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A REMARKABLE CICADA FROM MEXICO AND OTHER NORTH AMERICAN SPECIES

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In the Transactions, Maryland Academy of Sciences, 1892, page 169, P. R. Uhler characterized *Odopœa pœyi* Guerin, of Cuba: "the most remarkable of all the species yet discovered in the West Indies if not in all America." In 1920 Mr. Distant placed it in a separate genus (*Juanaria*) and commented upon its close resemblance to several African species. The insect is figured in this JOURNAL, March, 1928, plate 1.

While *pœyi* is remarkable among species of American cicadas, it possesses no structural characters not to be found among African species, whereas the Mexican cicada here described as *Tibicen curvispinosa* possesses the unique development of two rather conspicuous spines on abdominal segment nine not observed in any other species of *Tibicen* or in allied genera. It is possible that these spines function in connection with the uncus.

In some other, not very closely related cicadas, there are marginal appendages on the ninth abdominal segment. In the Central and South American genus *Carineta*, for instance, which, unlike *Tibicen*, has the tympana uncovered, there are a number of species that have a fold on the lower margin of segment nine often terminated with a spine or tooth, about or on which there are numerous hairs or bristles.

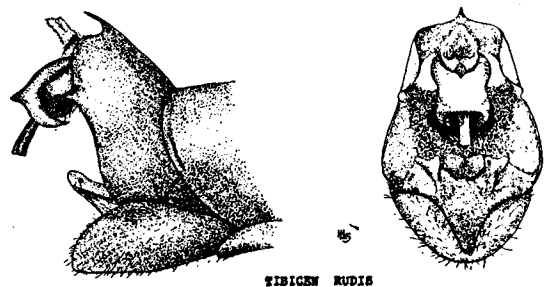
In addition to *Tibicen curvispinosa* I have received from many kind friends and institutions a number of cicadas, the records and descriptions of which follow, and, as usual, I am indebted to Mr. Hans L. Stecher for drawing the text figures.

Tibicen rudis (Walker)

Francis Walker described *Fidicina rudis* from Orizaba, Mexico, collection M. Sallé, in "List of the Specimens of Homopterous Insects in the Collection of the British Museum. Supplement," 1858. The description is not very definite, but in "Biologia Centrali-Americana, Rhynchota-Homoptera" (1. p. 8 Tab. 2, fig.

20), Distant figures and briefly describes under the name of *Cicada rudis*, a specimen from the Vienna Museum. He gives the habitat as Mexico.

In the writer's collection there is a male from Mexico City, April, 1926 (Miss H. L. Ayres); 9 males and a female collected at Cuernavaca, Morelos, in May, four of them by M. Rodriguez, and two males labeled: "Mexico, May, 1930," that agree with Distant's figure in having the vertical pruinose spots at the side on abdominal segments 3 and 4 of nearly equal length.



TIBICEN RUDIS

In the American Museum of Natural History there is a male labeled "Mexico," and in the Museum of Comparative Zoology, Cambridge, Mass., there are three males from the western coast of Mexico that bear a striking resemblance to *Tibicen rudis* but which have surprisingly different genitalia.

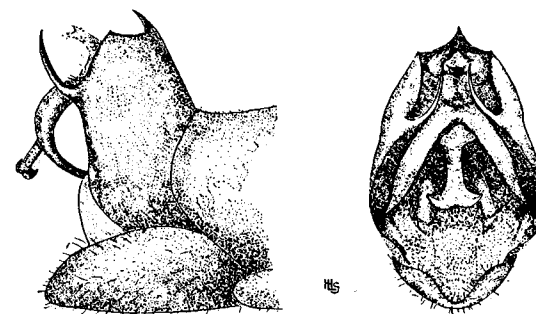
Both *rudis* and the allied species, here described as new, have the first cross vein of the fore wing as in the genus *Tibicen*, that is starting nearer to the base of the wing from radius 3 than in *Diceroprocta*, in which it starts at the lower central part of the first marginal area. Also, as in *Tibicen*, the last dorsal segment of the male terminates in a central spine and lacks the prominent lateral lobes found in *Diceroprocta*, and from which that genus derives its name.

Tibicen curvispinosa new species (Plate 3A, Fig. 1).

Type male from Colima, Mexico. Collection, Museum of Comparative Zoology, Cambridge, Mass.

Resembles so closely in size and markings the colored figure given by Distant in Biol. Centr. Amer., Rhynch. Hom., tab. 2, fig. 20, that the illustration does well for both *rudis* and *curvispinosa*. In *curvispinosa* there is

a long, slim, upturned spine protruding backward from segment IX, not present in *rudis*, which has merely a low protuberance. The uncus in *curvispinosa* is deeply cleft with the resulting two claw-like extremities long and curved inward. In *rudis* the uncus has the much shorter claws curved toward each other and more suddenly bent inward. Also there is a prominent ridge across the uncus above the claws not present in *curvispinosa*. The opercula overlap, are slightly less broadly rounded at the extremities than in *rudis* and reach the third or fourth abdominal segment.



