

## ADDENDA.

The succeeding Parts of this Food Plant List are ready for press and will be published from time to time as opportunity offers. At their conclusion will be given the Bibliography of all references indicated, a Plant Index including genera and common names, and an Aphid Index arranged alphabetically according to the specific names which will serve as a check list to the Aphids of the World.

## NOTES ON PSYLLIDAE:\*

EDITH M. PATCH.

The present paper is a record of species many of which have been kindly lent me for study. For the most part the available data are very meagre and for this reason the accession numbers are usually given together with what collection notes have been preserved, in the hope that more biological information may be added by others. Detailed descriptions have been avoided as the distinguishing characters are shown more clearly in the illustrations.

Lot 1339 includes those specimens lent by Cornell University; Lot 1347, by Doctor C. Gordon Hewitt; Lot 1348, by Professor C. P. Gillette; Lot 1440, by Doctor W. E. Britton.

## APHALARA.

Very little biological information concerning the species *Aphalara* in this country seems to be available. It is possible that when more collections of the nymphal stages have been made with the accompanying host plant data the species will be more easily defined. But at present from large series of specimens in several widely separated collections it has not been apparent to me in all cases which variations are of specific and which of individual significance. The shape of the wing from elongate to rotundiform; the breadth of the arch of Cu; the length of the branches of M; the presence, absence or degree of wing maculation; the length of the caudal segment of the female; all these are certainly subject to much individual variation in closely allied species and the resulting confusion indicates that systematic work with this group should be undertaken only when a background of ecological data is at hand.

\* Papers from the Maine Agricultural Experiment Station: Entomology, No. 55.

A few species are placed on a dependable footing, however. Mally separated a *Rumex* species from a *Polygonum* species (1894-95) and gave characteristic figures of immature stages as well as excellent figures of the wings which clearly distinguish the two species he discusses. In order to avoid reverting to previous mix-ups including these species, I have chosen to attempt to trace them no farther back than Mally's paper.

*Aphalara polygoni* Mally (Foerster?)

On October 18, 1911, large numbers of nymphs and adults were found on *Polygonum* along the Stillwater river at Orono. The nymphs were most numerous at the leaf axle. Many of the pupæ present molted after they were collected so that bred material was obtained. Both the nymphs and adult specimens accord exactly with the *Polygonum* species figured by Mally. Lot 1341 Sub 7. Figures 370, 379, 383 and 387.

Crawford (1911) follows Loew in his synonymy for the *Polygonum* of Foerster. Material already determined as *calthae* in the collections I have worked over I have left as such with due respect for that determination. Enough variation is present, however, among these specimens to make me hesitate in absence of authentic host plant data to merge the *polygoni* of Mally with them. Figures 364, 378, 382, and 384, represent named "*calthae*" from the Colorado collection. Lot 1348 Sub 53, and Sub 47.

LITERATURE.

- 1894 ('95) Mally, C. W. Psyllidae found at Ames, Iowa. Proc. Iowa Acad. of Sc., Vol. II. Plate XV. Figs. 1, 2, 3, Plate XVII. Figs. 3.  
1911 Crawford, D. L. American Psyllidae IV. Pomona Journal of Entomology, Vol. III, p. 495.

*Aphalara nubifera* sp. nov.

Ten specimens are at hand with data "Ft Collins Col., 6-13-99. Foothills, C. P. G. On *Sisymbrium canescens*, causing abnormal development of foliage in dense mass." This collection can be separated from the *polygoni* by slight differences only for the two are certainly very closely allied. The head and genitalia of both sexes resemble those of *polygoni*, though there are distinctions. The forceps of the male are

longer and the smaller of the two terminal tooth-like projections is at a slightly greater distance from the tip in *nubifera* and the female genital segment is relatively longer, the lower plate being subequal to the two preceding segments while in *polygoni* it is subequal to but the one preceding segment.

The wing of *nubifera* is broader than that of *polygoni* and the cloudiness of the wings is differently disposed. Lot 1348 Sub 48. Figure 369.

*Aphalara rumicis* Mally.

Lot 1341 Sub 6 was collected at St. Louis, Mo., Sept. 22, 1911, by Mr. J. T. Monell who says of them;—"On *Rumex*, the broad leaved common one, I found a colony curling the leaves longitudinally into a pseudogall which turned scarlet—from these I reared a few which I mail to you."

This species is closely allied to those developing on *Polygonum* and *Sisymbrium*, Mally's description and figures definitely and sufficiently characterize the nymphs. The specific characters of the wing and forceps are shown in figures 372 and 377.

LITERATURE.

- 1894 ('95) Mally, C. W. Psyllidae found at Ames, Iowa. Proc. Iowa Acad. of Sc., Vol. II, p. 166. *A. exilis* Web. and Mohr., var. *rumicis*, var. nov.  
1911 Crawford, D. L. American Psyllidae IV. Pomona Journal of Entomology, Vol. III, p. 496. *A. calthae maculipennis* Loew.

*Aphalara picta* Zetterstedt.

A large species with wing 3.55 mm. long in the Colorado collection I take to be *picta* as figured by Crawford (1911). Figures 380, and 388 represent the forceps and the caudal segment of the female. Lot 1348 Sub 29.

LITERATURE.

- 1911 Crawford. Pomona Journal of Entomology, Vol. III, p. 501.

*Aphalara fascipennis* sp. nov.

Collections from Canada and New York are at hand of a beautiful species which comes close to *picta*. The genitalia of both sexes resemble *picta* closely. The abdomen of the male is

constricted just cephalad the genital segment which is large and prominent; the forceps are long and from the lateral aspect are spatulate and attenuate at base; the lateral arms are long and tapering. The wing is broad and rotund and is decorated with a dusky band. Figure 366. Lot 1347 Sub. 30 includes 21 specimens with data "Ottawa, Ont. 7-VI-1903 B. Meadow—W. Metcalfe," and 3 specimens with data "27-VI-1903, W. Metcalfe." Lot 1339 and Sub. 24 includes 3 males with data "17-20 June, 1904. Mud Creek, Tompkins Co., N. Y."

The early stages are not known and the food plant is not recorded.

*Aphalara artemisiae angustipennis* Crawford.

This species as it exists in collections has a puzzling range of variation which biological data may sometime help to clear up. Figures 363, 375, 376, and 386 are photographs of apparently typical details.

LITERATURE.

1911 Crawford, D. L. Pomona Journal of Entomology, Vol. III, p. 499.

*Aphalara communis* Crawford.

Figures 365, 374, and 389 show a species as maddening in its elastic variations as *artemisiae*. This is close to *vcazei* Patch and biological data are needed to put on a satisfactory basis either many closely allied species or a few species with a broad and catholic taste in variation.

*Aphalara* sp.

Figures 371 and 390 represent collections with rotundiform wings that merge by gentle degrees too nearly with the *communis* group to deal with in the absence of biological information.

*Aphalara* sp.

In the other direction traveling toward narrow winged specimens with long branches of M and Cu is a series which also is too flexible to separate satisfactorily and treat until ecological information is forth coming. An extreme of this series is represented by figures 367, 373 and 381.

*Aphalara nebulosa americana* Crawford.

This pretty winged species is easily distinguished from the other species of the genus mentioned in this paper by the lateral arms of the male genitalia. Figures 368 and 385 represent details of Lot 1348 Sub 65 with data "Colo. 2204. 7-4-96. Larimer Col. C. P. G."

LITERATURE.

1911 Crawford, D. L. Pomona Journal of Entomology, Vol. III, p. 503.

PSYLLA.

