does an act worthy of his country, and he who cuts it down commits a crime against his race.

"Another important advantage," says J. T. Thomas, "has been occasionally afforded by the shelter of wood lands. It is well known that rust in wheat is commonly most prevalent on low and mucky lands; yet at other times, and in its most virulent form, it seems borne on the wind, and often destroys thousands of acres on all kinds of soil, in onesweeping blight. An instance of this sort occurred in northern Indiana in 1840. Early and late sown, on compact and spongy soil, on hill and dale, cleared land and prairie, were all alike affected. In every instance, however, where the crop was sheltered by wood land, it was least injured. An extensive farmer of Ontario county, New York, informed me, some years ago, that out of two hundred acres of promising wheat which he then had growing, all was completely destroyed except those portions sheltered by woods; the total loss being four or five thousand dollars, most of which he believed would have been saved had his land been protected by timber belts."

There are farmers, not a few, in Wisconsin who will call to mind instances of similar destruction of their wheat crops by a sudden spread of the rust over their field; and all their promising hopes blasted at once; where they expected thousands of wheat, they found only worthless straw, which they were obliged to remove by the aid of fire.

OF CUTTING TREES FOR WOOD.

The time of cutting trees as well as the number of trees which may be grown upon the acre, so as to procure the greatest quantity of wood from the acre, in a given period of time, are points that cannot be definitely settled, so as to be equally applicable to all pieces of land, or to all parts of the same piece.

If we take single trees fully established and growing rapidly, and examine them some useful deductions may be made on this subject. Let our sample tree be 12 feet high, and 4 inches around, or 1½ inches in diameter, making an annual layer of ¼ inch of wood, then by counting the wood deposited on the branches and ends of the top as equal to the amount deposited on the body of the tree, and we have an annual deposit four inches wide, one-half inch thick, and 12 feet long, or two superficial feet of wood one inch in thickness. Take another tree growing with the same rapidity, but 60 feet high and 16 inches in diameter, or 48 inches around, and the result of the annual growth would be a deposit 48 inches wide and 60 feet long, making 120 superficial feet one inch in thickness—an equivalent to the growth of 60 trees 12 feet high—a number which would occupy four times the space occupied by the sixty foot tree. Similar results will be found by a comparison of other trees of different sizes.

From these comparisons this rule may be deducted: Whenever trees cease to lay on a greater amount of wood annually than would be laid on by
the smaller trees that would stand upon the same space, and planted at suitable distances to make a thrifty growth, then the large trees should be cut away, and their place supplied by smaller trees; if the object be to get the greatest amount of wood. But if the trees possess any particular value for their fruit, or will continue to increase in value by age, without detriment to the timber already formed, as would be the case with pines and cabinet woods, then it will be more profitable to continue them in existence. At the same time it must be remembered that, if the trees stand in a grove or timber belt, they will greatly retard the growth of the small trees which are beneath them.

This rule will be found changing to suit all kinds of soil and timber; and will indicate to the grower that every tree that shows signs of decay, should be at once cut down, to make room for others. Also, that in most cases, for mere fuel, the maximum of wood producing property, in our native forest trees, will be reached between 20 and 30 years after the trees are firmly established. Eighteen years is the time allowed by law in France, in which owners may cut over their wood-lands. But experiments made in Massachusetts, have proved that 20 to 30 years is much preferable. We have made our estimates for 25 years.

When trees are cut off in the winter, they will send up sprouts from the roots, except such trees as never do sprout. Also by cutting in the winter the small trees which are growing on the ground, receive the sun and commence their vigorous growth in the spring of the year. Trees cut in the summer, or even after vegetation has commenced, and until some time after all vegetation has ceased will be certainly killed. The young trees are also likely to be killed at that time by being broken down, and damaged at a time that will kill them.

In cutting down as well as in trimming forests or timber belts, all the chips and brush should be removed from the ground. This fuel could be either bound in bundles, or cut short and put in baskets or boxes for convenience in handling, and be all sold by the pound as is done in France and some other places. It would make excellent kindlings at all times, and in summer would make a fine quick fire, and thus save much wood that would be otherwise used. Such fuel would find a ready market, as soon as its merits were understood; and machinery might readily be adapted to cutting and preparing the brush.

PROPOGATION OF TREES.

In this report, a scientific or elaborate description of the different methods of growing trees cannot be given. All trees may be propogated by layerings, many by cuttings, while all our native trees and the more common exotics, valuable for forest trees may be grown from seeds. Valuable varieties may be multiplied and perpetuated by budding, grafting and inarching. All who will give a little attention to the subject can grow them in some of these