

joint clubbed, second conical, tip with "sensitive aciculi." Both joints equally long. *Mentum* fleshy, narrow at base, broadening toward the rounded tip. Apparently no *ligula*. Head small, yellowish with a small aspersation of black pigment on occiput.

The body-integument exhibits under the microscope a beautifully arranged black pigmentation with fine canals between them. *Legs*, the middle and posterior pairs slightly longer than the anterior. The coxal supports are prominent, coxæ short, trochanter very short and apparently connate with the former, but the cast-off skin plainly shows a ring of the former going over one of the latter, thus lacking the internode of the other articulations; femur and tibia with long thick bristles, both pieces compressed, the latter slightly shorter than the former; claw simple and with two spines at middle.

Prothorax gradually getting broader toward base, as long as two of any of the other segments together, an impression along the margin, the anterior transverse line of which reaches the middle of the segment.

Mesothorax a little wider than the preceding.

Metathorax, the widest of all the body-segments. About four times wider than long.

The abdominal segments gradually diminish in width toward pygidium. The three thoracic segments and the first eight abdominal segments with a short bristle at base of marginal scute and one such bristle at tip, the latter bent back and downward. Ninth dorsal segment at tip with a cylindrical, immovable spine of the length of any of the tergal scutes. *Spiracles*, nine pair; first and largest near base of prothorax a little behind and above the anterior coxa. Second to inclusive fifth spiracle in the pleurites anteriorly of each of the first five abdominal segments, the last three spiracles are much smaller and correspond with the sixth, seventh and eighth segments; ninth segment without spiracle.

First ventral abdominal segment and sternal region remain whitish with a slight darker aspersation between the coxæ. Tenth ventral segment prominent (anus), cylindrical, serving as a propeller, fimbriate around the margin.

Antennæ. Cylindrical, three-jointed. First joint narrow, conical at base, second slightly shorter than the preceding; near tip, interiorly with an "olfactory disc," consisting of two anterior larger and three posterior smaller areolæ. Third joint inserted into a fleshy, transparent, retractile internode, base of third joint very narrow, getting thicker and thickest a little behind middle, tip conical. Second and third joints with stronger bristles than first joint. Third joint bent inwardly.

The olfactory disc can be better seen in the exuviae than in the living animal.

POTATO BUGS.—Last Monday there was such a swarm of potato bugs on the rails of the Connecticut River Railroad between South Ferry and Holyoke, Mass., that it was with difficulty the locomotive could draw the train through them. The crushed insects made the rails very slippery, causing the wheels of the engine to slide.—*Evening Star*, Washington, Sept. 13.

ON THE RED OR CIRCULAR SCALE OF THE ORANGE (*Chrysomphalus ficus* Riley MS.).

BY WM. H. ASHMEAD, JACKSONVILLE, FLA.

BIBLIOGRAPHICAL.

- | | |
|-----------------------------------|---|
| <i>Chrysomphalus ficus</i> Riley. | Manuscript notes. |
| " " " | Ashmead, <i>Fla. Agriculturist</i> , 1879. |
| " " " | Ashmead, <i>Pacific Rural Press</i> , 1880. |

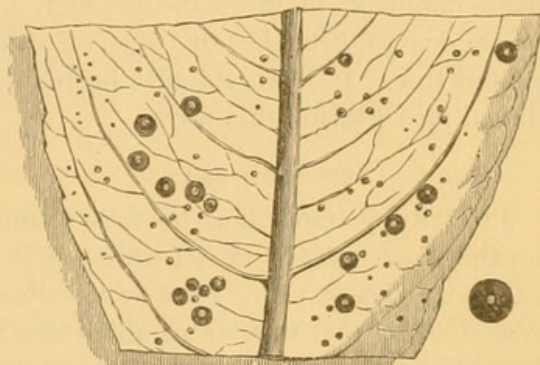
ITS FIRST APPEARANCE IN FLORIDA.

In September, 1879, I received the following communication, with specimens of infested leaves, from Mr. G. M. Holmes:

ORLANDO, Orange Co., Fla., Sept. 20, 1880.

Dear Sir:—Inclosed I hand you a leaf of an orange-tree infested with what appears to be a species of scale insect, which is new to us down here. It spreads from tree to tree very rapidly, and is not confined to the leaf, but appears upon tender stems and thorns. As you can see, it turns the leaf yellow wherever it locates itself.

[Fig. 146.]



Portion of Orange Leaf infested with *Chrysomphalus ficus* (after Ashmead).