*Psylla annulata* Fitch

The "Annulated Psylla" of Fitch can not possibly be a variety of *carpini*. The most conspicuous characteristic of this straw-yellow species on maple is the ringed appearance of the black and yellow antennae. The original description is certainly meagre but applies perfectly so far as it goes to this common maple species and not to the species occurring on horn beam.

A large collection from Rock maple *Acer saccharum* Marsh was made at Middletown, Conn., in May, 1911. The nymphs were sometimes on the upper side of leaf but occurred most numerous on the under side of the leaves and are nearly a leaf green in color. They were collected at various times from May 17-31. The adults are paler than the nymphs and were abundant May 30-31.

Me. 1345 Sub 2. Numerous nymphs, pupae and adults, collected by Mr. William C. Woods at Middletown, Conn., from Rock Maple, *Acer saccharum* Marsh. Figs. 395, 411, 421.

Me. 1347. Sub 29. One male with data "Ottawa, Ont. 14-VI-1903. W. Metcalfe."

Me. 1347. Sub 40. Fourteen specimens with data "Ottawa, Ont. 14-VIII-1904. W. Metcalfe, B. Meadow, Maple, and one specimen with data "Ottawa, Ont. I-VII-1904. W. Metcalfe."

LITERATURE.

1851

Fitch, Asa. Catalogue, with references and descriptions of the insects collected and arranged for the State Cabinet of Natural History. "Annulated Psylla, \**P. annulata*. Straw-yellow; legs white; elytra hyaline, nerves straw yellow; antennae black, basal half straw-yellow annulated with black. Length, 0.15. Occurs on the sugar-maple. No. 834, male; 835, female."

- 1881 Ashmead, Wm. H. Can. Ent. Vol. 13, p. 222. Listed.  
 1890 Packard, A. S. Forest Insects, p. 417. Listed.  
 1893 Riley, C. V. in Lintner IX, p. 411, "Probable var. carpini."  
 1894 Mally, C. W. Pro. Iowa Acad. Sc., Vol. 2, p. 153. Listed.  
 Fig. 4, Plate 16.  
 1906 Felt, E. P. Woodland Trees II, p. 728.  
 1909 ('10) Smith, J. B. Insects of N. J., p. 109. Listed.

*Psylla negundinis* Mally.

This species is certainly closely allied to *annulata* Fitch and the differential characters seem difficult to define. Mally, however, does not mention nor figure the antennal stripes characteristic of *annulata* as being present in *negundinis* and the pinned material in the collections at hand of this species do not show annulated antennae. Figures 393, 409, and 420 picture the head, wing and forceps of this species.

Me. 1339 Sub 46. Two specimens with data "Colo. 1605. Cornell U. Lot. 157. Sub 35. Received by exchange from Carl F. Baker."

Me. 1348 Sub 11. One female with data "Colo. 1981. 9-2-95. Ft. Collins C. P. G.," and one female with data "Colo. 1769, 9-26-94. C. F. B. Ft. Collins, on Box Elder."

Me. 1348 Sub 18. Five specimens with data "Colo. 1979. 9-31-95 Ft. Collins C. P. G. on Box Elder," and one specimen with data "Colo. 1769. 9-26-94. C. F. B. Ft. Collins. On Box Elder."

Me. 1348 Sub 24. One male with data "Colo. 1915. 7-5-94. Santa Fe. N. M., T. D. A. Cockerell."

## LITERATURE.

- 1894 (1895) Mally, C. W. Proc. Acad. of Sci., Vol. 2, p. 155.

*Psylla breviata* n. sp.

Three females with data "Ottawa, Ont. Dows Swamp. 14-VI-1903 W. Metcalfe" comprise Me. 1347 Sub 36. The host-plant is not yet known.

This species comes close to *annulata* and *negundinis* both in wing and cauda of female. The antennae are short, joints 3 to 10 inclusive being subequal to width of cephalic aspect of head across the eyes. The frontal cones are rather straight at their medial margin but curved along the lateral edge. The head, wing and cauda are given in figures 397, 405, and 424, and will serve to make the species recognizable until enough ecological information is obtained to make this species deserving of more attention.

*Psylla gilletti* n. sp.

*Psylla gilletti* Riley, MS. seems to be well represented in collections though not accompanied by ecological data. The wing is characterized by the short acute stigma, the distinct heavy dark spot between tip of clavus and margin of wing, and the four distinct linear dark marginal dashes as indicated in Fig. 396. The head of the female is well represented in Fig. 414. The female cauda (Fig. 428) is rather heavy and about subequal in length to the two preceding segments. The male forceps (Fig. 422) end in two short rather blunt projections and the terminal inner setal spines are strong and stiff.

Me. 1339 Sub 42. One specimen with data "Colo. 1456. Cornell U. Lot 157. Sub 33. *Psylla ribis* Riley MS. Received by exchange from Carl F. Baker."

Me. 1348 Sub 6. One female with data "*Psylla gilletti* Riley MS. Colo. 1887, 6-11-95. Ft. Collins, C. P. G." One female with data "Colo. 2078, 4-22-96, C. P. G. Ft. Collins."

Me. 1348 Sub 20. One specimen with data "Onagra Ks. 5-26-92, C. P. G. Trinidad, Colo. *Psylla gilletti* Riley, MS." One specimen with data "464 Onagra Ks. 5-27-92, C. F. B." One specimen with data "Colo. 427. 5-19-92 Soldier Canyon, Colo. C. P. G." One specimen with data "Col. Ac. Cat. 28. Mrs. P. Gillette, Ft. Collins." Twenty-two specimens with data "Colo. 2075 4-22-96. C. P. G. Horse tooth Gulch (near Ft. Collins) Bloom of Salix." One specimen with data "Colo. 1887. 6-11-95 Ft. Collins. C. P. G." Two specimens with data "Colo. 2078. 4-22-96 C. P. G. Ft. Collins. Two specimens with data "Colo. 2195. 7-4-96 Larimer County C. P. G. One specimen with data "Colo. 2096. 5-9-96. Dixon Canyon (near Ft. Collins) C. P. G." One specimen with data "Colo. 2805. 10-22-97, Belvue, Colo. Emma Gillette." One specimen with data "Colo. 2138. 6-15-96 Camp Carter, Colo. C. P. G. One specimen with data "Colo. 2094. 5-7-96 Howes Gulch (near Ft. Collins) C. P. G." One specimen with data "Ft. Collins, Colo. 6-17-99 E. D. Ball, Horsetooth Gulch."

*Psylla pyricola*.

This economic species was present in large number in 1910 upon pear in Camden, Maine. The leaves were badly discolored. Figures 398 and 434 show the wing and male cauda of this insect. Me. 1326 Sub 4.

## LITERATURE (for America).

- 1884 Riley, C. V. Pro. Biol. Soc. Wash. Vol. 2.  
 1892 Slingerland, M. V. Bul. Cornell Univ. No. 44.  
 1893 Riley and Howard Insect Life, Vol. 5, p. 226.  
 1893 Lintner 9th Rept. p. 317.



- 1894 ('95) Mally Proc. Iowa Acad. Sci. Vol. 2, p. 153, Listed.  
 1895 Marlatt, C. L. U. S. D. A. B. E. Circ. No. 7.  
 1896 Smith, J. B. Economic Entomology, p. 137.  
 1909 (1910) Smith, J. B. Insects of New Jersey, p. 109. Listed.  
 1911 Patch, Edith M. Me. Agr. Exp. Sta. Bul. No. 187, p. 11.  
       Recorded for Maine.

*Psylla ribis* n. sp.

