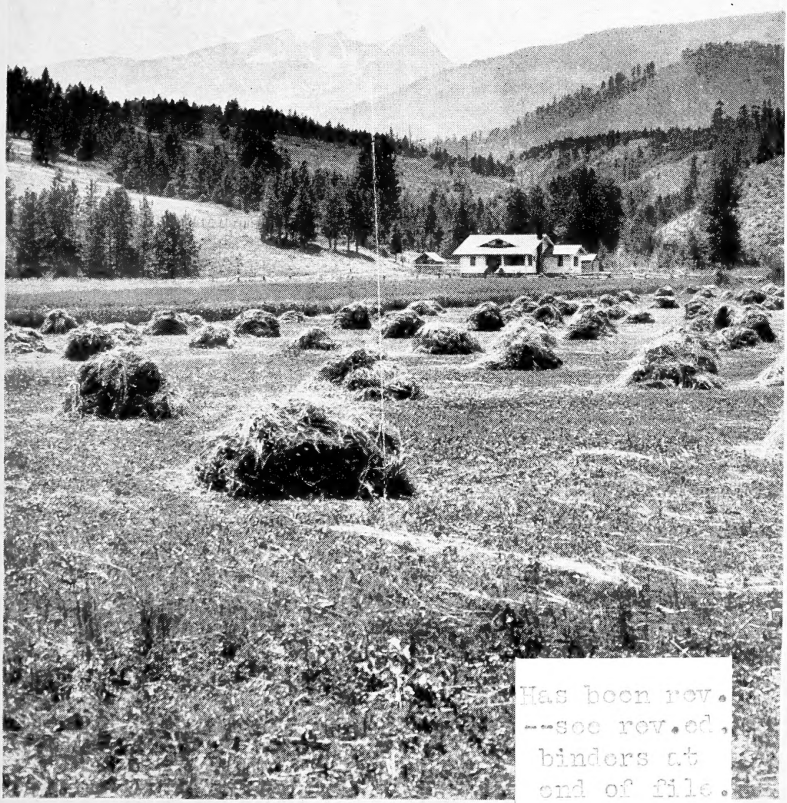
FORESTRY AND PERMANENT PROSPERITY



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FORESTRY AND PERMANENT PROSPERITY

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FOREST-LAND MISUSE

The American record of land misuse is almost unparalleled. Our forest lands, which constitute almost one-third the area of the continental United States, offer a striking example. Today, three-fourths of them—and four-fifths of the most valuable, or commercial forest lands—are in private ownership. On these lands in recent years fires have burned over more than 41,000,000 acres annually—an area greater than that of Connecticut, Massachusetts, New Hampshire, Virginia, Maryland, and West Virginia combined. Ax and fire together have devastated or left with crippled, inadequate growing stock an area three-fourths larger, even, than this.

For more than a century these forest lands were literally forced from public to private ownership. Deliberately undertaken, it may have been assumed that this course would, through individual self-interest, bring about economic prosperity; would somehow develop a wholesome, stable social and economic structure based upon individual operation of privately owned forest lands. There was precedent for the assumption that this might be a sound economic policy here. For in Old World countries there were privately owned forest lands and forest industries managed on an ever-producing, sustained-yield basis and they had for centuries helped maintain permanent communities. They had always ranked high as a source of stable employment. Integrated with agriculture, they had been the backlog of a sound, enduring rural economy. The attitude of their owners may have been a key to this situation. Certainly it seems so. For in Europe, the private owner of forest lands so managed considers himself a trustee. He harvests forest crops and regularly collects and enjoys

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the income from them. But he does not destroy the source of that income; he holds the land—and its power continuously to produce—inviolate for future generations.

Our own attitude toward forest-land ownership has been different. "This is ours", we have said, "to do with as we please." And burned acres and wasted empires have been a result (pl. 1). Unfortunately, they are only a part of the Nation's record of forest-land misuse. Another, a more vital aspect, is the human one. For as the timber disappeared and sawmills shut down, hundreds of thousands of workers were thrown out of their jobs. Many, looking for work, found it in prosperous times, but were forced to migrate in dull times. Others, without the means to move, were more unfortunate, for no longer was there any market for their labor or for the products of local agriculture. In community after community, taxes became delinquent. In one typical town, seven-room homes with steam heat and plumbing went on the auction block at $35. There were no buyers.

In this way forest exploitation has laid its blight on individuals and communities. It has been responsible for ghost towns and rural slums throughout the Lake States, the South, and on the Pacific coast. Indeed, its effects have eaten more deeply into the national fabric. For with forests cleared from hillsides, rains have run off quickly and floods have increased; topsoil has eroded from fertile acres (pl. 1); streams, dams, and harbors have loaded up with silt; property has been damaged and destroyed.

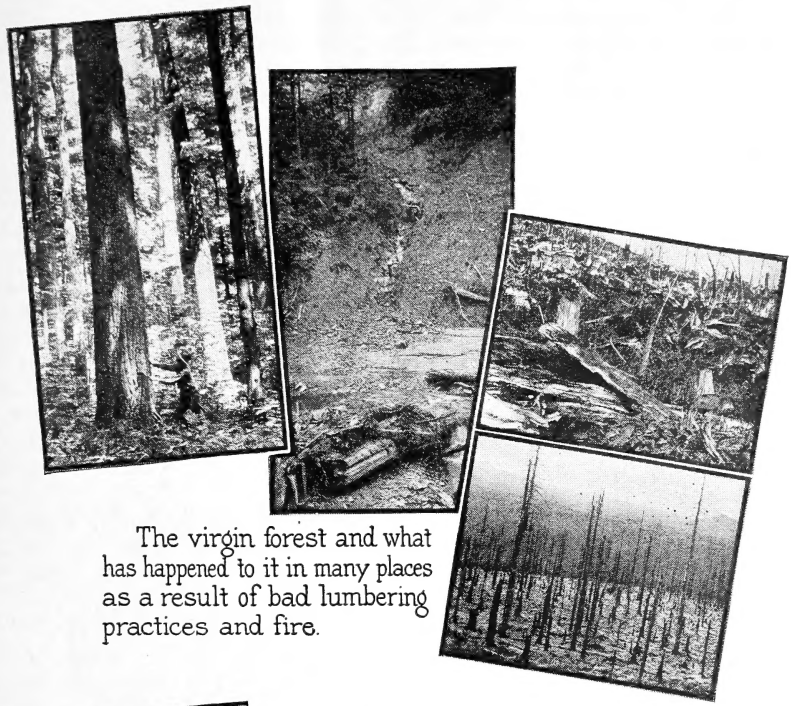
FORESTRY IN THE UNITED STATES

For more than a century this has been the history of forest-land mismanagement in the United States. It is true that almost from the earliest days of settlement on the eastern coast there were protests against the unlimited use of the forest and the lack of organized efforts to protect it from fire. But it was not until the close of the latter half of the nineteenth century that the movement for forestry really started. And in its modern phase, real progress has been made largely since 1900.

