

NEW CICADAS FROM CALIFORNIA AND ARIZONA WITH NOTES ON SEVERAL OTHER SPECIES

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In June, 1925, Prof. W. S. Wright, of the Natural History Museum, San Diego, California, made a very interesting collection of Cicadas at Buckman Springs, near Laguna Mts., in the southern part of San Diego County. He collected eight species, one an undescribed *Clidophleps*, and two others that, taken together with additional specimens in the writer's collection, are here considered as new varieties or races. Professor Wright also collected at Buckman Springs on June 23, a male of the beautiful green and black *Okanagana nigriviridis*, of which species but few have thus far been taken. Mr. Alonzo C. Davis collected a number of Cicadas of two species at Cactus Flat, San Bernardino Mts., on June 8, 1925, and also sent a number of other specimens from elsewhere in California. Professor Frederick M. Gaige sent specimens from Lamar, Colorado, collected in 1925, and Dr. R. H. Beamer, others from Oklahoma and New Mexico. This material, together with specimens that I have been able to examine in the collection of the U. S. National Museum, and others sent by several professional collectors form the basis of the present paper. I am very much obliged for the help that I have received.

Tibicen robinsoniana Davis.

Lately while examining the specimens in the P. R. Uhler Collection, U. S. National Museum, a male of this species was discovered labeled "Tenn." The species was described from Virginia and is also known from Missouri.

Tibicen figurata (Walker). Pl. XXI, fig. 1.

On October 7, 1925, Miss Louise Knobel found the female here figured at Hope, Arkansas. She reports that it was in a dying

condition along a road. It is remarkable on account of the dorsal line of pruinose spots on the abdomen, and is the only one I have seen so plainly marked. Some specimens have indications of such a line. Over forty have been examined.

A similar case was the female *Tibicen pruinosa* Say, mentioned and figured in this JOURNAL for March, 1923. *Figurata* belongs to a group of eastern North Am. Cicadas, and as remarked in the case of the female *pruinosa*, it is interesting to see pruinose spots appear on the abdomen as the home of such species as *dorsata* and *dealbata* is approached. These two species and their allies, normally have a dorsal line of pruinose spots on the abdomen.

Tibicen dorsata (Say). Pl. XXI, fig. 2.

The specimen figured is remarkable because it resembles in the pruinose markings on the abdomen *dealbata* Davis. Usually in *dorsata* the sides are not so whitened. This and nine others were kindly sent to me for examination by Prof. Frederick M. Gaige, who collected them on August 24 and 27, 1925, on the sand hills south of Lamar, Colorado, where there were some clumps of sage bushes. On August 25 he found *dealbata* coming out of the mud flats on the Arkansas River north of Lamar, where there were cotton woods.

Tibicen montezuma (Distant).

Biol. Cent. Amer, Homoptera, p. 8. Pl. 2, fig. 2.

While visiting the Arbuckle Mountains in Oklahoma, in July, 1925, Mr. Raymond H. Beamer of the University of Kansas collected five males and two females of what has been identified as *montezuma* Distant. He has contributed the following which I quote with his permission: "This species was taken over an area possibly ten or fifteen miles in extent, in cedars and oak. Its song was shrill and long continued while undisturbed. I found them exceedingly hard to locate, and some of them quite wild. As I remember its song very much resembled that of *Tibicen bifidus*."

Other specimens of this species, some of which are in the writer's collection, have been examined as follows: Gatesville, Coryell Co., Texas, July 16, 1888, male, U. S. Nat. Mus.; New Braunfels,

Comal Co., Texas, Aug. 14, 1921, male, July 1922, male and female, and July, 1923, male (O. M. Locke, Jr.); Anhalt, Comal Co., Texas, June 28, 1917, male, Cornell Univ.; Kerrville, Kerr Co., Texas, female (F. C. Pratt), U. S. Nat. Mus.; Comstock, Valverde Co., Texas, July 3, 1917, male (Dr. H. H. Knight); Juno, Devils River, Texas, July 3, 1917, male and female (Dr. H. H. Knight); Black Canyon near Bumble Bee, Arizona, July 30, 1917, female (Dr. H. H. Knight).

In the Transactions, Maryland Academy of Sciences, 1892, p. 154, Uhler states that *montezuma* occurs in Mex., Calif., Arizona, New Mex. and Western Texas, but he may have included specimens of other species in this distribution.

Tibicen inauditus Davis.

The six males of this species collected in Oldham Co., Texas, in 1917, 1918 and 1919, by Miss M. McGill, are referred to in this JOURNAL for March, 1921. Recently Mr. Raymond H. Beamer, of the University of Kansas, has sent for identification another male. It came from Las Vegas, New Mexico, June 11, 1925. This is about 150 miles west of the type locality. Miss McGill described the song as "very shrill."

