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NOTES ON THE LACHNINI OF FLORIDA
With Descriptions of Two New Species (Homoptera: Aphiidae)[1]

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For the past several years the writer has been interested in the aphids of Florida. During that time several thousand slides have been prepared and there has been accumulated a large volume of information on the distribution of aphids, their host relationships, and other matters pertaining to their biology. As this information may be of some interest to other workers this paper dealing with one tribe of the family Aphiidae has been prepared with the idea of making some of it available to them. Similar papers dealing with other aphid groups are contemplated.

All available Florida material of the species considered has been carefully studied in an attempt to correctly determine them. The writer is well aware that there may be some disagreement as to the identity of some of the species and in order that one may more easily ascertain just what species are concerned there have been included under each species a few notes regarding structural characteristics and important biological facts as well as camera lucida drawings of some of their structural features.

The arrangement of the genera follows Baker's "Generic Classification of the Hemipterous Family Aphididae", U. S. D. A. Bul. 826, 1920.

Genus ESSIGELLA Del Guercio

ESSIGELLA PINI Wilson

Figs. 1-4, Plate I

Essigella pini Wilson, Ent. News, XXX, 2, 1919.

This small, elongate aphid is light yellowish green with rows of brown spots on the abdomen. The antennae are five segmented

[1]Contribution from the Department of Entomology, Florida Agricultural Experiment Station, Gainesville, Florida. Published Aug. 15, 1939.

with very inconspicuous hairs. The cornicles are little more than rings and are devoid of hairs. The cauda is prolonged at the middle into a long conical process. This aphid feeds upon the needles of pines and the apex of the rostrum is very obtuse. It is very easily disturbed and at the least jarring of the branch on which they are found the individuals of a colony scurry very rapidly about the bases of the needles.

Collections.—Gainesville, Florida, March 22, 1928, (F-320-28); March 23, 1928, (F-323-28), (Pond A); April 6, 1932, (F-886-32), (Agr. Exp. Sta.); May 4, 1933, (F-1012-33), (Devils Mill Hopper); March 26, 1936, (F-1332-36). (Sugarfoot); Sanford, Florida, February 23, 1929, (F-480-29). All collections from *Pinus taeda* and all made by the writer.

Genus CINARA Curtis

Key to the Florida Species of the Genus Cinara

Alate Viviparous Females

1. Unguis of the sixth antennal segment a mere stub, shorter than the diameter of the primary sensorium of the segment; feeding on Arborvitae ..... *tujafilina* (Del Guercio)

—. Unguis of sixth antennal segment a conical thumb-like or finger-like process, longer than the diameter of the primary sensorium 2

2. Head with lateral extensions bearing the eyes, the posterior margin of these extensions being almost as great as the diameter of the eyes; eyes without ocular tubercles ..... *longispinosa* Tissot

—. Head without or with only slight lateral extensions; eyes with distinct ocular tubercles 3

3. Tibial hairs reclinate along the whole length of the segment; all hairs of cornicle bases approximately the same length 4

—. Tibial hairs rather erect along much of the segment; cornicle bases with a few long hairs and many more about one-third the length of the long ones ..... *watsoni* n. sp.

4. Tibiae of at least some of the legs with mid-portion light colored and contrasting with the darker bases and apices; feeding on *Pinus* 5

—. Tibiae of all the legs uniformly colored; feeding on *Juniperus* —*juniperivora* (Wilson)

5. Third antennal segment with one to four sensoria; hairs at middle of hind tibia but little longer than the diameter of the tibia at that point 6

—. Third antennal segment with five to ten sensoria; some of the hairs at middle of hind tibia nearly twice as long as the diameter of the tibia ..... *carolina* Tissot

6. Hind tibia uniformly colored throughout its length; hairs of hind tarsus reclinate, scarcely longer than the diameter of the tarsus —*taedae* Tissot

—. Hind tibiae with base and apex darker and contrasting with the middle portion; hairs of hind tarsus rather erect, fully twice as long as the diameter of the tarsus ..... *newelli* n. sp.

