

FORESTRY IN THE SOUTH

by
PAGE S. BUNKER

FOREWORD BY
CHARLES LATHROP PACK



PUBLISHED BY
The AMERICAN TREE ASSOCIATION
WASHINGTON, D. C.

1928

*"If the Nation Saves the Trees
The Trees Will Save the Nation"*

CHARLES LATHROP PACK

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by
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with foreword by
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PREFACE

When Charles Lathrop Pack, President of the American Tree Association, suggested the preparation of an account of Forestry in the South, the task appeared in advance to involve little difficulty. However, the South is a very large part of the United States, embracing a great variety of local conditions and diversified interests. To summarize the essentials of forestry thought and action typical of this section proved a matter involving a great deal of special investigation. The topics treated necessarily have been limited to matters of direct interest to the southern landowner and business man as well as the general public. The particular points covered have been selected so that they may be related to similar lines of progress in other parts of the country and also serve as a synopsis of southern forestry.

PAGE S. BUNKER.

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FOREWORD

By CHARLES LATHROP PACK

President, American Tree Association

AMERICAN civilization has been built upon a foundation of wood. Our mode of living, our standards as they exist today are all predicated upon the existence of an abundant and easily obtainable supply of wood. The great bulk of our traditions have behind them a forest background.

It is inconceivable that this complex scheme of things we have evolved in building up a new nation should continue in its present paths without the varied and necessary products of the forest. We have come to take these forest products for granted, like water, sunshine and air. Yet in the face of all this, we know that wood is daily becoming more scarce.

Our forests are playing out. The wood needs of a rapidly developing nation have exhausted America's forest regions one by one. First fell the white pine of New England, followed by the great hardwood and softwood forests of Pennsylvania and New York. For a time the timber of the Lake States forged to the front and contributed the bulk of the nation's wood, until this region too was emptied of its forest wealth and today lies abandoned and deserted like a worn out mine.

When, turning southward from Michigan in 1882, I first cruised timber in the great pineries of the south, few recognized what the future held in store. "Come back to the Lake States and saw wood," they said. "Leave that waste land and cheap timber alone."

For more than a quarter of a century now, the magnificent pineries of the South have been America's mainstay in timber production,—yet before our insatiable demand for wood and more wood, even these have not proved inexhaustible. Today, in spite of favorable climate, fertile soil and tree species of amazingly rapid growth we have so far overbalanced timber growth by timber use that the exhaustion of the virgin timber of the South is already in sight.

Carloads of lumber from the Pacific Northwest attest that again the nation is turning to another, and this time the last, timber region for its supplies.

This need not and should not be so. The same wonderfully productive climate, the same deep fertile soil are just as favorable to rapid tree growth in the South today as in the days that are gone. There exists no real reason for going across a continent to obtain the lumber that is needed in the South and East. The South has taken the leadership in some of the most significant steps this nation has ever made. The South today is in a position to assume leadership in forestry and thus insure the perpetuation of that most useful of all nature's gifts—wood. It is not so much a task as an opportunity. Those 225,000,000 acres of Southern forest soil must be made to continue their important part in the prosperity of the South and of the nation.

But in all this, the important thing is time. Each year's delay means another year of forest fires and another year's postponement of the harvesting. Not through hesitation and delay did the South accumulate her rich traditions of leadership in so many spheres. Neither will hesitation and delay reclothe her forest soil with trees and bring back her leadership in timber production.

Southern forestry promises rich returns. Practically in no other region in the world exist such favorable factors of rapid growth, accessibility and valuable tree species as in Dixie. Nature stands ready to do her share—man alone has been derelict. Slowly he is coming to that realization. Already individuals of vision and courage have laid the beginnings of Southern forestry. Already, most Southern states have established Departments of Forestry that are working for the furtherance of tree growth and tree protection.

These are hopeful signs. One need not be over optimistic to look forward to a day when forest fires, wasteful lumbering and destructive methods of turpentineing in the South will be things of an almost forgotten past. It will be a day when forest protection and forest regeneration will be reflected in a permanent lumber industry, in prosperous forest communities and in timberlands where the careful husbandry of the forester will balance tree growth with tree use.

FORESTRY IN THE SOUTH

CHAPTER I

SOUTHERN FORESTS

THE forests of the South! The pictures conjured before the mind by these words are at once colorful and tragic yet full of confident promise.

The early explorers of the southeastern part of North America found practically the entire region covered with heavy forests. The favorable conditions of soil and climate had produced an amazing variety of trees, most of them of important usefulness to the original settlers and the generations that followed them.

In no place in the world was there found a more wonderful and beneficial combination of forest types. The cypress, cedar, pines, oaks, gums, hickories, yellow poplar, walnut, chestnut, sycamore and other valuable and beautiful species formed dense stands either by themselves or in mixed forests. For every variation of soil, surface and climate there was a particular kind of tree, or a number of kinds, that found the site particularly adaptable, and Nature permitted few potential tree growing areas to lie waste. When in her destructive moods, with tornado or flood, she levelled the forest, the almost immediate reseedling and natural reforestation bore witness to her repentance.

**Wonderful
Forest
Trees**

Prior to settlement by the white race, human agency had made little impress on the forest. The American Indian was never a numerous race. His needs for wood and timber were modest and easily satisfied by the crumbs of forest surplus. While there was probably considerable variation in the practice among individuals and groups, history and scientific research indicate that he was careful with fire and rarely permitted extensive burns. He had no matches and the kindling of fires was a laborious process performed only when absolutely necessary. In the Southern forests conditions that result in frequent lightning fires are largely absent.

With the advent of white settlement, however, conditions changed. The white man's civic, cultural and economic needs, real and fancied, appeared hampered by the encircling woods. The forest was apparently inexhaustible. However, there were lands to be cleared for farms, roads to be built and lumber and other forest products to be obtained for home building and other domestic and industrial uses. There was no need of using any but the very best material, so the clearing or destruction of the forests went on and made possible a rapid increase in plantation and community development.

Later with the approaching exhaustion of northern forests the lumber industry centered in the South with spark throwing logging equipment, and the fiery trail of the naval stores industry steadily advanced from the Old Dominion through the coastal plain region to the limit of the long-leaf pine in the Lone Star State. The vast extent of the forests attracted additional lumber manufacturing interests, not only of our own country but also of Europe. Oftentimes the formalities of acquiring title to the timber before cutting were dispensed with and privately owned plants cut Government owned timber with no compunction or restriction. Notwithstanding these early encroachments, the woodlands of the South were so extensive that for generations the decrease in virgin timber was not generally apparent.

The southeastern part of the United States is fortunate in lying within two great forest regions of the continent, the southern pine belt and the central hardwood region. Extensions of the latter are sometimes regarded separately as a southern hardwood section. While the hardwood areas are of great importance, it is the pineries that have constituted the backbone of the forest resources of the South.

The original pine forests of the South probably contained over 1,000,000,000,000 board feet of timber covering about 130,000,000 acres. Beginning shortly after 1890, when the pine woods of the Lake States became diminished through over cutting, the movement of the lumber industry to the South became more rapid. The manufacture of southern softwoods increased steadily and reached its maximum in 1909 with an output of 17,000,000,000 board feet. Since this high point was reached there has been a slow dropping off in the production of southern pine. Although this lumber still dominates the eastern markets, the current cut is only about two-thirds

of the maximum. In 1924 it was estimated that there remained about 139,000,000,000 board feet of virgin pine timber, scattered over some 114,000,000 acres. There is in the South also approximately 119,000,000,000 feet of second growth timber.