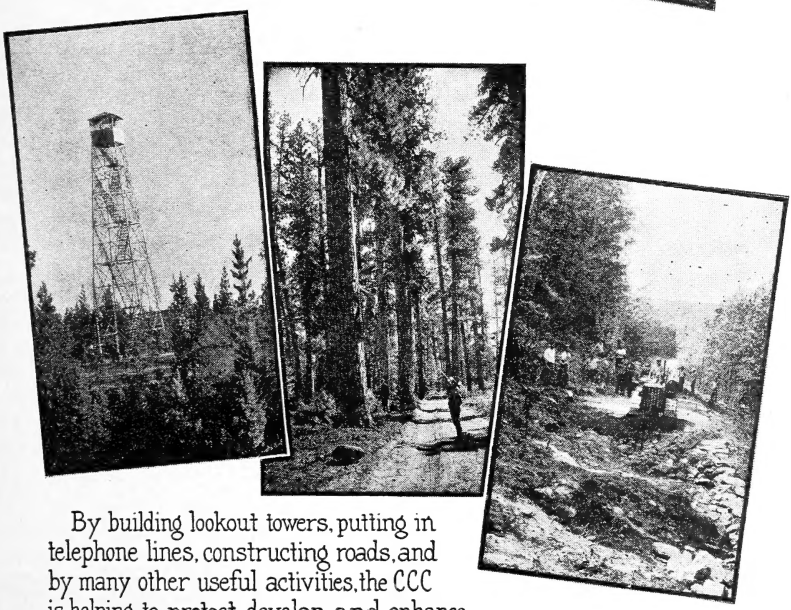
FORESTRY AS AN AID TO ECONOMIC RECOVERY

The national-forest system—administered by the Forest Service of the Department of Agriculture—has been a conspicuous effort in the development of American forestry. Over a period of years it has been a trial on a large scale of Federal administration of a great natural resource in the public interest; a radical departure from the traditional national policy of private ownership of natural resources and their exploitation for private profit. When the last depression struck, these huge Federal properties, offering an opportunity for emergency employment on a national scale, became a real factor in the fight for recovery. In that fight, building firmly on the foundations laid early in the present century, we have been putting our forests in order. The task is a huge one; it cannot be accomplished quickly. But already we have made a good start.

Beginning with the Civilian Conservation Corps, emergency forest work early expanded through public works, civil works, transient



The virgin forest and what has happened to it in many places as a result of bad lumbering practices and fire.



By building lookout towers, putting in telephone lines, constructing roads, and by many other useful activities, the CCC is helping to protect, develop, and enhance the value of forest resources in the United States under a program planned by the Forest Service long before the depression struck the country.

relief, and drought relief. And in all this, the Forest Service took the lead. Its projects were started promptly after the funds were allocated and they have employed a high percentage of direct labor. During the 12 months which ended June 30, 1934, better than 70 percent of all work projects on Federal, State, and private lands—which engaged the C. C. C. with an enrolled strength that exceeded 350,000 men, were planned and supervised by the Forest Service working in part through State conservation agencies. Within this period the national forests and national-forest purchase units in 37 States, Alaska, and Puerto Rico furnished more than 26,000,000 man-days of planned work. Figures for the fiscal year which ended June 30, 1935, indicate that the Forest Service planned and supervised a total volume of work—on and outside of the national forests—in excess of 43,000,000 man-days (pl. 1).

FORESTRY HELPS TO BUILD PERMANENT ECONOMIC PROSPERITY

But forestry's contribution, distinctly helpful in the present emergency, goes deeper than this. For the national-forest emergency-work program forms part of a comprehensive plan made long before the depression struck. Forest projects are so planned and executed that the work is essentially an investment. Noncompetitive with industry, that work is constructive and worth while. Rebuilding men, it contributes to human welfare. Rebuilding forests, it does more than assist during the emergency period; it helps to lay foundations for permanent economic prosperity.

Those foundations are broad. For in the continental United States there are some 615,000,000 acres of land which are more valuable for forest and allied uses than for any other purpose. They make up almost one-third of our total land surface. And since forests are products of the soil, they need not be mined. Like crops, they are susceptible of renewal and management in accordance with known sciences and practices. Treated thus, forest lands need not be devastated; need not create ghost towns or rural slums. They may, instead, be kept productive and be so managed that they will always contribute to the permanent support of their fair share of the country's population.

THE FOREST PROBLEM IS A SOCIAL ONE

Our forest problem has to do, it is true, with trees and the soil from which they spring. But through forestry, trees are no longer an end in themselves. They are crops; their real function is to add continuously to the permanent welfare of individuals, families, and communities; the people of the Nation. This is the real purpose of public conservation policies. It is the objective toward which the Forest Service is directing ever-increasing efforts. So in normal times, as in emergency periods, forestry and the work of the Forest Service have definite meanings for all of us. For example:

THE NATIONAL FORESTS

The national-forest system, established in 1891, is now familiar to many people. There are today about 154 individual national forests and purchase units, located in 37 States, Alaska, and Puerto Rico.

Their boundaries include over 221,000,000 acres, of which more than 170,000,000 acres are in Federal ownership (fig. 1). Their resources—wood, water, forage, wildlife, recreation, and many others—are administered under a multiple-use system which insures perpetuation of all resources through use; assures the greatest good to the greatest number of people in the long run.

