SIX NEW APHIDS FROM PENNSYLVANIA

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While collecting and making a study of the aphids of Pennsylvania a number of species have been collected that are apparently new to science and it seems well that they should be described and recorded. Six new species are treated in this paper.

Acknowledgments are due A. N. Tissot, Gainesville, Florida, and Miss Louise Russell, Washington, D. C., for their examination of specimens and opinions concerning these forms. The writer is deeply grateful to Dr. Tissot for his encouragement and helpful, constructive suggestions in the preparation of this paper.

Macrosiphum pennsylvanicum new species

ALATE VIVIPAROUS FEMALE. (Plate I, Figs. 1, 2, 3, and 4.) *Color.*—General body color in life is green, about the same shade as the yarrow foliage. Head dusky-black; eyes red; antennae black; rostrum pale, except the apical one-third which is black. With a hand lens two rows of whitish pulverulent small dots are visible on each side of the mid-dorsal abdominal line, these dots more prominent in some specimens than in others. Wings hyaline with stigma and all veins dark. Legs black except the basal half of femora which is light yellow. Cornicles black; cauda pale to dusky. *Cleared specimens.*—Head and antennal I light brown with antennal II darker. Base of segment III light, remainder of III and other antennal segments brown, however, the unguis is somewhat lighter in most specimens. Rostral segments III to V dark brown, basal segments light brown. Thorax light dusky-brown; all legs with basal half of femora light, shading to dark brown apically; tibiae and tarsi brown. Cornicles dark brown, extreme bases light. Cauda and anal plate light dusky brown. *Measurements.*—Vertex to end of anal plate 2.17 (1.99-2.75)[2]. Head width across the eyes .457 (.434-.476), Antennal III, .884 (.798-.966); IV, .630 (.546-.658); V, .536 (.518-.602); VI, .190 (.182-.196) plus .867 (.840-.896). Cornicle length .456 (.378-.490), width .056, length of reticulated area .256. Cauda length .325 (.294-.350). *Structural characters.*—Sensoria on antennal III, 48 (40-56); 0 on IV; primary ones on V and VI. Those on III are very tuberculate and scattered over the entire length of segment. Some of the sensoria are bulbous and their size is variable. Hairs on antennal segments heavy and spine-like. A few are slightly longer than the diameter of the segments. The same is true of the tibial hairs. The hairs on the abdomen are fairly abundant and spine-like, measuring .070. There are 4 or 5 hairs on each side of the cauda and 2 or 3 on the dorsal area near the apex. The cornicles are imbricated from the base to the reticulated area with an apical flange. Rostrum lance-like and reaching third coxae.

Described from 61 individuals.

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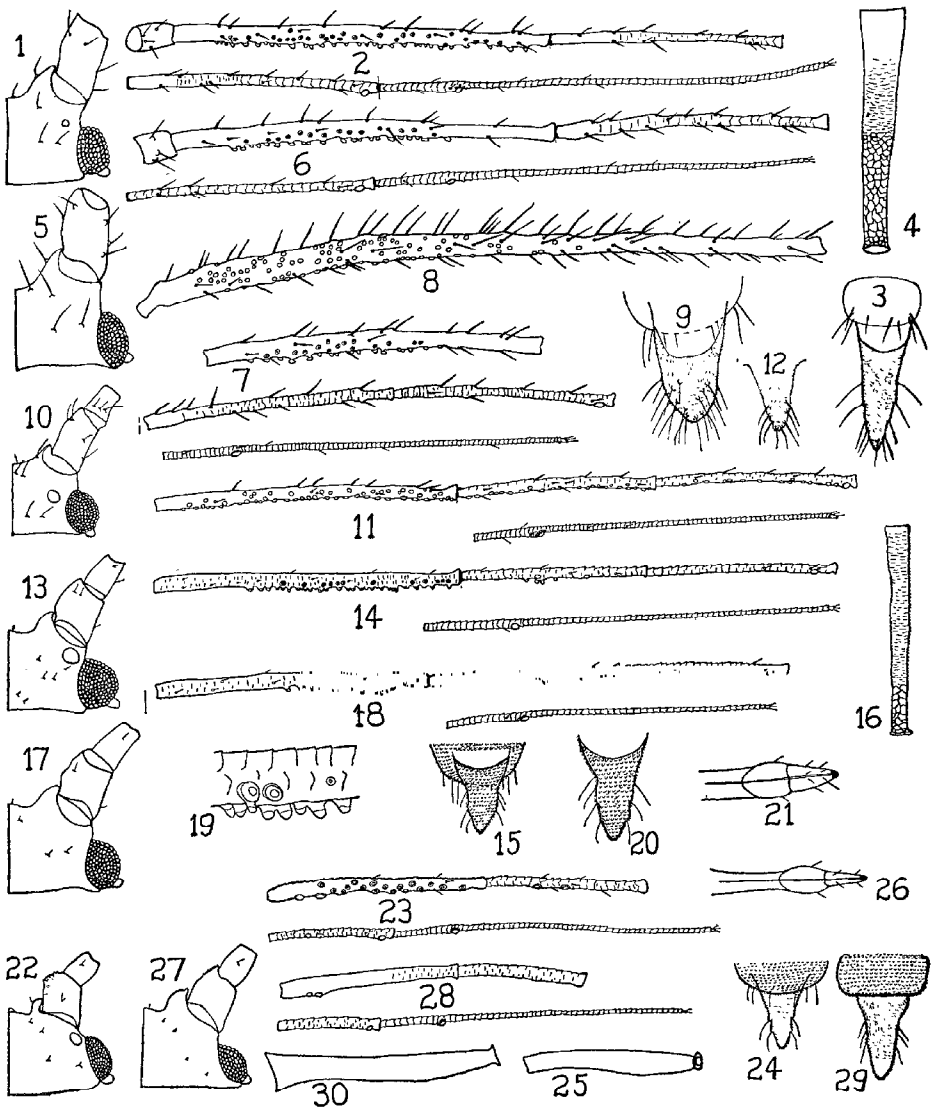
[2] All measurements in this paper are in millimeters; figures in parentheses indicate variations.



