PREVENTION OF BITTER ROT.

This disease, which has sometimes proven so disastrous to the apple grower, has already been found this year widely distributed throughout the chief apple growing regions of Illinois, and it has probably made the same start elsewhere. It is never greatly developed at this season of the year, but sharp observers are able to find it when there are but few infected spots on the young apples.

A discovery just made, July 11th, founded upon the observation of an Illinois apple grower, seems to give an opportunity not before possible to combat the scourge, and this circular is issued hastily in the hope that a portion of the apple crop now liable to attack may be saved. It is a matter of common knowledge that the fruit first infected in a tree occupies a definite position in the branches. In general terms, it may be said that the disease shows in a conical shaped area with the apex upward, and this has been explained by the fact that the spores of the fungus are adhesive so that they cannot be distributed by wind but can readily be washed down by rain. The primary infection at the apex of this cone, commonly supposed to be an earlier diseased apple, furnished, it was thought, the spores which started the disease in the fruits underneath. It has now, however, been ascertained (and this is the new fact in the case) that this primary infection starts in a canker upon the limb of the tree. In this situation the fungus
lives over winter and as early as sometime in June begins to produce spores by which the young apples are infected. It has been ascertained that this same thing takes place in a "mummied" fruit, and attention has heretofore been strongly directed to this. As, however, the mummied fruit commonly falls to the ground the matter remained a puzzle as to how the spores could rise to the tree. The new observations recently made by us in many orchards showed that the limb canker was in every case the source of primary infection, and therefore these cankers are much more dangerous than the old mummies. It is not usually easy to discover the cankered spot from the ground, but it is easy to locate it by the diseased spots on the apples. With a little practice, any one with eyes sharp enough to detect these latter can quickly find the former. It seems, therefore, entirely feasible to prevent further infection by a critical examination of the trees at this time of the year and the removal of the cankered limbs and the fruits already diseased from it.

WHAT THE CANKER LOOKS LIKE.

Canker occurs on limbs of any size—from those of an inch or two in diameter to last year’s fruit spurs. More commonly the spot is two to four inches long. The affected portion is killed by the fungus and the new growth rises as a rim of healing tissue about its border. The spot is therefore sunken to the extent of the later increase in diameter of the limb. It is rough and black and has somewhat the appearance of an old, ragged wound as often results from many causes. By close observation it will be seen that the old bark of the killed portion is still present though usually variously ruptured and sunken. The fungus which causes the bitter rot of apples is present in this old bark and bears the spores in clustered masses over its surface, from which they are washed by the rain to the fruit as described. So far as observed, these cankered spots are few in number, except in the case of one variety, that of the Huntsman, where they are found to be very numerous. More often only a tree here and there in the orchard has a cankered limb.

PREVENTIVE MEASURES.

From what is now known, the following preventive procedure is advised: Examine the orchard tree by tree, following systematically the rows—perhaps on horseback or in some way to look down as much as possible upon the fruit, the infected spots being
usually on the upper surfaces of the apples. At this time of the year these spots are brown, circular and very slightly depressed and show clearly against the light or reddish color of the apple. As soon as one spot is found search for others and just above the uppermost ones look for the cankered limb. This limb is sure to be in such a position that spores may be washed from it onto the spotted fruit. It will now be an easy matter to cut away the diseased limb and to remove the infected fruit below it. It will be safer, however, to take all the apples from that portion of the tree subjected to infection from the canker, for it may not be easy to find the very small spots where the fungus recently started. Cut well below the cankered spot, avoiding the rubbing of the infected area by tools or hands. The operator who goes into the tree top for the purpose of making examinations and removing cankered limbs should be provided with rubber boots or thin-soled shoes, so as to not in any way cause the rupture of the bark when climbing about. All diseased limbs and fruit removed from the trees should at once be put into a wagon or other receptacle and removed from the orchard where they will be either burned or buried deeply in the ground.

Experiments carried on this year by the University of Illinois prove conclusively that bitter rot can be very largely held in check by Bordeaux mixture, even when trees have one or more cankered limbs. It is believed, however, that a critical examination of the trees and the removal of the source of infection as described is the most important work the orchardist can do. This circular is therefore sent out with the hope that this later information with reference to bitter rot may be the means of saving the fruit growers of a wide section of the country from heavy losses. The University is now at work preparing additional information carefully illustrated which will be distributed in circular form within a week or ten days. Go to work now, however, with the information at hand, for the delay of a single day may mean the loss of your entire crop.

T. J. BURRILL, Chief in Botany.
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URBANA, Ill., July 14, 1902.

To the Editor: Kindly give the above matter a conspicuous place in an early edition of your paper. By so doing you may be the means of saving many fruit growers in your locality from heavy losses as a result of bitter rot.