I should like to know whether it is an enemy much to be dreaded, and, if you have had experience with it, the cure. Although a stranger to you, I see by the *Florida Agriculturist* that you have made the insects on orange-trees a study, and I thought you might give me some information about this particular insect. Yours, respectfully,—G. M. Holmes.

The scale being new to me, I immediately forwarded specimens to Prof. C. V. Riley, and from his reply I quote the following: "The circular, dark-brown scale with a golden centre has long been in my cabinet, and I have found it quite injurious to *Ficus nitida*. I have designated it by the manuscript name *Chrysomphalus ficus*, but have published no description of it, as the mere description of the scale without fully characterizing the insect that makes it, in both sexes, is imperfect entomological work."

ITS IMPORTATION AND SPREAD.

In Los Angeles, San Jose, California, and, indeed, in various parts of the State, it is quite numerous on the Orange, and is there known as the "Red Scale." The orange tree has but lately been introduced and grown in California, and this particular species is, therefore, not indigenous there. Where, therefore, did it come from, and how was it introduced into the State? These are two very important questions. Now, the commercial relations existing between the Californians with the people of China, Japan and Australia, point to one of these countries as its original home or starting point, from which it has spread. Indeed, many oranges have been imported from all these places, and it would not be surprising to me if, like our own *Long Scale* (*Aspidiotus Gloverii*), the Red Scale had been imported in the same manner, *i. e.*, on the leaves, branches or twigs of an imported tree. It has evidently been introduced into Florida this way.

ITS FOOD-PLANT.

Prof. Riley states that he first found it on the *Ficus nitida*; this, I presume, is an exotic species of Fig. I see by the *Pacific Rural Press*, that this, or an allied species, had been found on the Apple trees in San Jose, Cal. With the Orange, it attacks the fruit, leaves and twigs, seeming to like one about as well as another.

ITS NATURAL HISTORY.

I have not been able to thoroughly work up this insect, for want of specimens. From specimens received at different times, there would seem to be at least three broods, if not more, during the year. The first brood probably hatches in May; the second, from last of July to second week in August; and the third, from last of September to first week in October.

DESCRIPTIVE.

Eggs.—From 18 to 30 under each scale, less than .01 of an inch in length, ovoid, smooth, not quite twice as long as broad, of a bright yellow, promiscuously inclosed in body-walls of dead female.

Larva.—Length of body less than .01 of an inch, nearly twice as long as wide, *bright* yellow, ovoid, much wider towards head, being widest at thoracic segments; two very short anal setæ, hinder margin rough from numerous small fleshy tubercles, with a few short hairs around margin, no indentations as in *Ceroplastes rusci*; antennæ, 6-jointed (not easily made out with my microscope, which is of a low power); basal joint short and stout, nearly as wide as long; joints 2 and 3 less wide and of equal size; joints 4 and 5 about equal, each longer and thicker than 2 and 3 together; joint 6 much thinner, ending at tip in 2 long hairs, the inner being longest; an inner and outer hair on basal joint, with two inner and two outer ones on joints above these; legs ending in a feeble claw and four digituli, the two upper being longest; femora thickly swollen, with a distinct lobe near base, from which a sharp spine issues. I have never noticed this in any other scale insect.

Female Scale.—Form, round or circular, flattened slightly, rising towards centre, of from a reddish to a blackish-brown color, paler at margin, measuring from .04 to .12 of an inch in diameter; in the centre is a slight depression, in larger specimens .02 to .03 of an inch in diameter, and of a bright golden yellow, with a small brown cap.

REMEDY.

Mr. Holmes writes me, under date of August 6th, as follows: "As you request, I forward you by this mail a box containing specimens of the *Chrysomphalus ficus*, which I hope may reach you in good order. They have not done me any material damage as yet, but I keep my trees in very healthy condition and thrifty growth, as I have a large drove of cattle, and can cow-pen them. In my experiments for their removal, I have been most successful in the use of a strong brine of salt and water applied twice, at intervals of two weeks. It is heroic treatment and takes the leaves off, but the scale comes with them, and, if done just prior to a growing season, they soon send out a luxuriant new growth and



Ashmead, William H. 1880. "On the red or circular scale of the orange (Chrysomphalus ficus Riley ms)." *The American entomologist* 3, 267-269.

View This Item Online: <https://www.biodiversitylibrary.org/item/51632>

Permalink: <https://www.biodiversitylibrary.org/partpdf/244815>

Holding Institution

Smithsonian Libraries and Archives

Sponsored by

Smithsonian

Copyright & Reuse

Copyright Status: Public domain. The BHL considers that this work is no longer under copyright protection.

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.