Tibicen longiopercula new species. Pl. XXI, figs. 3 and 4.

Type male, Chiricahua Mts., Cochise Co., Arizona, June 10 (H. G. Hubbard collector). Collection U. S. National Museum.

Resembles *T. chiricahua* and *T. parallela*, particularly the first named, described and figured in this Journal for March, 1923.

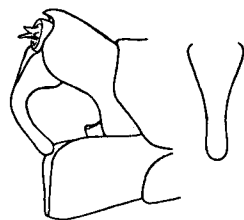
Head across eyes broader than the anterior width of the pronotum; front moderately produced and slightly more so than in *chiricahua*; no median sulcus; transverse rugæ well defined. Many white hairs on the face, the remainder of the under side of the body with but few hairs except on the legs. The opercula overlap at the base; are very long reaching the last ventral segment and end in rather conspicuous points that are bent outward as shown in the illustration. The last ventral segment is rounded and feebly notched at the extremity. Uncus bent as shown in the illustration, and armed on the inner surface from near the base to the rounded extremity with many short bristles. Sides of the body parallel for a considerable distance.

Body black; head with pale spots, one at base and apex of front, a small one near each eye and two on posterior margin. At first view the head appears black except for the small orange spot on apex of front, the remaining spots being so inconspicuous. Pronotum black with inconspicuous dull

testaceous spots centrally; posterior margin narrowly edged with testaceous. Mesonotum with two curved orange colored lines centrally extending backward from the front margin about half way to the cruciform elevation. Near the base of each fore wing there is an inconspicuous pale spot. The cruciform elevation is orange, black centrally, with a black band crossing each of the anterior limbs. Abdomen black above with a rather large dull orange spot centrally on each tympanum; pruinose each side on segments three to eight, which last has two orange spots, one on each side. Underside of body dark, variegated with orange on the head and thorax; conspicuously red on the metasternum near the insertion of the hind pair of legs which are lighter in color than the fore and middle pair of legs. The long opercula, which almost completely cover the underside of the abdomen, are conspicuously reddish and shining, especially near the extremities. The last ventral segment and valve are also reddish and shining. Fore wings with the basal area opaque; venation brown, darker about the marginal cells; first and second crossveins clouded. The basal membranes of both pair of wings are grayish, variegated with spots of bright orange at their extreme base, that is near the body.

MEASUREMENTS IN MILLIMETERS

	Male Type
Length of body	28
Width of head across eyes	10
Expanse of fore wings	72
Greatest width of fore wing	12
Greatest width of operculum	6
Greatest length of operculum	11



TIBICEN LONGIOPERCULA. TYPE

This very distinct insect, of which only the type is known, may be taken for *Tibicen chiricahua* if viewed from above only, but when turned over the remarkably long and pointed opercula readily separate it from other related species thus far described. The inner surface of the uncus is also very characteristic and

reminds one of a scrubbing brush, being very different from the smooth inner surface of the same organ in *chiricahua* and *parallela*. In the last named species the short uncus has many minute bristles on the outer part of the uncus.

Okanagana formosa new species. Pl. XXII, figs. 1 and 2.

Type male from Coal Creek, Iron County, Utah, June 27, 1919, and allotype from the same place, June 25, 1919 (Tom Spalding). Davis collection.

This large and beautifully colored species resembles *Okanagana cruentifera*, but is slimmer, has a narrower head, a somewhat differently shaped uncus, and the hind margin of the pronotum or collar is orange instead of all black. From *Okanagana schaefferi* it differs in having the front less prominent, in not having the pronotum edged all around with orange and in the front femora, which have a broad orange stripe on the outer side instead of being all black except the distal tips as in *schaefferi*. The uncus is also not as short and stout as in *schaefferi*. Head slightly narrower than the front margin of the pronotum; front, considerably produced and prominent. Median sulcus of the front well defined with the sides nearly parallel approaching near the top. Pronotum with the humeral angles rounded, and the anterior angles prominent. Last ventral segment with the sides nearly parallel to the rounded extremity. Uncus black, and when viewed in profile, with the top and lower lines nearly parallel until the extremity is approached. When viewed from behind, with a shallow notch at the extremity. The valve in the male extends beyond the uncus, is orange, blackened at the sides. The last ventral segment of the allotype is deeply notched with a very slight indication of an inner notch. Fore wings about as in *cruentifera* with the costal margin orange almost to the end of the wings, where it is slightly darkened; basal cell opaque. The venation is paler than in either *cruentifera* or *schaefferi*; only the marginal cells are surrounded by fuscous veins. The base of both pairs of wings, as well as the membranes or flaps, are bright red. Head black in the type; in the allotype there is an inconspicuous pale spot above each antenna. Pronotum black with the hind margin or collar orange, and irregular ferruginous areas each side of the central line. In the allotype there is a central pale line separating the ferruginous areas. Mesonotum black with the posterior margin and the following reddish orange; two spots each side, one at the base of each of the wings, the posterior extremities of the obconical central marks; the anterior extremities and the elevated central portion of the \times . Metanotum narrowly margined posteriorly with reddish orange. Tergum black with the hind margins of the segments very narrowly margined with reddish orange. In the allotype the two last segments are broadly margined with reddish orange. Beneath the legs are marked with reddish orange and black, and the fore femora are not encircled with black and pale at the extremities as in *schaefferi*. The abdominal segments are reddish orange centrally, each broadly marked with black near the outer margin.

