2858

Works program
Forest policy

PUBLIC WORKS PROGRAMS FOR FOREST DEVELOPMENT

by

L. F. Watts
Chief, Forest Service
U. S. Department of Agriculture

6-14-43

PUBLIC WORKS PROGRAMS FOR FOREST DEVELOPMENT

by
L. F. Watts
Chief, Forest Service
U. S. Department of Agriculture

(Delivered by R. E. Marsh, Assistant Chief of the Forest Service, at Meeting of the American Civic and Planning Association, Omaha, Nebraska, June 14, 1943)

Scope of the Program

It is appropriate that a discussion of works programs on our forest lands should follow the discussion of water power, reclamation, and flood control. Management of forest lands is vitally related to projects in these fields. Measures for the protection and improvement of forests on the headwaters of major streams contribute inevitably and materially to the safeguarding of water power installations, of reservoirs impounding water for reclamation projects, and of various flood control structures; they increase their efficiency, and prolong their period of usefulness. A forest-work program, no less than power and reclamation projects, opens up new fields of economic activity and develops new sources of national income.

At the outset, let me point out that it is not my intention to confine this discussion to the National Forests. The National Forests comprise only a small part of the land capable of producing timber of commercial quality and quantity. They by no means measure the opportunities for advancing our post-war economy through forest work.

Justification for extending a public works program to private forest lands need hardly be sought. The public has a large stake in the forest as a natural resource, irrespective of ownership, and has already assumed large responsibility for the protection of all forest lands from fire, insects, and disease. Forest planting on farm lands has been subsidized for years, and public loans have been made for the construction of privately owned timber-processing plants. Indeed, the scope of public work on private forest lands might be greatly expanded, were it backed by assurance that such lands would be kept productive and managed with due regard for the public interest. Meanwhile, public ownership gives greatest assurance that improvements and facilities constructed as public works projects will be adequately maintained and that the public interest will have priority in the management of the resource.

Advantages of Forest Work

Before outlining the activities that may be undertaken for the development of our forests, it is worth while to point out certain characteristics of forest work that justify its place in a comprehensive program of public works.

(Over)

For one thing, forest lands are widely distributed and are available for useful employment in many parts of the country. For another thing, most of the tools and equipment needed for this work are not highly specialized and are generally ready at hand. Much of the work can be done with simple hand tools. Trucks, tractors, bulldozers, graders, air compressors, and concrete mixers--the heavy equipment most generally needed--are standard items in commercial use, and experienced operators and mechanics can generally be picked up in any community. Under adequate technical direction forestry projects can absorb a large number of unskilled men.

Forest work can be readily organized to be handled from camps. Problems of the homeless worker and of overcrowded urban areas may be relieved by this means; but the work is also particularly adapted to the employment of local residents in rural localities. Where need for rural employment and supplementary farm income is greatest, a large volume of potential forest work is generally available.

Beyond all this, to my mind one of the most significant aspects of any program for post-war public works in the forest is what this kind of work may mean to the young men returning from war. A great responsibility rests upon those of us who will have a part in taking them back into pursuits of peace. These are most certainly and satisfyingly assured in the useful, healthful, absorbing tasks involved in a forest works program.

Finally, forest work is suitable for a prominent place in a public works program because it does not compete with any established industry. Instead, it tends to facilitate and enlarge the field for private industry.

Forest Activities Adapted to Public Works

Acquisition of Forest Land

Millions of acres of forest land in private ownership have been reduced to nonproductive condition by shifts from crop agriculture, by erosion, destructive forest practices, or fire. Because so long a time must elapse before these lands can again yield income, the cost of rehabilitation is often more than private owners may be expected to bear. Public ownership offers the best opportunity of restoring such land to economic productivity. Much of it should be brought into the National Forests by purchase and exchange. State, county, and municipal forests should also absorb a substantial acreage. Also, where the public interest in non-income-producing benefits is paramount, as on critical watersheds, public ownership is essential. During the past 20 years the Forest Service has been studying local conditions throughout the country in order to determine the location, extent, and priority of forest lands that should be in public ownership.

Acquisition of forest land by the public should, then, be an important part of a public-works plan. The consolidation of existing and the establishment of new public-forest units may provide larger opportunity for public works in sections where the field is limited and the need for employment great.

The very process of acquisition on a large scale requires much labor, since it involves preliminary field examination, survey, appraisal, title examination, etc. For such work the Forest Service maintains a skeleton organization of experienced and skilled men, upon which an employment program could be rapidly expanded to handle field and office work requisite to care for several millions of acres a year, without delay, at any time that funds are made available.

Fire Protection

Protection against fire is indispensable in the conservation of forest resources. Some degree of protection is now afforded 75 percent of the forest land in the United States, but this protection is by no means adequate. An area almost as large as Montana and Idaho, mainly in the South, is still without organized protection. The urgent task of providing organized protection for forest lands not now so protected and of intensifying protection elsewhere, should be a major objective of a post-war public works program.

A wide variety of projects are involved such as provision for detecting, reporting, and attacking forest fires in the shortest possible time. These involve comprehensive area surveys, mapping of forest fuel types, analysis of the most effective lookout coverage, and location of essential transportation and communication facilities. Lookout towers and cabins must be erected, telephone lines set up, and transportation facilities, landing fields, water holes, fire-crew barracks, equipment warehouses, and radio stations provided. All these detection and suppression activities will absorb large numbers of workers; but the largest volume of employment will be used in hazard-reduction tasks, such as the felling of snags, the construction of fire-breaks, and the elimination of inflammable material along trails, roads, and railroads and in the vicinity of camp grounds and recreational areas.

For such work on the existing National Forests and other public lands, not counting maintenance and other activities, about 1 million man-months would be needed, and four-fifths of this would be for hazard reduction. Obviously most of this work would be in the West where the bulk of the public lands are located. Estimates of the additional manpower required for the protection of private forest lands are not available; but it is generally recognized that present protective efforts on private land are less than half of what is needed, and that the volume of hazard reduction is fully as great as on comparable public land.

Control of insects and disease is another forest-protection activity for which the needed labor is not ordinarily available. Elimination of currant and gooseberry bushes in the white pine regions in order to eradicate blister rust makes the most immediate call for men. Bark beetle control is an important activity in the ponderosa pine forests of the West. In the East, control of the Dutch elm disease and gypsy moth may require many workers.

Resource Development

But protection against fire and other destructive forces is only the beginning of the job of developing the nation's forest resource. If we are to maintain economic timber production, a huge amount of work in

reforestation and timber stand improvement must be undertaken. Through misuse and neglect, large areas have been rendered nonproductive; also much of the land in second growth is only partly productive, because of inadequate stocking, the presence of inferior species and cull trees, and the inroads of fire, insects, and disease.

The forests on other large areas have been wrecked by natural catastrophes such as fires and storms. An example is the great Tillamook burn in western Oregon, where almost one-quarter of a million acres of forest, mostly heavy timber, was destroyed within a few August days in 1933. The land, nearly all privately owned, is now little better than a barren waste -- perhaps even worse, for it constitutes a potential source of conflagrations that may sweep into surrounding unburned forests. Naturally of high productivity, it could be rehabilitated but this would necessitate a longer period of waiting than most private owners are willing to contemplate.

Another example is the central New England area, where the great hurricane of September 1938 blew down hundreds of thousands of acres of timber, seriously damaged many hundreds of thousands besides, and created a worse forest-fire hazard than the region had previously known. Here again, the resources of many of the private landowners have been inadequate to undertake the necessary measures of rehabilitation.

Estimates for 1938 indicated that for the country as a whole some 77 million acres were in need of planting. The magnitude of this job can be realized when I tell you that through all the years up to 1940 only 3½ million acres had been planted successfully by all agencies, public and private. A program involving the planting of 32 million acres in a period of 25 years by or with the assistance of public agencies has been suggested. This program would require the expansion of existing nursery facilities to at least 3 times their present capacity. This nursery expansion should begin now, in order that the seedling and transplant trees may be ready for the men seeking employment in the post-war period.

These men will be needed also for cultural operations such as weeding, thinning, pruning, and cutting or girdling of overtopping and worthless trees, to improve the quality and quantity of timber in second-growth forests and on restocking areas. Such work requires efficient technical supervision and, handled on a large scale, presents a problem of organization and administration. But it calls only for simple skills and inexpensive tools.

Selection of forest lands for timber stand improvement work should be governed largely by economic considerations. Work should be concentrated first on relatively accessible areas where prospective timber values are high. A 25-year program involving some 65 million acres has been suggested.

A permanent system of roads and trails is essential for effective management and use of public and private forest lands. Construction of roads will provide access to the large bodies of unreserved virgin timber still untapped in the West, especially the Northwest, and will facilitate sustained-yield forest management everywhere. Roads, trails, and landing fields make areas of potential fire risk quickly and easily accessible, and also open up the scenic and sporting resources of the forests for public enjoyment.

Road construction will constitute an important part of a works program on public forest lands. To a large extent, it must be considered a public responsibility on other lands also, because public and private lands are often intermingled and because access to a given forest area is usually determined by topography of adjacent country rather than property lines. For the country as a whole, we shall need to construct more than 12,000 miles of forest highways, 105,000 miles of forest development roads, and 160,000 miles of trails. Two-thirds of the highway construction is needed on Federal lands and about two-thirds of the forest development roads and trails on private lands. Completion of the entire road and trail system would require some 8 million man-months of work.

Other activities in the development of forest resources need only be mentioned to indicate the scope of potential forest work. Upstream watershed improvements to control run-off, prevent erosion, equalize streamflow, and conserve an environment favorable for fish, constitute a field that we are only beginning to understand, but to which research and experience of the past 10 years point the way. Development and use of the forage resources on national-forest ranges also present opportunities for worth while public works. Improvement of stock driveways, range reseeding, control of rodents and noxious weeds and improvement of water supplies are some of the important activities that will contribute to the development of the forest range resource.

The increase in recreational use of the National Forests is evidence of public appreciation of the recreational facilities installed during the past decade. Additional camp grounds, mountain trails, ski-runs, shelters, etc., are certain to be well used. Again public works may serve as a medium for furthering the construction of such recreational improvements. New development should not, of course, encroach upon the 14 million acres which have been set aside as wilderness areas.

Research and Administrative Improvements

As more and more private forest land is put under management, and as more intensive use is made of the national and other public forests, the need increases for extending and refining the technical basis for forest and range management and for more efficient and diversified use of forest products. The research staff of the Forest Service could, if it had the manpower, do much more than it has ever done in carrying experimental operations beyond the test-tube stage. A public-works program could be used to provide the labor for extensive installations of research facilities, such as those for watershed studies at San Dimas, California, and to carry out pilot-plant operations which may well extend beyond experimental cuttings, such as those at Crossett, Arkansas, to include logging technique.

Other opportunities for public works are found in the construction of offices, dwellings, repair shops, storage depots, communication systems, fences, and other permanent improvements required in administration of the public forests.

It is estimated that the miscellaneous improvements required for recreation, research, and administrative purposes could provide 1,600,000 man-months of employment about equally divided between public and private lands.

Significance of the Forest Work Program

The critical situation of the Nation's forest resource is the most potent argument for the large program of forest work that I have outlined, and for giving it high priority. The economic welfare of the country is vitally affected by the productivity of our forest lands.

Wartime scarcity of strategic materials has shown how indispensable wood is to the economy of the Nation. Tremendous demands for timber products for a wide range of war uses have accelerated the trend of depletion, which was only partially and temporarily relieved in the depression of the early thirties. There is much evidence to lead us to believe that, if full employment is achieved after the war, wood requirements will remain at a high level.

As the Nation's timber situation becomes more acute, the National Forests have to provide a larger share of our total timber supply than hitherto. Growing dependence on these forests is indicated by a 70 percent increase in volume of timber sold from them in 2 years--more than double the rate of increase in lumber output for the country as a whole. Without violating established wilderness areas, other undeveloped portions of the National Forests should be opened up as soon as possible so that timber now inaccessible may be reached as needed. Furthermore, timber stand improvement and other management measures that will result in the production of timber of large size and high quality should be carried out over large areas. The importance of such measures has been forcibly emphasized by difficulties in obtaining supplies of certain items during the past year.

I have emphasized the importance of increased public ownership in the solution of the Nation's forest problem. But that should not conceal the fact that a large part of the best timber-producing land should remain in private ownership. Encouraging progress in forest practice has been made by private owners, both large and small. Especially during the immediate pre-war years the number of operating companies that employed foresters and took steps through selective cutting, reforestation, and special protective measures to insure a continuous supply of raw material for their mills increased markedly. Demonstrations of operating results, good reproduction, and gratifying growth of young timber in many forest regions have largely eliminated doubts as to the financial soundness of long-range forest planning for private owners under favorable conditions.

But with one-third of the Nation's standing timber confined to the 6 percent of our commercial forest land in the western part of Oregon and Washington, and with forest growing stock in all parts of the East and South entirely inadequate to sustain the current rate of cutting, we cannot look with complacency on continued widespread destructive cutting and the indiscriminate harvesting of immature timber. The achievement of good practice on private lands is still so far from the ultimate goal and the threat to timber depletion in many communities is so real, as still to be a matter of national concern. As a nation, our dependence on our timber supply is too vital to permit its dissipation through ignorance, carelessness, or selfish exploitation on the part of the private owner. I am convinced that continued productivity of the forest land not in public ownership can be assured only by public regulation

of cutting and related forest practices. Furthermore, I believe that such regulation to stop destructive cutting practices cannot be left to the States alone but will require as a minimum strong Federal leadership and a large measure of Federal participation.

But if the public is to impose restrictions on forest practices on private lands, the public must assist forest-land owners to meet the problems of forest management. Protection against fire, insects, and disease must be extended and intensified. Denuded land must be planted. Deteriorated stands must be rehabilitated. Methods of cutting must be adapted to silvicultural principles established by painstaking research. Technical assistance is needed in organizing forest operations, developing new uses for wood, and finding ways to eliminate waste. Small forest owners especially need help in cooperative organization to facilitate good forest management and orderly marketing of their products. The public may also encourage good practices by providing credit, insurance, and tax adjustments to meet special conditions applicable to forest enterprises.

Summary

The public works which have been suggested would contribute directly toward the maintenance and restoration of forest productivity which is at the heart of the Nation's forest problem. And increased forest productivity creates further opportunity for future employment in the woods and for sustained activity in the forest industries. It is a channel through which will flow increased national income. Forest productivity means community welfare.

Constructive, physical work on projects which contribute to the common welfare, such as those we have been discussing, should help to develop in young men seeking re-employment after the war a sound idealism and a sense of social responsibility. They will then be better prepared to do their part in communities throughout the Nation in creating the better society toward which all of us are striving.

Material for Pub Talks
Binder 21

EUGENE CHAMBER OF COMMERCE
2-23-40
L. F. Watts

PLANNING FOR FUTURE FORESTS

In accepting your urgent invitation to speak here today I have assumed that I should confine my remarks mostly to matters of local interest. I shall discuss mainly the forest situation in the upper Willamette Valley. Reference to more general conditions will be to illustrate definite points and for local application. I don't ask or expect that you will agree with all I say, but I hope it will at least stimulate straight thinking as to the future.

Lane County, according to best available figures, has about 60 billion feet of timber. About 51 billion feet is Douglas fir. Of the 60 billion total it is estimated that slightly more than 50%, or 32 billion feet, can be classed as economically loggable now. Probably not more than 50 billion will ever be loggable. You have about half the timber remaining in the Willamette Valley.

Obviously, few localities have a greater standing timber resource. Perhaps none are more fortunately situated. With that great resource available you ought to be able to profit by experience elsewhere. I don't refer to far distant points. I refer to such places as Bellingham, Grays Harbor, Ludlow, Astoria, and perhaps even Portland. In those places, and a dozen others you can name, the pinch of over-rapid liquidation already hurts.

In 1900 the population of Lane County was 20 thousand. In 1920 it was nearly 40 thousand, in 1930 it was nearly 55 thousand. By now I suppose it is 65 thousand.

In 1925 you had 48 sawmills. In 1935 the number had increased to 70. In 1938 you had 78 mills. I know that additional mills have been added in the last two years.

Annual lumber cut has gone up from 233 million board feet in 1934, to 320 million in 1935, and to 376 million in 1938. The new mill under construction or planned will probably increase this to around half a billion board feet.

Experts have figured that the ultimate sustained yield with all your forest land under good management might reach 780 million feet a year. But that excludes bad fires and other epidemics. You can't hope to actually have anything like all land under management. A practical objective would probably be not more than 500 million feet a year.

That doesn't look bad at all. An allowable annual cut of 500 million and an actual cut now in sight of about the same volume. Why, we are deliberately overcutting considerably at Prineville and Burns where the government has control. Pretty good, but who has control of possible increases - no one.

Clearly, with the very definite trend of industry from Washington and the lower Columbia southward your balance can easily be upset and thus you may well stop, look, and listen. Remember the pinch for logs at the mills in Portland, Astoria, Grays Harbor and the Puget Sound territory is becoming more acute.

I attended a small meeting of industrial and financial leaders a few days ago and heard things said about the future of most mills in western Washington, the lower Columbia, which would bring a demand for my transfer out of the region if I said them.

Now let's look at another fine development - the Willamette River Project. Don't quote me as criticizing that project but we do need to appraise its possible effect on this question of timber supplies and the rate of liquidation in the upper Willamette. We need to face facts.

As I understand it, one of the major objectives of the Willamette Project is to improve the navigability of the river - to stabilize the flow. That stabilized flow means better and cheaper transportation for logs from this territory to the Columbia River. Does it mean that your timber is then tributary to the mills at Portland and up and down the Columbia? They need the logs. Why, only a few weeks ago I read that more logs passed the locks at Oregon City during 1939 than during any previous four-year period - nearly 200 million board feet passed the locks in 1939.

You ask what I am driving at. It's just this. Lane County under present production schedules would appear to be approaching the optimum volume. You have exceptional prosperity and the makings of permanence. But you have reached the point where straight thinking is called for before you encourage more sawmills - and I don't include plywood and similar operations. I am not saying that additional mills aren't desirable, but they ought to be located for permanence.

Perhaps in the territory there are sizeable blocks of timber now in a non-operating status which invite new mills. Perhaps such holdings would be better merged with existing operating areas, or acquired by the State or Federal governments in order to assure orderly liquidation.

My thought is that this body might well have a committee - let's call it the permanent industrial committee - whose duty it would be to study this question. Frankly, Chambers of Commerce are sometimes criticized for short-sighted policies in enticing new industries. Your Chamber can well lead the way towards a real constructive conservation program for the entire State.

A few days ago before a group of lumbermen and foresters up at Tacoma, I discussed the much debated question of public regulation of lumbering on private land. I believe I will touch on that subject here.

Now, I don't think public regulation will bring the millennium to forestry, but I do think it can help. The ones who need it most are the operators who right now are trying to convert their operations to a real forestry basis and there are several in the fir region. Let's review some of the agreed upon objectives and relate them to public regulation.

Let's take a look at this all important question of markets. No one can question the statement that much better markets are essential to good forest practice in this region. Especially do we need better markets for low value material; for inferior species and low grade logs. Clearly we can't practice an acceptable grade of silviculture so long as number three and poorer logs are left in the woods; when sound hemlock is a drug on the market; and when high grading for peeler logs and number one's is not too uncommon. It isn't simply lack of knowledge of local conditions that causes shock to me and to the average person when we see the sound wood piled high on the ground after logging is done. Obviously, we can't question the need for improved markets and better prices so long as present utilization practices are necessary.

Now, let's assume that we have those good markets so that this low value material can be handled at a profit. What forestry does it get us? For a few well situated operators, definitely seeking a way to permanence, it may be the answer to their problems.

But the bulk of our private forest land is not so held. So perhaps the over-all advance in forestry as a result of good markets may not be too great.

Once upon a time the markets weren't so good in Montana. Larch, fir and small pine had to be left in the woods uncut. The resulting cut-over area looked pretty good to me. Sure, one could criticize the species distribution but the land was certainly left productive. Then the mines began to prosper and furnished the better market for props, logging and mine timbers. The area was recut and put completely out of the category of land suited for private ownership. I believe it was given later to the University of Montana to experiment with.

The market for low-grade pine wasn't so good in south Idaho and an area near McCall was high-graded, leaving it looking pretty good. But the price of railroad ties advanced and they went back and got every tree that would make a tie. Good markets didn't mean good forestry there.

I will bet that it was poor and not good markets that originally caused Tom Murray up at Mineral, Washington, to speculate on selective logging. It was certainly poor markets for low value material that originally caused the Clearwater Timber Company to abandon clear cutting white pine in north Idaho, and the Boise-Payette to do likewise in south Idaho.

Just what will good markets and higher prices mean to the Douglas-fir region. Excluding the relatively few fortunately situated outfits,

I think it will mean a decided impetus in the cutting of young second growth. Small mills of the irresponsible type will increase. Gypo loggers will flourish putting too young timber into the Sound and Columbia River - maybe the Willamette. This question of harvesting second growth is no small matter. I have just read a report put out in 1935 which shows that nearly 500 million feet of second-growth was cut during the previous year. The big cut of second-growth that year was the result of improved markets for low-grade material, railroad ties. If history repeats itself, the volume of low-grade lumber manufactured will go far to break down those better prices and positive deterioration of forestry opportunities will result.

And so I believe that in self-protection the industry might well favor some type of public regulation now. It could head off excessive cutting of second-growth and quite possibly set up cutting practices to slow down questionable liquidation of virgin timber.

Similarly, we all agree that research to develop new uses of wood is highly desirable. But here again this may not be an unmixed blessing to the future of this region. It's a two-edged sword that we are talking about.

In the Lake States, foresters thought that wood distillation was to be the answer to their dreams. Clearly, this use contributed much to the fine forestry and outstanding community support practiced by Bob Goodman in Wisconsin. Likewise it furnished the opportunity elsewhere in the Lake States for the most complete clear-cutting I know of over an area many times larger than Goodman operates. The developments at Cloquet, Minnesota, made possible the use of a lot of small material not previously salable - jack pine and aspen found a market. Also the same development offered the opportunity for a lot of small owners to absolutely clear-cut thrifty second-growth stands that ought only to have been thinned.

Now, I don't want to be quoted as being opposed to trade extension, improved markets or forest products research. I am enthusiastic about those needs. I am just pointing out that for the protection of the industry and for the especial protection of those who really want to practice forestry, your house will be in better order if you have a reasonable degree of public regulation of cutting practices. Desired improvement in salability of low value products should react to improve utilization in stands which ought to be cut rather than to flood the market with second-growth and similar undesirable cuttings.

I realize, of course, that regulation of cutting practice can't go far to control excessive expansion of cutting in the virgin stands. Such control would have to come mainly through enlightened community interest, through cooperative sustained yield agreements as authorized by the proposed McNary-Doxey bill, plus public acquisition of distressed holdings in what I have called irresponsible ownership.

Now I know you folks are going to ask what I mean by "regulation." I think the Secretary of Agriculture in his testimony before the Joint

Congressional Committee gave us a lead. I am going to be so bold as to express my own views with the clear understanding that those views are personal and in no way are the official expression of the Forest Service or of the Department.

I visualize regulation legislation as being patterned in part after Section II of the Clarke-McNary law. The states would enact the action legislation. If this legislation met the minimum objectives of the Federal purpose, the state and Federal government would enter into agreement as to enforcement. Half of the cost of inspection and enforcement would be met by Federal grants in aid to the states. The Federal interest would be protected by a very small corps of inspectors, much as we now handle Clarke-McNary fire control. Lack of an adequate state program, failure to enforce, the injection unduly of partisan politics and similar causes would be reason to withdraw Federal aid. Perhaps the most costly item to start would be in the field of broad land classification to delimit the areas which might well be converted to a higher use such as agriculture, to establish the limits of inoperable second-growth, and similar broad classifications.

The main deviation from the Clarke-McNary pattern would be in the provisions for Federal action in case of failure to act by any state within a reasonable period - maybe five years. This feature is necessary to protect the industry against unfair competition. For example, suppose Oregon went ahead promptly with the enactment of a satisfactory legislative program. Now, if either of your sister states lagged behind too long it seems obvious that the Oregon operator would be subjected to unfair competition. You would be doing things at some expense which your competitor could avoid. Washington second-growth might continue to compete with your low-grade logs from oldgrowth areas.

What would the cutting restrictions be like? Obviously each state would or might approach it differently. For example - here in the Douglas fir region, the rules would go a bit further than your present Forest Practice Rules. Permissible treatment of second-growth would have to be more affirmatively handled. Another question to be answered is that of maximum size of contiguous clear-cut areas. The fire control program would have to be stepped up materially. No one would or could expect the millennium but we might look for a major step forward - and I think it would be in the interest of stability for the operator who now wants to practice forestry.

I want to say a word about fire. I have no argument with the conclusion that fire control must be more reliable if private forestry is to make much progress. I do think that we need to view this realistically. Recently, I was impressed with a statement that the lumber industry was responsible for only 6% of the fires and 21% of the area burned over in Oregon and Washington from 1928 to 1937 inclusive. I asked our office to check these figures for me, using only state and private protection units. The figures were substantially the same. One other fact came out. During the ten-year period this small percent of operation fires caused 58% of the damage in Oregon and 31% in Washington.

The only point I have in mind is that where operation fires cause from one-third to one-half of the fire damage, you can't be too complacent. Remember that many of the fires classified as railroad, smokers, debris burning and incendiary are also pretty closely tied in to operations. It becomes obvious that both the public and the operators themselves have a good ways to go before fire prevention can be called acceptable.

Last spring we had a very dry period. It was my first season in the Region. I was amazed at the prevalence of so-called fern fires on land primarily valuable for timber growing. And I was surprised at the lack of effective organized action to control these pre-season fires on reforesting lands.

Sure, we need 9 million dollars a year from the Federal Government as their full 50% of the cost of adequate fire control. But along with that greatly increased Federal participation we need some more local action. Perhaps you could call it "regulation." Anyhow, it has to do with the handling of the land from which our future forests must come. So long as one-third to one-half of our fire damage comes from operation fires, the demand that fires be controlled first before any further regulation is attempted lacks something of being convincing.

I want to conclude this talk with a word about the future use of forest products. Often I have heard the fear expressed that we would run into overproduction if good forestry were practiced.

As I travel over the land I can't make this seem true. In less than a century we have pretty much stripped the bulk of our virgin timber. Even in the northern half of the Douglas-fir region, a few days' look from a plane leaves one cold about too much timber. The progress we have made towards deforestation right here in the Northwest in the last 30 years or even in the last 10 years is rather striking.

Clearly - anytime we try to project our thinking 50 to 100 years ahead, we are without reliable guide posts. Even though we had bales of regulative legislation, unlimited present markets, adequate research, and an open Federal purse for forest protection and improvement, we would still have to gamble with conditions a century ahead.

We do have data to show that our present demand or lack of demand isn't based on needs. We commonly hear, for example, that we ought to build 750,000 houses a year for 10 years to catch up with the housing shortage. If this means 10,000 board feet of lumber per house, here is a shortage of 7 and a half billion board feet per year for just one item. Perhaps the garages, barns, stock sheds, etc. that also need replacement would bring this figure up to 9 or 10 billion board feet per year.

It also seems clear that it isn't lack of need that holds our export lumber business down. Consider Germany, Japan, China and South America. It is rather lack of a satisfactory plan for world trade.

Per capita consumption of paper and related products seems to have gone up during the past 10 years, the field of wood chemistry has just been scratched. And so I prefer to think that the use of wood and wood products 100 years hence will be measured by their abundance.

I hope no one will refer to our present need for controls on the production of cotton or to the corn-hog program. True enough, we have some 11 million bales of cotton in storage. But it's also true that about one-third of our population have no money to buy adequate clothing and other cotton fabrics. We have too much pork, but even within a few minutes' drive from the stock yards in Chicago, Kansas City, and St. Louis there is a big demand for pork and beef which is completely buried in the direst kind of poverty.

I am reminded of the Missouri Ozarks. Why, there are counties down there where the average cash income per rural family is less than $200 per year. They aren't buying anything much. They even go barefooted. Even in Portland the surplus food stamps have been a surprising success, which indicates that right at home we have a latent demand for foodstuffs that is far from satisfied.

No, it isn't lack of need that causes our surpluses or curtails demand. It's lack of a satisfactory system of distribution. We have a tremendous problem to solve. It's tied in with unemployment. It has to do with gearing our economic system so that the lower half of our people can have the American standard of living which we talk about so glibly. Frankly, I don't know the answer to this problem. But I have enough faith in the future of our present civilization to believe that it will be solved or that long strides towards its solution will have been made before today's Douglas-fir and ponderosa pine seedlings reach maturity. If one lacks that faith, logic would lead to the belief that the future of private enterprise was on a very shaky foundation. I think that our democracy is challenged by the problem of distribution of the goods we need and can produce and that democracy can accept the challenge.

FOREST POLICY IN THE UNITED STATES

By Lyle F. Watts, Chief Forester, Emeritus
United States Forest Service[1/]

Forest policy in the United States has been evolving rapidly during the past century and is today still in a state of change. In the great westward expansion and settlement of the United States that reached a peak during the nineteenth century our Government adopted a policy of disposing of its vast domain of public lands to settlers and other private individuals through land sales and land grants. The Homestead Act of 1862 and the Timber and Stone Act of 1878 were outstanding examples of this policy of transferring public resources to private ownership. While our early land laws were generally designed to foster family size farms and other small holdings, at the same time they also favored the acquisition of vast private holdings in the hands of railroads, timber companies, and other large corporations.

An opposing policy of major importance--resource conservation--also came into being during the late nineteenth century. This was expressed at an early date in actions in a number of States for forest fire prevention and control. In 1891 a major step was taken in Federal legislation creating a system of national forests from public domain lands not yet transferred to private ownership. Under Harrison, Cleveland, Theodore Roosevelt, and other Presidents a total of 155 million acres of the public domain, located largely in the western United States and Alaska, was set aside in national forests for public administration and public use. There has also been some reverse flow of forest land back to the Federal government during the past 40 years through land purchase and exchange so that today the national forests comprise about 181 million acres, located in 38 States, Alaska, and Puerto Rico.

Various agencies of the Federal government also administer an additional 60 million acres of forested lands in the United States, and about 270 million acres of other lands; these Federal areas include mainly lands of low productivity that were passed over during the period when land, timber, and mineral resources were being acquired by private owners. Today the people of the United States still own one-fifth of the nation's commercial forest land, and a substantial part of the native range. Essentially all the crop and pasture lands are in private ownership.

Along with the growth of interest in public ownership of part of our forest resources, there has developed a number of forest policies designed to promote better protection and management of private forest

---

1/ Presented at the Sixth British Commonwealth Forestry Conference, Ottawa, Canada, August-September 1952. (Read by V. L. Harper, Assistant Chief of U. S. Forest Service in the absence of Lyle F. Watts.)

lands. These include such Federal legislative milestones as the Weeks Law of 1911 which provided for both purchase of national forests in the East and for cooperative fire control on State and private lands. The Clark-McNary Act of 1924 substantially strengthened Federal-State cooperative programs of fire control, tree planting, and educational assistance to private forest owners. In 1928 the McSweeney-McNary Research Act established a nation-wide system of forest research through regional forest and range experiment Stations. The Cooperative Forest Management Act of 1950, preceded by the Norris-Doxey Farm Forestry Act of 1937, provides for technical assistance to farmers and other small forest land owners.

Supplementing Federal action in the field of forestry has been a rapid development of State forest services and other State and local forestry agencies. Nearly all our States now maintain forestry organizations of varying size and effectiveness to carry out programs for the protection and management of State lands and protection and management services for private forest lands. The Federal Forest Service works in close cooperation with the State agencies in these forestry programs on State and private lands.

Mention should also be made of the development of forest industry organizations in the United States, many of which were formed initially to bring about better fire protection on forest land. These industrial agencies have also become increasingly effective in the fields of general forestry education and technical assistance to private land owners.

During the past several decades we have also developed a fine system of forestry schools in the United States to supply the technical needs of federal and State forestry organizations and, to an increasing degree, the needs of private industry. The first forestry school in the United States was established at Biltmore, North Carolina, in 1897. Today there are a total of 33 forestry schools in the United States with an enrollment of 5,280 students. These schools have developed primarily as a part of our State educational system, although privately endowed educational institutions have also contributed much to the advancement of professional and scientific training in forestry.

Great progress in forestry has resulted in the United States from the combination of Federal action and accompanying programs of the States, educational institutions, and private industry. Despite this material progress, however, the forest situation in the United States still presents a number of significant problems and policy issues.

Forest Conditions in the United States

As background to discussion of specific policies and programs, I would like to mention briefly a few facts regarding present day forest conditions in the United States. Our last comprehensive Reappraisal made in 1945 showed that we faced a number of problems in timber supply. The Forest Service has recently initiated another of its periodic

reappraisals of the forest situation which may lead to new views on forest policy, but the general outline of our forestry picture seems reasonably clear.

In the continental United States, one-third of all the land--622 million acres--is forest land. About three-fourths of this area, or 460 million acres, is considered to be commercial in character, that is, suitable and available for the continued production of timber crops. The difference--162 million acres--is noncommercial forest land primarily valuable for purposes other than timber production. Additional forests in Alaska total about 140 million acres, although in the foreseeable future only a small part of this vast area seems likely to be of commercial importance.

Notwithstanding the immense land clearing efforts which since Colonial times have accompanied agricultural development in the East and some parts of the West, the United States does not seem likely to have a dearth of land for timber growing. Our forest lands have the potential, under management, of ultimately producing sufficient timber to meet all our prospective needs.

Today, however, U. S. forests are not growing sufficient timber to meet the present level of drain on timber of sawlog size. Annual growth of all trees 5 inches and larger in diameter amounted to 13.4 billion cubic feet in 1945, which was just about in balance with total drain. In terms of saw timber, however, the estimated annual growth of 35 billion board feet was only about two-thirds of annual saw-timber drain. The deficiencies in growth were especially pronounced for the larger sizes and better quality trees, and for the preferred softwoods. For purposes of watershed protection our forest cover in many areas likewise is not making the contribution that it ought to be making.

As one of the guides to forest policies, we have set up a growth goal which we believe would be sufficient to meet our potential timber requirements plus a margin for possible new uses of wood, unexpected timber losses, and exports. Our current estimates indicate that we should aim to grow, within the next few decades, about 18 billion cubic feet of timber annually, including about 72 billion board feet of saw timber. This would mean increasing all timber growth by about 35 percent over the 1945 level, and doubling saw-timber growth.

