

TWO NEW SPECIES OF *CINARA*  
(HOMOPTERA: APHIDIDAE) ASSOCIATED WITH  
PINE RUST LESIONS<sup>1</sup>

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Certain pine-feeding species of *Cinara* Curtis some times are found in both active and dormant lesions or cankers of the rust, *Cronartium fusiforme* Hedge. and Hunt, on trunks or branches of pine trees. These lesions apparently provide the normal feeding sites of one of the species described here. Conditions under which it was collected, indicate a probable association between the second species described and the rust lesions.

*CINARA CRONARTII* new species

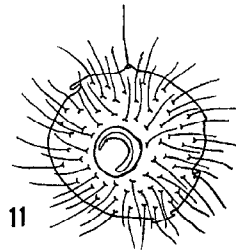
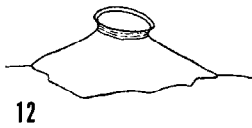
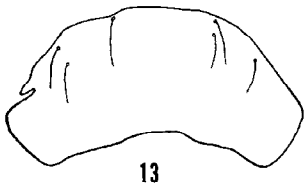
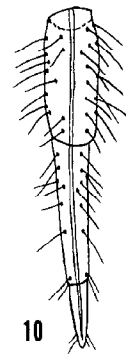
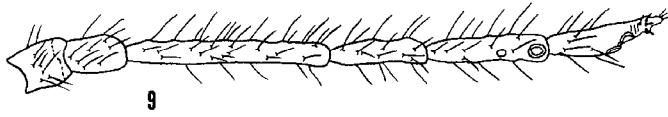
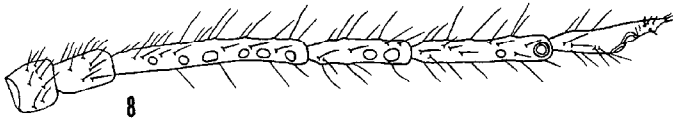
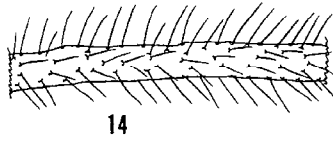
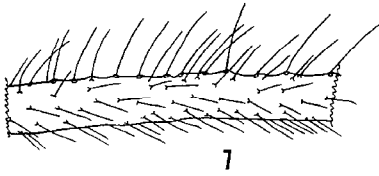
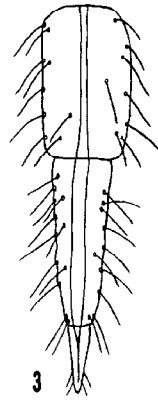
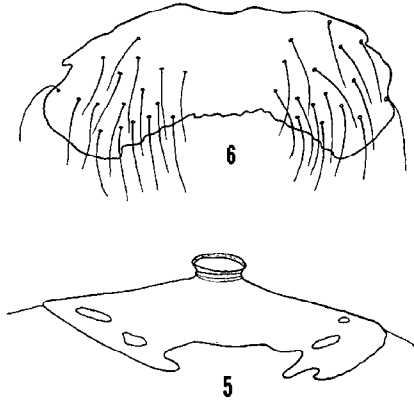
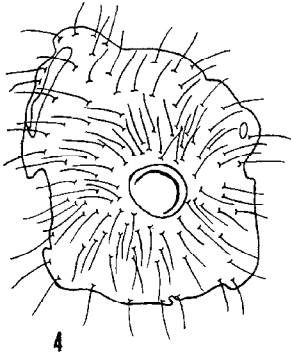
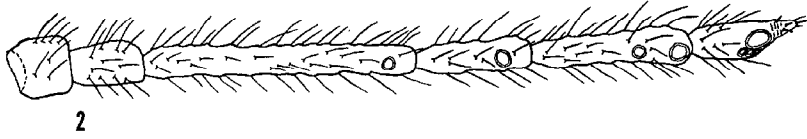
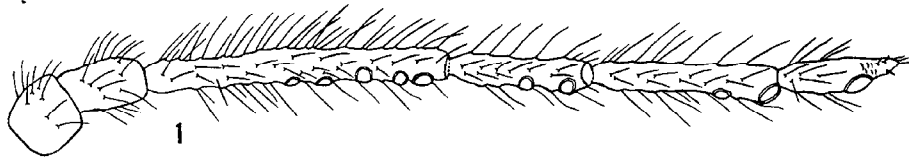
DIAGNOSIS: Structurally and biologically this species resembles *Cinara newelli* Tissot and *C. westi* n. sp. described below. In these species rostral segment IV is long and narrow, and all three have numerous setae on the dorsum of the abdomen and on the cornicle bases (Fig. 4, 11). Though lesions of the pine rust appear to be their normal habitat, these aphids may be taken in other situations. The Florida carpenter ant, *Camponotus abdominalis floridanus* (Buckley), usually attends colonies or groups of these species.

