Epicauta callosa* LeConte**

*Epicauta callosa* LECONTE, 1866, *Smithsonian Misc. Coll.*, vol. 6, no. 167, p. 158.

TYPE LOCALITY: Nebraska.

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: La Cruz, one; Delicias, six; 10 miles south of Delicias, 17.

Although this species has not been reported before from Mexico, it has been taken about 200 miles to the northeast of Delicias, at Alpine, Texas (Werner, 1945, p. 469), and also south of Hereford, Arizona, a few miles from the border. Two of the specimens have grayish yellow pubescence, but the others are of a brighter, more tawny color.

***Epicauta sericans* LeConte**

Figure 8

*Epicauta sericans* LECONTE, 1866, *Smithsonian Misc. Coll.*, vol. 6, no. 167, p. 158.

TYPE LOCALITY: Kansas.

RECORDED DISTRIBUTION: "Along the Gulf as far as Vera Cruz" (Werner, in letter).

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: Madera (A), one. Coahuila: 192 kilometers south of Piedras Negras (B), six. Durango: Palos Colorados (C), 10; 6 miles northeast of El Salto (D), one. San Luis Potosí: Valles (E), July 21, 1946 (J. and D. Pallister), 11. Distrito Federal: Guadalupe (F), August 31, 1903 (W. L. Tower), one.

With the exception of one of the Piedras Negras specimens, the northern specimens appear browner than, not so gray as, the series from Valles. Under a lighted microscope their pubescence is seen to be yellow, whereas the Valles specimens and the one from Guadalupe have white pubescence. Werner thinks the northern ones may be a distinct subspecies.

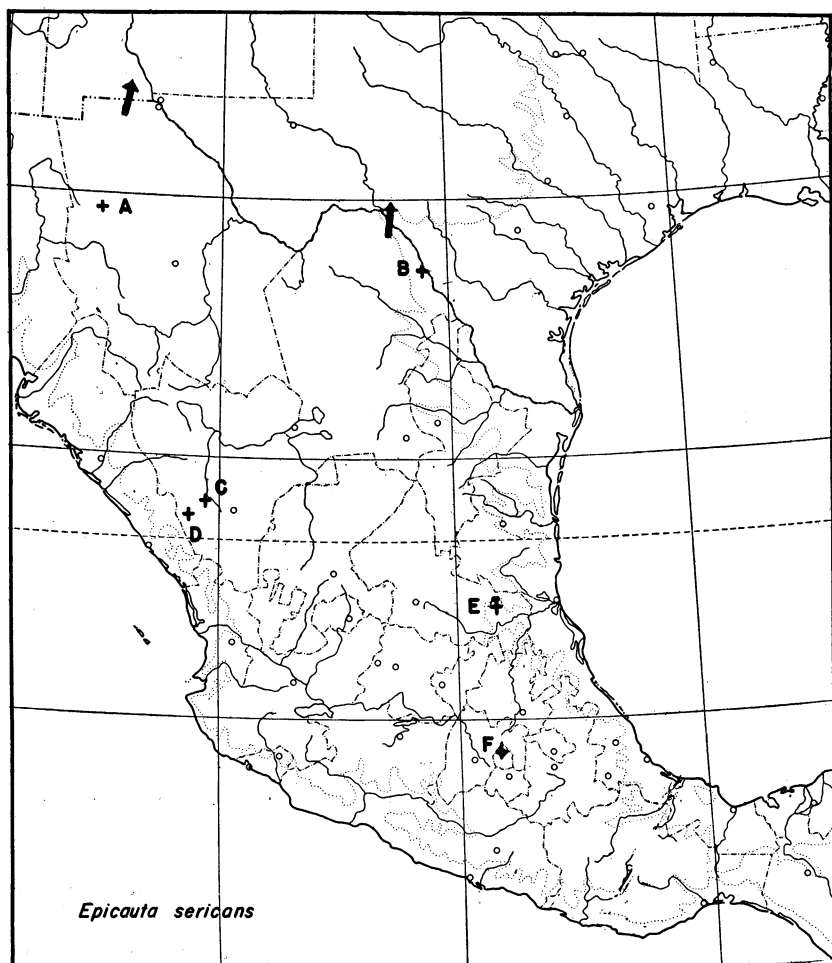


FIG. 8. Distribution of *Epicauta sericans* LeConte.

### ***Epicauta emarginata* Champion**

*Epicauta emarginata* CHAMPION, 1892, Biologia Centrali-Americana, vol. 4, pt. 2, pp. 426-427, pl. 19, fig. 24.

TYPE LOCALITY: San Isidro in Coahuila.

Type examined in British Museum.

### ***Epicauta singularis* Champion**

*Epicauta singularis* CHAMPION, 1892, Biologia Centrali-Americana, vol. 4, pt. 2, p. 427, pl. 19, fig. 25.

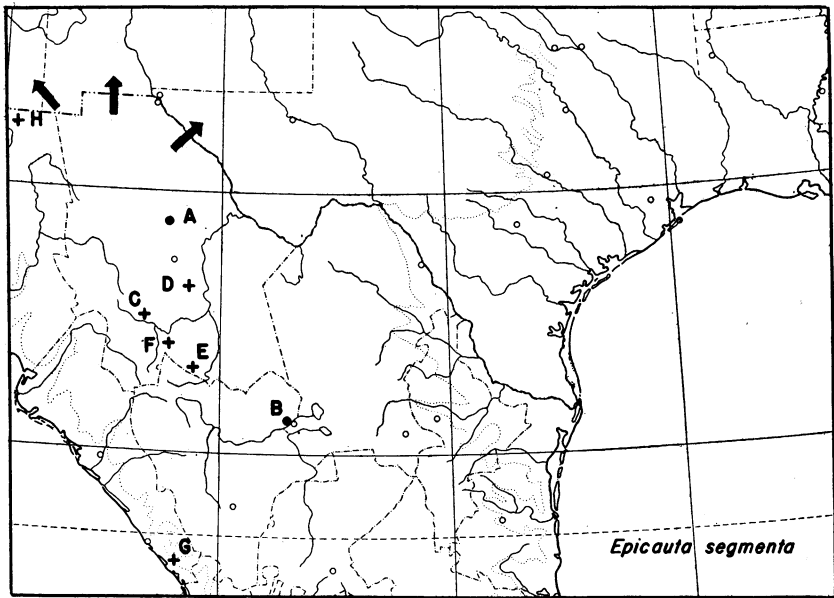


FIG. 9. Distribution of *Epicauta segmenta* (Say).

TYPE LOCALITY: Not given; here designated as Nuevo León, Monterrey, from original label on type.

RECORDED DISTRIBUTION: *Mexico*. Coahuila: Saltillo. Nuevo León: Monterrey.

Type examined in British Museum.

### ***Epicauta segmenta* (Say)**

Figure 9

*Lytta segmenta* SAY, 1824, Jour. Acad. Nat. Sci. Philadelphia, vol. 3, p. 303.

*Lytta segmentata* LECONTE, 1853, Proc. Acad. Nat. Sci. Philadelphia, vol. 6, p. 342.

*Apterospasta valida* LECONTE, 1858, Jour. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 4, p. 39.

*Macrobasis segmentata*, HORN, 1873, Proc. Amer. Phil. Soc., vol. 13, p. 93.

*Macrobasis cinctothorax* DUGÈS, 1889, Ann. Mus. Michoacano, vol. 2, p. 56.

TYPE LOCALITY: "Purgatory River of the Arkansa." Neotype locality designated by Werner (1945, p. 491): Fort Hayes, Kansas.

RECORDED DISTRIBUTION: *Mexico*. Chihuahua: Santa Clara (A). Durango: Villa Lerdo (B).

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: Valle de Olivos (C), one; Delicias (D), three; 10 miles south of Delicias, one; Catarinas (E), six, June 18, 1947 (Bradt), one; Parral (F), one. Sinaloa: Escuinapa (G) (J. H. Batty), nine. Sonora: (C. Lumholtz), one; Naco (H), 5000 feet, August 15, 1949 (Bradt), one.

In one of the Catarinas specimens the second and third antennal segments on the right side are of the same length, while on the left side the third segment is longer, as is normal.

These are the fully winged form of this dimorphic species. Champion's six specimens were also fully winged (1892, p. 401).

### ***Epicauta sublineata* (LeConte)**

*Lytta sublineata* LECONTE, 1853, Proc. Acad. Nat. Sci. Philadelphia, vol. 6, p. 447.

*Macrobasis sublineata*, HORN, 1873, Proc. Amer. Phil. Soc., vol. 13, p. 94.

*Macrobasis megacephala* CHAMPION, 1892, Biologia Centrali-Americana, vol. 4, pt. 2, p. 402, pl. 18, figs. 24, 24a.

TYPE LOCALITY: Eagle Pass, Texas.

RECORDED DISTRIBUTION: *Mexico*. Coahuila: Monclova.

No specimens examined.

Champion's two specimens of *megacephala* had the elytra black with the tip white and no lines.

### ***Epicauta lauta* (Horn)**

*Macrobasis lauta* HORN, 1885, Trans. Amer. Ent. Soc., vol. 12, pp. 108-109.

*Epicauta compressicollis* CHAMPION, 1892, Biologia Centrali-Americana, vol. 4, pt. 2, pp. 427-428, pl. 19, fig. 26.

TYPE LOCALITY: Arizona.

RECORDED DISTRIBUTION: *Mexico*. Durango: Villa Lerdo.

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: 10 miles south of Delicias and Delicias, two; 25 and 42 miles southwest of Camargo, four. Coahuila: San Pedro de Colonias, one. Durango: Pedricena, two.

This species had not been reported from Mexico before as *lauta*, but Werner (in letter) stated that Champion's *compressicollis* from Villa Lerdo was an "undoubted synonym."

The above nine specimens do not vary noticeably in color or pubescence. The apex of the femora and the entire tibiae and tarsi of the middle and hind legs are black, contrasting with the general reddish coloration. The ground color of the body below



is reddish, not black as in *polingi* and *diversicornis*, with black bands at the apex of each abdominal segment.

The Durango and Coahuila localities are quite close to each other; those of Chihuahua are nearly a third of the way north to Arizona.

### ***Epicauta tenella* (LeConte)**

*Lytta tenella* LeConte, 1858, Jour. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 4, p. 23.

*Macrobasis tenella*, Horn, 1873, Proc. Amer. Phil. Soc., vol. 13, p. 94.

TYPE LOCALITY: Llano Estacado (western Texas or eastern New Mexico).

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: Delicias, 65; 10 miles south of Delicias, two.

This is the first recorded occurrence of *tenella* in Mexico. The series is rather uniform. Some specimens have a darker suffusion on the reddish tan ground color of the thorax, but the contrast of the red head and thorax with the gray elytra is almost always readily visible.

### ***Epicauta purpurea* (Horn)**

*Macrobasis purpurea* Horn, 1885, Trans. Amer. Ent. Soc., vol. 12, pp. 108, 110.