TIBICEN CURVISPINOSA

Body dark greenish-brown or chestnut colored with black markings. Head with an interrupted black stripe connecting the eyes. Pronotum with a central, oblong, pale spot touching the anterior margin; the grooves blackened, and a transverse black line along the anterior edge of the broadly, greenish-brown collar. Also a black spot each side at the end of the collar. Mesonotum with the usual four obconical spots reaching backward from the front margin, the inner pair shortest. The elevated \times dark greenish brown with a black spot in the depression anterior thereto, and a black stripe each side extending nearly to the fore wings. Tergum black with about the posterior half of each segment dark greenish brown. The type has a conspicuous pruinose spot each side at the base; one each side on segments 3, 4, 7 and 8. Beneath the body is pale and pruinose; the legs pale and the central broad stripe on the abdomen straw color. In the male from "Mexico" the pruinose spots at the base of the abdomen are small; there is a small spot each side on segments 3, 7 and 8. Wings with the venation dark brownish green, the basal cells of the fore wings clouded with black and dark green; basal membranes of both pair of wings blackish gray with a small and inconspicuous bright orange area at the base of each hind wing.

As has been indicated this color description will cover both *rudis* and *curvispinosa*.

MEASUREMENTS IN MILLIMETERS

	Male Type
Length of body	37
Width of head across eyes	15

Expanse of fore wings	100
Greatest width of fore wing	15
Greatest length of operculum	8

Two additional males from Colima, Southwestern Mexico; a male from Nayarit, also on the west coast of Mexico and about 100 miles north of Colima, and the male from "Mexico" mentioned above, are the paratypes examined of this remarkable species.

Distant correctly states that *Tibicen rudis* (and his observation also applies to *curvispinosa*) "much resembles [in general form] the well-known European species *C. fraxini*" or *plebeja*, designated as the type of the genus *Tibicen* as at present understood.

In "Studies in Certain Cicada Species" (Entomological News, April, 1907), Smith and Grossbeck emphasize the importance of an examination of the male genitalia as a means of separating the species of cicadas, and as an example of a remarkable structure they show on Plate 3 the end of the abdomen of what is here described as *Tibicen curvispinosa*. They did not describe the species on account of lack of specimens.

***Tibicen nigroalbata* new species (Plate 3A, Fig. 2).**

Type female from Santa Cruz County, Arizona, August 15, 1935 (Prof. E. D. Ball) American Museum of Natural History.

Resembles both *Tibicen rudis* and *Tibicen curvispinosa*, but the front of the head is differently shaped and the tergum is shining black except for the pruinose spots. In *rudis* and *curvispinosa* the tergum is mainly chestnut-colored with the segments blackened along the base only.

Head shaped as figured and the abdomen broader at segment six than at base. In the female of *rudis* the sides are more parallel.

Head black, a transverse stripe extending from the rugæ nearly to the eyes; a spot on the front and an oblique stripe each side of the ocelli extending backward to the hind margin, chestnut-brown. Pronotum narrowly edged anteriorly with brown, a central oblong pale spot touching the anterior margin; the grooves blackened, and a conspicuous transverse black band along the anterior edge of the broadly brown collar. Also a black spot each side at the end of the collar. Mesonotum black, with the posterior margin, the cruciform elevation and a spot each side near the base of the wing, brown. The usual obconical areas are outlined at the sides with brown. Tergum shining black with conspicuous pruinose spots at sides, arranged as shown on the plate. Beneath the body is pale darker about the head and pruinose; the legs pale and the central broad stripe on the abdomen pale chestnut color. Wings with the venation dark, the basal cells of fore wings almost black, as well as the basal membranes of both pair of wings.

MEASUREMENTS IN MILLIMETERS

	Female Type
Length of body	38
Width of head across eyes	15
Expanse of fore wings	102
Greatest width of fore wing	16

In writing of the specimen here described, Prof. Ball stated that it came from Atascasa Mountain, 24 miles (by road) northwest of Nogales in Santa Cruz County, Arizona, probably four or five miles from the Mexican border. "These big cicadas were singing everywhere in the oaks, but very difficult to get hold of. This female was purely accidental; I was beating the tree for tree-hoppers."

Twelve male and one female *rudis*, and five *curvispinosa* have been examined, none of which are black as in *nigroalbata*. In the "Transactions of the Maryland Academy of Sciences" (1892, page 154), P. R. Uhler states that *rudis*: "inhabits Eastern Mexico, and is much like a fragmentary specimen in my collection from Arizona."

***Tibicen paralleloides* Davis.**

This species was described and figured in the JOURNAL, N. Y. Entomological Society, for March, 1934, from a single male collected in the vicinity of Compostela, Nayarit, Mexico. A second male has been discovered in the collection of the American Museum of Natural History labeled "Mazatlan, Mexico." This is no doubt the coast town of Mazatlan about 175 miles northwest of Compostela. The same differences in length of rostrum and venation are noted between this specimen and the five *T. parallela* in the writer's collection, as recorded on page 41 of the original description.