In life, both alates and apterae of *C. cronartii* are dark brown with generally dark appendages. *C. newelli* alates vary from light yellowish-brown to dark brown and the apterae may be yellowish, light brown, or even orange, with a light pruinose coating over the body. In cleared specimens both alates and apterae of *cronartii* have numerous pigmented areas around some of the abdominal setae, and the apterae especially have a mottled appearance. *C. newelli* lacks these pigmentations. *C. cronartii* has longer appendages than *newelli*: for example antennal III is 0.36-0.53<sup>2</sup> instead of 0.24-0.31; the hind femur is 0.93-1.38 instead of 0.78-0.95; and the hind tibia is 1.59-2.34 instead of 1.20-1.60. *C. cronartii* has more sensoria on antennal segment III of the alate than *newelli*, 3-7 instead of 1-2; and fewer setae on the base of antennal VI, 11-5 instead of 16-23.

*C. cronartii* is a larger aphid with correspondingly larger body structures than *C. westi*. The following features serve to separate these two species: body length 2.59-4.18 instead of 2.00-2.74; length of rostrum (Fig. 15), 1.68-2.22 instead of 1.30-1.53; antennal III, 0.36-0.53 instead of 0.29-0.32; hind femur, 0.93-1.38 instead of 0.69-0.81; hind tibia, 1.59-2.34 instead of 1.09-1.31. The most striking difference is in the genital plate, *cronartii* having about 30 setae on it and *westi* only 2-6 setae.

<sup>1</sup> Florida Agricultural Experiment Stations Journal Series, No. 2417.

<sup>2</sup> All measurements in this paper are millimeters. The first two numbers show the range in size and the numbers in parentheses are averages of the specimens measured.



## ALATE VIVIPAROUS FEMALE (Fig. 1, 7)

*Color:* General body color dark brown. Head and eyes black. First two antennal segments concolorous with the head; segments III to V light basally and shading to dark brown at apices; VI dark brown. Prothorax dark brown on dorsum with anterior and posterior margins lighter. Dorsal lobes of meso- and metathorax very dark brown to black. Wings dusky with the costal border and stigma of the fore wing black. Abdomen brown, lighter than the thorax. Cornicles, cauda, and anal plate black. White pulverulence between the lobes of the thorax, in segmentally arranged spots on the dorsum of the abdomen, on the sides of the abdomen, and on a large area behind each cornicle. Ventral surface of all body regions with a light pruinose covering.

*Cleared specimens:* Head medium brown with darker shading on the front margin and around the eyes. First two antennal segments concolorous with head; segments III to V pale brown at bases and shading to medium or dark brown apices; VI medium to dark brown. First rostral segment and base of second pale, apical one-fifth of second and all remaining segments medium to dark brown. Much of the second segment marked by large brown spots. Thorax generally about same color as head but dorsal lobes and lateral margins of mesothorax sometimes darker. Wings hyaline with costal borders of both pairs and the stigma of fore wing medium to dark brown. Fore legs medium to dark brown, usually with a short, slightly lighter area on basal part of tibia. Middle and hind legs similar to fore legs, except the light areas on tibia longer and more distinct. Extreme base of femora of all legs usually pale. Abdomen light tan or cream, with light to medium brown markings. Muscle attachment plates on the dorsum, stigmal plates, and sclerotized spots around some abdominal setae light brown; these spots especially prominent on the seventh segment. Cornicles, sclerotized areas on the eighth tergite, and genital plate darker brown. Margins of the cauda and anal plate nearly as dark as the head.

