

help. To Mr. Erdman West and Mr. Breeder our thanks are due for the photographs.

EXPLANATION OF PLATES X, XI, XII.

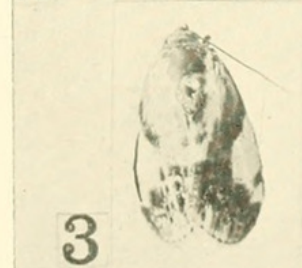
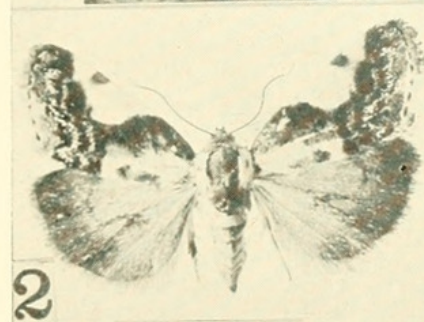
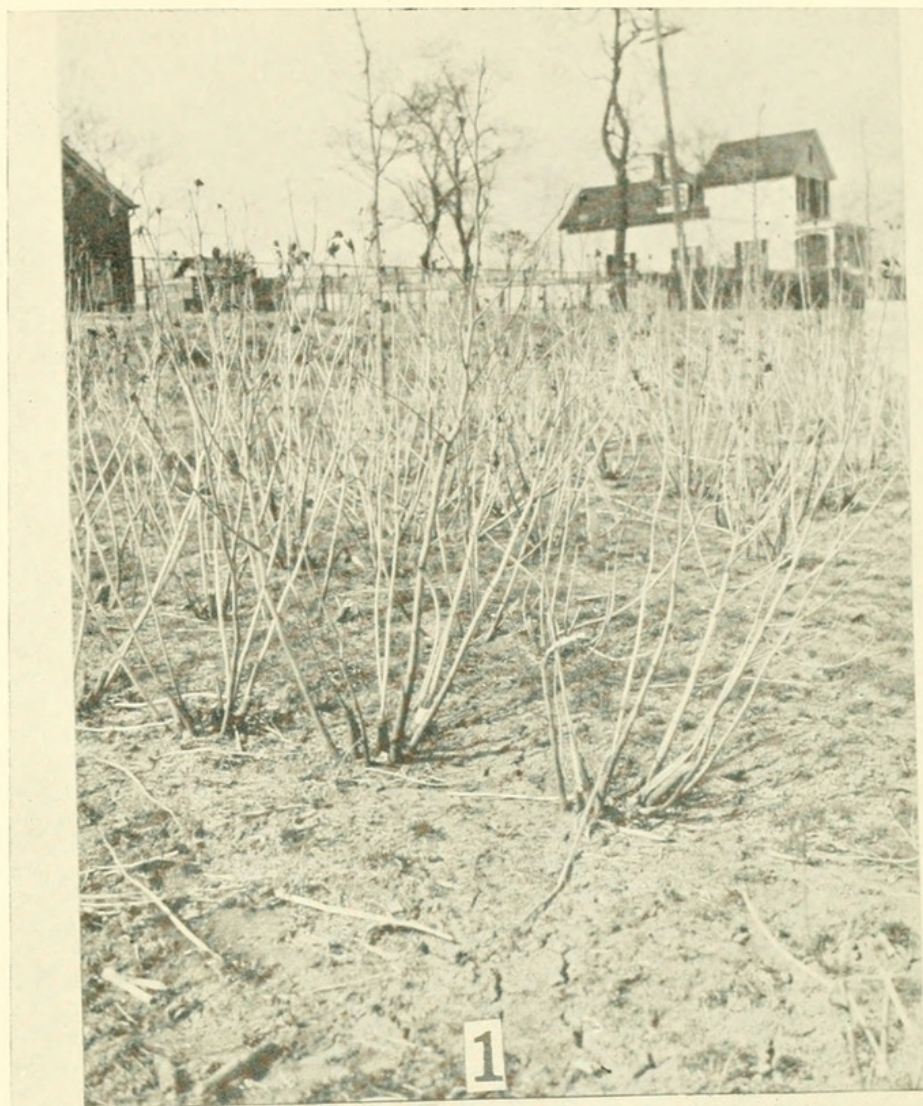
- Fig. 1. A nursery patch of *Hibiscus moscheutos* during the winter.
 Fig. 2. *Acontia delecta* adult.
 Fig. 3. *Acontia delecta* with wings folded.
 Fig. 4. *Gelechia hibiscella* adult.
 Fig. 5. Larvæ of *Acontia delecta*.
 Fig. 6. Petioles injured by larvæ of *Rhabdoscelis tenuis*.
 Fig. 7. Work of larvæ of *R. tenuis* in hibiscus stems, showing larva in one of the left.
 Fig. 8. Cocoon of *Sagaritas dubitatus* with shrivelled larval skin attached.
 Fig. 9. Work of larva of *Papaipema nitela*.
 Fig. 10. Feeding (large holes) of *Rhabdoscelis tenuis*.
 Figs. 11 and 12. Galls of *Apion hibisci*.
 Fig. 13. Stem split to show cavity occupied by larva of *Apion hibisci*.
 Fig. 14. Gall of *Neolasioptera hibisci*.
 Fig. 15. Stem split to show cavity in pith occupied by larvæ of *Neolasioptera hibisci*.
 Fig. 16. Feeding of *Chætocnema quadricollis*.
 Fig. 17. Flower buds injured by *Scudderia texensis*.
 Fig. 18. Leaf cut and rolled by larva of *Gelechia hibiscella*.