MEASUREMENTS IN MILLIMETERS

	Male Type	Female Allotype
Length of body	27	27
Width of head across eyes	7	8
Expanse of fore wings	68	72
Width of fore wings	11	13
Length of valve	4



OKANAGANA FORMOSA. TYPE.

The writer formerly included these two specimens with *Okanagana cruentifera* Uhler, but now that a considerable series of that species has been examined, they are seen to be distinct.

Okanagana cruentifera (Uhler). Pl. XXII, fig. 3.

In this JOURNAL for June–Sept., 1919, *Okanagana cruentifera* is defined and figured from the Nevada specimens discovered in the Uhler collection, U. S. National Museum. Four additional specimens labeled “Nev.” from the Uhler collection have since been examined. One of them probably was before Uhler when the description was written. It bears a label “*Cicada cruenta*. Uhler, Nev.,” written by Uhler, and on a more recent label is written “*Cicada cruenta*. Uhler, Nev., Det. Uhl.” This specimen is here figured natural size from a photograph. A figure of the uncus is also given.

While *cruentifera* and *magnifica* of the same region bear considerable superficial resemblance, both having the same crinkled wing appearance with the venation coarse and somewhat clouded about the marginal areas, a comparison of the uncus (see this JOURNAL, 1919, p. 190), of the much less prominent front in *magnifica*, together with its larger size and shape of wings, will serve to separate the two.

Uhler's original description of *cruentifera* in the Trans. Maryland Acad. of Sciences, 1892, states that it is “A large and long-winged, narrow, dull black species with bright orange costa and blood red flaps to both wings.” Some of the other features mentioned are, front of head prominent; “pronotum short, black, moderately pubescent, rugulose, emarginated in the lateral margin behind the middle, the edge in front of this with several short blunt teeth”; veins of the wings, “coarse, piceous black, as also the post-costal rib beyond the anastomosis, the basal areole long and narrow, infuscated, bordered anteriorly by an orange yellow vein.” “Venter broadly red along the middle line, or with the segments bordered with red, and the lateral raised edge also slenderly red, tergum minutely pubescent, the posterior edge of the segments red, but with the two apical segments more broadly banded with red, the genital sheath red, short, sub-acuminate, tooth of the apical segment of female short and acute, posterior border of the last segment of the male deeply emarginate.”

Other specimens examined since 1919, have been a male from Prof. Frederick M. Gaige, labelled Winnemucca, Humboldt Co., Nev., June 24, 1920 (B. C. Cain); a female from near Yreka, Siskiyou Co., Calif., July 29, 1925 (Mr. Wright) and a fine series of 10 males and 3 females from Cactus Flat, San Bernardino Mts., Calif., June 8, 1925 (Alonzo C. Davis).



OKANAGANA CRUENTIFERA UHLER.

It is now evident, with the present series of *cruentifera* available, that it is not as variable as once thought, and that the three females reported in this JOURNAL, March, 1921, from Colorado, must belong to some other species.

Also a number of specimens have been examined that might be confused with *cruentifera*, because they are to be found in the same region, and have the "blood red flaps to both wings," as described by Uhler for that species. They differ both in the shape of the uncus and in that of the wings, as well as in having the venation much less coarse. This insect may at present be considered as a race of *Okanagana tristis* Van Duzee, though it may also prove in the future to be a distinct species.

Okanagana tristis Van Duzee, race *rubrobasalis*. New race. Pl. XXII, fig. 4.

Type male, Nellie, San Diego Co., Calif., June 24, 1918 (Miss E. P. Hewlett).

Allotype female, Upland, San Bernardino Co., Calif., July 1, 1920 (Miss E. P. Hewlett). Davis collection.