*Measurements:* (20 specimens) Body length 2.59-3.80 (3.02). Head width across the eyes 0.62-0.75 (0.69). Rostral length (Fig. 15) 1.68-2.14 (1.88); rostral segments: IV, 0.21-0.30 (0.24); V, 0.09-0.12 (0.10). Antennal segments: III, 0.36-0.53 (0.43); IV, 0.12-0.22 (0.17); V, 0.18-0.29 (0.23); VI, 0.13-0.18 (0.15); unguis, 0.027-0.050 (0.035). Hind femur 0.93-1.38 (1.11). Hind tibia 1.59-2.34 (1.90). Hind tarsal segments: I, 0.09-0.12 (0.10); II, 0.20-0.26 (0.23). Width of cornicle base 0.31-0.41 (0.36). Length of setae: on head, 0.055-0.081 (0.069); on antennal III, 0.065-0.119 (0.086); on hind tibia, 0.098-0.140 (0.120); on dorsum of abdomen, 0.054-0.120 (0.086); on cauda, 0.100-0.162 (0.133).

*Other morphological features:* Head well rounded above with a prom-

Fig. 1-7. *Cinara cronartii*: 1—antenna, 7—middle portion of hind tibia, alate viviparous female; 2—antenna, 3—rostral segments III-V, 4, 5—cornicle, 6—genital plate, apterous viviparous female.

Fig. 8-15. *Cinara westi*: 8—antenna, 14—middle portion of hind tibia, alate viviparous female; 9—antenna, 10—rostral segments III-V, 11, 12—cornicle, 13—genital plate, 15—rostrum, apterous viviparous female. Drawings by J. O. P.

inent median suture. Eyes with well developed ocular tubercles; ocelli large and strongly tuberculate. Setae on head fine and rather numerous, spaced less than their length apart. Antennae short, reaching nearly to base of the abdomen. Setae numerous on the two basal antennal segments (Fig. 1). Segments III to V uneven in profile with the sensoria irregularly spaced and rather strongly tuberculate. Segment III with 3-7 sensoria, IV with 1 or 2, V with 1 secondary sensorium in addition to the primary one. Base of VI with 11-15 setae; unguis short, conical, and rugose. Rostral segments IV and V long and slender. Rostral segment IV with 10-14 setae on each side of the groove in addition to the 6 apical ones; these setae scattered and extending around toward the ventral surface of the segment. Wings normal for the genus with the median vein faint and twice branched. Legs rather slender, the hind ones longer than the body; their setae slender and fine pointed. Setae on the outer side of the hind tibia longer than the diameter of the segment (Fig. 7). First segment of all tarsi bearing one sensory peg. Muscle attachment plates on dorsum of abdomen rather small and varying in shape from circular, to oval, to comma-shaped. Setae on abdomen shorter and finer than in the aptera. Shape of the cornicle and number and arrangement of the setae as in the aptera (Fig. 4, 5). A faint reticulated pattern on the abdomen scarcely visible except around the cornicles. Sclerotized portion of eighth abdominal tergite sometimes in a continuous band but usually in two separate but narrowly connected areas. These sclerotized areas faintly and finely spiculate, the cauda and anal plate strongly so.

APTEROUS VIVIPAROUS FEMALE (Fig. 2, 3, 4, 5, 6)

*Color:* General body color dark brown. Head brownish-black, eyes black. Thorax and abdomen somewhat lighter than head; mesothorax with darker mottling on the dorsum; metathorax and first abdominal segment each with two large dark pigmented areas on the dorsum. Legs dark brown to black, tibiae with somewhat lighter areas near their bases. Cornicle bases black, with uneven margins.