*Psylla ribis* Riley, MS. is a species existing numerously in collections under its manuscript name. The wing (Fig. 392) is immaculate and the vein and stigma rather heavy. The head (Fig. 407) is with prominent eyes, moderately long antennæ and the cones subequal in length to the third antennal segment. The caudal segment of female (Fig. 430) is thick at base and about equal in length to the other abdominal segments. The upper plate is straight along dorsal line and is much longer than the lower plate. The male forceps (Fig. 417) are erect and simple with hairs very short, sparse and inconspicuous. There seem to be no food plant records available but the name is suggestive.

Me. 1348 Sub 7. One specimen with "Psylla ribis Riley, MS. Colo. 1556."

Me. 1348 Sub 25. Specimens with data "Marshall. Pas. Col. 8-27-99." "Ft. Collins, Col. 4-21-99," "Colo. 2074," "Colo. 2094," "Colo. 2204."

*Psylla brevistigmata* n. sp.

Two specimens in the Cornell collection which bears data "Alta Meadows Seq. Nat. Park, Cal. 19 July 1907. 9,000 ft. J. C. Bradley," seem distinctive enough to describe as new. The cauda (Fig. 427) is about the length of two preceding segments. The upper plate is thickly armed with short stout conical setulæ and scattered with a few long setæ. The facial cones are swollen at base and very divergent with rounded tips. Fig. 413. The broad wings are pale with pale shading (not heavy) along tips of veins. The stigma is broad at proximal edge but narrows suddenly and acutely as is shown in Fig. 399. Me. 1339 Sub 31.

*Psylla hartigii* Flor?

A species common on birch (*Betula populifolia*) in the vicinity of Orono comes too near to *hartigii* Flor as characterized by Sulc (1910) to describe as new. Me. 1340 Sub 1 comprised

2 females collected from birch June 15, 1911; Lot 1340 Sub 2 comprised 4 males and 20 females collected from birch July 1, 1911; Lot 1340 Sub 7 was a collection of 2 females taken with *P. striata* on birch June 25, 1910.

The antenna is conspicuously shorter than in *galeaformis*; and the wings are yellow. The caudal segment of female is much like *galeaformis* except for the constant downward curve of the long upper plate. Figs. 394, 408, 423, 429, 432, and 433, sufficiently characterize this species to prevent its confusion with other birch psyllids in this country. The nymphs were not taken.

LITERATURE.

1910 Sulc, Dr. Karel. Prispěvky Ku Poz nani Psyll. Tab. XII.

*Psylla cerasi* n. sp.

A species new to this country and for which I can find no place in European records, was taken on September 14, 1911, at Stillwater, Me., on wild cherry. Psyllid eggs, probably of this species were found on the same date tucked between leaf bud and twig of the same little tree.

This brilliant species had dorsal head and thorax rosy, dorsal abdomen almost vermilion, a black spot on dorsum of 1st abdominal segment, 5 vivid black transverse bands across the abdominal dorsum, the last coming just cephalad the genital segment. Antennal joints I, II, III rosy, rest black. Eyes bright black and bulging to width of thorax or slightly more. Wings clear and a little brownish. Ventral body pale.

A female distended with eggs had a total length, exclusive of wings and antennæ, of 3.8 mm. The wing (Fig. 400) with M and Rs approximating to give a pinched appearance. Wing without stigma. Head (Fig. 412) with large triangular facial cones rather acute at tip. Antennal length more than 2 1-2 times the breadth of head. The caudal segment (Fig. 431) with upper plate armed with large short blunt setulæ which give it a distinctly noduled appearance. Me. 1341 Sub 4.

*Psylla coryli* n. sp.

A species under the manuscript name of *Psylla coryli* Riley, MS. is sufficiently characterized by distinct large tooth-like projections on the inner side of the male forceps (Fig. 419) to

distinguish it from any other described species of America. The wing (Fig. 391) is heavily veined and darkly shaded especially near the veins. The head (Fig. 406) is probably better characterized by the accompanying illustration than by a description. Me. 1348 Sub 61 with data "Colo. 1114."

#### PACHYPSYLLA.

It is with reluctance that I name as new species of this group but without a certainty of linking them with the galls described by Riley it is apparently the only thing to do with collection specimens. The figures will characterize these species it is hoped, and later biological data will probably be forthcoming to throw a light on the synonymy. *Pachypsylla C. mammae* Riley seems to be common in collections. This species has been figured in detail by Stough (1910) so that nothing except a wing (Fig. 401) is given here, for the sake of comparison with the other species.

#### *Pachypsylla tridentata* n. sp.

A species easily characterized from other described species by the wings is here described as new. The wings (Fig. 402) have a row of irregular dark spots extending across the veins on distal third of wing. The branches of M and the approximate branch of the Cu are tipped with an angular mark which gives the wing the appearance of being decorated with three tridents. The head (Fig. 415) is characteristic of the genus with rounded lobes and short, stout antennae. The female cauda (Fig. 425) is long and stout and is subequal in length to the four preceding segments. The male cauda (Fig. 437) is preceded by a short constriction. The forceps are shown in Fig. 418. Me. 1339 Sub 40 is a single specimen from the Cornell collection and Me. 1348 Sub 67 comprises 4 specimens with data "Colo. 2049, 3-4-96. Canon City, Colo. From galls on *Celtis*."

#### *Pachypsylla dubia* n. sp.

Specimens from *Celtis* galls in the Cornell collection agree with the description of *C. gemma* so far as the shape of the wing goes, but that species is characterized by Riley as having wings "uniformly immaculate" which precludes the finely but densely

mottled wing of *dubia* (Fig. 404). The head (Fig. 416) has the broad rounded lobes and short antennae of the allied specimens.

#### *Pachypsylla pallida* n. sp.

Material bearing the data "Arizona C. U. Lot 34; Cornell U. Lot 45 Sub 469" is apparently a new *Pachypsylla*. The wing (Fig. 403) is wide at the basal third and broad for its length. It is more or less shaded especially at the distal marginal band, proximad which is a pale path extending transversely across the wing. From the form of both the wing and the head this species seems allied to *dubia* though easily distinguishable from it and the female cauda is also similar. The antenna is subequal in length to the width of the head across the eyes. The cones are broad and thick and bluntly rounded. (Fig. 410.) Me. 1339 Sub 51. Me. 1339 Sub 55 and 56.

#### TRIOZINAE.

#### *Trioza aylmeriae* sp. nov.

This species is easily distinguished from previously described members of this genus in America. The head (Fig. 330) is of an ordinary *Trioza* type with large divergent cones rather acutely rounded apically. The wing (Fig. 316) measures about 3 mm. in length, and is rather evenly elongate with tip rounded. They are clear and unmarked except for the three marginal spots common for this genus. The branches of M and Cu are relatively long.

The female caudal segment (Figs. 343 and 346) is large and the slender tip of the upper plate extends beyond the lower plate. The lateral arms of the male cauda (Fig. 345) are conspicuously long and heavily supplied with long setae. The forceps are enlarged and blunt at the tip (Fig. 344), Lot 1347 Sub 19. Eleven specimens with data, "Bilberry. Aylmer, Ottawa, Ont. 20-V 1906 W. Metcalfe."

#### *Trioza collaris* Crawford.

Lat 1348 Sub 74. A single female with data "Ariz. 2217, 5-20-96 Dr. R. E. Knize, Tuscon," is apparently *collaris* Crawford. The cauda is shown in Fig. 358 and the wing is not dis-

tinguishable from that of *longistylus* which is shown in Fig. 320. It measures about 3.5 mm.

## LITERATURE.

- 1910 Crawford, D. L. American Psyllidae I, p. 229.  
 1910 Crawford, D. L. American Psyllidae II, p. 347.  
 1911 Crawford, D. L. American Psyllidae III, p. 435.