As in most lumbering operations of their day, the first cuttings of southern pine were usually restricted to the best trees. This left upon the area many trees of small and medium size. These remnant forests later played and are still playing an important part in the timber supply. Naturally, under the systems of cutting in vogue, numerous trees suitable for seeding purposes remained after the operations. The rapid reseedling of cut-over lands and speedy restocking from this source are characteristic of most southern pine areas.

**Forest
Regrowth on
Old Fields**

Another important factor affecting the proportion of forest land in the South is the old field type of forest. After the close of the war between the states, followed by the destructive so-called reconstruction period, the problem of keeping labor on the plantations became difficult of solution. In many cases the agricultural use of extensive areas was conducted under trying conditions for a decade or two, only to collapse finally with a reversion of the land to forest seeding. In these instances the soil, being worked ground, was especially receptive to pine forest growth. In many stands of timber measuring as much as two feet in diameter traces of the plowed furrows of formerly cultivated fields may still be seen. Pines established on such areas grew very rapidly, in both height and diameter, with the result that at the present time old field stands comprise material timber resources. In fact, millions of acres in the South have been converted into pure pine from what otherwise would have been low grade mixed forest.

Further extension of forest lands of the old field type was caused by the advent of the cotton boll weevil. Added to the existing discouragements attending agriculture, this destructive pest hastened the turning point of land management over large areas. Continued departure of colored labor from the southern plantations to industrial centers restricted cultivation of land and hundreds of thousands of acres on which agriculture was no longer profitable reverted to forest growth.

Although increasing the area available for timber production, the effect of the boll weevil invasion on the whole was unfavorable to the extension of valuable tree growth. Attempts at the control of the insect involved practices highly destructive to growing forests. When the destruction by the weevil became widespread throughout the cotton belt the farmers sought desperately for some ready method of controlling it. The belief spread that setting fire to surrounding vegetation would destroy the boll weevil and the practice was wholeheartedly put into effect on a large scale throughout the entire region.

Fires running without check frequently destroyed rail fences and other improvements. On this account they occasionally were kept under partial control. The wide use of barbed wire instead of rails, however, largely removed such control with the result that the woods burning practice proceeded in general without supervision of any kind to restrict it.

**Portable
Sawmills
Increased**

Meanwhile the cutting of timber advanced steadily with only such variations as were occasioned by shifting market conditions and the decrease of virgin stands. The naval stores industry continued in full swing and, after having reached its geographical limit in eastern Texas, it turned upon itself and started working back over its original path. This movement has been accompanied so largely by the destructive working of immature long-leaf pine trees that this most valuable species has been in a fair way toward extermination over large areas. Later, however, the substitution of the cup and gutter system of working trees was a marked advance in better management of the naval stores industry.

The impetus given the lumber trade by the demands of the world war caused an unusual increase in the number of portable sawmills. These mills moving from place to place and serving as gleaners in the wake of larger operations cut an enormous amount of timber. In many parts of the South their inroads upon the remnant forests and the second growth were unusually heavy. Not being able to avail themselves of the economies possible in quantity production and following the expensive practice of cutting and sawing small trees with resultant high costs per thousand feet of material, such enterprises were seldom able to pay the landowner what his stumpage was worth, nor could they produce a high grade of manufactured material. Except under especially favorable circumstances, therefore, the net

result was often a loss both to the forest owner and to the operator. Under the mistaken impression, however, that logging and lumbering are fields of easy profit, the number of transient sawmill plants, although under frequently changing ownerships, has been maintained at a fairly high level.

In addition to over cutting and woods fires, the forests of the South have not been exempt from the attacks of insects and disease. Among the former, material damage has been caused by various bark beetles, sawflies, borers and tip moths. Among the tree diseases that have exacted toll are rusts, galls and wood fungi. On the whole, however, the impairments due to natural causes have been small as compared with those inflicted by human agency.

**General
Condition
of the South**

This, then, was the general condition of the South as to its forest resources over the period during which a positive human need for forest benefits began to be appreciated. The realization of the want was not wholly of local origin. It was also occasioned by grave situations in other parts of the country. This need was for a greater and continuous supply of the products of the forest, commodities the lack of which for generations had seemed so remotely distant as to hardly enter into human consideration.



CHAPTER II

THE BEGINNINGS OF FORESTRY

WHEN the products and facilities afforded by Nature, suitable for food, clothing, shelter, utensils and transportation, became restricted or unavailable, man was forced by various ways and means of his own devising to provide for his needs. Thus agriculture, mining, manufacturing and other systems of economic production, came into being. When the need for forest products became more acute, the science and art of forestry were developed.

Forestry Enterprises of the South

Similar needs and conditions give rise to similar reactions. The inception of forestry in America, or change made in the growth and use of forests which resulted in profitable production of timber, lay in undertakings of forest land owners in various parts of the country. The objects of forestry require that certain things be done. The doing of these things in the most efficient manner comprises the practice of forestry.

No general historical account of forestry in America has been compiled. Its chronological beginnings are as yet clothed in obscurity. It is well known, however, that various enterprises of this nature have been in existence for a great many years, some probably for over a century. Some reports credit the South with the first forestry enterprises; others locate the earliest undertakings of this character in the northeast. In one southern state records of a considerable number of independent timber producing projects have been compiled from 1857 down to the present time. It is certain, however, that there are various enterprises older than these. Most of these early developments supplied products for private and local consumption, although some covered thousands of acres and were factors in the general timber supply.

The southern landowner, be he lumberman, naval stores operator, mining man, farmer or other citizen, who undertakes the practice of forestry on his holdings is met by both helps and hindrances. The natural and economic advantages of the southern forest regions all work in the interest of the timber grower. On the other hand, certain traditions and mistaken practices in many of the communities exert a harmful influence. Altogether, however, the balance is on

the side of favorable conditions. This conclusion has been acted upon by large numbers of businesslike landowners from Texas to Maryland. The result is that the number and extent of forestry undertakings has increased markedly during the past quarter century. The territory covered by these enterprises now runs into millions of acres. The intensiveness of forestry practice varies widely on these holdings, but in all cases the productiveness of the areas has been profitably increased.

In the South, as in other parts of the country, progress in forestry has been delayed to a certain extent by unfortunate representations of individuals and agencies inspired by fanciful or sentimental ideas woven about the name of forestry. On the whole, however, the South has suffered less from these mistaken notions than most other sections of the country. Southern landowners and business men appreciate that trees may be propagated for many purposes, but unless the principal object is the profitable production of timber to furnish raw material for industrial or private use, the project is not forestry, but something else.

**Profitable
Production
of Timber**

The southern landowner who contemplates putting his idle acres to work growing timber usually takes a look ahead to view as far as possible the responsibilities that will devolve upon him and the proper methods of meeting them. Like various other undertakings, forestry in America had to wait until its practice became economically feasible. Since forestry means continuous and profitable yield of forest values, the landowner must see his way clear to make money out of his timber growing project, else he must make other use, or no use, of his land, despite representations of enthusiasts whose urgings involve no risk to themselves.

A forest may be considered in much the same light as a manufacturing plant, the product being the annual increment of timber and the power furnished for operation being Nature herself assisted by the informed and discriminating judgment of the manager or superintendent. In manufacturing, a basic principle is that the plant must be so designed, constructed and maintained as to expedite production the most and impede it the least. In the case of artificial forestation this principle can be given considerable play. Most forests, however, are established by Nature and the owner has had no part in their original design or composition. He must, therefore, at

least in the beginning, reverse the usual principle and adapt his methods of operation to the source of production as he finds it. Afterward it may be possible in a measure to convert the original forest to forms and conditions conforming more closely to the requirements of the basic principle.