*Cleared specimens:* Head, pro- and mesothorax brown, with darker shading on the front margin of the head, around the eyes, and on the sides of the mesothorax; the last also with distinct mottling dorsally. Metathorax and abdomen with light tan or cream background ornamented with dark pigmentation. Metathorax and first abdominal segment each with a pair of large pigmented areas on the dorsum; these areas always with very irregular margins and sometimes showing a broken mottled pattern similar to that on the mesothorax. Abdominal segments two to six usually with transverse groups of pigmented spots around some dorsal setae. Similar but more prominent markings on the seventh segment sometimes fused into two large patches with irregular margins. Muscle attachment plates, spiracular plates, cornicles, a transverse band on eighth segment, and genital plate medium brown; cauda and anal plate darker brown. First antennal segment concolorous with the head, second somewhat lighter. Segments III to V light yellowish-brown with medium brown apices; VI medium brown. Rostrum with segment I and base of II yellowish; apical part of II and remaining segments medium brown. Segment II with large pigmented spots along much of its length. Fore legs medium to dark brown with a slightly lighter area near base of tibia; middle and hind legs

similar to fore legs but with larger and more pronounced light area on tibiae and at bases of the femora.

*Measurements:* (20 specimens) Body length 2.96-4.18 (3.51). Head width across the eyes 0.67-0.79 (0.73). Rostral length 1.68-2.22 (1.94). Rostral segments: IV, 0.24-0.29 (0.26); V, 0.08-0.11 (0.10). Antennal segments: III, 0.38-0.51 (0.44); IV, 0.12-0.21 (0.16); V, 0.18-0.27 (0.22); VI, 0.13-0.17 (0.15); unguis, 0.030-0.040 (0.034). Hind femur 0.91-1.30 (1.09). Hind tibia 1.53-2.11 (1.81). Hind tarsal segments: I, 0.08-0.13 (0.11); II, 0.21-0.24 (0.22). Width of cornicle base 0.36-0.51 (0.43). Length of setae: on head, 0.065-0.109 (0.088); on antennal III, 0.060-0.113 (0.085); on hind tibia, 0.080-0.120 (0.104); on dorsum of abdomen, 0.065-0.110 (0.085); on cauda 0.120-0.162 (0.144).

*Other morphological features:* Antennal sensoria few in number. Segment III always with one sensorium near the apex, its diameter one-third to one-half that of the segment; some individuals with another smaller sensorium near the apical one. Segment IV with a single sensorium near its apex. Primary sensorium on segment V at the very apex, the single secondary sensorium about its own diameter from the primary one. Primary sensoria on V and VI of about equal size; the 5-6 secondary sensoria on VI in an irregular row. Base of VI with 12-15 setae; unguis conical with its basal diameter almost equal to its length. Rostral segment IV with 9-12 setae on each side in addition to the six apical ones (Fig. 3); about half of the setae in rows on each side of the groove, the rest scattered over the sides of the segment. Mesosternal tubercle large and moderately convex, with fine longitudinal rugae and 6-12 rather long setae. Surface of thorax and abdomen showing a fine reticulate pattern in well cleared individuals. Sclerotized portion of eighth abdominal tergite sometimes a continuous band but usually in two separate areas connected by narrow strips. The 18-24 setae on the sclerotized area arranged in an irregular row along the posterior margin. Genital plate (Fig. 6) with about 30 setae, located mostly on the lateral areas. Cornicle (Fig. 5) rather low with gently sloping unevenly margined base and a narrow rim around the opening. Setae shorter, finer, and more numerous on the upper portion of the basal cone than around the margin. A single sensory peg on the first segment of all tarsi.

*NOTES:* From December 1962 until early 1966 it was believed that *Cinara cronartii* occurred only in or near lesions of the fusiform rust on trunks and branches of pine trees. In 1962, Edward P. Merkel of the Naval Stores and Timber Products Laboratory at Olustee, Florida sent specimens of this aphid to A. N. Tissot. The aphids were found in cages containing fungus galls being used in the study of other insects. Acting on this clue, Tissot found the aphid in fungus galls on pines at Gainesville. Later, R. C. Wilkinson, W. J. Coleman, and the authors made additional collections of it at several other locations in Florida.

