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"Fire Blight" Successfully Combated*

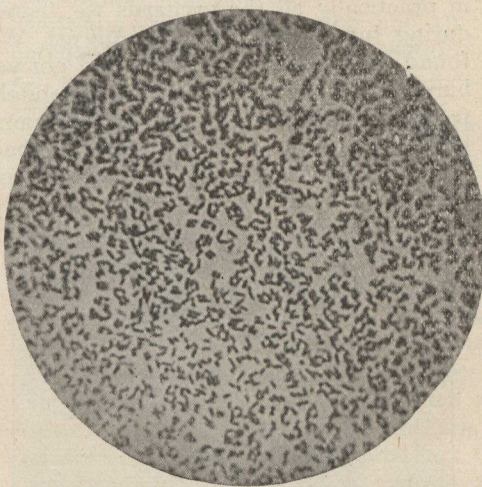
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IN order to successfully cope with a disease, whether it be a disease of animals or of plants, it is most desirable to know its specific cause and its methods of attack. Practically all that is known concerning the precise nature of infectious diseases, both of animals and plants, has been learned during the last thirty years or so. Everyone now is familiar with the precautions necessary to prevent the spread of typhoid fever, cholera, tuberculosis and anthrax, and other infectious diseases in man and animals. Individuals suffering from these diseases are isolated as far as possible and care is taken that all discharges from their bodies are burned or otherwise disinfected. These precautions are necessary because these diseases are the result of micro-organisms gaining access to the body through water, food or wounds, and there rapidly multiplying. Their multiplication produces the symptoms of the disease, and as millions of the germs are soon produced in the body from a few that have gained entrance, some of these are given off in the discharges, and if these are not destroyed they are liable to spread the disease to whoever comes in contact with them.

The disease of some trees known by the various names of fire blight, pear blight, apple twig blight, body blight, and blight canker, is a bacterial disease, and hence if its spread is to be prevented precautions must be taken somewhat sim-

ilar to those found necessary in dealing with bacterial or infectious diseases of man and animals.

So far as is known, the disease is peculiar to North America, where it has caused immense losses to pear and apple growers. In addition to being found on the cultivated and wild varieties of apple,



Bacillus amylovorus, the germ which causes the blight. Magnified 1000 times.

pear and quince trees, it is common on the juneberry, hawthorn and mountain ash, and occasionally it is found on the plum.

EFFECTS OF THE DISEASE

The disease is caused by a microbe known as "Bacillus amylovorus," which on gaining entrance to the bark of a tree subject to its attack, rapidly multiplies there and in doing so kills the bark. If the bark attacked be that of a twig, the twig with its leaves, blossoms or fruit will wither, turn brown and die. If the bark attacked be that of the trunk or main limb, the result is a canker of the area attacked. The cankered area is usually darker colored than the healthy part, is somewhat sunken, and usually surrounded by a crack. If the cankered bark be cut, it will be found to be brown and tough instead of being white or light green and tender. The canker in the apple tree does not usually spread to very great dimensions except in a few varieties, principally the Russian varieties. With the pear tree, however, it is different, for when the bacillus finds entrance to the bark of the trunk or a main limb of a pear tree it usually continues to spread there until it has killed the tree.

PEAR TREES SUSCEPTIBLE

For the disease to spread rapidly in a

tree it is necessary that the affected bark be juicy. The bark of the large limbs and trunk of the pear tree is softer and more juicy than that of most varieties of apple trees. Hence it is that the disease spreads more rapidly and does much more damage in the trunks and large limbs of the pear than in those of the apple. On the other hand, the bark of the twigs and young shoots of the apple is softer and more juicy than that of the pear twigs, and consequently blight of the apple trees is usually in the form of a twig blight, all the young growth on a tree often being killed in one season.

Trees in sod are not so sappy as those under cultivation. Hence it is that the disease kills off trees in well cultivated orchards more often and more rapidly than in orchards that are in sod. However, sod is not the ideal condition for an orchard. It not only curtails the production of fruit and hinders the development of the tree in general, but it harbors numerous insect pests for which it is a good breeding ground. We must, then, if we are to get the best results from our orchards, cultivate them and find some other means of keeping the blight in check than by leaving them in sod.

HOW THE BLIGHT IS SPREAD

Insects, more than any other thing, are responsible for spreading the blight. It was demonstrated a few years ago that bees, wasps and other blossom visiting insects often carry the germs of the disease on their bodies, especially their mouth parts, to the blossoms they visit in the orchard. When they insert their



Apple tree badly attacked by "Fire blight" through blossom inoculation in spring and twig inoculation by aphids. Eighty per cent. of twigs and small branches killed out in one season.



Young pear tree, with one branch inoculated with the germs by the pruning saw. The branch was killed and the disease was spreading from this branch to the others.