**Increased
Value of
Stumpage**

The practice, current until comparatively recent years, of logging an area once and then moving the sawmill to a new locality practically precluded any material degree of permanence as the term is used with reference to industry. It was appreciated in the South that permanence in the forest industries was a most desirable feature, but there were so many apparent obstacles that for a long time such a condition was deemed impracticable by most companies. The length of time required to grow new forests seemed excessive. Financial obligations demanded that operations under way be continued under current methods. For profitable operation the manufacturing plant had to be run at full capacity. The fire situation seemed uncontrollable, preventing, retarding and destroying young growth. The razor back hog rooted his way among the young long-leaf and destroyed new growth. Erratic and illy adapted systems of taxation appeared to preclude the leaving of any standing timber that could possibly be utilized.

Changes in the times, however, brought new viewpoints. Lumber and naval stores, like other commercial commodities, have their ups and downs on the market. Nevertheless the concensus of opinion among the leaders of industry is that with properly regulated production and distribution, prices much higher than those of former days can be successfully maintained. For instance the stumpage figure on long leaf yellow pine in 1880 averaged 5 cents per thousand. Today it averages at least \$5.00 per thousand and probably higher. The average trend of prices has been steadily upward. Moreover, study of the more valuable species has disclosed that if Nature be allowed to take her course, assisted somewhat by human effort, merchantable trees of valuable species can be grown in shorter time than that required by the chance survivors of a century or two of burning, which comprised the greater part of what have been called the virgin forests. Competition has forced a more businesslike management of the financial affairs of lumber operators. New sawmills are being built with view to future stumpage supply rather than that

of the present. The fire situation is yielding to treatment over large sections of the South. The razor back hog which ran at large is giving way to better broods kept within fences by farmers. In a number of southern states taxation systems have been made more rational.

The opinion in the South that the practice of forestry can be made to pay substantial profits now amounts to almost a positive assurance. A lively interest has arisen in the renewing of timber crops on logged off lands. Naturally, the matter of costs, although often freely passed over by enthusiastic forestry advocates, is the most vital of all. However, the balance sheets of the outstanding forestry enterprises of the South show that the costs can be kept very low with strong likelihood of added profits.

**Forestry
to Pay
Profits**

The forest land owner must remember that the preparatory work, be it thinnings, cleanings or what not is a true investment and that the labor costs attendant thereon are not lost. Altogether, the conditions of today are such that the growing of timber presents to any owner of a sizeable area an opportunity for profit which should not be neglected.



CHAPTER III

PINE FORESTRY

WHAT the southern landowner should do to install forestry methods on his holdings depends very largely upon whether his land bears softwoods or hardwoods. By far the greater part of the forest wealth harvested from the southern states has been composed of the yield of the pine forests. It is but natural that the owner of cut-over pine lands should look toward reforestation by the same species.

**Twelve
Species
of Pine**

Of the group of trees known as pines twelve species exist in the southern states. Some of these, such as the pinon and bull pine of west Texas, are commercially of negligible importance. Other species such as the sand pine of Florida, the mountain pine of the Appalachians, and the spruce pine of the southern coastal region are of such limited distribution or occur in such relatively small amounts that they are merely of limited or local value. There remain the Big Four,—the shortleaf, the loblolly, the slash and the long-leaf pine. These comprise the mainstay of the pine industries of the South. Each of these trees has certain specific requirements for its best growth. On the other hand, however, there are certain general statements that can be made applicable to them all.

Recalling that the forest is a production plant just as truly as is a textile mill or an automobile factory, it is obvious that the first step toward maintaining it in continuous and profitable operation is to see that its capacity for production remains unimpaired. In other words, the forest must be safeguarded against injury or destruction by harmful agencies such as fire, insects, disease and trespass.

For the smaller areas on or near which the owner resides most protective functions can be performed by the owner and his family. On larger forest holdings a greater degree of organization will be necessary. In all cases study of the situation will suggest modifications or extension of the measures suggested. Community good will toward the enterprise should be developed in every possible way. This is essential.

Even with the security of the forest guaranteed, however, there still remains much to be done before a pine area may be placed in a state of continuous and profitable maximum yield. Between the degree of production under conditions that have generally obtained during the past and the maximum that is practically attainable, there is a wide gap. Roughly, it may be said that protection alone will span rather more than half of this. The balance must be achieved mainly by modifications of cutting policies and methods and by direct aid to reforestation.

It is now generally recognized that young pines have actual money value. It is also well known, of course, that it is during the younger stages of their existence that they make their most rapid growth, thus compounding their value more frequently. To so conduct the logging operations as to insure the young trees the least damage is an extremely important part of maintaining pine areas in a continuously productive condition. Here is a matter of balancing one value against another. If the owner benefits more financially through reduced cost of logging by means of steam skidding than he will through protecting the young growth against breakage, certainly a considerable proportion of the young pines must be sacrificed. In such contingency, however, a very close investigation of the assumed data should be made. There is rather more than a possibility that the saving effected by steam skidding is somewhat overestimated and that the real money value of the young pines is largely underestimated. Even at the worst, however, the steam skidder is a temporary visitation and, with the great natural productiveness of southern pine lands, it is rare that a tract is permanently ruined by its use. While skidder logging leaves the ground in outwardly sorry shape, these resulting conditions afford an ideal germinating bed for practically all southern timber species, and, given a sufficient quantity of seed trees coupled with fire protection, this form of logging will usually produce a gratifying second crop.

**Effect of
Skidding
on Growth**

For practically every logging operation there is a minimum size tree that it is profitable to handle. What may be regarded as a small stick on some areas would be welcomed as a large tree on another. However, the principle holds good in that on either tract there may be found a size the handling of which from the stump through the mill to the car, can only be done at a money loss to the operator. Checks and investigations in this connection have been made repeatedly

**Maximum
Production
of Forests**

in the South during recent years. It rarely has been found that the operator has left trees that he could handle at a profit. On the other hand, in nearly every instance it has been found that he has taken trees that mean only a loss to him. The findings in these cases have been arrived at by strict engineering and business methods and there is no doubt as to their correctness. Next to protecting young growth from damage during logging operations, therefore, comes the leaving of the smaller trees that, while containing merchantable material, cannot be handled at a profit. The same principle obtains in naval stores production. The approximate diameter for any operation can be determined by a forester or production engineer. An operator interested in such investigations will probably have little serious trouble in figuring it out for himself.

Among the things to be done, those thus far considered have been directly analogous to corresponding features of other industries where their conservative treatment is regarded as a matter of course. Certainly, under present conditions, the businesslike landowner, after a survey of the situation, will readily recognize that his forest property is worth taking care of, that it is practicable to give it the necessary protection and that with comparatively slight changes in procedures utilization can be conducted so as to leave more and better young growth with greater profit to the owner. These are but immediate considerations, however, and a look ahead shows that in order to attain maximum productivity of pine lands still other things are necessary.

Maximum production means full stocking, or that there must be the largest number of thriftily growing trees possible on each acre. Observation supplemented by information from those who have made special study of the subject will indicate just which species of pine will promise the greatest returns on each part of the area. Pines naturally trend more toward pure stands than do the hardwoods. However, to secure maximum production the decision as to which species to favor must take into consideration the details of the tract as well as the area as a whole. There are also certain advantages in mixed stands of pine and hardwoods.

