

APHID NOTES FROM CALIFORNIA

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The following paper reports several plant-lice not heretofore found in California, of which three species are new to science. A few sexual forms are also dealt with and illustrated.

Cerataphis lantanae Boisd.

Taken in the spring of 1912 on ferns in the greenhouses of Stanford University, Cal., by Mr. H. Morrison.

Phyllaphis coweni Gillette.

Syn. *Cryptosiphum tahoense* Davidson (Jour. Econ. Ent. Dec. 1911).

I have not seen the types of *Phyllaphis coweni* but after comparing Gillette's description of this aphid (Can. Ent. xxxvii p. 125, 1905) with my description and specimens of *C. tahoense* I conclude that there is but one species.

Calaphis betulaeaccolens Fitch (Fig. 1, 2).

Alate male. Pale yellowish-green. Head, prothorax, thoracic lobes and two spots at the base of the wings black. Antennae reaching beyond cauda, yellow, apices of joints 3-6 and the filament dusky. Length of the joints as follows,—3, 4, 5, filament, 6, 1, 2. Legs yellow, femoral apices brown, base and apex of tibiae and the tarsi dusky. Wings large, stigma light gray with a large paler central area. Basal third of stigmatic vein obsolete. Second fork of third discoidal slightly nearer to the first fork than to apex of wing. Subcosta and discoidals stout, dark brown. Abdomen narrower than thorax, shorter than the head and thorax combined, greenish-yellow, with a dorso-median black transverse bar on all the segments except the last. Cornicles pale, almost as broad as long, situated on segment 7. Pale lateral tubercles occur on segments 2-6. Last segment dusky grey. Beak very short, reaching first coxae, stout and pale, the tip black. Under side of the thorax grey. Sensoria as follows:—III, 18-24: IV, 0:V, 1:VI, 1.

Measurements: Body, length	2.05mm	Antennal joints	I	.110
" width	1.54mm		II	.078
Wing expanse	7.70mm		III	.906
Cornicles	.08mm		IV	.633
			V	.550
			VI	.216
			fil.	.462

Oviparous female. Pale yellowish-green, caudal half of abdomen with a reddish tinge. Antennae reaching to cornicles or beyond, black, joints 1, 2, basal half of both 3 and 4 paler. Eyes red. Legs pale, base of tibiae and tarsi black. Cornicles longer than broad, the mouth flaring. Dorsum of body sometimes with indefinite dusky markings. Abdomen oval, the last three segments forming a conical addition.

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Measurements; Body, length	3.13mm	Antennal joints	I	.142
" width	1.37mm		II	.076
Cornicles	.16mm		III	.682
			IV	.491
			V	.417
			VI	.191
			fil.	.433

The sexual forms occur in November on cultivated Birch. Locality, Oakland, Cal.

Calaphis castaneae Buckton (Figs. 3, 4).

Alate male. General color lemon. Eyes dark red. Antennae reaching beyond the tip of the abdomen, dusky, joint 3 the longest and three times as long as the filament. Sensoria distributed as follows;—joint 3, 20; joint 4, 7; joint 5, 8; joint 6, 3-4. Thoracic lobes and scutellum brownish. Wings of medium size, stigmatic vein deeply curved, second fork of third discoidal slightly nearer to the wing apex than to the first fork. Stigma light brown, central portion lighter. Legs pale; tarsi, tibial apices and base of hind tibiae dusky. Abdomen narrower than the thorax, tapering gradually caudad, each segment with a median oval dusky area and dusky lateral spots. Cornicles dusky, almost twice as long as broad. Cauda globular, dusky, shorter than the cornicles. Beak pale, tip black, reaching midway between first and second coxae.

Measurements; Body, length	1.33mm	Antennal joints	I	.064
" width	.50mm		II	.055
Wing expanse	4.87mm		III	.621
Cornicles	.06mm		IV	.413
			V	.285
			VI	.120
			fil.	.194

Oviparous female. General color pale lemon yellow. Eyes dark red. Antennae not quite reaching to cornicles, pale, with the articulations and filament dusky; joint 3 longest, twice as long as the filament or as joint 5. Body oval, tapering posteriorly to the cornicles, beset with many long delicate spines. Abdominal segments 1-8 each with two oval, transverse dusky areas on the dorsum. Cornicles pale, twice as long as broad. Cauda bluntly rounded, short. Legs pale, tarsi and tibial apices dusky.