In March 1966, while preparing to describe some new species of *Cinara*, the authors studied specimens of an aphid taken near Ocala, Florida, 6 Aug. 1955, in large exposed colonies on branches of *Pinus clausa* (Chapm.) Vasey. At the time of collection this aphid was believed to be different from any known species of *Cinara* but it was not described then. Surprisingly, it was found that mounted specimens of the Ocala aphid were very similar to those of *C. cronartii*. Furthermore, color

notes of the two forms made from living specimens were almost identical. Careful measurements of several alates and apterae showed that the average size of the Ocala aphid was appreciably smaller than the one found in rust lesions though there was some overlap in the size of many body structures. In view of the totally different feeding sites it seemed possible that two distinct aphid species were involved in spite of their similarity. It was decided that transfer tests could be helpful. On 18 March 1966, a few dozen aphids of various sizes were collected from old canker areas on the lower trunks of *Pinus taeda* L. near Gainesville. These aphids were separated into three lots of comparable size. Two of the lots were caged in muslin sleeves on 1-inch diameter branches of *P. clausa* and the third was caged on a similar branch of *P. serotina* Mich. A few days later an examination of the cages showed that many aphids of the three groups were feeding normally and it seemed probable that the transfers would be successful. On 21 April the two caged colonies on *P. clausa* still were thriving and in addition there was a well established colony on the branch a short distance from one of the cages. This colony undoubtedly developed from a few aphids known to have escaped from the cage during a previous inspection. These findings give sufficient proof that the aphid found on *P. clausa* at Ocala is identical with the one that lives in rust lesions on other species of pine. Though these lesions provide the normal feeding sites for the species it obviously can live fully exposed in some cases.

Nearly always the aphid groups or colonies are associated with ants, usually *Camponotus abdominalis floridanus* (Buckley). Often the ants have their nest underground at the base of the tree on which the aphids are found. This ant is a nocturnal species and presumably actively attends the aphids only at night unless the aphids chance to be located below ground or are protected by accumulations of pine needles or other debris. Other ants associated with *C. cronartii* include *Crematogaster* sp. and *Aphenogaster* sp. The aphid is relatively free from attack by the usual aphid predators but it often is heavily parasitized in spite of the secluded habitat. The braconid *Aphidius (Protoaphidius) bicolor* Ashmead has been reared from it.

The aphids remain in the rust lesions throughout the year. They feed principally on the newer callus tissue of the gall but seem able to obtain nourishment from relatively hard wood or bark. In spring when the rust is sporulating, the aphids may be found among the loose spores beneath the crusty surface of the galls. The colonies seldom are exposed to view and one must remove flakes of bark or other covering before they can be seen. Because of the hidden situations in which this aphid generally lives, a special technique is required for collecting it. The uninitiated collector is not likely to find it at all.

**TYPES:** Holotype and morphotype (each with a paratype on the slide), collection F-62-58, and other paratypes, in U. S. National Museum; paratypes in the collections of the University of Florida Entomology Department, of the Florida Arthropod Collection, of Pennsylvania State University, of the authors, and in various other public and private aphid collections.

