

PINE PLANTATIONS AND NEW ENGLAND FORESTRY

By RICHARD T. FISHER

Director, Harvard Forest

FORESTRY began to be promoted in New England only a little over a quarter century ago. In that period the federal Forest Service, the several associations, and later as they became established the state departments and forest schools have built up an immense campaign of education. This publicity has largely determined the popular conception of forestry and hence the direction of its growth. Almost from the start and with increasing unanimity the programs and propoganda have been centered on the planting of white pine. For this there were obvious reasons: the abundance of natural old field pine, its rapid growth and ready market, the adaptability of abandoned or failing farms to planting, and, as a question of advertising, the ease with which the setting-out of little trees could be dramatized to the public. Leaving out fire protection (not in itself productive), progress in forestry is more and more commonly measured by the number of seedlings produced, distributed, and planted. Implied by this and often directly expressed is the assumption of vast deforested or waste areas which must be made productive. In consequence it is the common belief, shared by most timberland owners and apparently even by some foresters, that forestry means reforestation, and that reforestation means planting, generally white pine.

It is axiomatic that sufficient wood production is in the long run a regional

necessity, and that the right kind of education will help bring it to pass. Furthermore, if forestry is to be a live industry, not only must economic conditions permit timber to show a profit on its cost, but, in Colonel Greeley's expressive phrase, "the people must become forest-minded." In the light of these objectives and now that twenty-five years of silvicultural experience and economic developments have passed, it is timely to inquire whether the widespread emphasis on plantations of pine is a sound policy.

Pure pine stands both in natural woodlots and in plantations are silvically alike. At fifty to sixty years growth falls off rapidly, general health declines, and disease is frequent, especially red rot (*Trametes pini*). The soil tends to become impervious and unfertile under an increasing layer of raw humus and litter. Only low grade or knotty lumber is produced, and this poor quality is aggravated by injuries from the pine weevil, which is particularly damaging in the usual wide-spaced plantation. Blister rust, now widespread, is a matter of serious concern, and whatever may be said for control, the disease has proved most destructive in compact stands. Pure pine is a transition type, and except on the lightest soils reverts to hardwood or mixtures of hardwood and softwood. Viewed as a crop, the type, in spite of early rapidity of growth, is not in the long run productive, vigorous, or easy to maintain. Furthermore, there has

been a gradual shrinkage in the use of low grade white pine, and western lumber has largely replaced the better grades of native softwood, not a large element in local production at best. Thus the price of box lumber—the main product of plantation or woodlot—is now almost 30% less than it was ten years ago, and considering the prospective supply and probable demand, it will be many years before the value will reach the previous high point.

These may be considered to be intrinsic defects inherent in the life history of the type and its relation to utilization. They have been greatly aggravated in the practice of planting by defects in method. The public has been supplied with thousands of cheap trees and told simply to plant them six feet apart. No special knowledge required. The results have been inevitable. There may be by now upwards of 75,000 acres of plantation in New England, most of it white pine. Because of poor stock carelessly handled and planted, or soil unsuitable for the species, or no account taken of competing vegetation, planting distance seldom considered, excessive weevil damage, and above all, no check on forest weeds or discrimination between weeds and desirable components of the stand—because in fact the formation and care of a forest is *not* a simple problem, an appalling percentage of existing plantations are too poor to repay their cost.

The financial outcome of forestry is plainly the final test of its practice and progress as an industry. In this connection also the plantation complex has been a misleading influence. It has fixed the idea that forestry means a long deferred return, a wait of fifty years or more to

get back both the investment and the possible profit. This conception naturally involves the figuring of compound interest on original costs and carrying charges. Thus, forestry presents itself financially not in its true form as a continuous business in which current expenses are met by periodic returns, but as something between a speculation and a savings bank account, with a tendency toward the former that is only partly neutralized by the worthiness of the cause. It is true that self-supporting or continuously profitable forests cannot be created over night, but there are many where this condition could be approached in varying degrees; and to have the nature and financial constitution of such enterprises continually obscured by the bugaboo of compound interest has been a real obstacle to progress.

All these objections, serious though they are, do not mean that the planting of pure stands of conifers, even of white pine, should be wholly discouraged. On the contrary, there is much true reforestation that should and must be done by planting, some of it even with white pine. The real objection is that from the standpoint of increased production and the promotion of practice, there are so many better ways of spending money and propaganda. There exists today reliable knowledge of New England forest conditions, of proven method in silviculture, of the marketability of products, which, if rightly interpreted, means a fundamental revision in the aims of forestry.