The deficiencies of timber growth in the United States, in terms of both present drain and potential requirements, in the main reflects the condition of our timber growing stock. Less than 10 percent of our commercial forest area--44 million acres located almost entirely in the West--was classed as old-growth saw timber in 1945. Second-growth saw-timber stands of variable stocking covered only about one-third of the commercial forest area. Pole-timber and seedling and sapling stands made up 40 percent, and poorly stocked and non-stocked lands about 16 percent, of our commercial forest area.

In 1945 U. S. forests still contained an estimated 1,617 billion board feet of saw timber, or 469 billion cubic feet of all trees above 5 inches in diameter. But these volumes were not well distributed. In the eastern United States the volume of saw-timber growing stock needs to be nearly doubled if potential needs from this region are to be met. In the West, where two-thirds of the total remaining saw timber is concentrated, the situation is more favorable. But for long-term planning it is significant that three-fourths of our commercial forest land is in the eastern United States, and even old-growth stands of the West are being converted fairly rapidly to cut-over and young-growth stands.

The problem of inadequate growing stock is further complicated by a steady decline in quality of our timber resources. This is evidenced in a lowering of the average size and grade of available timber and by an increase in the proportion of cull trees.

These deficiencies in timber growth and quality are also, of course, a reflection of poor or inadequate forest protection and timber cutting practices. Recent progress in timber management in the United States has been substantial and at an accelerating rate, yet we are still far short of a general level of reasonably good practices. Particularly good progress has been made in fire control and today practically all Federal forests in the United States and all but 15 percent of the 427 million acres of State and private forest land needing protection are under some organized protection system.

In terms of cutting practices, however, progress has not been so good. In 1945 a comprehensive survey of forest management practices showed that on publicly owned lands, two-thirds of the cutting followed good or high order practices--a fairly satisfactory situation. But public holdings account for only one-fourth of our commercial forest land and only 10 percent of our current cut of timber products. On private lands the 1945 survey revealed widely different situations. On the large holdings of pulp and paper companies and large lumber companies, cutting practices were relatively good whereas on the smaller holdings they were in general poor. The best showing was made by properties of 50,000 acres or more in the South where pulp, lumber, and other wood manufacturing companies have gone into forestry as a business on the basis of the high forest productivity of this region. On these properties over half the cutting was good or better. On the other hand, on small forest holdings, of which there are some 4-1/4 million in the United States averaging about 62 acres in size, only 4 percent of the cutting was good or better. These small forest holdings comprise mainly farm woods and other small tracts not connected with farms and held mainly by nonresidents. They comprise three-fourths of the private commercial forest land in the United States, and they supply approximately two-thirds of our total cut of forest products, including the sawlogs for thousands of small sawmills and a major part of the pulpwood used by pulp and paper mills in the eastern United States. Thus these small holdings are the crux of our forestry problem. It is apparent that the general policy which for many years

guided our rural development--that as much land as practicable should be in small tracts under the management of individual owners--has and will long continue to have immense significance for forestry.

Since 1945 timber cutting practices in the United States--as well as fire protection and tree planting--have improved, but I believe the gist of the situation is about the same. While our forest policy must continue to be comprehensive in scope, it must emphasize the objective of bringing about better management on small private holdings.

In stressing the timber resource, I do not want to underrate the importance of other forest resources and values. As protectors of watersheds our forests are of incalculable value, and in many areas watershed protection must be the primary aim of forest land management.

Grazing for domestic livestock is another important value that must be taken into account in the management of forest land. In addition to our vast areas of wild native range lands generally devoid of commercial tree growth, we have in the United States much forest range that furnishes significant forage for grazing animals. In our southern and western States are some 350 million acres of forest range. In the South these forest grazing lands are in the main privately owned; in the West they are mainly public lands.

Throughout most of the United States forest lands are also valuable for their wildlife and as recreation grounds. Some forests, not included in our commercial acreage, have been set aside as parks or refuges devoted to these values. In general, however, wildlife and recreation are parts of multiple-purpose forest management.

Thus, our forest lands present variable problems in resource management: such as how best to integrate timber and livestock use, or how to safeguard watershed values which in most forest and range areas are of increasing importance.

The basic requirements of forest policy in the United States then are these: that it promote the building up of our timber resources to a level of productivity sufficient to meet our prospective timber needs for home use, export, and emergencies; and that it encompass other forest resources and values into a multiple-purpose program. Several programs have been fashioned to meet these requirements: first, public ownership and management of certain forest lands; second, public aids to private forest land owners; and third, public regulation of private forestry practices. In discussing these three classes, I would like to emphasize those aspects of the programs that most directly touch upon the work of the U. S. Forest Service.

Public Forest Lands

As indicated earlier, the Federal government holds title to fairly extensive areas of forest land in the United States, including 181 million acres of national forests, of which about 76 million acres are capable of producing timber of commercial character. In addition 14 million acres of commercial forest land are in Federal holdings other than designated national forests.

State and local government forests, made up largely of remnants of Federal grants plus extensive areas of tax delinquent lands, comprise about 27 million acres.

Altogether public forest lands in the United States thus include about 117 million acres of commercial forest land, or 25 percent of the total area of such land.

The development of our national forest system has been guided by the principle that government should own and manage in the long-run public interest a significant share of our forest land and timber in order to assure favorable watershed conditions and to furnish continuous supplies of timber for the nation. From time to time pressures appear to transfer our public timber and other resources to private ownership, but I believe that the public values in these forests is so widely recognized that our national policy will continue to be against any impairment of the national forest system.

Our national forests are managed by the Forest Service of the U. S. Department of Agriculture under a multiple-use program designed to protect the long-run interest of dependent communities and the nation as a whole. Our policies are to grow timber of relatively large size and high quality, to mark trees for cutting in accordance with sustained yield plans, to sell designated timber on the stump and to insure that logging is done in accordance with requirements that insure future timber crops and good watershed management.

Timber is of great economic importance on our national forests, yet in many areas management policies must place water in first place in terms of national values. National forests in the Western States, for example, are so situated in areas of higher elevation that they supply at least four-fifths of all the water for western agricultural and domestic use. The importance of multiple use on the national forests is also underlined by the fact that in 1951 30 million recreationists visited these lands for camping, hunting, and other recreational purposes. Protection of these forests from fire, and management of timber and other resources, must therefore be geared to an integrated program designed to develop all forest resources in the broad public interest.

The timber on national forests has come to represent a major economic factor in U. S. forestry. The 522 billion board feet of saw timber on these public holdings represents one-third of the total remaining

saw timber in the United States. Present timber sales now exceed 4-1/2 billion board feet per year, or close to one-tenth of our national saw-log cut. Today the annual receipts from timber sales on national forests are well in excess of the funds appropriated by the U. S. Congress for cost of protecting and managing the national forest timber resource. We know that the sustained yield capacity of the national forests is substantially greater than the current cut and that this timber yield can play an increasingly important role in our timber economy.

I would also like to call passing attention to the timber resources of Alaska which are of considerable potential importance. Although much of the forest area of Alaska is considered noncommercial in character because of inaccessibility and low productivity, there are in Alaska some 5 million acres of "commercial" forest land in national forests, plus an additional unknown acreage in the vast interior. The national forest lands in southeast Alaska have in the past been of importance only for local use but today construction of the first Alaskan pulp mill is underway. In the future these forests will undoubtedly play an increasingly important role.

Aids to Private Forest Owners

Our public forest policies during the past several decades have increasingly stressed a variety of financial and technical aids to private forest owners designed to encourage improved forest practices through cooperative action. Since private forest lands account for three out of every four acres of our commercial forests, and about 90 percent of the current total timber cut, they represent the dominant factor in the Nation's timber economy, both now and prospectively.

In the 41 years since enactment of the Week's Law of 1911 a Federal-State program of fire prevention and control has been extended to all but 63 million of the 427 million acres of State and private land in need of protection. Most of the remaining unprotected area is in the South, a region where small holdings predominate. Protection expenditures on State and private forest land by the Federal Government, the States, and private owners totaled about 33 million dollars in 1951, including about 9.5 million dollars from the Federal Government. This program is administered by State forest departments aided by the Federal Forest Service. We need further strengthening of our fire protection program, however, to cover all areas in need of organized protection and to lower fire losses on large areas now receiving inadequate protection.

Control of forest insects and diseases has been largely a public responsibility in the United States. Although large sums have been and are being expended for protection against white pine blister rust, pine bark beetles, the gypsy moth, and other pests, losses to insects and diseases exceed losses to forest fires. Since 1947 the Forest Pest Control Act has provided authority for intensified cooperative action by federal, State, and private agencies to detect and suppress attacks of insects and diseases.

Tree planting in the United States has been expanded rapidly under a Federal-State cooperative program. Since the Clark-McNary Act of 1924, 1-1/2 billion trees have been raised in State nurseries and distributed at nominal cost to farmers and other land owners. Programs of other Federal and State agencies, pulp companies, and other groups have also led to the planting of large areas. But even this expanding program is still not adequate to reforest our non-stocked or understocked lands in a reasonable time.

In the field of forestry extension the Federal-State Agricultural Extension Service now has 78 Extension Foresters developing State-wide programs. Other State and Federal agencies, and particularly private agencies such as the American Forest Products Industries, also are encouraging improved forestry through a number of educational programs.

Newest of our measures is a program of direct technical assistance to aid farmers and other small forest owners. We now have 230 "service" foresters in 36 States financed by State and Federal funds to provide aid to private land owners and small processors. Additional technical services to forest owners and operators are provided by other public agencies, by industry foresters, and by private consultants. But it would take some 2,000 foresters to extend adequate service to all counties having significant areas of forest lands in small holdings.

Research in the various phases of forestry is conducted by the U. S. Forest Service through a Federal system of 12 regional forest and range experiment stations and a national Forest Products Laboratory at Madison, Wisconsin. In addition, many State and private research institutions, as well as industry organizations likewise are actively engaged in forest research, much of it in cooperation with the Forest Service. In 1951 Federal expenditures by the Forest Service for forest research totaled $5,250,000. An even greater amount was spent by State, industrial and other agencies, particularly in the field of timber utilization.

Under the Agricultural Conservation program, administered by the U. S. Department of Agriculture, payments are made to farmers for certain conservation practices such as tree planting, fencing of woodlands, fire break construction, and improved naval stores practices.

Other financial assistance to promote forestry has been made available indirectly in a number of our States in the form of special State and local taxation of forest property designed to reduce the tax load or postpone tax payments until the time of timber harvest. The most recent law, enacted by the State of New Hampshire in 1946, substitutes a yield tax for the property tax on all timber and, in addition, provides a substantial reduction of the yield tax for owners meeting specified standards of forest practice.

Forest credit is made available in limited amounts through certain agencies such as the Federal Land banks. But adequate credit is not available for such purposes as consolidating timber holdings or improving forest properties and there appears to be need for a special system of forest credit and associated forest insurance. I believe we also need to assist cooperative associations in getting established as a means of improving timber management and utilization practices on small holdings.

Public Regulation of Private Forest Practices

One of the major policy issues in the United States is the regulation of private forest practices by public agencies. Our system of forest aids outlined above has brought about great improvements in forest practices on private lands, yet on many private holdings cutting and other forest practices are not satisfactory. Recognizing that the public interest suffers from indiscriminate cutting, some 16 States have enacted legislation to require minimum forest practices. Some of the laws on the books are mandatory, some although mandatory do not provide adequately for enforcement, and others simply provide incentives for compliance.

It is my firm belief that sooner or later in the United States we will adopt an effective policy of public control that will insure continued production from private timber land. I do not believe the public interest can be fully protected without public action to establish minimum standards for forest practices as a supplement to other phases of a comprehensive forestry program. The Forest Service has recommended that a State-Federal system be established which would rely upon the States to administer regulatory laws with Federal financial assistance but which would also provide for national standards and for Federal administration in States which request it or which after a reasonable period fail to put adequate legislation into effect.

In closing, I would like to emphasize that in the United States we have adopted a variety of Federal and State forest policies each designed to meet certain problems associated with the ownership and condition of forest lands. Our primary needs are to intensify the several phases of the broad program outlined above and to achieve as far as possible a balanced program for more effective conservation of our forest resources.

Generally O K — a few marginal comments. Overbalanced toward timber; not enough on water & public forest lands

ECC

FOREST POLICY IN THE UNITED STATES

By Lyle F. Watts, Chief Forester, Emeritus
United States Forest Service[1]

Forest policy in the United States has been evolving rapidly during the past century and is today still in a state of change. In the great westward expansion and settlement of the United States that reached a peak during the nineteenth century our Government adopted a policy of disposing of its vast domain of public lands to settlers and other private individuals through land sales and land grants. The Homestead Act of 1862 and the Timber and Stone Act of 1878 were outstanding examples of this policy of transferring public resources to private ownership. While our early land laws were generally designed to foster family size farms and other small holdings, at the same time they also favored the acquisition of vast private holdings in the hands of railroads, timber companies, and other large corporations.

An opposing policy of major importance--resource conservation--also came into being during the late nineteenth century. This was expressed at an early date in actions in a number of States for forest fire prevention and control. In 1891 a major step was taken in Federal legislation creating a system of national forests from public domain lands not yet transferred to private ownership. Under Harrison, Cleveland, Theodore Roosevelt, and other Presidents a total of 155 million acres of the public domain, located largely in the western United States and Alaska, was set aside in national

---

1/ Presented at the Sixth British Commonwealth Forestry Conference, Ottawa, Canada, August-September 1952.

forests for public administration and public use. There has also been some reverse flow of forest land back to the Federal government during the past 40 years through land purchase and exchange so that today the national forests comprise about 181 million acres, located in 38 States, Alaska, and Puerto Rico.

Various agencies of the Federal government also administer an additional 60 million acres of forested lands in the United States, and about 270 million acres of other lands; these Federal areas include mainly lands of low productivity that were passed over during the period when land, timber, and mineral resources were being acquired by private owners. Today the people of the United States still own one-fifth of the nation's commercial forest land, and a substantial part of the native range. Essentially all the crop and pasture lands are in private ownership.

Along with the growth of interest in public ownership of part of our forest resources, there has developed a number of forest policies designed to promote better protection and management of private forest lands. These include such Federal legislative milestones as the Weeks Law of 1911 which provided for both purchase of national forests in the East and for cooperative fire control on State and private lands. The Clark-McNary Act of 1924 substantially strengthened Federal-State cooperative programs of fire control, tree planting, and educational assistance to private forest owners. In 1928 the McSweeney-McNary Research Act established a nation-wide system of forest research through regional forest and range experiment Stations. The Cooperative Forest Management Act of 1950, preceded by the Norris-Doxey Farm Forestry Act of 1937, provides for technical assistance to farmers and other small forest land owners.

Supplementing Federal action in the field of forestry has been a rapid development of State forest services and other State and local forestry agencies. Nearly all our States now maintain forestry organizations of varying size and effectiveness to carry out programs for the protection and management of State lands and protection and management services for private forest lands. The Federal Forest Service works in close cooperation with the State agencies in these forestry programs on State and private lands.

Mention should also be made of the development of forest industry organizations in the United States, many of which were formed initially to bring about better fire protection on forest land. These industrial agencies have also become increasingly effective in the fields of general forestry education and technical assistance to private land owners.

During the past several decades we have also developed a fine system of forestry schools in the United States to supply the technical needs of federal and State forestry organizations and, to an increasing degree, the needs of private industry. The first forestry school in the United States was established at Biltmore, North Carolina, in 1897. Today there are a total of 33 forestry schools in the United States with an enrollment of 5,280 students. These schools have developed primarily as a part of our State educational system, although privately endowed educational institutions have also contributed much to the advancement of professional and scientific training in forestry.

Great progress in forestry has resulted in the United States from the combination of Federal action and accompanying programs of the States,

educational institutions, and private industry. Despite this material progress, however, the forest situation in the United States still presents a number of significant problems and policy issues.

Forest Conditions in the United States

As background to discussion of specific policies and programs, I would like to mention briefly a few facts regarding present day forest conditions in the United States. Our last comprehensive Reappraisal made in 1945 showed that we faced a number of problems in timber supply. The Forest Service has recently initiated another of its periodic reappraisals of the forest situation which may lead to new views on forest policy, but the general outline of our forestry picture seems reasonably clear.

In the continental United States, one-third of all the land--622 million acres--is forest land. About three-fourths of this area, or 460 million acres, is considered to be commercial in character, that is, suitable and available for the continued production of timber crops. The difference--162 million acres--is noncommercial forest land primarily valuable for purposes other than timber production. Additional forests in Alaska total about 140 million acres, although in the foreseeable future only a small part of this vast area seems likely to be of commercial importance.

Notwithstanding the immense land clearing efforts which since Colonial times have accompanied agricultural development in the East and some parts of the West, the United States does not seem likely to have a dearth of land for timber growing. Our forest lands have the potential, under management, of ultimately producing sufficient timber to meet all our prospective needs.

Today, however, U. S. forests are not growing sufficient timber to meet the present level of drain on timber of sawlog size. Annual growth of all trees 5 inches and larger in diameter amounted to 13.4 billion cubic feet in 1945, which was just about in balance with total drain. In terms of saw timber, however, the estimated annual growth of 35 billion board feet was only about two-thirds of annual saw-timber drain. The deficiencies in growth were especially pronounced for the larger sizes and better quality trees, and for the preferred softwoods. For purposes of watershed protection our forest cover in many areas likewise is not making the contribution that it ought to be making.

As one of the guides to forest policies, we have set up a growth goal which we believe would be sufficient to meet our potential timber requirements plus a margin for possible new uses of wood, unexpected timber losses, and exports. Our current estimates indicate that we should aim to grow, within the next few decades, about 18 billion cubic feet of timber annually, including about 72 billion board feet of saw timber. This would mean increasing all timber growth by about 35 percent over the 1945 level, and doubling saw-timber growth.

The deficiencies of timber growth in the United States, in terms of both present drain and potential requirements, in the main reflects the condition of our timber growing stock. Less than 10 percent of our commercial forest area--44 million acres located almost entirely in the West--was classed as old-growth saw timber in 1945. Second-growth saw-timber stands of variable stocking covered only about one-third of the commercial forest area. Pole-timber and seedling and sapling stands made up 40 percent, and poorly stocked and non-stocked lands about 16 percent, of our commercial forest area.

In 1945 U. S. forests still contained an estimated 1,617 billion board feet of saw timber, and 469 billion cubic feet of all trees above 5 inches in diameter. But these volumes were not well distributed. In the eastern United States the volume of saw-timber growing stock needs to be nearly doubled if potential needs from this region are to be met. In the West, where two-thirds of the total remaining saw timber is concentrated, the situation is more favorable. But for long-term planning it is significant that three-fourths of our commercial forest land is in the eastern United States, and even old-growth stands of the West are being converted fairly rapidly to cut-over and young-growth stands.

The problem of inadequate growing stock is further complicated by a steady decline in quality of our timber resources. This is evidenced in a lowering of the average size and grade of available timber and by an increase in the proportion of cull trees.

These deficiencies in timber growth and quality are also, of course, a reflection of poor or inadequate forest protection and timber cutting practices. Recent progress in timber management in the United States has been substantial and at an accelerating rate, yet we are still far short of a general level of reasonably good practices. Particularly good progress has been made in fire control and today practically all Federal forests in the United States and all but 15 percent of the 427 million acres of State and private forest land needing protection are under some organized protection system.

In terms of cutting practices, however, progress has not been so good. In 1945 a comprehensive survey of forest management practices showed that on publicly owned lands, two-thirds of the cutting followed good or high order practices--a fairly satisfactory situation. But public holdings

account for only one-fourth of our commercial forest land and only 10 percent of our current cut of timber products. On private lands the 1945 survey revealed widely different situations. On the large holdings of pulp and paper companies and large lumber companies, cutting practices were relatively good whereas on the smaller holdings they were in general poor. The best showing was made by properties of 50,000 acres or more in the South where pulp, lumber, and other wood manufacturing companies have gone into forestry as a business on the basis of the high forest productivity of this region. On these properties over half the cutting was good or better. On the other hand, on small forest holdings, of which there are some 4-1/4 million in the United States averaging about 62 acres in size, only 4 percent of the cutting was good or better. These small forest holdings comprise mainly farm woods and other small tracts not connected with farms and held mainly by nonresidents. They comprise three-fourths of the private commercial forest land in the United States, and they supply approximately two-thirds of our total cut of forest products, including the sawlogs for thousands of small sawmills and a major part of the pulpwood used by pulp and paper mills in the eastern United States. Thus these small holdings are the crux of our forestry problem. It is apparent that the general policy which for many years guided our rural development--that as much land as practicable should be in small tracts under the management of individual owners--has and will long continue to have immense significance for forestry.

Since 1945 timber cutting practices in the United States--as well as fire protection and tree planting--have improved, but I believe the

gist of the situation is about the same. While our forest policy must continue to be comprehensive in scope, it must emphasize the objective of bringing about better management on small private holdings.

In stressing the timber resource, I do not want to underrate the importance of other forest resources and values. As protectors of watersheds our forests are of incalculable value, and in many areas watershed protection must be the primary aim of forest management.

In addition to our vast areas of wild native range lands generally devoid of tree growth, we have in the United States much forest range that furnishes significant forage for grazing animals. In our southern and western States are some 350 million acres of forest range grazed by domestic livestock. In the South these forest grazing lands are in the main privately owned; in the West they are mainly public lands.

Throughout most of the United States forest lands are also valuable for their wildlife and as recreation grounds. Some forests, not included in our commercial acreage, have been set aside as parks or refuges devoted to these values. In the main, however, wildlife and recreation are parts of multiple-purpose forest management.

Thus, our forest lands present variable problems in resource management: such as how best to integrate timber and livestock use, or how to safeguard watershed values which in many forest areas are of foremost importance.

The basic requirements of forest policy in the United States then are these: that it promote the building up of our timber resources to a level of productivity sufficient to meet our prospective timber needs for

home use, export, and emergencies; and that it encompass other forest resources and values into a multiple-purpose program. Several programs have been fashioned to meet these requirements: first, public ownership and management of certain forest lands; second, public aids to private forest land owners; and third, public regulation of private forestry practices. In discussing these three programs, I would like to emphasize those aspects that most directly touch upon the work of the U. S. Forest Service.

Public Forest Lands

As indicated earlier, the Federal government holds title to fairly extensive areas of forest land in the United States, including 181 million acres of national forests, of which about 76 million acres are capable of producing timber of commercial character. In addition 14 million acres of commercial forest land are in Federal holdings other than designated national forests.

State and local government forests, made up largely of remnants of Federal grants plus extensive areas of tax delinquent lands, comprise about 27 million acres.

Altogether public forest lands in the United States thus include about 117 million acres of commercial forest land, or 25 percent of the total area of such land.

The development of our national forest system has been guided by the principle that government should own and manage in the long-run public interest a significant share of our forest land and timber in order to assure favorable watershed conditions and to furnish continuous

supplies of timber for the nation. From time to time pressures appear to transfer our public timber and other resources to private ownership, but I believe that the public values in these forests is so widely recognized that our national policy will continue to be against any impairment of the national forest system.

Our national forests are managed by the Forest Service of the U. S. Department of Agriculture under a multiple-use program designed to protect the long-run interest of dependent communities and the nation as a whole. Our policies are to grow timber of relatively large size and high quality, to mark trees for cutting in accordance with sustained yield plans, to sell designated timber on the stump and to insure that logging is done in accordance with requirements that insure future timber crops and good watershed management.

Timber is of great economic importance on our national forests, yet in many areas management policies must place water in first place in terms of national values. National forests in the Western States are so situated in areas of higher elevation that they supply at least four-fifths of all the water for western agricultural and domestic use. The importance of multiple use on the national forests is also underlined by the fact that in 1951 30 million recreationists visited these lands for camping, hunting, and other recreational purposes. Protection of these forests from fire, and management of timber and other resources, must therefore be geared to an integrated program designed to develop all forest resources in the broad public interest.

The timber on national forests has come to represent a major economic factor in U. S. forestry. The 522 billion board feet of saw timber on these public holdings represents one-third of the total remaining saw timber in the United States. Present timber sales now exceed 4-1/2 billion board feet per year, or close to one-tenth of our national sawlog cut. Today the annual receipts from timber sales on national forests are well in excess of the funds appropriated by the U. S. Congress for cost of protecting and managing the national forest timber resource. We know that the sustained yield capacity of the national forests is substantially greater than the current cut and that this timber yield can play an increasingly important role in our timber economy.

I would also like to call passing attention to the timber resources of Alaska which are of considerable potential importance. Although much of the forest area of Alaska is considered noncommercial in character because of inaccessibility and low productivity, there are in Alaska some 5 million acres of "commercial" forest land in national forests, plus an additional unknown acreage in the vast interior. The national forest lands in southeast Alaska have in the past been of importance only for local use but today construction of the first Alaskan pulp mill is underway. In the future these forests will undoubtedly play an increasingly important role.

Aids to Private Forest Owners

Our public forest policies during the past several decades have increasingly stressed a variety of financial and technical aids to private forest owners designed to encourage improved forest practices through cooperative action. Since private forest lands account for three out of every four acres of our commercial forests, and about 90 percent of the total timber cut, they represent the dominant factor in the Nation's timber economy, both now and prospectively.

In the 41 years since enactment of the Week's Law of 1911 a Federal-State program of fire prevention and control has been extended to all but 63 million of the 427 million acres of State and private land in need of protection. Most of the remaining unprotected area is in the South, a region where small holdings predominate. Protection expenditures on State and private forest land by the Federal Government, the States, and private owners totaled about 33 million dollars in 1951, including about 9.5 million dollars from the Federal Government. This program is administered by State forestry departments aided by the Federal Forest Service which furnishes over-all inspection. We need further strengthening of our fire protection program, however, to cover all areas in need of organized protection and to lower fire losses on large areas now receiving inadequate protection.

Control of forest insects and diseases has been largely a public responsibility in the United States. Although large sums have been and are being expended for protection against white pine blister rust, pine bark beetles, the gypsy moth, and other pests, losses to insects and

diseases exceed losses to forest fires. Since 1947 the Forest Pest Control Act has provided authority for intensified cooperative action by the Federal Government and the States to detect and suppress attacks of insects and diseases.

Tree planting in the United States has been expanded rapidly under a Federal-State cooperative program. Since the Clark-McNary Act of 1924, 1-1/2 billion trees have been raised in State nurseries and distributed at nominal cost to farmers and other land owners. Programs of other Federal and State agencies, pulp companies, and other groups have also led to the planting of large areas. But even this expanding program is still not adequate to reforest our non-stocked or understocked lands in a reasonable time.

In the field of forestry education the Federal-State Agricultural Extension Service now has 78 Extension Foresters developing State-wide programs. Other State and Federal agencies, and particularly private agencies such as the American Forest Products Industries, also are encouraging improved forestry through a number of educational programs.

Newest of our measures is a program of direct technical assistance to aid farmers and other small forest owners. We now have 230 "service" foresters in 36 States financed by State and Federal funds to provide aid to private land owners in cutting practices, woodland management, and timber marketing. Additional technical services to forest owners and operators are provided by other public agencies, by industry foresters, and by private consultants. But it would take some 2,000 foresters to extend adequate service to all counties having significant areas of forest lands in small holdings.

Research in the various phases of forestry is conducted by the U. S. Forest Service through a Federal system of 12 regional forest and range experiment stations and a national Forest Products Laboratory at Madison, Wisconsin. In addition, many State and private research institutions, as well as industry organizations likewise are actively engaged in forest research, much of it in cooperation with the Forest Service. In 1951 Federal expenditures by the Forest Service for forest research totaled $5,250,000. An even greater amount was spent by State, industrial and other agencies, particularly in the field of timber utilization.

Under the Agricultural Conservation program, administered by the U. S. Department of Agriculture, payments are made to farmers for certain conservation practices such as tree planting, fencing of woodlands, fire break construction, and improved naval stores practices.

Other financial assistance to promote forestry has been made available indirectly in a number of our States in the form of special State and local taxation of forest property designed to reduce the tax load or postpone tax payments until the time of timber harvest. The most recent law, enacted by the State of New Hampshire in 1946, substitutes a yield tax for the property tax on all timber and, in addition, provides a substantial reduction of the yield tax for owners meeting specified standards of forest practice.

Forest credit is made available in limited amounts through certain agencies such as the Federal Land banks. But adequate credit is not available for such purposes as consolidating timber holdings or improving

forest properties and there appears to be need for a new Federal system of forest credit and associated forest insurance. I believe we also need to assist cooperative associations in getting established as a means of improving timber management and utilization practices on small holdings.

Public Regulation of Private Forest Practices

One of the major policy issues in the United States is the regulation of private forest practices by public agencies. Our system of forest aids outlined above has brought about great improvements in forest practices on private lands, yet on most private holdings cutting and other forest practices are not satisfactory. Recognizing that the public interest suffers from indiscriminate cutting, some 16 States have enacted legislation to require minimum forest practices. Some of the laws on the books are mandatory, some although mandatory do not provide adequately for enforcement, and others simply provide incentives for compliance.

It is my firm belief that sooner or later in the United States we will adopt an effective policy of public control that will insure continued production from private timber land. I do not believe the public interest can be fully protected without public action to establish minimum standards for forest practices as a supplement to other phases of a comprehensive forestry program. The Forest Service has recommended that a State-Federal system be established which would rely upon the States to administer regulatory laws with Federal financial assistance but which would also provide for national standards and for Federal administration in States which request it or which after a reasonable period fail to put adequate legislation into effect.

In closing, I would like to emphasize that in the United States we have adopted a variety of Federal and State forest policies each designed to meet certain problems associated with the ownership and condition of forest lands. Our primary needs are to intensify the several phases of the broad program outlined above and to achieve as far as possible a balanced program for more effective conservation of our forest resources.

Reprinted from PERSONNEL ADMINISTRATION, Vol. 15, No. 4, July, 1952
Printed in U. S. A.

Employee Participation in the Forest Service

Lyle F. Watts

Based on a presentation at the meeting of the Federal Personnel Council, Washington, D. C., April 10, 1952

"Employee participation" is much too elaborate a term for what we are discussing here. Five-syllable words words simply do not fit when you are talking about the way human beings should feel toward each other and work together for a common cause. But I can't think of any other better term, so I will have to use it. I hope, though, that the way we discuss it will be in a different vein.

Another question about this term—who is employee and who is management in Civil Service? The Secretary of Agriculture still addresses groups in his Department as "Fellow Employees," reminiscent of his long career as an employee there. It seems to me we are just about all employees. The aim is to get as many employees as possible to take part in management. I am sure the Secretary's attitude goes a long way to inspire a real desire to participate among those whom he invites to think of themselves, not as employees, but as fellow employees.

As Chief of the United States Forest Service, Mr. Watts is an outstanding example of the many lifelong careers in that organization. He entered the Service in 1913 and served in practically all phases of its operations at various locations until appointment to his present position in 1943. He received in 1947 the Croix du Chevalier de la Merite Agricole by the Government of France; in 1948 the Iowa State Alumni Award for preeminent service in advancing human welfare and an honorary degree of Doctor of Agriculture; and in 1950 the Department of Agriculture Distinguished Service Award.

Employee participation is not an end in and of itself. It is the product of the conditions under which our jobs are maintained—the atmosphere, or, as we say nowadays, the climate in which we work. Let's think for just a moment of what produces the conditions in which employee participation develops. This brings us to some homely expressions like "The Golden Rule," "square deal," "friendliness," and "human sympathy." It is in this context that I hope we can think about this subject.

Before going further, I want to be sure that I make it clear how important I think this thing is—this thing we call employee participation in management. In some agencies it may be optional. However, I can't think of one in which it would not improve conditions, no matter how good they might be otherwise. In some, and the Forest Service is in this class, it is indispensable. We are highly decentralized. That is due in part to the wisdom of the men who organized the Forest Service. It is due also to the conditions under which we work. Our men and women work in more than 1,000 headquarters scattered from Puerto Rico to Alaska and from San Diego to Bangor. Often they work in isolated spots and the boss is located many miles away or, if he is located nearby, he may be out much of the time attending to his business in the field. Decisions must be reached and action taken. New and better methods must be discovered and put into effect by the man who is doing the job on the

Reprinted from PERSONNEL ADMINISTRATION, Vol. 15, No. 4, July, 1952
Printed in U. S. A.

Employee Participation in the Forest Service

Lyle F. Watts

Based on a presentation at the meeting of the Federal Personnel Council, Washington, D. C., April 10, 1952

"Employee participation" is much too elaborate a term for what we are discussing here. Five-syllable words words simply do not fit when you are talking about the way human beings should feel toward each other and work together for a common cause. But I can't think of any other better term, so I will have to use it. I hope, though, that the way we discuss it will be in a different vein.

Another question about this term—who is employee and who is management in Civil Service? The Secretary of Agriculture still addresses groups in his Department as "Fellow Employees," reminiscent of his long career as an employee there. It seems to me we are just about all employees. The aim is to get as many employees as possible to take part in management. I am sure the Secretary's attitude goes a long way to inspire a real desire to participate among those whom he invites to think of themselves, not as employees, but as fellow employees.

As Chief of the United States Forest Service, Mr. Watts is an outstanding example of the many lifelong careers in that organization. He entered the Service in 1913 and served in practically all phases of its operations at various locations until appointment to his present position in 1943. He received in 1947 the Croix du Chevalier de la Merite Agricole by the Government of France; in 1948 the Iowa State Alumni Award for preeminent service in advancing human welfare and an honorary degree of Doctor of Agriculture; and in 1950 the Department of Agriculture Distinguished Service Award.

Employee participation is not an end in and of itself. It is the product of the conditions under which our jobs are maintained—the atmosphere, or, as we say nowadays, the climate in which we work. Let's think for just a moment of what produces the conditions in which employee participation develops. This brings us to some homely expressions like "The Golden Rule," "square deal," "friendliness," and "human sympathy." It is in this context that I hope we can think about this subject.

Before going further, I want to be sure that I make it clear how important I think this thing is—this thing we call employee participation in management. In some agencies it may be optional. However, I can't think of one in which it would not improve conditions, no matter how good they might be otherwise. In some, and the Forest Service is in this class, it is indispensable. We are highly decentralized. That is due in part to the wisdom of the men who organized the Forest Service. It is due also to the conditions under which we work. Our men and women work in more than 1,000 headquarters scattered from Puerto Rico to Alaska and from San Diego to Bangor. Often they work in isolated spots and the boss is located many miles away or, if he is located nearby, he may be out much of the time attending to his business in the field. Decisions must be reached and action taken. New and better methods must be discovered and put into effect by the man who is doing the job on the

ground. In such a far-flung agency, we must have employee participation. It must be built right into the fabric of the organization. We feel we would be getting less than we pay for, if we did not in effect require it. I say "in effect," for we find that in most instances we need only let it be known that we want it.

