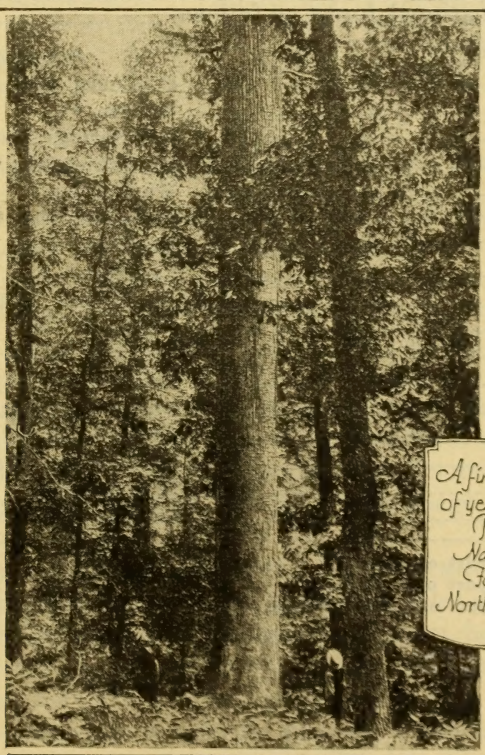
U.S. Department of Agriculture—
Miscellaneous Circular No. 75

Harvesting Timber Crops in the National Forests of the East and South

by R. M. Evans, Assistant District Forester, Dist. 7, Eastern Dist.



A fine specimen of yellow poplar Pisgah National Forest North Carolina

Washington, D. C.
Government Printing Office—
1926

GROWING TIMBER PAYS—PREVENT FOREST FIRES

FOREST HEADQUARTERS OF THE EASTERN DISTRICT

For maps or detailed information concerning all or any of the national forests of the eastern district, address the district forester, Atlantic Building, Washington, D. C., or the forest supervisor of the individual national forest as follows:

National Forest	*Headquarters*
Alabama-Benning	Columbus, Ga.
Allegheny	Warren, Pa.
Ouachita	Hot Springs National Park, Ark.
Cherokee	Knoxville, Tenn.
Dix [1]	Warren, Pa.
Florida	Pensacola, Fla.
Knox [2]	Knoxville, Tenn.
Lee [3]	Lynchburg, Va.
Luquillo	Rio Piedras, P. R.
Monongahela	Elkins, W. Va.
Nantahala	Franklin, N. C.
Natural Bridge	Lynchburg, Va.
Ozark	Russellville, Ark.
Pisgah	Asheville, N. C.
Shenandoah	Harrisonburg, Va.
Unaka	Bristol, Tenn.
White Mountain	Laconia, N. H.

[1] Administered as part of Allegheny.
[2] Administered as part of Cherokee.
[3] Administered as part of Natural Bridge.

UNITED STATES DEPARTMENT OF AGRICULTURE
MISCELLANEOUS CIRCULAR NO. 75

WASHINGTON, D. C. OCTOBER, 1926

HARVESTING TIMBER CROPS IN THE NATIONAL FORESTS OF THE EAST AND SOUTH

By R. M. EVANS, Assistant District Forester, Forest Service

CONTENTS

HOW THE FOREST SERVICE SELLS TIMBER

How does the Forest Service sell timber? Without going into great detail, the answer might be about as follows:

When sales business develops or bids fair to develop in some part of a national forest—a major watershed, perhaps, or the territory tributary to a permanent transportation system—a timber-management plan is prepared. This plan takes stock of the timber, determines the rate of growth, sets forth when, where, and at what rate cutting shall take place, and outlines the silvicultural and timber-sale policies to be followed; in short, gives the forest supervisor or other officer a clear-cut statement of how he is to manage the timber for which he is responsible.

The supervisor, then, upon receiving an application for the purchase of timber, knows what tracts he has for sale; and after interesting the would-be purchaser in some one of them, he makes a careful estimate of the amount of timber on the tract and an appraisal which sets a fair value for the stumpage, taking into account all the costs of the harvesting or lumbering process. This fair value is the least that the Government will accept. The timber is then advertised for 30 days or longer, in local papers if the sale is small and of local interest only; in trade journals and papers of wide circulation if the sale is large enough to be of regional interest. Every ef-

fort is made to obtain competitive bids, and before a contract is awarded all possible opportunity is given prospective purchasers to become familiar with the logging chance in question.