Ordinarily southern pines reproduce readily with little or no artificial aid. In this region with good management planting can be done quite cheaply. The cost of planting sometimes may be less than the present money value of the trees that it is proposed to leave

for seeding purposes. In any event, a small nursery is a simple and inexpensive project and enables the forest owner to restock blank spaces promptly if there is lack of natural reproduction.

A fully stocked pine forest not only means a greater growth return upon the same investment in land and effort, but it assists itself in its own maintenance and propagation far more than can a ragged and patchy piece of woodland. Trees grown fairly close together make straighter stems and yield better grades of material. When the lower limbs are quickly crowded off there is less danger of surface fires reaching the tops. A complete cover breaks the force of the wind so that low fires travel much more slowly. The forest floor is then of pine straw instead of intruding grass with its severe root competition and interception of the seed fall. Logging costs per thousand feet are materially reduced and in various other ways the fully stocked forest operates to the greater benefit of all concerned.

**Forest
Land and
Farm Land**

For these reasons it is most desirable that the landowner, in determining what to cut and what not to cut, consider raising his diameter limit in certain parts of the tract rather than leave too large openings in the remaining growth. While planting will restock such spots, nevertheless there may still be a very uneven aged stand over the area as a whole. Although uniformity of age and size may not be always desirable, on the other hand irregular extremes are to be avoided when possible. Under certain circumstances, however, such as the necessity of thinning to prevent stagnation in growth, it may be desirable to lower the diameter limit over parts of the area.

No lumberman would construct a lumber yard so that it enveloped the holdings of another industry. If he desired that particular site he certainly would buy up the interior property. In the past, however, it was the custom of timber owning agencies to sell all cut-over land that they could. As a result many large forest land holdings, especially of second growth, became interspersed with small farms. As a usual thing these interior farms are not profitable, and their occupancy by persons without common interest with the timber grower often proves a serious obstacle in the operation of the surrounding forest lands, largely through carelessness with fire and in various other ways. As far as practicable interior holdings of this character should be reacquired by the forest owner.

It is apparent that the landowner should carefully study the cost of forest development, should avoid snap judgments and should analyze his conditions before starting on his working plan.

CHAPTER IV

HARDWOOD FORESTRY

**Perpetuation
of Valuable
Pine Forests**

IN view of the utility of the pines and other softwoods, it is not surprising that the conifers should have received in the past what possibly may have been an undue proportion of attention from the forestry viewpoint. As compared with the hardwoods as a general class, commercial or otherwise, the conifers demand the more care and protection against the vicissitudes affecting the life of forests under present conditions. It appears, also, that in the race for existence that has been going on through the ages the softwoods have been losing ground to the more recent hardwoods. It is not strange, therefore, that southern endeavor in forestry should be directed first toward the restoration and perpetuation of pine forests.

Notwithstanding the encroachments made by the hardwoods upon the geologically ancient softwood species, the hardwoods under the economic demands of humanity have lost more ground relatively than have the softwoods. In other words, since the settlement of the South began it is probable that a greater percentage of merchantable hardwood material has been cut than in the case of the pines. One of the reasons for this lies in the different sites favored by the two great classes of trees. The more valuable of the softwoods, favor with few exceptions the lighter and better drained soils. The best quality hardwoods, however, are disposed toward the richer and moister lowlands. In the early days of the country's settlement, the demands of agricultural development cut far more deeply into the hardwood areas than into the pine forests.

Human needs at the present time require a continuous supply of both softwoods and hardwoods. The relative proportions of the two classes of timber required under present conditions vary considerably from time to time. For the past decade it appears that the demand for hardwoods has been in the neighborhood of one-sixth of the demand for softwoods. This refers to lumber only and does not take into account the other important uses of wood.

It is evident that hardwoods cannot practically be dispensed with. While for certain purposes selected species of hardwoods have

supplanted softwoods, the reverse has occurred much less often. Any causes operating to reduce the per capita use of lumber, particularly the trend of the population toward large cities, will probably result in a less percentage of decrease in the case of hardwoods than in that of softwoods; consequently the relative proportion of the former is likely to increase rather than diminish.

In view of these facts it is evident that the reproducing of hardwood stands is an important function of southern landowners and foresters. There are few species of trees that human effort cannot aid in their growth with reference to rate, quality and yield per acre. As with the pines, assuming that the sites are available and that tax conditions are favorable to the growing of timber, there remain the determination of the methods of procedure and the application of the appropriate practices in the woods.

**Protecting
the
Hardwoods**

While hardwood types carry a materially lower fire hazard than do the pine forests, it appears that in the case of fires the after effects in the way of the entry of fungi and consequent decay are fully as severe as with the softwoods. The liability of hardwood stands to fungus attacks cannot be too heavily stressed. It is a very real liability and one which has cost the southern timber owner far more than he realizes. In fact, from the best information available it appears that the indirect effects of fire upon standing timber in the southern states have resulted in greater relative losses to the hardwood stands than to the softwoods.

Surface fires in the hardwoods are easily extinguishable by skilled workers with suitable tools and equipment. About the only unusual hazard in hardwood types occurs when receding flood waters have left drift material lodged against the trees. Even this condition, however, is easily coped with by a good fire man. Top fires seldom occur and then only for very limited areas, usually spreading through dead leaves not yet fallen from the twigs.

While, as in the case of pine forestry, it is true that protection alone will result in more timber growth than any other single practice, yet very important additions to the yield of hardwoods can be obtained through systems of silviculture and management. The fact that the problems in the latter connections are somewhat more complicated than in the case of conifers does not mean that they are more difficult of application when once solved.

**Commercial
Reforestation
of Hardwoods**

The valuable hardwoods of the South rarely grow in pure stands. A mixture is the rule rather than the exception. A question that usually arises in the renewal of broad-leaved stands is whether the new growth shall comprise approximately the same proportionate mixture as the original forest or whether one or more particular species shall be favored to the practical exclusion of the others. Ordinarily there is a desire on the part of the owner to have a hardwood stand reproduce to the more valuable species. However, the site may not be particularly adaptable to the tree he most favors. While no fixed rule can be stated, in the absence of data to the contrary it is usually safe to assume that a site is more adaptable to the most dominant species naturally growing upon it than to the others. It must be borne in mind, however, that often a careless or profit taking previous cutting may have altered the stand composition in favor of some wood species whose presence in more or less mature sizes might easily mislead the owner. So many of our hardwood stands have been cut or culled that the present stand is by no means an infallible index of the proper growth. This is a good instance of the need for careful study—for examination of the old stumps, and a general recasting of the previous stand with its growth rate and other valuable data. Few landowners would attempt to grow yellow poplar on a chestnut oak site, or to proceed otherwise contrary to the evident provisions of Nature.

The great number of separate species of hardwoods adaptable to commercial use as compared with the conifers involves, of course, a correspondingly greater number of methods of management. This fact is very largely responsible for the belief that exists in many quarters that commercial reforestation of hardwoods is impracticable. To place this matter in its proper and more hopeful light it is necessary only to consider separately the requirements of some of the more valuable hardwoods.

