

Investigation Work on Little Peach and Yellows

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AS MOST of the peach growers probably know, I spent almost all this summer in the Niagara district in order that I might have a better opportunity to study Little Peach and Yellows and carry on investigation work on these diseases. As many growers no doubt would like to hear what line these investigations took and what results have been obtained, I have prepared the following account of my work.

In studying diseases one naturally tries to discover the cause, but I have not attempted to do so, because I know that if one were to endeavor to find this in the case of either Little Peach or Yellows, it would almost certainly mean years of the most careful laboratory and field work, with the probability of ultimate failure; for many good students of plant diseases have endeavored to find the cause of Peach Yellows and failed. Moreover, I learned in the autumn of 1911 that Dr. Duggar, formerly of Cornell University, but now of the Botanical Gardens, St. Louis, was working on these diseases and thought he had at last found a clue that might lead to the discovery of the cause. (For the sake of those who think that a powerful microscope would reveal the presence of some very minute causal organism I may state here that no microscope shows any organism to be present nor can any or-

ganism as yet be gotten to grow in any culture. So that, whatever the cause is, it is very different from that which produces Pear Blight or any of our other common diseases.) Feeling, therefore, that the study of the cause should be left to others better qualified for the work, I have devoted my whole attention to discovering if possible in what way or ways the diseases are spread and at what time or times of the year this takes place, and also how long a period may elapse from the inoculation of a tree until it shows clear symptoms of disease. If we get definite knowledge on these points we can then hope to simplify and improve our methods of control whether the cause is discovered or not, though we sincerely hope it will be.

In determining how the diseases are spread I have thought of the following: First, pits from diseased trees; second, buds from diseased trees; third, bees carrying pollen or nectar from diseased to healthy blossoms; fourth, rubbing or injuring healthy trees with diseased ones when removing the latter from the orchard or in any other way; and fifth, pruning tools used on diseased and then on healthy trees. Experiments have been planned, and carried out to test all of these possible methods of spreading Yellows and Little Peach.

In the autumn of 1911, with the assistance of Mr. Nelson, of Fonthill, and Mr. Harkness, of the Experimental Sta-

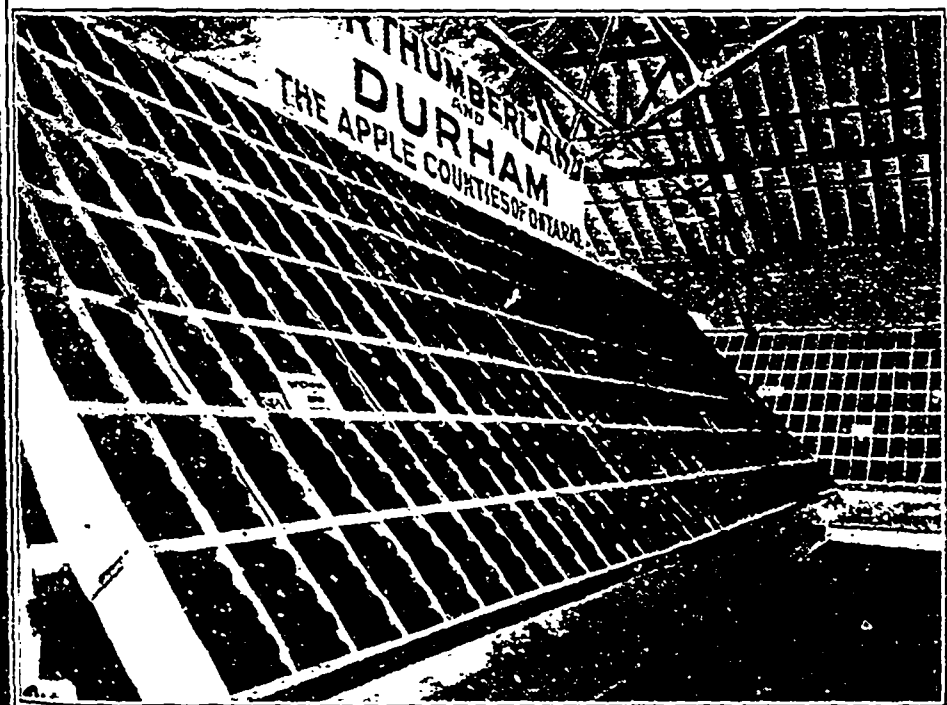
tion, six hundred and thirty-one pits from diseased trees were gathered. Mr. Harkness planted three hundred and thirty-one of these at the Experimental Farm; eight germinated and grew. I planted one hundred at Guelph; seven germinated and grew, thus making a total of twenty-one diseased pits in all that grew, or about three and one-third per cent. Of the healthy pits used as checks, Mr. Harkness got twenty and one-half per cent., Mr. Nelson forty-five and one-half per cent., and I got sixty-eight per cent. to grow. The seedlings from the diseased pits, though not quite so vigorous on the average as those from healthy ones, show no sign yet of disease but will be kept for several years to see whether it develops.

OTHER TESTS

Believing that a further test of pits should be made, I have, with the aid of Mr. W. E. Biggar, the Provincial Inspector, and Mr. Spencer, of the Ontario Agricultural College, Guelph, gathered a few more than two thousand five hundred pits this fall from trees selected by myself in each case. A few of these trees showed symptoms of disease very distinctly, most of them only moderately so, and one tree from which four hundred pits were taken would have escaped the notice of nine out of ten inspectors. The pits were gathered in October and to make sure that there could be no mistake, the fruit in every case was collected directly from the trees. The four hundred pits mentioned above are being kept separate to see if any larger percentage of them will grow than of those gathered from trees showing the symptoms fairly clearly.

BUDS

Several experimenters have proved that Yellows and Little Peach can be spread by using buds from diseased trees, but I thought that we should test this ourselves and see not only how long it would be before the seedlings or trees thus budded would develop the symptoms, but also what variation there would be in the length of this time. Accordingly, healthy trees, four years old, in a young orchard on the Experimental Farm were budded. The buds in each case were taken from healthy looking shoots on diseased trees about half of them from Yellows and half of them from Little Peach. Each tree had at least four buds inserted into it, all of which took. Each budded branch has been tagged so that track can be kept of it. In addition, one hundred seedlings from healthy pits were budded in a similar manner, so that we might be able to compare the result on these with that on the older trees. Nearly all of the buds on these seedlings also took. The budding was for the most part done by Mr. J. W. Smith's best budder, whose



Northumberland and Durham's First Prize Half Car-load of Fruit at the Ontario Horticultural Exhibition. This half car load was the finest exhibit of fruit ever shown in Eastern Canada. It consisted entirely of Spies. There were three hundred boxes. Each box contained exactly one hundred apples, twenty to a layer.