Always the right is reserved, and on occasion exercised, to reject the highest bid if its acceptance might lead to monopolistic control of local markets, or if on other grounds the public interests might be unfavorably affected. Sealed bids to be opened at a specified time are submitted, and following the award of the sale, a contract is executed. This contract gives the quantity and kinds of timber and its location, the price, and the periods within which the timber is to be cut; prescribes how the timber is to be marked and scaled and what is to be done with the brush; and enumerates the various necessary measures in the way of forest-fire prevention and control, and such other special features as need to be covered in the particular case. In all large sales and sometimes in small ones a bond is required. The timber is not paid for in a lump sum, but in installments in advance of cutting, each installment covering not less than two months' cut. From the purchaser's standpoint, such a system of payment has obvious advantages.

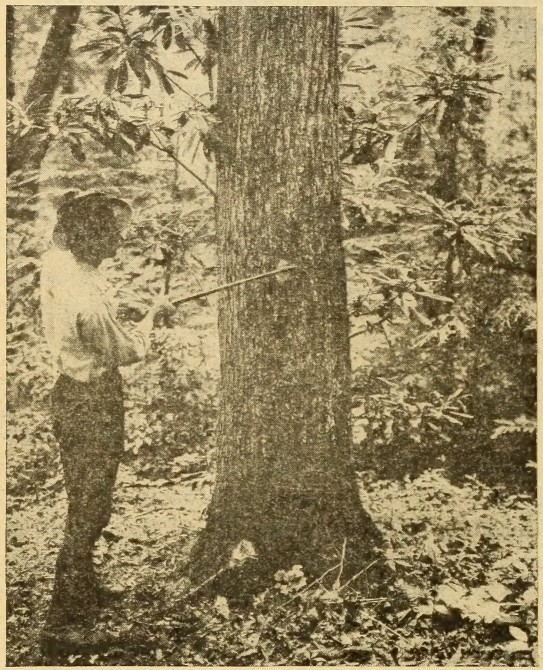


FIG. 1.—Marking a poplar for cutting, Pisgah National Forest. Before cutting each tree is marked by a forest officer, "US" being stamped in the blazes at breast height and on the stump where the evidence remains after felling to show that the tree was lawfully cut under the contract

Before any trees are cut they are marked by a forest officer. (Fig. 1.) The usual method is to blaze the tree at breast height and on the stump, and stamp "US" on each blaze. Thus after cutting, the evidence remains on each stump that the tree was allowably cut under the contract. Trees are marked for cutting with the idea of harvesting all of the mature and overmature timber, leaving for the next crop the younger trees and sufficient seed trees of valuable

species to assure reseeding of the ground left open by the logging operations.

A forest officer scales or measures the logs at the landing or in the woods (fig. 2), using the Scribner decimal C scale rule, which is the standard rule of the Forest Service, with a few exceptions, such as in the White Mountain National Forest in New England, where the custom of handling full tree lengths has made advisable the use of the solid cubic foot rule.

FIREPROOFING THE SALE AREA

Brush disposal has for its primary purpose assistance in fireproofing the sale area. In general, hardwood brush is lopped and scattered and softwood brush is piled and burned. There are exceptions to both rules. Special fire-control requirements depend on the kind of logging (horse, railroad, donkey, etc.), and the particular dangers to be encountered. A rather strict application of such requirements has been found advisable, since there is no need to invest in careful marking and expensive logging methods if later the investment, consisting of reproduction, young growth and trees left, to say nothing of soil fertility, is wiped out by a fire which might have been prevented.

FIG. 2.—Scaling shortleaf pine, Arkansas National Forest. A forest officer scales or measures the logs at the landing or in the woods, using the standard Scribner decimal C rule, except in a few instances, where the solid cubic foot rule is better adapted to local practice

THREE SALES PRINCIPLES

This, in brief, is the way the Government sells its timber, whether in Virginia or in California. Throughout, three principles are constantly in mind—harvesting the mature crop, improving and safe-

guarding the next crop, and providing reasonable opportunity of profitable business for the purchaser.