The hardwood lumber cut of recent years has been derived chiefly from the following species listed in the order of the relative amounts: oak, red gum, maple, birch, yellow poplar, chestnut, tupelo, elm, basswood, beech, ash and cottonwood. Scattered minor species have comprised a considerable additional quantity. While under the term of oak several species are involved, the white oak stands out as the most representative and valuable of this hardwood group. A

brief résumé of the salient points involved in the economic production of this species will be typical of the class of problems affecting reforestation of southern hardwoods in general.

In establishing a thrifty stand of reproduction of any species of oak, it is necessary to bear in mind the extent to which it demands light or, conversely, the extent to which it will endure shade. In the case of the white oak, unless the low undergrowth is very dense the seedlings and sprouts will not be retarded by the shade of tall stands. Oak sprouts especially appear to stand moderate shading very well. Later the young trees require more sunlight, about 60 or 70 percent of the full amount, although the saplings will continue to grow slowly with a less supply. When the overhead shade is removed, however, the younger trees recover from suppression very quickly. As the tree grows older into pole and tie size it must have a great deal more light, although white oak will endure distinctly more shade than the red oak. Its natural longevity and great powers of resistance enable it to withstand adverse conditions for a longer period than most of the other species. The resistance of white oak to wind throw is also a favorable factor in its adaptability for reproduction.

**Seed Crops
for the
Hardwoods**

As opposed to the favorable characteristics of this tree for purposes of reforestation, we must reckon with the tendency of white oak sites to become overrun with brier growth and other low dense vegetation upon the removal of the original stand which tends to limit its reproduction by seed. We must also consider the slowness of natural pruning in the case of white oak, its comparative deficiency in seed production and its requirement of the better class of forest soils.

A great deal more, of course, may be said of the favorable and unfavorable qualities and factors affecting the renewal of stands of this species. However, the foregoing are the most essential points and their treatment in a scheme of reforestation indicates the character of the problems to be solved.

Natural reproduction of white oak in the southern states may be either by seed or by sprout. Under usual forest conditions acorns are produced when the trees are about 70 or 75 years old. Good seed crops occur about once in every 4 to 7 years. While the white oak is a light seeder, the percentage of fertility is fairly high, being about 80 or 85 per cent. The acorns germinate readily under

ordinarily favorable conditions. To insure a good stocking with young seedlings it is necessary in general only to exclude fire and hogs. The losses from rodents, birds and other incidental causes are usually not great enough to materially affect the stand of reproduction. However, it is very advisable that in planning for reforestation from seed the cutting be done after a good crop of acorns, not only to assure a sufficient quantity of seed but also to give the seedlings a better chance to develop before the surface is preempted by brier and other low growth. Logging operations usually leave the forest floor in better condition to receive seed than exists either before or after a lapse of a year or two.

**Methods
of Slash
Disposal**

During logging, while it can be done with comparatively little cost, it is often desirable to fell the trees of any relatively worthless species which may be prolific seeders, thus preventing their taking possession of the ground ahead of the white oak reproduction. This is the proper time, also, to make such practicable disposition of the slash as will prevent increased fire hazard. To give the oak the best opportunity to prune itself of dead limbs during its growth, it is better not to attempt anything in the way of artificial thinning until the material to be removed has a market value.

The second method of reproduction, *i. e.*, by sprouting, will nearly always result in a stand of second growth on most white oak sites of the South. However, in determining the probable future value of such a stand, consideration must be given to the size of the trees in the original forest. Sprouting is primarily a function of young trees. In fact, the stumps of old growth trees over 15 inches in diameter can seldom be depended upon for vigorous reproduction. On the other hand, in the South white oak sprouts very readily from the root collars of the smaller stumps. In general, the volume of second growth derived from this source decreases with the age of the parent tree, and after two or three cuttings the sprouting ability of the individual tree ceases practically altogether. Seedling trees, however, can develop to any size and, under management, may produce the maximum possible volume of timber growth per acre.

Taking into account the factors affecting the growth and reproduction of white oak, it is entirely practicable for the lumberman to so direct his cutting of this species that satisfactory reforestation will ensue without the necessity of planting. The most obvious and simple practice to insure reproduction is by selective cutting, using a

diameter limit of approximately 20 inches in virgin forests and 16 inches for the first cutting in second growth. The latter limit may be dropped a couple of inches in the case of sprout timber.

Systems of forest management for hardwoods require an intimate knowledge of the growing requirements of the various species. Certain woods practices are necessary to give these requirements an opportunity to work their full benefit upon the second growth. However, in view of the great value of hardwood products, landowners can afford to familiarize themselves with the essential and available formation and knowledge into efficient handling of the woodlands facts regarding the more important species and translate their in-with view to sustained yield.

**Systems
of Forest
Management**

The observations made in connection with white oak may be elaborated and paralleled with reference to the various other leading hardwoods. There are many pertinent facts of interest to timber growers in connection with the reproduction of our most valuable trees. Such information can be acquired and applied with little difficulty by interested owners, and hardwood forestry thus readily takes rank among the practicable forms of economic development.



CHAPTER V

FIRE, INSECTS AND DISEASE

A FEW decades ago the suggestion that it might be possible to keep fire out of southern pine woods would have been regarded as a highly fanciful proposition. It is not amiss, however, to point out that wherever the fire problem has been intelligently studied by private and public agencies, progress has been made that would not have been thought possible twenty years ago. In fact, during recent years progress in relation to the hazard has been made at a greater rate in the South than in any other part of the country.

**Fire
Protection
Measures**

For the landowner who seriously intends to keep fire from his holdings the procedure is far less difficult than has often been thought. The situation is the same as that of any other production plant. It is similar to that faced by the owner of a sawmill or lumber yard. He there refrains from setting fires. He imposes upon his employees similar restrictions and has a watchman making continual rounds to guard against fires making headway. Even though in or near a city he does not place too great reliance upon municipal fire departments but provides facilities of his own. He may install sprinkler systems in the buildings, and he may design or alter the layout so as to provide for greatest ease in protection. In the larger plants he may even have fire drills by his employees with every man required to know just what to do in case of emergency and trained in doing it.

Applying the same degree of thought and action to the outside plant, *i. e.*, the forest, the same general principles will be followed. The owner and his employees will refrain from setting fire to the woods. Logging engines will be equipped with standard appliances maintained in good condition to prevent the escape of fire and sparks. Such devices are strictly feasible and when properly adjusted by intelligent mechanics or enginemmen they do not interfere with adequate draft. The employment of lookout towers is an effective means of early location of fires. There will be one or more carefully chosen men, employed by the week, month or year, making systematic rounds of the forest property, locating and disposing of special

hazards, extinguishing such fires as occur, and having authority to summon tenants and employees if necessary to assist in this work. The regular patrolmen may travel on foot, on horseback, by motorcycle or in light cars. In every case they will have with them two or more fire fighting tools. The light automobile, where it can be used, enables the patrolman to carry a large assortment of tools including fire swatters, rakes, hoes, shovels, axes, a pressure burner using either kerosene or gasoline for back-firing purposes, a five gallon spray pump and one or more large size milk cans full of reserve water. On specially hazardous days he may have a helper ride with him.

With motor transportation the ground can be covered much more rapidly than in any other way. However, there are many places that a car cannot go. The motorcycle has some advantage in this connection, although its carrying capacity is limited to the side car. The saddle horse has still less carrying capacity, but can go practically everywhere. In this case takedown tools, the heads of which can be carried in the saddlebags while the handles are suspended from the saddle horn through the stirrup leathers, are very practicable.

