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The San Jose Scale.

(Aspidiotus perniciosus.)

HERBERT OSBORN.

NOT YET KNOWN IN IOWA.

Although this dreaded pest is not known to occur at any point in Iowa, it seems essential to bring it to the attention of all interested in fruit trees, forest and ornamental shrubs.

Early in the season we issued a press circular calling attention to the imminent danger of its introduction (if not indeed already present but unnoticed) especially since it has been found in very serious abundance in the adjacent states of Illinois and Missouri.

Following the general publication of that circular in the papers of the state I received many specimens of twigs or branches supposed to be infested, but in no instance did these prove to be the San Jose Scale. A number of nurseries have been inspected at the instance of the nurserymen themselves, and it is a great satisfaction to be able to say that in every one of these inspected no trace of San Jose Scale has been found. As this list includes a number of the largest and best known nurseries we believe that our people are reasonably safe in purchasing stock grown in the state, but it is very important that stock coming from nurseries in other states, and especially those known to be infested should be accompanied by certificates of inspection.

WHAT IS THE DANGER.

Many persons, and among them intelligent fruit growers who have had no personal experience with this pest, are somewhat skeptical as to its dangerous character, especially in this part of the country, and are inclined to regard some of the claims concerning it unnecessarily exaggerated, possibly in the interest of parties affected by promulgation of restrictive measures. Doubtless actual experience is the most effective argument in such a case, but if half the loss possible from the introduction of this pest and actually recorded by reputable investi-
gators and orchadists were to occur in Iowa, it would be an experience we can by no means afford.

Prof. F. M. Webster, Entomologist of the Ohio Experiment Station, who speaks from actual experience, and one of the most conservative and reliable entomologists in the country, says: "No one who has not seen the work of this pest where it has had full sway can understand its fearfully destructive nature, and no one who has not searched for it, scattered about singly, over the twigs and branches of trees and shrubs, can fully understand the difficulty with which it is observed, before it has gained such headway and is in full possession of the area over which it has become distributed."

According to the best authorities the San Jose Scale is capable of a multiplication that enables a single female to produce 1,608,040,200 individuals in a season, these resulting from four to five generations during the warmer portions of the year.

The distribution of such a pest throughout the orchard, shade, and shrubbery plantations of Iowa would entail a loss impossible for us to estimate, and if, by due attention at the present time, such distribution can be prevented it will be a most fortunate result.

PRESENT DISTRIBUTION.

The San Jose Scale, although introduced into the eastern United States scarcely ten years ago, is now known in Massachusetts, New York, New Jersey, Pennsylvania, Maryland, Delaware, Virginia, West Virginia, North Carolina, South Carolina, Florida, Georgia, Alabama, Mississippi, Texas, Ohio, Illinois, Michigan, Missouri, and Ontario in Canada, while westward it occurs in British Columbia, Idaho, Oregon, Washington, California and New Mexico.

While believed to be native to a more southern climate, the fact that it is actually thriving in localities as far north as any part of Iowa and that its survival depends rather on food plants than temperature is sufficient to check any hopes that it might not be able to thrive in our state.

PLANTS INFESTED.

This scale affects a great many different plants includ-
ing practically all deciduous orchard and garden trees or shrubs, and many ornamental trees, shrubs and vines. Pear, plum, peach, apple and cherry are most commonly affected but it has so far been recorded also from roses, almond, apricot, raspberry, hawthorn, quince, flowering quince, cotoneaster, euonymus, linden, gooseberry, currant, flowering currant, persimmon, acacia, elm, osage-orange, English walnut, pecan, alder, weeping willow, laurel leaved willow, Carolina poplar, Lombardy poplar, golden leaf poplar, cut leaf birch, American chestnut, sumac, grape, catalpa and mountain ash. With such a list of food plants its introduction in any community can not but be a public calamity.

Fig. 1. The San Jose Scale, Aspidiotus perniciosus, on pear fruit and twig; natural size; enlarged female scale above and male scale at center. After Howard. Year Book U. S. Dept. Agr., 1894, p. 298.

HOW TO DISTINGUISH IT.

While the San Jose Scale is distinguished from other scale insects with great difficulty, there are certain char-
acters which can be seen with the naked eye or a common hand lens which will enable one to determine whether any particular infestation is likely to be of this species or some of the common, widely distributed forms. The San Jose Scale is nearly circular, rather flattened and possesses a small nipple like prominence very near the center. It is not more than one-sixteenth of an inch in diameter and scales newly formed containing partially grown insects will be much smaller.

On the other hand the common oyster shell bark louse, and the scurfy scale are more elongated and have no central elevation. Such scales may be disregarded but in any case where scales approach the appearance of the San Jose Scale as shown in the accompanying figures, the only safe plan is to submit specimens to a competent entomologist for determination.
Specimens sent for determination had best be first soaked in kerosene to make certain that no living individuals can escape, and with this precaution they may be simply rolled in a paper and enclosed in an envelope.

MEASURES TO ADOPT.

It is not deemed necessary at this time to give detailed instruction as to treatment. Should we discover it at any time in the state it would be necessary to give wide publicity to the most effective treatment, but experiments in other states where the pest is already present are constantly improving the processes of treatment and we may wait the actual occurrence of the pest to present the latest results. The most essential point at present is to prevent the introduction on nursery stock from infested localities, or, if it has been introduced in that way, to know it at the earliest moment so as to destroy it before it can spread.

Those who may wish further details are advised to secure Bulletin No. 3, New Series, Division of Entomology, U. S. Department of Agriculture. Bulletin 81 of the Ohio Experiment Station, just issued, is also very timely and contains most valuable reviews of legislation enacted and proposed. I would especially advise nurserymen to secure and read it. It can be secured by applying to Prof. Webster or the Director, Ohio Experiment Station, Wooster, Ohio.

The use of the figures for this article, has been kindly granted by the Department of Agriculture.