EXPLANATION OF PLATE I

Macrosiphum pennsylvanicum n. sp. Figs. 1-12.
1-4 alate viviparous female; 5-6 apterous viviparous female; 7-9 apterous oviparous female; 10-12 alate male.
Macrosiphum sleesmani n. sp. Figs. 13-21
13-16 alate viviparous female; 17-21 apterous viviparous female.
Myzus physocarpi n. sp. Figs. 22-30
22-26 alate viviparous female; 27-30 apterous viviparous female.
All figures 50× except Fig. 19 which is 200×.

APTEROUS VIVIPAROUS FEMALE. (Plate I, Figs. 5 and 6.) *Color.*—Same as the alate except the pulverulent dots merge on the thorax. The light yellow bases of femora are not as conspicuous as in the alate. Cauda dusky

in most specimens. Cleared specimens in general show same coloration as the alates, some individuals darker with the tibiae, tarsi, and cornicles appearing black. *Measurements.*—Vertex to end of anal plate 2.20 (1.92-2.45). Head width across eyes .494 (.476-.504). Antennal III, .896 (.798-.952); IV, .640 (.574-.700); V, .578 (.546-.588); VI, .193 (.182-.210) plus .858 (.812-.924). Cornicle length .581 (.490-.658), width .068, length of reticulated area .267 (.224-.280). Cauda length .421 (.378-.448). *Structural characters.*—Sensoria on antennal III, 37 (31-44); 0 on IV; primary ones on V and VI. Those on III are strongly tuberculate and distributed as shown in figure. All other characters are as in the alate.

Described from 75 individuals.

ALATE MALE. (Plate I, Figs. 10, 11, and 12.) *Color.*—Cleared specimens—head brown, lighter on posterior part. Antennal I and II light brown. Extreme base of III light, remainder of III and other segments brown. Beak light brown with IV and V brown. Prothorax light, meso- and meta-thorax brown. Extreme bases of femora light, darker to almost black apically; tibiae brown with lighter middle area; tarsi brown. Abdomen light; cornicles brown with bases light; cauda light to dusky brown. *Measurements.*—Vertex to end of anal plate 1.62 (1.47-1.75). Head width across the eyes .42 (.40-.43). Antennal III, .74 (.67-.78); IV, .53 (.43-.60); V, .48 (.39-.54); VI, .18 (.15-.20) plus .73 (.61-.89). Length of cornicle .19 (.16-.21), width at middle .035. Length of cauda .16 (.14-.17). *Structural characters.*—Head, beak and antennal segments bearing several hairs. Antennal III with 56 (46-62) round, tuberculate sensoria; IV, with 23 (17-30); V, with 15 (11-18); VI, with the primary one and several small ones at its edge. Abdomen with several hairs. Cornicles imbricated on basal half and reticulated on apical half. Cauda short with 8 hairs.

Described from 8 specimens.

APTEROUS OVIPAROUS FEMALE. (Plate I, Figs. 7, 8, and 9.) *Color.*—Cleared specimens—head, beak, antennal I and II brown, sometimes I and II darker than the head. Extreme base of antennal III light, the remainder of III, and other segments brown. Thorax and abdomen light. Femora light with a brown band just before apex; tibiae with bases and apices brown with light area between. Cornicles brown, bases sometimes lighter; cauda light dusky brown. *Measurements.*—Vertex to end of anal plate 2.19 (1.89-2.75). Head width across the eyes .48 (.47-.49). Antennal III, .79 (.73-.83); IV, .54 (.49-.59); V, .48 (.43-.52); VI, .18 plus .73 (.60-.77). Length of cornicle .45 (.43-.50), width at middle .052. Length of cauda .27 (.24-.29). *Structural characters.*—Head, antennae and abdomen with numerous hairs, some of those on antennae slightly longer than the diameter of the segments. Sensoria on basal two-thirds of III, numbering 25 (20-30), round, tuberculate, and in some individuals bulbous, as shown in figure. Segment IV without sensoria; V and VI with the primary ones. The beak long, reaching just beyond third coxae, and tapers to a point. The basal three-fourths of cornicles imbricated, the apical one-fourth reticulated. The cauda is short and broad, tapering to a blunt point with many hairs (18-24). The basal two-thirds of hind tibia is swollen and bears many round sensoria, varying in size. Hairs on outside of the tibia numerous, about as long as the diameter of the tibia; these hairs reclinate on apical portion.