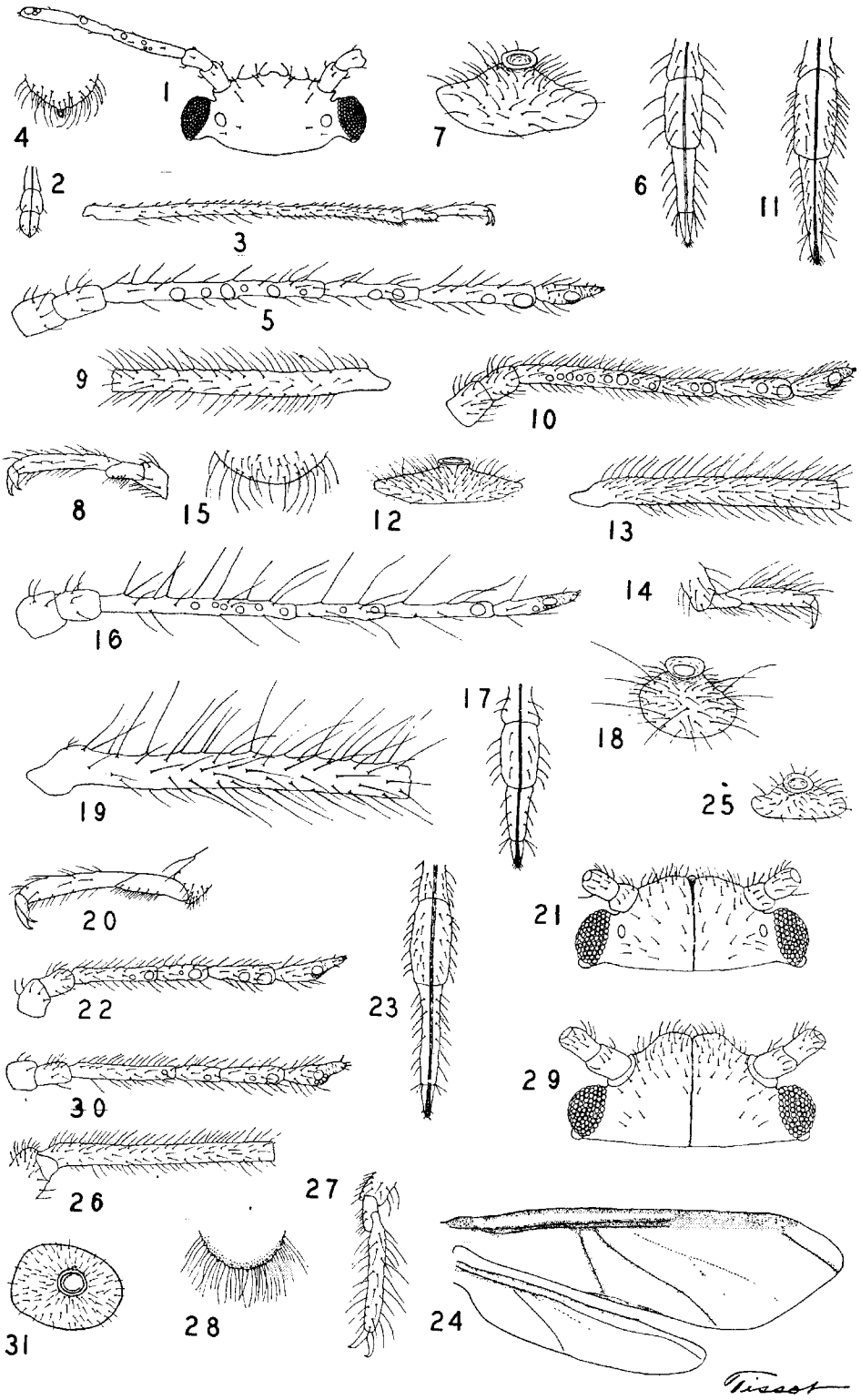
Apterous Viviparous Females

1. Hairs on antennal segment III rather erect and long, the longest two and one-half to three times the diameter of the segment 2
—. Hairs on antennal segment III not over one and one-half times the diameter of the segment, usually reclinate or if erect their length less than the diameter of the segment 4
2. Tibiae of all the legs uniformly colored or with mid-portion pale and contrasting with the darker bases and apices; cornicles with long and short hairs 3
—. Tibiae of all the legs pale yellow except at the apices which are darker; all hairs on cornicles about aqual in length —*tujafilina* (Del Guercio)
3. Tibiae of all the legs uniform brown or only slightly lighter near the base ..... *longispinosa* Tissot
—. Tibiae of fore legs uniform brown, middle and hind legs with a definite lighter area near the base ..... *watsoni* n. sp.
4. Sixth antennal segment including the unguis nearly or quite as long as the fifth, distinctly longer than the fourth; feeding on *Juniperus* ..... *juniperivora* (Wilson)
—. Sixth antennal segment distinctly shorter than the fifth, subequal to or shorter than the fourth; on *Pinus* 5
5. Third antennal segment without sensoria; tibiae of hind legs uniformly colored throughout ..... *taedae* Tissot
—. Third antennal segment usually with one or two sensoria; tibiae of all the legs with a light area contrasting with darker apices and bases 6
6. Dorsum of the abdomen with numerous scattered rounded spots; hairs of hind tarsus reclinate, scarcely longer than the diameter of the tarsus ..... *carolina* Tissot
—. Dorsum of abdomen with only a few spots and these arranged in longitudinal rows; hairs of hind tarsus more erect, twice as long as diameter of tarsus ..... *newelli* n. sp.

CINARA AUSTRALI (Ashmead)

Lachnus australi Ashmead, Can. Ent., XIII, 67-68, 1881.

Ashmead's description though very general does not agree entirely with any of the Florida species of *Cinara* examined and it seems probable that it has not been taken since his collections were made from *Pinus australis* in the vincinity of Jacksonville. If Ashmead preserved any specimens these apparently have since been lost. As no specimens are available for study the species is not included in the key.



LACHNINI OF FLORIDA—PLATE I

CINARA CAROLINA Tissot

Figs. 5-9, Plate I

Cinara carolina Tissot, Florida Entomologist XVI, 1-4, 1932.
Lachnus pini L., Mason, A. C., Florida Entomologist V, 24, 63, 1922.

This is easily the most common species of *Cinara* found in Florida. The most distinctive characteristic is found in the sensoria of the third antennal segment. These are large, clear-cut, and distinctly tuberculate. The colonies are found mostly near the tips of the branches. Slides prepared by Mason and labelled *Lachnus pini* have been examined and found to be *carolina.* The following species of ants have been found attending this aphid: *Camponotus abdominalis* subsp. *floridanus* Buckley; *C. socius* var. *oceola* Wheeler; *Crematogaster laeviuscula* Mayr.

Collections.—Lake City, Florida, March 28, 1897, on *Pinus* sp. (A. L. Quaintance): Gainesville, Florida, March 4, 1914, April 16, 1914, on Pine, (A. C. Mason); seventeen collections, all from *Pinus taedae* made by the writer during February-May, 1928-39; March 22, 1937, (F-1474-37), *Pinus taeda,* (Geo. R. Swank): Lamont, Florida, April 22, 1938, (F-1632-38), *P. taeda,* (Tissot): Marianna, Florida, April 22, 1938, (F-1664-38), *P. taeda,* (Tissot): Welaka, Florida, April 8, 1939, (F-1747-39), on *P. taeda;* (F-1748-39), on *P. palustris;* (F-1750-39), on *P. clausa,* (Tissot): Keystone Heights, Florida, April 14, 1939, (F-1753-39), on *P. palustris,* (Tissot): Doctors Inlet, Florida, April 14, 1939, (F-1755-39), on *P. taeda,* (Tissot).

CINARA JUNIPERIVORA (Wilson)

Figs. 10-15, Plate I

Lachnus juniperivora Wilson, Ent. News, XXX, 6-7, 1919.

Aside from its different host plant the most distinguishing feature of this aphid is the fineness and abundance of hairs on its appendages. Only one collection has been made: Gainesville, Florida, April 15, 1939, on *Juniperus silicicola,* (Merrill and

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Explanation of Plate I

Figs. 1-4—*Essigella pini,* head and antenna, beak, hind leg, and cauda, alate viviparous female.

Figs. 5-9—*Cinara carolina,* antenna, beak, cornicle, hind tarsus, and base of hind tibia, alate viviparous female.

Figs. 10-15—*C. juniperivora,* antenna, beak, cornicle, base of hind tibia, hind tarsus, and cauda, alate viviparous female.

Figs. 16-20—*C. longispinosa,* antenna, beak, cornicle, base of hind tibia, and hind tarsus, alate viviparous female.

Figs. 21-31—*C. newelli,* head, antenna, beak, wings, cornicle, base of hind tibia, hind tarsus, and cauda, alate viviparous female; head, antenna, and cornicle, apterous viviparous female.