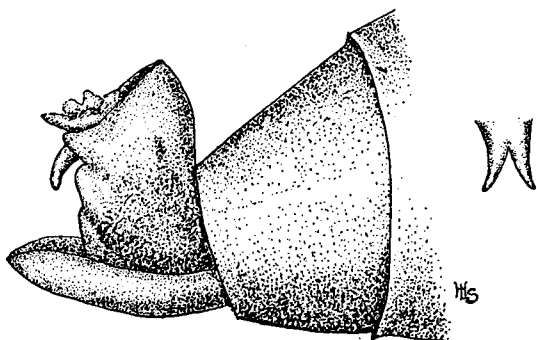
On August 18, 1935, Dr. R. H. Beamer and his companions collected eight males and one female *Tibicen parallela* in the Santa Rita Mountains, Arizona.

***Melampsalta texana* new species (Plate 3B, Fig. 6).**

Type male from 10 miles east of San Antonio, Texas, May 19, 1935 (Charles H. Gable, Jr.). Davis collection.

Resembles the pale green-colored *Melampsalta kansa*, in having five long marginal areas in the hind wing instead of six, as in *M. calliope*, but differs

from both of them in having the dorsal tip of the abdominal segment IX rounded and not drawn out into a curved point. In *M. cameroni*, also from Texas, there are five short marginal areas in the hind wing; the dorsal tip of segment IX is rounded, and it is broad instead of narrow across the widely open tympanal areas of the abdomen. The opercula are much larger and rounded out than in *texana*. In *cameroni* the marginal areas of the fore wing are shorter than the ulnar areas immediately adjoining them, while in *texana* the marginal areas are longer. In *texana* the head is narrow and the supra-antennal plates are nearly as in *cameroni*, and not protruding as in *kansa*. It is less hairy beneath than *cameroni*.



MELAMPSALTA TEXANA

General color of upper surface of body dark green; head black, front green; pronotum green, grooves narrowly black; mesonotum green with four obconical dark marks, the inner pair about one third as long as the outer pair. Hind margin of the metanotum green. Both pairs of wings clear; basal membranes almost white. Tergum green, the exposed timbals darker. Beneath the front green with black surrounding the transverse rugae. Legs pale, darker at base, and with claws and spines fuscous. Opercula green; abdomen green with the usual dark spot centrally at the base.

MEASUREMENTS IN MILLIMETERS

	Male Type
Length of body	12
Width of head across eyes	3
Expanse of fore wings	27
Greatest width of fore wing	5.5

The type is the only specimen so far examined, but the structural characters are so distinct that it may be separated as a species.

Okanagana magnifica Davis, and the Development of a Supernumerary Vein.

A very unusual condition exists in many individuals of this large species, irrespective of the locality from whence they come. It is the development of a branch or indications of a branch vein extending from vein Cu_1 into the 8th marginal area of the fore wing. In its greatest development this supernumerary vein extends nearly across the 8th marginal area and then either turns upward or downward. In its least development it consists of a mere thickened node at about the central part of vein Cu_1 . When it exists, the position of the vein, or its indication, has considerable regularity.

Three hundred and four specimens of *magnifica* in the writer's collection from Arizona, New Mexico and Colorado have been examined, and the supernumerary vein has been found more or less developed in 77 individuals, or about one fourth of the number. A great many *Okanagana* of other species have been examined, between one and two thousand in all, and only in a single male of *annulata* has an indication of such a supernumerary vein been found. There are about fifty species in the genus in North America, as well as many cicadas of other genera, that get on very well without developing a supernumerary vein from Cu_1 .

Okanagana formosa Davis.

The type and allotype of this species came from Coal Creek, Iron County, Utah, June 27, 1919, and were described and figured in this JOURNAL for June, 1926. In 1930 Dr. John W. Sugden, of Salt Lake City, sent me for examination a female of this species collected in 1929 in Zion Park, Washington County, Utah, and in the collection of the U. S. National Museum there is a male from Helper, Carbon County, Utah, August 4, 1899. These specimens are alike and may be told from *cruentifera* by having the hind margin of the pronotum, and sometimes the sides as well, orange; in *cruentifera* the entire pronotum is black. There are other less conspicuous differences as well as the shape of the uncus.

Okanagana aurora new species (Plate 3A, Figs. 3 & 4).

Type male and allotype female, Mammoth, Mono County (near Inyo County line), California (Dr. J. A. Comstock). Davis collection.

Resembles *Okanagana cruentifera*, but smaller and with a narrower head the front of which is considerably produced. It more closely resembles the little known *Okanagana formosa* from Iron County, Utah, described and figured in this JOURNAL, June, 1926, but the color arrangement is different and as in *cruentifera* it is more hairy both above and beneath than *formosa*.

Head narrower than pronotum at anterior angles with the grooves as in *cruentifera* and *formosa*. Median sulcus of the front well defined, with the sides more parallel near the top but separated below as in *cruentifera*. Last ventral segment with the sides not quite as converging as in *cruentifera* and *formosa*, and more broadly rounded at the extremity. Uncus black, and as figured. The last ventral segment of the allotype is deeply notched centrally with an indication of an inner notch which is more pronounced in the female paratype.