This leads me to suggest that there are three steps toward getting the members of any organization to become active in promoting the interests of that organization. The first is to let them know that the top brass want their help, and expect it—that it is part of their job. The second, I would suggest, is to keep them informed as to what the aims and policies of the agency are and what their place is in the scheme for carrying out these aims and policies. And the third is to let them know that the work they do and the part they play is important.

It doesn't take very long for members of the organization under your supervision to learn that you want their help in meeting the problems that face you. A friendly chat now and then—and there are lots of opportunities for them—with the people down the line will work wonders. A friendly visit, occasionally, at some one's desk. Sure, it takes time, but it gets results. The word goes around and others respond. You can encourage people to speak frankly—and respect their confidences. You can show a serious regard for the importance of what they are doing. Others will pick up the idea and start putting it into effect in their field of supervision. As a result of many little things, you have an atmosphere in which the individual member of the outfit will want to know what its objectives are and how he can more effectively help in reaching them. Meetings, news letters, employee activities, all can be used to supplement the personal approach but they can only supplement it. They cannot take its place.

When it comes to acquainting the members of an organization with its aims and problems and the relation of many varied functions to the end results, dependence must be placed on something more formal and systematic. So we have orientation in various forms for new employees, meetings, conferences, training courses, news letters, seminars, and many other devices. I am sure our people in the Forest Service do a better job when they know that their typewriters, slide rules, standard forms, messenger carts, test tubes, and microscopes are helping to put out forest fires, to grow timber and make it better serve industrial demands, to improve the range, and to provide better recreational facilities—including more and better fish and game—on our National Forests. This is basic and indispensable.

I haven't said much about the actual machinery of employee participation yet. But it is no oversight. I simply feel that first of all this must be a two-way street and you must have management participation moving in one direction before you get employee participation moving in the other.

A conscious and effectively directed effort is needed in most organizations, especially if they are large, to provide the machinery to carry out the basically simple measures of employee participation. I want to make it clear that I consider this machinery as subordinate to other factors and to be used only where and when you can't get along without it. Let me illustrate what I mean from my personal experience in the Forest Service. I have seen that organization—from within—develop

from a group of 2,900 men and women in the horse-and-saddle days of 1913 to something vastly more than a group —varying from 9,000 in the winter time, to 25,000 in summer—functioning according to the tempo and customs of the age in which we live. Forty years ago we were small enough so that we knew each other. We rode horseback together for days at a time. We camped together, cooked each others' meals, washed each others' dishes, packed and unpacked our common gear together. After a week or two of that we knew each other; we knew each others' ambitions, needs, lucky breaks, and misfortunes. When we came back to town and put on our store clothes, we were still Bill and George and Tom, and we naturally got together with our families and our office workers to continue our good fellowship. In our official dealings there was still a personal element that made it easier for us to get together on a common understanding of the objectives of the Forest Service. We didn't need committees, suggestion boxes, and other devices to stimulate a response. But now in our much larger, much faster moving organization, some of the contacts that used to come so naturally can be easily overlooked, especially by younger recruits who missed the joys of our early days. So we do need some props here and there, and we use them. I wouldn't trade the adventures of the present for the nostalgic past. Not for anything! I am simply saying that wholesome human relations—which are the well-spring of employee participation—developed more naturally in the early days of the Forest Service than they do now. Perhaps the same is true of some other agencies. I hasten to add that by providing certain machinery we can perpetuate many of those advantages of close personal associations. I am st "Lyle" to thousands of our employee

If an atmosphere is maintained which every member of an organizatic knows that his participation in agen management is welcome, you can sta out to provide the machinery. First, you will look around you, you may fi that you already have some of Unions, for example, can be much mo than grievance committees. As grie ances are eliminated, their attention likely to be turned to more constructi matters.

Suggestion systems are a recogniz means of employee participation ar are in common use. But to be effecti they require management participatio This means prompt acknowledgmer sound appraisal, effective adoption, —and this is of the utmost importan —sympathetic rejection. We have suggestion system in the Forest Ser ice. It is not perfect, but we work c it seriously and we get great benef from it.

We have followed with interest t splendid personnel management polici of the McCormick Tea and Spice Con pany of Baltimore—you are all famili with Mr. McCormick's book.[1] T Junior Staff idea, developed so effe tively in that organization, appeared have possibilities in the Forest Servic So it was given a trial under the ab leadership of Earl W. Loveridge, A sistant Chief, and Peter Keplinge (then) Staff Assistant in administr tive management. This trial develope through a process of evolution, and believe that fact alone has contribute much to its success.

[1] *The Power of People; Multiple Manag ment up to Date,* by Charles P. McCormic President, McCormick & Company, Balt more.

ground. In such a far-flung agency, we must have employee participation. It must be built right into the fabric of the organization. We feel we would be getting less than we pay for, if we did not in effect require it. I say "in effect," for we find that in most instances we need only let it be known that we want it.

This leads me to suggest that there are three steps toward getting the members of any organization to become active in promoting the interests of that organization. The first is to let them know that the top brass want their help, and expect it—that it is part of their job. The second, I would suggest, is to keep them informed as to what the aims and policies of the agency are and what their place is in the scheme for carrying out these aims and policies. And the third is to let them know that the work they do and the part they play is important.

It doesn't take very long for members of the organization under your supervision to learn that you want their help in meeting the problems that face you. A friendly chat now and then—and there are lots of opportunities for them—with the people down the line will work wonders. A friendly visit, occasionally, at some one's desk. Sure, it takes time, but it gets results. The word goes around and others respond. You can encourage people to speak frankly—and respect their confidences. You can show a serious regard for the importance of what they are doing. Others will pick up the idea and start putting it into effect in their field of supervision. As a result of many little things, you have an atmosphere in which the individual member of the outfit will want to know what its objectives are and how he can more effectively help in reaching them. Meetings, news letters, employee activities, all can be used to supplement the personal approach but they can only supplement it. They cannot take its place.

When it comes to acquainting the members of an organization with its aims and problems and the relation of many varied functions to the end results, dependence must be placed on something more formal and systematic. So we have orientation in various forms for new employees, meetings, conferences, training courses, news letters, seminars, and many other devices. I am sure our people in the Forest Service do a better job when they know that their typewriters, slide rules, standard forms, messenger carts, test tubes, and microscopes are helping to put out forest fires, to grow timber and make it better serve industrial demands, to improve the range, and to provide better recreational facilities—including more and better fish and game—on our National Forests. This is basic and indispensable.

I haven't said much about the actual machinery of employee participation yet. But it is no oversight. I simply feel that first of all this must be a two-way street and you must have management participation moving in one direction before you get employee participation moving in the other.

A conscious and effectively directed effort is needed in most organizations, especially if they are large, to provide the machinery to carry out the basically simple measures of employee participation. I want to make it clear that I consider this machinery as subordinate to other factors and to be used only where and when you can't get along without it. Let me illustrate what I mean from my personal experience in the Forest Service. I have seen that organization—from within—develop

from a group of 2,900 men and women in the horse-and-saddle days of 1913 to something vastly more than a group —varying from 9,000 in the winter time, to 25,000 in summer—functioning according to the tempo and customs of the age in which we live. Forty years ago we were small enough so that we knew each other. We rode horseback together for days at a time. We camped together, cooked each others' meals, washed each others' dishes, packed and unpacked our common gear together. After a week or two of that we knew each other; we knew each others' ambitions, needs, lucky breaks, and misfortunes. When we came back to town and put on our store clothes, we were still Bill and George and Tom, and we naturally got together with our families and our office workers to continue our good fellowship. In our official dealings there was still a personal element that made it easier for us to get together on a common understanding of the objectives of the Forest Service. We didn't need committees, suggestion boxes, and other devices to stimulate a response. But now in our much larger, much faster moving organization, some of the contacts that used to come so naturally can be easily overlooked, especially by younger recruits who missed the joys of our early days. So we do need some props here and there, and we use them. I wouldn't trade the adventures of the present for the nostalgic past. Not for anything! I am simply saying that wholesome human relations—which are the well-spring of employee participation—developed more naturally in the early days of the Forest Service than they do now. Perhaps the same is true of some other agencies. I hasten to add that by providing certain machinery we can perpetuate many of those advantages of close personal associations. I am st "Lyle" to thousands of our employee

If an atmosphere is maintained which every member of an organizatic knows that his participation in agen management is welcome, you can sta out to provide the machinery. First, you will look around you, you may fi that you already have some of Unions, for example, can be much mo than grievance committees. As grie ances are eliminated, their attention likely to be turned to more constructi matters.

Suggestion systems are a recognize means of employee participation ar are in common use. But to be effecti they require management participatio This means prompt acknowledgmen sound appraisal, effective adoption, —and this is of the utmost importan —sympathetic rejection. We have suggestion system in the Forest Ser ice. It is not perfect, but we work c it seriously and we get great benef from it.

We have followed with interest th splendid personnel management polici of the McCormick Tea and Spice Con pany of Baltimore—you are all familia with Mr. McCormick's book.[1] Th Junior Staff idea, developed so effe tively in that organization, appeared have possibilities in the Forest Servic So it was given a trial under the ab leadership of Earl W. Loveridge, A sistant Chief, and Peter Keplinge (then) Staff Assistant in administr tive management. This trial develope through a process of evolution, and believe that fact alone has contribute much to its success.

[1] *The Power of People; Multiple Manag ment up to Date,* by Charles P. McCormic President, McCormick & Company, Balt more.

Between 11 and 12 years ago, two training committees were set up in our Washington Office to take action under the Secretary's policy statement of April 1939, on employee training which included this comment:

". . . the direct purpose of employee training is to increase the efficiency of the Department. While increased satisfaction and earning power for the employee may result, it is incidental to this primary objective."

One of our committees was for the clerical employees; the other for junior executives. A study of employee training in the light of the Secretary's comment about increasing the efficiency of the Department brought both groups separately to the conclusion that training was needed in administrative management. The next step was to make a plan to improve employee understanding of, and participation in, management in the Forest Service. According to an article on "Multiple Management in the Forest Service" that appeared several years ago in *Personnel Administration*,[2] the clerical training committee's first progress report which—

was really a plan of organization, began by expressing its belief in Dr. H. L. Person's statement, in a then-current issue of *Public Administration Review*, that "Planning is dynamic"; and guided by that phrase, the Committee organized for continuous planning instead of merely producing a static plan.

Thus a study of training led to a better appreciation of the importance of administrative management, and a brief insight into administrative management resulted in the concept of dynamic, continuous planning. As a result we organized a permanent clerical staff to study current management problems and advise the Chief from the clerical employee's point of view. Briefly, this clerical staff, created about ten years ago, consists of seven women clerical employees, each with at least five years of Forest Service experience. Three members are retired and three new members are appointed each year. For members, we seek persons with "reputation for alertness, initiative, interest, and industry."

The evolution of a Junior Staff (made up of junior executives) out of the original administrative management training committee was similar. For more than ten years these two groups have worked faithfully and effectively on problems of management. Similar groups have been organized in several of our larger field offices.

Quoting again from the article mentioned above:

Two primary factors, according to Forest Service experience, require recognition if such staffs are to serve effectively. They must have a reasonably well sustained flow of activity—even if they must carry on some projects not ordinarily considered typically staff functions—in order to maintain interest and "keep their hand in" as a working group. And they must be allowed the time necessary to do the work involved—including research and conferences.

As a continuing project the Clerical Staff directs a series of "Family Meetings" in our Washington Office every year designed to keep all members of the office informed on up to date developments in the Forest Service and in its many fields of interest. One of the first individual projects of the Clerical Staff was to organize and carry on under Dr. Carl F. Tauesch, then of the Department of Agriculture, a "School

[2] December, 1945; by H. D. Cochran, H. C. MacFate, and F. C. McGindley.

of Philosophy" for members of the Forest Service. Most of their other projects consisted of studies and reports. Among these was a report on an honor award system for the Department.

Before the present system was adopted, the Forest Service, among other Bureaus, was asked to submit suggestions. The job, so far as the Forest Service was concerned, was assigned to the Clerical Staff. The Chief made no report other than to submit with his approval the clerical staff report. We all now take great pride in pointing to the similarity between the plan now in effect in the Department and the plan recommended by our Forest Service girls. A promotion policy for clerks in the Washington Office, including a plan for advertising clerical vacancies, was recommended and adopted. A very worth-while report on employment opportunities for women was submitted. These will serve as a small sample to indicate what this group has done for us. We have an annual program review together in my office and other contacts as needed by current activities.

The continuing project for the Junior Staff is similar to that of the Clerical Staff. It is a series of meetings each year for the technical and professional employees of the Washington Office in which current problems and other developments of interest to such a group are presented and discussed. This assembly is called the Big Staff. It does not have any formal organization with officers, by-laws, etc., but nevertheless it also serves a Staff fu tion. Not only is it a means of keep an important segment of our organi tion informed as to what is going more important, it is a forum in wh the collective counsel and advice of our technical and professional empl ees may be obtained on current pr lems facing the Forest Service. number of projects have been stud and reported on by the Junior St Among these have been ways means of taking care of lines of retr for members of the Forest Service Military Service during World W II; manpower utilization among cl cal employees (in cooperation with Clerical Staff); training details; career-ladder requirements for prof sional employees. In one regional fice, the Junior Staff did a notable of organizing a morale survey.

The value of counsel and advice this type from a group of up-and-co ing junior executives is self-evide Incidentally one of the Washington fice Junior Staff members of ab 1945 is now an Assistant Chief.

We feel that employee participat —by whatever name you call it—pa But it can't be produced by fiat. have said it requires a favorable mosphere if it is to flourish. If I m I would like to change the metapl and say it is like a crop—corn, whe apples, peaches, roses, or whatever y like to grow. First you must prep the soil; then you plant the seed, cu vate; maybe spray; keep the weeds o Then, after due time, comes the harv —and the pay-off!

UTILIZATION -- THE KEYSTONE OF INTENSIVE FOREST MANAGEMENT

(Address by Lyle F. Watts, Chief, U. S. Forest Service, at annual meeting of Forest Products Research Society, Milwaukee, Wisconsin, June 23, 1952.)

There was a time when all the timber marker needed for tools were a blazing ax, a bed-roll, and a good pair of legs. Those days have long since passed. The tools of timber management today are complex kits of implements and plans, which are infinitely variable according to the objectives of management and the character of the forest. This is but another way of saying that intensive management of forest properties is arriving in the United States. It is my purpose today to explore with you some of the reasons why it is here and some of the directions in which I think it is going.

The principal tools of the forest manager are still the ax and the saw, in the sense that selection for the harvest is the best means available to insure satisfactory subsequent harvests and realization of optimum yield of good wood. That this is an over-simplification is perfectly clear, but again it is but a way of saying that the harvest dictates all that comes after. The harvest in turn is controlled by a host of economic factors that reflect yarding costs, transportation costs, and so on. If those costs are too high in relation to the use of the product, it cannot be harvested. If there is a satisfactory margin the product will come out of the woods. So although we speak in general terms of intensive management, we may have to become specific when we talk of a particular locality, or a particular forest region, or kind of tree.

The dominant factor, however, in all matters controlling the harvest will be the market for the finished product. This is the particular aspect that I want to explore more thoroughly with you, because it is in the harvesting of wood for new and better fields of usefulness that utilization research comes to bear on the total management problem.

Before we go into that I want to point out that a lot of influence on management policies has been exerted by matters entirely outside the field of forestry or utilization research. Forest management is affected by the whole industrial development. I need but point out the revolution caused in our whole concept of accessibility by the advent of the tractor and truck in logging. Also, the development of light portable power saws has worked a veritable revolution in wood practices. Such things have made it possible to spread good management over thousands of square miles formerly thought outside the bounds of commercial forestry.

Likewise, the field of forest products utilization has felt the impact of the over-all rapid development of new industries and new products in fields remote from forest products. For example, although the discovery 25 or 30 years ago of the synthetic resins at first had nothing to do with forest products, soon some of them were found to be excellent materials for bonding wood. As a result we now have the whole exterior plywood industry, the laminating industry, and a long series of products bonded into artificial boards or whatnot by use of artificial resins.

(Over)

The history of forest products utilization research in this country can be roughly divided into three periods. In the early days, beginning about the turn of the century, the motivating influence primarily was one of encouraging efficient and wise use of wood in order to conserve our forests. In those days, research in wood utilization was being written on pages that were practically blank. We knew little or nothing of the basic properties of our native American woods as engineering materials.

This period of accumulating basic information continued up into the depression years. Then it became a major problem to promote and encourage the use of wood in order to insure better forest management. It was quite clear that only through utilization of the forest crop could we move in the direction of good forestry.

World War II gave tremendous impetus to wood use. We are no longer fearful of loss of markets for the products of the forest. Expanding technology and more and more new uses give us confidence that we shall be able to use the wood we grow, wisely and well.

The third and current phase of utilization research may be said to combine the elements of the first two phases. We study the efficient use of wood in order to conserve materials, manpower, and wealth. And we study the wise and efficient use of wood also from the point of view of promoting efficient and more intensive management of the forest.

The harvesting of the virgin forest over most of the United States was a pretty haphazard job. A host of silvicultural problems were created that do not lend themselves well to solution except through the use of the harvesting tools. Another group of problems, broadly speaking, lies in the field of intelligent harvesting of our remaining old-growth forests where we still have an opportunity to harvest intelligently and with due regard for the lessons of the past. For example, in the remaining stands of old-growth Douglas-fir we know the nature of the problem created by many billions of feet of trees infected with Fomes pini. We know that regeneration will be greatly forwarded by the harvesting of those trees and that a thriftier, more productive forest will follow.

We are thoroughly aware of the importance of developing utilization for decadent lodgepole and Engelmann spruce stands in untapped Rocky Mountain territories before we can look forward to having current growth and future yields from those lands.

We know the nature of the extensive culled-over hardwood lands in the central hardwood belt and we realize clearly that we shall never be able to have a satisfactory forest in that territory until we can provide satisfactory utilization of the culled stands. There will be difficulties in managing the delta hardwood and upland hardwood stands of the South and Southeast unless and until satisfactory and profitable markets can be provided for the species in those stands.

The hardwood problem extends into the Lake States, New England, the middle Atlantic states, and the Appalachians. Under-utilization characterizes most of our hardwood-producing territory, and until a proper balance can be struck we shall continue, I suppose, to over-cut conifers and under-cut hardwood.

The problems posed by residual stands of low-grade cull hardwoods, or extensive accumulations of so-called inferior species, cover a lot of territory and will be with us quite a while. There is no question but that these stands could be restored to productivity if we had unlimited money and manpower to do the indicated silvicultural jobs of conversion and reclamation. But I do not foresee that they will be treated that way. I think rather they will gradually be converted to productivity through utilization of the old over-story.

Good management of second-growth stands in many cases requires progressive thinnings and selection cuttings. In some cases, especially in southern pine, very good progress has been made in utilizing intermediate cuttings for pulp, using this technique to promote efficient and rapid growth of saw timber of reasonably good quality. We have not yet reached the stage, however, where the most efficient thinning practices can be employed, simply because we have not yet reached the stage where the material removed in early thinnings has market value. There may come a time when management will be so advanced that men will invest in early thinnings with a certainty of satisfactory recovery due to increased growth rates, but commercial practice has not yet gone that far in very many instances. We need for almost all timber types more broad by adaptable utilization processes that can take wood well below pole size and utilize it at a profit.

I want to refer briefly also to the growing importance of pruning. Pruning has been demonstrated to be profitable in many types where the objective is production of clear wood. It is not likely that it will ever be applicable to all species. For a long time it may be limited to a few species that are well adapted to production of good quality veneer and lumber; but in some of those cases research has already proved that the process can be made to pay large returns.

Summing up, we might say that our major problems in management are:

1. Harvesting of defective virgin or old-growth stands
2. Removal of defective cull and old over-story of both good and poor commercial species, especially in hardwoods
3. Utilization of hardwoods in mixed forests where over-cutting of conifers tends toward an increasing percentage of hardwood
4. Thinning and intermediate cuttings in the management of second-growth stands
5. Pruning by various methods and in various species where a market has created or will create values for clear wood that will return adequate profits to the operation.

Now let us look briefly at some of the trends and developments in utilization research that have already contributed toward the solution of management problems, and then analyze, if we can, how they may be expected to contribute further in the future.

Utilization research, generally, can be divided into three major parts:

1. Work on wood that will be used in its natural form

2. Modified wood, that is wood to which something has been added in order to enhance its usefulness

3. Chemical and fiber products in which wood has lost its original form.

Consider the first division -- wood as wood -- and the things that have taken place that have a direct bearing on management policies. In 40 years we have built up a vast amount of knowledge of the fundamental strength properties of our species, and we have thus made possible the use of our woods as engineering materials.

I mentioned earlier the influnece of the development of synthetic resins on the laminating and plywood industries. There have been some rather dramatic developments in the last two decades. It has been only about 20 years since a laminated-arch building -- one of the first examples of this type of construction -- was erected at the Forest Products Laboratory. It is still in use and the laminated arches are still sound. Incidentally, that building was covered with some of the earliest exterior grade plywood ever manufactured. We were rank amateurs in lamination of large members in those days, but the technique has developed with giant strides. There seems to be no limit now to our ability with edge gluing, scarf jointing and lamination to build members of almost any size and tailored to almost any shape.

Now, clearly, this opens the way to wide employment of wood from trees much smaller than what we were accustomed to deal with in the virgin timber. We no longer need to aim at the growth of huge old trees for a lot of uses that once required them. As a matter of fact, we have much more flexibility with the laminating technique than we ever had when we had to saw straight timbers from very large trees.

It must not be thought that the technique of lamination throws open the field of utilization to indiscriminate use of common grades and cull lumber -- that is not the case. For a lot of purposes lamination requires a pretty high grade of wood, and I believe that in the future this particular point will increase the importance of pruning in some species for the production of clear lumber. Yet there is a place in some heavy lamination for the inclusion of knotty material in the inner parts of the members. But let me repeat, the premium price will still be paid, I believe, for clear lumber.

I have referred already to the development of the exterior plywood industry. The most dramatic recent development to my knowledge is the return of wood to the box-car field, from which it looked as if it were going to be completely eliminated a few years ago. The so-called Unicel box-car is an all-wood car, with the exception of the chassis. I am informed that the same principles of stressed covered panel construction and lamination are also being applied to highway trailers. The field of usefulness of this type of construction would seem to be quite broad.

There also seems to be a continually increasing field of usefulness for plywood in general, because it is a thoroughly satisfactory material. Now this points up the necessity for forest management to look toward the production of veneer logs. I do not believe anybody thinks that they will have to be of the gigantic diameters that are being cut in the Northwest today. As a matter of fact, techniques for the cutting of veneers from second-growth Douglas-fir are already in use. None of it is coming from pruned Douglas-fir, but it can and probably will in the future. These developments, in my mind, point to a need to plan for the production of a certain proportion of clear wood, and I do not believe our management policies can ever lose sight of that fact.

In the harvesting of defective old-growth, research has come up with some interesting developments in utilizing so-called "white-pocket" Douglas-fir. White-pocket constitutes a tremendous obstacle to management in parts of the Northwest and California. It has been found, however, that certain grades of this material can be satisfactorily used where the stresses are not too high, and some of it is already moving in trade channels. Likewise, the cutting of veneer for certain utility grades of plywood has been thoroughly demonstrated and is already, in a small way, an accomplished commercial fact. It is not likely that these uses will satisfactorily absorb the very large volumes of white-pocket material found in harvesting old-growth fir in southern Oregon, for example, but research is opening other avenues.

We are always alert to opportunities for further utilization of hardwood dimension stock, by which I mean the small, sound, pieces cut from between the knots and decayed areas in trees from defective hardwood stands. Again, I do not anticipate that this field, or any other field concerned only with the use of wood as wood, will solve all the problems arising from defective hardwoods, but it will help.

In the field of modified wood we think in terms of adding to wood materials that modify its properties for higher usefulness. For example, we have learned to stabilize wood dimensionally against the come and go of moisture content; but it costs too much by the processes so far developed, except for special uses where the cost can be borne. There is perhaps nothing that would give greater satisfaction to the wood user than a cheaper method of doing this job. I am optimistic that it can be accomplished and we are directing our attempts through channels of fundamental investigation to solve the problem.

Similarly, the search for cheap and effective fireproofing treatments continues to receive attention. Both of these tasks are of importance in assuring the customer's continued satisfaction with wood and continued markets for lumber.

There is yet another field -- that of preservation -- in which there is renewed activity. It has become clear that there is a very large general field for wood preserved against decay and insect attack by sufficiently economical methods. That field transcends in volume the comparatively limited use of preserved wood to which we have been accustomed in the past -- that is, for crossties, piling, bridge timbers, mine timbers, and the like. The chemical industry continues to come up with new materials that offer promise as cheap preservatives.

In all problems of management, whether dealing with old-growth, young growth, hardwoods or conifers, it has become apparent in recent years that major contributions can be expected in utilization developments based upon fiber. There was a time not too long ago when the three major pulping processes were quite critical of the species and qualities of wood used. The sulfite process was practically confined to spruce, the true firs, and hemlocks. The kraft process, or sulfate, was more adaptable, and could take in practically all the conifers, and in recent years has been applied to many hardwoods. The groundwood process was restricted to those species giving pulps of adequate strength characteristics and bleachability, or light color to begin with.

Many years ago the Forest Products Laboratory recognized the approaching problem of inadequacy of our pulp species to meet rapidly expanding pulp and paper requirements and started a program to expand the pulpwood base. This program has been eminently successful. I shall not relate all the accomplishments in that field; they are familiar to most of you. The rapid increase in pulp and paper requirements in the last 20 years has made imperative the rapid implementation of the new processes, applicable to a broad range of species, developed by that program.

In recent years a great deal of attention has been given to increasing the yield of pulps by the so-called semichemical processes. These processes have been applied to a great many hardwoods and softwoods with uniformly successful results when proper variables have been introduced to take care of the varying properties of the woods. It can be stated now that about any species available in sufficient quantity can be made into a commercially useful pulp product. This does not imply that all of them will be, nor that the economics of various situations will lend themselves to the immediate establishment of pulp facilities. I only mean to say that as far as the technical base is concerned it looks as if we could make pulp out of almost anything and do a good job of it.

A major part of the requirements in these semichemical and high-strength kraft pulps has arisen in the packaging field; witness the very rapid growth of the corrugated-board and paper-board industry. About 20 years ago the Forest Products Laboratory began a research program on the fundamentals of the manufacture of corrugated boards. That program has paid rich dividends, not only in a tremendous increase in use for packaging of civilian goods, but in rapidly expanding programs in the packaging of military goods. As you are well aware, these fiber products have displaced a large amount of lumber in the packaging field. I cannot regard this as anything but a major gain for forestry, for the simple reason that the kinds and qualities of wood going into these fiber products are much less restricted than was the case with lumber for packaging. In other words, we get much broader forest utilization.

In recent years, also, we have stressed developments in the so-called synthetic-board field. The softboards and the hardboards have made very heavy inroads into the general field of wood consumption. While it is true that no artificial wood fiberboard has yet been produced that has the oriented strength properties of wood, nevertheless for a lot of uses the fiberboards serve well. As yet, few if any of them can be prescribed for general exterior use, because dimensional stability and ability to maintain their structure through long exposure have not yet been developed, except by rather costly resin impregnation. Work now in progress at the Laboratory, however, gives promise of the

development of processes for stabilization of fiber products economically. That would be an end greatly to be desired, because again fiberboards can take a very wide variety of qualities and species. For example, even the old-growth, white-pocket Douglas-fir makes satisfactory kraft pulp and satisfactory fiberboard, and this sort of industry could use the wood waste now developed in a wide range of forestry operations.

Now I come to one of the newest and most interesting fields in which research is operating -- the field of sandwich construction. One of the most important applications of this type of construction is in the field of housing. We have at the Laboratory a small test unit built of various kinds of panels developed on the sandwich construction principle. I hope you will all see it while you are here. This work is all still in a highly experimental stage, but it could well bring about another revolution in housing. And it will give us a field of usefulness for fiber products that will, again, enable us to harvest very judiciously and wisely in our woodlands.

I must not close this discussion without brief reference to the possibilities in wood sugar. I am certain that if our country were not blessed with such a wealth of agricultural resources, the wood-sugar industry would have long since become of major importance. I am also convinced that the development of basic knowledge in the conversion of wood to molasses for stock feed and as a base for fermentation industries and the growth of protein foods is important in shaping our present program of national defense, and that it will be important in a program of ample feed and food supply for a not too distant future. Suffice it to say that we are continuing our exploration of the possibilities in this field. Technically we are in good shape. The economics of the processes involved are still unknown.

May I close with this observation. Wood becomes more valuable as our great industrial plant expands and our population increases. Wood helped tremendously in the building of this country, and in the implementation of our industrial plant, and it has now assumed major importance as an industrial raw material. No other country in the world is so well equipped to use wood well as is the United States; no other country could benefit more from forest products. Wise utilization coupled with wise land use and good forest management can give amazing wealth to our people from our forests.

INSECTS AND DISEASES -- THE GREATEST FOREST MENACE

By Lyle F. Watts, Chief, U. S. Forest Service
(Talk presented at opening general session of the Seventeenth North American Wildlife Conference, Miami, Florida, March 17 - 19, 1952.)

I am going to talk today about bugs, about borers and beetle-grubs, about such unlovely things as blights, cankers, rusts, rots, and other parasites that affect the trees of our forests. Now I want to say at the outset that I shall not attempt to tell you the number of spots to be found on the thorax of an elm leaf beetle nor the special identifying characteristics of Fomes igniarius. I am neither an entomologist nor a specialist in forest pathology. But having worked in the forests for 40 years and having made inspections of forests in every section of this country I have seen plenty of evidence of the damage that these forest insects and diseases can do. And as head of the agency responsible for Federal leadership and cooperation in promoting the protection and wise use of the forests of the United States, including direct administration of 180 million acres of National Forests, I am extremely interested in the forest insect and disease problem. Indeed the matter seemed important enough for me to make it the major theme of my 1951 annual report as Chief of the Forest Service.

My observations throughout the country lead me to believe that the title of this paper is no exaggeration -- that insects and diseases are indeed the greatest natural enemy of this country's forests. They cause a greater loss of merchantable timber each year than that caused by forest fires. Recent forest reappraisal figures will back up that statement. During the decade 1934 to 1943 the average timber loss from fires per year was 460 million cubic feet. The estimated annual loss from insects and diseases during the same period was 622 million cubic feet.

And of course that estimate covers only the more conspicuous, easily measured losses, in terms of commercial timber volume. It covered mainly those losses resulting from heavy outbreaks or epidemics of some of the worst bugs or diseases. It did not cover damage to future growth of timber, nor damage to scenic or recreational values. It did not cover what you might call the normal damage caused by the thousands of other pests and parasites that are always at work in the forests.

In protecting our forests against fire we have made very substantial progress. It is true that we still have more than 60 million acres of forest land without any organized protection as yet, and that there are many other places where our protection set-up needs further strengthening. But in general forest fire control in this country has now reached a high degree of efficiency; the need for fire prevention is widely recognized, and where organized fire-control has been applied there have been significant reductions in area of forest burned. The control effort against destructive forest insects and diseases, however, has not kept pace. Through research by the Bureau of Entomology and Plant Quarantine, and the Bureau of Plant Industry, Soils, and Agricultural Engineering, and other agencies, we have made significant advances in our knowledge of these pests, and in the development of pest control techniques; and we have attained marked success in numerous individual pest control projects. But our total attack against the insect and disease menace to the forests, both for the research and for control, has been of relatively insignificant proportions. The over-all damage caused by these pests indeed seems to be on the increase.

In epidemic outbreaks, many of these insects and diseases can be tremendously destructive. The chestnut blight wiped out one of America's finest

trees throughout its entire natural range. The American chestnut was a timber tree of great commercial value. Its nuts were prized both for human food and as food for wildlife. Under a spreading chestnut tree the village smithy stood. Now from Maine and Ontario to Florida and Mississippi you can find only the whitened snags or stumps of blight-killed chestnut trees, and around the stumps occasional sprout growth that will in turn soon succumb to the destroying fungus.

In western Colorado, during the past ten years, bark beetles have killed more than 4 billion board feet of timber. That is equal to the amount of lumber that would be needed to build 400,000 five-room houses. It is 16 times more timber than was destroyed by forest fires in the entire Central Rocky Mountain region in the past 30 years. These bark beetles have left gray ghost forests of dead trees over thousands of acres. Unless the spread of the epidemic is checked, they threaten Engelmann spruce stands throughout the central Rocky Mountain Region.

In Idaho and Montana, bark beetles ravaged lodgepole pine stands on millions of acres during the 1920s. The bug-killed trees created forest fire hazards that still help to make that region one of the toughest and costliest for fire protection in the whole United States.

From about 1910 to 1920 an insect called the spruce budworm ravaged the spruce and fir forests of New England and eastern Canada and Minnesota. It was estimated that this insect destroyed as much timber as it would have taken to meet this country's requirements for newsprint and other paper products for 25 years. This same spruce budworm is again occurring in a far bigger and more serious outbreak in Canada, and also in parts of New England and the Adirondacks of New York. It has also infested large areas of Douglas-fir forest

in the Pacific Northwest. There, during the past three years, the Federal Government, the States of Oregon and Washington, and private forestland owners have joined forces in a large-scale spruce budworm control program that has been quite successful on the area so far covered.

A fungus disease that has spread clear across the country in less than 50 years is the white pine blister rust. It attacks three of our leading commercial timber species. The disease may start as a tiny spot on one of the needles of any 5-needle pine tree. Slowly but steadily it spreads to the twig, to the branch, and eventually to the main trunk of the tree. Seedlings and saplings are killed in just a very few years. It may take many years to kill a large tree. But once a stand is infected, the white pines are doomed in the future forest unless control measures are taken.

The white pine blister rust can be controlled, by eliminating ribes -- its alternate host. It is a long and costly job, but there are some 26 million acres in this country where white pine is of such importance that control work is economically justified. Since 1922, a substantial part of this control area has been covered, and we hope to complete control on the entire designated area before many more years. But even then we shall be surrendering to the disease an immense amount of valuable white pine timber growth that occurs in scattered and in mixed stands outside of the designated control area.