Fig. 24 is 16X, all others 45X.

Tissot). The aphids were found on the trunk of a cedar beneath the loosened edges of bark where it had been broken by an injury. They were being attended by numbers of ants, *Crematogaster* sp. Only apterous viviparous females were found in the colony and the accompanying figures were made from alate specimens received from Louisiana.

CINARA LONGISPINOSA Tissot

Figs. 16-20, Plate I

Cinara longispinosa Tissot, Florida Entomologist, XVI, 4-5, 1932.

The laterally expanded head, the eyes without ocular tubercles and the uniformly brown tibiae of all the legs serve to identify this species. The hymenopterous parasite, *Aphidius bicolor* Ashm., has been reared from a colony of this aphid. *Camponotus abdominalis* subsp. *floridanus* Buckley is the only ant that has been found attending this species.

Collections.—This aphid has been taken only in the vicinity of Gainesville, Florida, March 8, 1929, (F-486-29), March 22, 1929, (F-505-29), on *P. taeda*, (Tissot); April 21, 1937, (F-1518-37), April 5, 1938, (F-1620-38), on *P. glabra*, (Tissot); April 30, 1939, (F-1771-39), on *P. glabra*, (Tissot and R. K. Buckley).

CINARA NEWELLI new species

Alate Viviparous Female

Figs. 21-28, Plate I

Size and general color.—Length of body from vertex to tip of anal plate 2.2* to 2.4, average 2.3. Body and appendages various shades of brown, ranging from light yellowish brown to very dark blackish brown. In life a pruinose waxy covering of the body causes the dark areas to appear much lighter and gives the insects a grayish brown appearance. This waxy material is particularly heavy on the sides of the thorax. Head blackish brown, shining on the dorsum. In some specimens the median suture, a border around the antennal sockets, and a ring around the lateral ocelli darker than the general surface of the head; in others the whole head is uniformly colored. Eyes concolorous with the head. Antennae brown, the first two and last segments chestnut brown, much lighter than the head; third, fourth and fifth segments yellowish brown with chestnut brown apices, each successively darker at the apex than the preceding one. Beak with basal third yellowish, middle third yellowish brown mottled with dark brown, apical third dark chestnut brown, except last segment which is blackish brown. Thorax brown; the prothorax dark chestnut brown, much lighter than the head; the dorsal lobes of the thorax and the pleural region of the mesothorax blackish brown, concolorous with the head; remainder of the thorax and membranes yellowish brown to light

*All measurements in this paper are in millimeters.

chestnut brown. Wings smoky; the costal border, stigma, veins, and the hind border in the region of the anal vein olive brown; the subcosta, radial sector and medial veins with a golden cast in some specimens probably due to air in the veins; veins of hind wing light olive brown. Coxae and trochanters of all the legs dark chestnut brown; femora dark chestnut brown, a small basal area yellowish brown; tibia of all the legs yellowish brown with the bases and the apices chestnut brown; tarsi chestnut brown. Abdomen yellowish brown with two pairs of transverse irregular shaped dark brown patches anterior to the cauda, and a row of four brown spots on each side anterior to the cornicles. Cornicles and conical bases dark chestnut brown. Cauda and anal plate chestnut brown.

Head and appendages.—Width of head across the eyes, .58 to .61, average .60. Head definitely convex, well rounded in front. The median suture distinct but not sulcate. Eyes rather large, ommatidia large, circular; ocular tubercles definite though not particularly prominent. The median ocellus situated far down on the front, the lateral ocelli fairly close to the eyes. Surface of the head with short, slightly curved, mostly reclinate hairs, the longest measuring .04. Antennae with first two segments short and thick; third segment cylindrical; fourth, fifth and sixth segments narrow at the base and widening apically. Comparative lengths of antennal segments as follows: III—.24 to .29, average .26; IV—.13 to .16, average .14; V—.15 to .21, average .17; VI—.11 to .13, average .12 plus .05 to .06, average .06. Sensoria distributed as follows: third segment with one or two sensoria usually situated near the apex; fourth with one sensorium near the apex; fifth with one secondary sensorium in addition to the apical primary one which is very large, (in one specimen the fifth segment of one antenna had two small secondary sensoria instead of the usual larger one); sixth segment with four to six small sensoria clustered along one side of the large primary sensorium. Antennae rather thickly set with fine, slightly curved, reclinate hairs, the longest measuring .05. Beak lance-like, very long, extending at least to the tip of the abdomen and usually well beyond that point.

Thorax and appendages.—Thorax with a small conical tubercle on each side near the hind border of prothorax. Fore wings with subcosta well developed and prominent; radial sector, cubitus, and first anal vein definite and bordered with a narrow light brown band; medial vein very faintly indicated once forked or unbranched (of seventeen individuals examined, six had the media unbranched in both wings, four had it once forked in both wings, seven had it unbranched in one wing and once forked in the other); radial sector straight, terminating behind the extreme tip of the wing; the stigma slightly curved, nearly parallel sided, its outer apical angle extending well beyond the base of the radial sector; hind margin of the wing in the region of the first anal vein slightly thickened and forming a narrow fold for the engagement of the hooklets of the hind wing; the wing membrane of both the fore and hind wings appearing smoky due to the very closely spaced short, curved ridges or imbrications of the surface. Hind wing with subcosta well developed, undulate, two cross veins present but the first one very faintly indicated. Near the base of the subcosta of the fore wing a group of seven or eight clear oval areas resembling small sensoria, arranged in one or two irregular rows; the

subcosta of the hind wing with a group of eight to ten similar structures. The stigma of the fore wing with a few scattered clear, circular areas each bearing a very minute hair or spine. Legs rather long and slender, particularly the metathoracic pair; tibiae of all the legs curved, the hind tibiae presenting a double curve; tarsi slender with large apical claws. All segments of the legs thickly set with slightly curved slightly reclinate hairs, the longest near the middle of hind tibiae measuring .07 and the longest on the hind tarsi .09. Length of hind tibia 1.3 to 1.5, average 1.4; length of first joint of hind tarsus .07 to .08, average .075, second joint .24 to .29, average .26.

Abdomen.—The pleural regions of the abdomen rather thickly beset with fine hairs but the dorsum almost devoid of hairs, the few that are present measuring .02 in length. Cornicles situated on conical bases whose height equals about one third the greatest width; bases rather thickly set with hairs, the longest of which measure .07. Height of cornicle and base .08 to .10, average .09; greatest width of conical bases .24 to .30, average .26. Cauda nearly semicircular in outline, thickly set with the longest hairs found anywhere on the body, the longest measuring .13.