*Trioza diospyri* (Ashmead).

The head, wing and female cauda of this species are shown in Figs. 331, 318, and 357. The wing is clear with the veins slender and distinct. It measures about 3.8 mm. The three marginal dashes are especially narrow.

Lot 1339 Sub 47. One male and one female with the data "Trioza diospyra Le Baron? River Des Peres, St. Louis, Mo. June 2, '77. Persimmon. Cornell U. Lot 62. Collected by Theo. Pergande and determined by Uhler. Given J. H. C. by Pergande."

## LITERATURE.

- 1881 Ashmead, Wm. H. Canadian Entomologist. Vol 13, p. 222.  
*Psylla diospyri*.  
 1894 ('95) Mally, C. W. Proceedings of the Iowa Academy of Sciences. Vol. 2, p. 154. *Trioza diospyri* Ashmead, listed.  
 1909 ('10) Smith, J. B. Insects of New Jersey, p. 110, listed.  
 1910 Crawford, D. L. American Psyllidae II, p. 352. *Trioza diospyri* Ashmead (*latipennis* Crawford.)

*Trioza dubia* sp. nov.

Lot 1339 Sub 17. Two females and one male with data "S. Francisco dunes. Cal. 11 Nov. 1907. Bradley." Lot 1339 Sub 19. One female lent by Cornell University with data "Berkeley, Cal. 5 Nov. '06. J. C. Bradley."

The name of this species indicates the amount known concerning it at time of description. The wing measures about 2.75 mm in length. It is clear and unmarked except for the three marginal dashes common in this genus. The venation as shown in Fig. 319 is much like that of *maura*. The head with moderately long dark facial cones contiguous in basal two-thirds, distal third divergent, subacute at tip, is of the same general type as *maura*. The caudal segment of male has long slender forceps strongly curved cephalad when viewed laterally.

The chief character separating these specimens from the species to which it seems to be very closely allied is the female cauda which terminates in a subacute tip, as shown in Fig. 352. There is a distinct downward curve of the distal portion of the upper plate.

*Trioza forcipula* sp. nov.

This species, like *dubia*, is apparently closely allied to *maura*. The head (Fig. 338) with moderately long dark cones subacute at tip, and the wings (Fig. 317) are especially like those of that species. Wing length about 2.75 mm. The female cauda (Fig. 355) is distinctive, both upper and lower plates being rather broad and elongate. The upper plate has a downward curve. The male (Figs. 342 and 350) has the forceps strongly bowed in caudal aspect with tip ending rather bluntly and highly chitinized. The inner surface is supplied with long but not comparatively heavy setæ, the terminal group, however, are stiff and approximate.

Lot 1339 Sub 21. One female with data "Ithaca, N. Y. 16 May 1900."

Lot 1347 Sub 22. One male and one female with data "Hull, Ottawa, Ont. 17-V-1903, W. Metcalfe." Two males with data "Hull, Ottawa, Ont. 26-VII-1903, W. Metcalfe." One female with data "Ottawa, Ont. 17-V-1903, W. Metcalfe." One female with data, "Ottawa, Ont. 29-V-1904, W. Metcalfe." One female with data, "Elm, Ottawa, Ont. 5-VI-1904, W. Metcalfe."

Lot 1348 Sub 72. Seven specimens with data "Ft. Collins, Col. 5-12-99, E. D. Ball."

*Trioza longistylus* Crawford.

This species is closely allied to *collaris* and in some characters hardly to be distinguished from it.

Figs. 320 and 361 show the wing and female cauda. The wing of specimens at hand is about 3.45 mm long.

The forceps of the male cauda are from the lateral aspect, long and slender and rather strongly curved cephalad. On the inner surface are two longitudinal ridges, one bearing relatively few pointed setæ and the other thickly set with several irregular rows of large flat blade-like setæ.

Lot 1339 Sub 14. One female with data "S. Francisco dunes, Cal. Nov. 11, 1907, Bradley."

Lot 1339 Sub 15. Two males and one female with data "Felton, St. Cruz Mts., Cal. 15-19, May, '07. 300-500 ft. Bradley."

Lot 1339 Sub 16. One female with data "Blue Lake, Hmbltd Co., Cal. July 20-27, 1907, Bradley."

## LITERATURE.

- 1910 Crawford, D. L. American Psyllidae I, p. 233.  
1911 Crawford, D. L. American Psyllidae III, p. 434.

*Trioza marginata* Crawford.

The head and female cauda of this species come exceedingly close to *T. maura*. The length of branches of M and Cu are different and a smoky caudal margin of the wing further characterizes this species. The wing specimen at hand is 2.85 mm long. Figs. 321, 332, and 360.

Lot 1348 Sub 75. Two females with data "Ariz. 2217. 5-20-96. Tucson, Ariz. R. E. Kinze."

## LITERATURE.

- 1910 Crawford, D. L. American Psyllidae I, p. 232.  
1910 Crawford, D. L. American Psyllidae II, p. 356.

*Trioza maura* Foerster?

Twelve collections are either *maura* Foerster as figured by Sulc 1911 or remarkably close to that species. Included here are pale specimens with white faces and cones which are easily separated from black coned specimens in the collection by color characters, but as they show no specific structural differences I am of the opinion that the paler individuals are teneral and that the darker ones are those with a more mature coloring.

Wing measures about 2.85 mm in length. Figs. 322, 323, 337, 349, 351, 359. Fig. 322 is a wing taken from a specimen with black cones and Fig. 323 from one with white cones.

Lot 1339 Sub 18. One female with data "Mesa Grande Russian R. Cal. 30 Sept. '06. J. C. Bradley."

Lot 1339 Sub 20. One female with data "Algonquin, Ill. 12 July 1895."

Lot 1348 Sub 38. Six specimens with data "Colo. 2220. 8-6-96. Ft. Collins C. P. G. Caught flying around light." Five specimens with data "Colo. 2199. 7-8-96, Larimer Co. C. P. G."

Lot 1348 Sub 76. Two females with data "Colo. 1680. *Trioza striola* Foerster." One female with data "Colo. 1681, 7-13-94. Steamboat Springs. C. F. Baker. On willow."

Lot 1348 Sub 77. One specimen with data "det. C. V. R. Colo. 1733. 7-12-94, C. P. G. Estes Park, Colo."

Lot 1348 Sub 78. Eight specimens with data "Colo. 2176. 7-18-96 Denver, C. P. G."

Lot 1348 Sub 79. Five specimens with data "Colo. 2173. 7-18-96. Denver, Colo. C. P. G. On willow. *Trioza* near *albiventris*." The facial cones of this lot were white.

Lot 1348 Sub 80. Two specimens with data "Colo. 2173. 7-18-96 Denver, Colo. C. P. G. On willow." The face and facial cones of this lot were black.

Lot 1348 Sub 81. Seven specimens with data "Colo. 2785. 9-25-97. New Windsor, Colo. C. P. G. Taken in sweeping wet ground." Cones and face black in this lot.

Lot 1348 Sub 82. Two specimens with data "Colo. 2785. 9-25-97 New Windsor, Colo. C. P. G. Taken in sweeping ground." Cones white.

Lot 1348 Sub 83. Seven specimens with data "Colo. 2767. 8-15-97 Ft. Collins, C. P. G. On willow." Jet black head, and dorsal thorax.

## LITERATURE.

- 1911 Sulc, Dr. Karel. Monographia Generis *Trioza* Foerster. Part II, p. 10.

*Trioza quadripunctata* Crawford.