Another fungus disease the oak wilt, is now threatening our valuable oak trees. The disease has spread rapidly during the past few years. The disease can attack all species of oaks native to the central and eastern states, but it develops most rapidly on the red and black oaks. We are hoping that research by State agencies and by the Department of Agriculture will develop an effective way to check the disease before it gains too much momemtum.

In the South, the brown spot needle blight and the little leaf disease menace our southern pine timber. Pole blight is a recently discovered disease affecting young western white pines in the northern Rocky Mountains. There is the Dutch elm disease that is killing many of our prized American elm trees. There are the gypsy moths and tent caterpillars, the larch sawfly, the bronze birch borer, the Douglas-fir tussock moth, the spittle bugs, white grubs, and pine weevils. There are the borers and termites, and the fungi that cause rot and decay, which do millions of dollars of damage every year, both to wood in the forests and wood in use in our houses and farm buildings and factories.

Some of the worst of these pests are of alien origin. The chestnut blight came into this country from Asia, and the white pine blister rust and Dutch elm disease came from Europe. The gypsy moth and the Japanese beetle are imported insect pests. Such introduced pests often become especially destructive in their new enviroment. We are properly concerned these days over the danger of alien subversives in ideological and political fields. We must be just as alert to the danger of alien insect and disease saboteurs in our fields and forests.

Through very limited research and by experience we are slowly learning more about forest insects and diseases. Our progress so far has been much too slow. But with the knowledge thus far gained, and with the recent development of new materials and techniques for combatting these pests it is now possible to get effective control of many of the most destructive forest insects and diseases. In the Pest Control Act of 1947, Congress has provided the foundation for an effective program of forest insect and disease control. The program authorized by this Act should be fully implemented. We need continued and

greatly expanded research on these pests and their control. We need an expanded and effective detection system for prompt discovery of any new outbreak of insects or diseases in the woods, and also to prevent the entry of new foreign pests. And we need provision for prompt control action, either directly by the Federal Government, or cooperatively with the States, against insect and disease build-ups and potential epidemics.

Some of the new insecticides are very powerful. The Forest Service has worked closely with the Bureau of Entomology and Plant Quarantine and the Fish and Wildlife Service in studies and tests of their use. DDT, at a strength of one pound per acre, has been used successfully in large-scale aerial spraying operations against the gypsy moth in the East, the spruce budworm in Oregon, and the tussock moth in Idaho, without damage to birds and mammals in the forest. There is the possibility that the spray may affect fish, either by killing them outright or by reducing the supply of fish food organisms. In the budworm and tussock moth sprayings, however, the DDT at the strength used actually killed very few game fish -- almost none -- and the effect on fish foods was variable and not permanent.

But these new and powerful insecticides have been and should be used with great caution, and only after very thorough study and testing of their potential effects on wildlife and other values. And, if there should be danger to other values, there must be a thorough weighing of all values at stake.

Here again, in this matter of insecticide use, the need for a strong research program is emphasized.

I have mentioned only a few of the more serious insects and diseases. There are thousands of such pests always at work in the forests. Some of the

bugs and fungi and bacteria are beneficial -- for instance, those that help pollination, or those that help convert leaf litter into humus. Some prey on others and so help toward some degree of natural balance, and in many cases the damage to timber caused by destructive kinds is relatively minor, and more than offset by new tree growth.

Quite naturally I have stressed the importance of forest pest control from the economic standpoint. You see, we have the very great problem of meeting our expanding needs for lumber and pulpwood and other forest products. But commercial needs are by no means the whole story. Let's take a look at recreational values.

Have any of you visited the Laguna Recreation Area in Southern California recently -- either the National Forest or the State area? If you observed what you saw you must have been shocked, just as I was, at the number of dead and dying pine trees. It is an epidemic beetle attack, and we just don't yet know how to control it.

One of our prized wilderness areas is the Flat Tops Wilderness in Colorado. Much of this area has now been converted from a delightful spruce forest to a graveyard of gray, dead snags -- due to the Engelmann spruce beetle kill. And what was once a relatively easy fire risk is now an area of very high fire hazard.

Much of Yellowstone National Park was included in the lodgepole pine beetle kill area of the '20s. Because of the dead trees, standing and down, there is still a very difficult fire problem.

I shudder as I see big elm trees on the Mall in Washington, D. C. being removed one after another because of the Dutch elm disease. Is that disease going to cost us one of our favorite trees for ornamental planting?

The oaks of various species are what provide much of the beauty, as well as the wildlife food and the commercial value, of the forests of the North Central States. Could it be that the oak wilt disease will follow the pattern of the chestnut blight and decimate that whole family of trees? What would be the loss to recreation and esthetic values? What would be the effect on wildlife?

I could go on and on, painting a very black picture. I think one of the most serious aspects of the situation is the lack of public understanding of the problem. We will not do an adequate job of forest insect and disease control until the public has some knowledge of the danger to our forest resources and of the values at stake.

I will venture a guess that if you would go out on the main streets of Miami today and ask the first one hundred adult persons you meet about forest fires, 95 would be reasonably well informed as to the danger of fires and the need for forest fire control. They have read about fire prevention, heard about it on the radio, seen it on television and on numerous signs and posters.

But if you would ask the same one hundred persons about forest insects and diseases, I'll venture that 95 of them would not even be aware that trees in the forest are bothered by such things. I doubt if <u>any</u> of them would know that forest pests do more damage than fire.

I cannot emphasize too strongly the need for an aggressive public information program on forest insects and diseases by all conservation agencies. I think the Number 1 job in solving this problem is to get a better understanding of what the problem is. The necessary funds and support for research and for control activities, by the Federal Government, the States, and the private forest owners, will come much more freely once the menace of forest pests is well understood.

The late L. O. Howard, the noted entomologist, suggested that the end of the world, so far as mankind is concerned, could quite conceivably come about because of insects -- that through destruction of man's food and fiber crops, through the spread of his parasites and diseases, through sheer multiplication of numbers, the insects could win out over man in the struggle for survival.

I don't believe we are in danger of the insects taking over the world. I'm still betting on man. But as I have pointed out, insects and diseases <u>are</u> making new and great inroads and causing heavy losses in our forests. We certainly don't want to let the forests go to the bugs by default. And certainly we are not going to win the battle with the bugs unless we get in there and fight. Our total effort in forest insect and disease control so far has been far from adequate.

Statement by Lyle F. Watts, Chief, Forest Service, before the Senate Committee on Expenditures in the Executive Department, with respect to the Committee Print of S. 1149, a Bill "To provide for the organization of the Department of Agriculture in accordance with the recommendations of the Commission on Organization of the Executive Branch of the Government, September 11, 1951

Mr. Chairman and Committee Members:

I am Lyle F. Watts, Chief of the Forest Service. I appear before you in compliance with a request from the Committee Chairman to express my views on S. 1149. The Bureau of the Budget has expressed to you its position respecting the proposal in Section 7 of the bill to transfer the Bureau of Land Management to the Department of Agriculture. In recognition of that position and as Secretary Brannan has indicated, I shall try to present to the Committee some basic facts relating to that proposal. Because a proposal was made here the other day to transfer the national forests to a Department of Natural Resources, my statement will include facts pertinent to that proposal. I hope my comments will be helpful to the Committee in its consideration of this organization problem.

The national parks and Indian reservations are not involved. In the Hoover Commission sense, the "major purpose" of their administration is social.

First, I want to say that I have been a conservationist in the service of the United States for nearly 40 years. When I entered the Forest Service in 1913, it was already the dominant public conservation agency. In fact it was the only agency in Government which was seriously concerned with conservation of our natural resources. The Forest Service was then administering a sound and effective forestry, grazing, and watershed program; and to this day it has maintained the research and facilities to back up such a program.

It won't be many years before I shall retire. So my personal career is not at stake in this bill. My concern is solely with what will be best for our country. I believe that proper government organization is essential to an effective national conservation program. I believe further that such a program is of the utmost importance to our national welfare and security.

I.

Forestry and grazing are agricultural functions. Trees and grass are crops. Like corn, wheat, and cotton they start from seed. They respond to the same kind of care given other crops. They are harvested -- or at least they should be harvested -- so that one crop follows another. Their culture is based on the biological sciences, which are chiefly and in many cases exclusively the concern of the Department of Agriculture. Insect and plant disease control, genetics, soil science and other agricultural sciences are as important to growing crops of trees and grass as they are to field crops.

Moreover, the same plants and plant pests often relate to both. The bluegrass of Kentucky and Iowa is also one of the more important forage plants on our western mountain ranges. Crested wheatgrass is planted both by farmers for their pastures and by stockmen on their ranges. Currant and gooseberry bushes are host plants to a rust that kills white pine.

Forestry and grazing are inseparable parts of agriculture. It takes the same know-how to grow timber in the farmer's woods as it does in forests owned by anyone else. Farm woodlands are indispensable to the Nation's timber supply. Farmers own one-third of all our commercial forest land -- 139 million acres.

Turning it around, woodlands are indispensable to the farmer. Forest land makes up half the total farm acreage in New England and about 40 percent of all farm acreage in the South. Forest products provide farmers in many regions with a valuable source of cash income. When forest land is properly

managed, the timber harvest can be as regular and dependable as any other crop.

Farm forestry is an integral part of the Department's farm program. Farmers look to the Department of Agriculture for help on farm forestry just as they do in animal husbandry, fruit growing, or other crop problems. The small nonfarm forest properties of 125 million acres -- almost as extensive as the farm forests and often intermingled with them -- face exactly the same problems and should be served by the same agency.

Similarly no line can be drawn between open-range livestock production and livestock grown on farms. In the western States and in the South much livestock is grazed part time on forest-range and part time on farm pasture. Few livestock operations in the western range country can be separated from the base of privately owned, feed-producing ranches. Cattle and sheep which fatten on the open-range are certainly agricultural products.

Nor can any sharp line be drawn between forestry and grazing. In much of the South and West the same land is used to grow both trees and grass. Thus all such lands are interrelated parts of the Nation's agricultural enterprise.

And from the watershed angle, forest and grazing lands are inseparably linked with field-crop lands. In every watershed, we must have a unified approach covering all lands to effectively control erosion, floods, and water supply. Soil conservation and watershed management are agriculture, and the Department of Agriculture, under the Flood Control Act of 1936, is responsible for watershed surveys on all lands. Within the Department, the Forest Service and the Soil Conservation Service work together closely to reduce damage from floods and sedimentation on forest, grazing, and other crop lands.

Adding it all up, any way you look at it the answer is the same: Forestry and grazing are agriculture.

II.

Most Federal forest and grazing work is already in the Department of Agriculture. For the past three-quarters of a century the Department of Agriculture has been carrying on forestry activities by congressional direction. First there was a Commissioner of Forestry, then a Division of Forestry, later a Bureau of Forestry, and in 1905 the Forest Service was established. At that time the forest reserves, which had been created out of the public domain and for that reason were under the jurisdiction of the General Land Office of Interior, were transferred by Congress to the Department of Agriculture.

Somewhat paralleling the history of the national forests is the much more recent story of the Soil Conservation Service, first established in the Department of the Interior. The new agency was transferred shortly to the Department of Agriculture, where the sciences related to soil conservation had been developed and trained men were available to provide necessary technical leadership.

At the present time all Federal forestry and grazing research and practically all assistance to private owners as well as the preponderance of acreage responsibility, including both public and private lands, are in Agriculture.

With respect to forest research, the Forest Service is responsible for Federal effort in management, watershed influences, economics, and products. It also handles Federal grazing research for both forests and open range. I think it especially important that this bill or its legislative history recognize the need for continuing management and operational

research -- and that is our type of research -- under the agency having action responsibilities. This was recommended by the Hoover Commission.

There are other research activities in the Department affecting forestry and grazing:

The Bureau of Plant Industry, Soils, and Agricultural Engineering is responsible for the introduction and development of new pasture and open-range forage plants, soil surveys as a basis for successful reseeding and reforesting, and research on forest disease problems.

The work of the Bureau of Entomology and Plant Quarantine includes research and control work on forest insects.

The Bureau of Agricultural and Industrial Chemestry is doing research on the use of cellulose and lignin; also on naval stores.

The Bureau of Animal Industry and the Forest Service jointly operate range livestock experiment stations at Dubois, Idaho; Miles City, Montana; Tifton, Georgia; and Tidewater, North Carolina.

In all of this research work, through joint operation and otherwise, there is the closest kind of integration and cooperation between the Forest Service and other agencies in the Department of Agriculture.

Practically all Federal assistance to private owners for forest and grazing operations is handled by the Department of Agriculture. These tremendously important and far-flung activities include:

1. Forest fire prevention and control on 427 million acres of privately owned land -- nearly one-fourth of the total area of the United States. This is a cooperative project with 43 States and involves annual expenditures - Federal, State, and private - of 31 million dollars.

2. Aid in control of destructive forest insects and diseases. The Department has taken the lead in identifying the causes of these attacks, develops effective control measures, and operates large-scale control programs. Much of this work also is done cooperatively with the States and private landowners.

3. For the 4 million private forest owners, the Department provides technical advice and assistance in forest management, harvesting, marketing, and processing forest products. Here again the work is handled in cooperation with the State Foresters of 40 States.

4. The Department is assisting private owners in reforesting some 60 million acres of logged-off, burned-over, non-productive forest land. This year, in cooperation with State forestry agencies, about 400 million trees will be made available at low cost for planting on these lands.

5. Educational assistance to private landowners in forestry and grazing is provided through well-established channels by cooperation with the Agricultural Extension Services of the Land-Grant Colleges in 45 States.

6. Farm conservation plans developed by farmers with assistance by Soil Conservation Service personnel always include recognition of the farm woodland, improved pasture and range as integral parts of the whole farm enterprise.

7. Financial assistance to farmers through loans of various types by the Farm Credit Administration and Farmers Home Administration; also price supports for a number of farm products, including naval stores.

8. The Agricultural Conservation Program of the Production and Marketing Administration includes payments for improved forestry and grazing practices and for better forest practices in the naval stores industry.

9. Research in growing, managing, and protecting timber and grass crops. Much of this is in cooperation with State Agricultural Experiment Stations.

Acreage responsibility (including both the administration of Federal lands and services to other lands) is chiefly in the Department of Agriculture. The Department of Agriculture provides service for 76 percent of all our forests and 68 percent of all our open-range and farm pasture. If Alaska is excluded, the percentages served by the Department of Agriculture become 91 percent for forest land and 79 percent for open-range and pasture lands. These lands are widely distributed from coast to coast. Following are the pertinent figures for the continental United States, taken from a joint Agriculture-Interior-Budget Bureau study.

	Forest Land	Range, Pasture, and Desert (Including forest range)
	Million Acres	
Department of Agriculture		
a. Public land administered	123	86
b. Private and State land served by research, technical guidance, financial and educational assistance, cooperative protection, etc.	444	735
c. Total under Agriculture	567	821
Department of Interior		
a. Public and Indian lands administered	55	215

With your permission I shall supply for the record the more detailed table on which the above summary table is based.

The huge acreage of public domain in Alaska is not well known. Much of it is nonproductive. There are perhaps 40 million acres of commercial forest. Further exploration, surveys, and land classification are needed to determine the best use of this land.

If for the moment we think only in terms of federally administered commercial forest land in the continental United States, the Forest Service manages 148 national forests in 38 States, including 74 million acres of commercial forest. The Bureau of Land Management administers 6 million acres of commercial forest.

III.

The Nation's forest and grazing situation calls for strong, unified Federal leadership.

We have made great progress in forestry, but have far to go. Our forests are still operating in the red, and the quality of our timber is getting poorer. There is inadequate provision for restocking and future growth. Millions of acres are still without organized fire protection.

Similarly, much of our grazing land is overstocked, run-down, and eroding. For the western open-range country as a whole, grazing capacity has been cut in half by misuse. We face a huge task of restoring forage crops and building up livestock production on run-down ranges.

These are hard facts, but they are facts. We must restore these lands to good condition and keep them that way. The Nation needs their products now. It will need them even more in the world struggle ahead. Nor can these lands be allowed to spew forth flood waters and silt to ruin other lands and property. The economic prosperity and stability of many people and communities are dependent upon their productiveness.

The progress that is needed will not be achieved without unified leadership.

The major reason why forestry has made the progress that it has in this country is because Federal forestry activities have been largely unified since 1905 in one bureau in one department. The public generally and the Congress, regardless of party, have consistently supported the Forest Service in its fights for the conservation of our renewable natural resources.

If we are to have a truly national policy and program for the conservation of renewable resources, that policy and program must embrace private as well as public forest and range. The bulk of such public land is in the West. So a public land program would be dominantly a western program. However, 64 percent of all forest and 77 percent of the commercial forest is in the East. The bulk of the Nation's forage production is also in the East.

Public forests include less than one-fourth of the Nation's commercial forest land. The acreage of farm woodland is greater than that of all public forest of commercial quality.

Similarly, private open-range and pastures aggregate 507 million acres; Federal ranges only 243 million. Farm livestock production is far in excess of livestock production on public lands.

A division based on ownership is also untenable with respect to watershed relations. Watershed problems cut across public and private land boundaries; but each watershed must be treated as a unit. Again in the Hoover Commission sense, the "major purpose" which the lands serve should be the basis for action -- not who owns it.

It is clear that a national conservation program must involve more than the public forest and range. The "major purpose" of forest and grazing lands is agricultural regardless of ownership.

IV.

Agricultural functions are divided. Unification would promote economy and efficiency and eliminate duplication.

In this connection I wish to comment on several classes of publicly owned land.

Grazing districts and public-domain grazing land

Grazing on 147 million acres of Taylor grazing districts in the West and on 31 million acres of unreserved public domain is administered by the Bureau of Land Management. On these lands also are some 4 million acres of commercial forest.

Prior to 1934 there had been no control over grazing on these lands. Most of it was overgrazed and much of it seriously eroded. These grazing-district lands are tied to the national forests and the adjacent private lands in a range economy that requires use of different lands at different seasons of the year. In many cases the cattle and sheep which graze on national-forest lands in summer use grazing-district lands at other seasons. And they are also dependent upon privately owned feed-producing base properties.

In Utah, for example, the national forests take in most of the mountain land, a strip of private land occupies the irrigable bench lands and adjacent lower slopes, while the grazing-district lands are chiefly the dry interior basins and low non-timbered mountains.

In southern Idaho, by way of contrast, the grazing-district lands are adjacent to the national forests on the lower slopes, while the private ranch land is confined to narrow stringers along the valley bottoms.

Obviously the job of administering and developing the range resource wisely, whether in national forests or grazing districts, is handicapped by divided responsibility. Unification would result in administration from the same regional offices and under uniform regulations to the extent that this would be consistent with basic law. Procedures for the use of both lands by the same livestock could be simplified, and it would be feasible to make better use of men and equipment by equalizing work loads between seasons. In many cases, men who work on the high-mountain ranges in the national forests during the summer could work on the lower-elevation grazing districts in the winter.

Public Domain in Alaska

Alaska contains a huge acreage -- nearly 300 million acres -- of unreserved public domain now under the custody of the Bureau of Land Management. This is believed to include 125 million acres of forest, about one-third of which may be of commercial quality.

In southeastern Alaska, where climatic conditions are reasonably favorable, two national forests of 21 million acres are administered by the Forest Service.

The ultimate use of the unreserved public domain is not clear. Some of it is suitable for homesteading and the development of farms. Parts of it will find its best use in commercial timber production. Except for mining, such utilization and development as can now be foreseen will be agricultural, including forestry and grazing.

Among the immediate needs of this area are agricultural research, timber surveys, and soil classification. These are agricultural functions.

Oregon and California revested lands

The heavily forested so-called O&C grant lands in western Oregon include about 2 million acres intermingled with, adjacent to, and practically surrounded by some 6-1/4 million acres of national forests. Of these, some 450,000 acres are intermingled checkerboard fashion with national-forest lands. These revested lands were originally granted by the Government to aid the building of a railroad from Portland, Oregon, to the California line, and of a wagon road from Coos Bay to Roseburg. They were later repossessed by the Government because of violations of conditions of the grants.

The Department of the Interior claims another half million acres within the national forests in a similar mile-square checkerboard pattern. These are known as controverted lands. These controverted lands were also included within the boundary of the original grants, but since title to them never passed to private owners, they have continuously been an integral part of the national forests. The Attorney General in response to a request of the Secretary of Interior in an opinion dated September 6, 1940, concluded: "....it is my opinion that a disturbance of the continued administration of these lands by the Department of Agriculture as a part of the national-forest reserves would not be warranted under existing law."

Nearly all of the O&C land is commercial forest land; more than half still supports virgin timber. For the most part these lands are identical in character with adjacent national-forest lands. However, the Act of 1937 which provided for their administration left jurisdiction in what was then the General Land Office, which previously had custody over them. The result has been two Federal agencies with similar functions operating in the same locality.

A separate organization has been set up to handle timber management on the O&C lands. Independent and overlapping negotiations by two agencies with identical timber operators are confusing to the operator and not in the public interest. This duplication provides the opportunity for timber purchasers to try to whipsaw one agency against the other.

Duplicate organizations are so unworkable in the case of fire protection that responsibility for protection of the O&C lands has been contracted to the Forest Service and the State within their respective protection areas.

The Hoover Commission said the total result of this checkerboard administration has been "public confusion, unnecessarily duplicating services, and unsound management." Under unification, the O&C lands and the national forests would be administered from the same regional and local offices. This would also permit administration of the O&C lands and the national forests under uniform administrative regulations, except as requirements of law would make this impossible. It would facilitate administration, strengthen supervision, simplify relations with users, and eliminate much confusion.

.....

In conclusion, I want to say I have tried to present some of the basic facts which I hope will be helpful to the Committee in its consideration of this organization problem. I am sure that everyone will agree that a sound solution of this problem is essential to the development of a strong and vigorous forest, range, and watershed conservation program in this country.

Finally, and perhaps above all, it would encourage strong national leadership in forestry and grazing. Such leadership is urgently needed today and for the future so that these renewable natural resources -- trees and grass -- may contribute their full measure to economic and social welfare and to national security.

COOPERATING FOR PROGRESS IN NEW ENGLAND FORESTRY

Address by Lyle F. Watts, Chief,
Forest Service, U. S. Department of Agriculture
at 25th Annual Meeting, New England Council
Boston, Mass., Nov. 17, 1950

I. Introduction

Your program committee suggested that I review the activities of the Forest Service in New England. I have done so and am strongly impressed by the extent to which progress is being achieved by cooperation.

This is noteworthy because, as an outsider, I understood New England had a reputation for rugged individualism. But, as I stopped to think of it, the establishment of the New England Council 25 years ago was a concrete expression of a desire to work together. To the founders of the New England Council, New England problems loomed as regional problems rather than State problems.

Furthermore, I understood that New England has traditionally stood for self-determination and against enlargement of the scope of Federal activities. But your forest history reveals ample evidence for a contrary view.

It was New England which took the lead in working for Federal purchase of mountain lands for National Forests early in the century. The New England States were quick to see the need for Federal cooperation in forest fire protection under the Clarke-McNary Law. They cooperated wholeheartedly with the Forest Service in administration of the Civilian Conservation Corps during the depression. And New England's call for Federal help to deal with the 1938 hurricane disaster was spontaneous and sincere.

Many recent events reveal a growing appreciation of interdependence and need for cooperation. More and more we are being led to realize that regional problems cannot be disassociated from national problems.

So it is appropriate that "Cooperation for Progress" should be the theme of my talk here today. As a federal official I shall emphasize cooperation between the Federal Government on the one hand and the States, industries and private owners on the other. But I hope you will not regard me as a power-seeking bureaucrat to be eyed with suspicion. I would like you to feel that I am a partner working for New England as well as the national public interest.

There is no need to tell you what the forest industries mean to New England, especially in the three northern States. And there is no need for me to dwell upon the importance of forest recreation in this region. You know more about these things than I do.

But it should be worth while to review some elements of progress to emphasize the direction in which we are going. It should also be worth

(Over)

while to check up on the forest resource situation. And, finally, with such a background we may profitably take a look ahead.

II. Significant Aspects of Current Situation

The Forest Survey

Let's look at the current situation first.

We do not yet have an adequate picture of New England's forest resources. Past estimates have been based on partial or inadequate surveys and informed judgment. Only since the war has the Federal Forest Survey come into this region. New Hampshire is the only State for which figures have been released, although field work has been completed in Vermont. This survey is itself a good example of cooperation, and progress is related to the readiness of the States to participate.

I want to caution you against drawing conclusions as to trends by comparing our survey results with previous estimates. The New Hampshire survey, for example, reported more saw timber than shown in our 1945 Reappraisal project. Yet no one familiar with the situation would support a conclusion that New Hampshire forests, taken as a whole, actually have more saw timber than was true five years ago.

The Forest Survey totals up everything on the ground as shown by aerial photographs, without regard to quality or economic utility. Less-systematic estimates, conceived primarily in terms of current commercial utility, almost always overlook some of the less desirable species, the smaller timber, and the scattered trees which our Forest Survey picks up.

The important concept to keep in mind in interpreting forest resource statistics is the volume, character, and quality of growing stock in relation to that which is needed to make effective use of the productive capacity of the land.

In New Hampshire, for example, some of the important facts behind the over-all estimates are:

Only 35 percent of the total volume of all live trees 5 inches and larger in diameter, is in sawlog material. One-sixth is in cull trees.

Half of the saw-timber volume is in trees less than 15 inches in diameter. Only 45 percent is in stands that exceed 5,000 board feet per acre.

Two-thirds of the softwood saw timber is in low quality trees with less than one-third of the merchantable stem free of limbs or other defects.

At least half of the hardwood saw timber is No. 3 logs which will yield less than 30 percent of lumber in grades of No. 1 common or better.

Timber growth is reported in excess of commodity drain. But remember when drain is principally in softwood saw timber it is not of much avail to have a large excess of growth in hardwood pole timber, as is the case in New Hampshire. Nevertheless, the growth-drain relationships highlight the real forest problem. The utilization pressure on white pine saw timber is clearly in excess of that which can be sustained by current growth. On the other hand, the excess of hardwood growth reflects the lack of economic outlets for the large volume of low-grade timber which now occupies the ground.

Better Economic Setting For Forestry

These facts, applicable in a broad way to all of New England, present a continuing challenge. They should not be viewed with complacency. But they can be faced with courage and confidence. For today the economic setting for forestry in New England is better than it was before the war. The pressure of low-cost western lumber on eastern markets has been greatly reduced. Lumber prices are high and likely to stay so. In the wood pulp industry the great differential in costs, which put the North at a disadvantage in competition with the South 20 years ago, is being reduced.

Better Utilization Practices

I am told that New England has been alert to its problems of forest utilization and that its industries are better prepared to go forward in forestry than in the past.

I understand that great progress has been made in better manufacture and merchandising, especially of white pine lumber. Better returns obtained through more accurate manufacture, sawing for specific uses and attention to grade - all focus attention on the growing of larger and better quality timber.

I understand also that great changes are under way in the handling of pulpwood. Mechanization of such operations affords ample opportunity for the exercise of Yankee ingenuity. Of vast potentiality for forestry in New England also is the increased use of the dense hardwoods for pulp.

Without wanting to claim undue credit, I might point out that developments such as these are based in considerable part on Forest Service research. We think that progress is being stimulated by our Forest Utilization Service which helps forest operators and landowners take advantage of available technical information.

One indication of the improved outlook is to be found in a recent sale of 25 million board feet of timber on the White Mountain National Forest. This is the first large sale in which pulpwood, sawlogs, veneer logs, and bolts for special products will be cut in a single integrated operation. The purchaser is a logger who will sell the products to others for manufacture. In such an operation the forester is not handicapped by inadequate utilization in the application of good silvicultural practice.

Outside the National Forests, I am told that private owners and operators in New England are giving more serious attention to forest management than ever before.

Water

I want to speak of one other aspect of the current situation. In New England, as well as in parts of the country with less adequate rainfall, water is being recognized increasingly as a limiting factor in community and industrial development.

New England is power conscious. Not having natural fuel resources suitable for power generation within its borders, New England must lean heavily on water power to meet the requirements of industrial growth.

The suggestion that forest management has a significant relationship to New England's water resources is a telling way to arouse widespread interest in forestry progress for the region. It should be more generally used. Our research and flood-control surveys are piling up evidence that both floods and low-water stages in New England streams can be significantly affected by good forest management. And in New England the problems of low-water flows are as important as those of floods. They relate to stream pollution, sanitation, and fishing, as well as to base-load capacity and other power factors.

III. Elements of Cooperation in Recent Progress

Now let's take a look at some elements of cooperation in recent progress.

Perhaps the most significant example of region-wide cooperation is the Interstate Forest Fire Compact set up here last year. This had its genesis in the Maine forest fire catastrophe of 1947. That fire experience brought home the need for cooperation across state lines. The Forest Service cooperated by flying in fire-fighting equipment from the Pacific Northwest and sending experienced men from other regions to assist in fire fighting.

Stimulated by the Council of State Governments and certain insurance interests, the States worked out a compact for joint action in forest fire control. A commission composed of three men from each state, employing an executive director, is preparing a comprehensive plan of action. Major opportunities under this compact lie in correlating detection service from fire towers overlooking more than one state, in joint plans for airplane patrol, and in interstate training programs. I hope it will go much further.

We all anticipate a much-needed improvement in state fire control plans under this compact. The Forest Service stands ready to cooperate in backing up such tangible state plans by assistance in getting airplanes, moving men, procuring equipment, etc., when needed.

Technical assistance in woodland management illustrates recent progress in federal-state relations. In this program of federal aid, administered entirely by the States, resident foresters are assigned to specific localities to help farmers and other small owners in the management of

their woodlands and the marketing of their forest products. The States of Vermont, New Hampshire, and Connecticut are now fully covered by such woodland management projects. This public program supports and supplements private cooperative projects such as "Connwood, Inc." and the New England Forestry Foundation.

What has been happening in research illustrates cooperation involving private owners as well as public agencies. In recent years the Forest Service has strengthened its research locally by establishing work centers and experimental forests. In Maine, a number of paper companies joined hands in making available to the Northeastern Forest Experiment Station an experimental area of 3,800 acres for pulpwood research. Forest owners in Maine also took a long step forward in cooperation when they pooled forest resource data formerly considered confidential in order to help build up a map classifying forest lands as to vulnerability from attack by the spruce-budworm.

Such cooperation is perhaps in no small measure based on the years of joint discussions of regional problems and needs by the Northeastern Forest Research Advisory Council. On this Council, representatives of the States, the schools of forestry, conservation, agricultural, and industrial interests meet to help the Director of the Northeastern Forest Experiment Station establish and maintain a research program geared to the needs of the region. In recent years this type of cooperation has been further decentralized by the establishment of local advisory groups to help guide the work on some of our experimental forests.

IV. Looking Ahead

The National Forests

Turning now to a look ahead, I want first to speak of the national forests. Though not large in relation to the total forest area of New England, the two national forests here have a significant role to play in the New England situation.

Currently, some 20-25 million board feet of timber is being cut from the national forests each year. This is only about one-third of the allowable cut. Right now the volume of sales is limited in part by the manpower we have available to handle the work. But basically, our sales volume has been limited because the demand for timber of the character and accessibility available on these forests has been limited.

Important to New England is recreational use of the national forests. The number of people visiting these forests has more than doubled since the war. No new recreational facilities have been constructed since the hey-day of the CCC. All our important facilities are badly overcrowded. Our policy is to make simple facilities for camping, picnicking, hiking, and skiing available for the enjoyment of the great mass of the common people. At the suggestion of the Congressional Appropriation Committee, which has been loath to provide enough money for maintenance, we levied charges for use of the bathing facilities at Campton Pond last year. We do not anticipate that such charges will become general at all our recreational areas.

Perhaps even more vital to the region, though not so generally recognized, is the watershed value of these national forests. These lands were purchased primarily for watershed protection. Their value as regulators of streamflow and sources of supply for local communities is being emphasized as the role of water in the New England economy becomes critical. We are attempting to test all our resource development and use policies in the light of their impact on water. But we need to know much more about our watershed management problems. That must come from research and experience.

In order to relate the national forests more closely to local needs, it may be that the administrative group could use to advantage local advisory councils, similar to those which have served the research organization. The Regional Forester is now exploring this possibility. I am sure that responsible local people will welcome an invitation to serve on advisory councils set up to help our Forest Supervisors integrate the national forests into the economy of adjacent communities, the states, and the region.

Private Forestry

However valuable the National Forests may be, and however State and Community forests may be developed, we are, of course, fully aware of the fact that forestry in New England is primarily a problem of the private lands.

I have already mentioned the growing interest of the larger industrial owners in good forest management. But thus far such industrial forestry has barely scratched the surface. So long as the economic outlook for New England forest industries seemed uncertain, industrial forestry got little beyond fact finding, fire protection, and simple limitations on the cutting of small spruce trees. In the better economic setting which now prevails, I do not believe the large owners should or will be satisfied with such "half-a-loaf" forestry. I believe that a more intensive sustained yield management will prove more profitable from here on. Such management should not be one-product management, but integrated product management aimed at full utilization of all species. It may well mean a doubling of effective annual growth per acre.

But for most of New England the problem lies with the thousands of small owners. We have laid great emphasis on aid to small owners through technical service. We are convinced that what such service can accomplish will depend in some measure on the effectiveness of the supervision given the program by the States. We feel that the State Forestry Departments should set up forest management divisions to provide adequate supervision. The woodland management projects must be given just as much emphasis as fire protection and state forest administration.

The possibilities of progress through technical assistance have not yet been fully tested. But it remains to be proven that any such voluntary program can bring about enough good management to meet national goals for timber production or to restore or maintain desirable watershed conditions.

Experience with the technical assistance program, especially in Vermont,

New Hampshire, and Connecticut where coverage is complete, strengthens my conviction that public regulation of cutting and other forest practices is essential. The tax law adopted in New Hampshire this year recognizes this principle. It provides one approach short of a mandatory system. The rest of the country will watch the results with interest.

New York has another aid-incentive plan but I doubt if this will prove much more effective than the usual pattern of technical assistance under the cooperative program.

I think the situation in this region and elsewhere calls for a nation-wide system of regulation such as the Forest Service has been advocating for ten years or more. And I want to emphasize a fact all too frequently overlooked. No where in the world has purely voluntary action succeeded in establishing the kind of forest management that is needed to protect vital public interest. In this, as in other fields of action such as traffic, pure food, meat packing, sanitation, fire protection, etc., the need for regulation grows rather than fades as our economy advances from pioneer conditions.