THE CROPS OF FAR-FLUNG TIMBER FARMS

Of the eight national forest districts, this—the seventh or eastern district—is unique in several respects. Though its area of national forest land is the smallest, its boundaries embrace the largest territory of all. Within its boundaries and tributary to its national forests are more than 80,000,000 people, or about three-fourths of the population of the United States. Within its boundaries is also the center of wood consumption of the country. It stretches from the Canadian boundary to the Gulf of Mexico, and from the At-

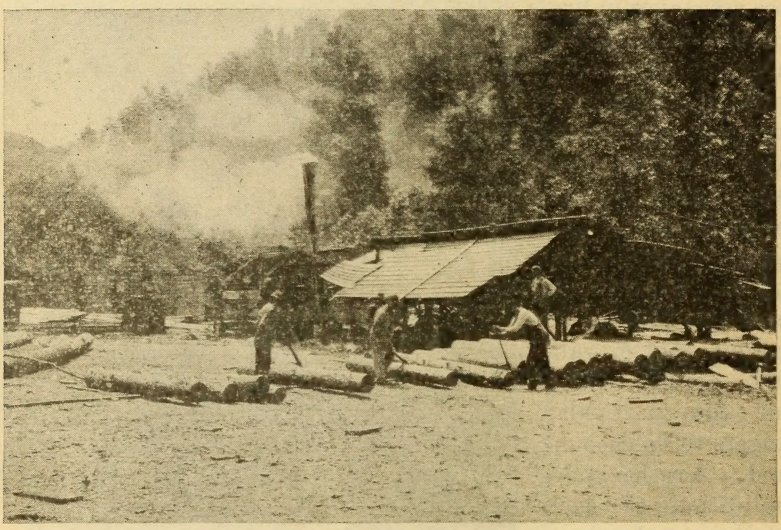


FIG. 3.—A small mill in the Appalachians. Handling national forest stumpage, Cherokee National Forest, Tenn.

lantic Ocean to Oklahoma, with Porto Rico thrown in for good measure. The commercial forests in this expansive district range from the dark spruce stands of Maine through the great oak, chestnut, and yellow popular forests of the Appalachians to the pine woods of Florida and Arkansas.

The national forests of the West were created from the public domain, but of the 4,000,000 acres of national forest land in the eastern district some 2,500,000 acres have been purchased by the Government from private owners. Naturally this land was not acquired in its virgin state, except for relatively small areas considered for the most part inaccessible in the heyday of logging in this region. Even the pine stands on the public lands from which

the Arkansas and Florida forests were created have been thinned by repeated fires to a fraction of what the land may be expected to produce.

Nevertheless, this district contains some 5,000,000,000 board feet of saw timber, 500,000 cords of tanbark, 500,000 telephone poles, 4,000,000 railroad ties, and an unestimated volume of fuel wood and other miscellaneous products—a total volume in the neighborhood of 10,000,000,000 board feet.

There are some 60 species of commercial timber trees and perhaps a third as many more which produce wood that is fit for use. About 25 per cent of the volume is overmature and decadent, and 40 per cent is fully mature and is no longer growing at a

FIG. 4.—In the turpentine woods, Florida National Forest. Loading gum for hauling to the still

profitable rate. The remainder, some 35 per cent, is immature, and though of small volume, occupies a large area and will furnish the future yield.

These forests have suffered severely from the logging operations of the last half century and the forest fires of a hundred years or more. The soil on which the greater part of the timber stands is of great richness and strength for tree growth, and the climate both as to rainfall and growing seasons is almost ideal. It can be understood, therefore, why foresters estimate that the timber crops of the future, grown under the care of man and protected from fire, will be at least three times as great in volume per acre and many times more valuable than the crops of the past.

Something over 2,000,000,000 board feet of the saw timber and products of these national forests is chestnut and chestnut is doomed by the blight which is marching southward at an ever increasing speed. This presents a problem in marketing, utilization, and wood technology which must be worked out with the wood-consuming industries, the Forest Products Laboratory, and the many land owners who are involved in the same problem. The utilization of chestnut is a bugbear to both the forester and the lumberman and the avoidance of economic loss due to its destruction will continue to be the major problem in the Appalachians for several years to come.