TYPE LOCALITY: Arizona.

RECORDED DISTRIBUTION: *Mexico*. Durango: Ventanas.

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Durango: Palos Colorados, one.

This specimen, a male, agrees with Champion's redescription (1892, pp. 397-398) of *purpurea*, which he gave because of some slight discrepancies with Horn's Arizona specimen.

Ventanas is near the western border of central Durango; Palos Colorados is somewhat southward, not far from Durango City.

### ***Epicauta polingi* Werner**

Figure 10

*Epicauta polingi* Werner, 1943, Psyche, vol. 50, pp. 71-72.

*Macrobasis diversicornis*, Champion, 1892, Biologia Centrali-Americana, vol. 4, pt. 2, p. 399 (in part).

TYPE LOCALITY: Davis Mountains, Texas.

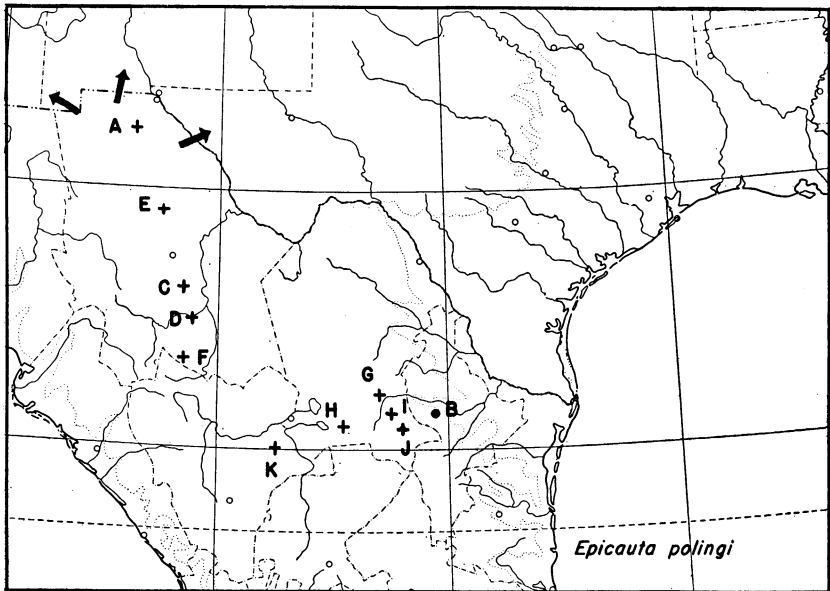


FIG. 10. Distribution of *Epicauta polingi* Werner.

RECORDED DISTRIBUTION: *Mexico*. Nuevo León: Monterrey (B).

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: Samalayuca (A), one; Delicias (C), 52; 10 miles south of Delicias, 11; 20 miles southwest of Camargo (D), one; Ojo Laguna (E), one; Catarinas (F), one. Coahuila: La Gloria, south of Monclova (G), one; Paila (H), one; Guadalupe (I), one; 5 miles north of Saltillo (J), one. Durango: Pedricena (K), two.

From the same locality (Delicias) there are about a dozen specimens measuring only 10 to 13 mm., while the largest reach 18 to 20 mm. The ground color of the head and thorax is black in all, but the pubescence is occasionally yellow instead of the usual gray white. The black ground color serves to distinguish the females from the females of *diversicornis* (Sinaloa and southern Mexico) and *arizonica* (Sonora), in both of which the ground color is reddish.

Some or all of Champion's northern records of *diversicornis* (Haag) undoubtedly refer to *polingi*, as Werner has made a study of the former (Psyche, 1949a, pp. 74-80) and he finds it to be a

more southern species. Champion's records were Chihuahua City, Chihuahua, and Villa Lerdo and Ventanas in Durango.

***Epicauta beckeri* (Dugès)**

*Macrobasis bekeri* [sic] DUGÈS, 1889, Ann. Mus. Michoacano, vol. 2, pp. 113-114.

TYPE LOCALITY: Canelas in Durango.

RECORDED DISTRIBUTION: *Mexico*. Durango: Canelas. Nayarit: Tepic. Jalisco: Colima Vulcano (Werner, 1949a, p. 76).  
No specimens examined.

***Epicauta longicollis* (LeConte)**

*Lytta longicollis* LECONTE, 1853, Proc. Acad. Nat. Sci. Philadelphia, vol. 6, p. 343.

*Macrobasis longicollis*, HORN, 1873, Proc. Amer. Phil. Soc., vol. 13, p. 90.

TYPE LOCALITY: Santa Fe, New Mexico.

RECORDED DISTRIBUTION: *Mexico*. Northern Sonora.

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: Ojo Laguna, five; 182 kilometers north of Chihuahua, 30; 10 miles south of Delicias, one.

Champion had seen only three specimens of this species. It is quite similar to *albida* from Texas, but lacks the dark lines on the thorax and the light-colored antennae. Some of the above specimens have most of the gray yellow pubescence worn off, resulting in a mottled appearance.

The new localities are in central eastern Chihuahua.

***Epicauta atrivittata* (LeConte)**

*Lytta atrivittata* LECONTE, 1854 (1856), Proc. Acad. Nat. Sci. Philadelphia, vol. 7, p. 224.

*Macrobasis atrivittata*, HORN, 1873, Proc. Amer. Phil. Soc., vol. 13, pp. 90-91.

TYPE LOCALITY: "San Diego trip."

RECORDED DISTRIBUTION: *Mexico*. Tamaulipas: Tlahualilo (Werner, 1945, p. 510).

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: 20 miles southwest of Camargo, one; 10 miles south of Delicias, 21.

This handsome and unmistakable species must be, as Werner (1945, p. 510) says, "quite scarce," since so few records of it have been reported and Champion did not have it for the "Biologia."

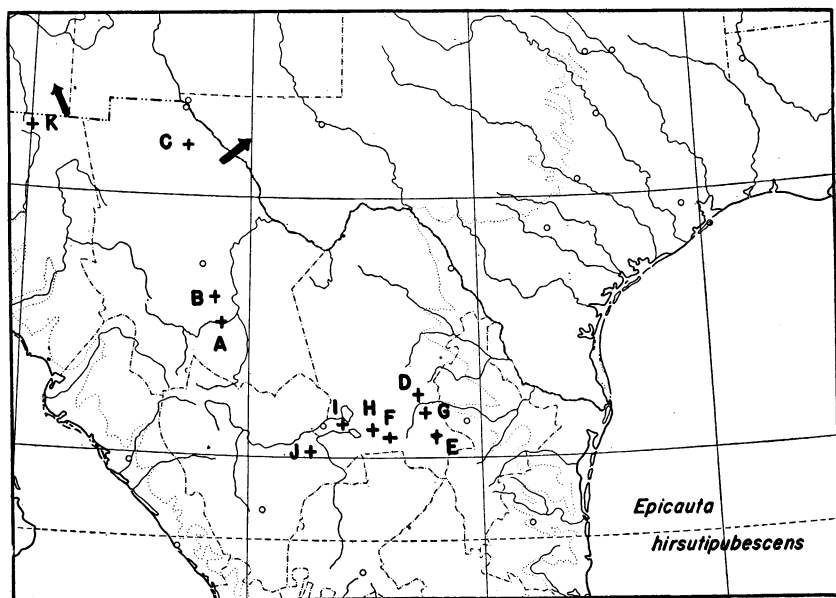


FIG. 11. Distribution of *Epicauta hirsutipubescens* (Maydell).

The state of Tamaulipas is separated from Chihuahua by both Coahuila and Nuevo León, and *atrivittata* no doubt occurs between. Tlahualilo is in the extreme southwestern part of Tamaulipas.

The above series is quite uniform in its elytral markings, but the amount of black on the thorax varies somewhat.

### *Epicauta hirsutipubescens* (Maydell)

Figure 11

*Macrobasis hirsutipubescens* MAYDELL, 1934, Trans. Amer. Ent. Soc., vol. 60, p. 334.

*Epicauta virgulata*, WERNER, 1945, Bull. Mus. Comp. Zool., vol. 95, p. 512 (in part).

TYPE LOCALITY: Texas.

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: 20 and 25 miles southwest of Camargo (A), 20; 42 miles southwest of Camargo, two; Delicias (B), two; Samalayuca (C), one. Coahuila: La Gloria, south of Monclova (D), one; 5 miles north of Saltillo (E), 27; Cabos (F), two; Guadalupe (G),

eight; Paila (H), one; 25 miles southeast of San Pedro de Colonias (I), 42. Durango: Pedricena (J), 10. Sonora: Naco (K), 5000 feet, August 15, 1949 (Bradt), four.

Werner (1949b, p. 110) separated *hirsutipubescens* from *virgulata*, with which it had been synonymized. Neither species has been recorded from Mexico before.

The above specimens are evidently more similar to Werner's west Texas *hirsutipubescens*, since the ground color in all cases is black, not brown as in his southeastern Arizona specimens. In these Mexican specimens the discal stripe on the elytra is not always noticeable. The pubescence is either tan or whitish gray, the number of each in the three states being as follows:

COLOR OF PUBESCENCE IN *hirsutipubescens*

	Tan	Gray
Chihuahua	21	3
Coahuila	67	14
Durango	6	4

The four specimens from Naco, which is virtually southeastern Arizona, have the ground color black, pubescence whitish gray, and the discal stripe very distinct.

### ***Epicauta linearis* (LeConte)**

*Lytta linearis* LECONTE, 1858, Jour. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 4, p. 23.

*Macrobasis linearis*, HORN, 1873, Proc. Amer. Phil. Soc., vol. 13, p. 94.

TYPE LOCALITY: Llano Estacado (western Texas or eastern New Mexico).

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Durango: Pedricena, one.

There have been only a few records of this species in the United States as it is "apparently a very rare species" (Werner, 1945, p. 514). This male is the first and only record from Mexico. Pedricena is in central Durango, near the eastern border.

### ***Epicauta*, species unknown**

Two black specimens of *Epicauta* were taken at Encino in northern Durango on the 1947 expedition. They were seen by Werner who said they were not *neglecta* Haag, not *nigra* Dugès, and not *pacifica* Maydell, but possibly a new species.

**Epicauta**, species unknown

Two specimens from Catarinas in southern Chihuahua and five from Encino in northern Durango. These seven specimens agree with Champion's description of *cupreola* Dugès in the "Biologia" (1892, p. 408), but Mr. Werner tells me that he has seen the type of *cupreola* (from Guanajuato) and it is not the same as these specimens. They seem to differ from *rufipedes* (Dugès) only in the black femora and under side and in being smaller and darker above. They also lack the median line of denser pubescence on each elytron, but this is often lacking in *rufipedes*. The hind tibial spurs seem to be the same as in *rufipedes*.

GENUS **PLEUROPOMPHA** LECONTE

*Pleuropompha* LECONTE, 1862, Smithsonian Misc. Coll., vol. 3, p. 273.

There are two species in this genus, both of which are here recorded from north central Mexico.