As our timber frontier disappears, and as good timber becomes increasingly scarce, the number of owners engaging in timber growing increases. But the acceptance of timber growing as an integral part of our economy does not lessen the need for regulation to safeguard the public interest. On the other hand, regulation will not impose undue restrictions on those who are already committed to good forest practice. Here is an important field for federal-state cooperation.

Comprehensive Planning

As I have intimated earlier, the future of forestry in New England will be tied in no small measure to the development of water resources. This leads me to speak of an important new development in federal program planning which holds great possibilities for cooperation and progress in this region.

I refer to the mandate to the Corps of Engineers in the Flood Control Act of 1950 to prepare a comprehensive program for development of the rivers and other land and water resources of New England and much of New York. President Truman has shown an active interest in making this a truly comprehensive program. He has asked the Department of Agriculture and other federal agencies to cooperate with the Army in the undertaking. This is an effort to look ahead in all phases of resource development at the same time in order more effectively to coordinate and integrate the activities of the several federal agencies into a logical and balanced plan of development for the region.

I can assure you that the agricultural phases will be developed with full cooperation of state and local agencies. I hope this effort to promote regional welfare by cooperative planning will receive full support of the New England Council and of the state forestry and agricultural agencies.

The time schedule under which we are working calls for fast action. The job is to be completed by July 1, 1952. The initial report may

prove to be sketchy and inadequate in certain respects. But it should give a clear picture of needs and priorities so that federal programs may be fully coordinated and geared to the needs of the region.

Public Understanding

I want to speak of one other thing which I feel is important for the future. That is that people should know the facts and understand the basic problems inherent in the forest resource situation. In New England, there has been no well-integrated public program for public education in regional problems and needs. The individual states and the state forestry associations vary in the orientation and effectiveness of their educational activities. The Federal effort is pretty well diluted by the time it gets down to local problems. The most consistent and best financed campaign is that of the organized forest products industries. There is an element of danger in that. I do not think the informed people of New England will be misled by the use of over-all statistics to create the impression that forest depletion and deterioration are no longer prevalent. They see deterioration as a fact in the forests all around them. Nevertheless our school children and uninformed urban people should not be misled. Perhaps the situation calls for cooperation between state and federal agencies in a unified program of public education. The Interstate Forest Fire Compact, of which I have spoken, points the way. And the Forest Fire Prevention Campaign of the National Advertising Council, with which I am sure you are all familiar, shows what can be accomplished.

In conclusion, I want to emphasize that in the future, as in the past, progress will be best when state and federal agencies and local organizations work together in programs which gear local needs into regional and national objectives of public welfare in a broad sense.

FORESTS AND WILDLIFE

(Address by Lyle F. Watts, Chief, U. S. Forest Service, at meeting of the Southeastern Association of Game and Fish Commissioners, Richmond, Virginia, October 16, 1950.)

It is a special pleasure to meet here with you today to discuss forest wildlife management programs of the Southeast. Some of the best cooperative wildlife management work in the whole country is being done in this region. The habitat management work under way is outstanding. It is attracting Nation-wide attention. Perhaps nothing like it is as yet being attempted on as large a scale anywhere else in the United States. The States you represent and the U. S. Forest Service are thus cooperating in some pioneering enterprises of far-reaching potentialities. We, of the Forest Service, are mighty happy to be a part of this fine work.

The national forests on which these cooperative projects are under way are part of a Nation-wide system of public forests which the Forest Service is charged with administering in the best interests of this Nation and its people. These national forests offer about 15 acres of hunting land for every one of the 12 million-odd licensed hunters in the country. They have something like 81,000 miles of fishing stream and 1,650,000 acres of lakes and ponds. The Forest Service wants these lands and these waters to be made the best possible for good hunting and fishing.

The national forests have several advantages for wildlife. They constitute an area equal to one-tenth of the total land area of the United States that is open and unposted for hunting and fishing. They are public lands under stable administration and management. The multiple-use system by which they are managed looks to the coordinated protection and development of all of their resources; and natural resources, as you know, are interdependent.

The objective in the management of these lands is to provide permanently the greatest total of public benefits. We hope to achieve this objective through a sound program of resource management. Effective cooperation between the Federal Government, the States, and the individual citizens is essential.

In this program, wildlife can have a big part. Eighty-one thousand miles of streams and more than 1½ million acres of ponds and lakes in the national forests constitute a pretty good natural fish hatchery. The 180 million acres of national forest lands are a pretty sizeable outdoor rearing pen for game.

It is the Forest Service policy, as you know, to seek and maintain strong cooperative relations with other agencies that have responsibilities in the field of wildlife management. The program for national-forest wildlife is, in effect, a three-way cooperative set-up. We look to the Fish and Wildlife Service for the fundamental research necessary to determine the basic principles on which wildlife management plans are to be based, and for technical advice in carrying out such plans and principles. We look to the State fish and game departments to assume leadership for restoration, protection, and utilization of the wildlife resources; for the necessary regulations as to

licenses, seasons, and bag limits; and often for additional aid in wildlife surveys and local research projects. The Forest Service itself gives primary attention to the maintenance and improvement of a favorable habitat upon which the wildlife can be produced. It manages these lands on a multiple-use principle. Management is constantly improved by techniques developed by the forest and range experiment stations. We are hosts to the fishermen and hunters, who in turn are licensed by the States.

Thus the Forest Service, the Fish and Wildlife Service, and the State fish and game departments all have distinct and important roles to play. Through carefully arranged and coordinated cooperative procedures their programs can be made complementary to each other, with little or no overlap or duplication. A more satisfactory wildlife situation is the net result.

Such cooperation, as I have already said, is resulting in some outstanding work here in the Southeastern States. Nearly 40 cooperative wildlife management and demonstration areas are now in operation in the national forests of this region. Some very gratifying improvements in fish and game conditions have been achieved on a number of these project areas.

The Forest Service is anxious to go much farther in habitat management work, but it is handicapped by lack of regular appropriations for this purpose.

However, the financial problem of cooperative wildlife management projects in this region, in some cases, is eased through the special fees collected by the States for hunting or fishing permits on the management areas. Through cooperative agreements, the special receipts collected by the States are shared with the Forest Service and applied to the work on the area. It has been amply demonstrated on these areas that the sportsmen are willing to pay a reasonably charge for their sport. They want to know that they will get good hunting or fishing in return and that the money is being spent to maintain or improve the opportunities for more good sport.

It is our responsibility, as I said, to administer the national forests in the best public interest. They are performing many services important to local and national welfare. Here in the Southeast, the national forests last year furnished nearly 450 million board feet of timber. The returns from the sale of that timber amounted to more than 4 million dollars, 25 percent of which was turned over to the States for county road and school funds. But that yearly cut of timber also is the basis of many thousand man-days of employment; it is the basis of business and industry that helps to support many communities and contributes to a progressing economy for the region. And with the timber in the national forests managed for sustained yield, it not only will keep on coming but will gradually increase.

Last year some 3 million recreationists visited the national forests of the Southeast. They included tourists and vacationers who brought business to local communities, and local people who found opportunities for outdoor enjoyment in the forests. They included hunters and fishermen -- the Southeastern national forests last year had 4 million man-days of hunting and fishing use.

These national forests perform other important services. They safeguard the water supplies of many communities. Their watershed protection services help to reduce flood damage and sedimentation. The expenditure of 1½ million dollars for road construction and maintenance, and other expenditures for national-forest improvement in the Southeast meant additional employment and benefit for the region.

Our national-forest system is still relatively young, especially here in the Southeast. There are immense possibilities for resource development. There is need for far more intensive work than it has as yet been possible to do. Through sound multiple-use management, the forests can be made to yield far more in products and services to the public.

Wildlife benefits from such multiple-use management. Timber cutting creates openings and edge for game. Watershed management and fire control keep fishing streams in good condition. It has been well demonstrated in the cooperative wildlife management units here in the Southeastern States that forest rangers and wildlife managers work well together. Their cooperative efforts result in the improvement not only of wildlife resource values but of total resource values.

The cost of manipulating wildlife habitat is often too great for license revenue to meet alone. Commercial timber sales, however, provide an effective tool for wildlife management. We can take advantage of opportunities for selling timber when and where wildlife will benefit. Access roads for timber harvesting also provide access to hunting and fishing. Special provisions for stream-bank and channel protection are included in national-forest timber-sale agreements. Our planting programs take into consideration wildlife food and cover needs as well as timber.

The sustained-yield principle applied on the national forests means both stability of the wildlife environment as a whole and desirable variation in the cover. Thus we can get a large amount of wildlife habitat improvement done through timber sales, in which the timber management men and wildlife management men team up and work together. The opportunities in this field will be even greater as better markets develop for the small, low-value timber species. And we shall certainly be on sound economic ground if we can accomplish much of the needed wildlife habitat improvement through commercial timber sales that help to meet the growing needs of an expanding economy for essential timber products.

The best type of fishing stream improvement is good watershed management. The streams reflect the condition of the watershed. Some significant research on watershed management, by the way, is being done at the Coweeta Experimental Forest in North Carolina. Through the work there we are learning much about watersheds and streamflow that is important in the development and maintenance of the fish resource. I believe many of you would be interested in the work under way there, and I want you to know that you are all cordially invited to visit the Coweeta Station whenever an opportunity offers.

Wildlife management work, such as that under way in the Southeast, is helping to bring about a better public appreciation of all natural resource values. The Forest Service and the State Foresters are getting better cooperation in forest-fire protection from sportsmen who are becoming more and more aware of the relationship between fire control and good hunting and fishing. Through an active interest in wildlife, many people are gaining a better understanding of the interdependence of all natural resources. They are beginning to see, for example, that fish certainly cannot thrive without good water, and good water generally depends on good timber or other vegetative cover on the watersheds.

Wildlife and soil, water, and forests, indeed cannot be considered apart. They will go up, or they will go down, together. We of the Forest Service want to see the wildlife resource go ahead to full development in a sound, coordinated program for the full development of all resources. If we all work together in well-planned cooperative programs, keeping in mind always the basic objective of full resource development, I know we are going to continue to make progress.

January 15, 1951

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

Address Reply to
CHIEF, FOREST SERVICE
and Refer to

I
INFORMATION
Special Articles

April 24, 1950

I&E No. 479

Regional Foresters
and Directors

Dear Sir:

Under separate cover we are sending you sufficient copies of the enclosed reprint of Mr. Watts' article in the March Journal of Forestry for distribution to forest supervisor and ranger district offices and work centers.

Very truly yours,

Dana Parkinson

DANA PARKINSON, Chief
Div. of Information & Education

Enclosure

Reprinted from JOURNAL OF FORESTRY, Volume 48, Number 3, March 1950

Points of View

Watts Discusses Referendum on Federal Regulation

I

The proponents of the referendum on regulation announced in the February JOURNAL have posed a question which is not clear cut. They are seeking a "yes" or "no" answer on an issue in which past discussion has developed at least three well-defined points of view: Those who believe forest regulation should be left solely to the states; those who favor federal regulation exclusively; and those who advocate a combined federal-state system with ample opportunity for the states to carry the public responsibility for keeping forest lands reasonably productive. The last might be subdivided into those who simply favor federal financial aid to the states in the administration of regulation and those who would establish federal standards as the basis for financial aid and provide authority for federal administration of regulation in states which requested it or failed to meet the federal standards.

The Council recognized the ambiguous nature of the question and asked the proponents of the referendum to modify it. It is difficult to understand why the proponents insisted on the original question after its ambiguity was called to their attention.

The issue might be sharpened by restating it to read, "Should the federal government take any part in the regulation of cutting and other forest practices?" To this question most of those who feel that regulation is necessary — and a previous referendum in 1944 showed that a majority of the Society of American Foresters does— would, I think, vote "yes." And they would vote "yes" whether they believe in outright federal control, whether they support the federal-state system advocated by the Forest Service, or whether they simply favor federal financial aid to the states in the administration of regulation following the pattern of cooperative forest fire protection. They would vote "yes" because forest conservation is so vital a national problem and, believing that regulation is necessary, they would want to enlist the strength and influence of the federal government in achieving its nation-wide application.

II

Because the petition and the question as posed by the referendum tend to evoke a response on outright federal regulation rather than on federal participation, I wish to clear up any possible misunderstanding of where I stand by restating the Forest Service position with respect to state participation in public regulation.

The Forest Service believes that the national interest will be well served if all the states have strong forestry departments functioning effectively in regulation of cutting and other forest practices on private forest lands as well as in other forestry activities. The Forest Service has consistently worked to help the states build up effective forest fire protection, technical assistance to private forest owners and operators, and other activities. It stands ready to help in developing effective state plans for regulation.

The Forest Service advocates federal participation in regulation because it believes there should be nation-wide application and because it believes that federal action will be needed in some states to get satisfactory standards applied. The Forest Service advocates a federal-state system of regulation in which certain standards would be set up as guides in the formulation and application—by the states—of rules of forest practice adapted to local forest conditions. The states would have opportunity to formulate their own plans for handling regulation in conformity with prescribed requirements. If the plan submitted by a state meets these requirements, the federal government would offer financial aid, on a matching basis, for the administration and enforcement of the plan by the state. On the other hand, in the Forest Service proposal, the federal government would undertake regulation in any state which did not adopt and put into effect a satisfactory plan of its own within a reasonable period.

I am firmly convinced that this federal-state plan is the best approach. It has had the endorsement of the last four Secretaries of Agriculture and of the present Secretary of the Interior.

It should be emphasized that the federal-government has authority to establish forest practices on private forest lands. The basis for such action is primarily the federal commerce power. There is ample precedent in the Federal Food, Drug and Cosmetic Act; the Packers and Stockyards Act; and in other fields. But under the Forest Service proposal, the federal government would not administer regulation except when the states do not act.

So, if you vote for federal participation in regulation on the basis advocated by the Forest Service, you are not voting against state regulation.

III

Neither the petition nor the referendum questions the need for public regulation. Nevertheless it is well to restate certain facts before discussing the basis for federal participation in forest regulation.

The need for public control of cutting and other forest practices has been widely recognized and repeatedly stated during the past 10 years or more. The Society of American Foresters adopted a statement in December 1940 which was reaffirmed by the Council in 1943 and approved by the membership in 1944. The Joint Congressional Committee recommended federal legislation in 1941 after exhaustive hearings in Washington and other parts of the country. Some 14 states have forest practice acts. The program of the American Forestry Association, enunciated

1360

UNESCO/IUPN/Conf.2/Misc./9
PARIS, 20 June 1949

REFERENCE COPY
FOREST ECONOMICS DIVISION

UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION

INTERNATIONAL UNION FOR THE PROTECTION OF NATURE

INTERNATIONAL TECHNICAL CONFERENCE ON THE PROTECTION OF NATURE
United States of America
22 August - 1 September 1949

NATURE PROTECTION IN THE NATIONAL FORESTS OF THE U. S. A.

by
Mr. Lyle F. Watts,
Chief, United States Forest Service, Department of Agriculture, Washington

---

We have in the United States an extensive system of national forests under administration of the Federal Government. It is in some ways outstanding among public forest systems of the world -- in its extent, in its variety of forest types, and in its services to public welfare. It comprises 152 national forests, located in 40 of the 48 States and in the territories of Alaska and Puerto Rico. Its aggregate area is approximately 180,000,000 acres. The Forest Service of the United States Department of Agriculture is charged with its administration.

The national forests came into being because of growing public concern about unbridled exploitation and rapid depletion of forest resources. The vast forests that covered much of the land when this country was first settled had given rise to the idea that timber supplies were inexhaustible. The lumber industry had developed on a "cut-out-and-get-out" basis; as the virgin timber stands were cut over along the eastern seaboard, the loggers moved westward to other stands. Although much of the land in the west was government owned, loose land laws and a governmental policy of rapid transfer of public domain land into private ownership fostered destructive exploitation of western timber stands.

The primary purposes for which the national forests were established, as stated in the Act of Congress providing for their administration, were to furnish continuous supplies of timber and to secure favourable conditions of water flows. The earliest national forests were established beginning in 1891 through reservation of lands within the public domain, largely in the western States. In 1911, Congress authorized the creation or expansion of national forests through governmental purchase of lands from private owners. The national forests in States east of the Great Plains have been developed largely through federal land purchases under this authorization.

When the Forest Service was placed in charge of the national forests it was directed to administer them for "the greatest good of the greatest number in the long run." In line with this guiding principle, the Forest Service manages the resources of the national forests by a multiple-use system aimed at the coordinated development and use of all the resources and values of the land. Within a given forest unit, those areas best suited to and needed for timber production are devoted to that purpose; those areas suited for grazing, wildlife, or recreation are devoted to those uses. A combination of several uses is usually possible on the same area. Watershed protection is a paramount consideration in the use of nearly all of the national forest lands. Conflicts between various uses are adjusted under over-all management plans that look to the highest total of public services and benefits.

National forests in the United States should not be confused with national parks. These are separate and distinct areas, under different administration and managed for different purposes. National parks are maintained for

the preservation and public enjoyment of certain unique and outstanding scenic, geologic, or historic values. The national forests, much more extensive in total area, are managed primarily for the production of timber, water, and other economic resources. Thus the national parks are administered for a single purpose in contrast with the multiple-purpose management applied on the national forests. The national park and national forest systems both have a distinct and important place in the Nation's conservation picture.

Under multiple-use management our national forests are providing many important services to local and national welfare. They are furnishing a yearly cut of approximately 4,000,000,000 board feet of timber to help meet the needs of the Nation for lumber, paper, and other forest products. With more intensive management and with construction of more access roads to timber stands now inaccessible, the sustained annual timber yield can eventually be increased by at least 50 per cent. This sustained yield of timber means a continuing supply for many local industries, and stability for the communities dependent upon those industries. The timber cut from the national forests is now a little more than ten per cent of the total timber cut in the United States; the bulk of the timber output comes from privately-owned forest lands, which are generally better and more accessible timber-growing lands. National forest timber, however, is becoming increasingly important to the Nation's wood supply, because many private forests unfortunately have been depleted by destructive exploitation in the past. Large areas of private forest land still lack the kind of management that provides continuing timber crops.

The national forests also are contributing to the Nation's supply of meat and wool by providing seasonal grazing for nearly 9,000,000 head of cattle and sheep. National forests harbour one-third of the Nation's big game animals and provide habitat for large numbers of small game and birds and other forms of wildlife. There are 90,000 miles of fishing streams within the national forest boundaries. Millions of persons visit the national forests each year for recreational purposes -- more than 20,000,000 visits were reported in 1948. The Forest Service maintains 4,500 camping and picnic areas, and 230 winter sports areas. More than 50,000 miles of national forest highways and roads are available to the motorist. Thousands of miles of hiking and horseback trails are maintained.

National forests protect the headwaters of many of the Nation's important rivers and the water supplies for hundreds of towns and cities, industries, irrigation, and hydro-electric power developments. In the western States, the national forests are the source of much of the water upon which the whole economy of the region depends.

In the multiple-use system under which these varied uses and services of the national forests are administered, there is ample place for the protection of nature. Scenic and other natural values are recognized among the important resources of the national forests.

On those areas within the national forests managed for timber production, theselective or partial cutting systems required in the harvesting of timber assure continuous renewal of forest growth. Selective or partial cutting takes only the commercially mature trees in a timber stand, leaving the younger trees to continue their growth or leaving ample sources of seed to assure reproduction. Methods vary with different forest types, but in every case the objective is to maintain ample growing stocks of trees and to assure a continuous yield of forest products. Cutting rules prevent unnecessary damage to young growth and to other forest values.

Approximately 73 million acres of national forest land in the United States is classed as commercial forest land on which production of commercial timber crops is one of the primary objectives under multiple-use management. But this is less than half of the total area of the national forests in the continental United States.

The remaining area -- some 75 million acres -- is of non-commercial forest types -- alpine lands, semi-arid lands supporting scattered growths of pinion pine and juniper, or native shrubs and grasses. Some of these lands are used for the grazing of domestic livestock. Many of them are good wildlife range. But the primary value of most of them is for watershed purposes.

The use of all these forest lands, commercial and non-commercial, results in relatively little modification of natural conditions. Sustained yield management requires that as timber and forage are used, growth must be constantly renewed. The protection of watershed values requires that the natural vegetative growth on these lands must be maintained. Development and maintenance of wildlife values has an important place in national forest administration.

Thus, a vast area of wild lands in the national forests stays wild. Although the resources are managed to contribute to the economy of the Nation, the policies for management and use of the national forests help to safeguard natural values. But there are, in addition, many special provisions for the protection of nature.

In those areas where timber sales may be made, regulations provide for the reservation of scenic strips along both sides of publicly used forest highways and roads, and along the shores of lakes and streams. In these strips no commercial timber cutting is allowed. The prescribed scenic strips vary in width from a minimum of 100 feet along secondary roads to 200 feet or more along main highways. Reservation of these scenic strips means that even in national forest areas subject to large-scale commercial logging operations, the forest along roadsides and watersides is modified as little as possible. The traveller in a national forest often is unaware that timber cutting is in progress a short distance back from the road.

A number of "Natural Areas" have been set aside within the national forests. One such area for example, is a thousand-acre tract in the Chippewa National Forest in Minnesota that supports a forest growth typical of the virgin pine that once covered large areas in the northern Lake States. Another is an eleven hundred acre stand of virgin Port Orford cedar in south-western Oregon. Other Natural Areas preserve representative examples of other native forest types in various parts of the country. The characteristic plant and animal life in these Natural Areas will be kept in unmodified condition for the purpose of science, research and education.

Twenty-five national wildlife refuges have been designated within the national forests by Presidential Proclamation or by special acts of Congress. Numerous additional game refuges have been designated under State laws. On other parts of the national forests hunting is permitted in accordance with State laws and the Forest Service seeks the co-operation of State agencies in setting hunting seasons and bag limits that will assure maintenance of game populations. The Forest Service gives special attention to maintenance or improvement of favourable wildlife habitat in its forest management operations. The selective or partial cutting systems employed in timber harvesting is helpful in this connexion; it creates a great deal of forest "edge" which provides optimum habitat for many species of wildlife.

National forest regulations also provide for the setting aside "Vanishing Species Areas" to protect species of plants or animals in danger of extinction. In Los Padres National Forest in California a Vanishing Species Area has been designated to safeguard nesting grounds of the California condor, largest of North American birds, now almost extinct. Another area in the Siskiyou National Forest, Oregon, protects a rare, recently discovered plant, Kalmiopsis leachiana. It is the only known area where this species grows.

The national forests contain much of the remaining wilderness in the United States. Within their boundaries are extensive areas which still exist in much the same state as when the first waves of settlement extended through the country. As more and more of the Nation's wild areas are tamed by motor highways, by mechanized transportation, and by the congregation of increasing numbers of people who bring with them all the social and mechanical devices developed by modern civilization, it has become increasingly desirable, in the interests of recreation, public education, and science, that representative areas of our original wilderness be preserved.

As a major contribution toward the satisfaction of this need, the Forest Service has designated 77 wilderness areas, wild areas, and roadless areas within the national forests. They embrace a total of some 14,000,000 acres -- an area larger than the States of New Hampshire and Vermont combined. Twenty-nine of the designated areas exceed 100,000 acres in extent and are known as "Wilderness Areas". Forty-five of smaller size, but embracing 5,000 acres or more each, are called "Wild Areas." Three, on which restriction of commercial use is somewhat less rigid, are designated as "Roadless Areas".

Many of these designated wilderness areas include majestic mountain ranges and high peaks, but scenic value was not the primary purpose for which they were established. They were selected as typical areas where nature may be kept "as is," and unmodified natural conditions maintained for the benefit of those interested in natural values.

Use of these areas is restricted to such activities as are not inconsistent with wilderness values, which are considered dominant. Management plans provide that there be no roads nor other provisions for motorized transportation, no commercial timber cutting, and no occupancy for hotels, resorts, or other such commercial uses. Grazing of domestic livestock, development of water storage projects which do not involve road construction, and improvements necessary for protection against forest fire may be permitted, subject to such restriction as the Chief of the Forest Service deems desirable. Invasion of some of the wilderness areas by airplanes has presented a special problem in recent years, especially the use of private airplanes to transport parties of hunters or fishermen into the heart of a wilderness. The Forest Service believes that airplane transportation is incompatible with the maintenance of wilderness values. It has prohibited the landing of airplanes on national forest lands within wilderness areas, except in emergencies or where the landing of airplanes was an established practice before the area was classified for wilderness purposes. Within some of the wilderness areas, however, there still remain tracts of privately-owned land, and the Forest Service has no authority to prevent the landing of aircraft on these private lands.

The Forest Service first began setting aside wilderness areas within the national forests in 1928. The first areas designated were called "Primitive Areas," the terms "Wilderness" and "Wild" areas having been adopted when the regulations governing such areas were revised in 1939.

Most of the designated wilderness areas are in States west of the Great Plains -- in the Rockies, Sierra, Cascades and other mountain regions. In the eastern States, the lands that have been acquired for national forest purposes were in most cases no longer of primitive character. Most of them had been cut over while in private ownership; many of them were badly depleted by repeated cutting and burning. Some small remnants of the primitive forests still exist, however, and a number of these have been set aside by the Forest Service as "Natural Areas," "Memorial Forests," or under other designations which provide for preservation of natural conditions.

While there are some 14,000,000 acres of specially designated wilderness areas, practically all of the 180,000,000 acres of national forests are to a certain extent wilderness in character and would be thought of as wilderness by

most people, since the Forest Service plan of management aims to preserve natural conditions on national forests in so far as is consistent with public use. Above all else, the Forest Service must take into consideration human needs in administering the national forests. To this end, woodlands and regulated wildlands are managed first and foremost so that they will permanently contribute to the welfare of the people, to the stability of homes and communities, and to the economic welfare of the Nation. Thus, lands within the national forests, as I have already endeavoured to explain, are devoted to timber production, production of range forage for livestock, mining, watershed protection, and water-power development; fish, game, and other wildlife production, recreation and various other uses or combinations of uses, under carefully worked out plans of management which seek to co-ordinate all such uses and bring about the "greatest good of the greatest number in the long run." Within this pattern of multiple-use management, the Forest Service believes that protection of natural values and preservation of representative areas of primitive forest or wilderness has a definite place and serves a public need.

The security of the national forest enterprise is in need of certain additional safeguards. National forest lands, under present laws, may too easily be transferred to a different status. Other agencies may issue leases on national forest lands for exploitation of minerals, or may construct dams which may cause the flooding of large areas of national forest land, without the consent of the agency responsible for the administration of those lands. The laws permitting establishment of private mining claims are vulnerable to certain abuses and provide no checks on damage to soil, timber, water or other values. Nor do they provide for return of the land to national forest status if the mining claim proves of no value. Better protection against these and other threats to the stability of the national forest system is needed.

There is also need for greater intensification of protection and management on the national forests. With the funds currently available, the protection and administration forces must be spread thinly over large areas. Fire protection forces are inadequate in some areas; more control work against destructive insects and tree diseases is needed; there is need for much more wildlife habitat improvement work and for more adequate facilities to provide for recreationists who are coming to the national forests in ever increasing numbers. Large areas of denuded land recently acquired for national forest purposes need replanting.

Within the established boundaries of most national forests are numerous tracts of privately owned land. Such spotty or checkerboard ownership causes many problems in national forest administration and protection. Acquisition of some of these private lands through Federal purchase or exchange would help to consolidate and develop the national forests so that they could more fully perform the services for which they were established.

There are other lands where acute problems of watershed protection, need for reforestation, or safeguarding of natural resources and values make public acquisition and management desirable. It is probable that our national welfare will eventually require a considerable expansion of public forest ownership.

The multiple-use system of forest management, I believe, provides us with the means of realizing economic returns from forest and wildland resources and at the same time maintaining natural values. Under this pattern of management, the protection of nature will continue to have an important place on all national forests now existing or that may be established in the future.

FIFTY YEARS OF FORESTRY IN THE BLACK HILLS

(Address by Lyle F. Watts, Chief, U. S. Forest Service, at program in observance of 50th anniversary of the establishment of the Black Hills National Forest. September 19, 1948)

We are within sight of the spot where real forestry first began in the National Forests of the United States. Here, half a century ago, was made the Government's first timber sale under supervised cutting -- the first attempt at scientific timber management in the National Forests. It was "Case Number 1" in the records of Government forestry.

I doubt if that first timber sale here in the Black Hills caused the news wires to hum all the way across the country, or that it made any big headlines in the great metropolitan newspapers. But it was an event of historical importance. Its effects were far greater than many of the other events that did make the now forgotten headlines of that day. It started something that is still growing. It was an important first step in the movement for conservation of natural resources -- a movement that may well determine whether our Nation, or indeed the human race, is to survive and prosper on this earth.

Today we celebrate the accomplishments of 50 years of forestry in the Black Hills. From the 1870's, when the Black Hills were first settled, until the National Forest was established, there had been unrestricted cutting of timber, and no effort was made to stop forest fires. Even before the area was settled there had been many bad fires. The town of Deadwood, as you know, got its name from the tangle of fire-killed timber that the earliest settlers found in the gulch. Fire and wasteful cutting were playing such havoc that back in the '90's local people began to realize that their timber supply was diminishing at an alarming rate, and that something should be done about it. The mining industry, especially, was worried about the supply of mine timbers. The movement that started here then resulted in the creation of the Black Hills Forest Reserve -- the area that now comprises the Black Hills and the Harney National Forests.

The first sale of timber was made about a year after the forest reserve was established -- in 1898. It was in some ways a rather elementary attempt at scientific timber cutting. Mistakes were made at the start. But essentially it was a sound undertaking. It proved out.

The Case No. 1 sale was made to the Homestake Mining Company. It was the first to make application to purchase timber from the forest reserve. The Company experienced many difficulties but to its everlasting credit, the Homestake Mining Company played fair with the forestry movement from the start. It gave this first attempt at forest management its full support. Eventually it put its own timberlands under management that is on a par with that of the Forest Service.

(Over)

The Black Hills Forest Reserve became a National Forest in 1905, when the U. S. Forest Service was established and placed in charge of the reserves. In 1911, part of the original reserve was made a separate National Forest -- the Harney.

It has been estimated that a billion and a half board feet of timber was used in the early mining days of the Black Hills, from 1876 to 1898. From the time of the Case No. 1 sale up to now, nearly another 1-1/3 billion was cut, or a grand total of 2,800,000,000 to date. At the same time, the forests, under management as a renewable resource, have continued their growth. It is estimated that there is now in the National Forests of the Black Hills, a total 2,300,000,000 board feet of standing saw timber -- nearly as much as all that was taken from the forests since the first settlers arrived. You might call that a case of eating your cake and having it too.

The development of the two National Forests has contributed greatly to the economic development of the whole Black Hills area. Today these National Forests are managed for permanent production -- for what foresters call a sustained yield. They are growing enough timber so that each year they can supply 37 million board feet of live saw timber, plus several million feet of additional material that can be removed by thinning young stands and cleaning out dead or defective trees.

The two National Forests provide range for 25,000 head of cattle and 20,000 head of sheep. The forests are used by something like half a million people each year for recreation purposes. There is a large deer population which assures the sportsman a good chance to bag his deer each year. The forests protect the watersheds on which originate Rapid and Spearfish Creeks and several other headwater tributaries of the Cheyenne and Missouri Rivers. They protect the sources of water used for domestic purposes by Lead, Deadwood, Spearfish, Rapid City, and other towns; water used for hydro-electric power purposes and for irrigating a substantial acreage of farm lands. The utilization of the National Forest resources provides employment for many people. Enough timber is coming along to sustain a sawmill industry that not only can supply local needs, but also ships out Black Hills products to help supply the needs of other less fortunate States.

Very few of our National Forests anywhere in the United States are in as good condition as the two in the Black Hills area. In many places here you can see seedlings, saplings, pole-sized trees, intermediates, and mature trees all in the same stand. That means that under good forest management you can keep cutting mature timber and always have plenty more coming along. The timber crop is being well managed and the local people strongly support the management policies. Most of the grazing lands on the Forests are in good shape and those that are not can be improved in a short time. The cash receipts of the National Forests are steadily going up; about 332,000 last year and since 25 percent of all the receipts go to the local counties, that means that more money is coming along each year to help improve county roads and support local schools.

The going has not always been easy. We have had some heart-breaking set-backs. Tornadoes have laid down long stretches of timber across the forest. Fire has been and is a constant menace. The Rochford fire of 1931 and the McVey fire of 1939 each burned over nearly a township of forest land.

There were other bad ones, too. At the beginning of the century, one of the worst outbreaks of pine beetles in history occurred in the Black Hills and caused a heavy loss of timber. This year we have been going through a similar situation; but with emergency funds made available by Congress, we believe we shall succeed in controlling the insect attack this time.

But in spite of bugs and fire and wind and high water, we have made a lot of progress. The trees even managed to grow equally well under both Democratic and Republican administrations.

The progress made has been possible largely because the people here believed in these Forests, and in what they stood for, from the very beginning. I want to compliment the people of the Black Hills region on this splendid support and cooperation they are giving the Forest Service in the protection and development of the National Forests. They have been especially alert to the need for fire prevention, and when fires do occur they turn out promptly to help put them out. There is a cordial partnership here. It is the best kind of cooperation; it works both ways.

It is most gratifying to the Forest Service to know that you folks here in the Black Hills are keenly interested in what goes on in the National Forests. You think of them as your Forests, and that is exactly what they are. These are public forests. They belong to the people. The Forest Service is your agent, charged with managing them in your interests. The basic principle under which our National Forests are administered is "the greatest good of the greatest number in the long run." The Forest Service holds steadfastly to that principle. It is endeavoring to administer and develop these Forests for maximum, permanent service to the communities, the State, and the Nation.

In line with that objective of the greatest good of the greatest number in the long run, we have two major administrative policies. One of these is the policy of sustained yield, which I have already mentioned. It applies not only to timber, but to range forage for grazing, to game and fish, to recreational facilities, and to water supplies. The other major policy we call "multiple-use." You can see how that works right here in the Black Hills. The National Forests are managed not only to grow timber and to protect watersheds, but to furnish grazing for livestock, to provide a home for wildlife, to maintain scenic values, to provide opportunities for recreation, to support local industries and employment and many other services. All of these uses and services are coordinated in over-all, multiple-purpose management plans. Such multiple-use management brings the highest total of public benefits and services from a forest area.

