FORESTRY FOR SOUTHERN NEW ENGLAND WOODLOTS.

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THE sort of forestry which is applicable to southern New England is governed, first of all, by the character and condition of the forest. Taking the region as a whole, it is covered with an immature growth of mixed hardwoods, in which, as in eastern and western Massachusetts, respectively, there is some White Pine and Spruce. Few stands are more than 60 years old, and fully 75 per cent are of sprout origin, having come up after the clear cuttings which have hitherto prevailed. In these cuttings stumps were commonly left high and ragged, and fire frequently followed the choppers. The succeeding growth, developing without care and often subject to further visitations from fire, became much inferior to the previous generation. Comparatively worthless species, like Gray Birch, Poplar, and Pine Cherry, took possession of much ground before occupied by more valuable trees. The growing sprouts were so thick that they forced each other to become crooked, and their attachment to a high and decaying stump often infected them with a fungous disease. As they grew on, unthinned, the dying and suppressed individuals choked the forest, so that not only the growth, but the reproduction, was retarded.

Similar evils are to be found in the few older stands from which scattering trees or patches of trees have from time to time been cut out. More often than not it was the thriftiest trees and the best species that were cut, when poorer specimens would have served equally well, and, as no pains were taken to spare seedling growth already on the ground, the number of poor individuals and less valuable species has been steadily increasing without any compensating quickening of the reproduction. Thus, broadly speaking, these forests are in need either of improvement cuttings, which shall stimulate their growth and encourage the more valuable trees, or of reproduction cuttings, which shall start a much needed crop of seedlings.

To meet these needs, and to enable forest-owners to meet them in some degree unaided, has been the aim of recent field-work on the part of the Bureau of Forestry. In response to applications for assistance, some twenty-five tracts in the region specified were visited and examined, and a scheme of treatment was advised for each. This scheme or working plan, simply stated, consisted in just as many of the needed silvicultural measures as were worth while to the owner; hence the degree of treatment possible depended very largely on the general purpose for which the forest was held and its situation with regard to market, labor, and transportation. An absentee owner, whose woodlot is merely an uncertain asset, too remote to be looked after in person, could obviously do little more than sell it on the stump to a local buyer and allow it to be cut as the buyer wished. On the other hand, a water company, whose forest land is chiefly useful to protect the slopes draining into its reservoirs, cannot afford to leave it neglected, and in such a case careful management, even if it merely pays for itself, is a necessary undertaking. For farmers, and other owners who count upon using or selling a certain amount of wood from their woodland, forestry is equally important and often more immediately profitable. The cost of proper harvesting for resident owners is but little greater than

that of ordinary methods, and the improvement in the productiveness and value of the land much more than makes up for the slight sacrifice of profit. Experience has shown that in most cases where it will pay to cut at all, it will pay to cut scientifically. This is for the first operation. In the long run the conservative treatment is certainly the more paying.

The points essential to forestry are that the forest as a forest (either for the production of wood or the ornament and protection of the ground) should have a permanent value to its owner, and that some sort of intelligent supervision should be possible. In a region like New England, where there is nearly everywhere a demand for firewood and small timber, the difficulty is not to dispose of the product, but to make sure that it is properly taken out. The necessity of selecting some trees and leaving others appears to the average chopper foolish and troublesome, and long habit has caused him to consider the seedling and sapling growth, which is the nucleus of succeeding generations, merely "brush," and to clear it out as such, partly to make chopping easier and partly because it is the custom. That these short-sighted methods are not necessary for profitable cutting has been abundantly proved on a number of well-managed woodlots. On one large tract where extensive thinnings are being made according to a scheme advised by the Bureau of Forestry, the chopping is costing no more than it did when the wood was cut without method. The only additional elements of cost are the marking of trees to be cut, the necessary supervision, and the fact that it takes more area than before to yield a cord of wood. On smaller tracts, when the owner himself shares or superintends the woods work, these elements are reduced to practically nothing. Practice and the ability to tell one tree from another, and seedlings from "brush," make discriminating cutting far easier than the inexperienced seem to think. What is chiefly required for the success of forestry in these accessible hardwood forests is knowledge of the results to be desired and the ways of bringing them about. In other words, either the man who does the work or the man who superintends it should know the trees and the general principles of improvement and reproduction cuttings.

This knowledge the Bureau of Forestry intends to furnish to the woodlot owner in a forthcoming bulletin, which is to embody in simple, untechnical form the important rules and considerations for the treatment of woodlands. The material, which has been gathered and worked up in collaboration with Professor H. S. Graves, Director of the Yale Forest School, describes cuttings already successfully applied to actual stands in New England, and its chief usefulness lies in the graphic description of thirty special cases taken from various localities, so as to represent typical forest conditions throughout the region. In each of these cases the stand was sketched in the woods as it would be seen from the edge of a slashing. The trees were drawn only in outline, but the shapes of the crowns and their relative positions, as well as the relations of the stems, were all diagrammatically shown. The name of each species was printed on the crown, and any serious defect, such as a dead top, the girdling of borers, or unsoundness, was conventionally represented. In the finished diagrams there will thus be depicted a sample strip of each sort of stand, roughly reproducing the actual problem on the ground. The diagrams are classified according to the sort of cuttings they are to illustrate, whether for reproduction or improvement, and the trees which require to be cut in each are marked with a heavy line. The reasons why these trees are cut and the results to follow are briefly explained in a subjoined paragraph. In this way it is hoped to make clear, with practically no technical discussion, how the main principles are applied in practice. The question whether or not any given measure would pay for itself could, of course, only be treated in general, since the situation varied greatly from place to place. In most cases an owner could decide this for himself. The main purpose of the bulletin is to show how the woods are to be cut.