KEY TO THE SPECIES OF *Pleuropompha* IN NORTH CENTRAL MEXICO

Each elytron with four raised ribs, or costae, not counting suture . . . . . *costata*

Each elytron with three raised costae, not counting suture . . . . . *tricastata*

**Pleuropompha costata** (LeConte)

## Figure 12

*Lytta costata* LECONTE, 1854, Proc. Acad. Nat. Sci. Philadelphia, vol. 7, p. 84.

TYPE LOCALITY: "Frontera, Rio Grande" (New Mexico).

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: 20 and 25 miles southwest of Camargo (A), 16; 42 miles southwest of Camargo, one; Primavera (B), three; 15 miles east of Parral (C), three. Durango: Villa Madero (D), one.

Neither Champion nor Werner reported this species from Mexico. Six of the above 24 specimens are 14 mm. or less, but the majority are larger, the largest two being 23 mm. (Camargo and Villa Madero). The pubescence is definitely white, except for two specimens in which it is slightly yellowish. The elytral intervals appear gray because of the black ground color showing through the sparse white hairs. The white stripes of the costae are very noticeable.

This and the following species, *tricastata*, occupy about the same range in Mexico, as they do in the United States (Werner, 1943).

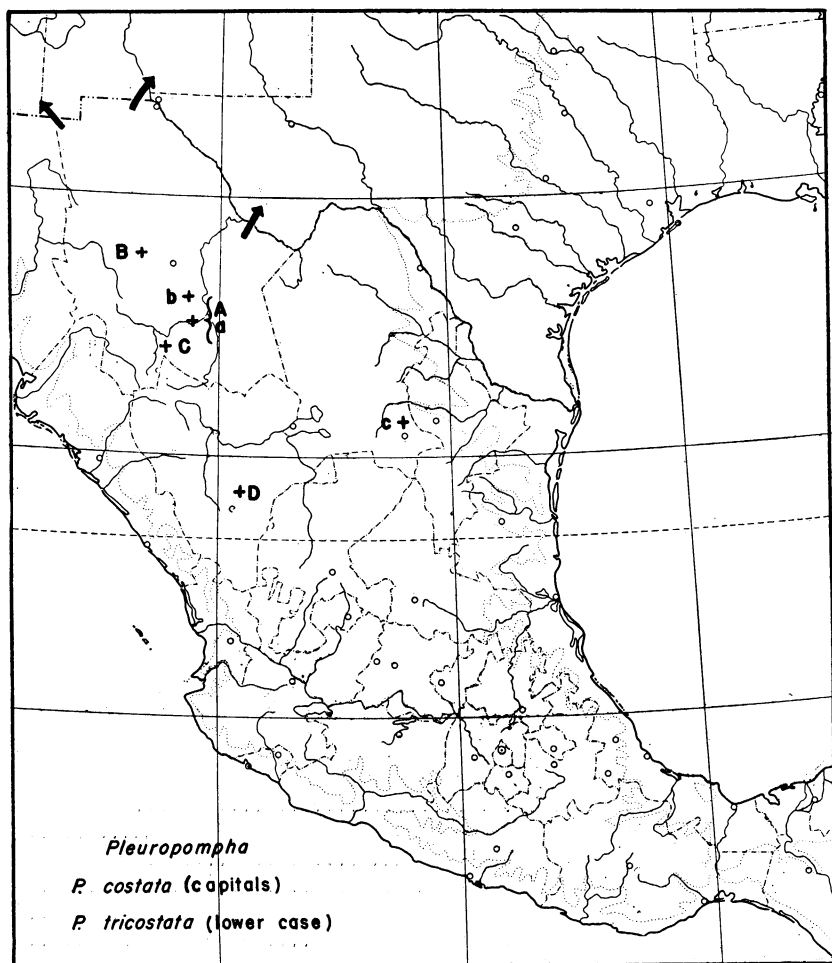


FIG. 12. Distribution of *Pleuropompha costata* (LeConte) and *P. tricostata* Werner.

### *Pleuropompha tricostata* Werner

Figure 12

*Pleuropompha tricostata* WERNER, 1943, Psyche, vol. 50, pp. 32-33.

TYPE LOCALITY: Presidio, Texas.

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: 42 miles southwest of Camargo (a), one; Delicias (b), 10. Coahuila: Guadalupe (c), 22.

This species is generally much smaller and narrower than *costata*, the largest one of the above series being 15 mm. (Guadalupe) and the rest under 15 mm. The pubescence is more evenly distributed than in *costata* and is gray white to yellow, eight of the specimens appearing yellow to the naked eye and 25 appearing gray.

#### GENUS *LYTTA* FABRICIUS

*Lytta* FABRICIUS, 1775, Systema entomologiae, p. 260.

*Cantharis* GEOFFROY, 1762, Histoire abrégée des insectes, vol. 1, p. 339; *nom. preoccup.*

*Tetraolytta* PIC, 1919, L'Echange, vol. 35, no. 391, p. 3, footnote.

*Picella* DENIER, 1933, Bol. Mens. Ministerio Agr. Nac., vol. 32, no. 1, p. 37, footnote. New name for *Tetraolytta* Pic.

The genus *Lytta*, as are *Epicauta*, *Zonitis*, and *Meloe*, is found in both the New and the Old World. In the New World about one-third of the species occur in South America, the rest in the United States and Mexico. Of the 28 recorded species from Mexico, only six have so far been taken in the north central region.

The larvae are parasitic in the nests of bees.

The so-called Spanish fly, *Lytta vesicatoria* (Linnaeus), is a member of this genus. It is a large iridescent green and blue species common in much of Europe.

#### KEY TO THE SPECIES OF *Lytta* IN NORTH CENTRAL MEXICO

1. Outer spur on hind tibiae slender, stick-like, same size as inner spur; large, black..... *suavissima*  
Outer spur on hind tibiae broader, much stouter than inner spur..... 2
2. Entirely dull or brassy black above..... *plumbea*  
Black and yellow above, or all yellow..... 3
3. Elytra yellow or yellow with black markings..... 4  
Elytra black..... 5
4. Elytra shiny, base without black marks; male without any elongated process on last dorsal segment; small (about 10 mm. or less)..... *biguttata*  
Elytra dull, opaque, base with two black spots or black band; male with last dorsal segment prolonged into long process; usually large (about 15 mm. or more)..... *quadrimaculata*
5. Head and thorax red; male with fourth segment of antennae dilated, fifth distorted, sixth normal..... *mutilata*  
Head and thorax mostly black; male with antennal segments 4 to 6 slightly thickened..... *intricata*

#### *Lytta mutilata* (Horn)

*Cantharis (Lytta) mutilata* HORN, 1875, Trans. Amer. Ent. Soc., vol. 5, p. 155.

TYPE LOCALITY: Arizona.



RECORDED DISTRIBUTION: *Mexico*. Coahuila: Monclova. Durango: Villa Lerdo.  
No specimens examined.

***Lytta quadrimaculata* (Chevrolat)**

Figure 13

*Cantharis quadrimaculata* CHEVROLAT, 1834, Coléoptères du Mexique, fasc. 4, no. 57.

*Cantharis octomaculata* PEÑAFIEL Y BARRANCO, 1866, Gaceta Méd. Mexico, vol. 2, p. 225, pl. 1.

*Cantharis fasciolata* JIMÉNEZ, 1866, Gaceta Méd. Mexico, vol. 2, p. 253, 1 pl.

*Cantharis bifasciatus* DUGÈS, 1870, La Natureza, vol. 1, p. 106, pl. 1, fig. 6.

*Cantharis alemani* DUGÈS, 1889, Ann. Mus. Michoacano, vol. 2, p. 106.

TYPE LOCALITY: Orixaba [Orizaba].

RECORDED DISTRIBUTION: *Mexico*. Durango: Villa Lerdo (A). San Luis Potosí. Aguascalientes: Aguascalientes City (B). Jalisco: Sayula (C), Guadalajara (D). Colima: Zapotlán (E). Michoacán: Morelia (F), Tacámbaro (G). Nayarit: El Puente (H). Puebla: Matamoros Izúcar (I), Esperanza (J). Distrito Federal: Mexico City (K). Mexico: Toluca (L). Oaxaca: Almolonga (M). Orizaba. Vera Cruz: Perote (N).

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Durango: San Lucas (O), one. Jalisco: Zopopam (P), September 11, 1903 (W. L. Tower), three. Puebla: Puebla (Q), August, 1903 (W. L. Tower), one. Hidalgo: Pachuca (R), May 23, 1937 (M. A. Embury), one. Vera Cruz: Jalapa (S), two.

OTHER SPECIMENS EXAMINED: *Mexico*. San Luis Potosí (Dr. Palmer), two. Jalisco: Guadalajara (D), September, 1903 (W. L. Tower), eight. Puebla: Esperanza (J) (Hoege), one. Distrito Federal: Mexico City (K) (Dr. Palmer), one; the following specimens are from the W. L. Tower collection; the localities are under (K) as they are virtually part of Mexico City: Guadalupe, September, 1903, two; Tlapam, July, September, 1903, eight; San Angel, July, August, 1903, two; Santa Fé, September 8, 29, 1903, two; Tlalenpautla, September, 1903, one. Mexico: Toluca (L), August, 1903 (W. L. Tower), 110.

The markings on the above specimens are quite variable, as is also the size. The smallest specimen (Durango) is only 9 mm., the largest (Distrito Federal) is nearly 25 mm. The thorax usually has two black spots of varying size in the center and two smaller ones on the sides towards the front. In some specimens the

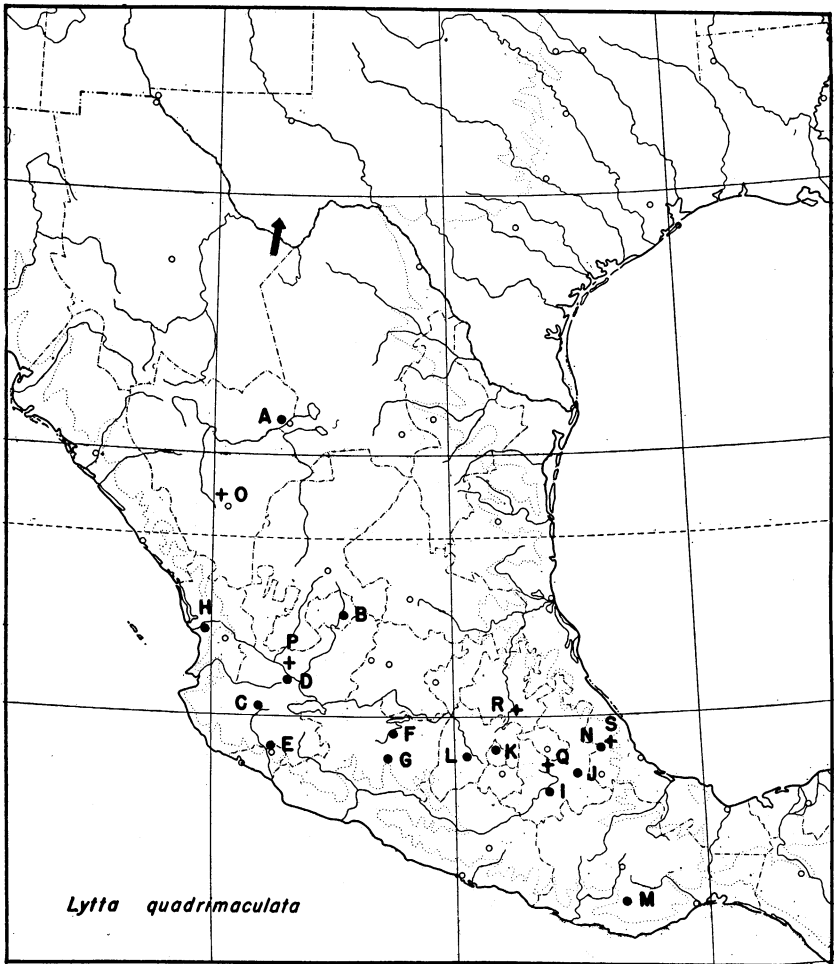


FIG. 13. Distribution of *Lytta quadrimaculata* (Chevrolat).

center spots become elongate into two stripes that reach to the base of the thorax, the stripes occasionally merging across the basal half, as in one of the specimens from San Luis Potosí. This specimen also has more black at the base and apex of the elytra than do any others except the small individual from Durango.