As alternatives to the pine planting policy—perhaps they should be called complements — t h r e e principal aims stand out. Taken together they make a

concept of forestry which fits the present silvical and economic facts. In practice these involve policies which are interwoven and dependent.

First, mixed stands, either mixed hardwood or mixed softwood and hardwood.

Mixed stands, especially mixtures of hardwood or hardwood with softwood, tend to form and maintain fertile soil. In such stands, owing to rapidity of growth and natural pruning, the best quality of timber is produced, especially with softwood species. General forest sanitation is most effective, and insects and diseases are less likely to become epidemic. The original, pre-settlement forests were largely mixed hardwood with a varying element of softwood, and there is good reason to believe that only mixtures approach permanence of composition and health. Mixed stands are soundest from a business point of view: First, because they can most cheaply be established from growing stock now present on wild and cut-over land, either with the natural reproduction alone through weeding, or with natural reproduction and supplementary planting combined with weeding; and second, because the quality and variety of product make a safer investment. As regards the better species of hardwood, prices are already much higher than for low grade pine, and the indications are that for the next generation hardwood will be more valuable than softwood, being subject to less competition and more demand. In short, mixed stands are natural to the region, and they exist already—at least potentially—in a large percentage of young growth.

Second, development of the natural forest, both for its greater productive-

ness per dollar and as the only basis for early or sustained yields.

In Connecticut, Rhode Island, Massachusetts, and the southern halves of Vermont, New Hampshire, and Maine, there are not less than 15,000,000 acres of woodland. This amounts to between 50% and 60% of the whole area, and at least 20% more than the region contained a hundred years ago. Three-quarters of this present forest began as cut-over land with the seedlings, mainly advanced growth, of hardwoods that started under the previous stand, the sprouts from stumps, and some new reproduction, usually weed species that germinated at or near the time of cutting. The other quarter comprises the variable and more gradual replacement on old fields, most often white pine or gray birch, or mixtures of the two. Tens of thousands of these acres contain *for the first few years* the elements of a first class new forest, either of hardwood or hardwood and softwood. Hundreds of thousands are approaching an early and nearly worthless maturity through the increasing dominance of forest weeds and defective trees. In the middle and older stages of growth, through thinnings in the better stands, through more selective logging in mature or uneven-aged timber, much can be done to build up growth and forest capital and to enlarge income, both present and future; but as an alternative to planting, as a means of adding productive acres to the land, the early weeding of suitable immature wild stands will show two to four times the return per dollar.

Third, economic solutions, such as cooperative selling, forest owner associations, fairer taxation, and market improvements.

Notwithstanding the blight of western overproduction, which only time can lift, and which has not helped to make the productive handling of our timberland more attractive, there are directions in which economic factors might be changed for the better. A sound theory of production and financing is indispensable. In the long run no industry can live which cannot pay its operating expenses and fixed charges out of income. A properly organized forest will meet this test, but the small unit of forest will seldom do so; the plantation, with its deferred return, never. A promising way out, said to be already in successful operation in Finland, is through associations of owners for purposes of management and marketing. With a sufficient and convenient grouping of holdings and above all, under an able manager, there could certainly be secured more regular and frequent yields, lower costs, and more advantageous selling. The quality and hence the price of lumber could be raised, both immediately by more selective logging, and gradually by better silviculture. Such a plan would tend to put both production and financing on the only basis compatible with forestry, namely, continuity. A similar point of view is needed for final solution of the

tax difficulty, much of which arises from the false conception that forests are frozen assets, to be liquidated only at long intervals, and must consequently be subsidized by some form of exemption. If forests can be thought of and expected to be units of continuous or periodic yield, as ultimately they must be in fact, taxation will be greatly simplified. In the matter of markets also it is possible by concerted studies and better organized relations between producer groups and consumer groups to find ways of economizing in distribution, of more varied disposal of low grade products, and even of developing new uses for species not now in demand.

Broadly speaking, forestry must be faced both by the public authorities and by the private owner as a genuine industry with the same technical, financial, and economic requirements as any other. In other words, if the community is to become truly "forest-minded," it needs silviculture that will get the best production for a given expenditure, forest properties that will keep on producing, and the best possible adjustments to markets and utilization. As the principal item in the program, the planting of pine does not seem to fill the bill.