The past half century, as I said, has seen some very encouraging progress in the Black Hills Forests. But we aren't done yet. There is a lot more to accomplish, a lot more improvement and development work to be done. During the '30's we made some rapid strides with the help of several Civilian Conservation Corps camps in the Black Hills and Harney Forests. These young men of the CCC built many miles of roads, developed recreational areas, lookouts and other fire improvements, and ranger stations. They did timber stand improvement work, which will make possible better and faster timber growth on 240,000 acres. When the war came along, it was not possible to go ahead with this kind of improvement work, nor even to maintain

many of the improvements we had. For effective fire protection we still need more roads, and more communication facilities and more heavy equipment. We need more timber stand improvement, more recreation facilities, and a lot of other improvements. We are going ahead with the program of improvement and development just as fast as funds become available.

The need for forest restoration and improvement and development is not confined to the Black Hills alone. In fact, with its two fine public forests as going concerns, the Black Hills are comparatively well off. Nationwide, our forest resource is dwindling. We are taking timber from the forests of the United States faster than it is growing back. The total volume of standing saw timber in the forests of the United States today is probably only about half of what it was 50 years ago. One-sixth of all the commercial forest land in the country has been so depleted by fires or by destructive cutting that it is now producing little or nothing. A good share of the rest is growing only a fraction of what it could. The increasing scarcity of good, easily accessible timber stands is reflected in the high prices people have to pay for a few boards to mend the back steps, or for most other forest products today.

Our National Forests and most other public forests are being managed for a sustained yield. That Case No. 1 sale here in the Black Hills involved something like 15 million board feet of timber, plus some cord wood, for about 15 thousand dollars. From that small start just 50 years ago the timber sale business on the National Forests of America has grown to nearly 4 billion feet, valued at more than 20 million dollars in the past fiscal year. With adequate funds for access roads to open up remote areas and with adequate funds to prepare plans and administer timber cutting, the amount cut from the National Forests could be increased in a few years to more than 6 billion feet a year. Both the forests and the Nation would benefit thereby.

But the public forests comprise only about one-fourth of our commercial forest area. Three-fourths of our commercial forest land is privately owned; and the private forest land is by and large the best forest land, from which the bulk of the Nation's timber supply must come. But a recent survey showed that only 8 percent of all timber cutting on private lands could be classed as good from the standpoint of keeping the forest land in full production. Sixty-four percent of all cutting was poor to destructive.

If our country is to stop the downward trend of our forest resources and get on the road to timber abundance, we shall have to take strong and energetic measures to build up timber growth for future needs. We shall have to put idle forest lands back to work. We shall have to see to it that good management is applied to all forest lands, public and private.

Our Black Hills forests are helping to point the way. They have demonstrated that forests are a renewable resource, that forests can be managed for permanent production. Already the area here where scientific timber cutting was first attempted in the National Forests has produced another crop of timber. Second cuttings have already been made on parts of the area.

The essence of the plan on which that Case No. 1 timber sale was based was to cut carefully and clean up the logging slash, and to leave seed trees and young trees to grow for the future. It sounds pretty simple now, doesn't it? But it was a revolutionary idea at that time -- just 50 years ago. And it hasn't gotten around any too widely yet. As I indicated a moment ago, even that simple, elementary type of forest practice has yet to be applied to 64 percent of all private forest lands.

But the development in sound forestry practice that started with Case No. 1 here in the Black Hills is still going forward. Research and experience have brought many improvements in forest management and cutting practice since that first attempt. Different methods have been worked out for different forest types. Scientific forestry is now standard practice throughout all the National Forests. It is gaining ever wider acceptance on other forest lands. And I am confident that the developments in forest conservation that started here with Case No. 1 will go on until permanent timber abundance for the whole country is achieved, until forest conserv a-tion is a nation-wide reality, and the forests of the United States will be contributing their full values and benefits toward the prosperity and welfare of our people.

OUR FOREST RESOURCES

Talk By
Lyle F. Watts, Chief, Forest Service
United States Department of Agriculture

in the
Graduate School Series on Agricultural Programs
United States Department of Agriculture
November 24, 1947

The forest is one of the basic natural resources. It is a basic resource because it supplies raw material from which is made thousands of useful or essential commodities. The forest is a great conserver of water and regulator of streamflow. It is a protector and builder-upper of another basic resource -- the soil. It is the home of much of our wildlife. And not the least of the values of the forest are its scenic and recreational values which contribute to our physical and spiritual well-being.

One-third of the land area of the United States is forest land, and the broad responsibility of the Forest Service is to promote good management and wise use of this land so that it will contribute its full share to the welfare of our people. I want to discuss briefly what our forest situation is today, and what the Forest Service is trying to do about it.

Specifically, the responsibilities of the Forest Service cover three major lines of activity: administration of the National Forests; cooperation in State and private forestry; and research on forest management and wood utilization problems.

Establishment of the National Forest system was the first great step in the conservation movement in America. The National Forest system began more than 50 years ago -- back in 1891, when Congress authorized the setting aside of forest reserves from the public domain. It was not until 1905, however, when these early forest reserves were placed under the jurisdiction of the Department of Agriculture, that development of the National Forest system really got under way. The guiding principle for their administration was laid down in Secretary "Tama Jim" Wilson's letter to the then Chief of the Forest Service, Gifford Pinchot. The keynote of Secretary Wilson's letter was that the National Forests should be administered "for the greatest good to the greatest number in the long run." The Forest Service has endeavored to follow that directive ever since.

I think I can say truthfully that our National Forests have become the world's outstanding public forest system. They now number more than 150 and include nearly 180,000,000 acres, nearly one-tenth of the total land area of the United States. They have been a proving ground for the relatively new science of forestry in this country, and a demonstration that conservation is wise use. They are making important contributions to the welfare of hundreds of communities and to the whole economy of the Nation.

Over-all direction of National Forest Administration heads up in a branch of National Forest Management in the Washington headquarters of the Forest

Service. Actual administration, however, is highly decentralized. The Forest Service maintains ten regional offices, with a Regional Forester in charge of each. Individual National Forests in each region are in charge of a Supervisor who is responsible to the Regional Forester. Each National Forest in turn is divided into several ranger districts, with a District Ranger in charge, who is responsible to the Supervisor. Rangers and Supervisors are authorized to make decisions on the ground, and only questions involving matters of broad policy need be referred to the Regional Forester or to the Washington headquarters.

Administration of the National Forests is a business proposition on a man-sized scale. Many of the activities are non-revenue producing, of course--the returns must be measured in terms of public welfare rather than hard cash. But the National Forest enterprise is big business in many ways.

Last year the Forest Service sold more than 3-1/2 billion board feet of timber from the National Forests. They supplied more than one-tenth of all the lumber produced in the United States. These timber sales returned some $15,000,000 to the U. S. Treasury, National forest timber sales represented the principal economic support of many communities. In many cases they meant the difference between continued operation of a sawmill or closing down at a time when lumber was most urgently needed.

That is not the only big business involved in national forest administration. Each year the Forest Service issues some 18,000 permits for grazing livestock on range lands within National Forests. About 5 million head of cattle and sheep are covered in these permits; if you count the young stock for which no grazing fees are charged and the free permits issued to local settlers for milk and work stock, about 9 million animals all told graze on national forest ranges.

That represents a significant contribution to the Nation's supply of meat, wool, and leather. Grazing fees last year returned more than $2,000,000 to the U. S. Treasury. Livestock ranch properties in the West representing investments of more than two billion dollars are dependent upon seasonal grazing on national forest lands. Because the demand for grazing privileges far exceeds the carrying capacity of the ranges, the Forest Service is under constant pressure to let in more stock. At the same time it is up against pressure from some of those stockmen who do have permits to convert their grazing privileges into vested rights. And on top of all this there is a conservation job to do -- to maintain good vegetative growth both for its forage value and its watershed protection value, and to build up ranges that have been depleted by past overgrazing.

Forest Service range management objectives, however, are clear cut -- to build up and maintain the national forest ranges at maximum carrying capacity and secure their full utilization through fair and equitable distribution of grazing privileges among livestock owners large and small.

Recreation is another large-scale activity in the National Forests. There were more than 18 million visits to the National Forests for outdoor

recreation last year. The Forest Service maintains more than 4,000 improved camping and picnic grounds, dozens of winter sports areas, and 50-odd organization camps which are made available to various civic and welfare organizations to provide vacation outings for children's or adult's groups at low cost. Numerous hotels and resorts are operated by private concessionaires under permit, and sites for summer cabins are leased to thousands of individuals. The demand for recreational use in the National Forest is bound to increase tremendously in the coming years.

The National Forests contain 90 thousand miles of fishing streams and they harbor one-third of all the Nation's big game. They are the country's largest public hunting and fishing grounds. Management of the wildlife resource and maintenance of conditions favorable for wildlife is another important activity in national forest administration.

Perhaps the most important activity of all is watershed management. Watershed protection and maintenance of favorable conditions of streamflow was one of the fundamental reasons for the original establishment of National Forests. National Forests are at the headwaters of our major rivers, and these watersheds furnish the water supplies of hundreds of towns and cities. In the western States, national forests cover many of the key watersheds upon which the whole life of the West depends. Every activity, therefore -- such as timber sales, grazing and recreation -- must be handled with due regard to its effect on watersheds. Good watershed management in some cases calls for special, complex techniques; but in general the kind of management that makes for good timber production or good grazing also makes for good water-shed protection.

In the management of our National Forests, the Forest Service has two keynote principles. One of these is what foresters call "sustained yield." Although the techniques of sustained yield forest management are varied and complex, the objective is simple enough -- to keep forest land yielding maxiuum returns continuously. The principle applies not only to timber crops, but to wildlife, range forage, recreational values, water supplies, and other forest products and services.

The other keynote principle is "multiple use." This means simply that the various uses and services of a given forest area are coordinated in one over-all management plan. The great bulk of the forest land can be used for a number of purposes -- such as for timber growing, livestock grazing, wildlife habitat, watershed protection and recreation. Under multiple use management, such uses can be combined and coordinated on the same area. It may be necessary to provide special limitations for certain areas within the forest; livestock grazing, for instance must usually be kept away from heavily used recreation areas; or timber cutting must be restricted where it would damage important scenic values. But conflicts of various interests or uses can be adjusted by carefully worked out over-all planning.

Under such multiple-use management, our National Forests are a going concern, making important contributions to the economic life of the Nation.

But I do not mean to imply that they have already reached a state of perfection. We still have a long way to go in developing their full potentialities. Large areas that have been acquired for national forest purposes were so depleted by past abuse that it will take years to restore a good forest growth. In other areas access roads are needed to make possible the judicious harvesting of overmature timber, which will utilize such stagnating stands and start the areas growing more timber. The range lands within our western National Forests present an especially tough problem -- to heal the effects of past over-grazing and adjust present use to carrying capacity. In the development of the recreational potentialities we have scarcely more than made a beginning. We need many more roads and trails, more facilities for fire control, and other improvements. And within the boundaries of existing National Forests there are still some 35 million acres of private land which should be purchased or acquired through land exchanges to complete the development of these units for public forestry purposes.

Along with its administration of the National Forests, a second major responsibility of the Forest Service -- and in many ways an even more important one -- is that of exercising leadership in the promotion of good forest practice on all other forest lands throughout the Nation. The bulk of our forest land, and the best of it from the standpoint of potential productiveness -- is in private ownership. It is to this private land that we must look for the bulk of our timber supplies.

A number of cooperative programs are under way to encourage and facilitate good management on private forest lands. One basic job, of course, is to see that all forest lands are protected from fire. Under the Clarke-McNary Act of 1924, federal-state cooperative fire protection has been extended to some 315 million acres of State and private forest land. But there are about 120 million acres of privately owned forest land that still lack under organized protection. And on many of the protected areas, the protection organization and facilities are still far from adequate. The recent disastrous fires in Maine are a rather tragic case in point.

Legislation was enacted during the last session of Congress that will -- provided funds are appropriated to carry out the purposes of the Act -- make possible cooperative aid to private owners for protection against forest insects and diseases that in some cases cause as much or more loss than fires.

Under authorization of the Clarke-McMary Act, the Forest Service also cooperates with the States in the production and distribution of trees for farm planting. The trees are produced in State-operated nurseries and furnished to farm owners at low cost. The demand for such trees for farm woodland and shelterbelt planting is far in excess of the present capacity of State nurseries.

Lack of time precludes a discussion of the fine part other agencies of the Department play in forest conservation. However I have not overlooked their important contributions. The Extension Service of the Department of Agriculture carries on valuable education or extension work in farm forestry as part of the general extension program conducted through the

land-grant colleges and the county agents. State forestry extension specialists in 45 States and 2 Territories conduct method and result demonstrations, work with rural youth, and carry on educational work to introduce new and improved farm forestry practices. The Soil Conservation Service also does a great deal to encourage farm forestry and tree planting in connection with its work to bring about good soil conservation practices.

One cooperative activity that is producing excellent results is the farm woodland management and marketing service carried on under the Norris-Doxey Farm Forestry Act. About 150 projects have been set up to date, mostly on a 50-50 cooperative basis between the Forest Service and the States. In each project, the services of a trained forester are available to farm woodland owners to help them work up management plans for their timber tracts, obtain competitive bids when they want to sell timber and prepare simple sale agreements which will protect the interests of both farmer and purchaser. This type of assistance is resulting in the farmer getting more for the timber sold than he would have realized under the old lump-sum sale practice, and what is more important, he is left with a stand of thrifty, growing trees which will produce future timber crops.

This work is spread thin, however, through a little over 600 counties. Such on-the-ground service is needed for 3-1/4 million farm woodland owners in more than 2,000 counties, and for almost a million small non-farm owners of forest land who have so far received little help.

These small non-farm owners -- investors, estate owners, and the like -- are an especially tough problem. Many of them are absentee owners. Few of them make any effort to manage their holdings as a timber-producing enterprise. Yet all together they hold some 30 percent of all our private commercial forest land. Another 40 percent is in farm ownership. The balance is in industrial and other large holdings. We are prone to exaggerate the importance of the big industrial owners in the total timber supply picture. Actually they hold less than 30 percent of the commercial forest area. A good share of our timber supply must come from the small farm and non-farm timber holdings.

Some of the more progressive industrial owners are doing an excellent job of forest management. Many farmers also are adopting food practice in their woodlands, But the fact remains that fully 75 percent of all our private forest land is not getting good management practice. Much of our timberland is producing only one-third to one-half of what it could under reasonably good forestry practice.

Large holdings make the best showing in status of management. Twenty-nine percent of all cutting on forest lands in large ownerships can be classed as good or better from the standpoint of leaving the forest in condition for vigorous growth of desirable species. But on small holdings, farm and non-farm. only 4 percent can be classed as good. Twenty-five percent is fair; 71 percent is poor to destructive. Obviously there is need for a lot of improvement in forest practice, especially on lands in small ownerships.

A third major responsibility of the Forest Service is in the field of

research. The science of forestry is only about 50 years old in this country. The forestry techniques that had been developed in Europe usually dis not fit the forest types and conditions found in America.

The research organization of the Forest Service includes eleven regional forest and range experiment stations, a tropical forestry station in Puerto Rico, and a Forest Products Laboratory at Madison, Wisconsin. Over-all direction is provided by a research branch in the Washington headquarters.

Forest Management Research is attacking many problems in the handling of various forest types for maximum production of usable timber; in the reforestation of denuded lands; and in the protection of forests from fire, insects and diseases. Watershed research is studying the influence of various types of forest cover and of various practices on water yield and flood control. Economics research is studying the financial aspects of timber growing and other economic problems involved in forestry and range management. Range research is investigation on the effects of various degrees of stocking and developing practicable methods for reseeding worn-out ranges that will increase their livestock carrying capacity.

The Forest Products Laboratory at Madison has brought out so many sensational new developments in the adaptation of wood to new uses, in waste reduction, and in widening the field of wood utilization that it has been called "Madison's House of Magic." Laminated wood, improved plywoods, and wood and paper base plastics are finding an increasing variety of uses. Such laboratory developments as "impreg", "compreg", "papreg", and the "uralloys" are receiving growing recognition in the industrial field. We now have the technical information on which could be developed the production of industrial alcohol or high protein livestock and poultry feed from wood waste.

The research program has provided a solid foundation for forestry practice in America. But the super-structure for intensive management is yet to be built. There has never yet been, for instance, a complete inventory of the forest resources of the United States. We can make pretty good estimates, but still they are only estimates. An inventory of our forest resources is now under way as part of a nationwide Forest Survey started some 15 years ago. It is now about half completed. Work on this Forest Survey was suspended during the work but has been resumed. Complete and accurate information on our forest resource is of course fundamental to the determination of sound forestry policies and programs.

Sound technical knowledge developed by painstaking research is indeed important to any program of action. And I don't need to tell you that research is a sound investment that pays handsome dividends as well. Every research agency is the Department of Agriculture can show you striking examples of that.

During the past two years, the Forest Service made a reappraisal of forest conditions in the United States in order to check up on current trends in the forest situation, evaluate progress, and provide an up-to-date factual basis for conservation objective and policies. This reappraisal showed that the situation and the trend are not good.

It showed that saw-timber trees are being cut from our forests one and a half times as fast as they are being replaced by growth. The volume of standing saw-timber in the forests of the United States decreased 43 percent in 40 years, and 9 percent in the past seven years. Along with the decline in total volume of available saw-timber there is a marked deterioration in timber quality. Conifer stands are being replaced in some regions by low-value hardwoods, or too often by worthless brush. The new forests that have followed the removal of the virgin stands are -- nationwide -- no more than half stocked. In the forest just as in the cornfield, you can't grow a good crop with half a stand or with inferior varieties.

The demand for lumber, for woodpulp, and other forest products is high. We were unable to meet fully the demand during war time. The supply of forest products is still short today and basically is getting shorter. In my judgment, if we meet current demand it will be only because scarcity and other factors have forced prices so high that people cannot afford to use the timber products they otherwise would.

This in spite of the fact that one-third of our land is forest land, and 460 million acres are suitable and available for growing commercial timber. That is enough forest land to grow all the forest products we are likely to need, plus a margin for export and for national security.

One-third of the remaining saw-timber is now is the national forests. Our national forests will therefore be able to help cushion the shock as privately owned saw-timber becomes scarce. But we shall have to look to private forests for most of our timber supply, because three-fourths of our commercial forest land is privately owned.

Up to now we have obtained most of our timber supplies from exploitation of the vast amount of virgin forest with which this country was once blessed, or from what second growth came along naturally after the virgin stands were cut. But, if we are to have adequate timber supplies for the future, we shall have to grow them. According to our best estimates this country's present saw timber growing stock is only about half enough to meet foreseeable future needs on a sustaining basis. So, to meet future needs adequately we shall have to double the growth.

The Forest Service has proposed three main lines of action which it believes are the essential basis of a program to build up adequate timber growth and assure permanent abundance of timber supplies in the United States.

We believe most strongly that some degree of public regulation of timber cutting and allied forest practices will be necessary. We believe such regulation is needed to stop forest destruction and deterioration and keep forest lands reasonably productive. It is necessary if we are to get good management practice on the 75 percent of all private forest land that is not now getting good management practice. The Forest Service proposal contemplates a Federal legislative charter which would set up basic standards of practice sufficient to prevent destruction and keep forests in reasonably productive condition.

The individual States would be given every reasonable opportunity to enact, and with Federal assistance, to administer forest regulation under State laws consistent with the Federal Standards. But provision should be made for Federal administration in States which fail to act within a reasonable time.

To help private owners make the transition from destructive exploitation to permanent forest management and to encourage them to go beyond the simple requirements of regulation toward intensive forestry practive, more public aid and cooperation will be needed. The second phase of the three-point program -- expansion of cooperative aids -- will include such things as more intensive fire protection and aid in combating insects and diseases; more on-the-ground technical assistance in forest management problems, especially for small owners; long-term, low-interest credits to help carry long-term timber growing projects; encouragement of cooperative management and marketing associations of small owners; and, of course, continued and expanded forest research.

There will still be substantial areas privately owned of forest land that are submarginal for private enterprise -- areas which because of inaccessibility, low productivity, or depletion of values, stand little chance of being developed and managed for permanent forestry through private initiative. Public ownership -- either community, state, or federal -- offers the best assurance that such lands will be properly handled in the public interest. And there are also certain lands of critical watershed importance or other high public value that undoubtedly should be acquired by the public. A considerable expansion of public forests, therefore is the third point in the proposed program.

These three lines of activity -- regulation of timber cutting, cooperative aid to private owners, and expansion of public forest ownership -- all complement each other. As we see it, they are the three essential legs of the tripod, and you need all three legs to make it stand up. We believe these three basic lines of action will provide a sound support for our national forestry enterprise and assure permanent timber abundance for the future.

- - - - - - - - -

FOREST SERVICE
United States Department of Agriculture
Washington, 25, D.C.
December 1947

ST-8

THE FOREST SITUATION IN THE UNITED STATES

By

Lyle F. Watts
Chief, Forest Service
United States Department of Agriculture[1]

I deeply regret that the press of other business makes it impracticable for me to discuss with you in person some of the disturbing facts about the forest situation in my country -- facts which are of deep significance not only to my people but also to other peoples, particularly those who reside in wood-importing nations. But very briefly, through George M. Hunt, Director of our Forest Products Laboratory, I wish to call your attention to some of the highlights of the United States forest situation, review some of the principal causal factors including the impacts of World War II, and outline goals for American forestry and what is needed to attain them.

Highlights of the Forest Situation

The most significant fact about the forest situation in the United States is the long-time downward trend in saw-timber volume. When the original colonies were being settled 300 years ago, the country that is now the United States is believed to have contained at least 8,000 billion (a billion is equal to a thousand million) board feet of standing timber. In 1909, when the first reasonably complete inventory was compiled, the volume was estimated at 2,826 billion board feet; and in 1945 the latest comprehensive estimate showed only 1,601 billion board feet, about half of which was still virgin timber.

The reduction of 43 percent in our saw-timber stand in 36 years is a serious matter, and the trend has not been stopped. For example, in 1944 saw-timber growth was only 66 percent of the drain of saw-timber trees. The approximate balance between growth and drain that is estimated to exist if the smaller trees as well as the saw-timber trees are included is not reassuring. It means that the forests of the United States are becoming stocked with smaller, less valuable trees and that the large-sized high-quality hardwoods and softwoods, which heretofore have made up a large proportion of our exports, are gradually disappearing.

One-third -- 624 million acres -- of the United States is forest land. Four hundred sixty-one million acres of this is commercial forest land; that is, suitable and available for growing merchantable timber. Although there will be minor shifts from forest use to cultivation and vice versa, no significant changes in the total commercial forest-land acreage are foreseen. The forest potential -- land and climate -- is great enough under proper management ultimately to meet our domestic needs and provide a margin for export to a world that is under supplied with timber.

To understand our forest problem, you must realize that 75 percent of the nation's commercial forest acreage and 57 percent of the saw timber is in private ownership and that the status of management practices and the degree of stocking are closely related to ownership (table 1). On the greater part of the private forest land, including generally the more productive and accessible areas, management is inadequate or lacking and current saw-timber growth is not more than half of what it should be. On the several million small properties which make up three-fourths of the private land, only 4 percent of the cutting follows good practices. On properties of 50,000 acres or more, 29 percent of the cutting is classified as good or better; but these properties, mostly industrially owned, make up only 16 percent of the private acreage. For all private land only 8 percent of the cutting is rated as good or better, 28 percent as fair, and 64 percent as poor or destructive (table 2). Although much of the 345 million acres of private commercial forest land supports good stands of timber, 62 million acres is denuded or very seriously depleted and nearly a third of the total area is seriously understocked.

Because of the backlog of standing timber, output of forest products in general has been maintained well despite the diminishing resource. Volume of cut is not a good criterion of the forest situation. Although the lumber production of 35 billion board feet in 1946 was the highest since 1942, this is not a healthy development from the forest-resource aspect. It means that depletion is being accelerated. Despite this high lumber production, the United States was a net importer of lumber in 1946, as it was during both world wars. If all wood products are considered, the United States has been a net importer for the past 30 years. We have been especially dependent upon Canada for pulpwood, wood pulp, and paper.

Looking ahead for the next decade, or for several decades, I expect the demand for forest products both in the United States and in other countries to continue high and to exceed the supply. We estimate that the United States would consume products equivalent to a saw-timber drain of 61 billion board feet if the national economy functions at a high level of employment and output and if consumers are afforded reasonable latitude in choice of readily available materials, including timber products. Of this amount, lumber might constitute 44 billion, fuelwood 3 billion, pulpwood 6 billion, and other products 8 billion. In addition, it will be necessary to provide for certain irreducible losses from fire, insects, and disease of perhaps 3 billion board feet, and there should be a margin of about 8 billion board feet for exports, national security, and new uses (table 3).

Causal Factors in the Present Forest Situation

The reasons why the United States is in danger of becoming a "have-not" forest nation are of interest primarily as a guide to what needs to be done. These reasons go back to colonial days.

An abundant nature endowed the United States with vast forests and

as resources were gradually depleted, the lumber industry mo
gressively from the Eastern Seaboard to the Lake States,
South, and to the West Coast. Now there are no more fro
Soon we must grow as much as we use. Land-disposal policie
Federal government favored forest destruction by settlers
quisition of enormous estates by the railroads and by indiv
Ownership was in fee simple, with complete independence of
tion. Over-investment in sawmills, the accumulating inves
timber through taxes paid on stands held for long periods,
ever-present risk of heavy loss from fire, insects, and dise
contribute to heavy financial pressure to liquidate. Lack
ledge, interest, and confidence in forestry as a profitable
private land management has been an important contributing
responsible for timber depletion.

World War II was only the last in a long series of events le
to the present situation. Drain on the forest during the
though 50 percent or more in excess of growth, was not as hi
many earlier years. Production of lumber and some other
products was much less than needed despite strenuous eff
stimulate output, and we were able to meet essential war-ti
for lumber only by severely curtailing ordinary domestic con
and reducing lumber stocks of producers and distributors fro
war level of about 17 billion feet to about 4 billion feet.
ages of manpower and equipment were most frequently cited
principal deterrents to production, but shortage of readil
sible standing timber accentuated manpower and equipment pr
This timber shortage was a basic underlying reason why w
output of forest products was not higher.

Logging and manufacturing practices deteriorated during the
a variety of reasons. Manpower was inexperienced and so sh
supervisors could not require adherence to standards. Th
kind of equipment was not available or, if at hand, was imp
maintained. There was haste to get the product out. I
belief, based on a several weeks visit to a number of E
countries in 1946, that forests of the United States we
severely damaged by war-time logging than were those of con
Europe.

A Forest Policy and Program for the United States

The forest policy of the United States should be to have th
resources contribute their full potential toward the nationa
being -- visualizing in this concept a vigorous and expand
tional economy. Specifically, forests should (1) grow at a
supply domestic needs for timber products in perpetuity, s
for export, and a margin for national security; (2) be man
assure maintenance of productive forests in all forest regi
hence stable forest industries and the communities dependen
on; (3) be managed to achieve the most practicable combined
all their resources -- an objective that may be attained
public lands; and (4) be reasonably balanced in ownership

The key to these objectives is to increase forest productivity. The growth goal for saw timber should be from 65 to 72 billion board feet annually, or about double the present rate. The growth of all trees -- saw timber as well as smaller trees -- should be increased about 50 percent. This growth goal exceeds present saw-timber use, but sound policy calls for enough production to supply what a prosperous people might use if suitable forest products were available at reasonable prices. In addition, this country, with its vast potential forest growth, should look forward to ultimately helping meet the world shortage of timber rather than to remaining permanently, as it is now, a net-importer of forest products.

It is sound policy to retain in private ownership the greater portion of the forest land. A substantial segment, however, should be in permanent public ownership and management -- Federal, State, and community. A considerable acreage now in private ownership should pass into public ownership. Some consolidation of private holdings appears desirable, but farm and other small holdings should remain a major factor. The national forests, which constitute the largest single class of ownership, occupying 16 percent of the commercial forest land, should serve as a demonstration of good forest practices and a backlog for emergencies. A cardinal policy of management of public forests should be to utilize the timber, forage, water, and recreational resources in the best combinations of use for the interest of all the people.

A forest program that will achieve the desired objectives must remove or alleviate some of the factors that have caused the present situation, such as lack of desirable balance between public and private ownership, financial pressure to liquidate, and lack of knowledge, interest, and confidence in forestry. Moreover, there must be assurance that the public interest in forest lands is adequately safeguarded.

The program advocated by the Forest Service and the Department of Agriculture of the United States consists of three broad categories of measures:

First, a series of public aids to the private forest-landowner, particularly the small owner.

Second, public control of cutting and other forest practices on private lands sufficient to stop forest destruction and to keep these lands reasonably productive.

Third, expansion and intensified management of national forests; and of State and community forests.

A very important corollary of these measures is the expansion and strengthening of the forestry agencies of the States; and effectuating the best possible working relations with these and with other public and private agencies.

Public aids to private owners have been in effect for many years, but on much too small a scale. Even in the beginning days of

sent out, in response to requests, to help owners draw up plans the management of their woodlands. Although most of such help requested by owners of larger tracts, some aid was furnished farmers.

Federal cooperation with the States in farm forestry extension first undertaken on a nationwide basis as a result of the Cla McNary Act of 1924. Prior to that time, total public expenditu for educational work among small forest owners were extremely sm Even at present, extension foresters number only 65 for the en United States and one territory. A much larger force is needed such work, particularly among the small owners.

The Norris-Doxey Act of 1937 broadened and strengthened aids private owners by providing direct technical advice and assista but, after nearly 10 years, there are only some 160 project esters distributed among 580 counties in 39 cooperating states. this type of assistance alone, over 2,000 foresters would be ne in order to reach owners in the remaining 1,400 forested coun and to serve adequately those within the project areas alr established.

Thus, technical advice and assistance in establishing and ten forests, and in harvesting and marketing products, and correspo aid to operators of small processing plants should be extended broader and much larger scale than at present. Federal leade and participation in these activities is essential, but in ge the activities should be carried on in cooperation with a administered by State agencies.

Public aids to private owners in forest planting are likewis need of great enlargement. We now have an estimated 62 mil acres of private forest land either denuded or so poorly stock to be practically idle, not to mention many more millions of a of abandoned farm land and run-out pastures that could best be into forests. About 122,000 acres of private land were plante 1945; and little more than 2 million acres have been successf planted since 1900. The United States is faced with an eno task in reforestation.

Cooperative fire protection on private and State-owned lands made good gains, but still requires great expansion if we a avoid needless heavy losses to dwindling forest growing st Similarly, more effective protection against forest insects diseases is an urgent necessity. In these enlarged activities Federal government must play a leading part, cooperating wit States and private owners.

Forest cooperative associations should be encouraged as a mea achieving good management primarily on small holdings; an establishment of cooperative sustained-yield units, authorize the Congress in 1944, must also be pushed forward to promote g stability of forest industries and employment.

A Federally sponsored forest credit system to make long-term to private owners on terms and

contingent upon sound forest practices. Forestry is now the only major form of land-use for which adequate credit facilities are not available. There are still abundant opportunities for improvement in forest taxation; and forest insurance should be brought within the economic reach of the average forest land owner.

Finally among public aids in the advancement of private forestry is needed expansion and intensification of all phases of forest research.

The second major category of needed action, namely, the public regulation of cutting practices on private lands, has been widely debated in the United States for many years. The Forest Service has long advocated public control to stop forest devastation and keep forest lands productive. In order to assure a consistent pattern of forest regulation -- nationwide and in a reasonable time -- the Forest Service proposal contemplates a basic Federal legislative charter which would establish standards as a guide for forest practices adapted to local conditions and which would give the States every reasonable opportunity to enact and, with Federal assistance, administer State regulatory laws. But the Federal government would assume control in any state which failed to do so within a reasonable period of time.

Today only 14 states have enacted any legislation looking toward such public control of cutting, and none fully meets the requirements envisaged in the Service proposals. Some of the State laws have no mandatory provisions; some do little more than legalize current practices; and in some cases there has been no significant attempt at enforcement. Under the forest situation now existing in the United States, which I described briefly earlier in my remarks, the pressure for public regulation of cutting becomes ever greater with time, and it is hoped that the States will push forward rapidly with adequate regulatory laws.

The expansion and development of the national forests -- and of State and community forests, as the third category of needed measures, is an essential corollary to the enlarged plan of public aids and to public regulation. It is the only practical way to assure stable ownership and satisfactory management for a large acreage of forest land that obviously is not suited to or destined for permanent private forestry. Areas to be acquired would include badly depleted lands that are unlikely to be restored to productive conditions by private owners, some private forest lands within established public forests, and key areas for watershed protection and other purposes. Four aspects of national forest development and management need special emphasis: bringing more acreage under active timber management, reduction in livestock numbers and other measures to clear up an unsatisfactory range situation, improvement of recreation facilities, and safeguarding and improving watershed values. Time is of the essence in carrying out the needed program which I have outlined. Its immediate application in full would mean that the growth goals could be attained in several decades. The longer the delay in taking positive steps to arrest and reverse the declining trend in our timber supply, the greater the program which

Table 1.--Ownership of commercial forest land and saw timber in the United States

Class of ownership	Commercial forest		Saw timber	
	Million acres	Percent	Billion bd. ft.	Percent
Farm	139	30	244	15
Lumber company	37	8)		
Pulp company	15	3)	670	42
Other private	154	34)	—	—
All private	345	75	914	57
National forest	73	16	518	32
Other federal	16	3	104	7
State and local	27	6	65	4

Table 3.--Saw-timber drain in the United States

	1925-29[1]	1936	1944	Potential requirements (1950-55) in terms of saw-timber drain[2]
	Billion board feet			
Lumber	38.0	27.7	34.4	44.3
Fuel wood	7.0	6.4	3.9	3.1
Pulpwood	1.5	2.3	4.8	5.8
Other products	8.1	6.0	6.6	7.8
Total commodity drain	54.6	42.4	49.7	61.0
Losses from fire, insects, diseases, etc.	4.8	5.4	4.2	3.2
Margin for exports, national security, new uses, etc.				7.8
Total	59.4	47.8	53.9	72.0

[1] Figures are the average annual for the 5-year period.

Table 2.--Character of timber cutting on commercial forest land by ownership class[1]

Ownership	Commercial forest area: Total	Commercial forest area: Operating[2]	Good and better	Fair	Poor and destructive
	Million acres		Percent of cutting in each ownership class		
All land	461	403	23	25	52
Private	345	302	8	28	64
Farm	[3] 139	123	4	23	73
Lumber company	37	34	25	27	48
Pulp company	15	14	33	49	18
Other	154	130	5	30	65
Public	116	101	67	19	14
National forest	73	65	80	19	1
Other federal	15	13	43	32	25
State and local	27	24	47	10	43

[1] Basis: Forest Service Reappraisal. 1945.