The amount of black on the elytra varies in size and shape, but not geographically. A specimen from Jalisco lacks the basal

markings entirely, but the apical marks are large, almost reaching the apex. The black marks may each cover about a third of the elytra or very much less.

The two specimens from San Luis Potosí and one each from Esperanza and Mexico City are from Godman and were seen by Champion for the "Biologia."

### ***Lytta intricata* (Champion)**

*Cantharis intricata* CHAMPION, 1892, Biologia Centrali-Americana, vol. 4, pt. 2, pp. 441-442, pl. 20, figs. 18, 18a.

TYPE LOCALITY: Villa Lerdo in Durango.

Type examined in British Museum.

### ***Lytta plumbea* Haag**

*Lytta plumbea* HAAG, 1880, Deutsche Ent. Zeitschr., vol. 24, p. 38.

TYPE LOCALITY: Mexico.

RECORDED DISTRIBUTION: *Mexico*. Durango: Canelas.

No specimens examined.

### ***Lytta biguttata* LeConte**

Figure 14

*Lytta biguttata* LECONTE, 1853, Proc. Acad. Nat. Sci. Philadelphia, vol. 6, p. 332.

*Cantharis biguttata*, HORN, 1873, Proc. Amer. Phil. Soc., vol. 13, p. 109.

*Cantharis bivirgata* DUGÈS, 1877, La Nature, vol. 5, pp. 140-141.

*Cantharis alfredi* DUGÈS, 1889, Ann. Mus. Michoacano, vol. 2, p. 98.

TYPE LOCALITY: Santa Fe, New Mexico.

RECORDED DISTRIBUTION: *Mexico*. Durango: Villa Lerdo (A). Guanajuato: Silao (B), Tupátaro (C).

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Coahuila: 5 miles north of Saltillo (D), 46; Guadalupe (E), 58; La Rosa (F), five; Paila (G), three; Cabos (H), one; La Gloria, south of Monclova (I), one; San Pedro de Colonias (J), two; 25 miles southeast of San Pedro, one. Durango: San Lucas (K), one; Cuencamé District, Yerbánís (L), one.

In the typical form of this species there are, according to Champion (1892, pp. 445-446), two black oval spots on the elytra about one-quarter from the apex and two small black spots on the thorax. The Saltillo series of 46 specimens are so marked (although the size of the elytral spots varies greatly), except for six specimens

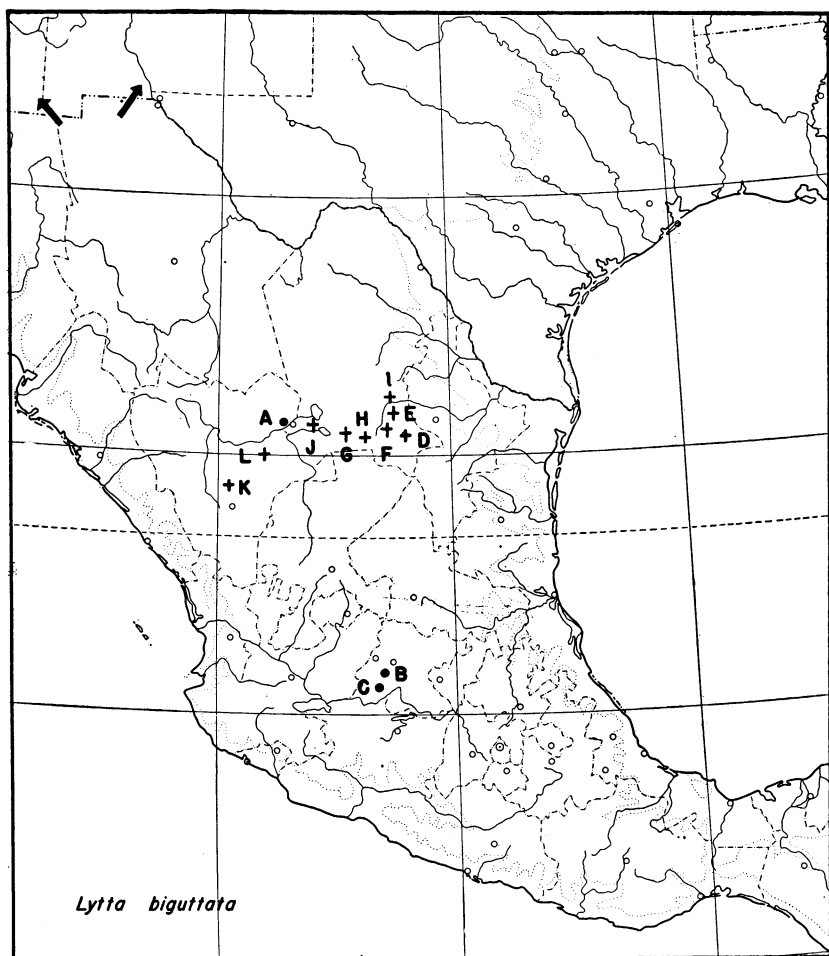


FIG. 14. Distribution of *Lytta biguttata* LeConte.

without any elytral marks and two in which they are so small and faint as to be scarcely visible. The Guadalupe specimens (58) have nine individuals with immaculate elytra and four with the spots scarcely visible; one of the immaculate ones and two others lack the thoracic spots. One from La Rosa has the elytra without marks, one has the black spots covering most of the apical half of the elytra. One of the San Pedro de Colonias specimens also has immaculate elytra.

A specimen from San Pedro and the one from Yerbanís have the

thoracic spots prolonged into stripes reaching the base of the thorax, a variation that Champion found in *biguttata* from Guanajuato and one that occurs also in *Lytta quadrimaculata*.

Below, the color varies from black legs to black and yellow, or yellow legs, from black abdomen to black with the last one or two or more segments yellow. The specimens with no black on the elytra usually have less black below.

### *Lytta suavissima* (Wellman)

*Cantharis gentilis* HORN, 1882-1883, Trans. Amer. Ent. Soc., vol. 10, p. 311.

*Lytta suavissima* WELLMAN, 1910, Deutsche Ent. Zeitschr., p. 24. New name for *L. gentilis* Horn, nec Frivaldsky, 1877.

TYPE LOCALITY: New Mexico and Arizona.

RECORDED DISTRIBUTION: *Mexico*. Durango: Canelas.

No specimens examined.

### GENUS *TETRAONYX* LATREILLE

*Tetraonyx* LATREILLE, 1805, in Humboldt and Bonpland, Recueil d'observations de zoologie, pp. 237-240, pl. 16, fig. 7.

*Picnoseus* SOLIER, 1851, in Gay, Historia física y política de Chile, Zoologia, vol. 5, p. 281.

*Iodema* PASCOE, 1862, Jour. Ent., vol. 1, p. 57, pl. 3, fig. 1.

This is a large, New World genus with most of the species occurring in South America and southern Mexico. Two species have been taken in north central Mexico.

#### KEY TO THE SPECIES OF *Tetraonyx* IN NORTH CENTRAL MEXICO

Head entirely yellow; surface shining.....*fulvus*  
Head piceous in front; surface opaque.....*frontalis*

### *Tetraonyx fulvus* LeConte

Figure 15

*Tetraonyx fulva* LECONTE, 1853, Proc. Acad. Nat. Sci. Philadelphia, vol. 6, p. 344.

*Tetraonyx rufus* DUGÈS, 1870, La Naturaleza, vol. 1, pp. 105-106, pl. 1, fig. 7.

TYPE LOCALITY: New Mexico.

RECORDED DISTRIBUTION: *Mexico*. Coahuila: Parras (a). Durango: Villa Lerdo (b). Guanajuato: Irapuato (c), León (d).

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: Delicias (e), 40. Durango: Cuencamé District, Verbanís (f), three.

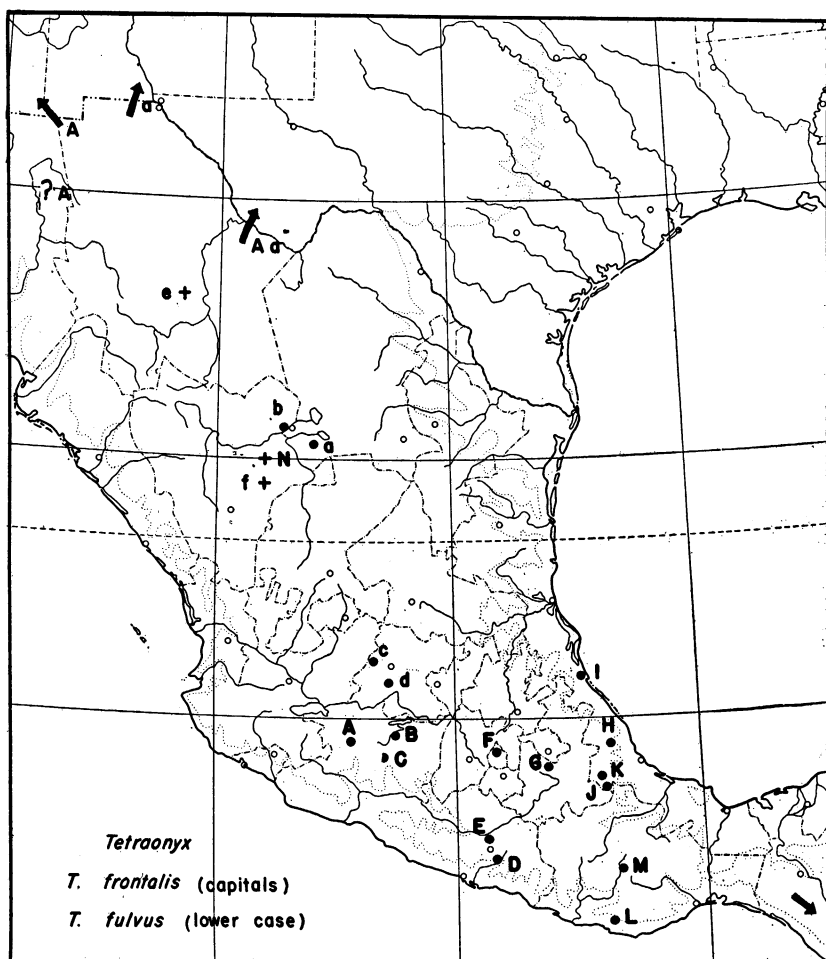


FIG. 15. Distribution of *Tetraonyx fulvus* LeConte and *T. frontalis* Chevrolat.