FARM WOODLANDS

Most people think of the Forest Service as guardian and administrator of these national forests and their resources. This is true. But it also has other obligations, several of which are closely allied with agriculture.

One of these concerns farm woodlands; tree lands which, owned by farmers, aggregate more than one-third of all our commercial forest lands and occupy more acres than any other crop on farms in the United States. These farm woods annually furnish timber, fuel, fence posts, and supplemental cash incomes to more than 2,500,000 farmers (pl. 2). So, since effective woodland management is a vital part of national agriculture, Federal cooperation in farm forestry is authorized. Under the Clarke-McNary law, its methods and technique are cooperatively developed, and its results are made available by the Extension Service of the Department of Agriculture and extension foresters of the various agricultural colleges. Cooperative forestry extension is now conducted in more than 1,090 counties. It includes assistance in forest management and in planting for timber production and windbreaks, advice, and assistance in estimating and marketing timber and wood products, and in protecting farm forests from fire, insects, and tree diseases. Thirty-eight extension foresters are employed in 33 States and Puerto Rico.

PLAINS SHELTERBELT

The Plains shelterbelt project also has a vital meaning to a rural population. In its immediate aspect, this project helped provide relief for an agricultural region seriously distressed by drought. But like other forestry measures it was broader than this. It envisioned a major physical and social contribution to planned agriculture in the Plains States. The medium for this contribution was trees. The program was one of protective tree planting, but not just any trees, planted in any place, irrespective of soil, moisture, or other conditions. For back of this project is a great deal of careful, painstaking research by State agricultural colleges and many Federal bureaus. Factors have been studied and reviewed; conditions, records, and practices have been explored. Data have been assembled, analyzed, and correlated. Major policies and practices have been worked out in cooperation with State and local authorities. Guesswork has been eliminated.

Although sharply limited by the amount of stock that could be made immediately available, 1,280 miles of field shelterbelts had been planted by June 30, 1936. For this work some 20 carefully chosen tree and shrub species were used. The number approximates 23,000,000.

Protective tree planting—even though it be planned—will not of course, stop drought, but it will lessen its local adverse effects. It

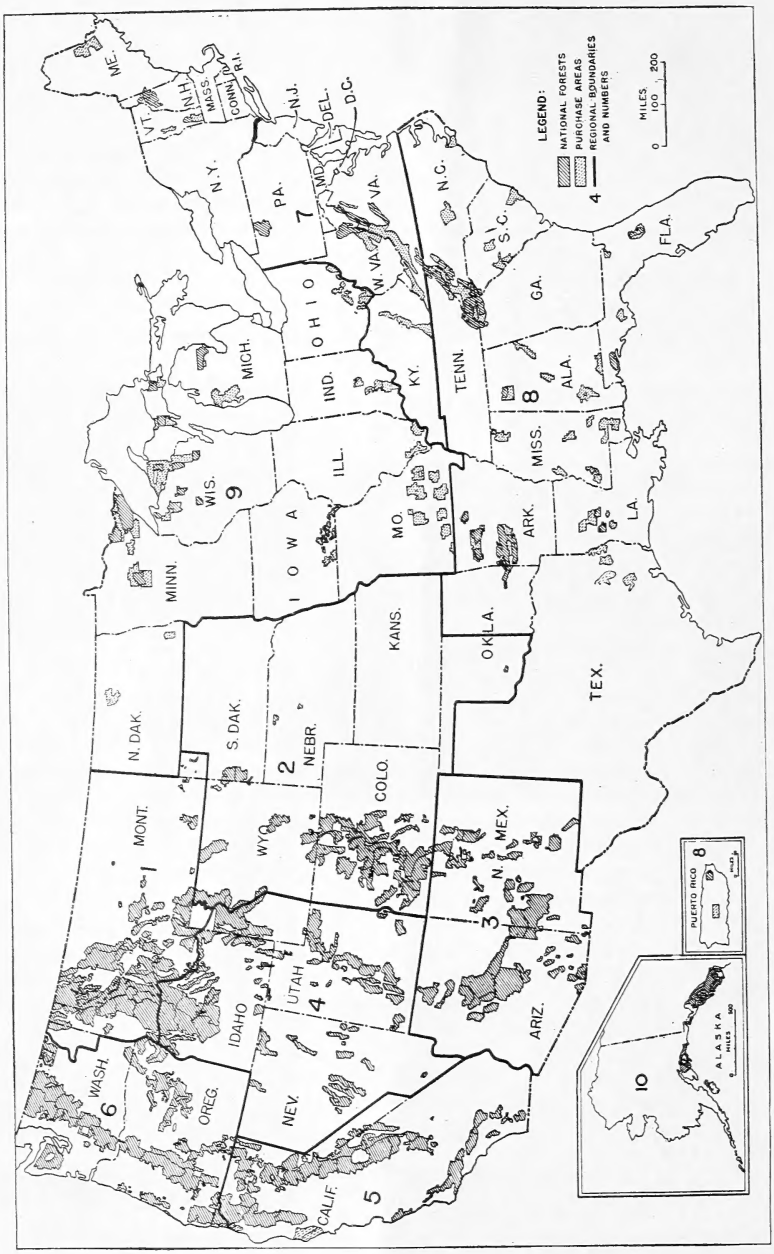
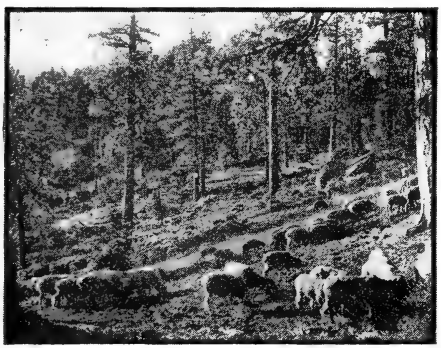
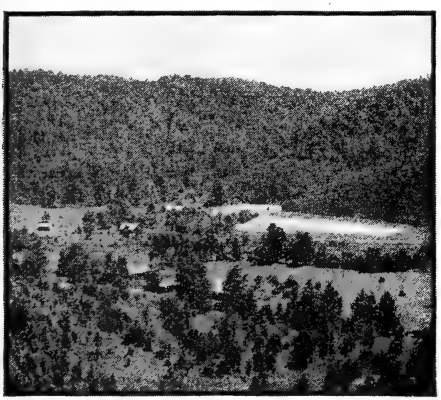


FIGURE 1.—National forests and purchase areas.