Described from 47 individuals.

TYPES: All specimens of this species were collected by the author in Pennsylvania on *Achillea millefolium*. *Holotype,* alate viviparous female, Philipsburg (Black Moshannon Dam) July 4, 1947, (on slide with morphotype apterous female). *Morphotype,* apterous viviparous female, same data. *Allotype,* male, State College, October 13, 1949 (on slide with morphotype apterous oviparous female and other apterous females). Morphotype, apterous oviparous female on same slide as allotype and same data. *Paratypes,* 6 slides, Philipsburg, (Black Moshannon Dam), July 4, 1947; 5 slides, same locality, August 23, 1943; 8 slides, same locality, September 2, 1942; 3 slides, State College, (No. 133), August 29, 1942; 3 slides, State College, (Greenwood Furnace), August 24, 1946; 3 slides, Woodward, September 16, 1946; 20 slides, Quarryville, (304-44), June 16, 1944; 12 slides, State College, October 13, 1949.

The holotype, allotype, morphotypes, and a number of paratype specimens, deposited in the U. S. National Museum (Cat. No. 59413): the remaining paratype material in the collections of the writer and of A. N. Tissot.

TYPE LOCALITY: State College, Pennsylvania.

HOST: *Achillea millefolium.*

TAXONOMY: This species keys out to *M. ludovicianae* Oestl. in both Gillette and Palmer's Aphidae of Colorado and Hottes and Frison's Aphiidae of Illinois but differs in the following respects: It has a greater number of sensoria on antennal III in both alate and apterous viviparous females; the sensoria are more tuberculate; segments 4 plus 5 of beak are shorter; the cornicles are shorter and not as slender; and the cauda has fewer hairs and has them located more apically than in *ludovicianae.*

Macrosiphum sleesmani new species

ALATE VIVIPAROUS FEMALE. (Plate I, Figs. 13, 14, 15, and 16.) *Color.*—The collector noted that living specimens were lemon yellow to lemon green. In cleared specimens head, thorax, antennal I and II, light brown, the remaining antennal segments, rostrum, cornicles, tibiae, and tarsi darker. Femora light brown with darker apices. Cauda light. *Measurements.*—Vertex to end of anal plate 1.83 (1.36-2.06). Head width across eyes .436 (.420-.462). Antennal III, .609 (.560-.672); IV, .390 (.336-.434); V, .370 (.322-.406); VI, .212 (.196-.238) plus .618 (.546-.686). Cornicle length .390 (.350-.420), width .042, length of reticulated area .078 (.070-.084). Cauda length .198 (.182-.210). *Structural characters.*—The sensoria on antennal III extend over the apical three-fourths of the segment and are located mostly on one side. They are small, very tuberculate, and difficult to count

accurately because two or more sensoria arise from a single base in many cases (Plate I, Fig. 19). Sensoria on III, 44 (35-47); IV, 7 (5-10); V and VI the primary ones. Segments III, IV, V, and VI show distinct imbrications. Antennal tubercles rather small for the genus but extending well beyond the vertex. Rostrum short, broadly obtuse, reaching midway between first and second coxae. Wings hyaline with stigma and veins brown, the latter narrowly bordered with light shading. The venation of the fore wings rather unusual for this genus. The radial sector long, arising well before the pointed apex of the stigma. The first fork of the media nearer the base than the wing margin, the second fork very close to the margin, in many individuals entirely lacking. Cornicles are almost parallel sided, the apical one-fifth is reticulated and the remainder is imbricated. Cauda very slightly constricted, tapering to a blunt point, with 3 to 4 long hairs on each side and usually 1 on the dorsum. Hairs on body and appendages minute and inconspicuous. Length of those on antennae .01, on tibiae .03.

APTEROUS VIVIPAROUS FEMALE. (Plate I, Figs. 17, 18, 19, 20, and 21.) *Color.*—Same as in alate viviparous female, except somewhat lighter, and the entire femora are light. *Measurements.*—Vertex to end of anal plate 1.88 (1.61-2.10). Head width across the eyes .451 (.392-.490). Antennal III, .566 (.420-.672); IV, .349 (.224-.420); V, .318 (.238-.350); VI, .183 (.140-.210) plus .555 (.476-.616). Cornicle length .414 (.280-.504), width .050, length of reticulated area .070. Cauda length .200. *Structural characters.*—Sensoria on III, 25 (10-37); 0 to 4 on IV; the primary ones on V and VI. All other characters as in the alate.