The specimens from Durango do not seem to differ from the Chihuahua specimens. LeConte said the feet were "not black," but all these have the tarsi black, also the apex of the tibiae and femora, the rest of the legs being yellow.

### ***Tetraonyx frontalis* Chevrolat**

Figure 15

*Tetraonix* [sic] *frontalis* CHEVROLAT, 1834, Coléoptères du Mexique, fasc. 1, no. 14.

*Tetraonyx femoralis* DUGÈS, 1870, La Nature, vol. 1, p. 104, pl. 1, fig. 8.

TYPE LOCALITY: Orizaba.

RECORDED DISTRIBUTION: *Mexico*. Northern Sonora. Michoacán: Uruapan (A), Morelia (B), Tacámbaro (C). Guerrero: Mochitlán (D), Amula (E), Xautipa [not located]. Distrito Federal: Mexico City (F). Puebla: Puebla (G). Guanajuato. Vera Cruz: Jalapa (H), Tuxpan (I), Orizaba (J), Córdoba (K). Oaxaca: Juquila (L), Oaxaca (M). *Guatemala*. El Tumbador, San Jerónimo.

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Durango: Cuencamé District, Yerbán's (N), one.

OTHER SPECIMENS EXAMINED: *Mexico*. Guerrero: Amula (E), 6000 feet, August (H. H. Smith), two. Distrito Federal: Santa Fé (F), September 29, 1903 (W. L. Tower), two. Vera Cruz: Jalapa (H) (W. Schaus), four.

The Durango and Santa Fé (Mexico City) specimens have the median third of the middle and hind femora and the basal two-thirds of the front femora yellow as described for *femoralis*. The Jalapa and Guerrero specimens have the entire legs black or piceous. Champion (1892, p. 393) states that the variety "*femoralis* has been received from two localities [Mexico City and Jalapa] in company with the typical form."

#### GENUS PYROTA DEJEAN

*Pyrota* DEJEAN, 1833, Catalogue des coléoptères, ed. 2, p. 224.

According to Denier (1934), there are 43 species of *Pyrota*, all in North and South America, a little more than half being found in the United States and Mexico. Nine of the 15 Mexican species occur in the region covered by this study.

#### KEY TO THE SPECIES OF *Pyrota* IN NORTH CENTRAL MEXICO

1. Elytra black with suture and side margins narrowly yellow or red . . . . . 2  
    Elytra either entirely yellow or yellow with black spots or bands . . . . . 3
2. Base of each elytron with incurved longitudinal yellow stripe, apex with yellow subapical spot . . . . . *insulata*  
    Base of each elytron with transverse yellow stripe, apex margined with yellow but without spot . . . . . *akhurstiana*
3. Elytra without any markings . . . . . 4  
    Elytra with black markings . . . . . 5
4. Thorax with four black spots; antennae short, stout . . . . . *quadrinervata*  
    Thorax with black cross; antennae rather slender . . . . . *nobilis*
5. Hind tibiae with spurs slender, nearly equal; maxillary palpi with apical

- segment narrow, elongate, not concave below (male and female).....*rugulipennis*
- Hind tibiae with outer spur spoon shaped, much larger than inner; male with apical segment of maxillary palpi broad, either pear shaped or strongly transverse, and concave below, female with it narrow, elongate, not concave below.....6
6. Elytra with three broad transverse bands of about equal size.....7
- Elytra with two or three transverse bands, often broken into spots, but the postmedian band or spots larger than the basal band or spots, or merging with them.....8
7. Male (palpi greatly enlarged) with third antennal segment equal to or shorter than fourth.....*mylabrina*
- Male (palpi greatly enlarged) with third antennal segment longer than fourth.....*palpalis*
8. Elytra with black lunate mark or spot at extreme apex; thorax with only two black spots; eyes broader, reaching about halfway to back of head (seen from side).....*punctata*
- Elytra without any mark at extreme apex; thorax with four black spots (rarely the two side spots lacking); eyes narrower, reaching less than half-way to back of head.....*postica*

### ***Pyrota akhurstiana* Horn**

*Pyrota akhurstiana* HORN, 1891, Trans. Amer. Ent. Soc., vol. 18, p. 44, pl. 1, fig. 9.

TYPE LOCALITY: Tucson, Arizona.

RECORDED DISTRIBUTION: *Mexico*. Northern Mexico.

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: Delicias, 193; 10 miles south of Delicias, 200; Valle de Olivos, 12; 20 miles southwest of Camargo, three; 42 miles southwest of Camargo, one; Santa Bárbara District, Santa Bárbara, 24; 63 miles west of Santa Bárbara, 14.

Champion had seen but one specimen of this species which was taken by the expedition in 1947 in such abundance. The red margins on the suture and on the border of the elytra are wider in some specimens, but always present. The red spot at the base of the thorax is lacking or reduced in many specimens from different localities; in two specimens (10 miles south of Delicias) the basal and apical marks are fused into a red stripe; occasionally there are extra spots in front of the lateral mark. The size range is from 15 to nearly 30 mm.

The new localities are in southern Chihuahua.



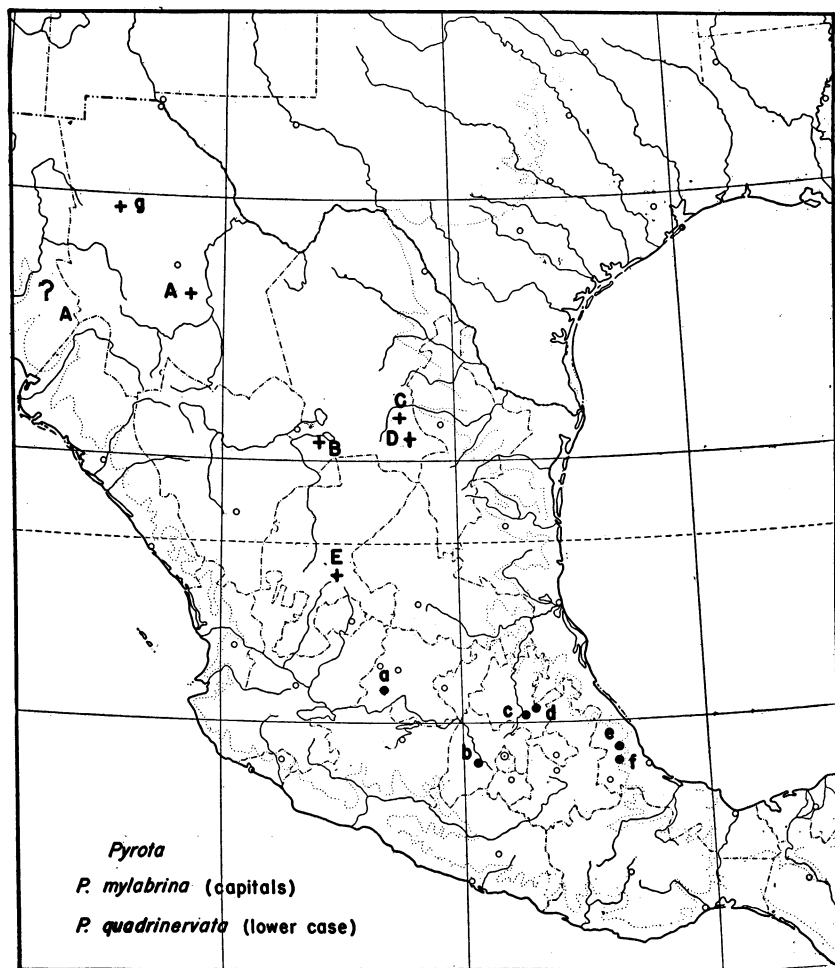


FIG. 16. Distribution of *Pyrota mylabrina* Chevrolat and *P. quadrinervata* (Herrera and Mendoza).

### ***Pyrota insulata* (LeConte)**

*Lytta insulata* LeConte, 1858, Jour. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 4, p. 22.

TYPE LOCALITY: Texas.

RECORDED DISTRIBUTION: *Mexico*. Durango: Villa Lerdo.

No specimens examined.

***Pyrota mylabrina* Chevrolat**

Figure 16

*Pyrota mylabrina* CHEVROLAT, 1834, Coléoptères du Mexique, fasc. 3.

TYPE LOCALITY: Tuxpan [Tuxpan].

RECORDED DISTRIBUTION: *Mexico*. Coahuila: San Pedro.NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Sonora (C. Lumholtz), one. Chihuahua: Delicias (A), three. Coahuila: San Pedro de Colonias (B), one; La Rosa (C), two; 5 miles north of Saltillo (D), one. Zacatecas: Fresnillo (E), five.

The type locality might have been in Nayarit, Jalisco, Michoacán, or Vera Cruz, since Chevrolat did not mention the state, and there is a Tuxpan in each of these states.

Champion's remark (1892, p. 430) that this species "varies but little in elytral markings" holds true for the above specimens. In the Sonora specimen, however, the thorax lacks the four black spots. Below, there is some variation in color, about half of the specimens having the metasternal region and abdomen black but the abdominal segments with yellow apical bands, the others having the metasternum mostly yellow and the abdomen as above, or the metasternum black but the abdomen more yellow than black.

***Pyrota nobilis* (Haag)***Lytta nobilis* HAAG, 1880, Deutsche Ent. Zeitschr., vol. 24, pp. 48-49.

TYPE LOCALITY: Mexico.

RECORDED DISTRIBUTION: *Mexico*. Durango: Canelas. Colima: Tonila. Oaxaca.

No specimens examined.

***Pyrota palpalis* Champion***Pyrota palpalis* CHAMPION, 1893, Biologia Centrali-Americana, vol. 4, pt. 2, suppl., pp. 462-463.

TYPE LOCALITY: Mexico; here designated as Villa Lerdo, Durango, from original label on type.

RECORDED DISTRIBUTION: *Mexico*. Chihuahua: Chihuahua City. Durango: Villa Lerdo. Nuevo León: Monterrey.

Type examined in British Museum.

***Pyrota postica* LeConte**

*Pyrota postica* LeConte, 1866, Smithsonian Misc. Coll., vol. 6, no. 167, p. 160.  
*Lytta plagiata* Haag, 1880, Deutsche Ent. Zeitschr., vol. 24, pp. 49-50.

