

Ore., August 20, 1909, on *Cornus* sp. The fall migrants were just beginning to form colonies on the leaves. This is an abundant species in Colorado, the eggs being deposited on twigs of *Cornus stolonifera* in the fall by apterous females that are the young of the migrants. In the spring the migrants leave the dog-wood and go to *Helianthus* for the summer. We have many times observed this habit in Colorado, and Mr. L. C. Bragg has artificially colonized this species both ways between these plants.

The figures are from fall migrants, taken at Fort Collins, Col., on *Cornus stolonifera*, Sept. 29, 1909. We have also taken this louse on *Iva xanthifolia* and in large numbers upon *Ribes aureum*. The male antenna is peculiar in having several sensoria upon all the joints beyond the second.

A. gillettei Cowen is a synonym of this species, but *helianthi* Monell seems probably to be a distinct species judging from an examination of balsam material sent me by Mr. Monell, and taken at St. Louis, Mo., July 7, 1910. Monell's specimens are somewhat smaller and have relatively shorter antennæ and cornicles, and the alate viviparæ lack the blackish patches at the base of each cornicle. The two forms, if distinct, are very closely allied. I find no difference in number or distribution of the sensoria.

Plate 26. *Aphididæ*. Unless otherwise marked, all figures are multiplied 70 times, and are from alate viviparous females. 1 and 2, *Aphis salicicola*; 3, 4, and 5, *A. sorbi*; 6 and 7, *A. ripariæ* (?); 8 and 9, *Aphis asclepiadis*; 10 and 11, *A. pomi*; 12 and 13, *A. gossypii*; 14 and 15, *A. spiræella*; 16 and 17, *A. cardui*; 18 and 19, *A. cephalanthi*; 20 and 21, *A. sambuci*; 22 and 23, *A. cerasifolii*; 24 and 25, *A. bakeri*; 26 and 27, (two views), *A. brassicæ*; 28 and 29, *A. maidi-radici*; 30 and 31, *A. rumicis*; 32, 33 and 34 (two views), *A. atriplicis*; 35, 36, 37 (male), 38 (male), of *A. cornifoliæ*.—Miriam A. Palmer, Delineator.

A LIST OF THE APHIDIDÆ OF ILLINOIS, WITH NOTES ON SOME OF THE SPECIES

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In this catalogue of the Aphididæ of North America (1901), Professor W. D. Hunter lists 98 species as having been recorded from Illinois. Since then, from records in literature and personal collections, the list has been increased to 170 species. Many more have been collected by us which we are at present unable to identify, either because of too little material or the apparent confusion of certain groups, which will require larger numbers of collections to work out satisfactorily. Following each species are one or more references to the most comprehensive descriptions of the various forms in Amer-

ican literature, together with brief notes on the economic importance, if any, and the first record of its occurrence in Illinois. An asterisk (*) before the species indicates that it is here recorded from Illinois for the first time, those having Illinois as the type locality are referred to by a "t" before the name, and those doubtfully occurring in Illinois, having only been reported by Hunter's compiled list.¹, so far as I have been able to find, are noted by a "d" before the name.

^t*Tychea brevicornis* Hart: 18th Rept. St. Ent. Ill. (1894), p. 97, 1 fig. Not uncommon in Central Illinois on the roots of grass, *Euphorbia*, and corn, but of very little economic importance. First reported by Forbes.

^t*Trama erigeronensis* Thos.: Hart, *loc. cit.*, p. 93, 1 fig. Common at Urbana, Ill., on dandelion roots, invariably attended by the ant, *Lasius flavus*. Also common on roots of *Erigeron canadense* and corn. First reported by Thomas.

^t*Forda occidentalis* Hart: *loc. cit.* p. 95, 1 fig. Common on grass and corn roots and occasionally injurious. First reported by Forbes.

^t*Rhizobius eleusinis* Thos.: List of Aphid. U. S., Bull. 2, Ill. St. Lab. Nat. Hist. (1878), p. 15. I have never taken this species, which Thomas described from specimens collected on roots of *Eleusine indica* at Carbondale, Ill.

^d*R. lactuæ* Fitch: 14th Rept. Ins. N. Y. (1872), p. 360. Thomas quotes Fitch, and there is no mention of its occurrence in Illinois.

^t*R. poæ* Thos.: 8th Rept. St. Ent. Ill. (1879), p. 166. Mr. C. A. Hart considers this as probably a *Dactylopius*. First reported by Thomas, which is the only record of its collection, so far as I am able to learn.

^t*R. spicatus* Hart: 18th Rept. St. Ent. Ill. (1894), p. 104, 1 fig. A rare species occurring on roots of grass, *Panicum*, and corn. First reported by Forbes.

Phylloxera caryæcaulis Fitch: Pergande, N. A. Phylloxerinae, Vol. 9, Davenport Acad. Sci. (1904), p. 244, 2 figs. This is the commonest species of *Phylloxera* attacking hickory in Illinois, but like the other species of this genus it rarely becomes sufficiently abundant to require artificial means of control. First reported by Shimer.

P. caryæ-fallax Riley: Pergande, *loc. cit.* p. 214, 6 figs. First reported by Pergande.

P. caryæfoliæ Fitch: Pergande, *loc. cit.* p. 194, 2 figs. I have taken this hickory gall-maker on several occasions in Northern Illinois. My collection of winged females have been made throughout the month of June. First reported by Pergande.

¹ The Aphididæ of North America, by W. D. Hunter. Bull. Ia. Agr. Exper. Sta., No. 60, Sept. 1901.

^t *P. caryæ-globuli* Walsh: Pergande, *loc. cit.* p. 222. (Quotes the scattered description of Walsh and Shimer.) I found this species on hickory at Lake Forest, Ill., June 29, 1909, the galls at that time containing large numbers of the winged individuals. After an initial determination by the writer, specimens were sent to Mr. Theo. Pergande who, in a letter of April 4, 1910, said, "The real *Phyll. caryæ-globuli* Walsh I had never seen before, though I think you may be right." First reported by Walsh.

^d *P. caryæ-gummosa* Riley: 7th Rept. St. Ent. Mo. (1875), p. 118; Pergande, *loc. cit.* p. 238, 3 figs. I find no record of its occurrence in Illinois.