[2] Ratings apply to "operating" forest acreage. "Nonoperating" includes tracts not operated for timber; those where fire or other agents have obscured evidences of cutting; and some remote national-forest lands that await access roads to open them for logging.

[3] Held by about 3.2 million owners. About 1 million additional owners -- largely small and in the "Other" category -- hold the other 206 million acres of private forest.

LET'S BUILD OUR FOREST PROGRAM IN THE PUBLIC INTEREST

Address by Lyle F. Watts, Chief,
U. S. Forest Service, Department of Agriculture

Before the American Forest Congress, Washington, D. C.
October 9, 1946.

There is widespread realization, among those who really know our forest situation, that it is bad. I want to discuss with you some of the basic issues involved in building a forest program that will effectively meet this situation with full regard for the public interest. It is my understanding that the Higgins Lake Committee proposals and their companion piece, the printed report of the American Forestry Association's Resource Appraisal, have been prepared as a basis for such a discussion at this Congress.

I cannot consider the proposals of the Higgins Lake Committee in a vacuum. I need to interpret them in the setting provided by the Resource Appraisal report.

Let me say freely and at once that most of the Committee proposals are, in my opinion, fully in accord with the best national interest. And they hit the mark. Or at least they are aimed at it. I refer to such items as general public education; protection of forests from fire, insects, and disease; tree planting; forest cooperatives. I refer also to intensification of public forest management, to public payments in lieu of taxes, to watershed protection, and to protection of other forest values and services.

It is true, of course, that these are mostly the old program items--the accepted items. They have long been a part of the program of the Department of Agriculture. I am filing a copy of that program for the record of this Congress.

As for the Resource Appraisal report, it is concise and interestingly presented. It contains a large array of dependable basic statistics on forest areas, volumes, classes of ownership, and related matters. Minor differences between these statistics and those of the Forest Service do not change the general picture. It seems to me, however, that for one thing the report fails to point up clearly and place in their proper perspective the private-land and the public-land aspects of our forest situation.

Private lands are the major element. They comprise 75 percent of our commercial forest acreage. They have furnished the bulk of our wood supply in the past, and must continue to do so. Please remember that generally the best and most accessible forest land is in private ownership. It is here that really intensive forestry is most feasible. And yet on small holdings, which make up three-fourths of the private forest, only 4 percent of the cutting follows good practices. Even on the largest

private holdings, where recent progress has been greatest, only 29 percent of the cutting follows good practices. On public forests the percentage is 67. It ought to be clear that our need for action in forestry centers upon the private lands. This is the background against which we must consider a forest program.

I make this emphasis at the outset because the Resource Appraisal report fails to do so. That report, it seems to me, persistently shifts attention, away from the major problem, to the public forests. It confuses the problem of supplying urgent present needs with the still larger problems of growing timber for the future. Thus it distorts the background.

Now what about the really central issues of the Nation's forest program? What does Higgins Lake offer us to help solve some of the major problems of forest management? What does the Resource Appraisal offer to help us understand those problems?

Let me be frank. I do not believe that most conservationists and those among you who give first concern to the interests of the whole people of America are going to find certain of the proposals and arguments acceptable. I, for one, vigorously reject some of them.

I refer particularly to the three main parts of the proposals and arguments on which Secretary Anderson has already commented:

1. Those dealing with the place of public forests in the national program.

2. In some measure, those dealing with the problem of the small private woodlands.

3. Those dealing with public regulation of private forest practices.

Incidentally, these are the three points on which the Higgins Lake Committee's representatives from the Department of Agriculture filed a minority statement. This minority statement was omitted from the latest printing of the record.

When I take issue with some of the proposals and arguments drawn up for this Congress, I am anxious not to be misunderstood. I realize that the Higgins Lake Committee worked without the help of some of the major groups concerned in American forestry. Public officials aside, the Committee worked without benefit of representation from the $4\frac{1}{4}$ million small owners who hold three-fourths of our private commercial forest land. The Committee membership included no representative of the operators of some 40 thousand small wood-using plants that turn out the bulk of our products. The Committee included not one of the several million workers whose job it is to cut our forests and get the products to market, and whose livelihood depends on forest conservation. Nor were timber-products consumers, as such, represented, despite the fact that it is also for consumers that we are interested in forestry and consumers suffer if we fail in forest conservation.

I hope that in this Congress those groups not represented at Higgins

Lake will speak out.

I would like to emphasize to you that our Nation has for generations been struggling toward an effective forest program that will meet the public interest. We have come a long way, and we still have a very great way to go. We have pinned down, one by one, a few critical forest issues, such as these:

We have one of the world's greatest public-forest systems -- nonpolitical and stable.

We have made good progress in developing strong forestry organizations in the States.

We have made headway toward adequate protection of our forests from fire.

We have come a long way in forest research.

We have made a start toward reasonably good management of private forests -- mostly on the larger holdings.

We have the beginnings of an effective program of special aid to small forest owners.

I need not remind you of the part played in these developments by the Forest Service during more than 40 years. I would like to remind you, however, of the prominent part played by the American Forestry Congress that met first in 1882, and of which this present Congress is at least the nominal successor. That first Congress and later ones discussed many measures which then seemed to be radical, but which have since become a firm and accepted part of our forest policy.

One of these issues long discussed was the creation of permanent public forests -- to be safeguarded from exploitation and managed in the people's interest. The Forest Congress that met here in Washington in 1905, by its very clear and vigorous resolution on that subject, undoubtedly helped to get the national-forest system as we now know it established in the Department of Agriculture. That Congress also passed a forceful resolution on another issue of the day that still holds meaning for us: the Congress protested against the attempts by private interests to get, for their own use, a part of the forest reserve in Minnesota.

Those were far-sighted, bold demands for recognition of the place of public forests in the National program. What is given to us on this subject in the printed materials prepared for the present Forest Congress?

Proposal No. 10 of the Higgins Lake Committee calls for intensive management of the national forests. Taken by itself, it thus appears to endorse the timber-management and -sale policy now in effect. The American Forestry Association's Resource Appraisal report, however, is studded with allegations and innuendoes about the management of the public forests. Parenthetically, I know of no real study of national-forest administration made by the Resource Appraisal crew.

The Forest Service has made its mistakes. It welcomes constructive criticism. I do, however, challenge any implication that past handling of the national forests has contributed measurably to present difficulties. On the contrary, I maintain that the policy of making national-forest stumlage available has been consistent with economic circumstances and sustained-yield principles. As a result, the national forests today serve as an anchor to windward. To a large extent, I think the same is true of other public forest lands.

May I say that I am particularly struck with the views of the American Forestry Association's Resource Appraisal writers that the public forests can contribute something like a third of the national cut, presumably in the near future. This is a matter to which the Forest Service has given much attention. The Appraisal report greatly exaggerates the possibilities. What concerns me is that these overestimates, together with the generally hostile context in which they are presented, will have the effect of inviting and strengthening the pressure for overcutting national-forest timber. This could be a serious threat to public forest-land management.

Let us turn now from the public timber to the public land itself. I have had a good look at Higgins Lake Proposal No. 12 -- or perhaps I should say a long look. This is the proposal -- and I quote -- "for a thorough-going study of Federal public-land policies and administration, including the relationship between Federal, State, and private ownership, with a view to the adoption of a comprehensive policy covering the disposal, reservation, acquisition, and administration of non-urban Federal lands." The Higgins Lake group proposes that a committee be appointed to make the study. With all its complex relations and interrelations, this study, in my judgment, is an impossible committee task!

I am in favor of thorough-going studies where they are necessary and feasible. I personally am convinced that there are many details, and some more than details, of public-land matters that need untangling. And I am all for doing this. But let me ask a question. In addition to recommending the impossible, does this proposal mean a holiday from needed forest acquisition by the public? When are we going to get down to brass tacks and put into public ownership and start acceptable forest management on that additional forest acreage where experience keeps on shouting to us that public ownership is needed?

The Westerner who sees, within or adjacent to the national forests, private lands of low growth capacity being stripped by owners who frankly say they have no intention to stay in business, needs no thorough-going study to convince him that public acquisition of such lands is the wisest course -- and the sooner the better! Nor does the Easterner who sees the washed-out soil and skinned-out woods from which the mountaineers of some areas attempt to make a living, need any further surveys to convince him that such land is unsuited to private tenure.

Let us have action where the need is obvious.

The Resource Appraisal writers, in their discussion of public owner-

ship, make no mention that I can find of specific problems such as these. Nor do they insist upon study and discussion. Rather they seem already prepared to advocate, instead of stable public ownership and management, placing public ownership on a custodial basis, subject to later relinquishment. I take it that this means that the people of the United States and of the several States should acquire and rehabilitate at public expense the depleted forests -- or hold and conservatively operate merchantable forests for a time. Then, when demand for timber is strong and prices high, the land will be passed to private ownership. Those who value the principle of permanent public forest conservation -- for timber production, for watershed protection, for public recreation and sport, and for other forest uses -- should be shocked at such a proposal.

The writers express the opinion that State forest "custody" is to be preferred to Federal, since it is so much easier for private interests to get the forests from State custodians. Those who, like myself, have strong faith in stable State forestry cannot be pleased at the implications of such a statement.

Incidentally, I wonder if the Higgins Lake Committee, in using the word "disposal" with reference to Federal lands, had in mind this same policy of public forest "custody"? I earnestly hope not.

I have devoted so much time to questions of public forestry because I am deeply concerned lest the Higgins Lake recommendation and the Resource Appraisal report may have the effect of threatening this, the cornerstone of our national policy of forest conservation.

So much for the public lands. Let me now reemphasize as clearly as I can the following fact: The principal forest problem of the United States -- the crux of the issue of obtaining the forest products and services we need -- is to get satisfactory forest management on private lands.

This fact would stand out in the American Forestry Association's Resource Appraisal report had the writers not interlarded their pages so heavily with editorial matter on other subjects. The fact does stand out clearly in the results of the current Forest Service reappraisal of the forest situation, preliminary reports from which will soon be available. Here is the gist of the situation:

1. Private owners hold three-fourths of our commercial forest land. Medium and large owners -- some 3,600 of them -- hold 18 percent. Some 4¼ million small owners -- their properties averaging about 60 acres -- hold 57 percent. Two-thirds of all timber cutting on these private lands follows poor or destructive practices. On the small holdings, nearly three-fourths of the cutting is poor or destructive.

2. Our forests are not providing us with our timber needs today. Even under the most vigorous program of good management it will be many years before they can fully supply our potential requirements. These requirements, together with an allowance for inevitable losses and a margin for security, exports, and other purposes, amount to some 18 or 20 billion cubic board feet of all timber per year, including 65 or 70 billion board feet of saw-timber. Most of this must come from private lands.

3. Actual growth of saw timber, which is the critical item, falls far short of this goal. Growth will need to be doubled in the East, more than doubled in the West. That means building up the growing stock and judicious cutting of remaining old growth.

4. We are, however, continuing to deplete our saw-timber stands, for saw-timber drain still exceeds growth by a wide margin. Our present stand of 1,600 billion board feet represents, conservatively, a 9-percent decline since 1938, a 43-percent decline since 1909. Our most accessible areas, our finest stands, our best species of trees, and our largest timber have been particularly hard hit. We should not be misled by the relatively favorable balance of cubic-foot growth and drain of all timber. Too much of that growth is of inferior species or poor quality. For example, in some areas, cubi-foot growth now exceeds current drain, but good saw timber is scarce. Finding profitable use for the low-grade timber that forms the bulk of the stand is a major problem in such areas.

5. Declining timber quantity and quality are profoundly affecting the industries based on forest raw material. Plants that need high-grade logs are feeling the tightest pinch; some can already see the end of their supplies. In the lumber industry in the West, local depletion has meant local depression. In the East, the horde of little sawmills is subsisting upon ever smaller logs. The pulp industry as a whole is in reasonably good supply position, though even here there are areas of shortage.

6. The pinch of timber supplies became a grave matter during the war. And it is felt by all of us today. Our distressing housing shortage is one sympton. Over and beyond the problems of labor, equipment, and prices is the problem of inadequate stumpage supply.

It looks as though we are faced with a dilemma: We need more timber products, and yet we need to curtail output in the East if we are to build up growing stocks for the future. I doubt if we can bridge the gap completely. But there is help to be found in our Western forests through wise handling, and the public forests can contribute more, though we cannot demand the impossible of them. National forests are already contributing twice their 1940 output.

What of the future? Isn't it obvious that if we are to improve management and build up growing stocks so as eventually to increase output we had better start now? The longer we wait the more difficult the adjustment will be. The solution lies primarily not on public lands, which occupy only a fourth of the area and are generally well managed, but on private lands, which occupy three-fourths of the area and are, in the main, poorly managed. That is why I say that the principal forest problem of the United States is to get satisfactory forest management on private lands -- and, I will add, especially on the small private holdings.

Returning now to program matters, I want to consider the needs of this predominant group of small owners -- farmers and other small forest owners.

I strongly endorse the emphasis placed by the Higgins Lake Committee on the small forest owner and processor as major factors in the forest situation. I have the feeling, however, that Proposal No. 2 of this Committee fails to come to grips effectively with the small-owner problem.

First, the proposal appears to consider mainly the farm-forest owner. Nearly as much commercial forest land is owned by a million small owners who are not farmers. The handicaps of both groups are similar. Their holdings are intermingled. Both need the same kind of technical forestry assistance. It does not make sense to neglect half of the whole small-owner acreage; nor does it make sense to set up one type of organization to help one group and another type of organization to help the other.

Second, the Committee's proposal appears to recommend diffusion of small-owner assistance among many Federal and State agencies. Such overlapping programs would be costly and would get us nowhere.

Actual experience with the problems of thousands of small owners and processors convinces us that individual, on-the-ground assistance is needed. To be effective, this assistance requires a high order of technical forestry skill. It is not going to be an easy job or a cheap one, but it is what must be done to get better forest management and more efficient timber utilization within a reasonable time.

I should like now to consider the last of the three main program issues that seem to me of prime importance: public regulation of private forest practices.

I have heard it said that education should precede regulation. The Resource Appraisal report contains some remarks to that effect. The Forest Service has always subscribed to that principle. It seems to me that the principle has a twofold meaning for us today.

In the first place, we are using the educational approach. We have been using it for several generations. It must be continued and strengthened. But we are now ready -- over-ready, as our forest situation attests -- to add more decisive measures. Many individuals and groups recognize this. The Higgins Lake Committee recognizes it in principle

In the second place, the Forest Service philosophy has always been that forest regulation should be accompanied by education. I am sure that every reasonable student of the subject conceives of regulation in this way. The purpose is to aid the forest operator who is not sufficiently informed to comply with the requirements. Such an approach, as we know by everyday experience with law, is sufficient in most cases.

I view forest regulation, for one thing, as a means of protecting the public from the adverse effects of destructive cutting upon timber growing stock and upon the watershed and other values of the forest. To use a phrase from the Resource Appraisal report, it is a stop-loss measure. Really good forest management must go far beyond what may be required by regulation. Such management will be undertaken because it is good business. If large numbers of private forest owners are ready, able, and willing to practice reasonable forest conservation -- and the Resource Appraisal report is one authority that they are -- then these owners will be unaffected by forest regulation, except as they will be protected by it.

Now if we want forest regulation -- if we regard it, as the Higgins Lake Committee commendably appears to do, as an essential part of our national program -- then surely we want our regulation effective and nation-

ally applicable. For this reason I regard the Committee's Proposal No. 3, for purely optional State control, as inadequate. Conservation knows no State boundaries. Our need, as a whole nation, is for better forestry on all lands to solve a critical national problem. This need knows no State boundaries. It is essential to the progress of forest conservation that we have a national law assuring basic Nation-wide standards of forest regulation.

Let me restate to you the forest program of the United States Department of Agriculture and the Forest Service as it bears on the three subjects I have discussed. This, you understand, is but a part of our program. It is the part that calls for special emphasis before this Congress.

First, as to the place of public forests in the national program: The public forests should be managed intensively for full output consistent with the best principles of conservation. We point to the substantial progress already made in that direction. We propose public acquisition -- local, State, and Federal -- and stable public tenure of that substantial acreage of private forest land which clearly can best serve the interests of the people if placed in public ownership.

Second, as to the problem of small private woodlands: We continue to recommend a greatly enlarged program of on-the-ground technical advice and assistance for both nonfarm and farm small owners. We call attention to the need for new legislation that will strenghten Federal authority for technical assistance to nonfarmers and processors.

Third and finally, as to public regulation of private forest practices: We propose that a basic Federal regulatory law be enacted. This law should establish reasonable standards as a guide for forest practices adaptable to local conditions. We propose that the States be given opportunity and aid to enact and put in force their own regulatory laws. The Federal law, however, should provide for Federal administration in States which, after a reasonable period, fail to enact and administer their own regulation consistent with the Federal law.

I hope that this Congress will be a forum for all who have contributions to make to the Nation's forest program. Our forest policy is a growing thing. Every such discussion as yours serves, if we apply the vision and ideals, to advance the cause of forest conservation closer to its goal of the long-run public interest. Let us always keep that goal in clear view.

Today our need to keep the conservation goal in view is especially great. I do not say that this Forest Congress faces any graver issues than did that other Forest Congress of 41 years ago: Surely no proposal will call for greater courage than did the far-sighted public-land proposals of that earlier Congress. But I do say that the present Congress faces graver forest problems than we have ever known: Not only have our forest conditions greatly deteriorated, but our national and world need for full use and wise use of all resources has greatly expanded. Let us make the most of this challenge and this opportunity in forest conservation.

THE FOREST SITUATION IN THE UNITED STATES

by
Lyle F. Watts, Chief, Forest Service,
United States Department of Agriculture

Presented to the forestry section, United Nations Conference on Food and Agriculture, Quebec, Canada, October 23, 1945.

The United States must greatly increase its annual timber growth if its forest industries are to hold the place they should in the life of the Nation. We are near the end in exploitation of the great virgin forests which have supplied our needs for 300 years. The time is rapidly approaching when we must grow as much as we use. And there is every indication that the demand for forest products will be high. In fact, we believe that in the expanded economy to which we look forward we must plan a forest crop of 21-1/2 billion cubic feet annually, which is some 5 billion cubic feet more than what we took from our forests in the war years.

The over-all facts of forest depletion in the United States are best told in estimates of sawtimber volume. When the original colonies were being settled some 300 years ago, the country that is now the United States is believed to have contained at least 7,625 billion board feet of standing timber. In 1909, when the first crude inventory was compiled, the stand was placed at 2,826 billion board feet. And our latest comprehensive estimate, made in 1938, showed only 1,764 billion board feet, about two-thirds of which was still classed as old growth.

A reduction of 37 percent in our sawtimber stand in 30 years is a matter of concern, especially when the trend of depletion has not been stopped.

Three-fourths of our commercial forest land lies east of the Great Plains. But only one-third of the sawtimber is in that part of the country. There is less sawtimber in all the East than in the narrow belt of the Douglas-fir region west of the Cascade Mountains in Oregon and Washington. The severity of past cutting in the East can be further emphasized by pointing out that the average stand of about 1,600 board feet per acre of forest land is less than half as much as the pre-war stand per acre in Germany.

Even in the Pacific Northwest, which holds the bulk of our virgin timber, exhaustion of timber supplies is rapidly making itself felt. Mills representing 60 percent of the present sawmill capacity in Washington and Oregon do not have private timber to operate more than 15 years. Some of these mills will be able to obtain public timber to prolong operation. And as others close the remnants of their timber supply will become available for those that remain. But lack of timber will inevitably force the closing of many mills in the next few years.

The problem we face is not one of acreage available for forestry. Our 462 million acres of commercial forest land is capable of producing all the timber we are likely to use without encroaching on areas dedicated to recreational use or watershed protection. But these 462 million acres have not been kept productive. Over 70 million acres are virtually without tree growth as a result of fire and heavy cutting. Much of the remainder is only partially stocked and producing less than half of what it should. We have allowed the growing stock in most of the East to fall far below what is needed to sustain current drain, to say nothing of the larger output envisaged for the future.

To understand our problem you must know that three-quarters of our commercial forest land is in private ownership and that nine-tenths of the annual output comes from these private lands.

The public forests, mostly in the rough mountainous country of the West, are in general less productive and less accessible than the privately owned lands. Less than half of the 179 million acres of National Forest land is classifiee as commercial forest. The balance is open range, barren mountain country, chaparral and other non-commercial forest. State and community forests together comprise less than 25 million acres.

We have made substantial progress in the protection and management of our public forests. On the National Forests timber is sold only in accordance with sustained-yield management plans. Slopes of critical watershed value are given special protection. Grazing of livestock on the National Forests is regulated by permits in order to check range deterioration and prevent soil erosion. Recreational use has been facilitated by construction of roads and trails, and the development of camp grounds, picnic spots, bathing beaches, and winter sports areas.

Looking ahead, we believe the acreage of public forests should be substantially increased to include perhaps half of our commercial forest land.

But the crux of our timber problem lies in the private forest lands. With minor exceptions in a few States the public has no control over the cutting of timber on private lands. Clear cutting has always been the general practice in commercial operations. In recent years an increasing number of forest industries and other land owners have planned their operations for continuous production. But by far the greater part of the cutting is still done without regard for future crops.

Under present harvesting methods, especially in the virgin forests of the Northwest, huge volumes of wood are left on the ground -- tree tops, broken trunks, cull logs and inferior species. Tremendous waste also occurs in the sawmills and other wood using factories. Better utilization of the forest crop can offset, in part, a prospective timber shortage.

Progress in forest crop production and better utilization depends upon research. The Federal Government has taken the lead in a comprehensive program of forest research carried out through 11 regional forest and range experiment stations and a central forest products laboratory. The program deals with watershed influences and range management as well as timber. A certain amount of research is also carried on by educational institutions and forest industries.

In addition to administration of the National Forests and carrying on research, the

Federal Government conducts a number of programs to facilitate and encourage good forest management on private lands.

Most important of these is cooperation with the States in the protection of forests from fire. Last year organized protection was provided for some 297 million acres of privately owned forests. Yet almost one-third of the private land in need of protection is still without it.

The Federal Government also cooperates with the States in helping farmers improve their woodland and market their forest products to the best advantage. In the Agricultural Adjustment program benefit payments are offered to farmers in some States for tree planting and other forest practices.

Aid to non-farm owners and operators is largely confined to technical assistance in the preparation of forest management plans. Because of limited appropriations, this work has been directed primarily at the larger operating owners. The small non-farm owners, who control almost a third of the private forest acreage, present an almost untouched field.

The Forest Service believes that the educational approach alone is too slow to be effective in sustaining an adequate flow of forest products. To help bridge the gap until second-growth forests are ready to support a larger output, the Federal Government should establish standards of forest practice that will stop premature cutting and other destructive practices and keep the land reasonably productive. We propose that the Federal Government extend financial aid to the States that enact regulatory legislation and enforce specific cutting rules conforming to the Federal standards; and we believe the Federal Government should itself regulate forest practices in States that fail to do so within a reasonable period of years. It is important to note that we do not propose to regulate cutting budgets or otherwise control the volume of output, except as restrictions on forest practices may limit the amount that may be removed from any particular property.

To help bring our forests and ranges into condition to support the demands that will be placed upon them in an economy of abundance, we should undertake without delay a large scale program of forest work. The work needed to restore our depleted forests and run-down range lands, and to develop fully the many values that forests can bring offers a major opportunity to build up the Nation's productive assets and broaden the base for permanent employment.

We believe that the comprehensive forestry program that I have so briefly outlined will eventually create as many as 2,500,000 permanent new jobs. Thus our forests should play an important part in helping the Nation achieve the goal of full employment which is commonly regarded as the most critical issue facing our democracy today.

- - - - - - -

Federal Participation in Measures for Better Forest Practices.
Address by
Lyle F. Watts, Chief, Forest Service
Maryland Conservation Forum, Baltimore, Md.,
April 12, 1944

Maryland Steps Forward in Forestry

In putting its Forest Conservancy Districts Act of 1943 into effect, Maryland is taking a long step forward in forestry. Its progress will be watched closely by other states, by the forestry profession, and by the forest products industries throughout the Nation.

Maryland's law is noteworthy in that it recognizes the need for more positive action to assure better forest practices on private lands, but does not spell out the silvicultural details. It provides for the setting up of district forestry boards and for local participation in promulgation of rules of forest practice which are to have the force of law. This is in line with recommendations made by the Forest Service to the Joint Congressional Committee on Forestry in 1938. While the wording of the Maryland law is somewhat indirect, public regulation is clearly involved. But let's not be carried away by any emotional reaction against regulation as an evil to be resisted.

Under the law, every person owning 3 acres or more of forest land is required to arrange for restocking of his land after cutting, to leave conditions favorable for regrowth, to refrain from cutting immature timber except for stand improvement and to maintain adequate growing stock. Such regulation is not regimentation. It leaves wide latitude for individual initiative. It does not involve taking over any private business. It does no more than establish safeguards to the public interest in proper management of a basic natural resource.

Such a law brings to bear upon forestry a truism enunciated by George Washington in a letter to John Jay in 1782 when he wrote: "Experience has taught us that men will not adopt and carry into execution measures the best calculated for their own good without the intervention of a coercive power." The pertinence of this statement to our discussion is apparent when we consider that in Maryland, under the cooperative plan of offering technical services to private owners that has been in operation for 30 years, only 5 percent of the woodland has been examined as the basis for management plans and only 1 percent has actually been marked for cutting to meet forestry objectives.

Our democracy has not found it inconsistent with basic principles of freedom to exercise regulatory authority in other fields. Compulsory education for our youth, for example, has long been recognized as basic to progress in democratic government. Your state forester has emphasized that application of rules of forest practice under the new law will be primarily an educational job. And I think the real significance of public regulation of forest practices is clarified when it is viewed as compulsory education in forestry, -- education that holds promise of raising the general level of voluntary and intelligent individual action in forest management to a higher point than actually required by the law.

(over)

In the light of widespread concern about the extension of federal activities in the states, I think it is significant that the framers of the Maryland Forest Conservancy Districts Act evidently anticipated and desired federal participation. In fact, it is the duty of the district forestry boards to secure the cooperation and assistance of the United States and any of its agencies as well as the agencies of the State. It is therefore appropriate to discuss what the Federal Government is prepared to do and what the Forest Service thinks it should do to obtain better forest practices on private forest lands throughout the country.

Federal Government Aims to Help Private Owners

At the outset I want to make it perfectly clear that the Department of Agriculture believes that it is sound public policy to make good forest practice attractive to private owners. A major objective of the Department's forest program is to give private owners and operators every reasonable encouragement and aid.

Of fundamental importance in this connection is the comprehensive research at the regional forest experiment stations and the Forest Products Laboratory. For more than 20 years the Forest Service has been building up knowledge of the growth habits of our principal commercial species. This research has provided the essential technical background for methods of cutting that will perpetuate the forest. It has shown the economic advantages of selective cutting. Research at the Forest Products Laboratory opens up new fields in pulp and paper making, wood plastics, and other forms of chemical utilization. It helps wood to compete in older markets by improving its serviceability through timber engineering, seasoning, conditioning and preservation. Research requires long years of persistent effort. It is indispensable to progress in better forest management. It is an invaluable service that private owners as a rule cannot provide for themselves.

The Federal Government is participating in another basic and indispensable service to all forest land owners through cooperative fire protection. In the last fiscal year, with war emergency funds supplementing regular Clarke-McNary Act allotments, the Federal Government contributed almost $200,000 of the $442,000 expended for forest fire protection in Maryland. Federal cooperation with the States will undoubtedly be substantially increased if S. 45, a bill that passed the Senate last July and is now before the House, is finally enacted.

It is generally recognized that the public interest in adequate protection from fire transcends individual property rights. Forest land owners have long accepted the restrictions imposed by the forest fire laws of the several states. It is worth noting in passing that the restrictions on private owners contemplated in the regulation of cutting practices do not differ in principle from those imposed for fire protection.

In service to individual owners the Federal Government functions through the State in the production and distribution of forest planting stock, in the educational program of the Extension Service, in woodland demonstration projects, and in farm forest marketing projects. The service provided in the marketing projects during the past 2 years is proving particularly effective. The project foresters, working within the limits of an area with which they can become personally familiar, are not only assisting owners in selling their timber crops advantageously, but also are demonstrating methods of cutting which maintain productive growing stock and give stability to their forestry operations. It is probable that these project foresters will play a large part in the application of forest practice rules under the Forest Conservancy District Act, since this act calls for the employ-

ment of a forester in each district to advise owners with regard to forest problems.

The Federal Government is giving aid directly to individuals through the Federal Land Banks, through F. S. A. loans and advice, through the complete farm plans furnished by the Soil Conservation Service, and through woodland demonstration projects. Beyond this the Forest Service is prepared to assist the non-farm and industrial owners in the preparation of plans for the management of their forest properties. Furthermore, as a wartime measure, the Forest Service has a number of men working in counties not served by farm forest marketing projects, to stimulate and facilitate the output of lumber and other forest products.

The legislative program advocated by the Forest Service would further encourage good forest management by provision for long-time forest loans and by providing forest insurance at reasonable rates.

In the face of all these aids to private owners it is difficult to rationalize the fears of those who charge that because the Forest Service has advocated public regulation of forest practices it aims to undermine private forest enterprise. Actually the Forest Service aims to put private forest enterprise on a much sounder and more permanent foundation.

It is encouraging to learn that in Maryland the effort to establish legal standards of forest practice is viewed as an extension of public guidance rather than as an encroachment on individual freedom.

Public Interest in Forest Practices is Nation-wide

George Washington emphasized the necessity for coercive action to get people to adopt measures for their own good. It is important to recognize also that the notion that individual and social aims are always in accord is open to question. Too often the individual is motivated by desire for immediate gain which in the final analysis proves to be at the expense of the community. Exploitation of soil and forest is patently in this category. So, the government must intervene and restrain the individual on behalf of the community.

In this connection I should like to quote from "The Wind Blew from the East" by Ferner Nuhn:

> "Title to a certain piece of earth is one of our more or less useless human fictions .....The only true title to things is use, and good use in the long run is good title, while bad use is bad title. We will soon lose what we cannot use well, no matter how sure we are that we own it."

Applying this thought to our forest problem I want to point out that no owner making good use of his land as judged by criteria of good forest practice need feel any encroachment on his title through the type of public regulation proposed by the Forest Service. But I believe that such regulation is a necessity because of widespread and traditional misuse of so much private forest land.

To reiterate oft-quoted facts that must be familiar to most of you: One sixth of our commercial forest land, some 77 million acres, is essentially unproduc-

tive as a result of destructive cutting and fire. A large part of the remaining area is only partially productive. The stand of sawtimber in the United States appears to have been reduced 40 percent in 30 years prior to the war. Depletion of basic growing stocks has not yet been checked on more than a small fraction of the privately owned forest area. Although we have enough forest land to produce timber for all foreseeable needs, if it is properly managed, we will probably have to double the present rate of growth in order to meet future requirements. For annual sawtimber growth is little more than half of wartime drain and our estimates indicate that total consumption in the years ahead is likely to be even higher than at present if timber is available at prices that people can afford to pay.

Proper forest land use is a matter of national significance with which the Federal Government must be concerned because timber is such an important item in the national economy. The war has shown how vital an abundant timber supply is for national security. Internally, people in the industrial sections of the East and in the sparsely wooded or treeless agricultural areas of the Middle West and Plains States have an interest in the productivity of the major timber-producing States of the South and the far West. The Federal Government cannot evade responsibility for protecting their interests in the permanent timber supply.

And the watersheds of great streams which provide hydroelectric power to turn the wheels of industry or water to irrigate agricultural crops do not conform to state lines. Protection of the forests from destructive cutting is as important as protection from fire. And it is just as important for flood control and the regulation of streamflow as it is for timber production.

This, in brief and only in part, is the basis for my conclusion that the Federal Government must take active leadership in the nation-wide application of measures that will prevent forest destruction, check further forest deterioration and keep forest lands reasonably productive.

Federal Standards of Forest Practice

What I wish to make clear at this point is that I do not believe our national forest problem can be successfully met on the basis of state legislation alone. State programs such as that upon which Maryland has embarked, do not eliminate the need for federal legislation.

In order to assure nation-wide adherence to satisfactory levels of forest practices, the standards for regulation should be established by federal law. This does not mean that the States could not administer forest regulation within their borders in accordance with their own procedures and institutions. But it would mean that the local rules of practice adopted by the States should not fall below the standards set up in the federal law. And the Department of Agriculture should have authority to act directly in any State which failed to enact suitable legislation and enforce adequate rules of practice.

State action in this field should not be delayed by the fact that the federal legislation does not yet exist. Inauguration of a regulatory system takes time. Development of adequate rules of forest practice to meet various local conditions calls for a high level of group thinking. It will involve a lot of intensive educational effort. States like Maryland that push forward on their own initiative will have a distinct advantage over those that hold off. It may not

be possible at the outset to set forest practice at the level which may ultimately be desirable. But is is to be expected that experience will lead to a general improvement in forest operations and a gradual raising of the levels of required practice. Thus States which inaugurate regulation at a very low level may need to strengthen their standards when a federal system comes into operation, while States which have attained high standards may find no amendment necessary. The Maryland law appears to provide a framework sufficiently broad to function effectively within the pattern suggested. Final judgment as to the adequacy of the Maryland program must, of course, wait upon the formulation and application of local rules of practice by the District Forestry Boards.

As a guide to thinking and action in the States, it is appropriate to outline in some detail what the Forest Service thinks the federal standards should require. In the first place rules of forest practice should include provision for protecting forest lands against fire. The responsibility of owners and operators in connection with logging, and in disposal of inflammable material resulting from logging operations should be defined. The rules should also provide for protection from insects and disease, including such measures as the disposal of slash, unpeeled logs, or diseased and insect-infested trees when necessary and reasonable. Finally the rules should safeguard the proper use of forest lands and prevent improper exploitation by

(a) Providing for adequate restocking after cutting with trees of desirable species and form;

(b) Prohibiting premature or wasteful cutting in young stands;

(c) Providing for reserving a sufficient growing stock of desirable trees to keep the lands reasonably productive;

(d) Preventing avoidable damage to uncut trees or young growth;

(e) Regulating grazing to prevent damage to tree growth and protect the watershed; and

(f) Prohibiting clear cutting, or limiting the size of a tract that may be clear cut, except where clear cutting is silviculturally desirable or the land is to be put to some other suitable use.