Through cooperation with the Forest Service, farmers may have assistance in the management of their woodlands.



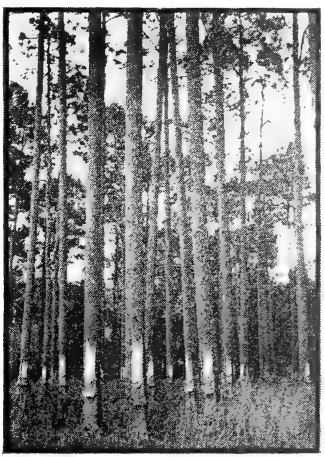
More than 7,000,000 cattle and sheep used western forest ranges in 1934.



The interests of the forest and the farm are interdependent.

The obligations of the Forest Service have to do with farm forestry, other related agricultural activities, and with the coordination of agriculture with forest resources.

Cottonwoods growing on the edge of the shelterbelt zone in South Dakota.



In some parts of the longleaf pine region the agricultural population is absolutely dependent upon part-time work in the forest.

may not increase local rainfall, but it will help conserve what does fall. It will not prevent the bitter winds of winter nor the hot drying ones of summer, but locally it will reduce their surface velocities and the damage they do. In all this, it will aid in preserving soil moisture and in water conservation. It will also provide recreational areas, form havens and refuges for upland game and other wildlife, and add variety and beauty to the landscape. Protective tree planting will, in short, make a Plains area of some 70,000,000 acres, including more than 185,000 established farm units, a better place in which to live.

So great is the need in the Plains region, so large are the public values involved, and so real the benefits which individual farmers have received from successful forest plantations they have made over the years, that more of them are bound to be established in the years to come, despite the fact that the second session of the Seventy-fourth Congress did not provide Federal funds for continuation of the shelterbelt project (pl. 2).

INTEGRATION OF AGRICULTURE WITH FOREST RESOURCES

Of the 615,000,000 acres of forest lands in the continental United States, approximately 495,000,000 acres are classed as capable of producing timber fit for commercial use. This vast forest acreage also directly affects the economic security of individuals, communities, and the Nation. In some regions, for example, successful agriculture can continue only if forest management and utilization create and maintain nearby markets for farm crops. In other regions farm population depends on forest work to produce cash incomes, while farm work produces the bulk of the family food (pl. 2). Then, too, permanent agriculture depends, in many places, on irrigation. This, in turn, depends on maintenance of plant cover on adjacent mountains from which water supplies come; in turn, this depends on forest and range conservation. In still other parts of the country, the Nation now faces the huge task of replacing agricultural production on worn-out or abandoned farm lands with forest production. Forms and amounts of land use must also be changed so that human effort devoted to agriculture may not destroy the land and waste itself.

A more specific illustration of the close relationship that exists between forest resources, agriculture, and human welfare may be found in the longleaf-slash pine region of South Carolina, Georgia, and north Florida (pl. 2). This is an area of approximately 30,000,000 acres, 70 percent of which is devoted to the growth of forest stands. In it, agriculture is declining, and neither mining, manufactures, oil, nor gas fields have developed to offset this decline. The growing, harvesting, manufacturing, and marketing of forest crops are the outstanding industries; the main occupations; the only assurances of a decent livelihood.

In this area, every county and nearly every town and hamlet has its turpentine orchards and stills. For the area contains three-fourths of that naval stores industry which produces all of the rosin and turpentine used in this country, and approximately 65 percent of the world's production. Close on the heels of the turpentine operators follow the sawmills. These, large and small, are found everywhere. Other wood-using industries produce poles, piling, railroad ties, and

material for vegetable and fruit containers. The present and future successful operation of public utilities such as railroads, steamship and barge lines, power companies, and truck lines depends upon forest products. And many little settlements have one or more wood-manufacturing plants.

Most of the agricultural land is tilled by small farmers, but the farm economy is such that part-time work for 3 or 4 months each year must be found for owners, field hands, and animals. Otherwise they cannot exist. In this area as a whole, there is sufficient growing stock of timber on hand to afford work and an opportunity for a comfortable living not only to the population now within its borders, but to hard-pressed people from less fortunate sections as well. But this holds true only if the forests are properly used and cared for. It has not been done in the past. If in the future the South is to prosper, it must be done. Now is the time to start; tomorrow will be too late.

FOREST-LAND FORAGE

Within the continental United States as a whole, some 334 million acres—more than 50 percent of all commercial and noncommercial forest lands—are grazed by domestic livestock. In the pine forests of the South, forage is a resource of forest areas often not owned by the stockmen, but of value to the rural population. In the humid East, grazing is usually so detrimental to hardwood forests that woodlot and other forest owners are often faced with the necessity for making a choice as between pasturage and forest values, or of attempting a dual use which generally results in poor pasturage and forests, both. In contrast, controlled grazing in coniferous forests (such as those so prevalent in the West) results in comparatively little damage to tree growth.

In some parts of the country, economic and social welfare is frequently dependent upon forest-land forage. This is particularly true in the West, where it largely involves public lands in the national forests, which are administered by the Forest Service of the Department of Agriculture, and public domain, part of which has recently been put under administration by the Department of the Interior through the Taylor Grazing Act.

NATIONAL-FOREST RANGES

Western national-forest ranges are used annually by more than 1,400,000 cattle and 6,000,000 sheep plus their natural increase; the forage produced on these ranges is vital, yearly, to some 26,000 individuals who own or control more than 4,500,000 acres of improved farm land and 22,000,000 acres of privately owned grazing land (pl. 2). These national-forest ranges in the West have been under administration for more than 30 years. On them, drift fences, corrals, and bridges have been built; water supplies developed; roads, trails, and stock driveways constructed; and poisonous plants eradicated. Always the effort has been to allow only the number of stock that the amount and condition of the available forage justified. As a consequence, and relatively speaking, western national-forest ranges came through the drought years, even, in good shape.