FIG. 5.—Hauling poles from the forest, Arnold's Valley. Natural Bridge National Forest, Va.

THROUGH AN INDUSTRIAL CYCLE

In the eastern United States the whole lumber industry has passed through almost a complete cycle and there is no section or region where the transformation has been more marked or more rapid than it has been in the Appalachians. This section was not the scene of large-scale logging until the depletion of the Pennsylvania hardwoods was first felt back in the late eighties and early nineties. From that time and until 1910, many large railroad and band-mill operations were established. Naturally enough labor of the regions soon turned to woods work and furnished an adequate supply of trained

loggers in a short time. Logging railroads were built and band mills installed, and during the next 25 years the southern mountains echoed the merry song of the saw and the ax and prosperity reigned.

By 1915 the rapid exploitation of the mountain forests had petered out, only a few large mills to be counted on one's fingers remained, and the Federal Government had started its acquisition of the cut-over land for its forests of the future.

The whole economic structure has suffered a considerable change since the period of the big operations. Lumber concerns, planing mills, and wood-using industries were all built on the basis of large mill production. These are gradually reshaping themselves to meet

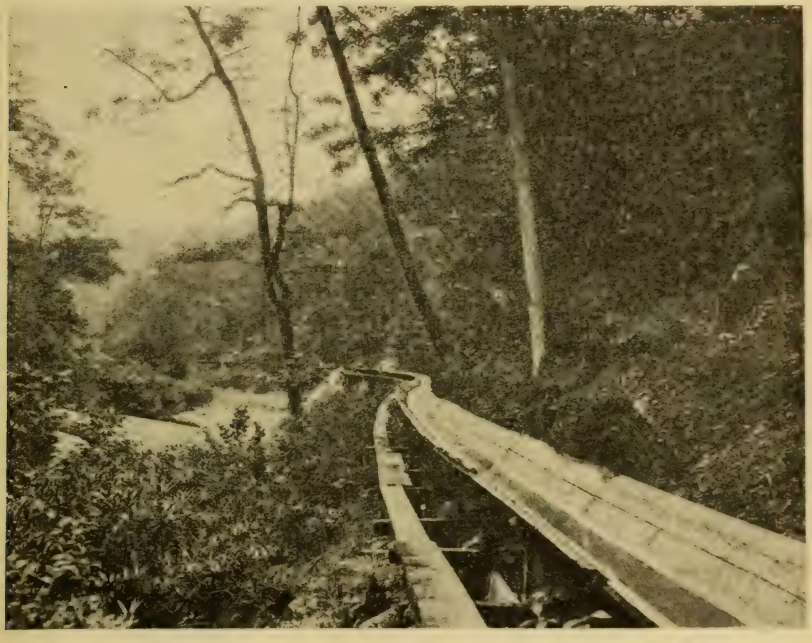
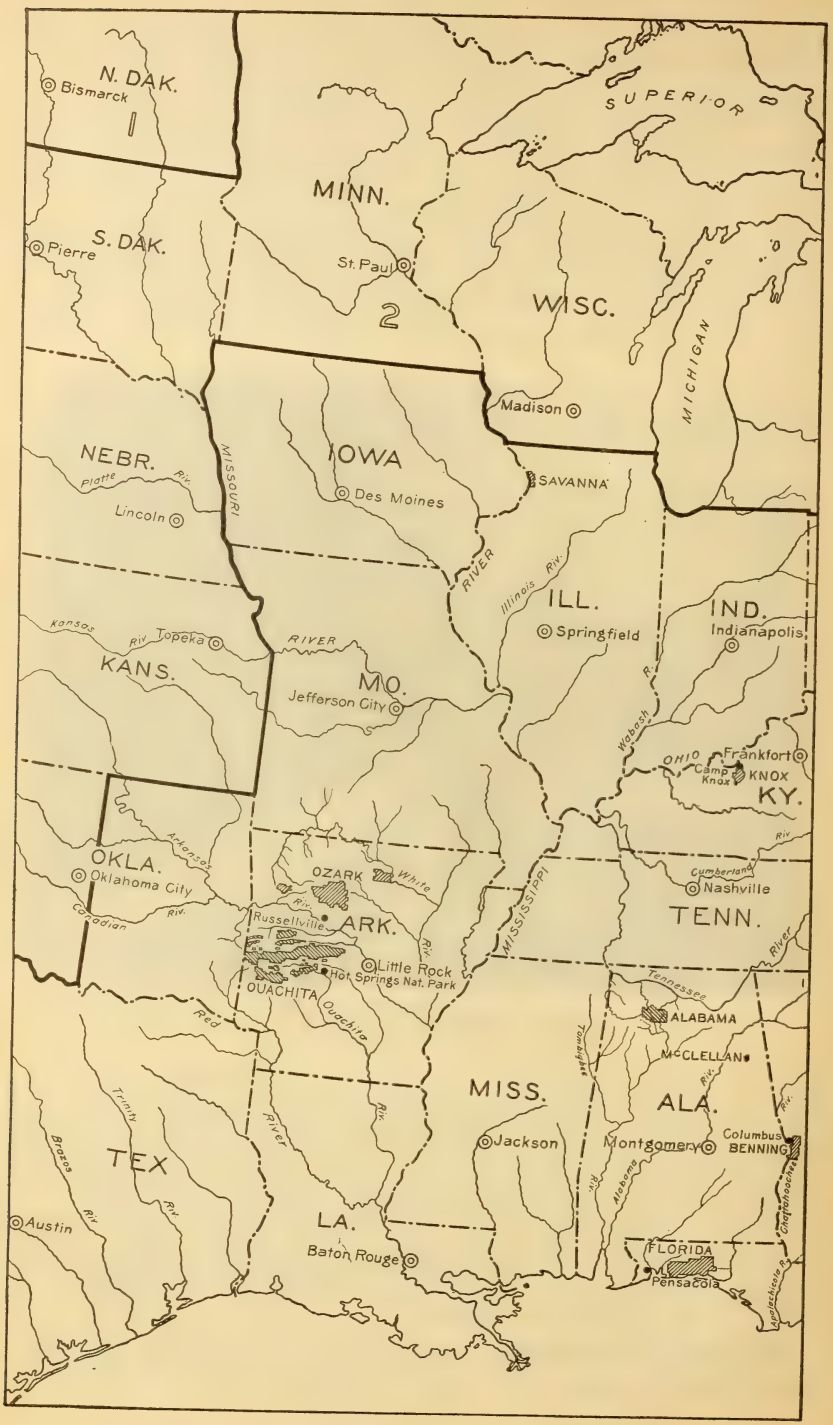
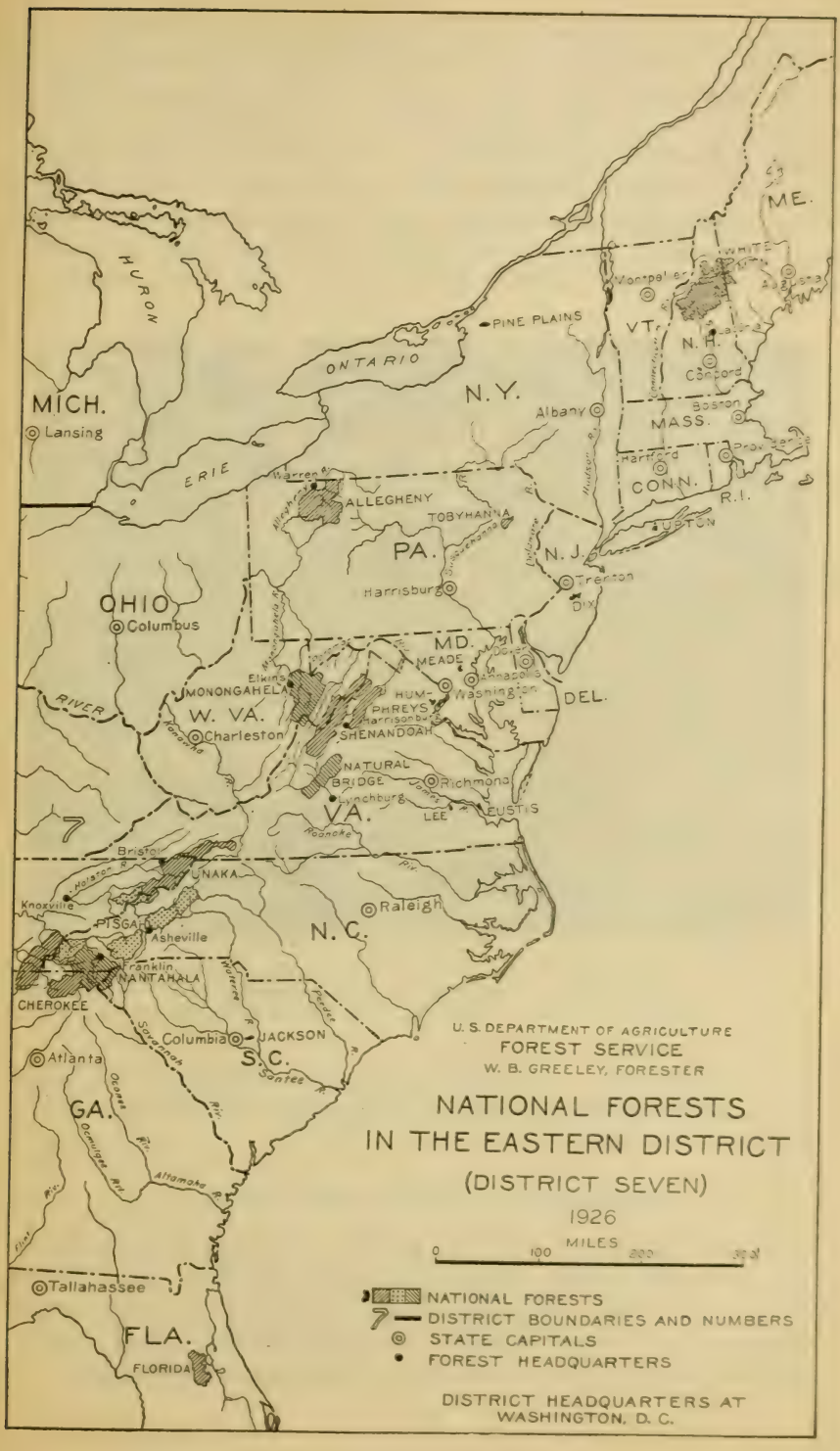