Measurements; Body, length	2.11mm	Antennal joints	I	.071
" width	.95mm		II	.050
Cornicles	.12mm		III	.414
			IV	.247
			V	.190
			VI	.115
			fil.	.176

The sexual forms are found on Chestnut in early November. Locality, San José, Cal.

Euceraaphis betulae Kalt. (Fig. 5.)

Oviparous female. Slightly woolly, body spindle-shaped, broadest at the third abdominal segment. Head and dorsum of the prothorax greyish-brown. Eyes red. Antennae mostly dusky, reaching to the base of the cornicles, on small frontal tubercles, joint 3 the longest and in order after that 4, 5, 6, the filament, 1 and 2. Rest of thorax and abdomen greenish-yellow or yellowish-brown, meso- and meta-thorax and first five abdominal segments with lateral black spots and transverse rows of black or brown spots on the dorsum. Cornicles black, slightly longer than broad, their apices slightly enlarged. Cauda rounded, concolorous with the body, with a marginal fringe of hairs. Front of head bears four short hairs. Legs green with greyish tinge, tarsi and tibial apices black. Beak pale, reaching second coxae.

Measurements; Body, length	3.50 mm	Antennal joints	I	.171
" width	.1.21 mm		II	.101
Cornicles	.107mm		III	1.014
Cauda	.087mm		IV	.700
			V	.585
			VI	.208
			fil.	.188

Male. Not taken.

The sexual female is abundant on cultivated Birch in November. Locality, Oakland, Cal.

Eucерaphis flava sp. nov. (Figs. 6, 7).

Alate viviparous female. Pale yellow, covered with greyish-white woolly secretion. Antennae one-fifth longer than the body, mounted on frontal tubercles; joint 1 twice joint 2 in length and half as wide again; joint 3 much the longest, almost equaling 4 and 5 combined; joint 5 a little shorter than 4 and twice as long as 6; the filament four-sevenths as long as joint 6. First two joints encircled with a broken black ring at about half their lengths. Articulations of other joints black. Sensoria distributed as follows:—joint 3, 5-7, oval, transverse sensoria on its proximal fifth; joint 5, 1 apical sensorium; joint 6, 1 large apical sensorium and 3 smaller ones. Head and ocelli pale yellow. Eyes dark red. Prothorax pale with two parallel longitudinal dark stripes, one on either side of the dorso-median area. Thoracic lobes and scutellum pale brown, the latter with a black posterior border. Wings of medium size, stigma narrow, extended, pale grey; veins narrow, brown; sub-costa pale grey. Legs long, thin, pale yellow; tibiae dark brown at the base and apex; tarsi dark brown. Abdomen long and narrow, with three pairs of tubercles on its anterior half, one pair on each of the segments 2-4 inclusive. These tubercles are dark brown, wart-like, directed latero-caudad. Cornicles dark brown, as broad at the base as long, situated on a semicircular brownish area. Seventh segment with a pair of smaller dark lateral tubercles. Posterior margin of segment 8 with a brown cross-band. Cauda short, pale, globular. General color of the abdomen light yellow. Beak pale, tip brown, extending a little beyond the first coxae. Lower side of body pale yellow.

Measurements; Body, length	3.33mm	Antennal joints	I	.128
" width	1.18mm		II	.067
Wing expanse	8.64mm		III	1.436
Cornicles	.07mm		IV	.787
			V	.685
			VI	.358
			fil.	.206

Pupa of alate female. Pale yellow, with no woolly secretion. Antennal annulations and tarsi black. Rest of body pale yellow with the exception of abdominal black spots arranged as follows; two median dorsal and two lateral on segments 1-5 and 7, two median dorsal on segment 6 (on which occur the cornicles). These black spots are tuberculate and bear capitate hairs.

This species is not uncommon on the under side of the leaves of *Alnus rhombifolia* Nutt. I have never seen the apterous female nor the sexual forms. Habitat; Santa Clara Co., Cal. Spring and Summer. *Aphis cardui* L.