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This is indicated by the fact that the Drought Relief Committee found it necessary to purchase but few of the livestock which grazed upon those ranges. But subnormal moisture had its effect upon them, nevertheless. And the term-permit system initiated in 1925 as a means of helping to stabilize the livestock industry, was a contributing factor. For under these first 10-year grazing permits, numbers of stock could not, in some cases, be reduced sufficiently—or quickly enough—successfully to meet changes in range conditions induced by the widespread, subnormal precipitation that culminated in 1934. As a result some national-forest ranges, built up prior to 1925 through use under the more flexible annual permits, now need rebuilding.

To accomplish this means, temporarily, fewer stock; a partial rest for the ranges. Term grazing permits—all of which expired with the 1934 season—were not, therefore, renewed in 1935; instead, grazing permits were issued on an annual basis. This made possible many important protective reductions, by means of which the numbers of stock were readjusted to the carrying capacities of certain ranges. And by means of cuts applied to permits covering stock greater in numbers than the protective limits, range was provided for more small owners who, though really dependent on national-forest forage, were unable to obtain it while the previous 10-year permits were in effect. Ten-year grazing permits were authorized again in 1936. They are, however, subject to adjustments for further distribution of grazing privileges and for range protection.

ACQUISITION OF FOREST LANDS BY PUBLIC AGENCIES

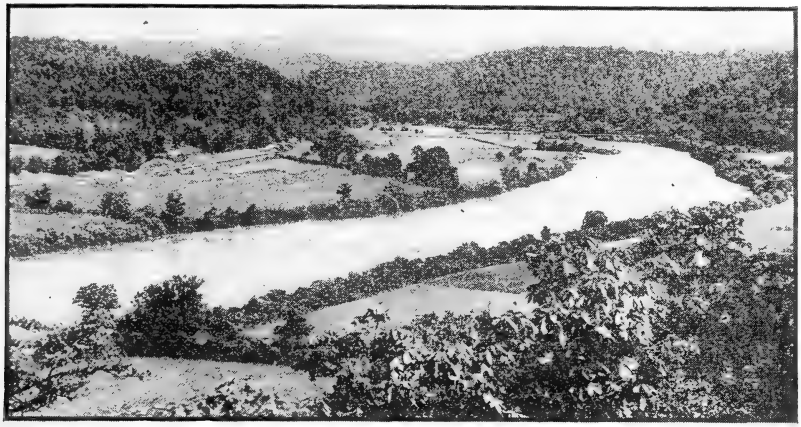
Important as is the relation between our forests and our agricultural pattern, the impact of forestry on the country's social and economic structure is much wider than upon agriculture alone. The everyday work of the Forest Service has a real and definite meaning which extends beyond the farmer. Acquisition by public agencies of part of the forest lands now in private ownership is an illustration of this.

Four-fifths of the approximately 495,000,000 acres of commercial timberland in the United States, or 396,000,000 acres, are now in private ownership. These are the most valuable and productive of all forest lands. From them have come 98 percent of all the lumber and timber produced. And since they have been "mined", they are the lands which have suffered most. Ownership of these lands is not stable. In fact, available data indicate a national, long-time tax delinquency of at least 50,000,000 acres. This threatens the economic stability of farming, manufacturing, and local government. And until these denuded lands again produce forest crops, they can neither adequately protect important watersheds (pl. 3) nor help the stranded communities which once depended upon them for a livelihood.

Recognizing this situation, Congress in 1911 passed what is popularly known as the Weeks law. It provides for Federal acquisition of forest lands for the protection of the headwaters of navigable streams, subject to approval by the National Forest Reservation Commission. In 1924, by the terms of the Clarke-McNary law, the original authority was broadened to include purchase of land for timber production as well as for stream-flow protection. Acquisition

A Forest Service timber sale in California on which a fine stand of trees has been left for a second crop.

Where selective logging is being practiced by a Lake State lumbering company.



In one of our purchased eastern national forests, where tree growth furnishes watershed protection and helps to prevent erosion of the soil from mountain sides and stream banks.

Since 1911 over 15,500,000 acres of forest land have been approved for purchase for national-forest purposes.

of land for national-forest purposes was first financed by regular appropriations, but since 1933 emergency funds have been available for this purpose, and purchases have been greatly speeded up. In the period since the Weeks law was passed the Forest Service, acting as the executive agency, has recommended, and the National Forest Reservation Commission has approved, proposals to purchase over 15,500,000 acres (pl. 3). Prior to 1933 Federal acquisition of forest lands had totaled less than 550,000 acres in any one year. Within a 12 month period in 1933–34, more than 4,000,000 acres were acquired or placed under contract of sale to the Federal Government, and the accelerated program continued through 1935.

As optioned, these lands have been added to the national-forest system, then put under protection and administration. Through fire control, improvement work, and planting, made possible by regular and emergency appropriations, areas once largely denuded are being brought back to productivity. Full- or part-time jobs are thus available to local people who might otherwise be on relief rolls. On areas thus purchased,[1] the yearly capacity of Forest Service nurseries, where trees for field planting are raised, was increased from 23,000,000 trees in 1932, to 166,000,000 in 1935.

To date, almost all forest-land acquisition by purchase has been confined to the territory east of the Rocky Mountains, where the proportion of privately owned forest land is high, and that of national-forest land low, as compared to Western States. It largely has been confined, too, to lands which did not bear merchantable timber at the time of purchase. Recent conditions have indicated the wisdom of applying a portion of such funds as may be available to the purchase of forest lands—in the West as well as the East—on which there is now merchantable timber. Such a course will make it possible to practice immediate sustained yield on demonstration areas. And acquisition of key tracts will in some cases help stabilize forest industries and communities by early application of sustained-yield management to economic units which might otherwise be privately operated on a cut-out-and-get-out basis. It will probably still be desirable, however, to concentrate the bulk of forest-land purchases in the eastern part of the country.

