A new Coccid Infesting Citrus Trees in California (Hemip.).

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In the early part of 1909 student inspectors from Pomona College discovered a soft scale on citrus trees near Claremont, California, which appeared to be different from the common *Coccus hesperidum* Linn. The insect was first identified as *Coccus longulus* Doug., but was later changed to *Coccus elongatus* Sign. Recent investigations by the writer indicate that the scale is a new species.

The insects were observed in no great numbers, but have since become considerably more abundant, and have also been found in a number of other localities.

Coccus citricola n. sp.

Adult Female.—Length, 3 to 6 mm.; width, 2 to 3 mm.; general color, dull gray, interspersed with numerous irregular yellowish spots. Body elongate, ends broadly rounded. Dorsum with small blotches forming a distinct irregular yellow stripe extending from anal plates almost to anterior margin. Two similar less distinct submedian stripes parallel with margin, and occasionally two indistinct submarginal stripes. A yellowish band of the same character extends around the margin. Antennae regularly eight-jointed, occasionally a specimen has seven joints in one and eight in the other, rarely seven in both. Average and most common formula 8-3-1(4-5)-2-6-7. The eighth is practically invariably the longest joint, sixth and seventh the shortest, while the rest vary considerably. No hairs on third and fourth joints. Stigmatic cleft small, with three spines, median spine curved and three times as long as others. Marginal hairs numerous, simple, pointed. Submarginal tubercles very few, or wanting. Anal ring with six long pointed hairs, plates of the anal operculum with the base slightly longer than the outer edge. Four fringe setae in groups of two across anal plates, with the lateral setae of each group longer than the mesal. Three subapical and four apical setae on each plate. Tibia one-third shorter than femur and very slightly longer than tarsus.

Adult Male.—Length, 1 mm.; body width, .28 mm.; style, .25 mm.; antennae, .57 mm.; wing length, .17 mm.; wing width, .05 mm. Color, dark honey yellow, head and thorax slightly darker. Anterior pair of upper eyes brownish, small. Posterior pair of upper eyes dark brown and much larger than anterior pair. Ventral pair dark brown,

equal in size to posterior upper pair. Antennae yellowish, ten-jointed. First joint short, cylindrical, second a little longer but thick and oval, third a little shorter and slender, enlarged toward tip. Fourth, fifth, sixth and seventh subequal, slender, each about twice as long as third; eighth, ninth and tenth subequal, the three being not quite as long as sixth and seventh together; eighth and ninth distinctly swelled, tenth slightly. Three long knobbed hairs at end of tenth joint. All joints except first and second with numerous curved hairs. Legs yellow, with a slightly brownish tinge, quite hairy. Style, lemon yellow, tapering sharply at tip. Wings hyaline, with a microscopic pubescence, heavier at veins. Veins yellowish.

Male Puparium.—Length, 1.7 mm.; width, .7 mm. Glassy white surface, rounded. Two lines, beginning at the anal opening diverge upward for a short distance and then proceed with only a slight divergence to near the anterior end, when they diverge outward again. Surface of the coronet slightly more convex. A quarter of the distance from the anterior end, where diverging lines begin to run almost parallel, is a cross carina; another carina crosses the coronet at a little more than a quarter of the distance from posterior end. Just back of this carina are two spiracular channels, from coronet to each margin. Half way between the two cross carinae are the other two spiracular channels, running from coronet to margin. There is a triangular space for the anal operculum and a cleft from this to the margin.

Egg.—Length, .21 to .24 mm.; width, .12 to .15 mm. Color, lemon yellow; oval shaped. When first deposited, light yellow, changing to a slightly darker tinge before hatching. Eyes show up as minute black spots.

Larva.—Length, .25 to .3 mm.; width, .15 to .19 mm.; length of spines, .1 to .12 mm. Antennae, .07 mm. Color, light yellow, eyes minute black spots, body flat and oval, slightly broader and more rounded at anterior end. Anal spines slightly less than half the length of the body. Antennae six-jointed. Eggs and larva are more yellowish than *C. hesperidum.*

Habitat, as far as known, on the leaves and twigs of citrus trees only. The young scales settle mostly on the leaves and when about half grown migrate to the small twigs. No scales have been found on twigs larger than one half inch in diameter. When the insects are abundant, and such is usually the case, they are arranged on the twigs in a curiously imbricated manner which is quite characteristic. The infestations are largely confined to the lower half of the tree.

Distributed in Pomona, Claremont, Ontario, Cucamonga, Colton, Highlands, Redlands and Riverside in Southern California; in Tulare and Fresno Counties in the lower San Joaquin Valley and slight infestations in Sacramento, Yuba City and Marysville in the Sacramento Valley. It is very probable that the insect has existed in California for some time and has passed unnoticed, or what is more likely, has been confused with and identified as *Coccus hesperidum* Linn., which it closely resembles.

Comparison of Coccus citricola n. sp. *and two related species.*

Coccus hesperidum	*Coccus citricola*	*Coccus elongatus*
Antennae 7-jointed	Antennae 8-jointed	Antennae 8-jointed
Formula	Formula	Formulae
(3-7)-4-2-1-6-5	8-3-1-4-5-2-6-7	3-(2-5)-(1-4-8)-6-7 3-5-(2-4)-(6-8)-7
3rd joint longest	8th joint longest	3rd joint longest
4th and 7th almost as long		8th joint one of shortest
4th joint longer than 5th	4th joint usually slightly longer than 5th	5th joint quite constantly longer than 4th
Hairs of anal ring 8, 2 fringe, 2 subapical and 4 apical setae on each plate	Hairs of anal ring 6, 2 fringe, 3 subapical and 4 apical setae on each plate	Hairs of anal ring 8, 4 fringe, 4 subapical, 1 discal and 3 apical setae on each plate
Dorsum with no longitudinal stripes	Dorsum with distinct irregular yellow stripes	Dorsum with no longitudinal stripes
Appearance, yellow minutely specked with brown spots	Appearance, dull gray interspersed with irregular yellow spots	Appearance, dingy pale yellowish gray
4 or 5 submarginal tubercles on a side	Submarginal tubercles very few or wanting	Submarginal tubercles large and numerous
3 or 4 generations a year	One generation a year	
Infests young trees, or a single branch of a single large tree in an orchard	Infests large trees uniformly and most of the trees in an orchard	
Host plants Oleander, Camellia Citrus, Holly Ivy, Laurel Jasmine, Myrtle Phlox and many others	Host plants Citrus trees	Host plants Acacia, Cherimoya Ficus, Lantana Citrus, Palms Ferns, Cherry, Laurel and many others