Head slightly narrower than the front margin of the pronotum; front moderately produced; about as in *tristis* and less prominent than in *cruentifera*. Median sulcus of the front well defined. Pronotum with the humeral angles rounded, and the anterior angles prominent. Last ventral segment with the sides gradually converging toward the rounded extremity as in *tristis*, not as constricted at the sides as in *cruentifera*, nor as truncate at the extremity. Uncus when viewed in profile with the top and lower lines nearly parallel until near the extremity, which has beyond the sinuation a slight tooth. When viewed from behind, with a broad notch at the extremity. The valve in the male is long, red, with a black spot each side. The last ventral segment in the allotype is broadly and doubly notched. The inner notch is more pronounced in some of the paratypes. Fore wings narrow, with the costal margin pale (except the extreme outer edge which is dark) to the end of the radial cell, darker beyond; the subcostal vein is fuscous; basal cell opaque. The venation is fuscous about as in *tristis*, but the flaps are blood-color and not orange or reddish-orange as in *tristis*. Head black except an inconspicuous pale spot above each antenna. Pronotum entirely black in the type and allotype; in some of the paratypes there are two irregular rufous spots one each side of the central line, as is occasional in *tristis*. Mesonotum black with the posterior margin and the following pale: two spots each side, one at the base of each of the wings, the posterior extremities of the obconical central marks; the anterior extremities and the elevated central portion of the \times . Metanotum narrowly margined posteriorly with red. Tergum black and more shining than in *tristis*, with the hind margins of the segments narrowly margined with red at the sides. In the allotype the two last segments are broadly margined with orange. Beneath the legs are marked with orange and black. The abdominal segments orange centrally, as is usual in *tristis*, each spotted with black near the outer margin.

MEASUREMENTS IN MILLIMETERS

	Male Type	Female Allotype
Length of body	29	27
Width of head across eyes	8	8
Expanse of fore wings	72	74
Width of fore wings	12	12
Length of valve	5



OKANAGANA RUBROBASALIS. TYPE.

The bright red color at the base of both pairs of wings, the more shining appearance, and generally broader wings, will serve to distinguish this race from *tristis*, which is more northern in distribution.

Of *rubrobasalis* nine examples can be recorded in addition to the type and allotype. Angeles Forest, Barley Flats, Calif., Alt. 5,500 ft., June 19, 1917, female (V. Duran); Confidence, Tuolumne Co., Calif., July 21, 1919, Alt. 4,000 ft., female (R. D. Hartman); Santa Barbara, Calif., July 1924, female (F. E. Winters); Upland, San Bernardino Co., Calif., July 1, 1920, two females (E. P. Hewlett), taken with the allotype; Nellie, San Diego Co., Calif., June 20, 1918, male (Miss Esther P. Hewlett, who records that "it was sitting on a brake fern making a deafening racket"); Buckman Springs, San Diego Co., Calif., June 17, 1925, male and female (Prof. W. S. Wright); Nevada, male, collection U. S. Nat. Mus.

Of the foregoing specimens the only one about which there is any doubt is the female from Santa Barbara, which has broader wings and is more shining than *tristis*, but which has the color at the base of the wings not as bright red as in the other eight examples.

The localities of the 27 specimens of *tristis* in the writer's collection extend all of the way from Mt. Rainier in Washington, southward to Tulare and Nevada counties in California. A male taken near Davis Creek, Modoc Co., Calif., June 1922, by Dr. A. W. Lindsey, is here figured.

Okanagana lurida Davis

Since the description of this species in this JOURNAL, June-Sept., 1919, and the note in the March, 1925, number, three more males have been examined. They are from the U. S. National Museum and were collected at Wawawai, Whitman Co., Washington, by M. C. Lane. Two were collected May 31, 1921, and one May 30, 1923. Wawawai is about 10 miles southwest of Pullman, the type locality. One of the males is much darker than the others and the valve is black edged with orange on the upper edge or margin. Upper parts of fore femora nearly all orange. The nearly clear basal cell appears in all specimens so far examined to be slightly longer and narrower than the basal cell in *bella* or *occidentalis*. The front of the head is more rounded than in *bella* which occurs in the same region.

Okanagana mariposa Davis.

Records for this large species are to be found in this JOURNAL for March 1915, June 1919, and March 1921. On June 17, 1925, Prof. W. S. Wright collected at Buckman Springs, San Diego Co., Calif., 11 males and 2 females, and on June 23, 1925, a single female. In all of the specimens so far examined from California, the basal portion of both pairs of wings show bluish-white reflections, but those from Buckman Springs are very noticeable in this respect, and are beautifully colored.

Okanagana arctostaphylae var. opacipennis new variety. Pl. XXIII, fig. 1.