The program of forest-land purchases under the Weeks law was the first project of such a character handled by the Department of Agriculture. Recently other land-purchase programs for purposes such as wildlife refuges, control of soil erosion, and curtailment of submarginal farming have become necessary and advisable in the public interest. To meet the need for coordination and correlation and to provide for unity of action, there has been set up in the Department a land policy committee.

This committee acts as a clearing house for land purchases of all departmental Bureaus. It receives and records all detailed project reports, determines relationships of separate land-purchase and management projects to each other and to the whole, provides for adjustment of geographical conflicts and interbureau cooperation. Through it, all land-purchase work of the Department is now unified, correlated, and coordinated.

[1] In the eastern, southern, and north central regions of the Forest Service.

A NEW TYPE OF FOREST COMMUNITY

As a whole, the lumber industry, though it has endorsed sustained yield as an objective, is still financed and operated on a basis of quick liquidation. Consequently, woods labor is largely transient and without permanent community ties. This makes for an unsatisfactory, unsound social structure. It is a definitely inadequate policy for successful sustained-yield operation of forest lands, to which permanent communities of skilled workers are essential.

In cooperation with the Resettlement Administration, the Forest Service has been studying possibilities for developing within the national forests new types of forest communities, so located that forest-land resources may assure economic freedom through stable, permanent work. Plans for a number of such projects, based upon sustained-yield utilization of national-forest and other timber products, have been developed.

SUSTAINED-YIELD MANAGEMENT AND PERMANENT COMMUNITIES

If our forests are to do their part in maintaining permanent, prosperous communities, they must be so handled that a continuous supply of timber is assured for each community dependent upon forest industries. This means sustained-yield forest management.

To the layman "sustained yield" may sound mysterious. If so, one might consider, by way of example, an individual who has fortunately accumulated a capital of $200,000 and then invests it so that he secures a safe return in the form of annual interest. If he keeps his expenditures within this interest, he has a sustained-yield operation. If not, sooner or later his capital is dissipated, his income gone.

This situation has a direct parallel in forest management. A man who owns 200,000 acres of productive timberland may establish sawmills and cut all the timber quickly. He may, in other words, liquidate by way of the cut-out-and-get-out policy under which there is feverish activity—for a time. A sawmill town is built, everything booms. But in a few years the operation is ended, the goose plucked. Unless some other activity intervenes, women and children are forced by economic necessity to follow their menfolk along tortuous job-hunting trails. Homes, schools, and churches are left empty and forlorn. Obviously, this way of doing things does not constitute a sustained-yield operation.

But if this timberland owner first determines the yearly interest—in the form of annual growth—which his 200,000-acre forest will yield, then builds sawmills to handle, each year, not more than the amount of timber which this growth represents, both property and town are on an all-time basis. For then annual growth replaces annual harvest; the forest capital is not depleted. Jobs, homes, schools, churches, are permanent. This is a sustained-yield operation. It is the type of management which is standard for all resources on the national forests; it has as a major objective community maintenance through production adjusted to growth.

Sustained-yield forest management can be practiced in every forest region of the United States. It may not be achieved everywhere by

exactly the same methods, but the basic idea is the same. It means providing a constant, and a constantly renewed, supply of raw material. It means stabilization of forest industries; perpetuation of our forests by cutting only as much timber as can be replaced by current growth (pl. 3). It requires adequate protection from fire, insects, and diseases, of course. It uses such methods of cutting as will damage young growth as little as possible. It insures future crops either by leaving seed trees and young trees or by planting where it is necessary to do so.

Under sustained yield the timber requirements of the Nation, a particular region, or a local community are figured over a period of years; on a specific area or areas there is set up an annual harvest which will yield raw material without diminishing the future supply; mighty industries which in normal times employed some 1,300,000 people may in large measure substitute stability and security for instability and insecurity, both for themselves and their workers.

Unfortunately, there are as yet comparatively few lumber companies which have been successful in prolonging their lives and those of their dependent communities by practicing sustained-yield forest management on forest lands in private ownership.

WILDLIFE

A large part of the wildlife in the United States, valuable for food, fur, and hunting, or for aesthetic purposes, is found in our forests. Its management in connection with other resources is an important part of forestry. Wildlife directly interests more than 13,000,000 people who hunt and fish (pl. 4). It helps support many more, and adds to the happiness of millions who are eager to catch glimpses of wildlife in its home environments.

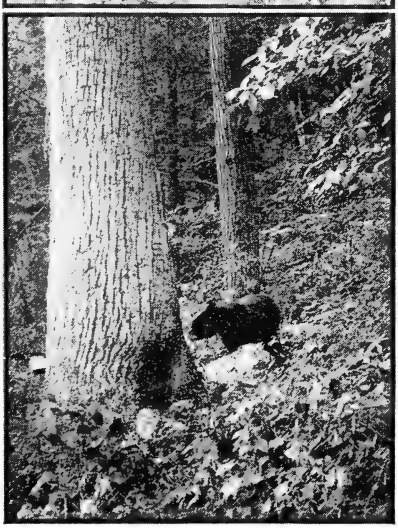
Ever since the mythical days of Robin Hood, the welfare of wildlife and forests has been closely linked. The relationship is as close as ever in our own country today. On our forest lands where exploitation and repeated fires have run rampant, the number of game animals has decreased markedly. But on the national forests, where game as well as timber and other resources have been used, but managed and kept productive for 30 years, the number of game animals increased 100 percent within the period 1921–33. In fact, as exploitation has continued in the West, ranges used by big game have been so restricted that now almost 75 percent of the total western big-game range is within the federally owned forests.

On most of these national forests the numbers—and in many cases the species—of wild game may be increased still further by adequate game management. It will not be sufficient, to accomplish this purpose, just to remove the causes which have led to destruction or decimation of wildlife species. More constructive action than merely enforcing the game laws is necessary. Modern game management must also devise ways and means to make more favorable environments and thus produce more, and more varied, wildlife. It must, for example, build dams—as has been done on the Coconino Plateau in Arizona—to impound water and provide nesting and resting places for migratory birds and make possible the introduction of fish in areas where there were neither birds nor fish before.

Modern game management also envisions the introduction of species of game animals in localities from which they have previously been

Game animals increased 100 percent between 1921 and 1933 on the national forests, where they have been under protective management.