TYPES.—All specimens of this species collected in Pennsylvania by G. B. Sleesman on *Adiantum pedatum. Holotype,* alate viviparous female (on same slide with morphotype apterous viviparous female and 1 paratype apterous female and 1 immature form), Richlandtown, June 8, 1949. *Morphotype,* apterous viviparous female (on same slide as holotype), locality, date, and host data same as on holotype slide. *Paratypes,* two slides, Glenmore, (Vick's Nursery), September 23, 1945, bearing eleven apterous viviparous females; six slides, Richlandtown, June 8, 1949, bearing 7 alate and 8 apterous viviparous females.

The holotype and morphotype specimens, deposited in the U. S. National Museum (Cat. No. 59414); the remaining paratype material in the collections of the writer and of A. N. Tissot.

This species is named for George B. Sleesman, who has collected many interesting aphids for the writer.

TAXONOMY AND NOTES: Some of the characters are like those found in *Macrosiphum* and *Kakimia* but in other respects it is different from either of these genera. The peculiar sensoria on antennal segments III and IV are different from any known to the writer. The venation of the forewings is unusual and the cauda

is suggestive of the genus *Myzus*. A new genus could be erected for this species but the writer prefers to leave it in *Macrosiphum* for the present.

Myzus physocarpi new species

ALATE VIVIPAROUS FEMALE. (Plate I, Figs. 22, 23, 24, 25, and 26.) *Color.*—General body color of live specimens, light greenish; head, antennae, thorax and cornicles black; legs, rostrum and cauda light brown. In cleared specimens, head, thorax, antennal I and II, brown; extreme base of III light, remainder of III and the remaining segments brown; V and VI somewhat lighter. The coxae, trochanters and bases of femora light brown with femora shading to dark brown on apices; tibiae and tarsi brown. Abdomen with three lateral black spots on each side anterior to and one just posterior to cornicles; five smaller, irregular black spots on each side located just dorsally of the lateral ones, the posterior two between the cornicles; cornicles, cauda and anal plate light brown. Wings hyaline with stigma and all veins dark. *Measurements.*—Vertex to end of anal plate 1.80 (1.61-1.91). Head width across the eyes .402 (.392-.420). Antennal III, .508 (.462-.588); IV, .307 (.252-.336); V, .294 (.252-.364); VI, .147 (.140-.154) plus .568 (.504-.616). Cornicle length .365 (.350-.392), width .056. Cauda length .179 (.160-.196). *Structural characters.*—Sensoria on antennae circular and located as shown in figure; number on III, 15 (12-18); IV, 0 to 5; V, 1 to 4; VI, the large primary one and smaller accessory ones about it. All segments distinctly imbricated. Inner margin of segment I, slightly protuberant. Antennal tubercles of medium size, imbricated, moderately convergent. Rostrum broadly obtuse, extending almost to middle coxae. Cornicle with slight imbrications, basal portion constricted, the middle portion swollen and then tapering to apical flange. Cauda slightly constricted, tapering to a blunt point, with 2 to 3 hairs on each side. Hairs on body and appendages minute; length of those on antennae hardly .01; on abdomen .017; on tibiae .02.

APTEROUS VIVIPAROUS FEMALE. (Plate I, Figs. 27, 28, 29, and 30.) *Color.*—General color of living specimens is much lighter than in the alate. Cleared specimens appear almost colorless and there are no dark spots on the abdomen as in the alate. *Measurements.*—Vertex to end of anal plate 1.90 (1.71-2.10). Head width across the eyes .423 (.392-.434). Antennal III, .435 (.336-.476); IV, .251 (.168-.294); V, .253 (.196-.310); VI, .143 (.140-.154) plus .468 (.280-.560). Cornicle length .434 (.322-.476), width .06. Cauda length .222 (.196-.238). *Structural characters.*—There are 0 to 3 circular sensoria located on a slightly swollen area on the base of III; 0 on IV; primary ones on V and VI. Other characters as in alate, except cornicle bases appear wrinkled and the remainder smooth.

TYPES.—All specimens of this species were collected in Pennsylvania on *Physocarpus opulifolius*. *Holotype,* alate viviparous female (on slide with 1 paratype apterous viviparous female), Spruce Creek, Colerain Park), April 25, 1945 (No. 5-45). *Morphotype,* apterous viviparous female (on slide with 2 paratype alate viviparous females), same location, date and host data as

for holotype. *Paratypes,* 21 slides, same location, date and host data as for holotype. These slides bear 47 alates and 20 apterous viviparous females. All collections by the writer.

The holotype and morphotype specimens are deposited in the U. S. National Museum (Cat. No. 59415), the remaining type specimens are in the collections of the writer and of A. N. Tissot.

TYPE LOCALITY.—Spruce Creek, Pennsylvania.

HOST.—*Physocarpus opulifolius* (L.) Maxim.