Colonies on the young growth of several thistles throughout summer. Habitat; San José, Cal.

Aphis atriplicis L. (Figs. 8, 9).

Apterous male. Head, thoracic lobes and scutellum black. Prothorax brown-Eyes dark red. Antennae black, reaching to the cornicles, third joint the longest-filament next, then fourth, fifth, sixth, first and second in order. Frontal tubercles small, black. Lateral tubercles absent. Legs brown, hind pair darker. Abdomen pale yellow, with 8 brown dorsal transverse bars, which are often broken up into spots. Cornicles short, black, incrassate, not half as long as the hind tarsi. Cauda black, tapering to a blunt apex, half as long again as the cornicles. Genital segment below cauda large, black, rounded. Coxae, under side of head and thorax and genital segment black. Rest of lower surface yellow. Beak transparent, its tip black, reaching second coxae. Sensoria on antennal III 18-21; IV 7-9; V 6-8; VI 3-5, small, placed irregularly on the much serrated antennae.

Measurements; Body, length	1.08mm	Antennal joints	I	.057
" width	.46mm		II	.050
Cornicles	.078mm		III	.300
Cauda	.086mm		IV	.151
			V	.185
			VI	.121
			fil.	.257

Oviparous female. Entirely pale greenish-yellow, with a thin white powdery covering. Eyes red. Antennae seven-jointed, about one-third the length of the body, pale greenish-yellow; the relative size of the joints as follows: joint III longest; the filament or seventh joint a little shorter with IV; V and VI sub-equal. Legs pale greenish-yellow, coxae brown. Cornicles pale brown, almost as long as the hind tarsi. Cauda shaped as in the male, pale brown, slightly exceeding the cornicles in length. Anal segment brown. Beak not quite reaching second coxae, its tip brown.

Measurements; Body, length	1.57mm	Antennal joints	I	.064
" width	.77mm		II	.043
Cornicles	1.07mm		III	.179
Cauda	1.30mm		IV	.086
			V	.093
			VI	.088
			fil.	.133

Apterous viviparous female. Pale green, slightly pulverulent. Body more than twice as long as wide. Antennae dusky, a little over one-third the body in length;

joint III the longest, filament next, then joint IV and V sub-equal, then VI, I and II. Legs entirely dusky brown. Cornicles green, slightly incrassate, small, barely exceeding the fore tarsi in length. Cauda slightly dusky, a little longer than the cornicles, widest at the base, tapering gently to a blunt apex. Eyes dark red. Beak dusky, very short, reaching midway between first and second coxae. Coxae very dark.

Measurements; Body, length	1.82mm	Antennal joints	I	.083
" width	.83mm		II	.057
Cornicles	.147mm		III	.302
Cauda	.226mm		IV	.131
			V	.127
			VI	.103
			fil.	.217

Occurs on the upper side of the leaves of *Chenopodium murale* L., the sexual forms appearing in August. Habitat; San José, Cal.

Aphis salicicola Thos.

Abundant on Willows throughout the summer. Preyed on by the larva of a *Leucopis* (Agromyzidae). Habitat; San José, Cal.

Aphis maidis Fitch.

Colonizing Corn (*Zea mays*). Habitat; San José, Cal.

Amphorophora latysiphon sp. nov. (Figs. 10-13.)

Alate viviparous female. General color dark olive green. Head, prothorax, thoracic lobes, scutellum, frontal tubercles, first two joints of the antennae, cornicles and cauda black. Legs yellowish-brown; distal half of the femora, distal third of the tibiae and the tarsi darker. Eyes dark crimson lake. Antennae on frontal tubercles, which bear hairs on their inner angles, half as long again as the body, armed with many hairs; third joint the longest, joints 4 and the filament sub-equal, joints 6 and 1 sub-equal, joint 5 a little shorter than joint 4. Sensoria distributed as follows;—joint 3, 13-17 on the exterior margin in an irregular row; joint 5, 1 apical; joint 6, 1 large and 3 small, all apical. General color of antennae yellowish-brown. Lateral tubercles small, bearing a hair. Wings of medium size, veins brown, stigma amber-colored, second fork of third discoidal close to the wing apex. Abdomen oval, yellowish-green or dark olive, with a large sub-quadrate black spot on the dorsum above the cornicles and a black cross-band on the segment below the cornicles and black lateral spots. Cornicles long, very much dilated for half their length. Cauda ensiform, about one-third the length of the cornicles. Under side of the body and beak olive green; tip of beak and sterna black. Beak reaches second coxae. Coxae dusky.