CICADAS OF THE GENUS CACAMA, WITH DESCRIPTIONS OF SEVERAL NEW SPECIES.

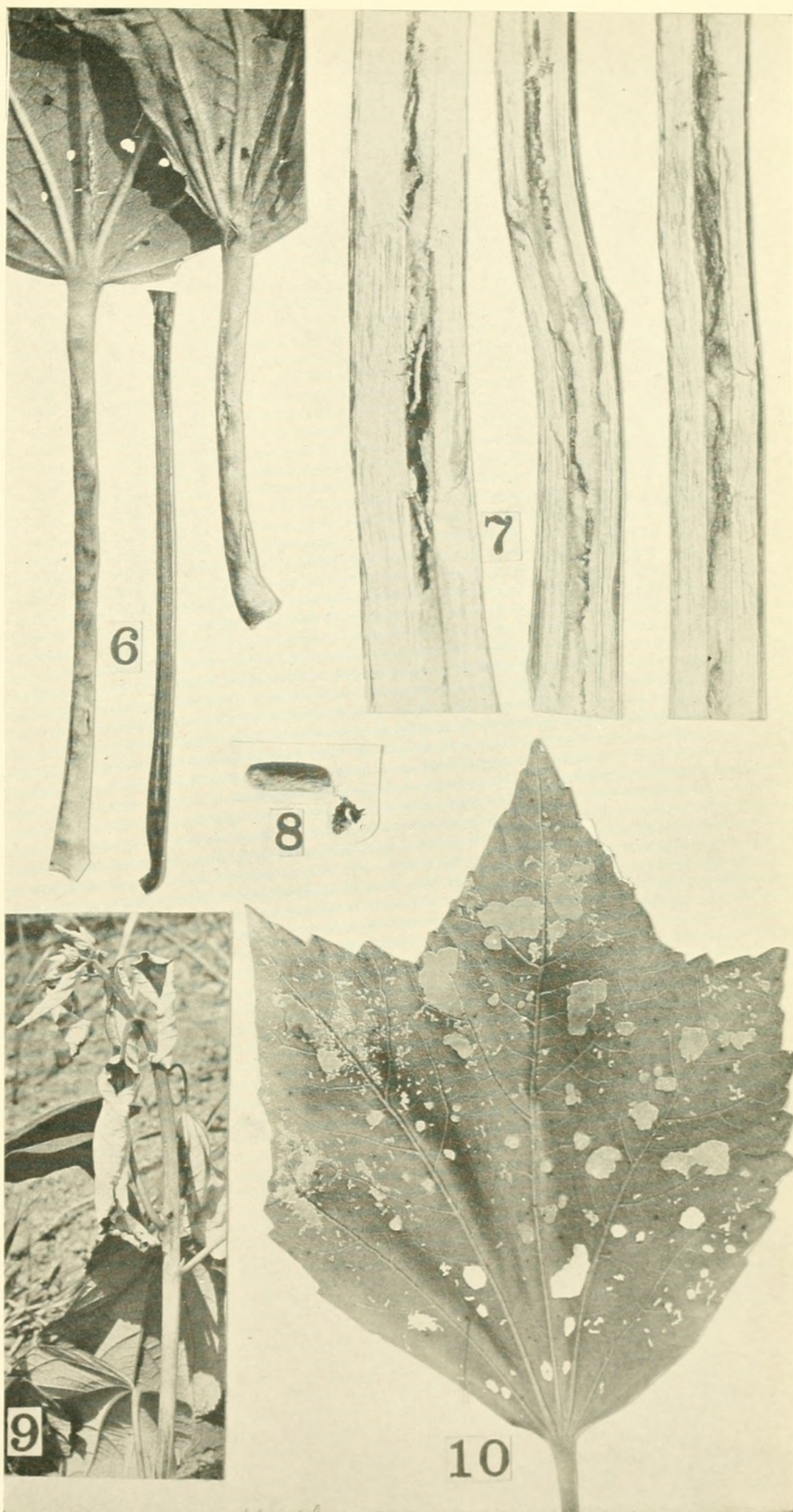
BY WM. T. DAVIS,

NEW BRIGHTON, STATEN ISLAND, N. Y.

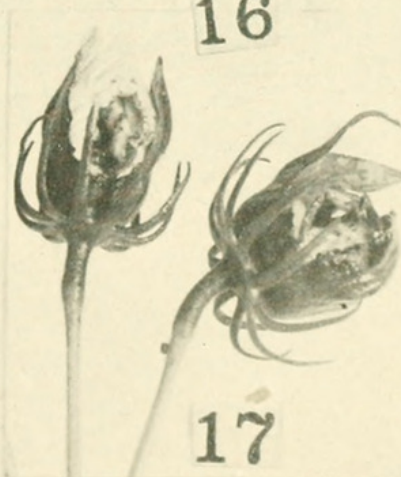
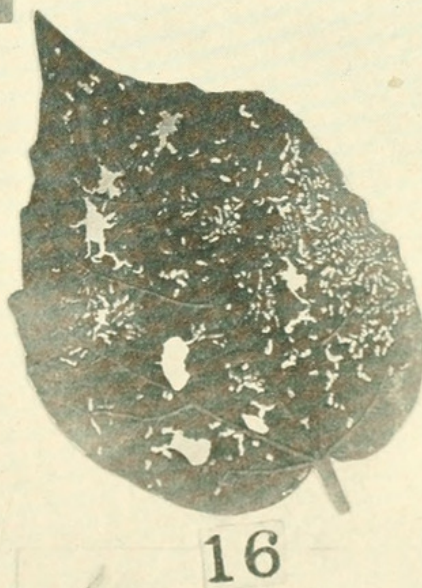
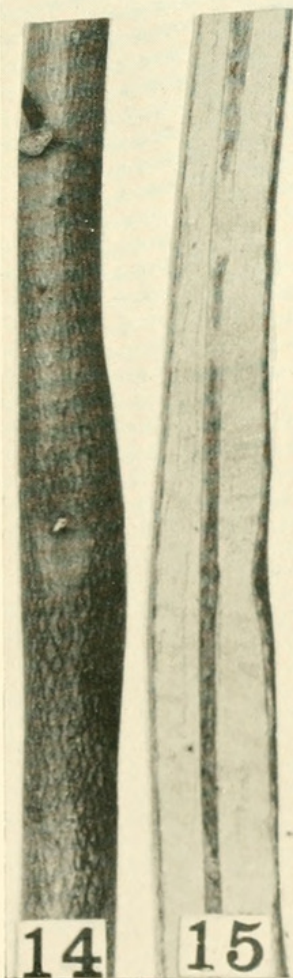
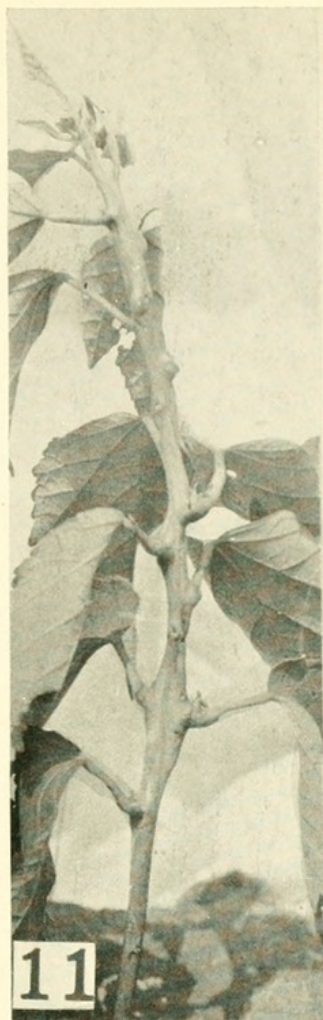
In Genera Insectorum Mr. Distant lists *Cacama maura* Dist. from Mexico and Yucatan; and both *Cacama dissimilis* Dist. and *Cacama longirostris* Dist. from Mexico. These three species were described in 1881 in Biol. Centr.-Amer., *maura* and *longirostris* under the generic name of *Proarna*, and *dissimilis* as a *Cicada*. Uhler's *Proarna valvata* described from Texas and Arizona in 1888 in Entomologica Americana, is listed in that genus in Genera Insectorum, but Mr. Van Duzee removed it to the genus *Cacama* in 1915 (JOURNAL N. Y. ENTO. SOCIETY). In the Transactions of the San Diego