Type female, Buckman Springs, San Diego Co., California, June 23, 1925 (Prof. W. S. Wright). Davis collection.

Resembles closely in size and general color *arctostaphylae* Van Duzee described in this Journal, March, 1915, except that the front margin of the fore wing is more curved near the tip; the abdomen entirely black above except the two terminal segments (instead of having merely a dorsal line of black), and both pairs of wings deeply reddish-ferruginous in color and opaque. The color about each of the veins is less intense than in the

central parts of the cells. The cotype of *arctostaphylae* in the writer's collection has the "elytra with a distinct purplish tinge," as described by Van Duzee, but they are nevertheless transparent and the label on the insect may be read through them as is generally the case in *Okanagana*. The red at the base of all of the wings is not apparent, but merges into the general color. The front of the head is as in *arctostaphylae*, except that the median sulcus is very narrow and only about one half as wide as in the cotype of that species. The eyes and ocelli are encircled with black and the humeral angles of the pronotum are black. The last ventral segment of the female is doubly notched.

MEASUREMENTS IN MILLIMETERS

	Female Type
Length of body.....	25
Width of head across eyes.....	7
Expanse of fore wings.....	67
Greatest width of fore wing	10

The original description was made from four males and one female collected on manzanita bushes by Dr. F. E. Blaisdell at Mokelumne Hills, Calaveras Co., at our altitude of 1,800 feet. The type of variety *opacipennis* was also found on a manzanita bush. It is one of the most remarkably colored of all of the species of *Okanagana* so far described. A more common and also very beautiful species that frequents the manzanita is *Okanagana rubrovenosa* Davis, and of this Prof. Wright took a female at Buckman Springs on June 17 and a male on June 23, 1925. This species is known from as far north in California as Plumas and Lake counties.

Clidophleps blaisdelli (Uhler).

An examination of the specimens in the U. S. National Museum, has enabled the writer to make the following memoranda, and also to present natural size figures from photographs of two important specimens.

Male, "San Diego, Cal.," on one label, and "5-10-11" on another label (P. R. Uhler Collection). Pl. XXIII, fig. 2. Male, "San Diego, Cal.," on one label, and "May 11, 1890" on another label (P. R. Uhler Collection). This specimen was marked by Uhler "*Tibicen Blaisdellii* Uhler, Cal." A still later label reads: "*Tibicen Blaisdellii* Uhl. Cal. Det. Uhl." Pl. XXIII, fig. 3.

In the original description of *blaisdellii*, Trans. Maryland Academy of Science, January, 1892, is the statement: "Only males have yet been examined. Specimens have thus far proved scarce. This curious species was discovered in the vicinity of San Diego, Cal., May 10-11, by Dr. F. E. Blaisdell, of Coronado, to whom the species is dedicated. . . ." The two specimens here mentioned and figured are therefore no doubt part of the original lot and perhaps the only ones before Uhler at the time he made the description of *blaisdellii*. The original description gives "Length to apex of abdomen 20-24; expanse of wing-covers 59-66; and width of base of pronotum 9½-11 millims."

See Mr. Van Duzee's notes on this species, Journal, N. Y. Ento. Soc., March, 1915, and Trans. San Diego Soc. of Natural History, vol. 2, p. 47, 1914. Also notes by the writer, this Journal, March, 1917.

Clidophleps wrighti new species. Pl. XXIII, figs. 4 and 5.

Type male, Upland, San Bernardino Co., California, June, 1922 (Miss Esther P. Hewlett).

Allotype female, Buckman Springs, San Diego Co., California, June 23, 1925 (Prof. W. S. Wright). Davis collection.

Generally smaller than the average examples of *blaisdelli*, *distanti* and its varieties; pronotum black at the sides, not bordered with yellow, venation coarser; the red at the base of all of the wings brighter, the uncus differently shaped and as figured.

Head as broad as the front margin of the pronotum; front produced as in *blaisdelli*. Median sulcus of the front well defined. Pronotum with the humeral angles produced with the angles rounded, sides serrulate, and anterior angles well defined. Opercula with the extremities angled as in *blaisdelli*. Last ventral segment rounded at the extremity with a slight sinuation centrally. Last ventral segment in the allotype broadly and doubly notched. Uncus when viewed in profile bent downward at the extremity which is considerably rounded, and deeply sinuate on the lower surface of the apical third (not half as in allied forms); shorter than valve. Basal cell of the fore wings clear. Costa of the fore wings pale to the end of the radial cell, black beyond; all of the other veins coarse and black.