Fore wings shaped as in *formosa* and *cruentifera*. The venation, including nearly the entire costal margin, a bright orange except about the marginal areas. Basal cell of the fore wings black centrally, with a small black spot below. Both pairs of wings at base, as well as the anal membranes, bright orange, but not red as in *cruentifera* and *formosa*.



OKANAGANA AURORA

Type entirely black above with a small orange spot each side on the mesonotum at base of the wings, and also the hind margin narrowly edged with orange. Metanotum narrowly margined posteriorly with bright orange. Segments 8 and 9 of the tergum margined posteriorly with orange, and very briefly and narrowly at the sides near the lower part of the abdomen. The female paratype is black above like the type, but the allotype in addition to the orange spot of the type, has a pale spot above each antenna, the pronotum very narrowly pale on the margins, seen when magnified, and two small orange spots at the anterior extremities of the cruciform elevation. Segments 8 and 9 are broadly margined posteriorly with bright orange. Beneath black; legs nearly entirely orange, each abdominal segment very narrowly margined posteriorly with orange except the last which is broadly margined. Valve orange clouded at the base and sides.

MEASUREMENTS IN MILLIMETERS

	Male Type	Female Allotype
Length of body	30	25
Width of head across eyes	7.5	7
Expanse of fore wings	70	70
Greatest width of fore wing	11	11
Length of valve	6

The type, allotype and paratype, all collected at the same place and time, are alike in the brilliant orange coloring, resembling somewhat *Okanagana ornata* Van Duzee, except that the wing veins are bright colored to the marginal areas, giving the insect a singularly beautiful appearance. In *cruentifera* and *formosa* the venation about the ulnar and marginal areas is fuscous.

Okanagana lurida Davis (Plate 3A, Fig. 5).

This species was described and figured in this JOURNAL, June-September, 1919, from a male in the collection U. S. National Museum collected at Pullman, Washington (C. V. Piper). In this JOURNAL, March, 1925, page 46, is the record of a second male in the National Museum collection, also collected at Pullman, Washington (C. V. Piper). Lately Mr. Paul W. Oman, in charge of the cicadas in the National Museum, kindly sent to me several specimens for determination, and among them are a male and female labeled: "Pullman, Washington (C. V. Piper)."

As these specimens are no doubt of the original lot, it is advisable to mention that the female of *lurida*, not available in 1919, has the notch in the last ventral segment broad with an indication of an inner notch. The length of the body is 24 mm., and the wings expand 65 mm. The venation is pale as recorded in the original description, with the basal cell of the fore wing clear or nearly so. The pronotum is margined with pale orange, very narrowly so on the anterior margin. The orange at the base of all of the wings is paler than in *Okanagana bella*, in which the basal area of the fore wing is opaque, and the notch in the ventral segment of the female is single. In *Okanagana occidentalis*, from the same general region as *lurida*, the head is hairy and the pronotum is black on the lateral edges.

From specimens in the collection of the U. S. National Museum

it appears that *lurida* is to be found also in British Columbia and Oregon, and that some individuals are darker colored than those of the original series.

Okanagana nigrodorsata Davis.

Most species of *Okanagana* are more easily identified when the wings are spread and their general shape and the colors of the basal membranes are seen. *Okanagana nigrodorsata*, however, has an outstanding distinction even with closed wings, when the orange, basal margin of the hind wings show as conspicuous, oblique bars against the insect's coal black body.

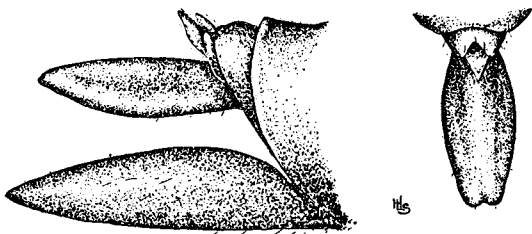
The species was described in this JOURNAL for March, 1923, and additional specimens, 24 in all, mentioned in the JOURNAL for June, 1932, p. 253. All were collected in June or July in the northern half of California. On June 29, 1935, Dr. Raymond H. Beamer and his associates collected 14 specimens of this species at Weed, Siskiyou County, California.

Okanagana ferrugomaculata new species (Plate 3B, Fig. 4).

Type male, Aspen Lake, Klamath County, Oregon, June 18, 1934 (Kenneth McLeod, Jr.). Collection U. S. National Museum.

Resembles *Okanagana bella* in size and color but has a broader head, narrower wings, a longer uncus and the hind margins of the abdominal segments are more completely and conspicuously bordered with orange.

Head more deeply set in the pronotum than in *bella* with the result that the eyes are not prominent; front but slightly produced, median sulcus well defined. Pronotum with anterior angles rather sharp. Last ventral segment slightly truncated at the rounded extremity. Uncus when viewed in profile not as short and deep as in *bella*, but with the lower surface more gradually upturned toward the extremity. In *bella* the valve extends beyond the uncus, whereas in *ferrugomaculata* it is more nearly of the same length; when viewed from above with a shallow notch at the extremity. Fore wings nar-



OKANAGANA FERRUGOMACULATA

row, with dark venation except the front margin to end of radial cell; basal area black with the membranes of both pair of wings brilliant orange-red, as in *bella*.