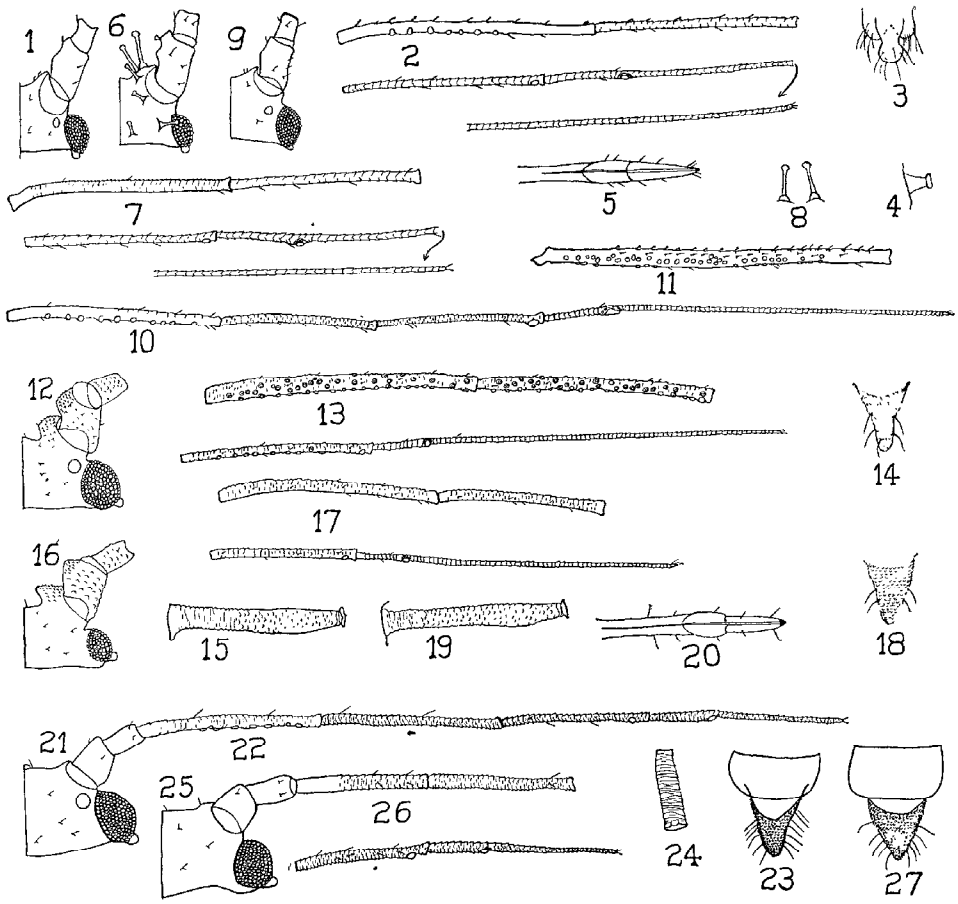
TAXONOMY AND NOTES.—The specimens occur on the under sides of the leaves of the tender water sprout growth in the spring and early summer and then disappear from the plant. This species keys out fairly well to *M. eriobotryae* Tissot, in Mason's key. Specimens were sent to Dr. A. N. Tissot and he states that it is definitely not that species. He also made these remarks "*M. eriobotryae* has IV plus V of rostrum long, slender and almost parallel sided. This species has the rostrum short, blunt, and tapering. Also *M. eriobotryae* has 2 tubercles on the hind margin of the under side of the head; your species has none."

Calaphis alnosa new species

ALATE VIVIPAROUS FEMALE. (Plate II, Figs. 1, 2, 3, 4, and 5.) *Color.*—General color of living specimens a very light pale green, antennae and legs black. In cleared specimens the head, antennal I and II almost colorless, base of III light brown, remainder of III and other segments dark brown. The coxae, trochanters, and femora dusky-brown; tibiae with basal one-fourth light brown shading to dark brown apically. Cornicles and cauda almost hyaline. Wings hyaline with veins and lower margin of stigma dark brown; first anal and cubitus narrowly bordered with brown shading, only a slight indication of shading on media. *Measurements.*—Vertex to end of anal plate 1.46 (1.36-1.57). Head width across eyes .322 (.308-.350). Antennal III, .609 (.532-.672); IV, .478 (.450-.546); V, .465 (.420-.518); VI, .213 (.168-.238) plus 1.19 (1.02-1.68). Cornicle length .056 (.042-.070), width .028. Length of hind tibia 1.00 (.896-1.11). *Structural characters.*—The antennae are held horizontally back over the body. The basal one-third of antennal III is slightly curved. There are 7 (5-9) large oval sensoria in a single row on III; 0 on IV; the primary ones on V and VI. Apical one-third of III and all of IV, V, and VI are imbricated. Antennal I with a protuberance on inner margin. Rostrum tapers to a sharp point and reaches the third coxae. Fore wing with radial sector absent. Cornicles smooth, widest at base and taper to a rolled flange. Anal plate deeply bi-lobed. Cauda knobbed. Both anal plate and cauda bear fairly long hairs. Blunt hairs on antennal segments and base of tibia .012 long, those on apex of tibiae slightly longer.

Described from 58 specimens.

APTEROUS VIVIPAROUS FEMALE. (Plate II, Figs. 6, 7, and 8.) *Color.*—General body color of living specimens creamy white with a reddish-brown



EXPLANATION OF PLATE II

Calaphis alnosa n. sp. Figs. 1-11
1-5 alate viviparous female; 6-8 apterous viviparous female; 9-10 alate male; 11 apterous oviparous female.