Insects of the Rose-Mallow.



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Soc. Nat. Hist., ii, p. 45, 1914, Mr. Van Duzee described *Proarna crepitans* from California, which in 1915 he also removed to the genus *Cacama*. So the genus up to the present has had five known species, three from Mexico and two from the United States.

In *Cacama* the tympanal coverings in the male entirely conceal the orifices, which is also the case in the genus *Tibicen*, but the head including the eyes is much narrower in *Cacama*, being little more than two thirds the width of the mesonotum. The abdomen is broad and much rounded behind; in *Tibicen* it is more tapering. The apical areas of the fore wings in *Cacama* are eight in number, the two lowermost small and somewhat square in shape. In *Tibicen* the two lowest apical areas are not as nearly of the same size, the seventh being much smaller than the eighth.

The type of the genus is *Cacama maura* (Distant), figured in Biol. Centr.-Amer., and also in Genera Insectorum. *Cacama longirostris* is also figured in Biol. Centr.-Amer. The remaining species, including four new ones and a female from Yucatan, which has been identified as *maura*, are figured on the plates accompanying this article. Owing to the lack of specimens available for its preparation the following table for the separation of species is not altogether complete.

Genus *Cacama*.

- | | |
|---|----|
| Rostrum not quite or barely reaching posterior coxæ | A. |
| Rostrum reaching posterior coxæ or beyond | B. |
| Rostrum reaching the first abdominal segment | C. |

A.

A black species. Basal cell of fore wings usually includes a darkened area near front margin, translucent on hind margin; anal membranes of both pairs of wings grayish, sometimes slightly ochraceous with hind margins gray. First and second transverse veins of fore wings hardly infuscated. Black spot on dorsum of the pale colored eighth abdominal segment of male quadrate. Abdomen above with first segment straw colored or pruinose; beneath straw colored **valvata** (Uhler).

Not as dark in color as the last. Basal cell of fore wings ochraceous, translucent in part; anal membranes of both pairs of wings ochraceous. First and second transverse veins of fore wings slightly infuscated. Eighth abdominal segment of male almost entirely black, light colored each side at base and near extremity. Abdomen orange colored beneath. Uncus deeply notched at the extremity **furcata** new species.

Body considerably variegated with ochraceous; basal cell of fore wings ochraceous, translucent in part; anal membranes of both pairs of wings orange. First and second transverse veins of fore wings infuscated. Black spot on dorsum of eighth abdominal segment in male inversely napiform (turnip-shaped)**variegata** new species.

Resembles *variegata* in color and size, but with head usually smaller and the narrowed fore wings with outer margin more straight. Basal cell of fore wings nearly clear; first and second cross veins hardly infuscated.

californica new species.

B.

Basal area of fore wings "slightly ochraceous and opaque"; anal membranes of fore and hind wings orange with hind margin gray. First and second transverse veins of the fore wings "scarcely infuscated."

dissimilis (Distant).

Resembles *valvata* in being a black species, but has a larger head and is more hairy beneath about the legs. Basal cell of the fore wings blackish, translucent in part; anal membranes of both pairs of wings dark gray, abdomen above, entirely black at base. Dorsum of the eighth abdominal segment of male black with a small pruinose area each side.

carbonaria new species.

Basal cell of the fore wings translucent in part; anal membranes of the fore and hind wings orange. First and second transverse veins of the fore wings infuscated**crepitans** (Van Duzee).

Basal area of fore and hind wings black, first and second transverse cross veins of the fore wings infuscated**maura** (Distant).

C.

Basal area of the fore wings black, cell partly clear, first and second cross veins not infuscated**longirostris** (Distant).

Cacama valvata (Uhler).