^t ¹ *P. caryæ-semen* Walsh: Pergande, *loc. cit.* p. 211, 2 figs. I do not know this species. First reported by Shimer.

^t *P. caryæ-septem* Shimer: Pergande, *loc. cit.* p. 190, 7 figs. I am unacquainted with this hickory gall-maker. First reported by Shimer.

^d *P. caryævenæ* Fitch: Pergande, *loc. cit.* p. 239, 10 figs. I find no record of its occurrence in Illinois, other than that in Hunter's Catalogue.

^t *P. conica* Shimer: Pergande *loc. cit.* p. 225, 7 figs. First reported by Shimer.

^t *P. depressa* Shimer: Trans. Amer. Ent. Soc., Vol. 2, p. 389 (Pergande *loc. cit.* p. 208, quotes Shimer). First reported by Shimer.

^t *P. foveata* Shimer (= *foveatum* Shimer). Trans. Amer. Ent. Soc., Vol. 2, p. 393 (Pergande, *loc. cit.* p. 209, quotes Shimer). First reported by Shimer.

^t *P. globosum* Shimer: Pergande, *loc. cit.* p. 236, 4 figs. Quotes and discusses Shimer's confused descriptions. First reported by Shimer.

^t *P. minimum* Shimer: Trans. Amer. Ent. Soc., Vol. 2, p. 391 (Pergande, *loc. cit.* p. 210, quotes Shimer). First reported by Shimer.

^d *P. rileyi* (Licht. MS.) Riley: Pergande, *loc. cit.* p. 261, 4 figs. I find no record of this species having been taken in Illinois other than that in Hunter's Catalogue.

* *P. salicola* Perg.: *loc. cit.* p. 267, 8 figs. This species is very common in some of the Chicago parks. It occurs in the crevices of the trunk and larger branches of the willow, appearing as small white flocculent masses, and when abundant, as it sometimes is, gives the willow trunks an unsightly appearance.

^t *P. subelliptica* Shimer: Pergande, *loc. cit.* p. 239, 10 figs. Quotes Shimer in full. First reported by Shimer.

P. vitifoliæ Fitch (= *vastatrix* Planch.): Riley, 6th Rept. St. Ent.

¹ Although Walsh does not give any definite locality, he very probably collected it in Illinois.

Mo. (1872), p. 30, figs. Common but of little economic importance in Illinois. First reported by Walsh.

^d *Chermes pinifoliae* Fitch: Patch, Bull. Maine Agr. Expt. Sta. No. 173 (1910), p. 277, 9 figs. Thomas named this species *abieticolens*, quoting the brief and unsatisfactory description of the gall as given by Packard and reproduced Packard's figure. Packard found the species in Maine and there is no reason to believe that Thomas found it in Illinois, as Hunter has supposed in his catalogue.

C. pinicorticis Fitch: Störment, 20th Rept. St. Ent. Ill. (1897), Appendix, pp. III-XXVI, figs. First reported by Walsh.

^t *Geoica squamosa* Hart: 18th Rept. St. Ent. Ill. (1894), p. 98, 5 figs. Common on grass roots and occasionally on corn roots, but never, to my knowledge, in sufficient numbers to be injurious. First reported by Forbes.

^t *Hamamelistes spinosus* Shimer: Pergande, Tech. Bull. Div. Ent., U. S. Dept. Agr., No. 9, p. 25, 12 figs. I have found this species very common on cultivated witch-hazel at Chicago, and wild witch-hazel growing in a timber at Kankakee. Of little economic importance. First reported by Shimer.

^t *Pemphigus aceris* Monl.: Can. Ent., Vol. XIV (1882), p. 16. First reported by Monell.

* *P. betæ* Doane: Bull. 42, Wash. Agr. Expt. Sta. (1900), p. 3, 1 fig. Last September (1909) I collected wingless individuals of what I then determined as *Tychea brevicornis* Hart on the roots of *Bidens vulgata* at Oak Park, Ill. At that time only wingless forms were found. Later in the fall (Oct. 9), winged specimens were found on the roots of the same group of plants, a species I have determined as *P. betæ* after comparison with specimens received from Professor Gillette. The observations, although scanty, would seem to indicate the possible synonymy of the two species.

* *P. corrugatans* Sirr. (?): Ia. Acad. Sci., f. 1893, Vol. I, pt. IV (1894), p. 129. What I have been calling *Pemphigus pyri*? was found at Le Roy, Ill., July 7, 1907, corrugating the leaves of *Crataegus* sp. The pseudo galls and winged viviparous females agree fairly well with the description given by Sirrine for *P. corrugatans*, excepting the relative lengths of the antennal segments IV and V. In my Le Roy specimens segment IV is invariably slightly longer than V, while in the description of *corrugatans*, Sirrine gives Segment IV, .13 mm. and V, .17 mm. long.

^t *P. formicarius* Walsh: Proc. Ent. Soc. Phila., Vol. I (1862), p. 308. This is an unknown species, it not having been reported since Walsh's original description. First reported by Walsh from Rock Island, Ill.

^t *P. formicetorum* Walsh: loc. cit. p. 308. Nothing known of this

species excepting Walsh's original observations. First reported by Walsh from Rock Island, Ill.

* *P. fraxinifolii* Riley: Bull. U. S. Geol. Surv., Vol. 5 (1897), p. 17. Very common on green ash throughout the state, and one of the important pests of that tree. Further than the direct injury, the pseudogalls (curled leaves) of the insect gives the tree a very unsightly appearance. Specimens of this species were sent to Dr. G. Del Guercio who reported it distinct from the European ash *Pemphigus*, *P. nidificus* Löw. He has published an account of the differences in the two species in "Rivista di Patologia Vegetale," Anno IV, No. 4. The only additional contribution to the life history that we have to make is that the oviparous females are produced in the fall and are to be found in the crevices of the bark on the ash-tree trunk. These females produce but one egg each as do other Pemphigians.

P. populicaulis Fitch: Jackson, Columbus Hort. Soc., Vol. 22 (1908?), p. 191. This poplar gall-maker is common at Urbana, but I have failed to find it in Northern Illinois. First reported by Walsh.