Micromyzus collinsoniae n. sp. Figs. 12-20
12-15 alate viviparous female; 16-20 apterous viviparous female.

Aphis hamamelidis n. sp. Figs. 21-27
21-24 alate viviparous female; 25-27 apterous viviparous female.

All figures 50×.

lateral line on each side of the thorax and abdomen. Antennae and legs black. In cleared specimens head, antennal I and II almost colorless; basal two-thirds of III and basal half of IV light brown; the remainder of III, IV, and remaining segments are darker brown. Rostrum pale with brown tip. Legs almost colorless with apical one-third of tibiae and tarsi brown. *Measurements.*—Vertex to end of anal plate 1.45 (1.33-1.57). Head width across eyes .305 (.294-.322). Antennal III, .491 (.406-.560); IV, .393 (.350-.476); V, .371 (.308-.434); VI, .182 (.154-.224) plus .894 (.784-1.10). Cornicle length .058 and width .028. Length of hind tibia .815 (.714-.966). *Structural characters.*—Antennal III and IV without sensoria; primary

ones on V and VI. Base of III has a definite curve or bend. Segment III and basal two-thirds of IV appear smooth on posterior margin, the anterior margin of these two segments and both margins of remaining segments distinctly imbricated. Short reclining hairs on all segments, those on I and II capitate. Antennal tubercles with three stalked, capitate hairs on a large conical base. Rostrum tapering to acute point and reaches third coxae. The prothorax with a single stalked hair (.06) on conical base on each lateral margin. The meso-thorax has a large thumb-like, blunt tubercle on each side plus capitate, stalked hairs on the dorsum. Each abdominal segment bears several long, stalked capitate hairs on conical bases. Cornicle, cauda and anal plate same as in alate.

Described from 92 specimens.

APTEROUS OVIPAROUS FEMALE. (Plate II, Fig. 11.) *Color.*—Cleared specimens.—Head light with antennal tubercles and hair bases brown. Antennal I and II slightly dusky, II being more dusky than I. Basal two-thirds of III light brown with apical one-third and remaining segments almost black. Beak light with dark tip. Thorax, abdomen, cornicles, and cauda light; body hairs and their bases light brown. Femora light with tibiae and tarsi brown, the basal part of tibiae usually darker than the apical part. *Measurements.*—Vertex to end of anal plate 1.45 (1.33-1.64). Head width across the eyes .33 (.31-.34); Antennal III, .43 (.39-.46); IV, .33 (.29-.35); V, .34 (.32-.36); VI, .17 (.16-.18) plus .75 (.67-.84). Length of cornicle .056, width at middle .042. Length of hind tibia .72 (.66-.77). *Structural characters.*—Body with stalked capitate hairs on conical bases. Antennal I with a single short capitate hair on inner margin near apex plus several short blunt hairs scattered on the segment; short pointed, reclining hairs on remaining segments. Segments III to VI strongly imbricated. Segments III and IV without sensoria; V and VI with the primary ones. The meso-thorax has a large thumb-like tubercle on each side pointing backward and located dorsally to the regular meso-thoracic tubercle. Cornicles same as in apterous viviparous form. Anal plate broadly rounded and with many hairs. Cauda definitely knobbed and with several hairs. Hind tibiae with sensoriated areas somewhat swollen, round sensoria of varying sizes distributed over the basal three-fourths of the tibiae; the basal half of the outer edge bears about nine short capitate hairs, the remaining hairs on the tibiae are not capitate.

Described from 142 specimens.

ALATE MALE. (Plate II, Figs. 9 and 10). *Color.*—Cleared specimens—Head light dusky brown with vertex and front darker brown. Antennal I and II dusky brown; extreme base of III light with remainder of III, IV, V, and VI brown. Beak light with tip black. Pro- and meso-thorax light brown, meta-thorax darker brown. Femora dusky brown with tibiae and tarsi dark brown to black. Abdomen colorless to slightly dusky. Cornicles light to slightly dusky. *Measurements.*—Vertex to end of anal plate 1.15 (1.08-1.22). Head width across the eyes .34 (.33-.35). Antennal III, .45 (.42-.50); IV, .34 (.32-.36); V, .35 (.30-.40); VI, .18 plus .71. Length of cornicle .042, width at middle .028. Length of hind tibia .77 (.73-.82). *Structural characters.*—Antennae with apical one-third of III slightly imbricated; IV to VI strongly imbricated. Short hairs on all segments.

Segment III with 10 (9-11) large almost round sensoria; IV, without sensoria; V and VI, with primary ones. Abdominal hairs fairly abundant and heavy, some few slightly capitate.

Described from 3 specimens.

