

TREATMENT OF SECOND-GROWTH WHITE PINE.*

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The following methods of thinning and pruning white pine, and the effect of such cuttings, are based on investigation carried on in the natural pine groves of southern New Hampshire. Many of the principles set forth, although applicable to this portion of the

opment, and on account of crowding is likely to assume a long, lanky shape, which is very easily damaged by wind and snow. It is this state of affairs that the owner should strive to obviate by thinning his trees. Thinning is the cutting out of such tree-growths as interfere with the healthy development, and hence the future value, of the crop. This form of thinning is termed the "weeding" out of the unde-

branches low down on the trunk; consequently they produce knotty and less valuable timber. Moreover, open stands are not apt to improve the fertility of poor soil on account of exposure to the light, which dries out the moisture; hence open stands can be grown best only in naturally fertile soils.

These few conditions govern profitable growth in all localities. Thus while in one case it would be proper to remove all suppressed and dominated, and even a part of the dominating, trees, in another case it would be necessary to look carefully after all of these classes in order to secure the maximum growth and the highest timber value from the land.

Certain important changes are gradually taking place in the growth of trees in the forest, both individually and collectively. There are changes in the soil in which they grow, in the surrounding atmosphere, and changes wrought even upon the inhabitants in the neighborhood. These changes are chemical and mechanical. A growing tree takes from the soil the elements that are essential to its development, but restores them to the soil through its fallen leaves and branches in the form of carbonaceous and nitrogenous matter. Thus, under normal conditions the soil grows richer and capable of supporting larger and more luxuriant forests. The mechanical changes are more easily traced. The roots of trees change the composition of soil by forcing their way into it, thus disintegrating the rocks and earth and allowing the free access of air and water.

In dividing the trees of a forest into classes an account must be taken of the dead trees.



FIG. 1.—A WELL-MANAGED FOREST; LARGE TREES READY FOR MARKET; UNDER-GROWTH SUFFICIENTLY DENSE TO PROTECT THE SOIL.

country, will have to be slightly modified to suit conditions elsewhere.

As the supply of white pine decreases and the stumpage value increases proportionately, the aim of nearly every farmer who owns a woodlot is likely to be the production of the greatest quantity of valuable timber in the shortest possible time. To do this, his first object should be to stock the area with a sufficient number of trees to form a complete cover overhead. This is not only beneficial to the soil, but also for the proper development of the trees. In the natural woods this state of affairs very often exists.

Natural forests are likely to be more valuable than artificial plantations, for most natural forests grow only in such situations as are congenial to the life of trees, the seeds of which will not germinate readily in unfavorable soil. Nature seldom errs in the choice of conditions favorable to tree-growth, a judgment in which man is very liable to error.

Shortly after the leaf canopy is established the growing trees begin to crowd one another, and the struggle for light and space commences. A number of trees overtop the rest, rearing their heads to the full enjoyment of the light. Below these a few trees here and there enjoy with their leading shoots the light which is not absorbed by the dominating trees. Others are left so far behind in the race that they are deprived of enjoyment of all direct light—that is, they are suppressed. They live for a shorter or longer period, but unless they are a shade-enduring species they are not apt to survive for any great length of time.

Thus the forest is divided into three classes—dominant, intermediate, and suppressed trees. This struggle for existence goes on during the entire life of the forest, and is apt to so reduce the growing space of each dominating tree that it cannot reach its fullest devel-

opment. A single tree growing in the open and in the complete enjoyment of light will develop a full crown and root system and lay on a maximum volume of wood, but growth under these conditions has several serious drawbacks:

1st. Trees growing in this manner do not always produce the greatest volume of wood

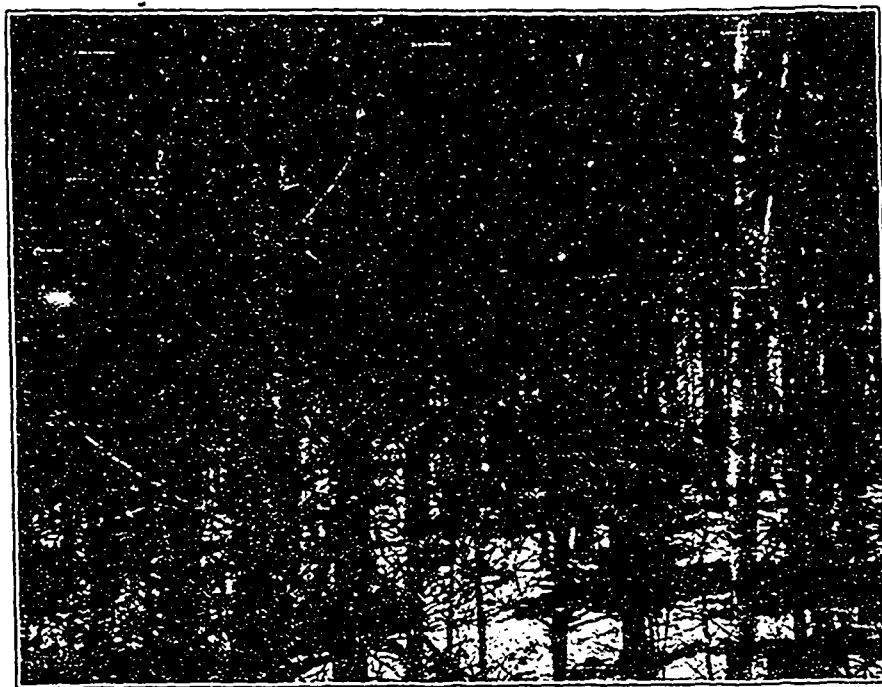


FIG. 2.—NATURAL REPRODUCTION OF WHITE PINE, SHOWING DENSITY OF GROWTH.

per acre. Although every tree in a crowded woods has a smaller volume than the isolated one, yet, owing to the greater number of trees, the crowded stand generally has a larger total volume per acre, and therefore greater stumpage value.

2nd. Isolated trees usually grow short or crooked, while trees in thick woods are, as a rule, straight.

3rd. Trees in the open generally have

These should be removed at every thinning, as they can be of no benefit to the other classes, but may be a constant source of danger from insects, fungi, and, in many cases, fire.

All thinnings are carried on with one of two objects in view: first, the production of the greatest quantity of material; second, the production of the highest quality of timber. The means of attaining these ends differ considerably.

Experience has taught that the greatest

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