* *P. populi-transversus* Riley: Bull. U. S. Geol. Surv., Vol. 5 (1879), p. 14, 1 fig. Common throughout the state on the cottonwood.

^t *P. pseudobyrsa* Walsh: Proc. Ent. Soc. Phila., Vol. I (1862), p. 306. This is one of the unknown species. The original collection of the species by Walsh at Rock Island, Ill., appears to be the only record of its capture.

P. rhois Fitch: Jackson, Columbus Hort. Soc., Vol. 22 (1908), p. 202. First reported by Walsh.

^t *P. rubi* Thos.: 8th Rept. St. Ent. Ill. (1880), p. 147. There is no reference to the collection of this species since the original description. First reported by Thomas.

* *P. tessellatus* Fitch: Jackson, Columbus Hort. Soc., Vol. 22 (1908?), p. 183; Patch, Ent. News, Vol. XIX (1908), p. 484, 1 pl. This species is injuriously abundant on the alders in the Chicago parks. I follow Miss Patch in considering *P. acerifolii* Riley a synonym. It has never been recorded from Illinois, except in Hunter's Catalogue and by Jackson, who seems to have followed Hunter.

^t *P. ulmi-fusus* Walsh and Riley: Amer. Ent. Vol. I (1869), p. 109. A rare species which I have taken on elm at Leroy and Urbana, in the central part of the state. First reported by Walsh and Riley.

^t *Mordwilkoja vagabunda* Walsh (*æstlundii* (Ckll.): Oestlund, Bull. Geol. and Nat. Hist. Surv. Minn., No. 4 (1887), p. 22. A common poplar gall-maker in Northern Illinois, especially abundant in the vicinity of Chicago. Often the street trees are so covered with these galls as to make them quite unsightly in winter. I have never taken this species south of Kankakee, Ill. First reported by Walsh.

* *Colopha ulmicola* Fitch: (*eragrostidis* Middl.)Riley, Bull. U. S. Geol. and Geog. Surv., Vol. 5, No. 1, (1879), p. 9; Patch, Bull. Me. Agr. Expt. Sta. No. 181 (1910), p. 196, 11 figs. A very common species. The galls are often so abundant on elms as to give the trees an unsightly appearance. As Miss Patch has recently pointed out, *C. eragrostidis* Middl. is doubtless a synonym of *C. ulmicola* Fitch.

* *Schizoneura americana* Riley: Bull. U. S. Geol. and Geog. Surv. Vol. V, No. 1 (1879), p. 4, figs. A common pseudo-gall-maker on elm and not infrequently injuriously abundant.

^t *S. caryæ* Fitch: 3rd Rept. Ins. N. Y. (1856), p. 443. This species is unknown to the writer. First reported by Fitch.

S. corni Fabr.: Oestlund, Bull. Geol. and Nat. Hist. Surv. Minn., No. 4 (1887), p. 28. This is a common species on *Cornus sanguinea* et spp. throughout the state. First reported by Walsh under the name *cornicola* Walsh.

S. cratægi Oestl.: Bull. Geol. and Nat. Hist. Surv. Minn., No. 4 (1887), p. 27. A serious pest of the hawthorns used in ornamental plantings in Chicago, being especially common on *Cratægus crus-galli*. First reported by the writer.

ON *CRATÆGUS*, SEPT., 1909. DUNNING, ILL.

Antennal segment	Measurements in mm.							
III.....	0.4075	0.4075	0.3993	0.4075	0.4075	0.4156	0.4156	0.4075
IV.....	0.1222	0.1141	0.1141	0.1222	0.1222	0.1141	0.1222	0.1141
V.....	0.1385	0.1304	0.1304	0.1385	0.1385	0.1385	0.1385	0.1304
VI.....	0.1141	0.1141	0.1141	0.1141	0.1141	0.1141	0.1141	0.1141

S. lanigera Haus.: Gillette, Jour. Econ. Ent., Vol. I (1908), p. 306, colored and other figs. A common and destructive apple pest throughout the state. First reported by Thomas. Antennal measurements given below for comparison with *S. cratægi*.

ON APPLE IN GREENHOUSE, URBANA, ILL., 18 NOV., 1907.

Antennal segment	Measurements in mm.							
III.....	0.4156	0.4238	0.3993	.....	.....	.....	.....	.....
IV.....	0.1141	0.1141	0.1141	.....	.....	.....	.....	.....
V.....	0.0978	0.1059	0.0978	.....	.....	.....	.....	.....
VI.....	0.0978	0.0896	0.0815	.....	.....	.....	.....	.....

S. panicola Thos.: Hart 18th Rept. St. Ent. Ill. (1894), p. 90, 2 figs. Common on roots of *Panicum* and occasionally on corn roots, but of little or no economic importance. It has still to be proven that this is identical with *S. corni*. First reported by Forbes.

^t*S. querci* Fitch: 5th Rept. Insects N. Y. (1859), p. 804. This species has not been recorded from Illinois since the first record by Fitch. I have taken a species on oak leaves several times in Northern Illinois, which is, I believe, the species referred to by Oestlund and Cowen as Fitch's *querci*. However my oak aphid, which is found in colonies beneath a rather dense cottony secretion, is a *Phyllaphis*, apparently undescribed, and will be described fully in another paper. First reported by Fitch.

^{t1}*S. rileyi* Thos. (*ulmi* Riley): Riley, 1st Rept. St. Ent. Mo. (1869), p. 123. A serious pest of the elm throughout the state. First reported by Riley.

^t*Mindarus abietinus* Koch (= *pinicola* Thos.): 8th Rept. St. Ent. Ill. (1880), p. 137; Patch, Bull. 182, Me. Agr. Expt. Sta. (1910), p. 242, 7 figs. This species has never been taken in Illinois since the original description. First reported by Thomas.

^d*Phyllaphis fagi* Linn.: Thomas, 8th Rept. St. Ent. Ill. (1880), pp. 120, 140; Weed, Trans. Amer. Ent. Soc., Vol. 20, p. 303, 3 figs. (?) Other than in Hunter's Catalogue, this species has not been reported from Illinois.