Measurements: Body, length	2.54mm	Antennal joints	I	.149
" width	1.17mm		II	.088
Wing expanse	8.75mm		III	.977
Cornicles	.67mm x .157mm		IV	.771
Cauda	.19mm		V	.554
			VI	.163
			fil.	.733

Apterous viviparous female. General color of the body light olive green. Eyes dark red. Antennal articulations, prothorax, cauda, and a large quadrate spot on the dorsum of the abdomen dusky to black. Cornicles black. Antennae on large

frontal tubercles, longer than the body with the relative size of the joints as in the winged form. Legs light olive, apical half of femora, tibial apices and tarsi dusky to black. Cornicles and cauda shaped as in the winged form. Beak pale, tip black, reaching to second coxae.

Measurements;—Body, length	2.57mm	Antennal joints	I	.190
“ width	1.44mm		II	.097
Cornicles	.73mm x .10mm		III	.887
Cauda	.18mm		IV	.681
			V	.504
			VI	.151
			fil.	.700

Occurs sparingly on the Periwinkle (*Vinca major*) and *Convolvulus arvensis*. Habitat; San José and Courtland, Cal.

Phorodon carduinum Walker.

On the under side of the leaves of Artichoke, becoming a pest. Very susceptible in California to fungus diseases. Kindly determined by Mr. J. T. Monell. Habitat; San José, Oakland and Courtland, Cal.

Myzus varians sp. nov. (Figs. 14–19.)

Pupa of alate female (viviparous), dark form. Pale yellow, prothorax, anterior half of the abdomen, 7th abdominal segment purplish-red. Head pale yellow; ocelli prominent, light red. Eyes dark red. Antennae on large frontal tubercles, reaching to the base of the cornicles, pale yellow; articulations of joints 3–6 and the filament black. Filament the longest joint, then 3, 5, 4, 6, 1, 2 in this order. Legs pale yellow, tarsi black. Sutures of thoracic lobes reddish, wing pads pale with dusky tips. Abdomen broadest at the fourth segment, then tapering abruptly to the cauda. Cornicles about as long as antennal joints 4 and 5 together, narrowing from the base and curved, pale with the tip black. Cauda almost colorless, conical, as long as the hind tarsi. Beak pale, tip black, reaching the second coxae. Under side of the abdomen and thorax more or less reddish.

Measurements;—Body, length	1.73mm
“ width	.72mm

Alate viviparous female, dark form. Pale greenish-blue, first three and last two abdominal segments tinged with crimson (fainter in some individuals). Rest of abdomen with a faint bluish tinge. Head and antennae black. Eyes dark red. Frontal tubercles prominent. Antennae exceeding the tip of the abdomen, base of third joint pale; relative sizes of the joints as in the pupa. Prothorax brownish-red. Thoracic lobes and scutellum deep brown. Wings large; sub-costa and insertions reddish-grey; stigma long, narrow, grey; veins narrow, grey, second fork of the cubitus or third discoidal slightly nearer to first fork than to the wing apex. Legs yellowish-red, apical half of femora, tarsi, and tibial apices black. Abdomen widest at segment three, with dusky transverse bands which sometimes coalesce to form a quadrilateral area on the dorsum, and with black lateral spots, and with a transverse dusky bar below the cornicles. Cornicles dusky, slightly curved, rather narrowed at the apex, not quite as long as antennal joint 3 and not quite reaching the tip of the cauda. Cauda black, conical, upturned, equalling the hind tarsi in length.

Under side of thorax black, of abdomen reddish. Beak pale, reaching midway between first and second coxae. Sensoria distributed as follows;—joint 3, 9–12 circular, in an irregular row; joint 5, 1 terminal; joint 6, 1 large and 3 small, terminal.

