

several years past, been endeavoring to determine the possible existence of similar conditions in plants growing under ordinary influences, and their relation to specific diseases. The results of our examinations show most conclusively, that in certain diseases, e.g., peach yellows, we have to deal with essentially the same histological characteristics as were artificially produced by Nobbe and Schroeder in the case of buckwheat, and not only that, but that the disease can be produced and cured at will.

In order to understand this, it will be necessary to deal with the experiments in both their chemical and botanical aspects.

In dealing with the chemical changes involved, it was deemed essential, first of all, to determine what mineral constituents normally enter into the composition of both fruit and wood in its healthy condition, and to compare these quantitatively with the constituents found in the ash of corresponding structures in a state of disease. The analyses obtained were as follows :—

Fruit of Crawford's Early.	Healthy.	Diseased.
Ferric oxide.....	0.58	0.46
Calcium oxide.....	2.64	4.68
Magnesium oxide.....	6.29	5.49
Phosphoric acid.....	16.02	18.07
Potassium oxide.....	74.46	71.30
	100.00	100.00

These results at once made it clear that in the diseased, as compared with the healthy, the ash contains more phosphoric acid and lime, and less potash. Previous examinations and experiments with strawberries and grapes had already demonstrated the superior importance of potash in improving the qualities of these fruits, and the inferior value of lime, and it seemed possible that similar results might be obtained here in the case of the peach. Analyses were, therefore, made of the diseased wood, and acting upon the theory that potash and chlorine were probably the two elements most needed, a number of diseased trees were treated with muriate of potash. After the lapse of a few years, they lost all appearance of disease, and were restored to such a condition of health that, up to the present time, they have been most profitable in their production of fruit. An analysis of the