Longistigma caryæ Harr.(? ?): Sanborn, Kans. Uni. Sci. Bull., Vol. 3 (1904), p. 30, figs. (*L. longistigma*). What has been heretofore known as *L. longistigma* on linden and *L. platanicola* on sycamore, are common throughout the state, the winged males and wingless oviparous females making their appearance during October in Northern Illinois, the large eggs being deposited in the crevices of the bark as well as on the smaller branches. First reported by Fitch (?).

^d*Lachnus abietis* Fitch: Cat. Homopt. N. Y. (1851), p. 67. There is no record of the occurrence of this *Lachnus* in Illinois other than in Hunter's Catalogue.

^{t2}*L. dentatus* Le B.: 3rd Rept. (2nd of Le Baron), St. Ent. Ill. (1872), p. 138, figs.; Weed, Bull. Ohio Agr. Expt. Sta., Tech. Ser., Vol. 1, No. 2 (1890), p. 117, figs. A common species in Northern Illinois, becoming very abundant in the fall, and on ornamental willows it is a considerable nuisance. First reported by Le Baron (?).

^d*L. quercifoliæ* Fitch: Cat. Homopt. N. Y., p. 67, 1851. This

¹ Chicago, Ill. and St. Louis, Mo., type localities.

² Although not definitely stated, Le Baron probably described this species from Illinois specimens.

species appears to be lost and it is doubtful if the species collected by Thomas in Illinois is the same as that described by Fitch in New York.

^d*L. strobi* Fitch: 1st Rept. Ins. N. Y. (1855), p. 256; Weed, Bull. Agr. Expt. Sta. Ohio, Tech. Ser., Vol. 1, No. 2 (1890), p. 116, figs. This species has never been reported from Illinois except in Hunter's Catalogue.

^t*Sipha flava* Forbes: Davis, Tech. Ser. Bur. Ent., U. S. Dept. Agr., No. 12, Pt. VIII (1909), p. 156. Common in Central Illinois on various grasses, corn, wheat, sorghum, and broom corn. On the latter two it often becomes destructive. First reported by Forbes.

**Brachycolus tritici* Gillette Mss. I found this species common on grass at Aurora, Illinois, Sept. 24, 1908. Specimens were sent to Prof. C. P. Gillette, who replied that he had recently taken the species and had described it in manuscript under the above name.

^t*Melanoxantherium smithiæ* Monl.: Bull. U. S. Geol. and Geog. Surv. No. 5 (1879), p. 32; Weed, Psyche, Vol. V (1889), p. 132. A species which often becomes excessively abundant on the branches of willow in the fall. In parks and other much frequented places these insects are a serious nuisance because of the blood-red stain caused when the soft-bodied aphids are crushed, this stain discoloring and ruining the clothing. First reported by Monell.

Chaitophorus aceris Linn.: Common on hard and Norway maples in Northern Illinois and apparently becoming more common every year. Although not a serious pest at present, it is likely to become one within a few years. It is found on the maples throughout the year, the sexual forms (winged male and wingless oviparous female) occurring in September and October. The dimorphs were not observed, which, however, may be accounted for by the fact that I was not able to make continuous observations the past year (1909). After comparing with sketches of the abdominal markings, as well as a specimen of each of the winged and wingless viviparous females of *Ch. aceris*, received from Doctor Del Guercio of Italy, I am inclined to consider our species distinct from the European *aceris*, but further study is necessary.¹ First reported by Gillette.

^d*Ch. candicans* Thos.: Mentioned by Thomas but never described, hence *nomina nuda*.

^t*Ch. negundinis* Thos.: Oestlund, Bull. Geol. and Nat. Hist. Surv.

¹In going over the species of *Chaitophorus*, with a view of monographing the genus, the writer has found many difficulties, necessitating studies continued throughout the year to determine the constancy of the color patterns and measurements. This is especially true of the poplar *Chaitophorus* of which we likely have several undescribed species.

Minn., No. 4 (1887), p. 37; Weed, *Insect Life*, Vol. 3 (1891), p. 287, figs.; Davis, *Ent. News*, Vol. 21 (1910), p. 14, figs. Common throughout the state and a pest of considerable importance on box elder. First reported by Thomas.

^t*Ch. populicola* Thos.: Sanborn, *Kans. Uni. Sci. Bull.*, Vol. 3 (1904), p. 36, figs. One of our most common species of *Chaitophorus* in Illinois, occurring throughout the state. The several forms (winged male with wings marked as are those of the viviparous female, and oviparous female) are to be found on poplar twigs and leaves in September. First reported by Thomas.

^t*Ch. quercicola* Monl.: *Bull. U. S. Geol. and Geog. Surv.*, No. 5 (1879), p. 32; Oestlund, 14th Ann. Rept. Geol. and Nat. Hist. Surv. Minn. (1886), p. 49, (*spinosus*). I took the oviparous forms of this species on the under surfaces of the leaves of post oak (*Quercus obtusiloba*) at Kankakee, Ill., Oct. 13, 1908, and have received winged and wingless viviparous forms from Mr. W. P. Flint, who collected them on white oak (*Q. alba*), at Heyworth, Ill., April 10, 1908. The specimens agree in every particular with the descriptions of *Callipterus quercifolii* Thos. and *Chait. spinosus* Oestl., both of which species I consider synonyms of Monell's *quercicola*. First reported by Monell.

Winged viviparous female.—The following notes are offered to supplement Monell's description.¹ Antennæ with 5–8 sensoria in a row on III; from the alcoholic specimens the coloration appears as follows: I, II, and III, dusky excepting a small pale area a little beyond the center of III. IV and V, pale except the dusky tips, and VI entirely dusky except basal half of base VI. Abdomen with a row of dusky tubercular areas bearing spines on the dorsum, these being most conspicuous at the anterior end; a similar row on each side. Plate 27, figures 1 and 2.

Wingless viviparous female.—The descriptions given by Monell² and Oestlund³ are quite characteristic for the species.

The excellent description of the wingless oviparous female given by Oestlund⁴ agrees exceedingly well with my notes and specimens.

