

**THE INSECTS
DESTRUCTIVE TO
FRUITS, PP. 160-210**

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The Insects Destructive to Fruits, pp. 160-210 by M. V. Slingerland

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THE INSECTS
DESTRUCTIVE TO FRUITS

BY

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EDITOR'S PREFACE TO THE TWENTY-FIRST
EDITION.

PROBABLY no other work of its character has enjoyed the popularity of Thomas' "American Fruit Culturist"; first published many years ago. It has, unlike most books by other authors, been revised and kept up to date, both with respect to the newer varieties of fruits and also the improvements in cultivation—in all the details, in fact, pertaining to the science and art of fruit growing. In the preparation of the present edition the editor has had the valued assistance of Prof. M. V. Slingerland of Cornell University, who wrote the chapter on Destructive Insects; of Prof. Byron S. Halsted of Rutgers College, who wrote that on Diseases of Fruits; and especially of Prof. L. H. Bailey, who supervised almost the entire book.

The editor still feels that the time has not yet come to adopt absolutely the rule of the American Pomological Society with respect to the names of fruits. To do so before the nurserymen, the dealers, much more generally conform to it could only lead, as before stated, to uncertainty and confusion. Thomas' "Fruit Culturist" has again been materially enlarged both in text and illustrations.

While it is believed that this book will be found scientifically accurate, it must be remembered that it is prepared especially as a practical working manual for the amateur and farmer.

WILLIAM H. S. WOOD.

New York, *February, 1903.*

CHAPTER XII.

DESTRUCTIVE INSECTS.

INSECTS are among the most formidable enemies to successful fruit-culture. The losses occasioned by the plum curculio alone amount to more than a million of dollars annually. Orchardists are sometimes deterred, by the attacks of this insect, from attempts to raise the apricot, nectarine, peach, and plum; and the market supply of apples and pears is often much disfigured by it. The apple-worm, or codling-moth, is even a more formidable insect pest. New York fruit-growers alone yearly furnish \$2,500,000 worth of apples and \$500,000 worth of pears to feed this insect; and other similar apple-growing States report nearly as large an annual loss from its ravages. The depredations of many other insect pests, like the apple-tree and the peach-tree borers, the canker-worms, the tent-caterpillars, the apple maggot, and the pear psylla, each causes annual losses amounting to several hundred thousand dollars.

As a general rule those remedial measures are of little value, which attempt merely to repel insects without destroying them. Experiments show that rarely is an insect repelled from attacking any part of a plant by the application of odorous substances, like carbolic acid, tar, etc.

How insects eat.—Another very important fact which fruit-growers must understand is that all insects do not eat in the same manner. Many, like the currant worms or the plum curculio, have two pairs of horny jaws, which they work from side to side and bite off or chew and swallow solid particles of their food; while several of our worst fruit-pests, like the scale-insects or pear psylla, have mouth-parts built on an entirely different plan. Their jaws are modified into long, fine

bristles which are worked along a groove in a supporting beak or elongated lower lip. These insects place the point of this beak on the surface of the plant, force the bristles into the tissue, and then, by the help of a muscular box in the throat, they draw or suck up along the beak the liquid juices from the interior of the plant.

One can readily see how the biting or chewing insects are killed by putting a poisonous powder or spray on the surface of the plant attacked; particles of the poison would be taken into the body with the solid food in eating. But a sucking insect can eat only liquid food, which it gets from the interior of the plant; hence it could not eat a poison put upon the surface. And as it is not possible to poison the internal tissues or juices, one is forced to use something besides poisons to kill sucking insects. They can be killed by suffocating them with a gas, like hydrocyanic acid gas, or with a powder, like pyrethrum, which stops up their breathing-holes, or with some liquid, like kerosene or a soap solution, which kills by soaking into their body or in the same way as the powders. Many pounds of Paris green have been wasted in trying to feed it to sucking insects.

Fruit-growers can readily determine if an insect is chewing or sucking its food. If of the former class, then aim a poison spray at the part of the plant where it is feeding; but if it is a sucking insect, then aim an oil or soap spray at the insect itself.

There are a hundred or more different kinds of injurious insects, and equally as many diseases, which sometimes seriously interfere with the growing of a profitable crop of fruit. Most of the serious or standard insect pests and the more common diseases which are met with by the fruit-grower will be found treated of in this chapter; the others which occur less frequently, or become serious in their effects in restricted localities, it has not been considered necessary to treat of here. In all such cases advice should immediately be sought from the State Agricultural Experiment Station. (For list see chapter xvi.)

In previous editions of this work no logical plan was followed in discussing the destructive insects. We have thought it advisable to change this and first discuss the apple pests,

beginning with those affecting the roots, then the trunk and bark depredators, following with those feeding on the buds and leaves, and finally discussing those which infest the fruit. The insects which affect the pear, plum, peach, cherry, quince,

grape-vine, currant and gooseberry, raspberry and blackberry, and strawberry will be discussed in the order in which they are named, and in each case the method outlined for the apple insects will be followed.

The Woolly Aphis (Schizoneura lanigera).—This reddish-brown plant-louse, covered with a flocculent waxy secretion (Figs. 211 and 212) works both on the roots, where it forms knotty enlargements (Fig. 210), and on the branches, where it causes roughened scars. It attacks the apple only, and some varieties, the Northern Spy, for instance, are quite immune from it. Nursery stock and young trees are often seriously damaged, while in most parts of the country well-established bearing trees are rarely noticeably injured. It has quite a complicated life-history.

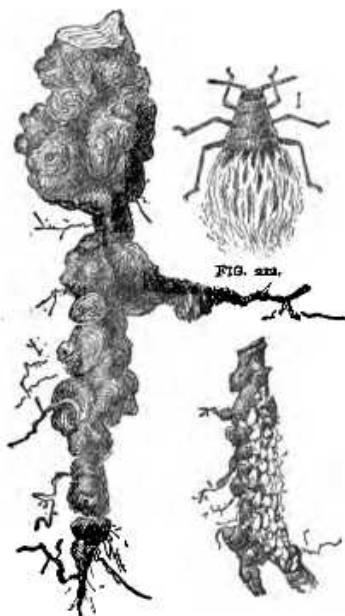


FIG. 210. FIG. 211. FIG. 212.
The Woolly Aphis.

FIG. 210.—Root illustrating deformation by the aphid. FIG. 211.—Portion of root with aphids on it. FIG. 212.—The Root Louse, female. Figs. 210 and 211 natural size; Fig. 212 much enlarged. (U. S. Div. of Entomology.)

Most of the lice are wingless, but in the fall many winged forms appear, and these are one of the means by which the insect is spread. It is also widely distributed on nursery stock.

The aerial or branch form of the insect does little injury,