Head black with the supra-antennal plates and the transverse grooves in front of the central ocellus, and the one immediately behind, orange. The region of the transverse rugae black bordered by orange; rostrum black orange at base. Pronotum nearly black bordered with orange, very narrowly on the anterior margin, with a large irregular rust-colored area each side of the central groove. Mesonotum shining black bordered on the sides posteriorly with orange, and an orange spot at the base of each fore wing. The elevated \times has the fore limbs touched with orange, in front of which are the usual four orange spots arranged in a semi-circle. Metanotum black edged posteriorly with orange. Tergum shining black with the segments plainly edged posteriorly with orange. Beneath, the legs are orange blackened at the joints and considerably blackened on the inner side of the fore femora. The abdominal segments are black centrally, broadly orange on the posterior margins, also with a black spot on each segment at the sides. Uncus black, valve black orange at the sides along the upper margin.

MEASUREMENTS IN MILLIMETERS

	Male Type
Length of body	24
Width of head across eyes	8
Expanse of fore wings	61
Greatest width of fore wing	10
Length of valve	4

In the writer's collection there are two males that closely resemble the type, one labeled Nevada County, California, June 20, 1913 (F. W. Nunenmacher), and the other from Yosemite, California, June, 1931. In the collection of the U. S. National Museum there is a female from Siskiyou County, California, that probably belongs to this species. The notch in the last ventral segment is broad and single, that is, there is no inner notch.

Okanagana canadensis Provancher.

On July 13, 1935, Mr. Paul W. Oman collected a male of this species in the low hills southeast of Salt Lake City, Utah, and states that, along with some other cicadas, it was found on sage brush. This is a western record for *canadensis* in the United States, and so far the only one west of the Continental Divide. A single male *canadensis* has been recorded from Strontia

Springs, Douglas County, Colorado. (See JOURNAL, N. Y. ENTOMOLOGICAL SOCIETY, March, 1930, p. 6.)

In Canada, *Okanagana canadensis* has been found in New Brunswick, Quebec, Ontario, Manitoba, and Alberta. *Okanagana rimosa* Say, which like *canadensis* is a species of northern distribution, has been found west of the Continental Divide, so the discovery of the closely allied *canadensis* in Utah is not as remarkable as it might at first appear.

Okanagana opacipennis Davis.

The female type of this beautiful species was collected by Prof. W. S. Wright at Buckman Springs, San Diego County, California, June 23, 1925, and the next year he collected a male on June 26 at the same place. Both specimens were found on manzanita, the bark of which is also reddish in color, and the cicadas are thus inconspicuous when resting on the bush. *Okanagana arctostaphylæ* Van Duzee, and *Okanagana rubrovenosa* Davis, also occur on the manzanita, and are reddish in color. (See JOURNAL, N. Y. ENTOMOLOGICAL SOCIETY, June, 1926, and December, 1927).

On June 6, 1935, Mr. Paul W. Oman collected a male *opacipennis* at Cajon, San Bernardino County, California, about 120 miles northwest of Buckman Springs. This specimen is brownish-red in general color. The head is dark about the eyes; pronotum dark at sides; mesonotum of a brownish color with slightly reddish tint; abdomen greenish brown with the usual triangular black area on dorsum; black spot each side on segments 2-8; uncus dark at sides with paler dorsal stripe; valve pale. Under side of head at eyes dark; rugæ pale; legs pale; abdomen pale. Wings of a pinkish brown color, both pair reddish-orange at base. This individual departs considerably in color from the three other known specimens.

On August 3, 1935, Dr. Raymond H. Beamer collected a male *opacipennis* at Idyllwild, Riverside County, about 70 miles north of Buckman Springs. It is quite like the female type and of the same reddish color. Dr. Beamer writes as follows: "I took this specimen from manzanita on a mountain slope one afternoon. It sang and I walked over to it. It buzzed out to the ground and was captured quite easily, due perhaps to the injured wing.

Recognizing that it was a good thing the whole party spent the next half day there but without success. We heard them but they would not sing long enough for us to penetrate the brush to them. They sang for but a few seconds and then not again for some time."

Okanagana rubrovenosa variety *rubida* new variety.

The species was described in the JOURNAL, N. Y. ENTOMOLOGICAL SOCIETY for March, 1915, from a male collected in Mariposa Co., California, June 15, 1914, and the statement is made that the "dorsum is black, but has a dull reddish appearance owing to its covering of rufous hairs." In giving further records of the species (JOURNAL, N. Y. ENTOMOLOGICAL SOCIETY, June-Sept., 1919), a female, collected at Keddie, Plumas Co., California, June 28, 1918, by Frank Morton Jones is described, and it is stated: "body black above covered with short reddish hairs, which give it a rusty appearance. The tergum is black where denuded of hair."

This beautiful insect is found on manzanita bushes, the reddish bark of which the cicada closely matches in color. Specimens are now in the writer's collection from Oregon, California, Arizona and Utah, and it has been found that in some of the broods or colonies, the insects have black bodies, as mentioned in the original description, while in other colonies the insects are almost entirely red in color, including the veins of the wings, except for the vertical darker stripes usually present on the sides of the abdomen.