TYPE LOCALITY: Texas and New Mexico.

RECORDED DISTRIBUTION: *Mexico*. Durango: Villa Lerdo. Nuevo León: Monterrey. Jalisco: Ahualulco.

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: San José Babícora, 150; Santa Bárbara District, Santa Bárbara, four.

The elytra in the typical form, as described by Champion (1892, p. 431), have the black postmedian spot large and quadrangular. This type is well represented in the above series, but 18 specimens have the spot much elongated and merging with the basal spots until the elytra are nearly all black. The four specimens from Santa Bárbara have the four basal elytral spots distinctly separated, which occurs in the minority of San José Babícora specimens where the spots are either partly or entirely fused. All specimens have the femora and tibiae yellow with the tips black.

From San José Babícora in northern Chihuahua to Villa Lerdo in central eastern Durango is about as far as from Villa Lerdo to Ahualulco in Jalisco.

***Pyrota punctata* Casey**

*Pyrota punctata* Casey, 1891, Ann. New York Acad. Sci., vol. 6, pp. 173-174.

TYPE LOCALITY: Western Texas.

RECORDED DISTRIBUTION: *Mexico*. Coahuila: San Pedro. Durango: Villa Lerdo.

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Coahuila: San Pedro de Colonias, two; Torreón, June 14, 1937 (M. A. Embury), one.

In one of the San Pedro de Colonias specimens a black line joins the middle band to the apical lunule near the outer margin, and the lunule covers a much larger area than in the other specimen. The Torreón specimen has the apical lunule large but not joining the middle band. One of Casey's three specimens showed a tendency to the prolongation of the lunule. Villa Lerdo, San Pedro de Colonias, and Torreón are in close proximity. Champion's "San Pedro" might be any one of the five San Pedro's in Coahuila.

***Pyrota quadrinervata* (Herrera and Mendoza)**

Figure 16

*Cantharis quadrinervata* HERRERA AND MENDOZA, 1866, Gaceta Méd. Mexico, vol. 2, p. 265, fig. 2 on pl.

TYPE LOCALITY: Mexico.

RECORDED DISTRIBUTION: *Mexico*. Guanajuato: Tupátaro (a). Mexico: Toluca (b). Hidalgo: Pachuca (c), Real del Monte (d), Mineral del Chico [not located]. Vera Cruz: Jalapa (e), Coatepec (f).

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: San José Babícora (g), five.

The Chihuahua record is far to the north of the recorded range, but this is quite a distinctive insect, though evidently not common.

Champion (1892, p. 436) says that this species varies in the color of the legs and under side. This is borne out in one of the above specimens which has a yellow orange narrow band at the apex of the first four abdominal segments, whereas the others lack this band. In all five specimens the femora and tibiae at the apex and all the tarsi are piceous; the under side is also piceous, except for the last two abdominal segments which are yellow.

***Pyrota rugulipennis* Champion**

*Pyrota rugulipennis* CHAMPION, 1892, Biologia Centrali-Americana, vol. 4, pt. 2, p. 431, pl. 20, figs. 4-4d.

TYPE LOCALITY: Canelas in Durango.

Type examined in British Museum.

**GENUS *MELOE* LINNAEUS**

*Meloe* LINNAEUS, 1758, Systema naturae, ed. 10, vol. 1, p. 419.

*Proscarabeus* STEPHENS, 1832, Illustrations of British entomology, Mandibulata, vol. 5, p. 65.

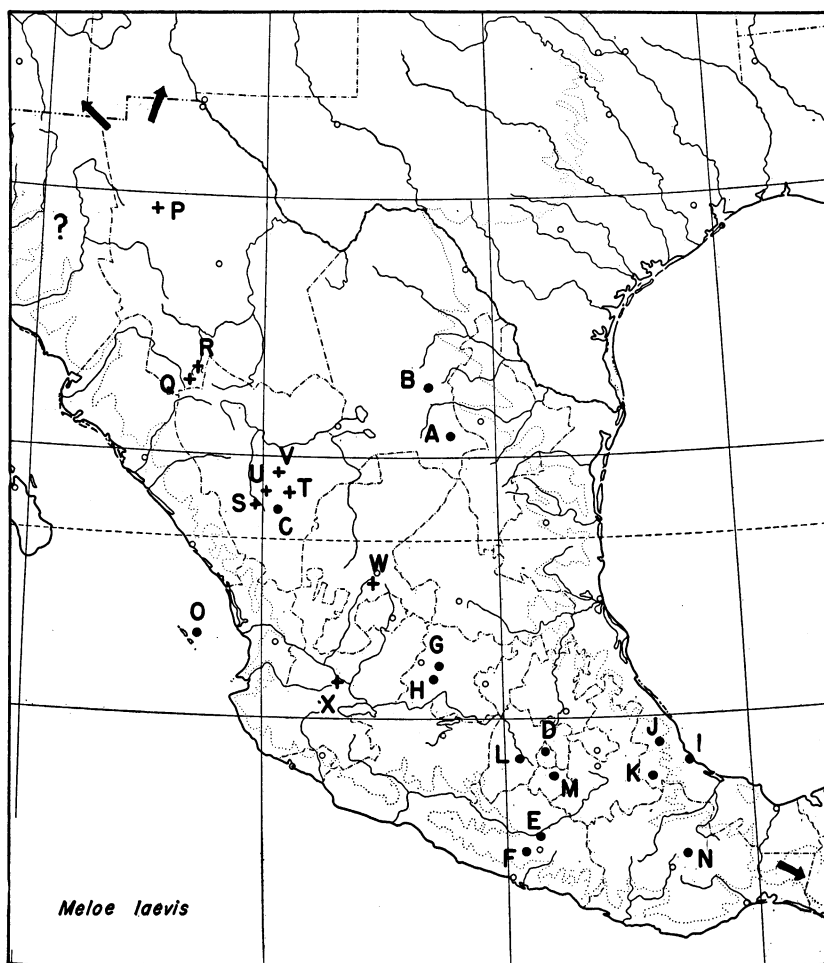
*Cnestocera* THOMSON, 1864, Skandnaviens Coleoptera, vol. 6, p. 342.

*Treiodous* DUGÈS, 1870, La Nature, vol. 1, p. 102.

Of the four species occurring in Mexico, two have been taken in north central Mexico. The genus is characteristic of more northern, temperate zones, and in Mexico it is found in the highlands (Champion, 1892, p. 364). It occurs in the Old World as well.

**KEY TO THE SPECIES OF *Meloe* IN NORTH CENTRAL MEXICO**

Antennae gradually increasing in thickness to apex (male and female) . . . *laevis*

FIG. 17. Distribution of *Meloe laevis* Leach.

Antennae gradually increasing in thickness to sixth segment, then decreasing in thickness to apex (female), the sixth and seventh segments widely dilated and flattened (male).....*dugèsi*

### *Meloe laevis* Leach

#### Figure 17

*Meloe laevis* LEACH, 1815, Trans. Linnean Soc. London, vol. 11, pp. 249–250, pl. 18, fig. 4.

*Meloe cordillerae* CHEVROLAT, 1829–1844, in Guérin, Iconographie du règne animal, vol. 3, p. 133, pl. 35, fig. 6.

*Meloe sublaevis* LeCONTE, 1854, Proc. Acad. Nat. Sci. Philadelphia, vol. 7, p. 84.

*Meloe tucchi* PEÑAFIEL Y BARRANCO, 1866, Gaceta Méd. Mexico, vol. 2, p. 227.

*Meloe tridentatus* JIMÉNEZ, 1866, Gaceta Méd. Mexico, vol. 2, p. 230.

*Treiodus barranci* DUGÈS, 1870, La Nature, vol. 1, p. 102, pl. 1, figs. 1-2.

*Meloe opaca* MOTSCHULSKY, 1873, Bull. Soc. Imp. Nat. Moscou, vol. 45, pt. 2, p. 48.

*Treiodus cordillerae* DUGÈS, 1889, Ann. Mus. Michoacano, vol. 2, p. 35.

TYPE LOCALITY: "Insulâ Americe St. Domingo."

RECORDED DISTRIBUTION: *Mexico*. Sonora. Coahuila: Saltillo (A), Monclova (B). Durango: Durango City (C). San Luis Potosí. Distrito Federal: Mexico City (D). Guerrero: Amula (E), Omilteme (F), Xautipa [not located]. Guanajuato: Guanajuato (G), Silao (H). Vera Cruz: Vera Cruz (I), Jalapa (J), Orizaba (K). Mexico: Toluca (L). Morelos: Cuernavaca (M). Oaxaca: Capulalpam (N). Mexico or Jalisco?: Atotonilco. Peras, Parada, Santecomapan [not located]. Tres Marias Islands (O) (Van Dyke, 1928, p. 447). *Guatemala*. Escuintla, San Jerónimo, San Joaquín, Tepan, Cobán, Aceytuno. *Nicaragua*. *Costa Rica*.

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: San José Babícora (P), two; Balleza (Q), one; Santa Bárbara District, Santa Bárbara (R), four. Durango: Palos Colorados (S), three; Villa Madero (T), two; San Lucas (U), one; San Juan del Rio (V), 11. Zacatecas: Zacatecas District, Guadalupe (W), seven. Jalisco: "Envir de" Guadalajara (X), 1901 (M. Diguët), 11.

OTHER SPECIMENS EXAMINED: *Mexico*. Vera Cruz: Jalapa (J) (Hoegel), one, (W. Schaus), four. Near Mexico City: Teotihuacán (D), July 18, 1947 (Malkin), one.

Among these specimens are some with the elytra quite smooth and others with them rugose or longitudinally wrinkled, as Champion (1892, p. 367) noticed in the large series he examined. The size varies from 13 to 40 mm. Some of the small ones have the abdomen uninflated (or shriveled?) but the head, thorax, and elytra show by their size that they are much longer insects.

### *Meloe dugèsi* Champion

Figure 18

*Meloe dugèsi* CHAMPION, 1892, Biologia Centrali-Americana, vol. 4, pt. 2, p. 366, pl. 17, figs. 2, 2a.

