

America of this undesirable shrub, the sooner we will attain success in the control of grain rust. Unless conditions materially differ on the Continent of America from the Continent of Europe, it is safe to state that with the disappearance of the barberry, at any rate within the grain-producing States and Provinces, wheat rust will have lost its sting.

I am now quoting a few paragraphs from Dr. Stakman's report on the relation of barberry to black rust:—

“In 1865, De Bary, a German scientist, finally cleared up the matter of the relation between the barberry and grain rust. He made careful experiments and found that the life history of the rust parasite is as follows: The black stage of the rust lives through the winter. It cannot infect grains or grasses. The spores (seeds), however, do infect the common barberry, on which they produce the cluster-cup stage of the rust. These cluster-cup spores are then blown by the wind and infect grains and grasses, on which they produce the red or summer stage of the rust. This stage continues to propagate and spread until fall, when the black stage again is produced.”

“Hundreds of scientists have shown that De Bary was right. No one any longer would dispute the fact.”

“The barberry stands convicted. Farmers proved that the common barberry spreads rust. Scientists showed why and how. Both have shown that rust epidemics disappeared when the bushes were destroyed.”

#### LESSONS FROM EUROPEAN EXPERIENCE

It is clear from the experience of Europe that the only way in which to eradicate barberries effectively from large areas is by a virgorous campaign. Even though farmers were almost universally convinced of the necessity for eradicating barberries as long as 200 years ago, it was impossible for them to get rid of all the bushes. There always were some persons too ignorant or too lazy to do the work.

Many local attempts were made to eradicate barberries. The evidence is that whenever the bushes were moved, the rust either disappeared entirely or the severity decreased. In many regions there were so many bushes that local eradication was not sufficient to protect the crops, because the rust blew in from some unprogressive neighbour's bushes. It is a striking fact also that when the bushes sprouted again, on account of having been imperfectly dug, the rust reappeared in those regions from which it had disappeared after the barberries had been dug.

Conditions in Europe are not essentially different from those in this country. There are tremendous numbers of bushes in the upper half of the United States. These bushes rust heavily in the spring. The rust spreads to grains and grasses, and terrific damage often results.

The question often is asked how far rust can spread from a barberry bush. There sometimes is an idea that it cannot spread far. But it can.

During the past year, spread of rust to grasses and grains in Minnesota was traced directly more than ten miles from a single barberry hedge.

A single barberry bush can cause extensive losses. During the past summer, Prof. H. S. Jackson, of Purdue University, made the following observation:—

“One thing that has generally interested us this summer, and on which Mr. Beeson, our State leader, made a special study, was on outbreak of stem rust which started from one barberry bush. It travelled in one direction, at least, for about five miles. The area was pretty carefully surveyed and I have a report here containing figures given by the farmers themselves on eighteen out of perhaps a total of twice that