**Methods
of Best
Operation**

In all fire protection work, it is the individual patrolman himself that is of the most vital importance and no system can be effective unless this man is intelligent, alert, energetic and able-bodied. He must be definitely instructed and drilled in his work, and frequently checked by his superiors. In almost every community there will be found one or more men who can measure up to the standards required and who are respected by the local residents.

It is futile, however, merely to engage men under general instructions to "go around and look out for fires." The mere assignment of a man or men to fire protection work means comparatively little. In some localities it is the practice of lumbermen and other large owners to subsidize certain local residents chiefly for the sake of gaining their good will. In order that they may have a nominal function to account for their place on the pay roll, they are often assigned to "woods riding" or "looking after fires." Needless to say, this is not a businesslike way of handling fire protection. Very rarely should employment conditional upon the occurrence of fires be tendered to idle persons or to others whose direct interests do not lie in the efficient extinction of the fire.

**Injuries
Caused by
Insects**

Even with good men under term employment as fire guards or patrolmen, a particular tract may be invaded by fire from the outside. In the South, the construction and maintaining of clean firebreaks around large and small areas is comparatively inexpensive. It may be done by plowing alone, or by burning between two furrows. Sometimes the work must be done largely by hand. The chief value of a firebreak is that it offers a vantage point for back-firing, and it must not be assumed that the forest is fireproofed merely by its construction. Interior firebreaks may also be constructed. The pressure oil or gasoline torch is very valuable for these purposes. If the tract or any part of it is fenced, the fences should be kept up. Fenced land gives the public a distinct impression of cared for property and is thus exempt from a great deal of casual vandalism and trespass.

A large part of the injury caused by insects is directly due to methods of lumbering that encourage their attack. A good practice is to drag the tops and limbs from the felled trees at least twenty feet away from the timber left standing. Infested trees should be felled and the bark peeled off or the trees burned. If the application of such general rules does not remedy the conditions a forester or entomologist should be consulted.

In the case of diseased trees, much depends upon the particular cause. As far as practicable all trees showing the fruiting bodies of fungus or rust diseases should be felled and the parts not promptly utilized that show evidence of the disease should be burned. Many fungus diseases, however, involve growth upon forest trees during a part of their life history and upon some weed or shrub during another part. In such cases the shrub is called the alternate host of the disease. Inquiry of a forester or plant pathologist will usually clear up this point so that the alternate host may be identified and in connection with the woods operations may be largely eradicated.



CHAPTER VI

COOPERATION IN FORESTRY

WITH the great variety of viewpoints and the varying needs of individuals and communities, it is not surprising that the significance of forestry as one of the basic economic systems should not be appreciated to the same degree by every person. To bring about a general understanding of the necessity of sustained timber production on the nonagricultural lands of the South requires coordinated action on the part of all of the agencies in a position to render information and assistance to landowners in their undertakings.

**Owners
Working
Together**

Naturally, the shorter and more direct the course between co-operating agencies, the less will be lost in transmission and the closer will be the bond. An example of what is probably the most efficient cooperation is the case of a forest land owner who is successfully practicing forestry on his holdings and who acquaints his interested neighbor with his methods, their reason and results, and assists him in likewise putting them into effect.

As more owners undertake the forestal development of their rough or wild lands, their cooperation with each other in matters of common interest becomes a community matter. This is particularly emphasized in the case of protection against harmful agencies, such as fire. With definite knowledge of what forestry means, volunteer cooperation in forest protection is making good strides.

The principle of individual initiative and responsibility so characteristic of American life finds most effective play in development of southern forestry. In other words, it is regarded in most parts of the South that the most complicated and extended development of cooperative methods and devices must always be subject to the prime necessity of leaving the chief responsibility for forestry practice squarely upon the owner of the land, be this an individual, a corporation or the public.

While the South, in the main, conceives that timber growing is fundamentally a function and responsibility of the owner of the land, nevertheless it is appreciated that there are certain cooperative

phases that can best be dealt with by the State as the organized public. Thus there have sprung into existence, in the natural course of events, state forestry departments or corresponding public agencies, in most of the southern commonwealths. Since the forestal, civic, economic and political conditions existing in the various states differ widely, these departments are not organized on a uniform plan. On the other hand, as in other parts of the country, they vary materially as to specific functions, facilities for carrying out their duties and general usefulness in the furtherance of timber production.

**State
Agencies
Active**

As a rule the state forestry departments in the South are less hampered by specific statutory provisions as to exact details of procedure than those in other sections. This in various cases has permitted them to adapt their course of action to conform more closely to conditions as they exist rather than to tradition or to the preconception of uninformed forestry proponents.

Although, in general, southern state forestry agencies work with smaller appropriations in relation to the actual and potential forest values involved than is the case in most other sections, nevertheless it appears that this disadvantage is to a great extent offset by definite aims, close connection with the field of actual timber growing and economical methods of procedure. The recognition of the principle that the success of timber production enterprises must ever depend primarily upon the initiative and responsibility of the landowner has made the stimulation of interest among lumbermen, naval stores operators, farmers and other holders of nonagricultural lands a major function of many of these departments. With this step achieved, a large part of the labor and expense frequently borne by public agencies is, in various of the southern states, placed squarely where it belongs, with a lessening of the drain upon public resources.

As has been pointed out, it seems clear to southern thought that cooperation in forestry, as in other things, should be as closely knit and follow as direct channels as possible. The more immediate the interest, and the less remote from each other the cooperating agencies may be, the better for profitable timber growing. However, it must not be overlooked that the Federal Government, although to a less degree than the State, has a proper place in a complete system of cooperation. Certain Federal statutes, notably the Clarke-McNary

Law, have conveyed authority to Governmental agencies to participate in such a program. Fire protection and forest planting are the principal fields covered.

Federal cooperation has been freely tendered to the southern states as elsewhere. The Government's relations with the states in forestry matters are maintained chiefly through the Forest Service, a bureau vested primarily with the responsibility of practicing forestry upon certain holdings of the Government as a landowner.

By critical observers it is felt that Federal cooperation based on sound standards, and strictly maintaining its character as real co-operation designed to conserve the integrity of state and private functions, is capable of rendering extremely valuable service to timber growing. Certainly, allotments of Government funds to state forestry departments have tended to strengthen the latter, at least in the beginnings of their existence. In various of the states the Federal fund for fire prevention work has made possible much more rapid progress than could have occurred otherwise. Unquestionably this form of cooperation has been one of the greatest stimuli to the initiation of state work in furtherance of forestry.

**Government
Assistance
Serviceable**

An agency whose activities have contributed materially to the development of forestry in the South is the Southern Forestry Congress. This organization meets annually at some point where its presence will tend to further important forestry measures. The Congress, whose membership is composed of business men, landowners, educators, lumbermen, foresters, naval stores operators, editors, professional men, legislators and forward looking citizens generally, has done much in arousing the southern people to a sense of their opportunity and responsibility in developing the growth of forests on the nonagricultural lands of the South.

The development of forestry has been materially aided by public education on the subject, by the use of forestry literature in the schools, and by editorials and articles in the newspapers and magazines.



CHAPTER VII

FORESTRY AND THE SOUTHERN CITIZEN

General Public Benefits

WHEN the need for the practice of forestry in the South became apparent it carried various appeals, some to every individual and others to the particular interests of specific groups according to the situation of each. In general, it may be said that the southern citizen appreciates that while forestry may be more than mere economics it certainly cannot be anything less. While realizing that there are various forms of arboriculture, land use and field engineering, the southerner recognizes that these may be readily designated by self-explanatory terms without infringing upon the name of forestry, and as a rule he is a bit at a loss to account for the occasional references to forestry as commercial forestry, economic forestry, etc., as implying that there perhaps is some other kind.