For this color variety the name *rubida* is here proposed, and as type and allotype a male from Redding, Shasta County, California, June 28, 1935 (R. H. Beamer), and a female from Dunsuir, Siskiyou County, California, July, 1922 (F. R. Cole), have been chosen.

Specimens from Kirby and Grant's Pass, Oregon, have black bodies, while from the ten counties in California they may be either typical *rubrovenosa* or variety *rubida*. Those in the writer's collection from Buckman Springs, San Diego County, Southern California, have black bodies. From Lake County both dark and light-colored individuals have been received. Eight specimens from Utah have black bodies.

Many specimens without data as to broods have been received from Arizona, and they are usually of variety *rubida*, with an occasional nearly black specimen present. Rarely, however, is the head, pronotum and mesonotum black as in typical *rubrovenosa*.

Okanagana hirsuta Davis (Plate 3B, Fig. 1).

This large and extremely hairy species, of which the male is unknown, was described in this JOURNAL, March, 1915, pages 13 and 43, from a female in the collection of the American Museum of Natural History collected on Santa Rosa Island off the coast of Southern California. The hairs are particularly long on the under side and when viewed from above they are seen to form a fringe about the body. The legs are also hairy, and on the hind tibiae they are about twice as long as the diameter of the joints. The basal cell of the fore wing is clear.

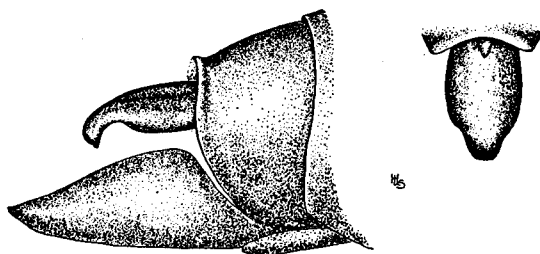
What appears to be a new species, or at least a race of *hirsuta*, is found on the Island of Santa Catalina, about 80 miles to the southeast of Santa Rosa.

Okanagana hirsuta catalina new race (Plate 3B, Figs. 2 & 3).

Type male, Santa Catalina Island, California, June 17. Davis collection. Allotype, female, Santa Catalina Island, California, June 27 (D. H. Blake Coll.). U. S. National Museum.

Smaller than *hirsuta* with the front of the head not as prominent. Basal membranes of the wings orange, but not as clouded or darkened as in *hirsuta*, which also has blacker venation. Tergum with the segments completely edged with orange posteriorly; in *hirsuta* they are orange on the sides only.

Head nearly as wide as the anterior margin of the pronotum; front and eyes not prominent; median sulcus narrow with parallel sides. Last ventral segment in the type with a shallow but well defined notch at the extremity. In the allotype the ventral notch is broad with an indication of an inner notch. The uncus is hooked at the extremity and shaped as illustrated. It is smaller than in *vanduzeei* and other species of equal size in which the uncus is hooked. Fore wings with the basal cell clear. As in *hirsuta* this is a very hairy insect. Many of the hairs on the hind tibiae are more than twice as long as its diameter.



OKANAGANA HIRSUTA CATALINA

Head black; supra-antennal plates touched with orange, and a transverse orange spot in front of the central ocellus. Pronotum black out to the lateral margins; front margin narrowly edged with orange; hind margin more broadly so. In the allotype there is an irregular paler area each side of the central line. Mesonotum black, hind margin orange; X orange in part, with the four spots in front of the X arranged in a semi-circle. Orange near the base of each fore wing. Metanotum margined posteriorly with orange. Tergum black, the second segment more broadly margined posteriorly with orange than the remaining segments. Uncus black; valve pale tipped with black. Beneath the central sulcus of the head is bright orange; the legs are pale striped with black; the abdominal segments are orange, each one with a black spot at sides; the central portion with the segments black at base, but in some the blackened portion is very narrow.

MEASUREMENTS IN MILLIMETERS

	Male Type	Female Allotype
Length of body	23	22
Width of head across eyes	7	7
Expanse of fore wings	63	64
Greatest width of fore wing	10	10
Length of valve	3.5

Tibicinoides mercedita plays possum.

In the original description of *T. mercedita* in this JOURNAL, March, 1915, twenty-two specimens are recorded, all collected in Merced County, California, June 18, 1914.

On June 8, 1935, Mr. Paul W. Oman collected 21 males and 10 females at Lancaster, Los Angeles County, California, and on June 12, 1935, four males and one female at Califa, Madera County, California. Of the Lancaster colony Mr. Oman wrote: "The males were singing in short clumps of grass, and when approached or otherwise disturbed, immediately folded up their legs, released their hold on the grass stem, and dropped to the ground. The females did the same. Specimens could be picked up and handled without their showing any signs of life, and after dropping to the ground it would be several minutes before they again climbed up a grass stem. I do not recall seeing a single specimen in flight."

Mr. Franklin T. Scott kindly sent me 10 males and 5 females of this species taken June 5, 1935, and stated that they were found in the river bottom lands near Visalia, Tulare County, California, on short grass and weeds, and were very numerous.