Photographs of this species are given in Figs. 324, 333, 347, and 353. The most striking feature is the heavy maculation of the wing at the three marginal dashes and at tip of clavus. As the species is pale in color these dark spots are particularly conspicuous. The cephalic margin of wing is strongly bowed. The wing of specimen at hand is about 2.25 mm long.

Lot 1342 Sub 3. Four specimens (male and female) given me by Mr. J. J. Davis with data "Ft. Collins, Colo. 11, Nov. 1910 collected from common nettle *Urtica*, by Prof. C. P. Gillette."

Lot 1348 Sub 21. Six specimens with data "Boulder."

Lot 1348 Sub 71. One specimen with data "Ft. Collins, Col. 5-12-99, C. D. Ball."

Lot 1348 Sub 86. One specimen with data "Colo. 2248. 8-12-96. Palmer Lake, Colo. C. P. G."

Lot 1348 Sub 88. Probably this species, though dashes are not as heavy as usual. One female with data "Colo. 2220. 8-6-96 Ft. Collins. C. P. G. caught flying around light."

## LITERATURE.

- 1910 Crawford, D. L. American Psyllidae I, p. 233.  
1911 Crawford, D. L. American Psyllidae III, p. 433.

*Trioza stylifera* sp. nov.

The yellow wing of this species is broadly and bluntly rounded and the heavy veins of an ordinary *Trioza* type of branching as shown in Fig. 325. It measures about 2.4 mm in length. The

cones are moderately long and rather bluntly pointed, and divergent. The cuticular thickenings of the frontal plates from the middle ocellus to eye are flat and scale-like (Figs. 344 and 335). The female cauda (Fig. 356) is relatively long and acutely pointed. The upper plate extends a bit beyond the ovipositor and is slender at tip. The male cauda is characterized by the peculiar forceps, the distal part of each arm being broad, thick, hollowed, and hood-shaped. This aspect is shown in Fig. 362.

Lot 1347 Sub 20. Six specimens with data "Brockville, Ont. W. Metcalfe. Oct. 25, 1903; Oct. 29, 1903; Nov. 1, 1903; Nov. 15, 1903."

Lot 1348 Sub 85. One female without data.

### *Trioza tripunctata* (Fitch).

This beautiful species has attracted some attention on account of its conspicuous occurrence on blackberry bushes. Photographs of the head and wing are given in Figs. 326 and 336. The wing is about 3 mm long.

Lot 1342 Sub 2. Nymphs and pupæ pellucid and yellowish. Head and prothorax deeper yellow than other parts. Eyes dark red. Mesothorax and metathorax sometimes clear pale green. Wing pads and abdomen pale. In flocculent white fluff on ventral surface of blackberry leaf. Collection at Orono, Maine, Aug. 31, 1911, comprised both nymphs and imagoes.

Lot 1342 Sub 4. Pupæ and imagoes collected at Sebago Lake, Maine, Aug. 19, 1904, from wild blackberry bushes.

Lot 1339 Subs 1 and 2. Two named specimens received from Doctor Felt with data "Lot 125. Karner, N. Y. April 15, 1902. N. Y. S. Coll."

Lot 1339 Sub 13. Specimens with data "Adiron, Mts. Axton, N. Y. 12-22 June, 1901. Cornell U. Lot. 235 Sub 34." Nineteen pinned specimens with data "Sea Cliff, L. I."

Lot 1339 Sub 41. One specimen with data "Uhler Nov. 77, D. C. on Pine, Mar. 16, '73. Cornell U. Lot 62. Collected by Theo. Pergande in D. C. and determined by Uhler. Given J. H. C. by Pergande."

### LITERATURE.

- 1851 Fitch, Asa. Catalogue *Psylla tripunctata*.  
 1869 Walsh and Riley. Am. Ent. Vol. 1, p. 225. *Psylla rubi*.  
 1879 Thomas, C. 3rd Rept. p. 17 account after Walsh and Riley.  
 1880 Fuller, A. S. Am. Ent. Vol. 3, p. 62. *Psylla rubi*.  
 1880 Riley, C. V. Am. Ent. Vol. 3, p. 62. foot note. *Psylla tripunctata* Fitch (*P. rubi*).

- 1884 Riley, C. V. Pro. Biol. Soc. Wash. Vol. 2. *Trioza tripunctata* Fitch (*rubi* Walsh and Riley.)  
 1890 Packard, A. S. Forest Insects, p. 805. Reference to Riley (1880).  
 1894 ('95) Mally, Proc. Iowa Acad. Sc. Vol. 2, p. 154. *Trioza tripunctata* (*Phylloplecta tripunctata*?)  
 1900 Lugger, Otto. Report p. 141. Mention.  
 1909 ('10) Smith, J. B. Insects of New Jersey, p. 110. Listed.  
 1910 Crawford, D. L. American Psyllidae I, pp. 231 and 232.  
 1911 Crawford, D. L. American Psyllidae III, p. 430.

### *Allotrioza arbolensis* (Crawford).

Lot 1348 Sub 16. Three specimens with data "Colo. 2294. 8-22-96 Cimarron, Colo.," I think to be *arbolensis*. Figs. 327 and 339. The wing measures 3.4 mm.

### LITERATURE.

- 1911 Crawford, D. L. American Psyllidae III, p. 444.

### *Neotrioza ottawanensis* sp. nov.

A species with wings like *laticeps* Crawford and cones like *immaculata* Crawford and evidently exceedingly close to those species. Thorax red in pinned specimens and narrower than head with eyes. Long slender tapering cones not divergent in pinned specimens but approximate to tip. They spread by pressure in balsam mounts (Fig. 341). The female cauda (Fig. 354) is long and tapering at distal end. The upper plate extends beyond other parts. The male forceps (Fig. 348) have clavate arms blunt at distal part. The wing (Fig. 328) measures 2.5 mm in length.

### *Paratrioza cockerelli* (Sulc).

This species has been well described and figured by Sulc, and is receiving economic attention in Colorado. Figures of head and wing 329 and 340 are given here with accession numbers of the material at hand merely by way of including this species.

Lot 1348 Sub 5. Specimens with data "Ft. Collins, Col. 7-30-06 Potatoes," "Ft. Collins, Col. 10-2-06 Potatoes. Collected by S. A. Johnson," "Ft. Collins, Col. 3-24-09 Pepper. Breeding Cage A."

Lot 1348 Sub 23. Thirteen specimens with data "Colo. 2256," three specimens with data "Colo. 2786," one specimen with data "Colo. 2787."

## LITERATURE.

- 1909 Sulc, Dr. Karel. Casopisu (Ceske) Spolecnosti Entomologicke, p. 102. *Trioza cockerelli*.  
 1911 Crawford, D. L. American Psyllidae III, p. 448. *Paratrioza cockerelli*.  
 1911 Johnson, S. Arthur. News Notes. The Tomato Psyllid.

## EXPLANATION OF FIGURES.

The photomicrographs were taken by Mr. Royden Hammond from balsam mounts prepared for study. The frontal cones are in some cases spread apart more in these mounts than in pinned specimens or in life; and, as is evident enough, in order to bring the cones into correct focus, the occipital aspect is sometimes brought into view where the preparation is particularly transparent.

Fig. 316. *Trioza aylmeriae*. Fig. 317. *T. forcipula*. Fig. 318. *T. diospyri*. Fig. 319. *T. dubia*. Fig. 320. *T. longistylus*. Fig. 321. *T. marginata*. Figs. 322 and 323. *T. maura*? Fig. 324. *T. quadripunctata*. Fig. 325. *T. stylifera*. Fig. 326. *T. tripunctata*. Fig. 327. *Allotrioza arbolensis*. Fig. 328. *Neotrioza ottawanensis*. Fig. 329. *Paratrioza cockerelli*.