General body color black, variegated with orange. Head black both above and beneath with a pale spot centrally on the posterior margin, being a continuation of the pronotal stripe. Pronotum black with a central stripe and the posterior border orange. No orange at the sides. Mesonotum black with the following orange: tips of the two obconical marks;

anterior extremities and top of \times ; posterior margin extending to the base of the wings. In the depression on each side of the \times there is a patch of long silvery hairs. Metanotum black, margined posteriorly with orange. Dorsum of the abdomen black with much silvery hair, the posterior margins of the segments orange. The uncus black. Valve nearly entirely pale with the lower surface darker. The legs are black striped with orange. The lower surface of the abdomen is covered with silvery hairs; each of the segments margined posteriorly with orange.

MEASUREMENTS IN MILLIMETERS

	Male Type	Female Allotype
Length of body.....	21	20
Width of head across eyes.....	6	6
Expanse of fore wings.....	54	55
Greatest width of fore wing.....	9	9.5
Length of valve.....	3	



CLIDOPHLEPS WRIGHTI, TYPE.

In addition to the types the following specimens from California are in the writer's collection: Upland, June 18, 1920, two males (Miss E. P. Hewlett); Buckman Springs, June 23, 1925, two males and a female (Prof. W. S. Wright). Some of these are smaller than the type.

At Buckman Springs on June 17, 1925, Prof. Wright also collected a male and female *Clidophleps blaisdelli* Uhler.

Platypedia rufipes Davis.

This species was described and figured in this Journal, June, 1920, p. 101, from Los Angeles Co., California. At that time seven specimens were examined. In 1925 Mr. Alonzo C. Davis collected six males and nine females at Cactus Flat, San Bernardino Mts. on June 8th; and Prof. W. S. Wright collected two males and four females at Buckman Springs, San Diego Co.,

Calif., on June 17, and twelve males and seven females at the same locality on June 23. In the series from Cactus Flat the fore wings are slightly broader than in those from Buckman Springs, and in each series there are large individuals expanding over 50 millimeters.

Platypedia laticapitata Davis.

This species was described and figured in this Journal, March, 1921, from a male and female collected at Upland, San Bernardino Co., Calif., in June and July, 1920. In 1922, Miss Esther P. Hewlett collected at the same locality seven males and four females in June, and two females in July. More recently Mr. Alonzo C. Davis has sent to me a female from Sierre Madre, Los Angeles Co., Calif., June 21, 1919, and a male from Pasadena, Calif., June 15, 1924. The range is thus extended slightly.

Note. The writer has lately placed in the collection of the Am. Museum of Natural History a number of types of cicadas described in this Journal, and it is his intention to place his remaining types in the same collection.

PLATE XXI

- Figure 1. *Tibicen figurata* (Walker). Showing dorsal spots.
 Figure 2. *Tibicen dorsata* (Say). With whitened sides.
 Figure 3. *Tibicen longiopercula* Davis. Type. Under side enlarged.
 Figure 4. *Tibicen longiopercula* Davis. Type. Natural size.