**Ch. viminalis* Monl.: *Bull. U. S. Geol. and Geog. Surv.*, No. 5 (1879), p. 31; Weed, *Psyche*, Vol. 5 (1889), p. 133. Common in all parts of the state on willow. It varies greatly in color,—from a light

¹ Notes on the Aphididæ of the United States, etc. *Bull. U. S. Geol. and Geog. Surv.*, Vol. V, No. 1, p. 32, 1879.

² *Loc. cit.*

³ Synopsis of the Aphididæ of Minn. *Bull. 4, Geol. and Nat. Hist. Surv. Minn.*, p. 38, 1887.

⁴ List of the Aphididæ of Minn., etc. 14th Ann. Rept. Geol. and Nat. Hist. Surv. Minn., p. 50, 1886.

brown to almost black, indeed not only the color but the lengths of the antennal segments and numbers of antennal sensoria vary so much that I have been unable to distinguish between this species and Oestlund's *Ch. nigræ*.

* *Callipterus* (*Pterocallis*¹) *alni* Fabr.: This species is rather common on the lower surface of the leaves of alders in the Chicago parks, and when abundant, as it often is, the upper surfaces of the lower leaves become heavily coated with the honey dew. I believe this species has not before been recorded as occurring in the United States. According to the table of American species of *Callipterus* given by Mr. J. T. Monell,² *alni* comes nearest to *C. hyalinus* Monl., from which it may be distinguished by the blackish wing veins, the black tipped cornicles, filament of antennal segment VI shorter than base, etc. Inasmuch as there is no description of this species in American literature, I describe in full the viviparous and sexual forms.

Winged viviparous female.—Head pale greenish yellow, Pl. 27, fig. 3, first thoracic segment pale greenish, thoracic shield pale with a faint brownish tint, and abdomen pale yellowish or greenish yellow with a more or less distinct dorsal transverse green marking near the anterior end, another near the cornicles and a median longitudinal marking, usually indistinct, connecting the two. Antennæ about as long as the body, segment III longest, IV about two-thirds the length of III, V a little shorter than IV, base VI less than one-half the length of V, and filament VI slightly shorter than base VI; 2 to 4 large but rather inconspicuous circular sensoria near the base of III, and the usual ones at the distal ends of segments V and base VI; I and II concolorous with head, III and IV pale (whitish) excepting the distal ends, which are black, V pale at base and gradually darkening to blackish at distal end, VI blackish. (Pl. 27, fig. 4). Eyes red. Beak rather short, reaching a little beyond the coxæ of the first pair of legs. Wings hyaline with rather conspicuous dark brown veins which are apparently bordered with an almost imperceptible pale browning tint, stigma with a dark brown area at each end, stigmal vein hyaline or sub-hyaline except the distal third. (Pl. 27, fig. 5.) Legs pale excepting dusky distal ends of the tibiæ and the blackish tarsi. Cornicles tubercular and black excepting the pale base. (Pl. 27, fig. 6.) Style pale knobbed, anal plate very conspicuously bifid. (Pl. 27, fig. 7.) Measurements,—length of body, 1.4 mm., width, 0.53 mm.; length of wing, 2.2 mm., width, 0.79 mm.; antenna, I, 0.05; II, 0.05; III, 0.4890–0.5460, avg., 0.51; IV, 0.3079–0.3423, avg., 0.33; V, 0.2445–0.2934, avg., 0.27; VI, base 0.1141–0.1304, avg., 0.12; VI, filament, 0.0896–0.1141, avg., 0.0978; avg., total, 1.4278 mm.; cornicles, 0.05–0.06 mm.; styles, 0.115 mm.

Wingless oviparous females.—Head pale greenish yellow, thorax and abdomen pale greenish with darker green dorsal markings as follows: irregular transverse patch near head, another narrower one anterior to the center and a third near the

¹ For the present I prefer to use the genus *Callipterus* rather than *Pterocallis*. There is every gradation between the two so-called genera. If we take as a criteria the characters for dividing the old genus *Callipterus*, used by several European authors, there would be sufficient reason for the erection of several new genera among the American species of *Callipterus*.

² Notes on Aphididæ, Can. Ent., Vol. 14, Jan. 1882, p. 13–16.

cornicles. Eyes red. Antennæ as those of winged viviparous female as to relative lengths of segments and coloration. (Pl. 27, fig. 8.) Beak as in winged, legs also as in winged, excepting the hind femora which are swollen the basal two-thirds and bear many small inconspicuous circular sensoria. (Pl. 27, fig. 9.) Coloration of style and cornicles as given for the viviparous. Abdomen more tapering and drawn out at the posterior end. On the ventral lateral surface just beneath the cornicles is a silvery white patch which proves to be a mass of fine flocculent matter, from glands beneath, and probably is used as a protection for the eggs mentioned below. Measurements (average), length of body, 1.7 mm.; width, 0.8 mm.; antennæ, I, 0.05; II, 0.05; III, 0.38; IV, 0.21; V, 0.19; VI, base, 0.115; filament, 0.098; total, 1.093 mm. Eggs.—They are deposited in the crevices at the buds and are more or less covered with the silvery white flocculent matter found at the glands beneath the cornicles mentioned above. When first deposited they are pale greenish, later changing to jet black.

Winged male.—Head and thorax dark brownish, sometimes prothorax with a greenish tint. Abdomen pale yellowish green, with the green markings similar, but less conspicuous than in the winged viviparous female. Antennæ entirely dusky, 12–14 rather large circular sensoria in a row on III, 5–7 on IV, and 3–5,—together with the usual distal one,—on V, and the usual one at end of VI base. (Pl. 27, fig. 10.) Legs entirely dusky excepting joints and base of femur. Cornicles and eyes and wings as in winged female. Styles dusky. Measurements (average): length of body, 1.2 mm.; width, 0.49 mm.; antenna I, 0.055; II, 0.065; III, 0.46; IV, 0.29; V, 0.25; VI, base, 0.12; VI, filament, 0.105; total, 1.345 mm.

Cal. asclepiadis Monl.: Bull. U. S. Geol. and Geog. Surv., Vol. 5 (1879), p. 29; Oestlund, Bull. Geol. and Nat. Hist. Surv., Minn., No. 4 (1887), p. 42. Found abundant on the common *Asclepias*, throughout the state. First reported by Gillette.