TYPES: All specimens of this species were collected by the writer in Pennsylvania on *Alnus rugosa*. *Holotype*—alate viviparous female and *Morphotype*—apterous viviparous female on same slide (also 5 paratype apterous viviparous females) State College, (Decker Valley), July 5, 1945. *Allotype*—male and Morphotype apterous oviparous female on same slide (also 3 paratype apterous oviparous females), State College, (Whipple Dam), October 23, 1949. *Paratypes*—1 slide, same locality and data as holotype slide; 1 slide, State College, (Greenwood Furnace), August 24, 1946; 14 slides, Ohiopyle, June 18, 1947. This is a total of 29 slides bearing 52 alate and 92 apterous viviparous females. Sixteen slides, State College, (Whipple Dam), October 23, 1949, bearing 3 alate males and 142 apterous oviparous females.

A slide containing a single alate viviparous female, Cashiers, N. C., August 24, 1941, A. N. Tissot and J. O. Pepper, on *Alnus?* has been examined and appears to be identical with this species but is not included with the type material.

The holotype, allotype, morphotype, and a number of paratype specimens, deposited in the U. S. National Museum (Cat. No. 59417), the remaining paratype material in the collections of the writer and of A. N. Tissot.

TYPE LOCALITY: State College (Decker Valley), Pennsylvania.

HOST: *Alnus rugosa*.

TAXONOMY AND NOTES: This species feeds on the under side of the leaves and alates are very hard to find. The apterous females adhere very closely to the mid-vein and other larger veins of the leaf and are difficult to see. They sometimes occur on the same leaves with *Myzocallis alnifoliae* Fitch but can be easily overlooked. The apterous oviparous females of this species and *M. alnifoliae* have been found together depositing eggs on the bark around the same buds or other rough places, but the color markings and size separate them easily.

Calaphis alni Baker occurs on *Alnue rugosa*, but it is a large species with definite color markings and feeds mainly on the stems and foliage of tender growing terminals.

Micromyzus collinsoniae new species

ALATE VIVIPAROUS FEMALE. (Plate II, Figs. 12, 13, 14, and 15.) *Color.*—The general body color in life is purple lake (Smith, Explanation of Terms Used in Entomology). In cleared specimens—head, brown with darker shading surrounding the ocelli. Antennal segments I and II darker than head. Extreme base of III light, middle portion brown fading to light brown apically; segments IV, V, and VI becoming progressively lighter, the unguis almost colorless. Beak light dusky with black tip. Thorax dusky, slightly darker than the head. Legs, with basal half of femora light and apical half dusky; tibiae and tarsi light dusky, the apical end of tibiae dark. Abdomen, light with 3 or 4 lateral dusky spots on each side. Cornicles and cauda light dusky. Anal plate dusky dark. *Measurements.*—Vertex to end of anal plate 1.88 (1.75-1.99). Head width across the eyes .40 (.39-.42). Antennal III, .60 (.59-.64); IV, .45 (.39-.49); V, .38 (.35-.43); VI, .13 (.11-.14) plus .64 (.53-.73). Cornicle length .36 (.32-.39), width .056. Cauda length .15 (.14-.16). *Structural characters.*—Head with prominent antennal tubercles which are gibbous and imbricated. On the posterior ventral part of head there are two large thumb-like tubercles located between rostrum and lateral margins. Antennal I and II imbricated, the inner apical margin of I gibbous. Sensoria on III circular, varying in size, and distributed over entire length of segment, numbering 46 (40-52); some of the sensoria are slightly tuberculate; segment IV with 29 (21-29) sensoria, distributed over entire length; V with 9 (6-11) sensoria, located mostly on one side and reaching almost the entire length of segment. All antennal segments are imbricated and bear several minute hairs. Basal one-half of cornicles narrow with wrinkled imbrications; middle portion swollen, tapering to wide flared apex; the entire surface of cornicles shows some reticulations. The anal plate broad, tapers to a blunt point and bears several large and small hairs. The cauda tapers to a point and bears 2 lateral hairs on each side and usually 1 dorsal hair.

Described from 23 individuals.

APTEROUS VIVIPAROUS FEMALE. (Plate II, Figs. 16, 17, 18, 19, and 20.) *Color.*—Coloration the same as in the alate, except lighter. *Measurements.*—Vertex to end of anal plate 1.40 (1.19-1.61). Head width across the eyes .37 (.35-.39). Antennal III, .46 (.43-.50); IV, .32 (.28-.38); V, .30 (.28-.31); VI, .12 plus .52 (.47-.56). Cornicle length .37 (.35-.39), width .056. Length of cauda .15 (.14-.18). *Structural characters.*—Dorsum of head covered with short curved rows of minute punctures. Antennal tubercles large and protruding strongly inward and roughened with numerous small tubercles. On the posterior ventral part of head there are two large thumb-like tubercles between rostrum and lateral margins that point backward; these are more prominent than in the alate. All antennal segments are imbricated, segment I has the inner apical part gibbous and roughened similar to antennal tubercles. Antennal segments III and IV without sensoria and only the primary ones on V and VI. All segments with minute spines. Beak is fairly long and almost parallel sided and reaches the third coxae. The skin of the abdomen is reticulated and bears many very short inconspicuous hairs. The cauda tapers gradually to a point and bears two or three hairs on each side. Cornicles same as in alate.

Described from 17 individuals.