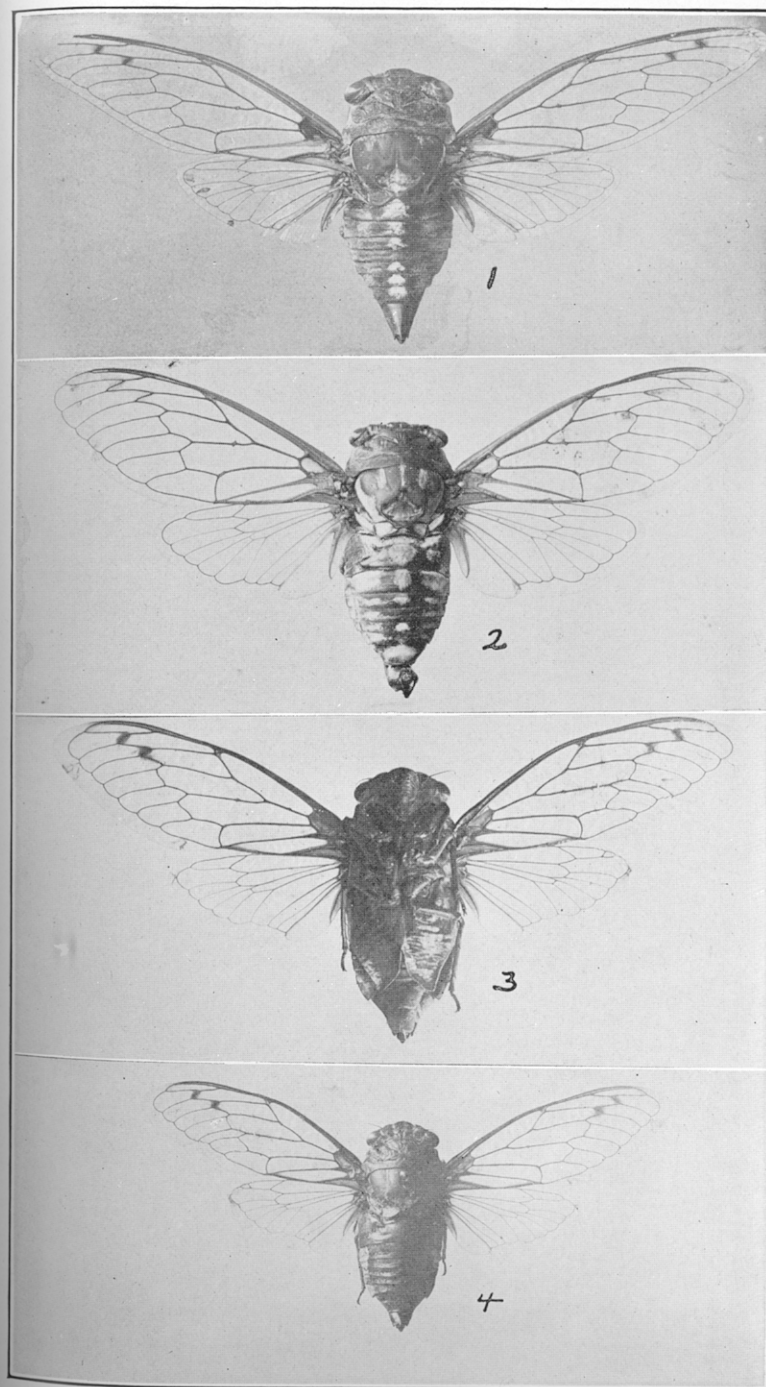


PLATE XXII

- Figure 1. *Okanagana formosa* Davis. Type.
 Figure 2. *Okanagana formosa* Davis. Allotype.
 Figure 3. *Okanagana cruentifera* (Uhler).
 Figure 4. *Okanagana rubrobasalis* Davis. Type.
 Figure 5. *Okanagana tristis* Van Duzee. Modoc Co., Calif.