Fig. 330. *Trioza aylmeriae*. Fig. 331. *T. diospyri*. Fig. 332. *T. marginata*. Fig. 333. *T. quadripunctata*. Figs. 334 and 335. *T. stylifera*. Fig. 336. *T. tripunctata*. Fig. 337. *T. maura*? Fig. 338. *T. forcipula*. Fig. 339. *Allotrioza arbolensis*. Fig. 340. *Paratrioza cockerelli*. Fig. 341. *Neotrioza ottawanensis*.

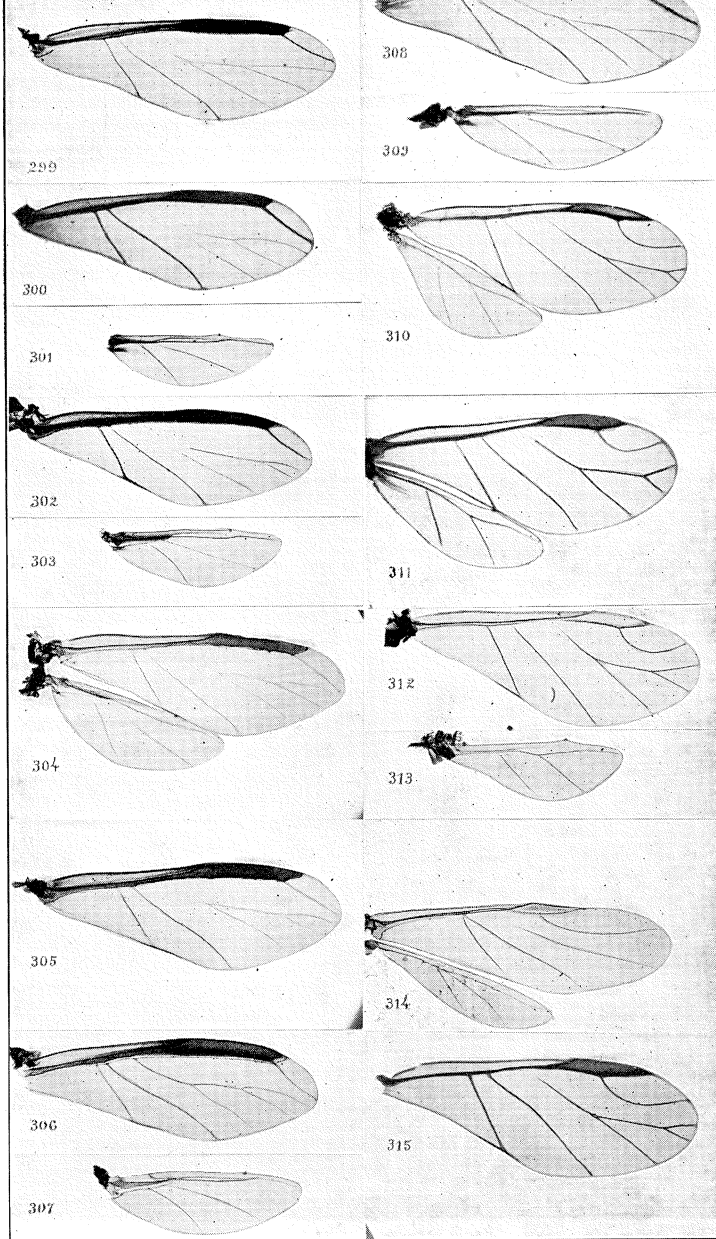
Fig. 342. *Trioza forcipula*. Figs. 343-346. *T. aylmeriae*. Fig. 347. *T. quadripunctata*. Fig. 348. *N. ottawanensis*. Fig. 349. *T. maura*? Fig. 350. *T. forcipula*. Fig. 351. *T. maura*? Fig. 352. *T. dubia*. Fig. 353. *T. quadripunctata*. Fig. 354. *N. ottawanensis*. Fig. 355. *T. forcipula*. Fig. 356. *T. stylifera*. Fig. 357. *T. diospyri*. Fig. 358. *T. collaris*. Fig. 359. *T. maura*? Fig. 360. *T. marginata*. Fig. 361. *T. longistylus*. Fig. 362. *T. stylifera*.

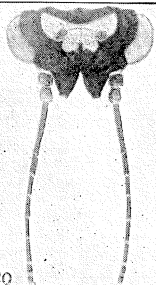
Fig. 363, *A. artemisiae angustipennis*, Lot 1348-41; Fig. 364, *A. calthae*? Lot 1348-53; Fig. 365, *A. communis*, 1348-39b; Fig. 366, *A. fascipennis*, Lot 1339-24; Fig. 367, *A. sp.*, Lot 1347-39; Fig. 368, *A. nebulosa americana*, Lot 1348-65; Fig. 369, *A. nubifera*, Lot 1348-48; Fig. 370, *A. polygoni*, Lot 1341-7; Fig. 371, *A. sp.*, Lot 1347-38; Fig. 372, *A. rumicis*, Lot 1341-6; Fig. 373, *A. sp.*, Lot 1347-39; Fig. 374, *A. communis*, Lot 1347-37; Figs. 375 and 376, *A. angustipennis*, Lot 1347-24; Fig. 377, *A. rumicis*, Lot 1341-6; Fig. 378, *A. calthae*? Lot 1348-53; Fig. 379, *A. polygoni*, Lot 1341-7; Fig. 380, *A. picta*, Lot 1348-29. Fig. 381, *A. sp.*, Lot 1347-39; Fig. 382, *A. calthae*? Lot 1348-53; Fig. 383, *A. polygoni*, Lot 1341-7; Fig. 384, *A. calthae*? Lot 1348-47; Fig. 385, *A. nebulosa americana*, Lot 1348-65; Fig. 386, *A. angustipennis*, Lot 1348-41; Fig. 387, *A. polygoni*, Lot 1341-7; Fig. 388, *A. picta*, Lot 1348-29; Fig. 389, *A. communis*, Lot 1347-32b; Fig. 390, *A. sp.*, Lot 1347-38.

Fig. 391, *Psylla coryli*, Lot 1348-61; Fig. 392, *P. ribis*, Lot 1348-25; Fig. 393, *P. negundinis*, Lot 1348-11; Fig. 394, *P. hartigii*, Lot 1340-2; Fig. 395, *P. annulata*, Lot 1345-2; Fig. 396, *P. gillettei*, Lot 1348-20; Fig. 397, *P. breviata*, Lot 1347-36; Fig. 398, *P. pyricola*, Lot 1326-4; Fig.

1339-40; Fig. 403, *P. pallida*, Lot 1339-51; Fig. 404, *P. dubia*, Lot 1339-56.  
 Fig. 405, *Psylla breviata*; Fig. 406, *P. coryli*; Fig. 407, *P. ribis*; Fig. 408, *P. hartigii*; Fig. 409, *P. negundinis*; Fig. 410, *P. pallida*; Fig. 411, *P. annulata*; Fig. 412, *P. cerasi*; Fig. 413, *P. brevistigmata*; Fig. 414, *P. gilletti*; Fig. 415, *Pachypsylla tridentata*; Fig. 416, *Pachypsylla dubia*; Fig. 417, *Psylla ribis*; Fig. 418, *Pachypsylla tridentata*; Fig. 419, *Psylla coryli*; Fig. 420, *P. negundinis*; Fig. 421, *P. annulata*; Fig. 422, *P. gilletti*; Fig. 423, *P. hartigii*.