Apterous Viviparous Female

Figs. 29-31, Plate I

Size and general color.—Length of body from vertex to apex of abdomen 2.7 to 3.1, average 2.9. Prevailing color brown; head chestnut brown, somewhat lighter posteriorly. Eyes dark brown or slightly reddish. Antennae with first two and last segment concolorous with the head, third, fourth and fifth segments yellowish brown with chestnut brown apices. Beak as in alate female. Prothorax chestnut brown, somewhat lighter than the head, with posterior margin yellowish brown; remainder of thorax and abdomen light yellowish brown, almost orange in some individuals. Dark brown markings on thorax and abdomen as follows: mesothorax with a large patch on the pleural region, metathorax with a smaller one; the dorsum of these segments with brown flecks forming two rather definite patches on each segment; the first abdominal segment with two patches on the dorsum; on each side of the abdomen a row of spots, and four longitudinal rows of very small spots on the dorsum; two pairs of rather elongate patches just anterior to the cauda. Legs, cornicle bases, cauda and anal plate colored much as in the alate female. In life the apterous females with a pruinose covering as in the alate form.

Head, thorax, abdomen and appendages.—Width of head across the eyes .58 to .62, average .60. Median suture forming a definite sulcus on the dorsum, front of head definitely bilobed. Eyes large with large circular ommatidia; ocular tubercles prominent. Antennae with segments shaped much as in the alate female, length of the segments as follows: III—.25 to .28, average .26; IV—.12 to .15, average .13; V—.13 to .17, average .15; VI—.09 to .12, average .11 plus .05 to .07, average .06. Third and fourth segments each with one sensorium; the fifth with one sensorium in addition to the primary one; sensoria of the sixth segment as in the alate female. Antennal hairs similar to those of the alate female. Beak as in the alate, reaching nearly to the apex of the abdomen. Legs very similar to those of the alate female. Length of hind tibiae 1.2 to 1.3,

average 1.3; first joint of hind tarsus .07 to .08, average .08, second joint .23 to .25, average .24. Cornicles shaped much as in alate female but with outer border somewhat more irregular. Height of cornicles .07 to .09, average .08; greatest width of base .28 to .30, average .29. Cauda very similar to that of the alate female.

Types.—Holotype—Alate viviparous female; Welaka, Florida, April 8, 1939, (F-1749-39), on *Pinus palustris*, (Tissot). Morphotype—Apterous viviparous female, same colony and data as the holotype. *Paratypes*—Twenty-one slides containing sixteen alate and seven apterous viviparous females, same data as the holotype. Holotype and morphotype in the U. S. National Museum Collection, paratypes in the collection of the Entomology Department, Florida Agricultural Experiment Station, and in that of the author.

Type locality.—University of Florida Conservation Reserve, Welaka, Florida.

Collections.—The above collection is the only one that has been made. The insects were found in small groups on both sides of the cut face of a slash pine that had been turpentined some years previous. The aphids were found from about eight inches above the ground to a height of three and one-half feet. The projecting edges of the old bark served to hide and protect the aphids which were feeding on the new bark growing over the scarred surface. Ants running up and down the trunk served as guides in locating groups of the aphids. Some of the alate aphids possessed mere stubs of wings, these organs apparently having been broken off by the ants. Specimens of the ants were identified as *Camponotus abdominalis* subsp. *floridanus* (Buckley).

This aphid appears to be very different from all known species of the genus *Cinara*. Some of the outstanding characteristics which will serve to identify it are: the almost total absence of hairs on the dorsum of the abdomen in the alate female; the relatively long hairs of the hind tarsus of that form; the media of the fore wing never with more than one fork and often unbranched; and the prominent median suture and bilobed head of the apterous female.

This species is dedicated to Dr. Wilmon Newell, Director of the Florida Agricultural Experiment Station, who for many years has been interested in the insects of Florida, and who has played a leading part in the advancement of entomology in the state.

CINARA TAEDAE Tissot

Figs. 32-36, Plate II

Cinara taedae Tissot, Florida Entomologist, XVI, 5-7, 1932.

This aphid exhibits no outstanding characteristics though the secondary sensoria are fainter than in the other species studied. The features mentioned in the above key will serve to separate it from other Florida species of the genus. The ant *Camponotus*

abdominalis subsp. *floridanus* Buckley has been taken in attendance on this species.

Collections.—*Pinus taeda*, Gainesville, Florida, March 15, 1928, (F-311-28), April 6, 1932, (F-887-32), May 5, 1939, (F-1783-39), (Tissot): *Pinus* sp., Winter Garden, Florida, March 1, 1933, (F-987-33), (H. K. Winter): Slash pine, Homestead, Florida, April 23, 1935, (F-1242-35).

CINARA TUJAFILINA (Del Guercio)

Figs. 37-41, Plate II

Lachniella tujafilina Del Guercio, Redia V, 287, 1907 (1908).

The writer is very uncertain as to the exact identity of this aphid and is doubtful what name rightfully belongs to it. There appears to be much confusion in literature regarding the species and even the spelling of its name varies. The Florida species evidently is the same as the one described and figured by Essig, Pom. Jour. Ent. III, 541, 1911, under the name *Lachnus juniperi* (De Geer), and which Swain, Univ. of Cal. Publ., III, 50, 1919, lists as *Lachnus tujafilinus* (Del Guercio). The apterous female is easily recognized by the peculiar color markings of the dorsum of the body. The reddish brown ground color of the body shows through the whitish waxy covering as two transverse lines joining areas around the cornicles, and two longitudinal lines beginning behind the cornicles and extending forward over the abdomen and thorax to the front of the head where they converge. This is a fairly common species on Arborvitae and occasionally becomes numerous enough to cause some injury to the plants.