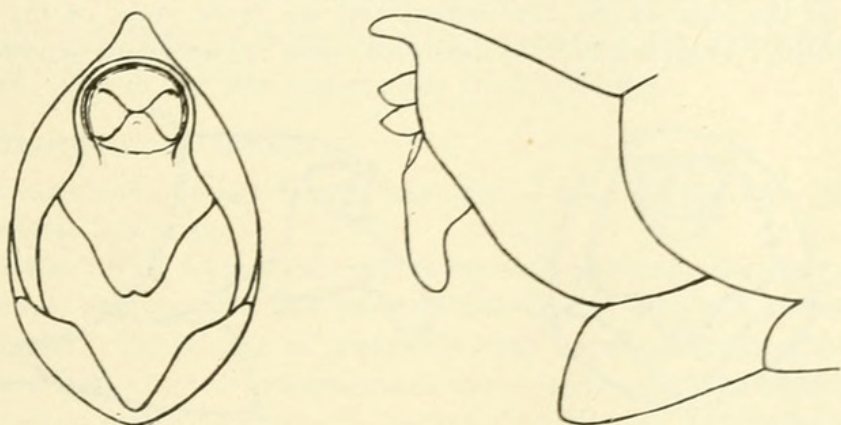
1888. *Proarna valvata* Uhler. Entomologica Americana, IV, p. 84.

Specimens examined: Tascosa, Tex., June, 1918, male (Miss McGill), D's Coll. Pecos River, Tex., May 24, male, U. S. Nat. Mus. Coll. Devil's River, Tex., July 3, 1917, male, Cornell University Coll. Jemez Springs, N. M., 6,400 ft., 15 males, 3 females, June, 1918, and 6 males, 3 females, July 2 and 3, 1918 (John Woodgate), D's Coll. Alamogordo, N. M., June 6 and 7, 1902, Coll. Acad. Nat. Sci. Phil. Pueblo, Col., June 15, 1900, male (Univ. of Kans.), D's Coll. Pueblo, Col., June 15, 1900, 3 females, E. D. Ball Coll. Carson City, Col., July 3, male, D's Coll. Trinidad, Col., June 3, 1910, male (F. C. Bishopp), U. S. Nat. Mus. Coll. Cañon City, Col., July

3, male, U. S. Nat. Mus. Coll. Holly, Col., June 19, 1900, male, E. D. Ball Coll. Coolidge, Col., June 18, 1900, male, E. D. Ball Coll. Ft. Collins, Col., June 28, 1900, male, E. D. Ball Coll. Kanab, Utah, June 24, 1913, male (E. D. Ball), D's Coll. Kanab, Utah, June 24, 1913, two males and female (E. D. Ball), Coll. Dr. Ball. Arizona, male, labeled "*P. valvata* Uhler," by Uhler, U. S. Nat. Museum Coll. Bradsh Mts., Ariz., June 22, 1892, two males, Coll. Oregon Agri. College. Rincon Mts., Ariz., male and female, D's Coll. Nogales, Ariz., July, female (Oslar), D's Coll. Grand Canyon, Ariz., sage bush country half way level in Canyon, June 5, 1915, male (B. B. Fulton), D's Coll. Grand Canyon, Ariz., Indian Garden, June 9, 1916, male (Geo. P. Engelhardt), D's Coll.

The two males from the Grand Canyon are smaller than the others in my collection.

Uhler in the original description mentions three males as typical specimens, one "from the vicinity of the Pecos River in Texas, and



Cicada valvata

the others were captured in Arizona." The remaining specimen mentioned by him from Camp Grant, Arizona, with "a much longer rostrum than the types," is in the collection of the U. S. Nat. Museum. In addition to the locality it is labeled "Palmer's Assorting No. 1043." The rostrum reaches the posterior coxæ, and we think the specimen is referable to *Cicada dissimilis* (Distant).

Mr. Woodgate writes of the *valvata* he sent from Jemez Springs, N. M., that they were very shy and often found about the bush cactus. Some he took in the evening while they were at rest on the cactus. "They are the only insects except ants that can settle on the bush