Fig. 424, *Psylla breviata*; Fig. 425, *Pachypsylla tridentata*; Fig. 426, *Pachypsylla dubia*; Fig. 427, *Pachypsylla brevistigmata*; Fig. 428, *Psylla gilletti*; Fig. 429, *P. hartigii*; Fig. 430, *P. ribis*; Fig. 431, *P. cerasi*; Figs. 432 and 433, *P. hartigii*; Fig. 434, *P. pyricola*; Figs. 435 and 436, *Pachypsylla dubia*; Fig. 437, *P. tridentata*.





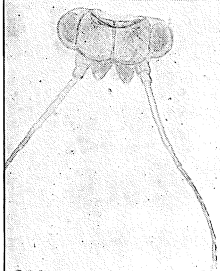
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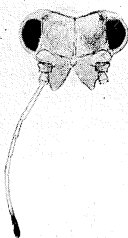
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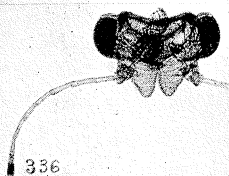
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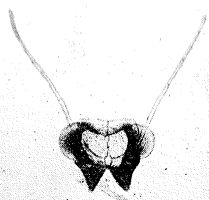
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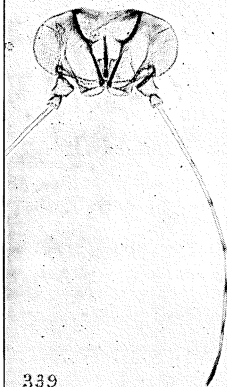
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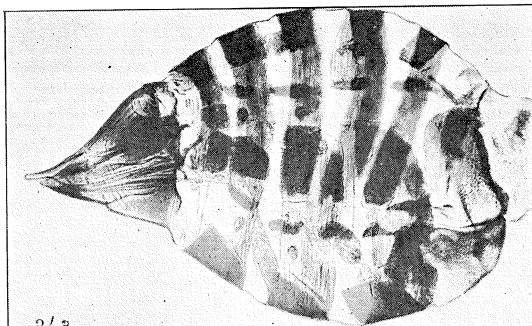


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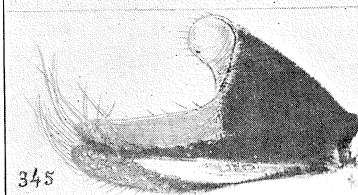
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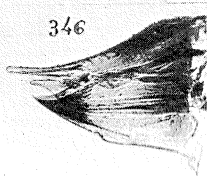
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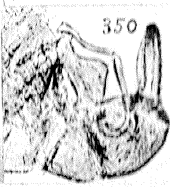
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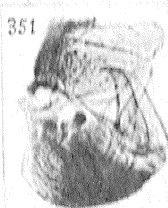
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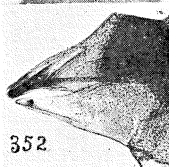
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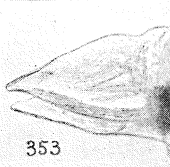
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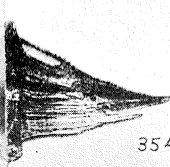
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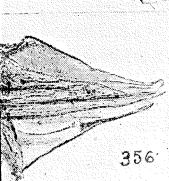
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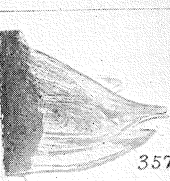
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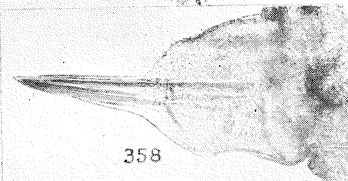
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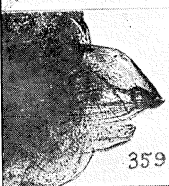
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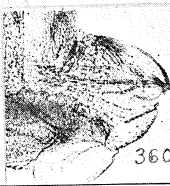
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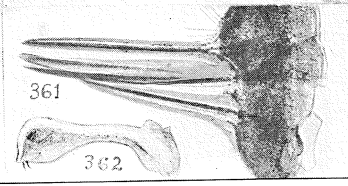
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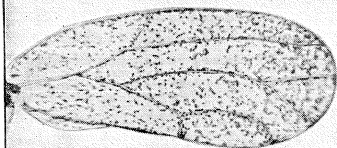


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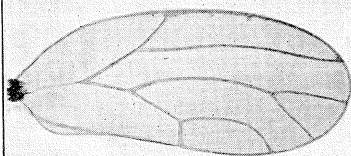
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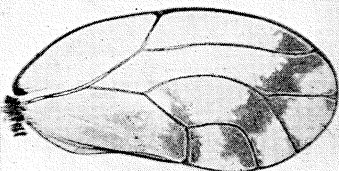
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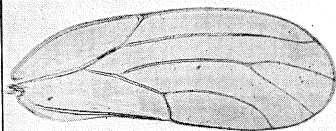
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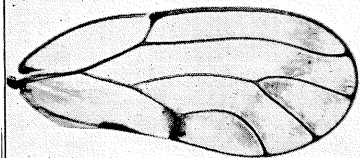
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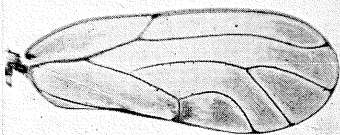
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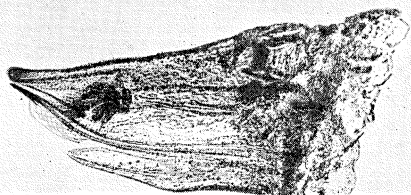
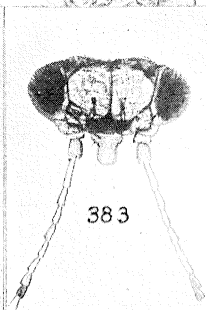
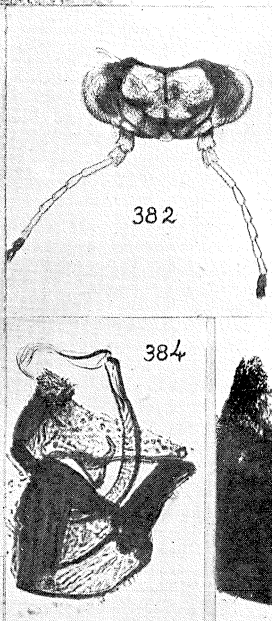
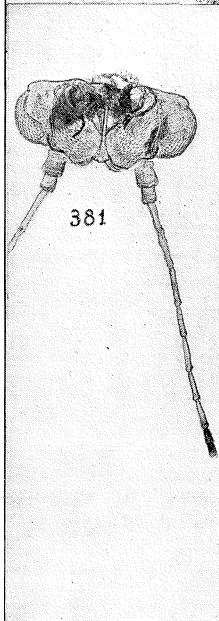
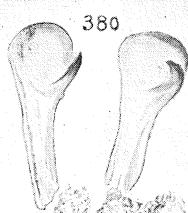
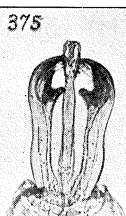
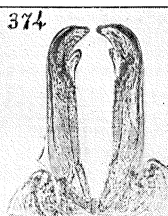
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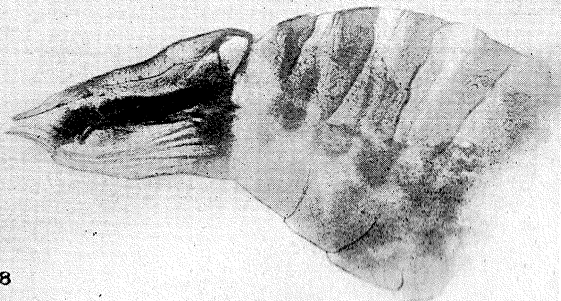
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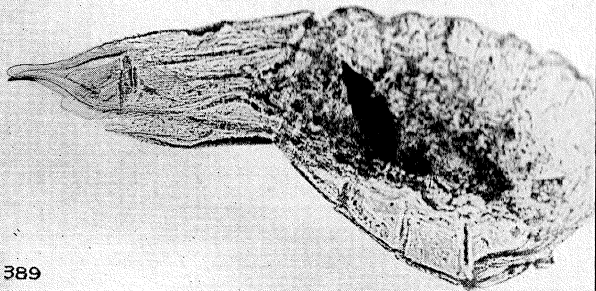
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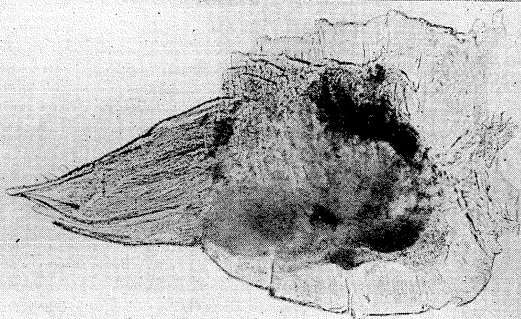
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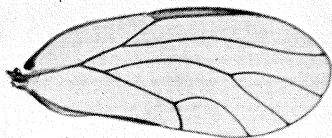