Although to the southern people forestry is the business of growing timber for practical purposes, it is nevertheless realized that the incidental benefits, such as hygienic influences, watershed protection and recreation, are too important to be ignored. However, these things are inherent to the practice of forestry, and if the latter is undertaken on a substantial scale no southerner fears that there will ever be a lack of the contingent advantages that properly carry large appeal.

The southern citizen long since observed that forest land that is not yielding full returns in the way of increased growth ranks with a factory that is not operating, a team standing in the stalls, a house that yields no rental, the skill of a worker not employed, and money kept in hiding instead of out at interest. He feels that the possessor of any form of capital, whether it be real property, cash or one's capacity for labor, is entitled to certain returns. It is evident, however, that such returns do not flow automatically, but accrue only when the property or ability to produce is put to work. He holds that the best use of most of the idle land of the South lies in timber growing.

For several decades alert southerners have been concerned with the fact that unless the growth of timber stands should be increased important industries employing many thousands of workmen would leave the region and migrate to other sections. The inevitable ef-

facts of such a loss have impressed the southern citizen with their seriousness. That such a thing should occur appears to him wholly unnecessary, knowing full well that the natural conditions and other advantages of the South render it able to maintain indefinitely continuous growth of timber.

It is only in this way that the citizen can be assured of a perpetual supply of forest materials for local use and for export, and exemption be guaranteed from the great supertax of from six to fifteen million dollars to be paid annually by the people of each southern state in excess freight rates alone on lumber shipped in from the Pacific northwest. He sees this lamentable situation in actual effect in many of the northern and eastern states, due primarily to the failure of these communities to practice forestry on their nonagricultural lands.

**Forests
Are Grown
to Be Used**

In view of these considerations, the southern citizen holds that forests are grown for use and not primarily for their beauty and other incidental considerations. A thriftily growing forest is a beautiful sight and contributes many collateral benefits to the citizenry of the community. However, a field golden with ripened grain or white with bursting cotton bolls is also beautiful, but all of these things are grown to be harvested and used. On the other hand, it must not be assumed that the citizen of the South is altogether immune to the diffuse propaganda emanating from various sources designed to regulate his forestry thinking. There are not lacking those to whom the name of forestry carries chiefly an esthetic significance. However, in most cases the southerner succeeds in working his way through the barrage of highly colored representations and contrives to adhere to the main theme.

Quite generally throughout the South forestry has been stripped of much of the mystery with which it is vested in various quarters. The southern citizen is thus able to translate the general purpose and methods of timber production into terms of comparatively ready understanding.

With the southerner, the question is not so much what should be done as who shall do it and when. The citizen who owns no forest property quickly solves this question to his own satisfaction. His ready answer is that the man who owns potential forest land should bring about its development. While, in the main, this is undoubtedly a sound view, the owner of such land, as has been

pointed out, encounters problems that must be solved for each individual case.

The forest land owners of the South fall into two principal classes, —those who have acquired lands with view to their permanent use for whatever purposes they may appear best adapted, and those whose acquisition of areas has been chiefly incidental to some other primary purpose. Among the former class are the farmers, stockmen and rural residents generally, in most cases residing upon or near their lands. These citizens usually are in a position to supervise fairly closely the development and use of their acreage and thus devote every part of the area to the purpose for which it is best suited, whether this be agriculture, pasturage or timber growing. The second class of landowners, however, is faced with a somewhat radical readjustment of views as to matters outside the scope of the original purposes of the investment. In this class are found lumber corporations, mining companies, land investors and others who, in the main, did not originally contemplate personal and permanent occupancy and development of the surface holdings.

**Southern
Lumber
Executive**

The southern lumber executive has naturally occupied the position of a manufacturer rather than that of a grower of raw material. His status, to a certain degree, has been comparable with that of a woolen manufacturer as contrasted with the wool grower. In our age of specialization few would expect managers and executives intensively trained and experienced in textile manufacturing to attempt to acquire a working knowledge of the intricacies of animal industry and carry on the two enterprises in conjunction.

The southern lumberman, however, operating on a large scale, has found himself in a somewhat different position. In the early days of the wood using industries, in order to buy the timber it usually was simpler and more expedient to take the land and timber together. The ownership by manufacturing concerns of large areas of forest land is thus accidental, or at least incidental. In the majority of cases, however, there was no intention of retaining the cut-over lands for further purposes of the industry. On the contrary, it was believed that agricultural requirements would result in the development of most of these areas as farming sections.

The difficulties besetting agriculture in recent decades and the trend of the population toward large centers, together with the unsuitability of much of the cut-over land for agricultural purposes,

have resulted in tremendous areas being left on the hands of the manufacturers. As has been pointed out, the resulting situation constitutes an economic problem of the first magnitude. In the South, happily, many large concerns have undertaken the maintenance of two separate divisions, one for the continuous production of raw material from the forest lands and the other for the manufacture and distribution of the finished commodity. The nonowner of forest land has thus seen his solution of the problem made effective in numerous cases.

While the South contains many successful examples of this plan its adoption cannot be said to be universal in extent. The southerner who either individually or in association owns large areas of potential forest land oftentimes still hopes to sell it to settlers for farming purposes. With some justice, he sometimes feels that he can hardly be expected to organize a new line of business and master a new profession, *i.e.*, that of timber growing as distinguished from manufacturing or land dealing. In the main, however, the decided trend of opinion among such owners and the citizens generally is to the effect that the land should and will be put to work under competent management to growing new crops of timber.

**Civic and
Industrial
Progress**

No one appreciates as much as the southerner the variable elements that enter into the civic and industrial progress of the South. Here, perhaps more generally than elsewhere, observant citizens feel direct and constructive interest in the development of the forest resources. With the practice of forestry in effect, the working man sees continued opportunity for employment. The farmer finds a market for much of his produce almost at his very door. Merchants realize on an increased volume of trade in furnishing supplies to the forest industries. Mining men are assured of an adequate source of needed timbers. Railroad executives find a very large proportion of their freight composed of forest products. Mail and telegraph business similarly increases. Home builders are able to secure material in plenty at a reasonable cost. Bankers find well-stocked forest lands better security for their loans. Editors and publishers profit by the improved business conditions and see a constant supply of pulpwood for the manufacture of paper. Thriving communities centered about the locations of forest industries are able to maintain better educational and living facilities for the coming generation, and the higher value of well managed forest properties permits of a lower tax rate with abundant returns for the financing of public affairs.

CHAPTER VIII

THE FUTURE

**Further
Development
of Forestry**

WHAT of the future of southern forestry? We can only base this upon the trend of current conditions and the course they have thus far followed. It may be well again to recall that forestry is the business of growing timber, as distinguished from merely conserving stocks in trade, such as mature forests waiting to be cut, and from the management of lands for purposes other than profitable timber production. That forestry as a distinctive field has in the South a future of marked development and expansion can hardly be doubted. The natural advantages that have been pointed out and the increasing interest on the part of the southern people render this inevitable.

That the further development of forestry in the South will be brought about in much the same manner and by the same class of agencies as in the cases of agriculture, mining and manufacturing seems certain. The lack of definite data as to the successful practice of forestry on publicly owned areas has been a hindrance to the undertaking of extensive systems of state forests. Although various of the states through the passage of enabling acts have authorized the Federal Government to acquire private lands within their boundaries for forestry purposes, in many quarters this system has been questioned on both theoretical and practical grounds. Thus far, however, only two southern states have repealed the enabling legislation.