**TYPE LOCALITY:** Columbia County, Florida.

**COLLECTIONS:** In or near lesions of the rust, *Cronartium fusiforme*

Hedge. and Hunt, on trunks or branches of pines: On slash pine, *Pinus elliotii* Englem. Columbia County, Fla. Dec. 1962 (F-62-58\*<sup>3</sup> Paul Mikell), 51 slides, holotype, morphotype and paratypes. Gainesville, Fla. 2-26-1964 (F-64-8 ANT), 4 slides. Taylor, Fla. 3-13-1964 (F-64-14\*, F-64-15\* ANT), 27 slides; 6-17-1964 (F-64-53 R. C. Wilkinson and W. J. Coleman), 3 slides. On loblolly pine, *P. taeda* L.—Gainesville, Agr. Exp. Sta. Farm 4-3-1963 (F-63-32\* ANT), 8 slides, 4-5-1963 (F-63-34\* ANT), 28 slides, 4-10-1963 (F-63-40 ANT), 5 slides, 11-21-1963 (F-63-76\* ANT), 2 slides, 3-9-1964 (F-64-11 ANT), 1 slide; Horticulture Research Unit, 4-5-1963 (F-63-33\* ANT), 10 slides, 3-24-1964 (JOP & ANT), 4 slides; N. W. 15th Ave., 3-11-1964 (F-64-13\* ANT), 6 slides; S. E. 16th Ave., 3-23-1965 (F-65-5\* JOP & ANT), 4 slides, 3-29-1965 (F-65-527\*, F-65-528\* ANT & JOP), 15 slides, 3-29-1965 (F-65-13\*, F-65-14\*, F-65-15\* JOP & ANT), 17 slides, 3-15-1966 (F-66-2\*, F-66-502\*, JOP & ANT), 26 slides; N. W. 39th Ave., 3-25-1966 (F-66-3\*, F-66-507a JOP & ANT), 17 slides; near the Municipal Airport, 4-1-1966 (F-66-513 ANT & JOP), 3 slides. Lee, Fla., 4-6-1966 (F-66-515 RCW), 4 slides. On branches of sand pine, *P. clausa* (Chapm.) Vasey—St. Augustine, Fla. 4-11-1945 (F-2458-45 ANT), 1 slide (one specimen in a collection of *C. carolina* Tis.). Ocala, Fla. 8-6-1955 (F-3765-55\* ANT), 68 slides. Gainesville, Fla. 3-29-1966 (F-66-512 ANT & JOP), 2 slides. Beating *P. clausa*—Salt Springs, Ocala National Forest, Fla. 3-26-1965 (F-65-523c ANT & JOP), 1 slide. The known range of this aphid was extended greatly when G. F. Fedde made two collections of it in South Carolina. Collection data are: Clemson, S. C., Ginning Mill Plantation, 5-23-1966 (S C-66-3), in old rust lesions on *Pinus taeda*, 6 slides with mature apterae and late instar nymphs; Fox Plantation, 6-14-1966 (GFF 82-66), in old lesions of *Cronartium fusiforme* on 3-foot-high tree of *P. taeda*, 5 slides with alate and apterous viviparae and alatoid nymphs. A slide in the U. S. National Museum bears the following data: "University, Va. Let. Feb. 11, 1932, on pine needles, by R. S. Maddox". We have not been able to determine whether this locality is correct.

#### CINARA WESTI new species

DIAGNOSIS: *C. westi* resembles *C. cronartii* n. sp., *C. newelli* Tissot, and *C. taedae* Tissot in some respects but it can readily be separated from each of them. The most conspicuous difference is in the setae of the genital plate. *C. westi* has only 2-6 setae on this structure, while the other species have 28-50. The setae on segment IV of the rostrum also help to separate the species, as *C. westi* has 4-7 setae on each side of the groove, *C. cronartii* 9-15, *C. newelli*, 12-17, and *C. taedae*, 2-3. Finally, *C. westi* has two sensory pegs on the first segment of all tarsi while the other species have only one peg. *C. westi* appears to be similar to *C. rigidae* Hottes but limited material of the latter and the condition of the specimens make a dependable comparison impossible. The single individuals of alate and apterous viviparous females of *rigidae* each have three sensory pegs on the first segment of the tarsi and *C. westi* always has two pegs. More extensive collecting may prove that the two aphids are identical but the available evidence indicates that they are different species.

<sup>3</sup> Paratype specimens were selected from the collections indicated by an asterisk (\*).

## ALATE VIVIPAROUS FEMALE (Fig. 8, 14)

*Color:* Detailed color notes of living aphids are not available but the general color is brown.

*Cleared specimens:* Head dark brown with still darker shading around the ocelli; the median suture black. First two antennal segments somewhat lighter than head. Segments III-VI pale at base and shading to medium brown on their apical portions. Rostral segment I pale; segment II pale at base and light brown on apical one-third, a few brown spots in the middle region. Segments III-V progressively darker than the apex of II. Thorax dark brown, the dorsal lobes concolorous with the head. Wings dusky, their costal margins and the stigma light brown. All femora medium to dark brown, the hind pair pale at extreme base. Bases and apices of tibiae nearly as dark as the femora, with slightly lighter areas on their basal halves. These light areas longer and more pronounced on middle and hind pairs than on the fore tibiae. All tarsi medium brown. Abdomen light tan with darker markings. Stigmal plates, cornicles, and genital plate light brown; cauda and anal plate medium brown.