Collections.—All collections from various horticultural varieties of Arborvitae. As there is considerable confusion in the naming of varieties of this evergreen no attempt will be made to give scientific names. Collections were made at the following Florida localities. Avon Park, July 12, 1933, (F-1047-33), (M. R. Brown): Bagdad, May 31, 1932, (F-956-32), (P. F. Robertson): Cottage Hill, March 7, 1932, (F-876-32), (Robertson): Fruitland Park, April 21, 1927, (F-213-27), (Bosanquet): Gainesville, September 13, 15, 22, 1922, April 26, 1923, (Beyer); February 5, 1929, (F-465-29), (Tissot); March 18, 1931, (F-769-31), (G. F. Weber); March 7, 1936, (F-1308-36), (R. J. Wilmot); March 17, 1936, (F-1316-36), (Tissot): Glen St. Mary, April 4, 1930, (F-583-30), (Bett and Kerr): Gonzales, June 13, 1933, (F-1043-33), (Robertson): Jacksonville, October 18, 1929, (F-536-29); January 21, 1930, (F-559-30), (Knight); June 5, 1936, (F-1382-36), (Lawton): Lakeland, December 2, 1935, (F-1280-35): Leesburg, October 18, 1928, (F-408-28), (Bergmaier); February 15, 1936, (F-1297-36), (D. M. Newell): Little River, November 16, 1937, (F-1568-37), (C. A. Bass): Miami, August 22, 1922, (Beyer): Orlando, May 23, 1933, (F-1025-33), (R. L. Miller): Palm Beach, September 15, 1926, (F-151-26), (LeRoy): Tavares, April 1, 1937, (F-1499-37), (J. Chaffin).

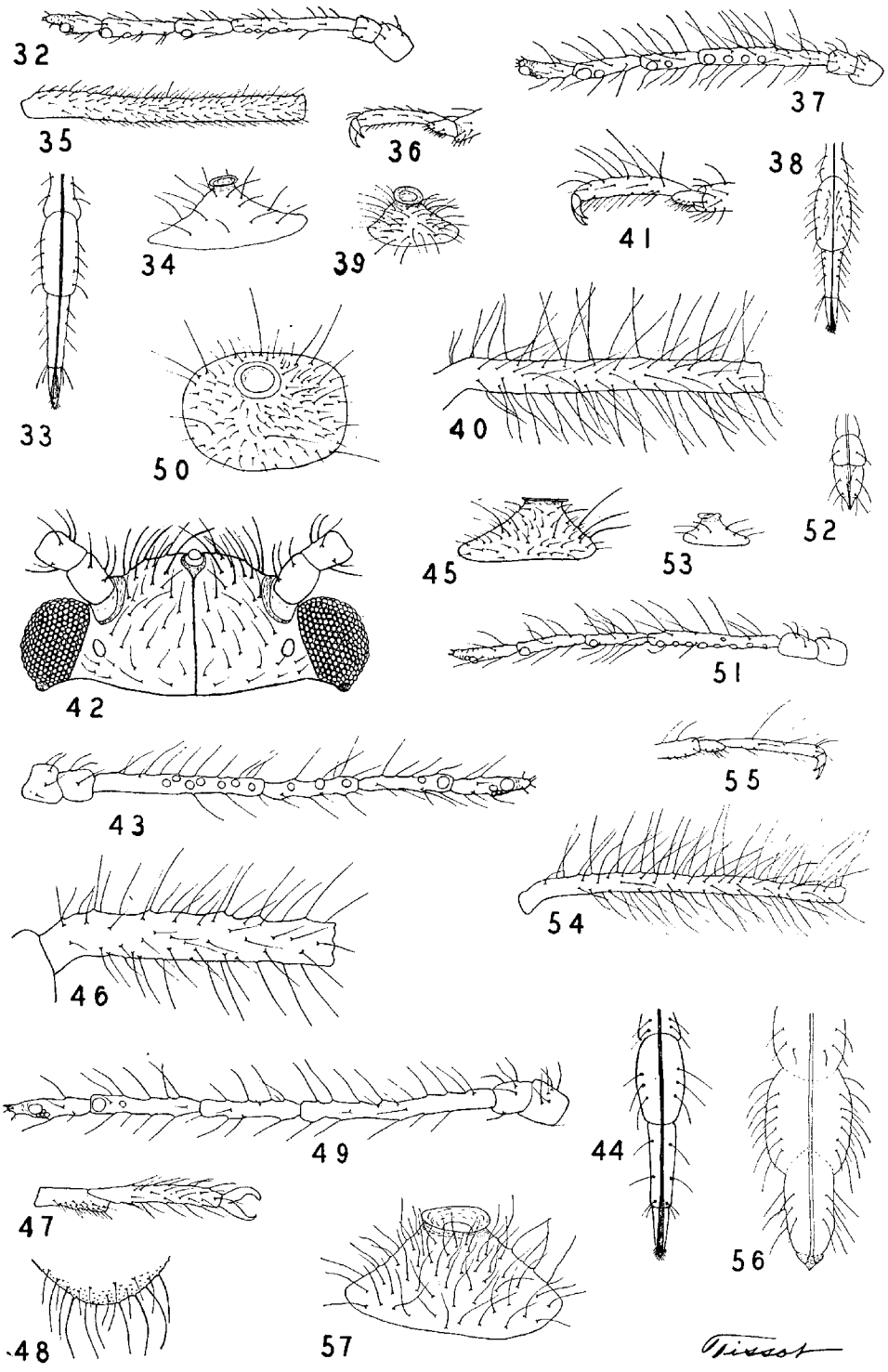
CINARA WATSONI new species

Alate Viviparous Female

Figs. 42-48, Plate II

Size and general color.—Average length from vertex to tip of anal plate, 3.4. Body mostly shades of brown; in life with the surface covered with a waxy bloom giving the insects a grayish appearance. Head and sclerotized portions of thorax dark chestnut brown, the membranes of the thorax and the wing insertions lighter brown. The median suture of the head and a narrow border around the ocelli very dark brown. Eyes reddish-brown. Abdomen cinnamon brown with scattered more or less circular dark brown spots and two somewhat elongate dark brown patches anterior to the cauda. First two antennal segments chestnut brown, somewhat lighter than the head: the remaining segments with basal portion light yellowish brown and apex dark chestnut brown, the dark portions comprising a larger portion of each successive segment to the sixth which has only a small light portion. Wings hyaline, the costal margin suffused with brown, stigma brown. Coxae and trochanters of all legs very dark brown; femora of all legs very dark blackish brown, the first and middle pair with a narrow yellow ring at the base, the hind femora with about one-sixth their length yellow; the tibiae of the fore legs entirely dark blackish brown, the tibiae of the other legs with a small basal band dark blackish brown followed by a yellow or yellowish brown portion comprising about one-third the length of the joint, the apical portion blackish brown; the tarsi of all the legs blackish brown. The three apical segments of the beak shining blackish brown, the long second segment mostly yellowish with the apex light brown and mottled with dark brown. The cornicle bases, cauda and anal plate chestnut brown, darker than the abdomen but lighter than the head.