FIG. 6.—Water flume used for bringing acid wood from the forest to the tannic acid plant. Pisgah National Forest, N. C.

the new conditions. A class of operators able to handle small logging jobs is being developed, partly through the sales of national forest stumpage. The portable mill has returned to a position of importance in the manufacture of lumber, and it has brought with it brokers and wholesalers equipped to handle the output. The farming population adjacent to the national forests looks more and more to Forest Service timber sales as sources of employment during the off seasons, all of which has a very important bearing on the handling of our timber resources.

All stages of development can be found on the eastern and southern national forests. The depleted Monongahela and Allegheny


N. DAK.
Bismarck
1
SUPERIOR
MINN.
S. DAK.
Pierre
St. Paul
2
WISC.
MICHIGAN
Madison
NEBR.
Platte Riv.
Lincoln
MISSOURI
IOWA
Des Moines
SAVANNA
RIVER
Illinois Riv.
ILL.
Springfield
IND.
Indianapolis
Kansas Riv.
Topeka
KANS.
RIVER
MO.
Jefferson City
Wabash R.
OHIO
Frankfort
Camp Knox
KNOX
KY.
Arkansas Riv.
OKLA.
Oklahoma City
Canadian Riv.
OZARK
White Riv.
Cumberland Riv.
Nashville
TENN.
Russellville
ARK.
MISSISSIPPI
Little Rock
Hot Springs Nat. Park
OUACHITA
Ouachita Riv.
Red River
Tennessee River
ALABAMA
McCLELLAN
Tombigbee River
MISS.
ALA.
Jackson
Montgomery
Columbus
BENNING
Trinity River
Brazos Riv.
TEX
Austin
LA.
Baton Rouge
Alabama River
Chattahoochee R.
FLORIDA
Pensacola