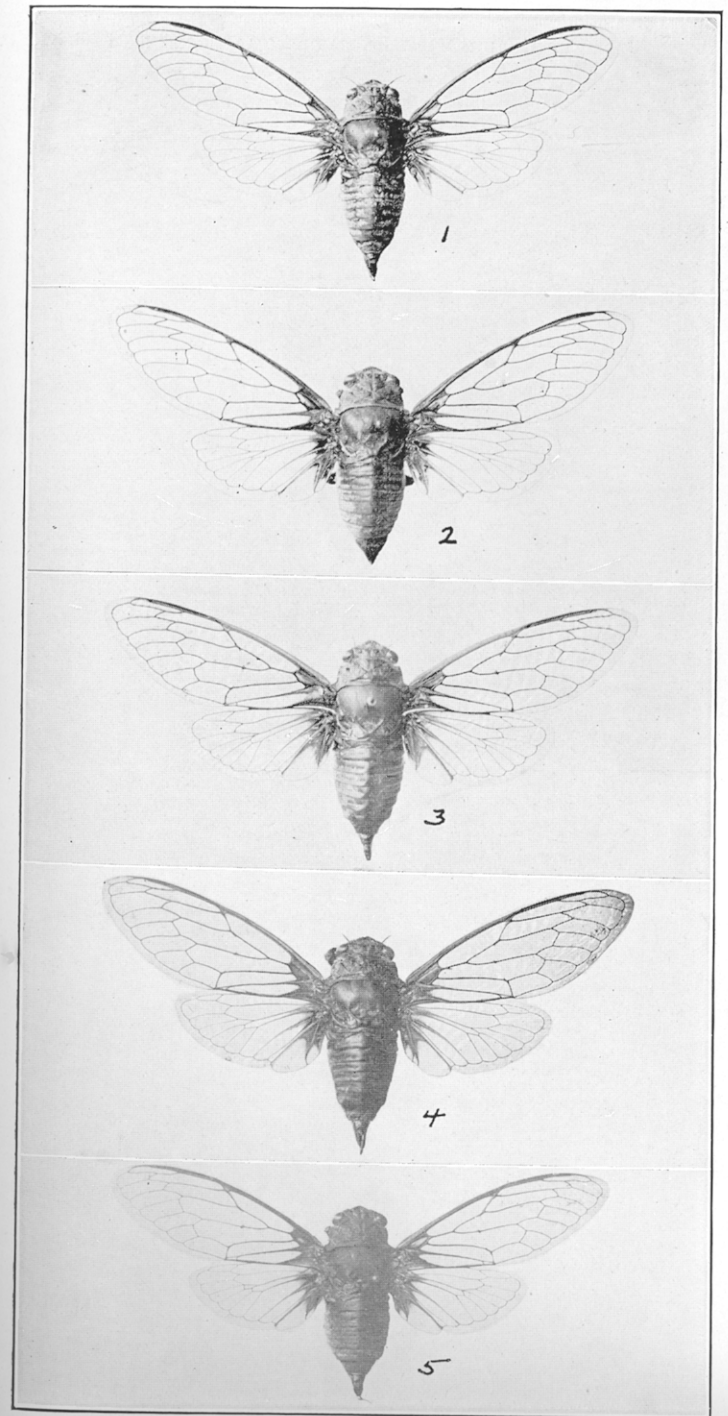
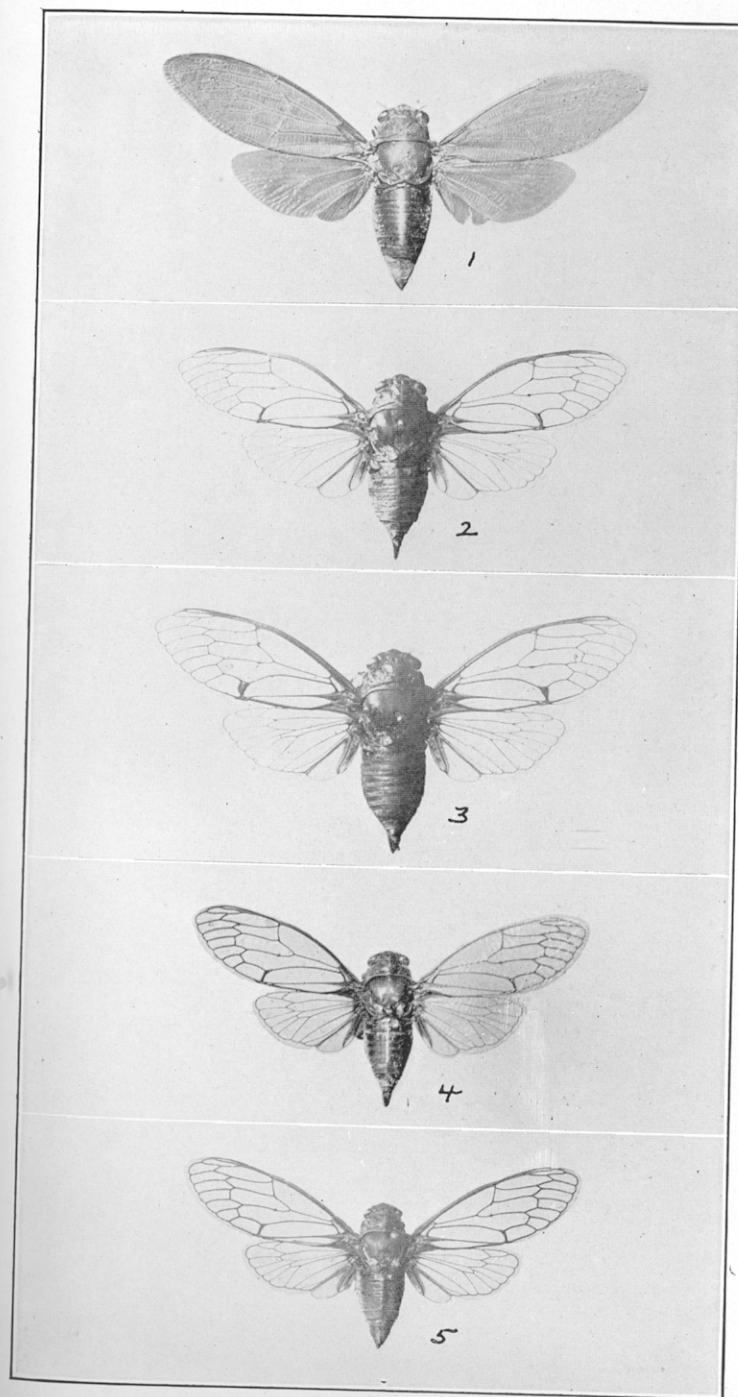


PLATE XXIII

- Figure 1. *Okanagana arctostaphylæ* var. *opacipennis* Davis. Type.
 Figure 2. *Clidophleps blaisdelli* (Uhler).
 Figure 3. *Clidophleps blaisdelli* (Uhler).
 Figure 4. *Clidophleps wrighti* Davis. Type.
 Figure 5. *Clidophleps wrighti* Davis. Allotype.



CICADIDAE