In 1935 more than 58,000,000 people either visited or passed through the national forests.



The forests of the United States support a large part of the Nation's wildlife valuable for food, fur, and hunting

More than 13,000,000 people in the United States who like to hunt and fish are interested in the wildlife which is found largely in the forest.

exterminated. With careful selection of environment and such modifications of current land uses as may be necessary and practicable, this is often feasible. Witness, for example, the introduction and successful building up of some 125 new elk herds on certain western national forests.

There are, as has been said, many areas on which the number and species of wildlife can be increased. But there are also some areas which are already too heavily populated with big game, where the herd has increased far beyond the carrying capacity of the winter range to support it. Damage to forage crops, heavy winter losses through starvation, and accelerated erosion have resulted. On these areas, modern game management calls for such adjustments as will protect both the big game and the forage upon which it lives.

RECREATION

Recreation contributes largely to the health, happiness, and welfare of our people. Once considered by some people a luxury, it has now become a necessity in which forests play an important role. They provide rest and relaxation, return rich dividends in physical health and spiritual and mental well-being; so recreate the body and mind that man may tackle with renewed vigor his everyday, bread-and-butter tasks. Through recreation, forests also make an important economic contribution. For, according to the best available figures, expenditures by those enjoying forest recreation in the United States now reach a total of $1,750,000,000 annually.

The national forests afford an example of the enormous growth forest recreation has made in the last two decades. In 1917 the number of people who visited or passed through them was 3,000,000. This jumped, in 1935, to 58,000,000 (pl. 4). Many of these 58,000,000 were travelers who made little or no stop, it is true. But more than 17,000,000 deliberately sought—and found—real recreation. These people occupied summer homes, hotels, dude ranches, or resorts; they stayed at municipally operated camps or those managed by the Boy Scouts or service organizations or clubs; they chose camp spots of their own or stopped at one or more of the 3,000 free camp grounds equipped by the Forest Service with modern conveniences; they lazed around, hunted, fished, studied plants, animals, geological features, or traveled roads and trails over timbered slopes to snow-clad peaks, rushing streams, or placid mountain lakes.

As a type, national-forest recreation is simple, democratic. Public camp and picnic grounds—and most resorts and other facilities—are on an unostentatious, inexpensive level. Annual rentals for individual summer home sites (for which permits are issued) are low and their number, size, and location are restricted. Happiness for the many takes precedence, always, over consideration for the few. Incidental uses—by people who "drop in" to picnic, camp for a night or two, fish, hike, or hunt with camera or gun—are encouraged. Policing is kept to that minimum necessary to assure safety to public health and public property.

MULTIPLE-PURPOSE MANAGEMENT

Planning is necessary if every national-forest resource—recreation as well as wood, water, forage, and wildlife—is to be perpetuated through such use as will assure the greatest good to the greatest

number of people in the long run. All resource plans must be integrated and correlated one with another; management over broad areas must be on a system under which the land as a whole can support its fair share of the country's population. This means multiple-purpose management. For living within and adjacent to existing national forests—and dependent for all or a material part of their competence upon them—are already nearly 1,000,000 people. With national-forest areas now being acquired in the East, South, and Lake States, this number may soon exceed 1,500,000. It is obviously against the public interest to lock up, under the guise of single-purpose management, the resources from which all these people make their living.

Nor is this necessary. For over broad areas, integration between uses of various and varied resources has been accomplished for more than 30 years on national-forest lands which in the aggregate now exceed the combined areas of Illinois, Indiana, Ohio, Iowa, and Missouri, with half of Kansas thrown in. And under multiple-use management on these broad areas, the million people just mentioned earn all or a part of their subsistence by regularly harvesting resources such as timber and forage, the while recreational use has increased between 400 and 500 percent in less than 20 years.

This multiple-use principle of land management requires special treatment in its application to restricted areas, of course. There are, for example, many spots of rare scenic beauty in the national forests; places which afford visitors all they desire in the way of beauty, interest, and inspiration. These places are not as a rule susceptible of being combined one with another. They are, instead, scattered but integral and inseparable parts of much larger areas.

Recreational uses of these larger areas are affected by managed uses of such resources as timber, water (for municipal and other purposes), forage, or minerals. But on certain smaller areas—on shores of limpid, tree-fringed lakes, beside beautifully clear mountain streams, in fragrant meadows from which lofty, snow-clad peaks are visible—recreational values are often so outstanding that special treatment—which approaches single-purpose management—is applied to them.

FOREST RESEARCH

In all phases of forestry, research is fundamental and vital, particularly in these days when changes in methods of handling forest lands and in manufacturing, distributing, and utilizing forest products seem inevitable. The major part of the effort in this field in the United States is now concentrated in the Forest Service. Provision is made for basic silvicultural, range, watershed, economics, and products investigations. Congress has provided for a series of 12 regional forest, or forest and range, experiment stations and a Forest Products Laboratory. Here studies and research are conducted on forest problems of the entire United States.

The diversity of the research problems undertaken and their wide direct application to everyday life may be illustrated by three examples of work recently accomplished. One concerns the condition and weight of cattle as affected by use of range forage; another, inexpensive, modern homes; the third, the forest-credit situation.

The first instance is one of an investigation made by the Northern Rocky Mountain Forest and Range Experiment Station of the Forest Service, in cooperation with the Bureau of Animal Industry. This showed that overgrazing short-grass range during a series of years near Miles City, Mont., was costly to the stockmen. During the drought of 1934, so little forage was produced that hay was required as a supplement in all pastures. On controlled experimental areas over a ton of hay to each cow was required on overgrazed range, as compared to an average of approximately a half ton per cow on range not normally overgrazed. It was also found that over a 2-year period, calves from cows on the latter range averaged 72 pounds heavier at weaning time than calves from cows on the overgrazed range. The cost of range and supplemental feed per pound of calf produced in 1934 was about 8½ cents for the overgrazed lot, as against about 3½ cents for the more conservatively grazed lot. In other words, this greater cost of feed per pound of beef is a penalty—of about 240 percent—paid during drought periods for overgrazing.