TYPES: All specimens of this species were collected by the writer in Pennsylvania on *Collinsonia canadensis*. *Holotype*—alate viviparous female and *Morphotype*—apterous viviparous female on same slide (plus 1 paratype apterous viviparous female), State College (Greenwood Furnace), August 26, 1946. *Paratypes*—9 slides with same data as on holotype slide.

The holotype and morphotype specimens deposited in U. S. National Museum (Cat. No. 59416), the remaining paratype material in the collections of the writer and of A. N. Tissot.

TYPE LOCALITY: State College, Pennsylvania.

HOST: *Collinsonia canadensis*.

TAXONOMY: The aphid most similar to this species in *Micromyzus formosana* (Takah.) commonly called the "onion aphid". The following characters will help to distinguish these two species. The alate viviparous female of *collinsoniae* has a larger number of sensoria on antennal segments III, IV, and V than are found in *formosana*. The radial sector of the fore wing does not curve down as deeply and the veins are not as heavily bordered in *collinsoniae* as in *formosana*. The antennal tubercles and segment I of antennae in both alate and apterous forms of *collinsoniae* are more gibbous and imbricated than in *formosana*. These characters along with the different host plants distinguish *collinsoniae* from *formosana*.

Aphis hamamelidis new species

ALATE VIVIPAROUS FEMALE. (Plate II, Figs. 21, 22, 23, and 24.) *Color.*—General body color of living specimens salmon, covered with white pulverulence. Cleared specimens—head and thorax dark brown. Antennal I and II brown; extreme base of III light, remainder of III and remaining segments light brown. Abdomen with four interrupted black crossbands and a black patch between cornicles and cauda; four lateral dark spots on each side and dark areas around cornicle bases. Femora with extreme bases light brown shading to dark brown apically; tibiae light brown with apex darker; tarsi brown. Cornicles dark brown; cauda brown. Wings hyaline with stigma and all veins dark; in some specimens the veins appear to be bordered with smoky shading. *Measurements.*—Vertex to end of anal plate 1.95 (1.71-2.13). Head width across eyes .469 (.462-.490). Antennal III, .378 (.350-.406); IV, .351 (.322-.378); V, .319 (.294-.350); VI, .136 (.126-.140) plus .301 (.252-.336). Cornicle length .193 (.182-.196), width .048. Cauda length .144. *Structural characters.*—Round sensoria on antennal III arranged almost in a straight row and numbering 6 (5-7); 0 on IV; primary ones on V and VI. Antennal segments strongly imbricated except I and II. Cornicles imbricated. Each lateral margin of abdomen bears 4 prominent tubercles anterior to the cornicles and I posterior; some individuals with 2 additional tubercles located just anterior and

just posterior to the cornicle. Cauda with 5 to 8 hairs on each side. Rostrum acute and reaching almost to the middle coxae. Body hairs, .028 long; antennal hairs reclinate, .014 long; hairs on tibiae .020.

Described from 88 specimens.

APTEROUS VIVIPAROUS FEMALE. (Plate II, Figs. 25, 26, and 27.) *Color.*—Same as the alate except in general a little lighter and without dark cross bands or markings on the abdomen. *Measurements.*—Vertex to end of anal plate 1.88 (1.75-2.06). Head width across eyes .460 (.448-.504). Antennal III, .345 (.322-.378); IV, .304 (.266-.350); V, .292 (.266-.350); VI, .137 (.126-.140) plus .281 (.266-.322). Cornicle length .218 (.182-.224), width .065. Cauda length .176 (.154-.185). *Structural characters.*—Antennal segments III and IV without sensoria; primary ones on V and VI. Rostrum reaching third coxae. Body skin reticulated. Other features as in alate.

Described from 60 specimens.

TYPES: All specimens of this species were collected by the writer in Pennsylvania on *Hamamelis virginiana. Holotype*—alate viviparous female and Morphotype apterous viviparous female on same slide (plus 1 alate paratype and 1 pupa), State College, (Camp 62), June 9, 1946. *Paratypes*—6 slides, State College, (Camp 62), June 9, 1946; 10 slides same locality, June 14, 1942; 5 slides, State College, (Greenwood Furnace), June 15, 1947; 3 slides, State College, (Poe Paddy Park), June 22, 1947; 8 slides, Quarryville, (305-44), June 16, 1944; 1 slide Clarks Valley, August 11, 1931; 7 slides, Philipsburg (Black Moshannon Dam), July 7, 1946.

The holotype, morphotype and a number of paratype specimens, deposited in the U. S. National Museum (Cat. No. 59418); the remaining paratype material in the collections of the writer and of A. N. Tissot.

TYPE LOCALITY.—State College, Pennsylvania.

HOST.—*Hamamelis virginiana* L.

TAXONOMY AND NOTES.—This species has some characters that might place it in any of the following three genera—*Aphis, Anuraphis* and *Brevicoryne.* The writer feels that it comes nearest to *Aphis.* It feeds on the water-sprout growth and tender growing terminals. Only two other aphids, *Hamamelistes spinosus* Shimer, and *Hormaphis hamamelidis* Fitch, are known to feed on Witch Hazel, *Hamamelis virginiana* L.