Measurements;—	Body, length,	2.28 mm	Antennal joints	I	.108
	“ width	1.05 mm		II	.078
	Wing expanse	7.16 mm		III	.550
	Cornicles	.407 mm		IV	.334
				V	.365
				VI	.132
				fil.	.682

Alate viviparous female (Light form). Pea green. Antennae on prominent frontal tubercles, longer than the body, black with joints 1 and 2 green and joints 4 and 5 light brown. Eyes dark red. Head and prothorax light brown, rest of the body green. Abdomen wider than the thorax, widest at the fourth segment. Wings large; stigma greyish-yellow, narrow and long; insertions and sub-costa greenish-yellow; second fork of third discoidal about midway between first fork and the wing apex. Legs green, knees, tarsi and tibial apices black; tibiae yellowish. Cornicles green, slightly curved, six times the hind tarsi in length, shaped as in the dark form. Cauda short, dusky, conical. Beak green, tip brown, not quite reaching second coxae. In the single specimen that I have there are 9 sensoria on joint 3 of the left antenna and 10 on joint 3 of the right antenna. Joint 5 has 1 terminal sensorium and joint 6, 4 terminal sensoria. The antennae of this form differ from those of the dark form by having joint 4 longer than 5.

Measurements;—	Body, length	2.30mm	Antennal joints	I	.114
	“ width	1.04mm		II	.080
	Wing expanse	7.13mm		III	.671
	Cornicles	.57mm		IV	.562
				V	.521
				VI	.153
				fil.	1.031

Apterous viviparous female. General color pea green. Filament and articulations of the antennal joints black. Mouth of the cornicles black. Eyes red. Tarsi grey. Antennae on very conspicuous toothed frontal tubercles, reaching to the base of the cornicles. Relative lengths of the antennal joints as in the green winged form. Legs slender, green; all tarsi grey. Cornicles green, curved, with tip black, five or six times the hind tarsi in length. Cauda green, conical, half as long again as the hind tarsi. Beak green, with a brown tip and extending to the second coxae.

Measurements;—	Body, length	1.96mm	Antennal joints	I	.124
	“ width	1.51mm		II	.052
	Cornicles	.44mm		III	.383
				IV	.350
				V	.297
				VI	.132
				fil.	.604

Occurs on the under side of the leaves of wild Clematis (*Clematis ligusticifolia* Nutt.). The alate green forms are very rare while the

dark forms apparently do not appear until November. No sexual forms were collected. Habitat; San José, Cal.

Amphorophora rubi Kalt.

Colonizes the terminal shoots of cultivated blackberry and loganberry and is also to be found on the wild thimble-berry (*Rubus nutkanus* Moc.). I am indebted to Mr. J. T. Monell for the determination of this species. Habitat; San José, Cal.

Macrosiphum chrysanthemi Oestl.

On the young shoots of a composite. Habitat; Courtland, Cal.
Macrosiphum granarium Kalt.

Occurs on various grasses in spring. Habitat; San José, Cal.
Macrosiphum solanifolii Ashm.

Occurs on wild lettuce. Habitat; San José, Cal. I am indebted to Miss E. Patch for the identification of this species.

Explanation of Plates 11, 12: 1, *Calaphis betulaecolens*, alate male; 2, *C. betulaecolens*, oviparous female; 3, *Calaphis castaneae*, alate male; 4, *C. castaneae*, oviparous female; 5, *Euceraphis betulae*, oviparous female; 6, *Euceraphis flava*, alate viviparous female; head and antenna; 7, *E. flava*, abdomen; 8, *Aphis atriplicis*, alate male; 9, antenna of same enlarged; 10, *Amphorophora latysiphon*, head; 11, antenna; 12, cornicle; 13, cauda; 14, *Myzus varians*, head of alate viviparous female, dark form; 15, antenna of same; 16, cornicle of same; 17, head of apterous viviparous female; 18, antenna of same; 19, cornicle of same. I am indebted for these figures to Miss E. Weber, formerly in the employ of the Bureau of Entomology.