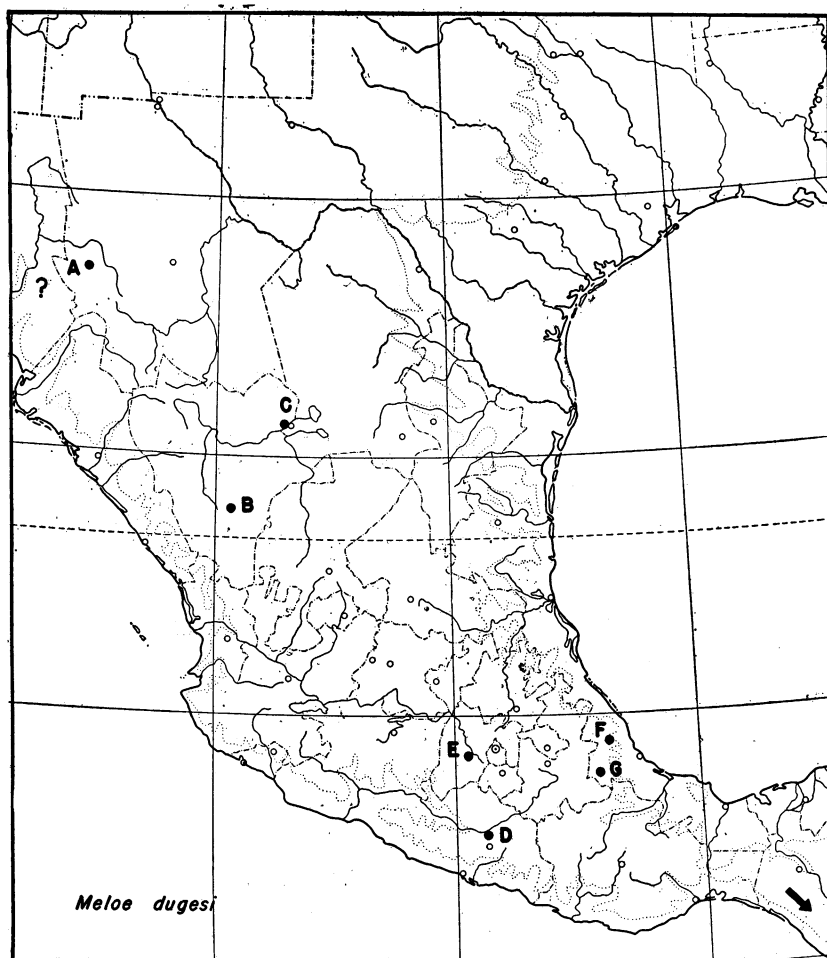


FIG. 18. Distribution of *Meloe dugesi* Champion.

**TYPE LOCALITY:** Not given; here designated as Pinos Altos, Chihuahua, from original label on type, examined in British Museum.

**RECORDED DISTRIBUTION:** *Mexico.* Chihuahua: Pinos Altos (A). Durango: Durango City (B), Villa Lerdo (C). Guerro: Amula (D). Mexico: Toluca (E). Vera Cruz: Jalapa (F), Córdoba (G). *Guatemala:* Tepan.

**NEW LOCALITIES AND SPECIMENS EXAMINED:** *Mexico.* Sonora (C. Lumholtz), one.

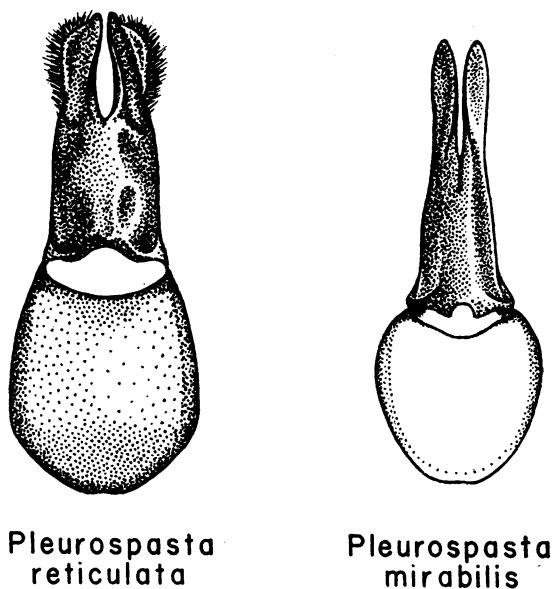


FIG. 19. Male genitalia, dorsal view, of *Pleurospasta reticulata* Van Dyke and *P. mirabilis* Horn.

OTHER SPECIMENS EXAMINED: Jalapa (F) (W. Schaus), one.

These specimens are both males, with the fifth to seventh antennal segments dilated and distorted.

GENUS **PLEUROSPASTA** WELLMAN

*Pleurospasta* WELLMAN, 1909, Ent. News, vol. 20, p. 20.

With the elevation of *P. mirabilis reticulata* to species status, there are now two species in the genus, only one of which has been reported from north central Mexico.

***Pleurospasta reticulata* Van Dyke**

Figure 19

*Pleurospasta mirabilis reticulata* VAN DYKE, 1947, Pan-Pacific Ent., vol. 23, pp. 157-158.

TYPE LOCALITY: Loving, New Mexico.

RECORDED DISTRIBUTION: *Mexico*. Tamaulipas: Nuevo Laredo (Van Dyke, 1947, p. 157). Coahuila. (*Fide* figure in Champion, 1892, p. 394, pl. 18, fig. 12, under *P. mirabilis*.)

No specimens of this species from Mexico were examined, but



examination of a series of 83 specimens from White City, Eddy County, New Mexico, shows that the differences between *P. mirabilis* and *P. reticulata* are not merely subspecific, but specific, which are included in the comparison below.

DIFFERENCES BETWEEN *Pleurospasta reticulata*  
AND *P. mirabilis*

	<i>P. reticulata</i>	<i>P. mirabilis</i>
General color of markings	Blood red mixed with black	Brown to pale red, no black
Head	Less convex between antennae and not suddenly depressed behind; margin of back of head oval	Very convex between antennae and suddenly depressed behind; margin of head round
Hind margin of clypeus	Straight to feebly rounded	Feebly rounded to strongly convex
Third segment of male antennae	Same width throughout, not excavated on inner side	Narrower at base because of slight excavation on inner side
Surface of head and thorax	Shining; deeply, irregularly punctured	Opaque; nearly smooth, punctures not visible or few in number
Base of thorax	Prominently bulbous	Feebly convex
Elytral pattern:		
Basal spots	Two to five, usually two; usually smaller	Four or more, usually four; usually larger
Postmedian band	Pattern irregular but not zigzag; broader; color blood red with black borders, or red and black	Pattern zigzag or like double V's; narrower; color brownish to pale reddish
Apical band	Blood red edged with black at front, band always reaching apex	Brown or pale red without black at front, band usually not reaching apex
Costae	Merging in postmedian band and with numerous strongly raised cross ribs	Continuing straight to near apex, not merging in postmedian band, but with occasional feebly raised cross ribs
Male front first tarsal segment	With hairy pad from base to apex	With hairy pad at apex only
Male genitalia, dorsal side	Lateral lobes excavated internally towards apex; lobes robust, and with hairs on sides near apex	Lateral lobes straight, nearly parallel, not excavate; lobes slender, without hairs

All the above characters except the general color and the elytral pattern seem to indicate the specific distinctness of *P. reticulata* even though the distribution, as given by Van Dyke, is allopatric. Other characters not given before and not listed above are:

Head sparsely but deeply and irregularly punctured, with a median groove from near base to apex and a slight, shallow depression near the base, neither being always well marked. Clypeus and labrum of about equal size, labrum with front margin rounded. Maxillary and labial palpi with last segment small, elongate. Eyes small, not prominent, elongate oval, one-third longer than broad. Antennae slender, reaching just beyond the base of the thorax in the male, not quite to the base in the female, closely segmented, the articulations not visible, first two segments with a few stiff, dark setae, first segment stout, half the length of third, second about half the length of first, third and following segments covered with fine dense pale hairs and of equal width throughout, third segment one-third longer than fourth, fourth and following segments the same length, except the last which is slightly longer. Thorax bilobed, with deep median line and basal and apical transverse depressions, constricted and much narrower in apical half, each basal bulbous lobe with a deep, sometimes shallow, depression in the center, thorax about as long as wide (though it appears longer than wide), irregularly punctured and rugose. Elytra four times longer than thorax, nearly parallel, two-thirds wider at base than thorax, with four strongly raised costae, the suture and side margins also costate, each interspace between the costae interrupted postmedially (in the area of the red and black band of color), by one or more than one red transverse costa or rib; at the apex the costae are again interrupted and connected with each other and with the margins, surface of elytra with short, dark, stiff setae, widely scattered. Below, apex of abdomen triangularly emarginate in the male, rounded in the female. Legs slender, hairy, the femora with short, fine, white hairs, the tibiae and tarsi with dark, coarse setae intermingled with the hairs, the apex of the tibiae with two slender, tapering spurs, the outer one on the front tibiae slightly longer than the inner and curving outward, on the other tibiae the outer spur shorter than the inner one and both spurs straight; front tarsi below with no hairy pad in the female. Claws toothed, the tooth a little more than half the length of the claw. Length: 7–12 mm. (measured from top of head with head deflexed).

The 83 specimens from White City show considerable variation in the elytral pattern and in the conformation of the cross ribs. The basal dark spots, while two in number and situated in the second interspace in 82 per cent of the specimens, vary from one to five in the other specimens and are occasionally placed in the first interspace. The spots are usually black, sometimes reddish, elongate or round, usually smaller than a pinhole, and in a few specimens are visible only under the microscope.

The middle band is usually mostly red, with the borders edged with black to a varying degree, but 27 specimens have more black than red. In either case, however, the raised ribs are always red.

As to the cross ribbing, in the first interspace postmedially there may be one to four cross ribs, feebly or strongly raised, sometimes more on one elytron than on the other, but always present; the first and second costae (not counting the suture) may meet in the postmedian band of color either in a sharp point or at an angle or in a square. Sometimes little extra cells are formed where two ribs meet.

The New Mexican series was taken June 20, 1948, by M. Cazier, in an area approximately 50 feet wide by 150 feet long, bordered on one side by the main highway to Carlsbad Caverns and on the other by a section of White's Auto Court in White City, New Mexico. No specimens were collected outside this area, although they were looked for elsewhere in the vicinity. The area was primarily sand, with a small amount of gravel, and was sparsely vegetated with low annuals with very little grass intermixed.

Although their elytral pattern is somewhat mottled in appearance the beetles were not cryptically colored and were easily detected as they ran from plant to plant, upon which, however, they did not appear to be feeding. None were observed flying, in spite of the fact that they have well-developed wings, nor did they make any attempt to fly when chased either by other specimens or by the collector, even though at this time the temperature was very high. They were very rapid and erratic in their behavior, much like ants which they somewhat resembled. There were many ant nests in the area, but the beetles, while seen running over the ant hills, were not observed entering or leaving the holes nor were they molested by the ants.

#### GENUS *EUPOMPHA* LECONTE

*Eupompha* LeCONTE, 1858, Jour. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 4, p. 21.

The following is the only species in the genus.

**Eupompha fissiceps** LeConte

*Eupompha fissiceps* LECONTE, 1858, Jour. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 4, p. 21.

TYPE LOCALITY: Llano Estacado, Texas.

RECORDED DISTRIBUTION: *Mexico*. Coahuila. Durango. Villa Lerdo.

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Coahuila: Guadalupe, two. Chihuahua: 42 miles southwest of Camargo, one.

The male of this brilliantly iridescent green meloid not only has its red head virtually cleft in two from base to apex, but has the first three tarsal segments on the front legs dilated and distorted and the front tibiae distorted and sinuous. The depression in the head of the female is much shallower but extends also from base to apex.