The second illustration has to do with the acute need in the United States today for small, inexpensive homes of such simple but sound design and construction that upkeep, obsolescense, and first costs may be slashed liberally. To meet these requirements successfully, prefabrication is essential; the more difficult and time-consuming part of construction and assembly must be done inside the factory.

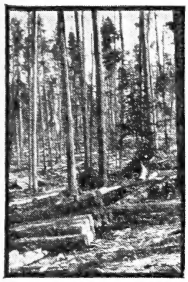
A prefabrication system of marked promise, with wood as a building material, is now under development at the Forest Products Laboratory. The basic unit is a panel consisting of two plywood faces glued to either side of an inner structural framework. This forms what is virtually a box girder with all the strength essential for high-class construction. Under tests, floor panels were found capable of sustaining maximum loads of 300 or more pounds per square foot over a 13-foot 6-inch span, and wall panels, under a 60-mile-per-hour gale, developed a fiber stress less than one-third the allowable safe stress for the material.

To test the practicability of this new method in prefabrication, a five-room demonstration house was constructed. As a further test, this house included combinations of such panels as might be needed in larger houses. The scheme of assembly is so well adapted to the requirement of speed in construction that the demonstration five-room house was erected complete in 21 hours by seven men.

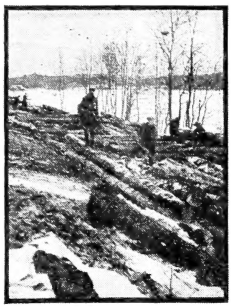
The third example cited is one covering the economic side of forest research. Investigations by the Forest Service have brought out widespread need for a sounder credit basis for forest production. In cooperation with the Farm Credit Administration, a basis for sound forest-credit legislation has been worked out. The general scheme is to parallel, as nearly as the character of forestry organizations permit, the Nation-wide plan already in effect for farm credits. An essential feature is the granting of loans only in connection with bona-fide sustained-yield forest enterprises. This will put a penalty on the old cut-out-and-get-out methods of ruthless forest exploitation.

UNIVERSAL USE OF WOOD

It is literally true that wood in some form enters into most daily lives, from the cradle to the grave. Births and deaths are published in newspapers that, in the United States, require close to 4,500,000

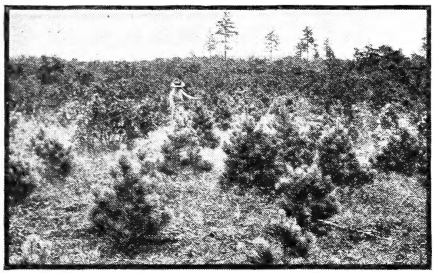


A tie operation on a national forest, where young trees have been left to make future crop.



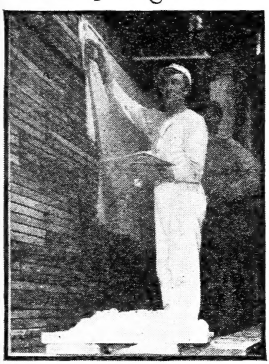
Getting out wood for pulp.

The way to provide for a permanent supply of forest products is to adopt the best-known methods of utilization, to protect the forest from fire and disease, to replant it where it is necessary to do so, and to harvest the timber crop in such a way as to insure its continuous renewal.



Anticipating future needs by planting

A Forest Service cut-over area 25 years after logging. Note seed trees left for reproduction.



Preparing a wall for rigidity test Forest Products Laboratory, Madison, Wis.

Longleaf pine on the way to market.

Fighting a forest fire in heavy timber in a western forest.

Grubbing out gooseberry bushes as a means of controlling white-pine blister rust.

cords of pulpwood (pl. 5) annually for their manufacture. Our system of rail transportation calls for 110,000,000 wooden railroad ties yearly (pl. 5); annual requirements for telephone and telegraph total close to 4,000,000 wooden poles; cellulose is transformed into clothing and fiber containers; forests furnish, each year, 65,000,000 cords of firewood and 1,500,000,000 barrel staves; wine is stored in wooden vats and casks; wood is preferred for handles on many tools and utensils; few, indeed, are the homes into the construction of which wood does not enter. And these are but samples of the countless purposes to which wood is put.

FOREST PROBLEM IS MORE THAN ONE OF GROWING TIMBER

Despite such universal uses, our per-capita consumption of wood fell sharply, even in predepression years. So, in face of increased population, did total consumption. The need for research, and for development of new uses and markets for wood, is therefore evident. But normal forest drain exceeds normal forest growth by a ratio of nearly 2 to 1. Indeed, it is about 5 to 1 for the saw-timber sizes. So there is also real need to conserve our forest resources, to use them wisely, to add to them by growing forests on lands most valuable for forest purposes. To do otherwise would be to continue forest devastation and its consequences. It would create more ghost towns and perpetuate the system of an ever-shifting, migratory labor; would augment agricultural depression and increase an already unstable and transitory social and economic structure.

This latter course is manifestly contrary to the public interest. It considers all forests as raw material only; thinks of them only in terms of timber; assumes that immediate manufacture and marketability are the chief issues. It fails to take into consideration the fact that destruction of forest cover leads to erosion and that the presence of forest cover is a most effective means of erosion control. It passes up such close, vital relationships as those between forests and agriculture, wildlife and recreation, and it ignores the fact that these forest values, expressed in dollars and cents and in terms of physical and social well-being, are infinitely greater than the values of forests expressed in terms of wood alone.

The viewpoint that only such forests are needed as will supply current demand for wood products is too circumscribed. Our forest problem is broader, by far, than this. It includes the production of timber for human use, of course. But it also embraces utilization through multiple-use management of all resources of all forest lands as a means to assure social advantages and stable livelihood for the greatest possible number of people. To do this, it must take definite cognizance of existing social obligations and opportunities; must, through such self-liquidating projects as improvement of timber stands, reforestation (pl. 5), and control of insects and tree diseases, help rehabilitate ghost towns and rural slums and place forest properties in such shape that through them and all their resources people may become, and remain, self-sustaining.

It is in helping to solve this broad forest problem that the normal activities of the Forest Service in the Department of Agriculture directly affect millions of people in all walks of life and play a vital part in permanent, economic prosperity.

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