Locust Leaf Miner (*Chalepus dorsalis* Thunb.). This common enemy of the black locust was excessively abundant on Long Island in 1911, the beetles, in association with the rosy hispa, *C. nervosa* Panz., skeletonizing the foliage of young locust trees over extended areas in the vicinity of Syosset. A recurrence of the attack was observed in August 1912, the injury being confined as previously, largely to the smaller trees and, the past season, being due almost entirely to work by *C. dorsalis*. The mines made by the grubs were of comparatively little importance where the feeding of the adults in August resulted in skeletonizing the foliage over large areas, the beetles being so numerous that 2, 4, 6 and even 8 were found on individual leaflets. It is evident that a thorough spraying, the latter part of July or early in August, with arsenate of lead would effectually control outbreaks of this character.

E. P. FELT.

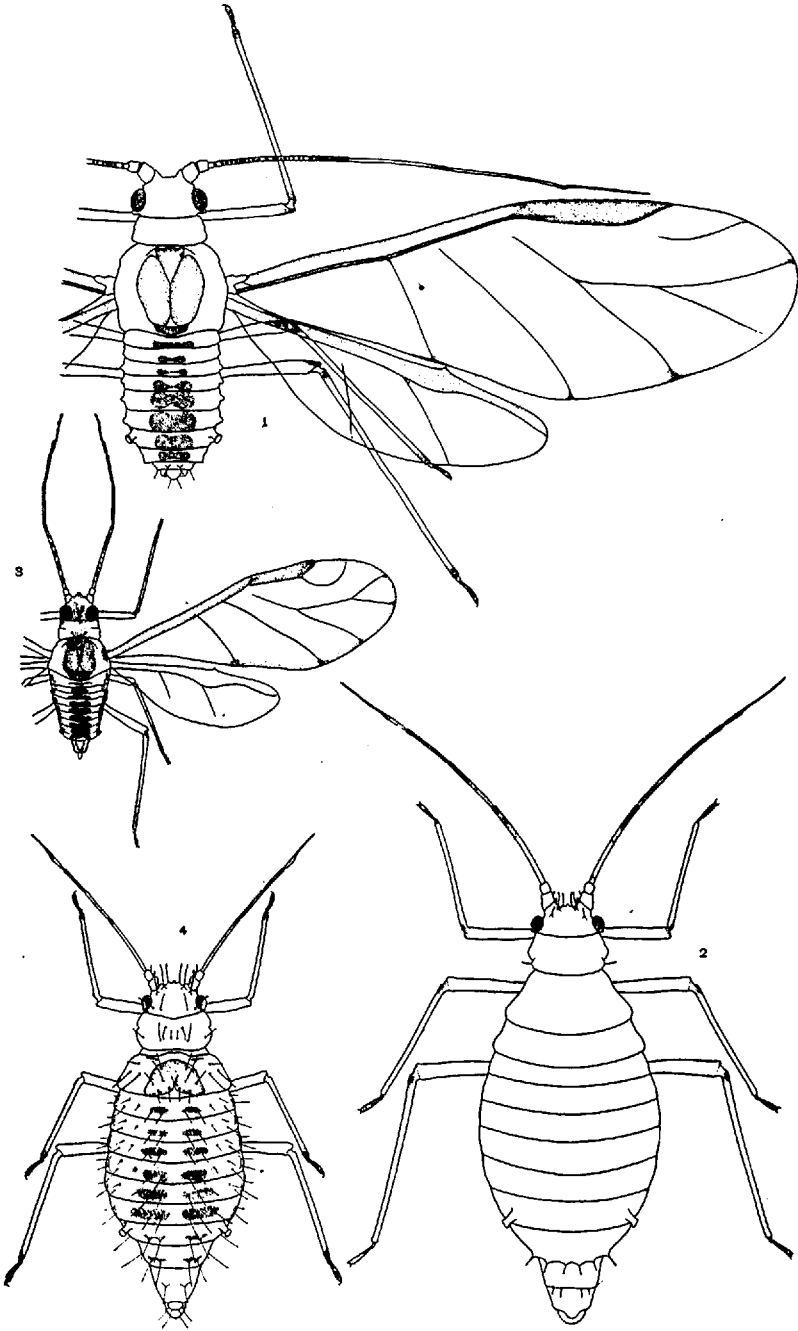


Plate 12