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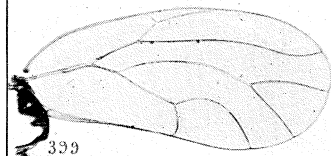
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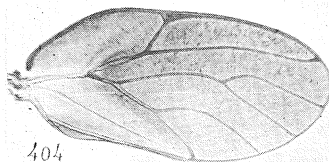
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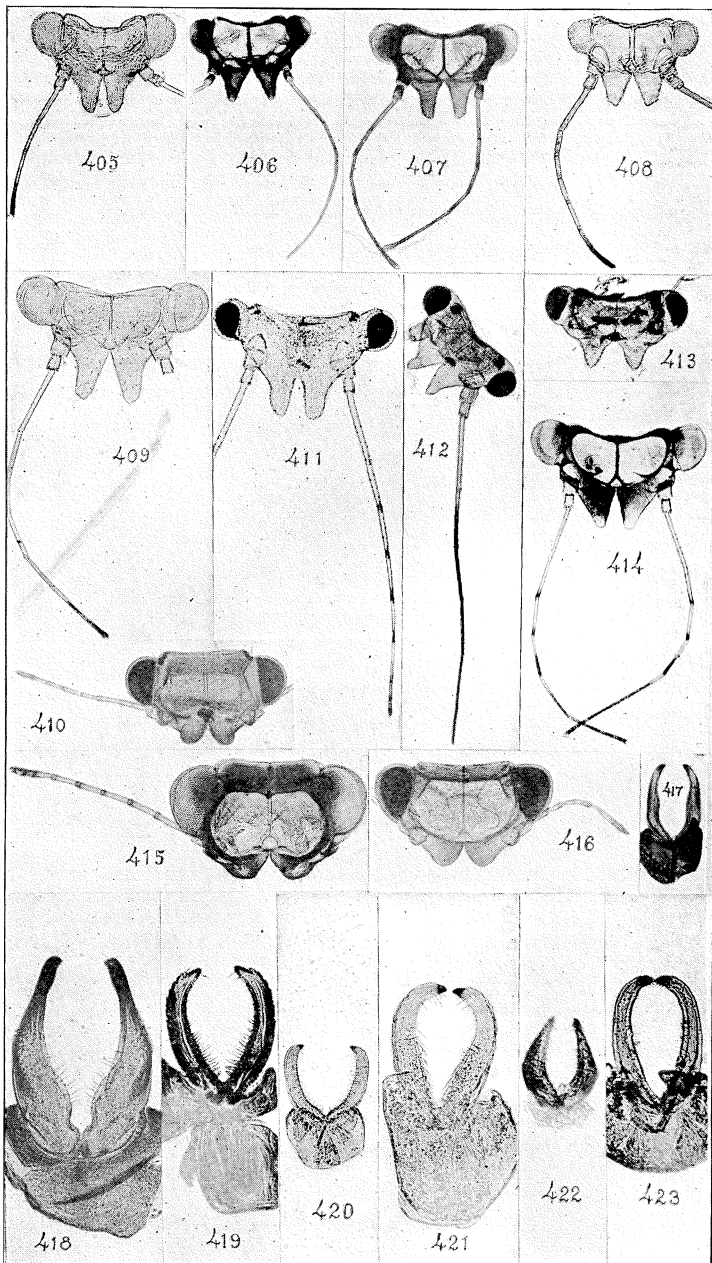
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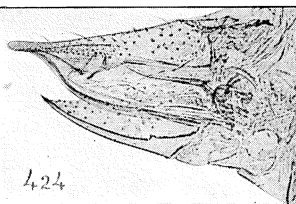


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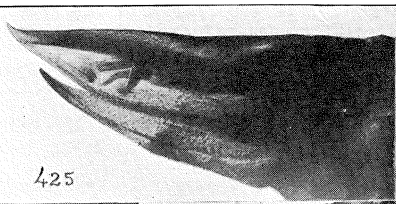


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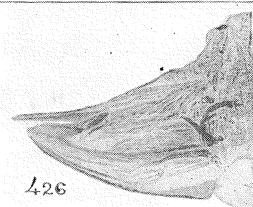




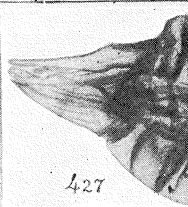
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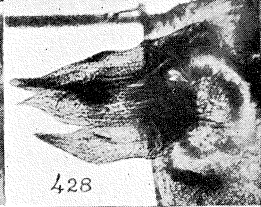
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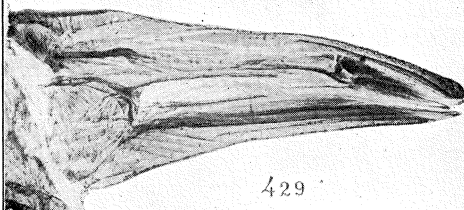
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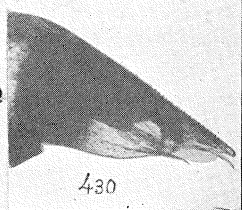
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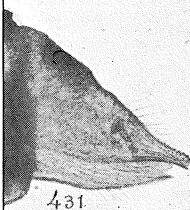
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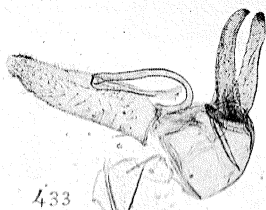
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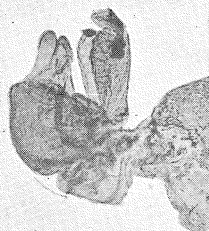
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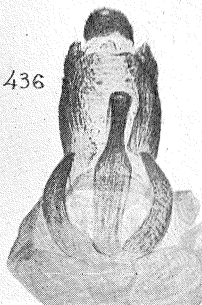
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# Maine Agricultural Experiment Station

ORONO

BULLETIN No. 202.

JULY, 1912.

**APHID PESTS OF MAINE.  
FOOD PLANTS OF THE APHIDS.  
PSYLLID NOTES.**

ISSUED  
SEP 20 1912



This bulletin contains a descriptive account of troublesome Maine aphids infesting Conifers and certain other plants, accompanied by a list of aphids recorded elsewhere on the corresponding plants and also some miscellaneous notes on American psyllids. Several new species are described.