ME.
WHITE
Montpelier
Augusta
VT.
N. H.
Concord
PINE PLAINS
ONTARIO
N.Y.
Albany
Boston
MASS.
Hartford
Providence
CONN.
R.I.
NEWTON
MICH.
Lansing
ERIE
HURON
Warren
ALLEGHENY
TOBYHANNA
PA.
N. J.
Harrisburg
Trenton
Dix
OHIO
Columbus
MD.
MEADE
Annapolis
Washington
DEL.
Elkins
MONONGAHELA
HUM-PHREYS
Harrisonburg
W. VA.
Charleston
SHENANDOAH
RIVER
NATURAL BRIDGE
Richmond
Lynchburg
LEE
EUSTIS
VA.
Roanoke
7
Bristol
NAKA
Knoxville
Raleigh
PISGA
Asheville
N. C.
Franklin
NANTAHALA
CHEROKEE
Columbia
JACKSON
S. C.
Atlanta
GA.
Tallahassee
FLA.
FLORIDA
U. S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
W. B. GREELEY, FORESTER
NATIONAL FORESTS
IN THE EASTERN DISTRICT
(DISTRICT SEVEN)
1926
0 100 200 300 MILES
NATIONAL FORESTS
7 DISTRICT BOUNDARIES AND NUMBERS
STATE CAPITALS
FOREST HEADQUARTERS
DISTRICT HEADQUARTERS AT
WASHINGTON, D. C.

have almost no woods activities, the Cherokee and Nantahala are still lacking in transportation facilities, while the Natural Bridge and Unaka Forests, 20 years after exploitation, have hundreds of small sales every year. The virgin stands on the Arkansas and Florida National Forests, depleted as they are from the fires of the last century, have achieved value through the exhaustion of the privately owned timber of their respective regions, and consequently are now in great demand, and are undergoing harvesting; but, be it noted, not the hurried, unheedful exploitation that the Appalachians suf-

FIG. 7.—Shenandoah National Forest, Va. A young stand of white, black, and red oak in excellent condition for rapid growth. Slack cooperage and fuel-wood sales have removed defective oaks and chestnut, black gum, maple, pine, and other weed trees

fered. These forests are being harvested according to the precepts and principles of forestry and yet with profit to the purchasers who carry on the harvest.

PRODUCTS FOR MANY NEEDS OF MAN

Prior to 1914 there were no sales of stumpage in this district except from the public-domain forests of Arkansas and Florida. During the calendar year 1924, there were some 1,400 sales, consisting almost entirely of salvage materials—stumpage that was regarded as practically worthless at the beginning of that decade.

In addition to the more usual sales of saw timber, ties, etc., which go on throughout this district, it is doubtful if the variety of special products can be equaled anywhere. In New England there are sales of beech, hard maple, and yellow birch for bobbins to supply the busy looms down river. Low-grade material goes into the manufacture of all kinds of wooden toys—perhaps some of the toys our own children are now happily destroying are made from wood grown on the White Mountain National Forest. Then there are sales of white birch for spools, wooden novelties of all kinds, and shoe pegs. There is one small peg mill in New Hampshire, where the shipping stencils read like a lesson in world geography.

In the Appalachians there are sales of chestnut for telephone poles and extract wood, chestnut oak and hemlock tanbark, dogwood for shuttle blocks, locust for posts, sassafras roots for sassafras oil, birch twigs for birch oil, rhododendron and laurel plants for ornamental purposes—the roots for briar pipes. These forests cater to man's necessities, his sense of beauty, and his pleasure.

In Florida the tree is drained of its pitch for the turpentine man, and the tree itself is sold to the sawmill man, the pine knots, and, it is hoped soon, the stumps, to the wood distiller.

Perhaps the greatest impetus to the products sales in this district is the rapid improvement in permanent transportation systems. Old railroad grades, long overgrown, are being converted to the use of the modern truck; roads are reaching back into the mountain valleys, not only enabling the farmer to haul his crops to market, but also encouraging him to employ his off seasons in getting out products from the forest. Sometimes the few crossties or cords of extract wood he buys from the local forest ranger constitute his only source of cash for replenishing his supplies of sugar, coffee, and clothing.