* *Cal. bellus* Walsh: Sanborn, Kans. Uni. Sci. Bull., Vol. 3 (1904), p. 40, figs. Common throughout the state on oak.

Cal. betulæcolens (Fitch) Monl.: Bull. U. S. Geol. and Geog. Surv., Vol. 5 (1879), p. 30; Davis, Annals Ent. Soc. Amer., Vol. 2 (1909), p. 30, figs. Especially abundant on the American and European lindens in the Chicago parks. At Elgin, Ill., this species was exceptionally abundant, the upper surfaces of the linden leaves being coated with honey dew, and the aphids, when disturbed, arose from the leaves in small swarms giving the general impression of a flight of small leaf hoppers, such as *Empoasca mali*. First reported by the writer.

* *Cal. caryæ* Monl.: Bull. U. S. Geol. and Geog. Surv., Vol. 5 (1879), p. 31. A species occurring everywhere throughout the state on hickory and walnut.

† *Cal. caryæfoliæ* Davis: Ento. News, Vol. 21, May (1910), pp. 198–200, 1 pl., 1 fig. First reported by the writer.

* *Callipterus* (*Myzocallis*¹) *coryli* Goetze: This species has been taken occasionally on the wild and cultivated hazel shrubs, infesting

¹ See note under *Pterocallis* on a preceding page.

the under surfaces of the leaves, in and about Chicago. In Monell's table¹ this species comes nearest to *C. betulæcolens* from which it may be readily distinguished by its smaller size, the pale wing veins, shorter filament in comparison with the base of VI, etc. *C. coryli* was once before reported from the United States, by W. T. Clarke, who collected it in California².

Winged viviparous female.—Entire body, including head, (Pl. 28, fig. 11) pale yellow. Antennæ whitish excepting the tips of III, IV, V, distal half of base VI, and filament VI; segment III longest, it being fully a half longer than IV, IV, V, and filament VI subequal, but IV being invariably slightly the longest of the three, VI base being less than half the length of VI filament; three or four large but inconspicuous circular sensoria near the base of III, and the usual ones at the distal ends of V and VI base. (Pl. 28, fig. 12.) Eyes white from above and reddish from below. Beak reaching to the coxæ of the second pair of legs. Legs pale (whitish) excepting the pale dusky distal end of tibia and blackish tarsus. Cornicles concolorous with body; longer than wide but the length less than twice the breadth. (Pl. 28, fig. 14.) Style concolorous with body and knobbed. Anal plate conspicuously bifid. (Pl. 28, fig. 15.) Measurements (average): length of body, 1.1 mm.; width, .046 mm.; length of wing, 1.8 mm.; width, 0.7 mm.; antenna I, 0.055; II, 0.065; III, 0.42; IV, 0.26; V, 0.20; VI, base, 0.105; VI, filament, 0.23; total, 1.335 mm.; cornicles, 0.065 mm.; style, 0.05 mm. Pupa, entirely pale yellow.

Wingless oviparous female.—Entire body pale yellowish. Eyes reddish. Antennæ pale whitish, excepting extreme distal end of III and the remaining segments, which are more or less dusky. Comparative measurements as winged viviparous. (Pl. 28, fig. 16.) Legs pale whitish excepting distal end of tibia and the tarsus, which are dusky, hind tibia swollen and bearing rather inconspicuous sensoria on the basal two-thirds. (Pl. 28, fig. 17.) Entire body covered with rather long capitate hairs; on the dorsum is a longitudinal row of tubercles, bearing hairs. Abdomen prolonged at the posterior end. Cornicles and style concolorous with the body. Measurements (average): length of body, 1.5 mm.; width, 0.7 mm.; antenna I, 0.05; II, 0.04; III, 0.26; IV, 0.16; V., 0.145; VI, base, 0.09; VI, filament, 0.20; total, 0.945 mm.; cornicles, 0.08 mm.

Winged male.—Head dusky with a faint dark greenish tint; prothorax yellowish with a median longitudinal marking concolorous with head. Thoracic shield shining dark greenish, and abdomen pale yellowish with a median row of short wide transverse black markings and a row of inconspicuous dusky spots on each side. Antennæ as follows: I and II dusky, III pale, and dusky at distal end, the remaining segments dusky to blackish; 17-18 roundish oval irregularly placed sensoria on III, 3-5 in a row on IV, 3-5 on V, and 1-3 on base VI, as well as the usual ones at the distal ends of V and base VI; III longest, it being more than a half longer than IV and about twice the length of VI filament, IV and V subequal, the former being invariably slightly the longer, VI base about one half the length of the filament which is subequal to or slightly less than the length of V. (Pl. 28, fig. 18.) Wing veins slightly darker than the female. Legs pale or slightly dusky, excepting the darker distal end of the tibia and the tarsus. Cornicles and style dusky. Measurements (average): length of body, 1.0 mm.; width, 0.35 mm.; length of wing, 2.25 mm.; width, 0.71 mm.; antenna I, 0.05; II, 0.05; III, 0.42; IV, 0.24; V, 0.215; VI, base, 0.10; VI, filament, 0.215; total, 1.29 mm.

¹ *Loc. cit.*

² A list of California Aphididæ, Can. Ent., Vol. 35 (1903), p. 248.

* *Cal. discolor* Monl.: Oestlund, Bull. Geol. and Nat. Hist. Surv., Minn., No. 4 (1887), p. 41; Weed, Psyche, Vol. 4, (1889) p. 131. A common species on the oaks (*Quercus* spp.).

Cal. hyperici Monl.: Bull. U. S. Geol. and Geog. Surv., Vol. 5 (1879), p. 25 (*Aphis*). First reported by Thomas.

* *Cal. punctatus* Monl.: Bull. U. S. Geol. and Geog. Surv., Vol. 5 (1879), p. 30. Not uncommon in Illinois on oak.

Cal. trifolii Monl.: Davis, Annals Ent. Soc. Amer., Vol. 1 (1908), p. 256, figs. A common species on clover, but of little economic significance. First reported by the writer.