*Measurements:* (10 specimens) Body length 2.00-2.37 (2.20). Head width across the eyes 0.56-0.62 (0.59). Rostral length (Fig. 15) 1.30-1.48 (1.40). Rostral segments: IV, 0.19-0.22 (0.20); V, 0.090-0.114 (0.099). Antennal segments: III, 0.28-0.32 (0.30); IV, 0.12-0.15 (0.14); V, 0.19-0.22 (0.21); VI, 0.16-0.19 (0.17); unguis, 0.032-0.055 (0.047). Hind femur 0.69-0.78 (0.72). Hind tibia 1.17-1.31 (1.21). Hind tarsal segments: I, 0.080-0.100 (0.093); II, 0.19-0.22 (0.20). Width of cornicle base 0.19-0.24 (0.21). Length of setae: on head, 0.055-0.70 (0.062); on antennal III, 0.060-0.081 (0.070); on hind tibia, 0.070-0.110 (0.088); on dorsum of abdomen, 0.060-0.076 (0.068); on the cauda, 0.090-0.140 (0.123).

*Other morphological features:* Head rounded above, the front margin curved, but sometimes when viewed from above, the front appears angular with nearly straight sides; median suture narrow but distinct. Eyes large with well developed ocular tubercles, ocelli strongly tuberculate. Setae on the head fine and fairly numerous, their lengths about equal to distances between their bases. Antennae shorter than head and thorax combined. The 3-6 sensoria on segment III variable in size, unevenly spaced in an irregular row generally extending over the apical two-thirds of the segment. Segment IV with 1-2 sensoria on its apical half, V with 1 secondary sensorium in addition to the apical primary one. Primary sensoria on segments V and VI with definite rims. Antennal segments I and II with numerous fine setae (Fig. 8). Setae on segment III more numerous on anterior side than on posterior, the longest setae about 1½ times as long as diameter of the segment. Base of segment VI with 10-13 setae, the unguis with 3-4 subapical setae and 3 terminal ones; unguis about twice as long as its basal width. Rostral segments IV and V (Fig. 10) long and narrow. Segment IV with 4-7 setae each side of the groove in addition to the 6 apical ones. Wings normal for the genus, the median vein once branched. Legs slender; in most individuals the hind tibiae strongly curved. Setae on hind tibia more erect on outer side than on inner, the longest setae about 1½ times the width of the tibia (Fig. 14). Two large sensory pegs near apex of lower surface of first segment of all tarsi. Setae on dorsal and ventral surfaces of abdomen about the same



length, slender and fine pointed. Cornicles rather small, with generally even margins. Setae on cornicles about the same length as those on abdomen, arranged more or less in circles over entire cornicle base. Two sclerotized patches on eighth abdominal tergite. The 14-22 setae on this tergite arranged in irregular rows, usually along posterior margins of sclerotized areas, a few setae sometimes outside these areas. Genital plate (Fig. 13) with only 2-6 setae, generally located near the anterior margin of the plate. Surfaces of cauda, anal plate, and genital plate faintly and finely spiculose.

APTEROUS VIVIPAROUS FEMALE (Fig. 9, 10, 11, 12, 13, 15)

*Color:* The general color of living aphids is brown.

*Cleared specimens:* Head medium to dark brown, with darker shading on front margin and in region of the eyes. First two antennal segments medium brown, lighter than the head. Segments III-V pale at the base, shading to medium brown apically; extreme apex of III sometimes pale. Segment VI medium brown. Rostral segment I and basal half of II pale; apical one-fourth of II medium brown its midregion mottled with brown. Segment III medium brown, IV and V dark brown. Thorax and abdomen light tan with brown markings. Pro- and mesothorax with light brown shading on parts of the dorsum and on their sides. Femora of all legs medium to dark brown, except their extreme bases which are pale. Bases of tibia and their apical halves concolorous with the femora, with lighter areas on their basal halves. These light areas longer and more pronounced on middle and hind pairs than on fore legs. Muscle attachment plates, stigmal plates, cornicles, and genital plate vary from light to medium brown in different individuals. Cauda, anal plate, and sclerotized areas on eighth tergite generally darker brown than the above structures.