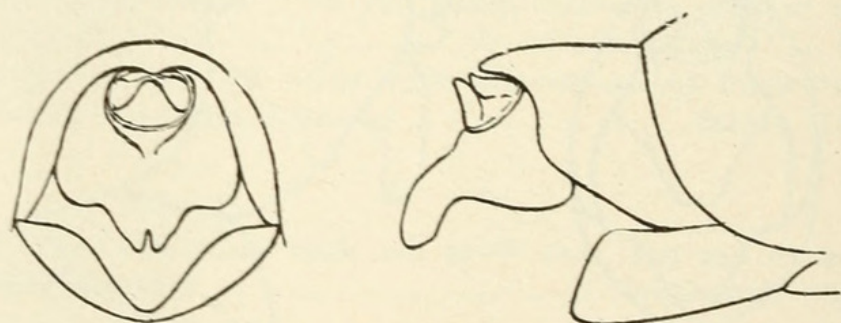
cactus without impaling themselves. The toughest beetles become impaled when they settle on this cactus and the ants proceed to eat them, but these Cicadas that have a very swift flight, can settle with impunity." He says that "their song is not sustained for more than about two minutes in the brightest sunshine even."

Cacama furcata new species.

Type male, labeled "Lower California?" Collection, University of Nebraska.

A dark colored species decorated with orange and black at the base of both pairs of wings.

Head black with a light brown spot above each antenna and a median light brown line below the central ocellus. Region of the transverse rugæ black, variegated each side with brown and black. The orange colored rostrum is black at tip, and extends slightly beyond the median coxæ. Pronotum black or nearly so, with a brownish spot on the front margin each side of the central line; the lateral margins variegated with brown, and a rather conspicuous upturned brownish line near the posterior angles. Mesonotum black, except the outer two lines of the central W mark, the extreme lateral margins at the base of the fore wings, and the front limbs of the X, which are brownish. Tergum black or nearly so, with the segments narrowly edged



Cacama furcata

at the sides of the body with brown. The first segment almost entirely black, the hind margin edged with brown, especially conspicuous near the central portion, and a minute pruinose spot each side near the extremities and adjoining the tympana. The eighth segment is nearly all black, light brown near the tip and on the sides; there is also a basal pruinose line. Fore wings with the basal cell nearly clear; both the fore and hind wings are variegated at base with orange and black; the membranes are orange tinted with gray on their posterior margins. Costal margin of the fore wings testaceous with a series of connected darker spots to the end of the radial cell, from which point the margin is darker colored to the end of the wing. The outer margin of the fore wing is nearly straight, somewhat abruptly turned at the eighth

marginal cell; the first and second cross veins are hardly infuscated. Beneath the insect is almost wholly dull orange in color, variegated with black about the legs and at the sides of the abdomen. Opercula dull orange, overlapping along the inner margin and broadly rounded behind. Uncus deeply notched at the extremity.

MEASUREMENTS IN MILLIMETERS.

	Male Type.
Length of body	27
Width of head across eyes	8.5
Expanse of fore wings	72
Greatest width of operculum	7
Greatest length of operculum	7

This is a smaller species than *valvata*, more orange colored at the base of the wings, with the eighth abdominal segment nearly all black instead of pale. Beneath it is orange colored as in *crepitans*, and not pale, especially the opercula, as in *valvata*. The rostrum is longer than in *valvata*, but not as long as in the much smaller *crepitans*.

For the privilege of describing this species I am indebted to Prof. Myron H. Swenk, of the University of Nebraska.

Cacama variegata new species.

Type male and allotype female from San Benito, Texas, June, 1918 (Miss Matz). Davis collection.

Head black with a brownish spot above each antenna; one near each posterior ocellus, and one centrally on the hind margin; also one in front of the central ocellus. Upper area of transverse rugæ black, centrally with a brown streak; face light colored and pruinose; white hairs especially about the eyes. The testaceous colored rostrum is blackened at the tip and extends slightly beyond the median coxæ. Pronotum black, much variegated with light brown and rusty brown; the hind margin is edged with brown which extends inward (forward) near the posterior angles. The central area is rusty brown, each side of a somewhat lighter colored oblong spot. Mesonotum black with the outer lines of the W mark well defined. The mesonotal X is brown, the front limbs and hind limbs being each crossed by black bands. There are two oblong spots in the depression in front of the X. The sides are light colored, overlaid with pruinose which extends forward along each side to the hind margin of the pronotum. Tergum black, exposed part of first segment light colored and pruinose; second segment margined behind centrally with brown; third segment with a light colored spot each side, which is also more or less pruinose; eighth segment light colored and pruinose with an apical inversely napiform black spot. Two black dots, one each side, are included in the pruinose area. Fore wings with the basal cell partly obscured, especially at



Davis, William T. 1919. "Cicadas of the Genus *Cacama*, with Descriptions of Several New Species." *Journal of the New York Entomological Society* 27, 68–79.

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