Cal. ulmifolii Monl.: Bull. U. S. Geol. and Geog. Surv., Vol. 5 (1879), p. 29; Oestlund, Bull. Geol. and Nat. Hist. Surv. Minn., No. 4 (1887), p. 42. Abundant on *Ulmus americana* throughout the year, the sexual forms (winged male and wingless female), being common in September and October. Although not usually considered injurious to the elm, I have occasionally found them sufficiently common to do injury, causing the foliage to drop prematurely and coating the upper surfaces of the leaves with honey dew. First reported by Gillette.

^t *Calaphis betulella* Walsh: Proc. Ent. Soc. Phila., Vol. 1 (1862), p. 301. I have never taken this interesting species, but Walsh reported it from Illinois in his original description. Mr. J. T. Monell has kindly sent me specimens collected by him at St. Louis, Mo., on the leaves of birch. Camera lucida drawings of the head, wing, cornicles, and style are given in Plate 28, figures 19 to 23.

* *Monellia caryella* Fitch: Oestlund, Bull. Geol. and Nat. Hist. Surv. Minn., No. 4 (1887), p. 45. I have collected this species but once, namely on hickory at Centralia, Ill., August 13, 1907.

Drepanaphis acerifolii Thos.: Sanborn, Kans. Uni. Sci. Bull., Vol. 3, No. 1 (1904), p. 45, figs. Common throughout the state on soft maple and occasionally on hard and Norway maple but seldom in such numbers as to be injurious. The winged males and wingless females are quite common in September; the eggs being deposited in the crevices at the buds, or cracks of the rough bark of the smaller branches. First reported by Thomas.

^t *Drepanaphis? minutus* Davis: Ento. News, Vol. 21 (May 1910), pp. 195-198, 1 pl. First reported by the writer.

^t *Idiopterus nephrolepidis* Davis: Annals Ent. Soc. Amer., Vol. 2 (1909), p. 199, figs. Occasionally found in Chicago greenhouses attacking the tender unfolding fronds of the Boston and other ferns. It sometimes becomes abundant and destructive in poorly kept greenhouses, but where fumigation is regularly practiced they are easily held in check. First reported by the writer.

(To be continued)

Explanation of Plates 27 and 28.

Chaitophorus quercicola Monl.—Fig. 1, wing; 2, antenna of winged viviparous female.

Callipterous alni Fabr.—Fig. 3, head; 4, antenna; 5, wing; 6, cornicle; 7, style of winged viviparous female; 8, antenna; 9, hind tibia of wingless oviparous female; 10, antenna of winged male.

Callipterus coryli Goetze.—Fig. 11, head; 12, antenna; 13, wing; 14, cornicle; 15, style of winged viviparous female; 16, antenna; 17, hind tibia of wingless oviparous female; 18, antenna of winged male.

Calaphis betulella Walsh.—Fig. 19, head; 20, antenna; 21, wing; 22, cornicle; 23, style of winged viviparous female.

Camera lucida drawings, figures 3, 6, 7, 11, 14, 15, 19, 22, and 23 with one-inch eye piece and two-third objective; 2, 4, 8, 9, 10, 12, 13, 16, 17, and 18, with two-inch eye piece and two-third objective; 1, 5, 20, and 21, with one-inch eye piece and one and a half-inch objective.

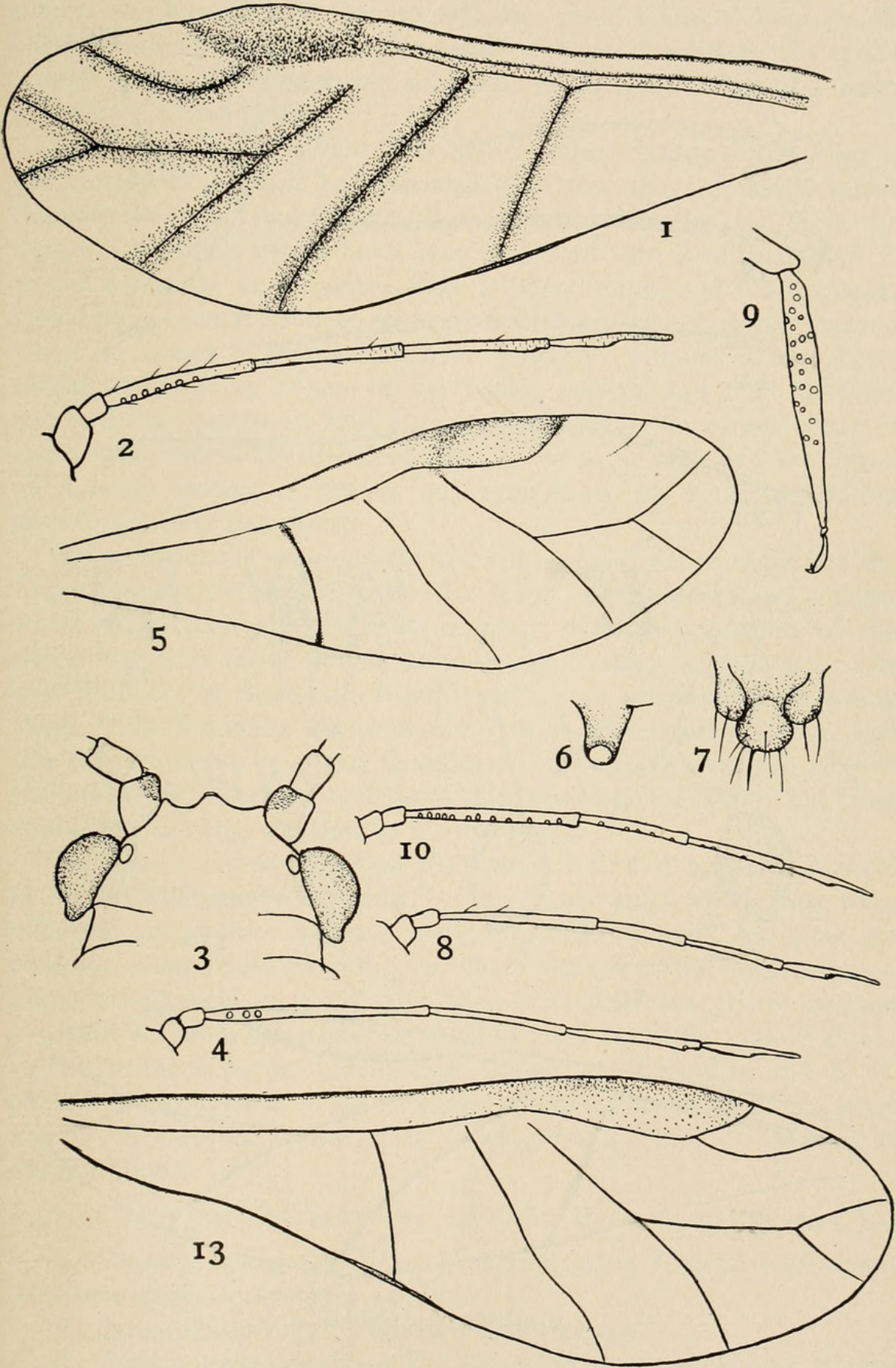
THE COCCIDÆ OF AUDUBON PARK, NEW ORLEANS, LA.¹*First Paper*