FORESTRY PRINCIPLES IN PRACTICE

The Forest Service has been busily engaged in building up these eastern and southern forests by purchase, equipping them with fire tools, trails, telephone lines, and lookout towers, perfecting the organization of trained forces to administer and protect them, and converting the attitude of the mountain farmer from one of forest destruction to forest conservation. To date it has contented itself, therefore, with taking care of the sales business which has come unsolicited—not reaching out after the business which is believed to exist. It is certain that the timber-sale business of to-day can and will be expanded during the next 10 years to several times its present size.

But, even this expanded business, after all, is only the clean-up and salvaging operation designed to remove the last of the old crop of timber. All of these harvesting operations are conducted with the same end in view, namely, the improvement of the conditions of growth of the second crop. Artificial planting is the forester's last resort. Natural reforestation is the end to be sought. Fortunately, throughout this district nature reforests abundantly when given intelligent assistance. Culled stands must make way for stands that will grow; diseased and decadent trees must be removed; young stands must be thinned; else competition will strangle all.

In working out methods, the foresters are confronted with many problems both economic and technical. The same problems must be faced by the land owner who wishes to cut his woodlands with an eye to the future. It is found that the intensity of forestry practice is governed rather sharply by the demands for available products; there is much to learn about the proper treatment of individual stands; and, before all else, the fire problem must be effectually solved. Some progress is being made. The rapidly changing character of the scrub-oak areas on Massanutten Mountain, in the western part of Virginia, and the greatly increased amount of white-pine reproduction in the Natural Bridge country, in northern Georgia, and in many other places, bear witness to the value of protection from fire. Increased sales have made it possible to place considerable areas in excellent shape for rapid growth.

The timberland owners of the region might and should have more first-hand knowledge of these things, gained through better acquaintance with national forest officers and visits to the national forests. These forests are representative of nearly every type and forest condition. They should be considered as forest laboratories in which problems common to Federal, State, and private management of forest lands can be worked out cooperatively and to wise conclusions.

ORGANIZATION OF THE

UNITED STATES DEPARTMENT OF AGRICULTURE

September 22, 1926

Secretary of Agriculture	W. M. JARDINE.
Assistant Secretary	R. W. DUNLAP.
Director of Scientific Work	A. F. WOODS.
Director of Regulatory Work	WALTER G. CAMPBELL.
Director of Extension Work	C. W. WARBURTON.
Director of Information	NELSON ANTRIM CRAWFORD.
Director of Personnel and Business Administration	W. W. STOCKBERGER.
Solicitor	R. W. WILLIAMS.
Weather Bureau	CHARLES F. MARVIN, *Chief.*
Bureau of Agricultural Economics	LLOYD S. TENNY, *Acting Chief.*
Bureau of Animal Industry	JOHN R. MOHLER, *Chief.*
Bureau of Plant Industry	WILLIAM A. TAYLOR, *Chief.*
Forest Service	W. B. GREELEY, *Chief.*
Bureau of Chemistry	C. A. BROWNE, *Chief.*
Bureau of Soils	MILTON WHITNEY, *Chief.*
Bureau of Entomology	L. O. HOWARD, *Chief.*
Bureau of Biological Survey	E. W. NELSON. *Chief.*
Bureau of Public Roads	THOMAS H. MACDONALD, *Chief.*
Bureau of Home Economics	LOUISE STANLEY, *Chief.*
Bureau of Dairy Industry	C. W. LARSON, *Chief.*
Fixed Nitrogen Research Laboratory	F. G. COTTRELL, *Director.*
Office of Experiment Stations	E. W. ALLEN, *Chief.*
Office of Cooperative Extension Work	C. B. SMITH, *Chief.*
Library	CLARIBEL R. BARNETT, *Librarian.*
Federal Horticultural Board	C. L. MARLATT, *Chairman.*
Insecticide and Fungicide Board	J. K. HAYWOOD, *Chairman.*
Packers and Stockyards Administration	JOHN T. CAINE III, *in charge.*
Grain Futures Administration	J. W. T. DUVEL, *in charge.*

This circular is a contribution from—

Forest Service	W. B. GREELEY, *Chief.*

ADDITIONAL COPIES
OF THIS PUBLICATION MAY BE PROCURED FROM
THE SUPERINTENDENT OF DOCUMENTS
GOVERNMENT PRINTING OFFICE
WASHINGTON, D. C.
AT
5 CENTS PER COPY

▽