Head and appendages.—Width of head across the eyes, .82 to .89, average .85. Head short and broad with definite lateral projections supporting the eyes. Joints III to VI of the antennae rather uneven in profile with slightly bulbous hair bases and slightly raised sensoria. Comparative lengths of the segments as follows: III—.45 to .50, average .47; IV—.24 to .30, average .28; V—.29 to .32, average .30; VI—.16 to .17, average .16 plus .04 to .05, average .05. Sensoria distributed as follows: third segment with six to eight sensoria arranged in a relatively straight line, the first sensorium usually located about one-third the length of the segment from the base and the last usually near the apex; with the exception of the apical one or two, the sensoria faint and not easily visible; the fourth segment with two to four sensoria (four in most cases) in a row, unevenly spaced and faint except for the apical one or two; the fifth segment with a small secondary sensorium in addition to the apical primary one which is very large; the sixth segment with large primary sensorium and four or five secondary ones, one of the latter being about half the diameter of the primary one. The unguis of the sixth segment narrowly conical, definitely imbricated and with five or six short spiny hairs which are slightly capitate in some individuals. Antennal hairs rather sparse, prominent, reclinate and long, the longest nearly four times as long as width of segments and measuring .10. The compound eyes coarsely granulated,



LACHNINI OF FLORIDA—PLATE II

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the ocular tubercles present but not particularly prominent. The beak reaching slightly beyond the hind coxae.

Thorax and appendages.—Fore wings with subcostal vein prominent and dark brown; radial sector, cubitus, and first anal veins definite but not prominent; medial vein twice forked and feebly developed; the stigma parallel sided, its apex extending in a curve beyond the base of the radial sector and terminating in a rather acute point. A narrow fold on the hind margin extending on either side of the apex of the first anal vein serving to engage the hooklets of the hind wing and thus forming the wing coupling. Hind wings with the costal margin suffused with brown particularly on the basal portion; two cross veins present and well developed. Femora of all the legs rather thickly beset with slightly curved hairs which are mostly erect on the fore femora and somewhat reclinate on the middle and hind femora; tibiae of all the legs slightly curved, the degree of curvature progressively increasing from the fore to the hind legs; all tibiae armed with prominent hairs which are rather erect at the base of the hind and fore tibiae but becoming more reclinate toward the apices of the segments, middle tibiae with all hairs reclinate, the longest hairs near the middle of the hind tibiae measuring .21; length of hind tibia—2.1 to 2.4, average 2.2. Tarsi of all the legs armed with rather short hairs which are reclinate

Explanation of Plate II

Figs. 32-36—*Cinara taedae*, antenna, beak, cornicle, base of hind tibia, and hind tarsus, alate viviparous female.

Figs. 37-41—*C. tujafilina*, antenna, beak, cornicle, base of hind tibia, and hind tarsus, alate viviparous female.

Figs. 42-50—*C. watsoni*, head, antenna, beak, cornicle, base of hind tibia, hind tarsus, and cauda, alate viviparous female; antenna and cornicle apterous viviparous female.

Figs. 51-55—*Unilachnus parvus*, antenna, beak, cornicle, base of hind tibia, and hind tarsus, alate viviparous female.

Figs. 56-57—*Longistigma caryae*, beak and cornicle, alate viviparous female.

All figures 45X

forming an angle of about 45 degrees with the surface; length of hind tarsus, exclusive of the claws, .33 to .39, average .36.

Abdomen.—The dorsum of the abdomen is rather thickly beset with slightly curved hairs measuring .06 to .13 with an average of .07. The cornicles situated on rather steep sided cones having rather regular outer margins; height of cornicles .17 to .19, average .18; width of cones at the base .37 to .42, average .39. The cornicle bases armed with a few scattered long hairs and with numerous shorter ones about one-fourth to one-third the length of the long ones. The cauda is broadly rounded and is armed with hairs of varying lengths, the longest measuring .21.

Apterous Viviparous Female

Figs. 49-50, Plate II

Size and general color.—Average length of body from vertex to tip of anal plate 3.5. General color of body and appendages nearly identical with color characters found in the alate viviparous female.

Head and appendages.—Width of head across the eyes, .79 to .88, average 85. Front of head broadly rounded, somewhat more convex than in the alate female; the median longitudinal suture distinct as in the alate. Eyes large, prominent and coarsely granulated; ocular tubercles present but not very prominent. Length of antennal segments as follows: III—.47 to .53, average .49; IV—.28 to .30, average .29; V—.29 to .31, average .30; VI—.16 to .19, average .17 plus .05 to .07, average .06. Third segment without sensoria; fourth segment without sensoria except in the case of one individual having one sensorium near apex of this segment in one antenna; fifth segment with one secondary sensorium in all cases in addition to the large apical primary one; sensoria of sixth segment as in alate female. Antennal hairs much as in the alate female except that they are slightly shorter in proportion to the width of the segments. Beak much as in alate female, reaching beyond the hind coxae.

Thorax, abdomen and appendages.—Legs very similar to those of the alate female except that the curvature of the tibiae is somewhat less marked. Length of hind tarsus exclusive of the claws .37 to .42, average .38. The dark spots on the dorsum of the abdomen are much more numerous than in the alate female and as in that form they appear to have no regular arrangement but are scattered indiscriminately but rather evenly, over the surface. Abdominal hairs much as in the alate female. Cornicles with the conical bases somewhat more flattened and with more irregular outer margin than in the alate female, hairs much as in that form; height of cornicles .17 to .18, average .18; greatest width of cone at base .38 to .47, average .43. Shape of cauda and caudal hairs as in the alate female.

Types.—Holotype—Alate viviparous female; Gainesville, Florida (Devils Mill Hopper), May 4, 1933, (F-1011-33), on *Pinus taeda,* (Tissot). On slide with morphotype apterous female. *Morphotype*— apterous viviparous female; same data and on slide with holotype. *Paratypes*—Six slides with four alate and three apterous viviparous females, same data as holotype; six slides with three alate and three apterous females, Raiford, Florida, November 17, 1933, (F-1066-33), on *Pinus taeda,* W. E. Tew, collector; three slides with three apterous females, Otter Creek, Florida, April 2, 1936, (F-1345-36), on *Pinus taeda,* Tissot, collector. Holotype and morphotype

in U. S. National Museum; paratypes in the collection of the Entomology Department, Florida Agricultural Experiment Station, and in that of the author. *Type locality,* Gainesville, Florida.