While the various parts of the South differ as to local problems, it may be said that the solution of these is well under way and will be very definitely determined within the next few decades. As has been pointed out, among the chief influences retarding the practice of forestry have been the incomplete appreciation of the actual value of young timber, mistaken ideas in many quarters as to the effects of fire, premature utilization of growing trees, inappropriate tax laws and lack of information as to practical and scientific methods of increasing the productivity of forest lands. Happily all of these obstacles are melting away year by year, with the result that very largely throughout the region there is evident a greatly accelerated

growth of young timber, much of which has already reached the stage where it cannot retrogress and which constitutes a definite basis for future crops.

The southeastern part of the United States is particularly fortunate in that it possesses a large number of successful forestry projects to serve as demonstration areas. The hundreds of instances that exist in which cared for forest property has paid substantial dividends comprise evidence which the landowner and investor cannot ignore in looking for a sound and profitable use of capital.

The great variety of species of southern trees will continue to prove a material contributing factor in maintaining the leadership of this region in supplying the nation with practically all kinds of forest products. In general, it may be said that few needs of this nature will arise that may not be filled from the forest resources of the South. In fact, in no place in the world are conditions so favorable for the rapid growth of a large accessible supply of valuable species as in the southeastern part of North America.

**Leadership
in Forestry
in the South**

One of the greatest aids to forestry is the close utilization of the timber that is cut. The more complete use made of the material removed from the forests, the less will be the drain upon the remaining growth, thus tending to permit the maturing of growing stands as opposed to their premature cutting to supply material to take the place of that wasted. Southern lumber manufacturers have taken the lead in furthering the use of short lengths, notably in end matched flooring, using material that formerly was almost always discarded. Mill waste is also being utilized in the South for the manufacture of composition material which is made into various sizes and used for many of the purposes formerly met only by sawed lumber. A substantial proportion of the tree that in earlier days was considered of no use whatever is now often saved through such processes. It is wholly probable that the future will see important developments along these lines with consequent advantages to timber growing.

The profitable disposal of thinnings to permit better silvicultural practices is a serious problem in many parts of the country. The demand for pulpwood is one of the outlets for material taken from the woods for such purposes. The pulp industry has already established itself in certain parts of the South, and it appears inevitable that enterprises of this character will multiply in the future.

Developments of this nature, by affording a market for classes of material that formerly had little or no immediate cash value, tend to solve one of the most important problems of American forestry.

**Legislation's
Effect on
the Forests**

The forest land of the South amounts to substantially 225,000,000 acres. It is unlikely that under any foreseeable conditions agriculture will extend materially into this area. While certain small portions, from time to time, may be placed under cultivation, this is usually offset by the abandonment of other areas and their return to wild growth. Practically all of this vast acreage will grow good timber. In this respect the South has an advantage over other regions possessing large amounts of idle land. As previously observed, the people of the South hold that the future of such lands necessarily lies in the growing of forests. This regional policy is becoming more and more fixed, and the comparatively near future will in all probability see it firmly established. All evidence points to the early coming of the day when the proper use of forest lands will be as natural a procedure as obtains at present with agricultural or mineral areas. Although farms, mines and railroads may change hands repeatedly, the realization of the obvious and profitable use of such resources is the chief guarantee of their best management. A forest minded citizenry of the South seems assured.

To many who wish to hasten progress in basic fields one of the first steps that may appear desirable is legislation. In most southern states the tendency is toward doing as much as practicable without invoking the aid of special laws. In this particular, the theory that the best governed people are those who are the least governed is accorded recognition. Undoubtedly, lack of legislation designed to aid timber growing has retarded forestry enterprises in certain instances. However, the hindrances from this source are very often theoretical rather than actual.

The measures that bring about the greater part of the increase of growth under forestry management are comparatively inexpensive. As a matter of fact, the carrying charges on lands suitable for forest purposes continue whether the acreage is being used or not. The permitting and aiding of timber growth on such lands ordinarily does not add to these charges. On the other hand, over any considerable term of years, such provisions will result in production of from 100 to 500 board feet per acre per annum over and

above what would otherwise accrue. Thus, as a rule, a great deal may be safely done even in the absence of constructive legislation. However, the not distant future will unquestionably see appropriate changes in state laws working to the benefit of forestry. In the meanwhile southern landowners as a class will not wait on ideal solutions, but will proceed, as they have begun, to grow timber under the numerous natural and economic advantages as they exist.

The future will probably see large areas of southern forest lands held not only as adjuncts to manufacturing projects but also by individuals and corporations who will acquire extensive tracts for the primary purpose of timber growing. In other words, growing timber will be the forethought rather than the afterthought. Substantial beginnings have already been made along this line. It is likely, also, that systems of pooling forest lands by small owners will be developed to take advantage of the economy and efficiency possible in quantity production.

**The South
Safe for
Forestry**

The initiative of southern citizens and communities has intervened in sufficient time to prevent the almost complete transformation of forest types that has occurred in various other sections of the country where valuable coniferous forests, on account of neglect and abuse of the land, have very largely given way to inferior types or to substantial barrenness upon which it may well be questioned whether expenditures for forestry purposes are justified. Thus the more intensive practice of forestry in the South is able to start from a much higher level than has been possible in many other parts of the United States. There can be no doubt that this will redound very considerably in future advantages and continued leadership in the actual growing of timber.

The South is safer for forestry than most other sections of the country. The development of coniferous forests on a permanent basis is rendered more feasible than in other regions through the fire hardy character of the pines. The early bark formation of seedlings and saplings, internal and medial rather than external resin ducts in the leaves and various other factors impart to southern pines an unusual degree of resistance. As a result the severe top fires that cause such heavy losses in other regions are rare. In fact, a hundred-acre fire in long-leaf pine may cause less damage than a one-acre fire in northern white pine. These conditions help to pro-

tect southern forest investments against being wiped out by a single fire, or even by a series of ordinary fires, as contrasted with the hazards to be assumed in sections subject to devastating conflagrations.

**Forests as
a Civic
Influence**

While the South will continue to stress the essential character of forestry as a highly specialized and distinctive system of economic production, the southern people will by no means become so centered upon business considerations that there ever can be a lack of appreciation of the forest as a civic and cultural influence. With those who love the woods, well knowing their beneficence to mankind, and with wholesome pride devote their earnest efforts to adding to their productivity, it is easy to vision for southern forestry an early fulfillment of its constructive aims. Inspired purpose and warm sentiment need not suffer because linked with sound policy and workaday practices. The timber grower may love his work and still be entitled to material prosperity. Not only in their own behalf, but also with view to the needs of the Nation as a whole, the people of Dixie with high ideal and efficient method will continue steadily the advancement of forestry in the South.



LIST OF
American Tree Association
PUBLICATIONS



Trees as Good Citizens

Forestry Almanac

Tree Habits, How to Know the Hardwoods

The School Book of Forestry
(Edition Exhausted)

The Forestry Primer

Floods, Forests and the Future
(Edition Exhausted)

The Forest Poetic

Town Forests
(Edition Exhausted)

Tree Planting Book

Forestry Legislative Survey

Common Trees of New Jersey

Common Trees of New York

Common Trees of Massachusetts

Common Trees of Indiana

Common Trees of Michigan

Common Trees of Ohio



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