By T. C. BARBER, *Audubon Park Laboratory, Agent and Expert, U. S. Bureau of Entomology*

Audubon Park, New Orleans, is a particularly favorable locality for the development of plant and insect life. The climatic conditions are such that plants seem to thrive with equal facility whether they are transported from regions far to the north of Louisiana, or from as far to the south. Scattered through the park may be found representatives of almost all the common ornamental plants of the Northern States, while flourishing side by side with them can be seen hundreds of plants representing the native semi-hardy flora and plants imported from the semi-tropical regions of Mexico and Cuba. In one corner of the park may be found the huge Horticultural Hall, a relic of the Cotton Centennial Exposition of 1884. In this hall hundreds of species of tropical plants are found, which are carried through the comparative coldness of the Louisiana winters by means of artificial heat. Altogether, it is doubtful if many places can be mentioned where the observer is confronted by such a luxuriant and varied array of flora in a circumscribed area as can be found in this piece of land of less than 300 acres within the city of New Orleans.

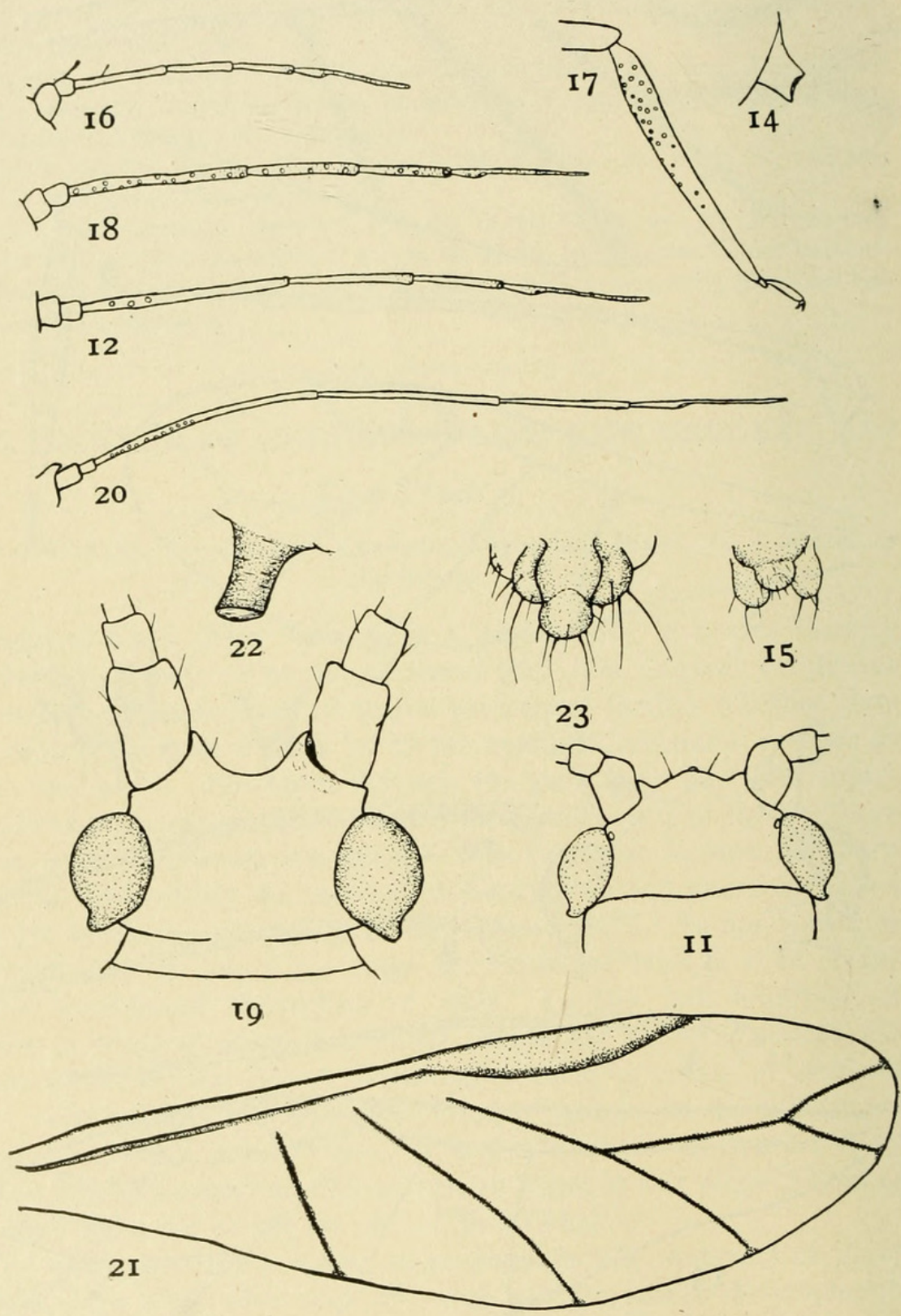
The same conditions which make possible this diversity of plant growth, also make this spot an ideal one for insect development. With the exception of a few weeks of moderately cool weather in the winter, insect growth and multiplication is practically continuous the

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Structure of Aphididæ

Plate 28



Structure of Aphididae



Davis, John J. 1910. "A list of the Aphididae of Illinois, with notes on some of the species." *Journal of economic entomology* 3, 407–422.

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