Collections.—In addition to the above the following collections have been made: Gainesville, Florida, April 23, 1936, (F-1362-36), on *Pinus taeda,* March 24, 1937, (F-1482-37), on *P. taeda,* March 24, 1938, (F-1601-38), on *P. glabra;* Keystone Heights, Florida, April 14, 1939, (F-1753B-39), on *P. palustris;* these four collections made by the author.

This aphid is very similar in many respects to *Cinara longispinosa* Tissot but there are certain constant differences that serve to separate them. In *longispinosa* the lateral extensions of the head are more pronounced and the eyes are without ocular tubercles. There is a slight difference in the relative lengths of the antennal segments. In *watsoni* the fourth and fifth segments are longer in proportion to the third than in *longispinosa;* in *watsoni* the sixth segment, including the spur, is distinctly shorter than the fourth while in *longispinosa* the sixth segment is as long as or longer than the fourth. There is a marked difference in the coloration of the tibiae. In *longispinosa* all the tibiae are wholly dark brown; in *watsoni* the tibiae of the middle and hind legs have distinct yellowish areas on the basal half. This species is named for Professor J. R. Watson who has shown a sincere and helpful interest in the aphid studies of the writer since he first began working with the aphids of Florida.

Genus UNILACHNUS Wilson

UNILACHNUS PARVUS (Wilson)

Figs. 51-55, Plate II

Lachnus parvus Wilson, Trans. Am. Ent. Soc., XLI, 104, 1915.

This aphid is a needle feeder and is met with rather commonly on pines. The individuals usually are ranged in single file along one side of a needle, and often are completely hidden by a grayish white, waxy secretion. The antennae and legs are armed with rather erect long hairs, the apex of the beak is obtuse and the median vein is faint and unbranched.

Collections.—Pinus taeda, Gainesville, March 16, 1928, (F-313-28); March 19, 1928, (F-316-28); March 22, 1928, (F-321B-28); March 8, 1929, (F-487-29); March 29, 1929, (F-510-29); May 2, 1930, (F-631-30); April 7, 1932, (F-888-32); January 26, 1934, (F-1078-34); March 19, 1936, (F-1318-36); March 23, 1936, (F-1328-36); March 26, 1936, (F-1333-36); (all above by Tissot); February 5, 1931, (F-757-31), (H. E. Bratley); Sanford, February 23, 1929, (F-479-29), (Tissot); Winter Park, April 14, 1932, (F-911-32), (Brown and Dyson); Welaka, April 8, 1939, (F-1752-39), (Tissot). Pinus glabra, Gainesville, March 24, 1938, (F-1596-38), (Tissot).

Genus LONGISTIGMA Wilson

LONGISTIGMA CARYAE (Harris)

Figs. 56-57, Plate II

Aphis caryae Harris, A Report on the insects of Massachusetts Injurious to Vegetation, p. 190, 1841.

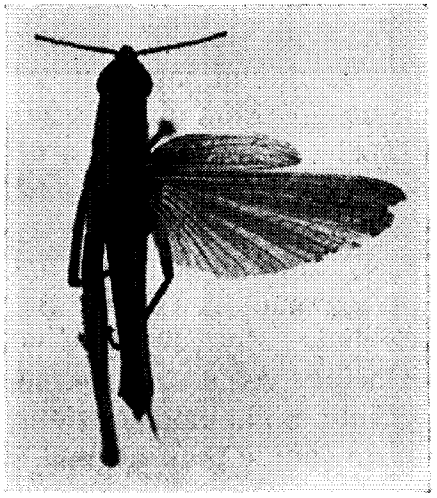
The exceptionally large size of this aphid and the elongated stigma reaching to the tip of the wing will readily serve to distinguish it from all other species. In the North it is widespread and common, occasionally becoming a pest. In Florida it is much less common and apparently never becomes very numerous. In contrast to most Lachnids which normally feed on conifers, this aphid feeds upon deciduous trees.

Collections.—Gainesville, February 2, 1927, (F-179-27), on *Quercus nigra*, (Tissot); December 9, 1931, (F-833-31), on *Q. michauxii*, (Tissot); March 4, 1932, (F-873-32), on *Myrica cerifera*, (H. E. Bratley); January 18, 1932, (F-852-32), on Pecan, (Tissot); MacClenny, April 29, 1926, (F-108-26), on Walnut, (Betts); Quincy, February 3, 1932, (F-855-32), (Feinberg); River Junction, March 7, 1932, (F-877-32), on Pecan, (A. O. Duke); Tampa, January 7, 1937, (F-1424-37), on *Quercus* sp.

A CASE OF REDUCTION OF THE RIGHT TEGMEN IN A MALE of *Syrbula admirabilis* (Uhler)

By K. Princis (Riga Latvia).

Some time ago I received a small lot of Orthoptera collected in September, 1937 by S. B. Smalley at Cincinnati, Ohio, U. S. A. Among these specimens I was surprised to find a male of *Syrbula admirabilis* (Uhler) with the right tegmen considerably reduced, but with the wing of the same side and both tegmen and wing of the left side fully developed (Fig. 1). Such cases of partial reduction of the organs of flight are rather uncommon in Orthoptera, and the peculiarities of this specimen warrant a short description.



The measurements of the specimen are as follows: length of body 21.4 mm.; length of pronotum 3.9 mm.; length of left tegmen 16 mm.; length of right tegmen 9 mm.; length of wings 15.4 mm.; length of hind femora 15.4 mm. All of these measurements are more or less below the minima given for the species by Blatchley[1], and the stunted condition of this individual may indicate that it was subjected to less favorable general growth conditions than usual. However, the specimen is by no means to be considered as a cripple, for all parts of its body are normally developed except the right tegmen, and the latter is not malformed. The reduced tegmen looks more or less like a normally developed tegmen, and at first sight appears to be merely a dwarfed reproduction of a normal tegmen. However, more detailed study shows at once the incorrectness of such a conclusion, only the basal half of the tegmen being more or less like that of a normal specimen, while the apical half is greatly reduced.

The reduction has proceeded from the apical end towards the base, and from the whole apical half of the tegmen there is left only a small part which forms the apex of the tegmen. The network of this reduced apical part is represented only by the be-

[1]Blatchley, W. S.—Orthoptera of North-Eastern America, Indianapolis, 1920, p. 209.

ginnings of the branches of the principal veins; the cross-veinlets which are so well and regularly developed in normal tegmina are almost wanting, except for a few quite irregular remaining ones.