From the foregoing it would appear that 1935 was a brood year for *Tibicinoides mercedita* in several localities in California.

***Clidophleps beameri* new species (Plate 3B, Fig. 5).**

Type male, Cuyama Ranch, California, July 25, 1935. University of Kansas.

Front of head more produced than in any other recorded species of the genus. Median sulcus well defined with the sides nearly parallel and even. Last ventral segment short and the extremity slightly truncate. Uncus as figured. Fore wings broad, pale straw-colored, the veins about the marginal areas but slightly darkened; the central portion bulged outward or upward if the wings are expanded, and the triangular nodus at the outer end of the cubital area prominent, as in *C. distanti* and *C. blaisdelli*. (See this JOURNAL, June, 1926, plate XXIII, and December, 1927, plate XVIII).



CLIDOPHLEPS BEAMERI

General body color pale yellowish or straw color, variegated slightly with fuscous. Front of head with the transverse rugæ slightly darkened near the median sulcus; a curved dark mark surrounding each of the posterior ocelli. Pronotum straw-colored with a spot each side of the central line at the front margin, and each outer groove very slightly darkened. Mesonotum straw-colored with but the two outer obconical marks darkened—the central pair but faintly outlined. Dorsum of the abdomen yellowish with a slightly greenish tinge, each segment with an irregular, central dark spot, also dark spots along the sides to segment IX. The uncus and valve are pale, also the underside of the abdomen. The legs are pale striped and spotted with brown.

MEASUREMENTS IN MILLIMETERS

	Male Type
Length of body	25
Width of head across eyes	7
Expanse of fore wings	61
Greatest width of fore wing	10
Length of valve	4.5

In addition to the type, seven males were collected at the same place and time by the members of the University of Kansas expedition. Cuyama Ranch is along the Cuyama River, a branch of the Santa Maria River, which forms the northern boundary of Santa Barbara County, and the cicadas were collected between fifty and seventy-five miles from the coast. They were in giant sage, and Jack Beamer, an expert cicada collector, was attracted by their peculiar song. "One of them will start and then the whole lot will start up; sing a little while, and then quit just as suddenly as they started." The entire party went cicada hunting, but as the insects favored them with but one or two brief outbursts of song, only a few additional specimens were collected.

***Platypedia occidentalis* Davis.**

This beautiful and highly colored insect was described in this JOURNAL, June, 1920, as a variety of *Platypedia putnami* Uhler, but it is probably a distinct species. The type and allotype came from Trinity County, California, and other specimens from Siskiyou, Mendocino, Sonoma and Marin counties—ten in all.

Since 1920 no other specimens have been seen by the writer until the examination of the four males and five females collected at Weed, Siskiyou County, June 29, 1935, by Dr. Raymond H. Beamer and his associates. The species appears to be confined to the western part of California.

***Platypedia mariposa* Davis.**

On June 28, 1935, Dr. R. H. Beamer collected four males and a female of what appears to be this species at Redding, Shasta County, California. *Mariposa* was described and figured in this JOURNAL, September, 1935, from five specimens from Mariposa County. The Shasta County specimens differ in being generally darker in color, with the membranes at base of all the wings white and less of pale orange surrounding.

***Platypedia scotti* Davis.**

The first specimens of this species seen by the writer were sent by Mr. F. T. Scott, who collected the type and allotype as well as eight paratypes, at Kaweah, Tulare Co., California, May, 1935. The species was figured and described as *P. scotti* in the "JOURNAL, N. Y. ENTOMOLOGICAL SOCIETY" (Vol. XLIII, No. 3, p. 308,

September, 1935). On the cover of the December "JOURNAL, N. Y. ENTOMOLOGICAL SOCIETY" (No. 4), it is stated that No. 3 was published on October 1, 1935.

Platypedia sierra Wymore was described in the "Pan-Pacific Entomologist" (Vol. XI, No. 3, p. 143, July, 1935), which number according to "Dates of Publication, 1935," p. 192, of the same journal, was published October 8, 1935.

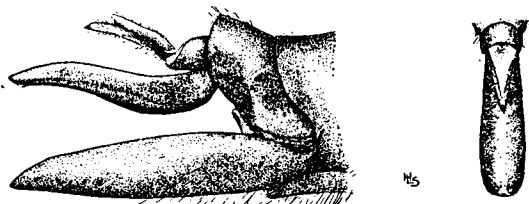
This gives the specific name *scotti* priority.

A comparison with *P. scotti* of the four paratypes of *P. sierra* sent to me October 21, 1935, by Mr. Wymore, show it to be the same species. *Scotti*, by reason of the distinctive shape of the uncus, can be easily separated from other *Platypedia*.

Platypedia balli new species (Plate 3B, Fig. 7).

Type male, Yarnell Heights, Yavapai County, Arizona, June 20, 1935 (Prof. Elmer D. Ball). Collection, American Museum of Natural History.