*Measurements:* (10 specimens) Body length 2.15-2.74 (2.49). Head width across the eyes 0.61-0.66 (0.64). Rostral length (Fig. 15) 1.41-1.53 (1.46). Rostral segments: IV, 0.21-0.23 (0.22); V, 0.092-0.103 (0.098). Antennal segments: III, 0.27-0.32 (0.30); IV, 0.13-0.16 (0.14); V, 0.19-0.23 (0.21); VI, 0.17-0.19 (0.18); unguis, 0.043-0.050 (0.046). Hind femur 0.69-0.81 (0.74). Hind tibia 1.09-1.27 (1.18). Hind tarsal segments: I, 0.098-0.108 (0.102); II, 0.19-0.23 (0.21). Width of cornicle base 0.24-0.28 (0.26). Length of setae: on head, 0.060-0.103 (0.078); on antennal III, 0.076-0.092 (0.081); on hind tibia, 0.070-0.100 (0.087); on dorsum of abdomen, 0.060-0.091 (0.078); on cauda, 0.080-0.140 (0.120).

*Other morphological features:* Antennal sensoria unusually few in this form. In 10 specimens studied, segment III always devoid of sensoria; only a single individual with a small sensorium on IV of one antenna. Primary sensorium of V at very apex of the segment, the single secondary sensorium about twice its diameter from the primary one. Primary sensoria on V and VI are of the rimmed type. The 4-6 secondary sensoria on VI irregularly placed, variable in size. Base of VI with 8-12 setae; unguis with 4 subapical setae and 3 terminal ones, its length about twice its basal diameter. Rostral segment IV (Fig. 10) with 4-7 setae in an irregular row on each side of the groove on basal three-fourths of the segment. Mesosternum flat with no sign of a tubercle. Two well developed sensory pegs near apex of the first segment of all tarsi. Eighth abdominal tergite with two irregular-margined, widely separated, sclero-

tized areas. The 14-22 setae on this tergite mostly on posterior portions of the sclerotized areas, though a few often are outside these areas. Cornicles and their setae (Fig. 11, 12) similar to those of the alate but the basal margin more irregular. Genital plate (Fig. 13) with only 2-6 setae, as in the alate.

NOTES: *Cinara westi* has been taken in three somewhat different situations. In one case a large colony was found in southeast Gainesville beneath ant sheds on small branches of a tree, near the ground. Canker lesions of the rust, *Cronartium fusiforme*, were noted on larger branches elsewhere on the tree. On a nearby tree, another smaller colony was found under an ant shed on an active (sporulating) rust canker on a 1-inch diameter branch. Both ant sheds were constructed by a species of *Crematogaster*. Two individuals of this aphid were taken beneath the bark at the edge of a rust canker on a tree in the Forestry area of the Horticulture Research Unit of the University of Florida, about 12 miles northwest of the other location. All collections were from loblolly pine.

This species is named in honor of the late Erdman West who for many years was Botanist and Mycologist of the Florida Agricultural Experiment Station of the University of Florida. During that time Mr. West identified a great many aphid host plants for the authors.

TYPES: Holotype, morphotype (with an alate paratype on the slide), and paratypes, collection F-65-518, in U. S. National Museum. Paratypes in the collections of the University of Florida Entomology Department, of Florida Arthropod Collection, of Pennsylvania State University, and of the authors.

TYPE LOCALITY: Gainesville, Florida.

COLLECTIONS: Gainesville, Florida, S. E. 16th Avenue, 3-23-1965, beneath ant sheds on small branches near the ground (F-65-518\*\* ANT & JOP), 48 slides, holotype, morphotype and paratypes; Mar. 23, 1965 (F-65-9\* JOP & ANT), 24 slides. Under ant shed on rust lesion, 3-23-1965, (F-65-516\* ANT & JOP), 8 slides; Mar. 23, 1965\* (JOP & ANT), 8 slides. Forest Area, Horticulture Research Unit, University of Florida, under bark at edge of rust canker, Mar. 24, 1965 (JOP & ANT), 1 slide.

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Merkel = correct

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\* Paratype specimens were selected from the collections indicated by an asterisk (\*).