The basal half of the tegmen is almost like that of a normal individual, but careful inspection shows deviations from the normal condition in this part of the tegmen also, though here the indications of reduction are less evident than in the apical half. In the first place the size is less than that of a normal tegmen. Furthermore, the venation shows some peculiarities when compared with that of a normal tegmen. The costal vein is well-developed, and has its usual shape. The mediastinal vein shows an interruption at its base, so that the vein is divided into two parts: a basal one and a distal one. The distal part, instead of being connected with the basal part, joins with the humeral vein near its base, but the short basal part of the mediastinal vein ends freely, and can be traced only for about one-fifth of the length of the tegmen. A further peculiarity concerns the discoidal vein, which is fully conjoined with the humeral vein. All the other principal veins are present and almost normally developed except for slight modifications. The cross-veinlets are more irregular in course than normal.

On the whole we can state that the reduction shown by this tegmen is of "normal" type—that is, the reduced tegmen is similar to the tegmina of short-winged forms of Acrididae—even though such reduction constitutes a rare abnormality in *Syrbula admirabilis*. This agrees fully with the statement of Karny[2] concerning the reduction of flight organs of Orthoptera, in which he says: "Die Reduktion der Flugorgane bei den Orthopteren erfolgt in ganz gesetzmassiger Weise, und zwar nicht etwa durch gleichmassige Verkleinerung oder Rückbildung aller Teile, sondern vielmehr gewissermassen vom Apikalende aus, so dass der distale Teil bedeutend starker reduziert wird als der proximale."

We have, perhaps, to seek the cause of the teratological structure of this specimen in some inner physiological disturbance. Unfortunately the specimen was received in dried condition, so that it was impossible to study its internal anatomy. Detailed anatomical studies of such cases are desirable, since it is quite possible that such investigations would bring us much closer to an understanding of brachypterism and macropterism than at

[2]Karny, H. H.—Ueber die Reduktion der Flugorgane bei den Orthopteren. Zool. Jahrb., xxxiii: 27-40. 1912.

present. Thus Ramme[3] studying long-winged individuals of *Metrioptera roeselii* (Hgb.), has found a correlation existing between macropterism and the development of the gonads. All of the macropterous specimens examined by him showed definite signs of reduction in their gonads.

Some years ago a similar case of reduction of the left forewing in a dragon-fly, *Leptetrum quadrimaculatum* L., was described by O. John[4], but without any examination of the internal anatomy.

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[3]Ramme, W.—Verlust oder Herabsetzung der Fruchtbarkeit bei macropteren Individuen sonst brachypterer Orthopterenarten. Biol. Zentralbl., li: 533-540. 1931.

[4]John, O.—Reduktion eines Flugels bei einer Libelle. Folia Zool. et Hydrobiol., Riga, I: 177-180. 1930.

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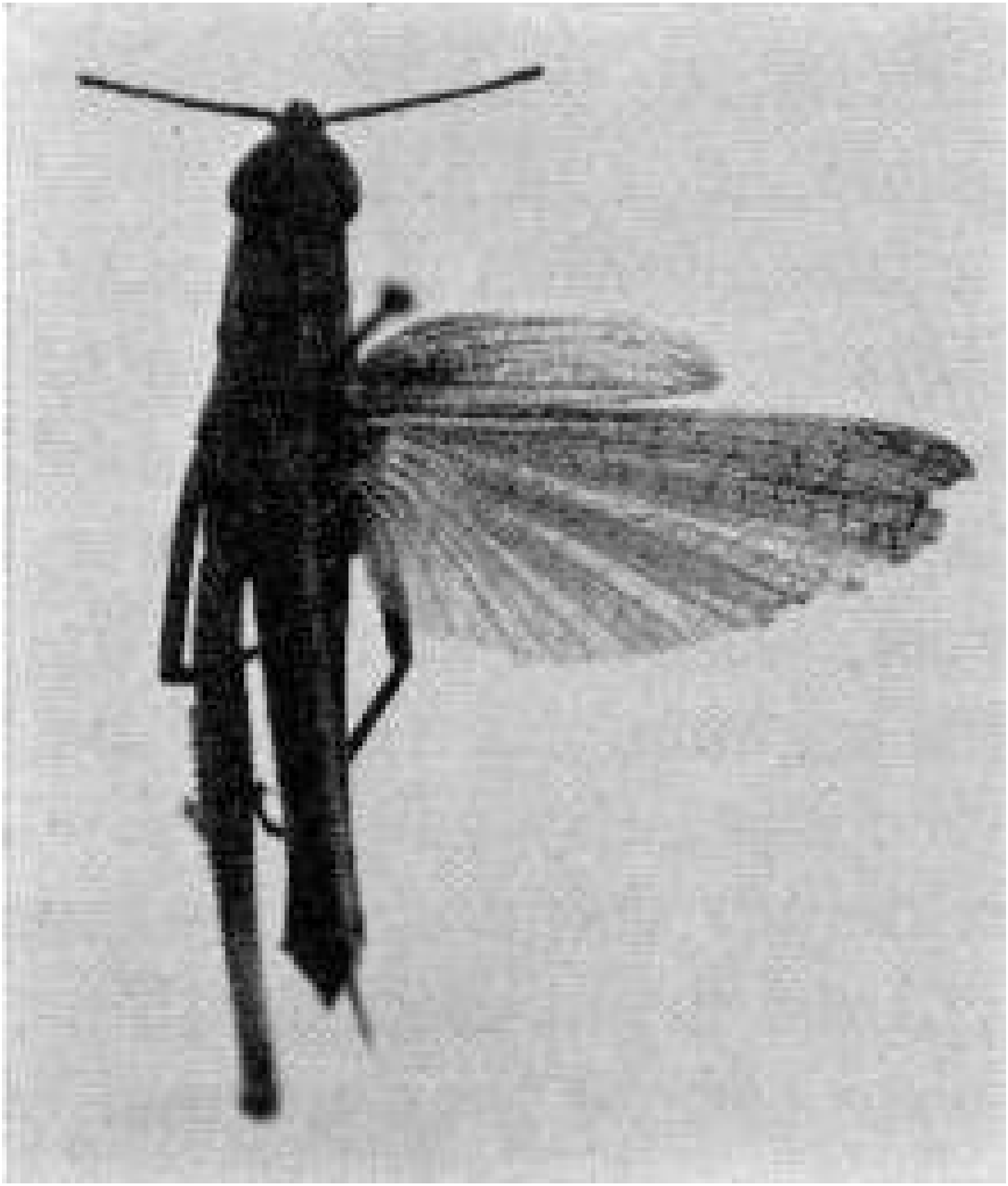

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