Resembles the larger *Platypedia keddensis* and *Platypedia lutea* in color pattern and in having the front wings rather narrow, but the uncus is much flatter than in either. It is separated from the *areolata* and *similis* in having the fore femora black except at tip, instead of chestnut colored, and while at first glance it resembles *P. similis* in size and the pale coloring at base of wings, the uncus is differently shaped, being flattened toward the extremity instead of much arched.



PLATYPEDIA BALLI

Body black above and below, the legs yellow striped with black; fore femora black tipped at the extremity with pale orange. A pale spot above each antenna; pronotum black; front margin narrowly pale with the central groove pale nearly to the collar, which is pale orange. Mesonotum black with a bluish tinge, hind margin pale orange. Metanotum edged with orange. Tergum black with a slightly brassy tinge. Uncus and valve black in type and in the paratypes. Costal margin of the narrow fore wings orange to end of radial area; the venation of the fore wings otherwise darker or fuscous; membranes at base of both pairs of wings pale orange, almost white.

MEASUREMENTS IN MILLIMETERS

	Male Type
Length of body	19
Width of head across eyes	6
Expanse of fore wings	47
Greatest width of fore wing	9
Length of valve	4

In addition to the type, four male paratypes have been received from Prof. Elmer D. Ball, all collected at Yarnell Heights, Yavapai County, Arizona, June 20, 1935.

PLATE 3A

- Figure 1. *Tibicen curvispinosa* new species. Type.
 Figure 2. *Tibicen nigroalbata* new species. Type.
 Figure 3. *Okanagana aurora* new species. Type.
 Figure 4. *Okanagana aurora* new species. Allotype.
 Figure 5. *Okanagana lurida*. Topotype.

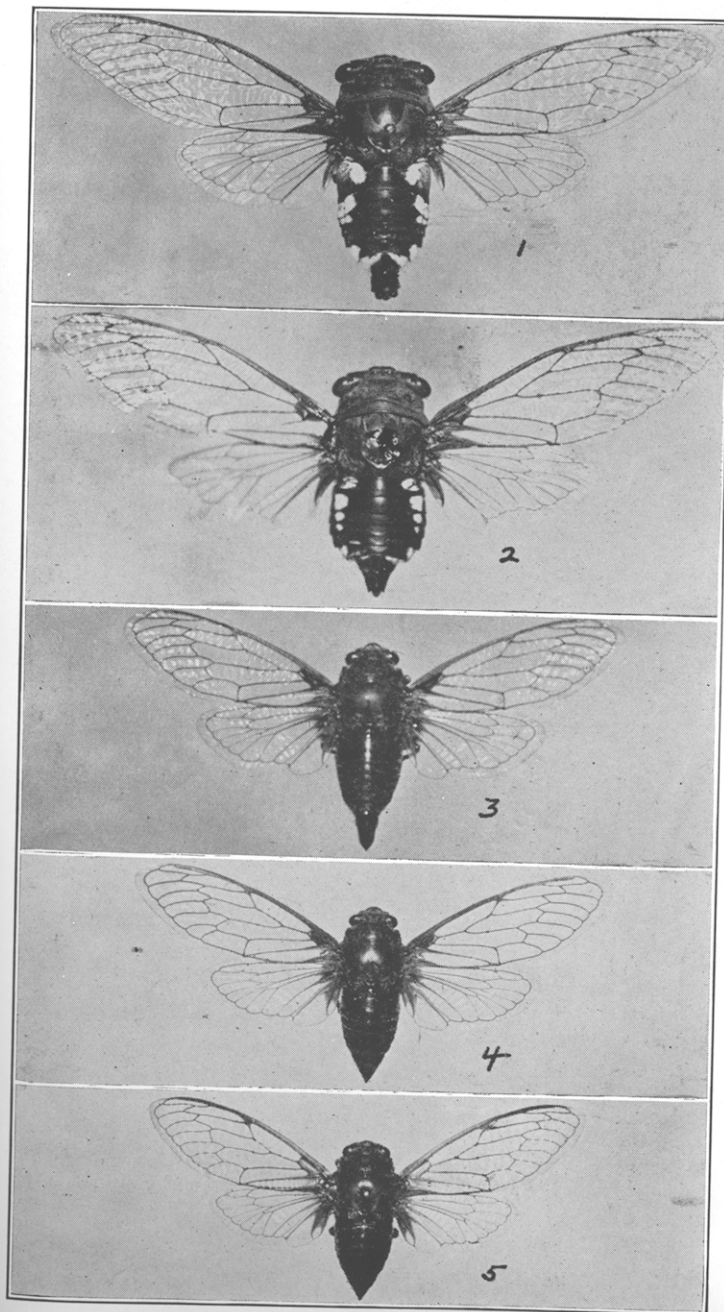


PLATE 3B

- Figure 1. *Okanagana hirsuta*. Type.
 Figure 2. *Okanagana hirsuta catalina* new race. Type.
 Figure 3. *Okanagana hirsuta catalina* new race. Allotype.
 Figure 4. *Okanagana ferrugomaculata* new species. Type.
 Figure 5. *Clidophleps beameri* new species. Type.
 Figure 6. *Melampsalta texana* new species. Type.
 Figure 7. *Platypedia balli* new species. Type.