This species is very abundant in Texas. The new localities are in the southeastern part of their respective states.

GENUS **CYSTEODEMUS** LECONTE

*Cysteodemus* LECONTE, 1851, Ann. Lyc. Nat. Hist. New York, vol. 5, p. 158.

Only one of the two species of this genus has been recorded from north central Mexico.

**Cysteodemus wislizeni** LeConte

*Cysteodemus wislizeni* LECONTE, 1851, Ann. Lyc. Nat. Hist. New York, vol. 5, p. 158.

TYPE LOCALITY: New Mexico.

RECORDED DISTRIBUTION: *Mexico*. Chihuahua. Durango: Villa Lerdo.

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: 42 miles southwest of Camargo, nine. Coahuila: Guadalupe, six; San Pedro de Colonias, one; Cabos, two.

OTHER SPECIMENS EXAMINED: *Mexico*. Durango: Villa Lerdo (Höge), one.

The size variation in this material is from 9 mm. to 18 mm. Eight of the specimens are purple, the remainder blue green. The Villa Lerdo specimen is one of Godman's, probably seen by Champion.

Camargo is in southeastern Chihuahua, and the other new localities are in southern Coahuila.

### GENUS *MEGETRA* LECONTE

*Megetra* LECONTE, 1859, in Thomson, *Arcana naturae*, vol. 3, p. 127, pls. 12-13.

Both species of this genus have been recorded from north central Mexico.

#### KEY TO THE SPECIES OF *Megetra* IN NORTH CENTRAL MEXICO

1. Labrum with front margin emarginate; each elytron with a well-defined reddish stripe on dorsal surface reaching about three-quarters of the way to the apex; deflexed margin of elytra with large, deep, fairly regularly placed pits as on elytra above..... *vittata*  
 Labrum with front margin not emarginate; each elytron with a maze of reddish reticular markings on dorsal surface, or with an irregular, ramifying reddish stripe reaching to apex; deflexed margin of elytra with a few small, shallow pits in the irregularly rugose surface, not as in elytra above..... 2
2. Dorsal surface of elytra entirely covered with reddish reticular markings; elytra shorter in both sexes..... *cancellata cancellata*  
 Dorsal surface with reddish reticular markings obliterated towards suture, usually forming an irregular, ramifying stripe; elytra longer in both sexes..... *cancellata championi*

### *Megetra cancellata cancellata* (Brandt and Erichson)

Figure 20

*Meloe cancellatus* BRANDT AND ERICHSON, 1832, *Nova Acta Leopoldina*, vol. 16, p. 141, pl. 8, fig. 9.

*Cysteodemus cancellatus* LECONTE, 1854 (1856), *Proc. Acad. Nat. Sci. Philadelphia*, vol. 7, p. 224.

*Megetra cancellata hoegei* DUGÈS, 1889, *Ann. Mus. Michoacano*, vol. 2, pp. 39-40.

TYPE LOCALITY: Mexico.

RECORDED DISTRIBUTION: *Mexico*. Hidalgo: Tula (a), Pachuca (b).

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Durango: Villa Madero (c), 19.

OTHER SPECIMENS EXAMINED: *Mexico*. Hidalgo: Pachuca (b) (Höge), one, July 12, 1935, July 4, 1937 (K. L. Maehler), two.

These specimens have the elytra entirely covered with a network of orange red lines. The 12 males and eight females are

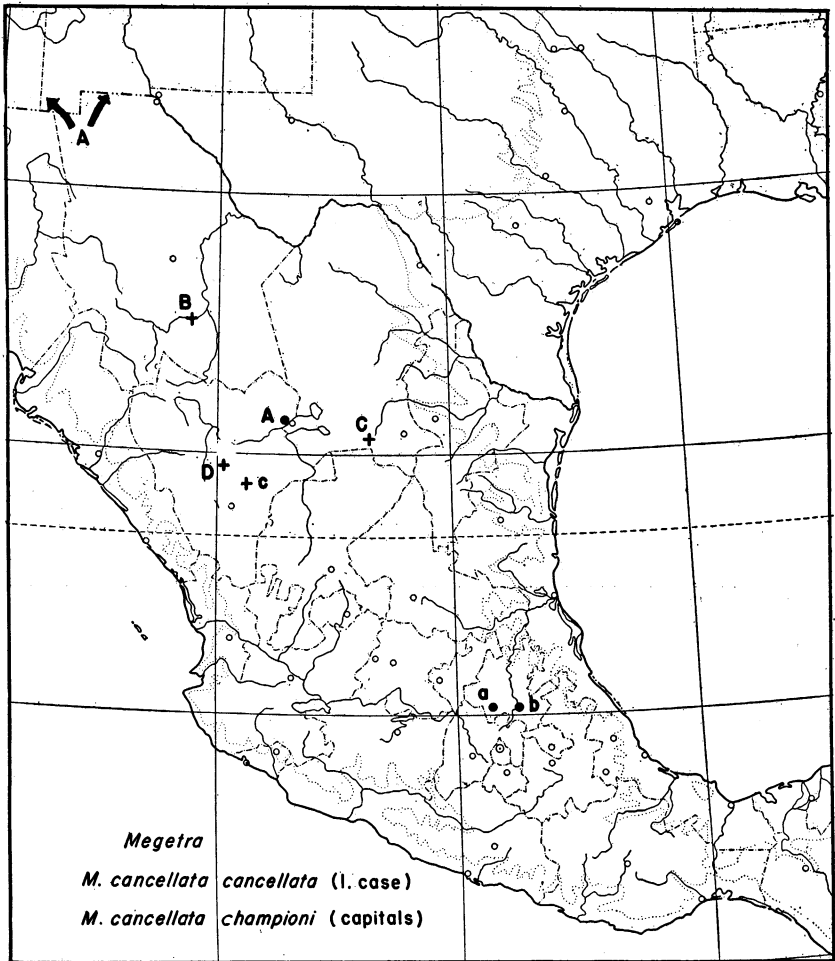


FIG. 20. Distribution of *Megetra cancellata cancellata* (Brandt and Erichson) and *M. c. championi* Van Dyke.

similar except in the shape of the last abdominal segment which is deeply cut out in the male and rounded in the female. The elytra reach to, or usually beyond, the hind margin of the first abdominal segment, sometimes nearly to the hind margin of the second segment. The Hidalgo specimens do not differ from the northern ones. Further collecting should produce more specimens from the area between these widely separated localities.

***Megetra cancellata championi* Van Dyke**

Figure 20

*Megetra cancellata championi* VAN DYKE, 1928, Univ. California Publ. Ent., vol. 4, no. 12, pp. 456-457.

TYPE LOCALITY: Mexico.

RECORDED DISTRIBUTION: *Mexico*. Durango: Villa Lerdo (A).

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: 42 miles southwest of Camargo (B), six. Coahuila: Cabos (C), two. Durango: San Lucas (D), one.

Champion (1892, p. 370) described and figured this subspecies as a variety of *cancellata*, but gave it no name. It is more northern than nominate *cancellata*, occupying the same geographical range as *M. vittata*, with which it might be confused at first glance. The two Durango localities, San Lucas and Villa Lerdo, are, respectively, about 40 and 100 miles north of Villa Madero, Durango, where nominate *cancellata* was taken. Champion mentioned that Höge collected both forms "in widely-separated localities and not intermixing." (The San Lucas locality is not the better known San Lucas from the extreme southern corner of Durango.)

The elytra in this subspecies are longer than in either *M. vittata* or nominate *cancellata*, reaching at least to the hind border of the second abdominal segment. Eight of the above specimens, four males and four females, have the abdomen so shriveled that the elytra cover it entirely, giving them quite a different appearance from the two specimens with the abdomen normally enlarged.

***Megetra vittata* (LeConte)**

Figure 21

*Cysteodemus vittatus* LECONTE, 1853, Proc. Acad. Nat. Sci. Philadelphia, vol. 6, p. 330.

TYPE LOCALITY: New Mexico.

RECORDED DISTRIBUTION: *Mexico*. Chihuahua: Pinos Altos (A), Chihuahua City (B). Durango: Villa Lerdo (C).

NEW LOCALITIES AND SPECIMENS EXAMINED: *Mexico*. Chihuahua: 42 miles southwest of Camargo (D), 155; Santa Bárbara District, Santa Bárbara (E), eight; Catarinas (F), one; Valle de Olivos (G), one. Coahuila: 25 miles south of San Pedro de Colonias (H), three. Durango: Durango District, 6 miles north-east of El Salto (I), two.

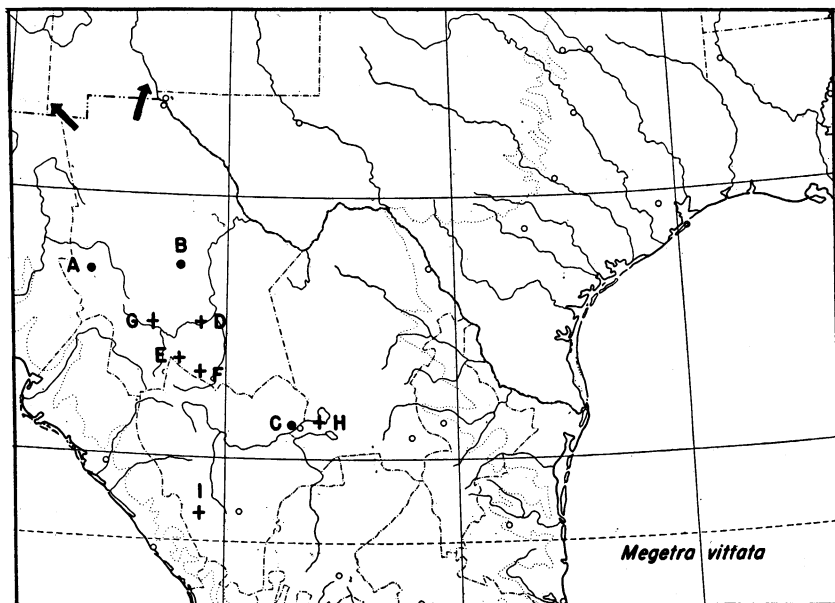


FIG. 21. Distribution of *Megetra vittata* (LeConte).

OTHER SPECIMENS EXAMINED: *Mexico*. Chihuahua: Pinos Altos (A) (Buchan-Hepburn), one.

This species, according to the data and material available, occupies about the same geographical range as *cancellata championi*. It seems, however, far more abundant. Both species were taken in 1947 at Camargo and Santa Bárbara in Chihuahua in the proportion of 162 *vittata* to seven *cancellata championi*. Champion (1892, p. 370) reported both from Villa Lerdo in Durango. Neither form has been reported from so far south as nominate *cancellata* from Hidalgo and Villa Madero, Durango.

The males have the same enlarged abdomens as the females, but differ from them in the shape of the last abdominal segment which is cut out, or triangularly emarginate, although not so deeply as in male *cancellata*. The elytra reach about to the hind border of the first abdominal segment.

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