The intent of these standards is clearly to maintain a growing stock of trees of desirable species and of a size larger than seedlings and small saplings wherever practicable. The level of required silvicultural practices would usually fall somewhat below that attained on the national forests and the more intensively managed private lands. The standards would not of themselves assure sustained-yield management.

In preparing rules of forest practice, forest lands within each administrative area should be classified with reference to such factors as forest type and conditions, topography, prevalence of insects or diseases or other relevant factors. The rules should apply uniformly to all lands within each such class. The several provisions that I have mentioned would be applied to each class so far as they are applicable and necessary, but the rules need not be restricted to these specific provisions. Insofar as practical, rules of practice should be couched in descriptive terms readily understood by landowners. To provide flex-

ibility in the application of good practices to a particular property opportunity should be given for any owner to operate under a working plan for his own property that would not fall below the level of the prescribed rules for the classes and conditions involved.

It is my firm belief that state and Federal Governments must collaborate in a plan of public regulation such as I have outlined. Not only should the States that undertake to administer such forest regulation themselves expect financial aid from the Federal Government, but the Federal Government should expect cooperation rather than opposition from the States in cases where it becomes necessary for it to take over the job or where the State prefers to have it do so.

I am not seriously concerned about the problem of enforcement. Of course, it will take money -- and your state forestry department is seriously handicapped by lack of an appropriation with which to work right now. But administration of the regulation I envisage in an atmosphere of helpful official guidance and assistance should have far-reaching educational effects. It is probable and indeed desirable that most owners will soon be led to give their lands more intensive management than will be required by the law. Such an outcome will simplify the task of enforcement, but will by no means eliminate the need for having standards of forest practice established by law.

Forestry Means Human Welfare

In closing I want to congratulate the people of Maryland on the constructive manner in which its new plan to improve private forest practices is being worked out. And I want to assure you that we in the Forest Service want to do all we can to help put your program on a truly satisfactory basis.

For success in this program means more than the conservation of a basic resource. It means jobs for workers, opportunities for enterprise, and lifeblood for rural communities which contribute so much to our American way of life.

# # # # #

WHERE ARE THE GOAL POSTS?
address by
Lyle F. Watts, Chief, Forest Service
Southern Forestry Conference, Atlanta, Ga.,
January 20, 1944

Occasionally we read of a football player becoming confused and running the wrong way to down the ball behind his own goal posts. Likely as not the player turns out to be one of the best trained and most competent men on the team. How disconsolate he becomes when he realizes his mistake!

Such a setting for my remarks is in line with an item entitled "Let's get our Signals Straight" announcing this meeting in the December issue of the "Forest Farmer." In defining the objectives of the conference, the editor suggested that some of the players on the Southern Forestry team do not know where the goal posts are!

But before attempting to find out where the goal posts are, or to agree on signals, let's be sure we are playing on the same team. We all wear jerseys showing the same colors of conservation and economic progress, but as I review statements by your leaders which appeared in "The Forest Farmer" in 1942, I see your president out there running with the ball in direct opposition to the Forest Service. And I wonder if you should have invited me in to help fix up the signals for your team. So let's go into a huddle to straighten this out. But remember there is a sharp limit on the time we can debate amongst ourselves. If we dally too long before going into action a penalty will be imposed and we will have that much further to go.

What is the Game?

I hope I am not wrong in assuming that we are all playing the same game. Do we not all strive for economic progress in the South through strengthening and expanding the forest industries? And do we not all recognize that better protection and better forest management are essential to the expansion and sustenance of prosperous forest industries?

We are all convinced that forestry can play a vital part in the diversified agriculture to which the South is turning. And we believe that forest farming may be the economic solution for millions of acres which are now more of a liability than an asset to the counties in which they are located.

I hope that you believe as firmly as I do that the welfare of the people of the South and the conservation of forests are interdependent. It is shortsighted to suppose that forest industries can be on a sound basis with labor generally in poverty and the small landowners under constant economic pressure. A prosperous South must be based on economic health for all of the people. On the one hand labor efficiency will be increased by giving more of the coming generation an adequate education and ~~be~~ inculcate higher standards of individual responsibility and initiative. On the other hand, I believe that a

(over)

more intelligent and skilled labor group will facilitate expansion of the primary forest industries and open the way for the secondary industries that we all hope to see established in the South. And this will react to the benefit of small owners. Fabricating and chemical industries based on wood or gum, in turn, hold much promise of further raising the level of living for the entire community.

As I appraise your basic objectives, we are playing the same game. And I wonder whether there is any organization in the South in better position to stimulate progress than the Forest Farmers Association Cooperative. For the crux of the forest problem here is in the small owners, who not only provide most of the timber for the thousands of small mills that now account for the bulk of the cut, but also supply much for many large plants. Forest landowners should be a most constructive influence because they view the problem from the most fundamental angle, namely the productivity of the forest itself. If they are properly organized and imbued with the concept of growing timber as a crop, the possibility of wasteful exploitation under the pressure of industrial demand will be reduced. The facilities for converting the timber into manufactured products will appear as servants rather than despoilers of the land. But to attain its full stature, an association of landowners like this must keep its vision high and be guided by social welfare in a large sense. It should not be bound by any traditional political dogma or special group interest.

What is the Goal?

Having defined the direction we are going, it should not require much discussion of statistical detail to find out how far we have to go. The Forest Survey has published its findings on the resource situation and you are all familiar with the picture.

But we must guard against over-optimistic interpretation of local resource relationships which prevailed in the depression years when much of the Survey data were gathered. The impact of the war has rendered the balance between growth and drain less favorable. It has accentuated the sawtimber depletion that has characterized the long-time trend.

Furthermore, we must remember that the stand deterioration that follows repeated heavy cutting and "creaming" is of more significance than bare statistics of volume change. And we now realize that we must guard against "inflation" in the use of volume data obtained in the Survey because the system takes in all trees no matter how scattered they are or how small the stand. In a concrete case in another region where small ownership predominates, discounts of more than 20 percent have been found necessary to translate similar survey data into volumes actually available for industrial use.

It is also worth emphasizing that forest productivity is roughly proportional to the volume of growing stock. Salvation does not lie in "cellulose forestry" with rotations that yield only trees suitable for chemical conversion. Plenty of wood for such conversion will be available as a by-product of management aiming at high-quality sawtimber. But sawlogs cannot be cut from seedlings and saplings. Good growth requires ample growing stock.

To get perspective for defining the goal of Southern Forestry we must consider the outlook for wood use and think about the South in terms of national needs. But so much has been written on the new era of wood, which we seem to be entering, that I need not dwell on the many new uses opening up in the field of chemistry. And you will not need to be convinced that new engineering techniques for conditioning wood and facilitating its use for construction will enable wood to hold its place in competition with other materials. Furthermore, there can be little doubt that, in addition to domestic demands, requirements for reconstruction abroad may bring opportunities for export that will tax the productive capacity of our forests.

All in all, recent developments support the soundness of the national goal of annual growth proposed by the Forest Service in 1938. This goal of 21.4 billion cubic feet, including some 68 billion board feet of sawtimber, compares with wartime consumption and losses of less than 17 billion cubic feet, involving perhaps 60 billion board feet of sawtimber. In the economy of abundance on which post-war prosperity must be built, we should plan for an annual forest crop substantially greater than what we are using now. When we recall that wartime drain is almost twice our current annual growth, the forestry task before the Nation becomes clearer.

The South has a Great Opportunity and also a Large Responsibility.

The South has pointed with justifiable pride to its vast acreage of forest land. It has extolled the virtues of the remarkably prolific and commercially useful species which are so widespread. It has not been slow to appreciate the natural advantages of easy logging conditions. It is beginning to realize the opportunity for integrated management to produce naval stores, pulpwood, poles, piling and sawlogs. Even stock raising is recognized as having a place in southern forest management. And the South knows that the products of its forest industries are in demand in the great industrial and agricultural zones of the north and central states.

But I wonder if the South has realized the extent of its responsibility to the Nation in meeting future timber requirements. Balancing all factors in the various regions it seems likely that the South should supply about half of the Nation's future output. Now let's see where we stand in relation to such a goal. Before the forests were subjected to the accelerated depletion incident to the war, current growth in the South, exclusive of the mountain region, was estimated at 5.6 billion cu. ft. with 18.6 billion bd. ft. of sawtimber. Evidently to supply half of a national goal of 21.4 billion cu. ft., it will be necessary to double current annual growth in the South.

Considering that second growth pine stands are now less than 50 percent stocked, this goal is not at all extreme. But, let us not be deceived as to the magnitude or difficulty of the job! Our forestry team will have to fight hard and long to overcome the obstacles which lie between it and the goal. We shall have to work shoulder to shoulder, using every formation that offers promise of advancing the ball.

Tactics which have been tried in the past have not proved adequate. The kind of progress experienced in the years before the war in my judgment does not justify the over-optimism and complacency that are so prevalent in the South. Without allowing for disparity in the basis for the estimates which would tend to exaggerate the change, the figure for annual growth in 1938 was only 0.8 billion cu. ft. greater than that used for 1930. Thus, even if that increase could be accepted at face value, we could not hope to double the growth in less than 50 or 60 years. But we cannot be sure that even such a prospect is justified. The apparent increase in annual growth in the years preceding the war developed when the annual cut was largely supplied by stagnant old growth. Now almost all of the cut must be borne by second growth. And a huge pulp industry has arisen to impose an additional demand of 7 million cords annually upon the young timber.

I want to tell you what impressions I gained from about 8 weeks traveling in the South and talking with informed people. I was encouraged by the number of owners who are really getting into sustained-yield management and I saw a lot of forest land in good condition. But my impression is that there still is much more bad than good forest practice. I think you will all agree that heavy cutting, and particularly premature liquidation of promising young timber, is working with uncontrolled fire to hold down the volume of growth accruing each year. In some sections it may lead to a shortage of trees available for turpentining.

I am appalled by our failure to solve the problem of fire control. When I drove from Jacksonville to Lake City, Florida, last summer I saw practically no country outside the relatively small area state-protected or federally-owned, that had not been burned hard during the previous winter and spring. We shall have to break up this combination of destructive cutting and uncontrolled fire if we are to make any real progress toward the goal.

Let me repeat, our future national welfare requires that forest productivity in the South be doubled. You have, therefore, a responsibility going much further than striking a balance between growth and drain at whatever level you happen to find yourselves. But in this goal also lies the chief hope for much of the industrial expansion so eagerly sought by the South.

Federal Aids Facilitate Progress

For more than 20 years the Forest Service has been laying the groundwork for this increased production and industrial expansion through its farflung research on the growth, reproduction and management of the principal commercial species, on forest planting, on the economics of forestry in the region, on increasing the efficiency of naval stores operation, on methods of seasoning lumber, on the chemistry of pulp and paper making, etc.

For a similar period the Federal Government has been aiding and encouraging the States and the landowners in the protection of forests from fire. Considering the traditions of the region accomplishments in this field are substantial. The problem is especially difficult because controlled use of

fire in the woods appears to have a legitimate place - at least in the longleaf pine belt - in keeping inflammable undergrowth under control, in aiding reproduction, especially of longleaf pine, and in maintaining desirable forage conditions for livestock.

Through the various State and Federal agencies the Government has also worked to give the people an understanding of and interest in the forestry game. Particularly significant are the farm marketing projects inaugurated during the past 2 years. In each of these projects a competent technical forester is put to work, studying the problems and needs of farm woodland owners in an area no larger than he can deal with on the basis of personal acquaintance. Especial attention is given to helping the owners market most advantageously the timber that needs to be cut, and to advising them on the best methods of cutting. Results so far indicate that this is an effective way of making good players out of the thousands of small owners.

I will not take time to mention other forms of cooperation that have been recommended or extended to private owners to encourage good forest management.

Getting the Signals Straight

One of the most important matters we must decide if we are to advance toward the goal is who is going to carry the ball. In general, I think we can all agree that as far as possible the private owners should carry the ball themselves. But there are areas of such low productivity that private owners cannot be expected to carry through. In other localities commercial forests have been so extensively stripped that restoration will involve several decades. Because private owners are likely to drop the ball under such circumstances, the public must stand ready to pick it up and carry on.

The necessity for public ownership of forest lands in the South is doubtless much less than in the mountains and critical watersheds of other regions. But let's not overlook the signal for public acquisition and let's be ready to use that play to the extent necessary to maintain progress toward our goal.

We will need quite a variety of plays to provide suitable opportunities for private owners of all sorts to carry the ball. A few have had many years of successful experience in this forestry game. They have shown such resourcefulness and ability that all we need to do is give them the ball and let them drive ahead.

For the vast majority, however, our signals will need to provide protection against possible tacklers. One play holding promise for progress is for a large group to move forward together, pooling their strength by organizing for joint action in a cooperative association.

Numerous instances will occur where an owner is thrown back when short-sighted liquidation by his neighbors deprives him of adequate primary outlets for his timber. Or again operators seeking to maintain good forestry standards may find the growing stock upon which they must depend for their future raw material supply undermined by the indiscriminate cutting of competitors. To meet

such contingencies, our signals must provide that the public provide protection, such as is contemplated in our proposals for the regulation of cutting and related practices on private forest lands. This, I believe, is essential to keep the field clear for effective running by all owners, large and small.

It is at this point that our team has not pulled together. Every time the signal is called for the public to join the play in this way, someone calls for time out and argues for a different strategy. Apparently many of the players want only to be given a free hand, notwithstanding the fact that games are won by coordinated team work.

Are the Rules Adequate?

But, I must hasten to add that I do not wish to imply that the confusion which arises when the signal for public regulation is called is due solely to selfish interest. What is really being expressed is difference of opinion as to the adequacy of the rules of the game. In advocating public regulation, I am suggesting that new rules are needed. In this I am sensitive of what is taking place in other regions as well as in the South. In respect to forest resources, this country has now reached a point where it can no longer rely primarily on the virgin stands. In hundreds of localities throughout the country, depletion has reached such an advanced stage that we can no longer escape the necessity of doing something more comprehensive and more effective than our limited efforts to date. Under the old rules, too many people are being hurt.

In the course of human affairs our concepts of government and interdependence undergo progressive change. We have never experienced total war before. It should be apparent by now that the playing field is bigger than it used to be. We can never go back to the assumptions of national isolation which dominated so much of our thinking before the war. And as a corrollary to this it is inevitable that we must temper our desires for individual freedom, and concede that government must have broader controls to fully serve the public interest.

The war is showing us that the game must be played much faster. Rules that might have seemed adequate under a 60 or 70 billion dollar national economy will not suffice at a tempo of 130 billion dollars annually. The game is also going to be more open because of improvements in transportation and log handling. More players will be in action that counts because we shall have to depend so largely on the small owners and the small operators. Such a game requires stronger controls and closer coordination.

Some of the players particularly those connected with the forest industries, object to rules controlling cutting and related practices because of their experience with restrictions imposed by war agencies. But the arbitrary edicts necessitated by war must be differentiated from basic rules to protect the public interest at all times. The forest regulation that I have

advocated does not involve interference in ordinary business transactions; neither does it impose a load of reporting and accounting. The cost need not be excessive.

Another source of confusion is the unfounded assumption that because the Forest Service has advocated rules for a better game, it is seeking authority for itself. It has been charged that regulation of cutting and other forest practices means displacing private enterprise and taking over management of land or industry by the Government. My recent address to the National Lumber Manufacturers Association in Chicago entitled "A Forest Program to Help Sustain Private Enterprise" should dispel any such misapprehension. In the Forest Service we fully appreciate that administration of regulation will involve plenty of "headaches" and endless hard work. The "power" which some people picture as so alluring will return no benefits to those charged with responsibility. Regulation is not an end in itself. The easy course would be for us to avoid it altogether. But the Forest Service has a Nation-wide responsibility that it cannot avoid. It believes that new rules must be adopted and it counts on responsible organizations like this to consider the need objectively.

The States now have the power to keep forest lands within their borders reasonably productive. I have suggested that general standards of forest practice be defined in federal legislation, but that the federal government take direct action only when the States fail to enact and enforce suitable legislation. However, I want to emphasize that "Rose Bowl" or "Orange Bowl" rules cannot be left to each contestant to formulate as he pleases. If the national game is to be a success, the teams in all sections of the country must use similar rules.

Really, is there anything in the program I have recommended which would not encourage rather than impede the States in fully developing and protecting their forest resources and forest industries? From the standpoint of sheer self interest, it would seem that the South should welcome every aid and stimulus in developing the great potentialities of its forest resources.

Conclusion

In conclusion, it may be helpful to recall who are the real opponents in this forestry game. Neglect, fire, waste, destructive cutting, selfish interest, political interference, social exploitation - these are the opponents that have worked through forest depletion and deterioration to set us back dangerously close to our own goal line.

I have used this football analogy, knowing full well that it is far from perfect. Rarely can any such analogy be carried through without inconsistency. I trust it has served to express some things about which I am very much in earnest in a way which will appeal to your imagination. And if as a result we can agree on what is the goal of forestry in the South, it may lead to more sympathetic understanding and more constructive discussion of the details of procedure.

So let us ask again, "Where are the Goal Posts?"

Are they at the line of maintaining unlimited independence? The formation of this cooperative association should provide a convincing object lesson on the futility of complete individual independence when a common interest is to be served.

Are they at the point of balancing forest drain against annual growth? Not if the level of a pre-war depression year is accepted as the measure of success.

Or are they set far out in the public interest, where the South's expanding forest economy will yield half of the generous output of a prosperous Nation?

A wise answer to this question and a determined effort to achieve the goal is of the utmost importance. Dependence on wood in wartime is so critical that the Nation cannot leave the future to chance. The next generation will not have an abundance of virgin timber at its disposal as we have had.

The Nation is looking toward the South for a far-sighted forestry program. It counts on the united effort of landowners, timber operators, manufacturers, conservation agencies, and the public. It sees the crossbar of social progress for the South held proudly aloft on the twin goal posts of sound industrial development and forest management yielding double the present annual growth.

Beyond this goal, in a very real sense, will be found national defense and security.

# # # # # # # #

3712

A FOREST PROGRAM TO HELP SUSTAIN PRIVATE ENTERPRISE

Address by
Lyle F. Watts, Chief, Forest Service
at meeting of
National Lumber Manufacturers Association
Chicago, Illinois, December 13, 1943

Introduction

I am glad of this opportunity to discuss with this forest industry group some of the problems which face the forestry enterprise in America. It will make for progress and understanding if you, who have a direct financial stake in our forests, know the views of myself and the public organization which I represent.

I do not believe it necessary to spend much time here discussing the basic facts of the forestry situation. You know, as well as I do, that the situation is not satisfactory. You know that timber depletion has curtailed industrial activity in many communities and will have a like effect in many more. You know that much too little of present day cutting on private lands is according to good forest practice. You know that much second-growth timber is being cut prematurely. You know that almost 60 percent of the forest land in the South is still without organized fire protection. You know that annual sawtimber growth is far below the level of what can and should be used in an economy of abundance.

On the other hand, you are well aware of the increase in good forest practice on private lands in recent years. The number of owners, who have adopted long-range forestry programs, leaves no doubt that private forestry is a practical proposition. And it is my impression that the

(Over)

owners whose forestry programs have been most successful have not been content with minimum practices to keep their lands productive. They have generally found it advantageous to go into timber growing more intensively and to organize for sustained yield.

I suppose that if we were not concerned about maintaining wood as an important and generally available material for construction, fabrication, and chemical conversion, we could be content with the gradual spread of good forest practice. But we are concerned about the markets for lumber and other forest products and we do not want to have those markets impaired by scarcity and the competition of other materials. So we cannot complacently accept the cumulative depletion of productive growing stocks in the East and the unsystematic liquidation of virgin timber in the West which inevitably undermine those markets.

A Three-Point Program

I have been studying this forestry problem from the standpoint of the welfare of the people and the Nation for many years. I have been close to the situation successively in the Intermountain Region, the Inland Empire, the Lake States, and the Pacific Northwest. During the past year I have traveled widely in the East and South, absorbing what I could from all sources, including forest owners and operators and the woods themselves. I am convinced that the public must act in a far more comprehensive manner than heretofore to stop destructive cutting, to facilitate good practices by private enterprise and to acquire such lands as may not otherwise be given the management dictated by the public interest. I believe that such public action will prove beneficial to the forest industries.

The public action which I believe to be necessary has three equally important elements. It may be likened to a tripod used by the surveyor to obtain firm support for his instrument on uneven ground. Three legs are the minimum needed to get firm support and three legs are easily adjusted to a variable base. Our program must stand firmly throughout the country on the uneven ground of forest depletion, growth capacity, logging conditions, economic environment, ownership status, and attitudes. It must be adaptable to frequent and perhaps drastic changes in these conditions. Its three legs give it that stability and adaptability. Take away any one of them and our instrument for progress will be out of balance.

Public Cooperation

The first leg of our tripod is public cooperation with private owners. Our American democracy is based largely on private enterprise. We want to encourage private enterprise in every legitimate way to provide the production, the employment, and the security upon which the welfare of the people depend. In the past we have placed major emphasis on public aids and cooperation to establish forest conditions for permanence and stability in the dependent industries, and to protect watershed, recreational, and other values inherent in forest lands.

Cooperation from the Federal Government has been a potent factor in the increasingly effective fire protection in most of the States in forested regions. Federal aid and action have been invaluable to the States and to forest land owners in the control of forest insects and

diseases. Government statistics on forest resources; the production and distribution of forest products; lumber, log and stumpage prices; etc. are constantly used by the forest industries in the conduct of their business.

Federal aid has made possible the employment of extension specialists to work with the farmers in 43 States for better woodland management. By reason of federal grants, forest planting stock has been available to farmers at very low cost, though on too small a scale. Advice and aid on forestry problems have been included in the programs of the Soil Conservation Service and the Farm Security Administration. During the past year the services of 82 foresters cooperatively employed by the State and Federal governments have been made available to farmers in 296 counties to aid in the development of regular woodland income by proper marketing of forest products. And I do not refer here to the Timber Products War Project sponsored by the War Production Board to stimulate output of small mills.

Through the regional forest experiment stations and the Forest Products Laboratory, the Government provides a program of research. This is constantly improving the technical basis for profitable forest management and for more efficient processing and use of wood. It is also opening up new fields for wood utilization.

It was research that defined the relations between weather and fire that now permit localized forecasting of fire danger. Research was needed to discover how to combat bark beetles and blister rust, and

how to protect seedlings in forest tree nurseries from damping-off and white-grubs. Through research we are learning the conditions necessary for successful reproduction of commercial species. Research has shown how profits may be increased by selective cutting that leaves the smaller trees to grow. Among the many contributions to better processing and use of forest products, I need only mention that research developed methods of kiln-drying which represent savings of millions of dollars in transportation costs now that the country depends so largely on the deep South and the far West for its lumber supply. Although the value of thoroughgoing research can hardly be overestimated, public service in this field, except for the work in forest products, has been curtailed year after year.

The leg of public cooperation can and must be made much stronger to bear its share of the full load of the timber-growing enterprise this country needs. To this end the Department of Agriculture reported favorably on two bills broadening public aid to forest landowners that passed the Senate last summer. One of these increases the authorization for cooperative fire protection; the other provides for cooperative sustained-yield management of federally administered and intermingled private land. The Department has also reported favorably on bills to provide the authorization needed to complete the Forest Survey and keep it up-to-date.

To strengthen the leg of public cooperation technical advice in the preparation of management plans and in utilization problems should be made generally more available. Assistance should also be available for the establishment of small-owner forest cooperatives. Public credit facilities should be broadened more adequately to meet the needs of those striving

to build up depleted forest properties and to organize for sustained yield. Insurance on standing timber should be underwritten by the Government. Taxation should be adjusted so as not to impose inequitable burdens on the forestry enterprise.

Public Acquisition

Since private enterprise alone cannot and will not solve the Nation's forestry problem in all its ramifications, we must look to the second leg of our tripod -- public acquisition of certain forest lands. Within the borders of national forests and purchase units already established are 50 million acres of private land. Of these some 36 million acres should be acquired by the public. The Forest Service, in collaboration with State forestry officials, has estimated that, for reasons of public welfare, perhaps 50 million acres outside of existing national forests and purchase units, should be given national forest status. For perhaps another 50 million acres, State or community ownership seems desirable.

Public acquisition is advocated primarily for lands unsuited for private ownership. For example, productivity of a large portion of the Ponderosa pine country is too low to provide adequate incentive for timber growing to private capital. Other lands lie at such high altitude or in such rough and inaccessible country as to be unattractive for private ownership after the original timber is cut. Still other lands have been so denuded as to offer no prospect of income for many decades. Unless held as part of a generally productive property, private ownership cannot be expected to rehabilitate such lands. Public ownership is also needed

to insure proper management for certain lands where watershed or recreational values predominate. Finally, it is important that the Government own certain tracts of good timberland that vitally influence timber management on adjacent national forest lands or affect the welfare of dependent communities.

For a number of years the rate of public acquisition of forest land has declined. This reflects a general lack of appreciation of the magnitude of the country's forest problem. Whether we like it or not, a substantial increase in the acreage of public forest ownership is inevitable. The adjustments involved will be easier and problems of restoration simplified if the necessary acquisition can be systematically and expeditiously carried forward. Legislation recommended by the Federal Real Estate Board for more dependable financial contributions to local governments should facilitate a more adequate purchase program.

Public Regulation

The third leg of the tripod, needed to safeguard the opportunity for private enterprise, is public regulation to keep reasonably productive all forest lands cutover in the future.

I can add little to the ideas on forest regulation included in my annual report to the Secretary of Agriculture, a preview of which constituted a widely publicized speech that I made at Milwaukee in September. In brief, I believe that basic Federal legislation is needed to assure satisfactory standards and nation-wide application. These standards should:

(1) Provide for protecting forest lands against fire, insects, and disease, and

(2) Safeguard proper use of forest lands and prevent improper exploitation by

(a) Providing for adequate restocking after cutting,

(b) Prohibiting premature or wasteful cutting in young stands,

(c) Providing for reserving a sufficient growing stock of desirable trees to keep the lands reasonably productive,

(d) Preventing avoidable damage to uncut trees or young growth,

(e) Regulating grazing to prevent damage to tree growth and protect the watershed, and

(f) Prohibiting clear cutting except where it is silviculturally necessary or the land is to be put to some other suitable use.

Believing that the States should be given the opportunity within such a framework to shoulder the responsibility for handling regulation within their borders, I have suggested that the Secretary of Agriculture be authorized to take direct action only where suitable State legislation is not enacted and where enforcement or the practices established are not adequate. At the outset, however, the Secretary of Agriculture would set up a representative advisory council at the national level through which the groups most directly concerned in the application of the law could express their views on any phase of its administration.

There is ample precedent for the belief that enunciation in legislation of soundly conceived standards of forest practice will bring order out of chaos and supplant suspicion on the part of industry by whole-hearted

cooperation for the common good. Certainly those operators who are already practicing sound forestry would have nothing to fear. And the confidence with which organized industry is encouraging enlistment in the "Tree Farm" movement would be ill-founded if the imminence of such public regulation threatened to undermine the position of those who had made the effort. In my opinion public regulation will prove to be a most effective educational tool. Arbitrary application as a punitive measure would doom it to failure.

I must say a word about the potentially splendid publicity regarding the Nation's forestry enterprise sponsored by the forest industries. It seems regrettable to me that so much of this gives the impression that little not already being done on private land is needed to assure the Nation ample timber supplies for the future.

I know , of course, that there is honest difference of opinion as to the need for public regulation of cutting practices on private lands. Then, too, among those who recognize the need, there is room for differences as to whether state or federal control is most desirable. Although industry spokesmen take pride in the part industry has played in the adoption of State regulations for fire protection and in initiating cutting regulations in a few states, I know that many, probably most of you, really are opposed to any extension of either State or Federal regulatory powers.

I am at a loss, though, to understand the obvious attempt by opponents of the regulation I have advocated to write into my statements ideas which simply do not exist. Does it lead to real public understanding to broadcast the idea that I seek to displace private enterprise by nationalization of the forest industries?

I doubt if any of you would claim that the railroads, the public utilities, radio broadcasting, the meat packing industry, or industrial labor itself has been "nationalized" because they are subject to federal regulation. And nothing in the regulation of forest practices that I have advocated could be rightly characterized as nationalization. It does not contemplate taking over industry, nor acquiring forest lands that private owners desire to hold. It does not dictate how much or when an owner may cut, nor who he shall hire to do the work. It deals only with preventing forest destruction and deterioration and keeping forest lands reasonably productive -- indubitably matters of great public concern.

In closing, I repeat that many of you approach this problem with a different philosophy than I do. Perhaps we cannot get together. In the final analysis the people must decide. My concern is that they be fully and frankly informed. An issue so vitally affecting the welfare and security of the common man can and must be resolved in the public interest. The program I have suggested to assure ample supplies of forest products at prices within the reach of the man on the street and the farm, provides a firm foundation for thriving and diversified forest industries.

# # #

THE NEED FOR THE CONSERVATION OF OUR FORESTS

Address by
Lyle F. Watts, Chief, Forest Service
at meeting of
Friends of the Land, Chicago, Ill., Nov. 12, 1943

Recently, in an address before a section of the Society of American Foresters at Milwaukee, Wisconsin, I discussed the Nation's forest situation. I presented the need for reasonable public control of the treatment of private forest lands. In commenting on that paper, a friend of mine in the National Lumber Manufacturers Association alleged that, "In normal periods the basic American forestry problem is not one of scarcities but of surpluses, not of timber famine but of timber abundance." Today I want to explore that philosophy because, if it is true, there is really no occasion for much concern about forest conservation.

If I sense the times rightly, an economy of abundance is a major world objective--widely recognized and earnestly striven for as an essential element in a lasting peace. This certainly was the keynote of the recent United Nation's Food Conference at Hot Springs, Va. There freedom from want of food was declared to mean "a secure, an adequate and a suitable supply for every man." To make this ideal a reality, it was estimated that 40,000,000 additional acres would be needed for increased food production in this country.

Some of this land will come from areas now in forest. This reverses the thinking of the depression years, when reduction of the acreage in cultivation and reforestation of submarginal farm lands were given major emphasis. But the acreage available for timber crops has always been ample. So the philosophy of abundance which dominated the Food Conference when applied to forestry throws the emphasis where it belongs -- not on the acreage involved, but on forest productivity and proper management.

The amount of useable wood that can be supplied annually as a crop depends as much upon the volume and character of the growing stock -- or forest capital -- upon which growth accrues as upon the acreage and fertility of the land. If lumber and other forest products are to be generally available at reasonable cost, it will be necessary to maintain, well distributed in all forest regions, a stand of timber capable of yielding in annual growth more than enough merchantable wood for the country's needs.

In discussing this question of scarcity versus abundance, I want to make it clear that forestry is something more than boards, ties, cordwood, and other forest products. To me forestry has a human side. It encompasses permanent communities with prosperous industries and a stable tax base. It means good schools, public health, and attractive homes. It means security for the worker to invest in a home and for the butcher, the baker, and beauty shop keeper to invest in a business. In short, what I am interested in is the extent to which our forest resources may contribute to a better livelihood and greater happiness for all the people.

(over)

I must confess that I cannot rationalize the economic thinking of my industry friend who in one breath says, "We want forest products at low costs now and in the future," and in the next postulates that abundance constitutes an obstacle to attaining that goal. Evidently the lumber industry has an entirely different philosophy than that which motivated the United Nations Food Conference. But since the crucial factor is the existence or lack of surplus timber supplies rather than whether we view such surpluses as liabilities or assets, let us inquire where these surpluses may be.

Are the timber surpluses in New England?

I took a trip up there this summer and saw plenty of forest acres but not much merchantable timber. Seventy percent of New England is forest land, but 75 percent of all the wood products consumed in New England comes from outside the region. The only evidence of surplus, so far as I know, is in small low-grade material which cannot be marketed even under the intense demand of the huge industrial population.

The hurricane of 1938, followed by abnormal wartime requirements for box boards, has left only scattered remnants of merchantable white pine in central New England. Scarcity of stumpage forced several of the leading operators in Massachusetts to move out of that State last year. Even in the wild lands of Maine, most of which have been gone over several times by logging operations since Colonial times, the average cut of pulpwood, taking all that is considered merchantable from the ground, is estimated at only 4 cords per acre. Such an average certainly implies no troublesome surplus of available timber.

But don't take my word for it. After all, I have only been in New England a couple of times. Listen to what men who have been intimate with New England conditions for years have to say.

Victor Cutter, prominent businessman and recently Chairman of the National Resources Planning Board for New England wrote in 1943, "The situation is ghastly here at present. I have not seen any decent lumber coming out of New England." And Henry Baldwin of New Hampshire in a recent report of the National Resources Planning Board on "Forestry in New England" declares, "Present conditions obviously demand some sort of improvement .... Only a drastic reversal of present cutting practices together with more effective protection can restore adequate growing stocks."

Are they in Pennsylvania?

Not so many generations ago Pennsylvania was the leading source of the Nation's lumber supply. In 1941 it ranked twenty-third among the States with an output of less than 1 percent of the total. The original pine forests have been largely replaced by scrub oak and other hardwoods as a result of fire following logging.

The anthracite region, about two-thirds of which is forest land, highlights the results of forest depletion. Here the coal mines require huge quantities of timber which the adjacent forest land is capable of producing. Yet "operators scour the country for timber large enough to make props" and find only one-third of the amount needed. Only 9 percent of the forest can be classed as sawtimber.

Are they in Virginia?

The Forest Survey for Virginia showed sawtimber growth in 1940 some 25 percent in excess of drain by cutting. So perhaps we should find the timber surplus here. But of what significance is an excess of growth over drain when lumber output is only about half of what it was 30 years earlier? The decline in Virginia's lumber output is a reflection of sawtimber scarcity. Stands with as much as 8,000 board feet per acre occupy less than 4 percent of the total forest area. More wood was consumed by non-lumber use than for lumber in 1940.

And when we examine this margin of growth we find that it is chiefly in the inferior Virginia pine and in oak less than 20" in diameter. In the Piedmont, if cutting continues at the 1940 rate, all loblolly and shortleaf pine over 13" in diameter will be gone in 30 years. And wartime increases in cut for the Coastal Plain in all probability have stopped the upward trend in loblolly and shortleaf pine growing stock noted there in 1940.

Are they in the Appalachian Mountains?

The hardwood forests in this region have been exploited for many years. "Creaming" has removed most of the better trees and the residual stands are usually of poor form or defective. Logging is difficult in the rough mountain territory so that once the high-grade timber has been removed from the "coves" it is often impractical to operate the poorer timber on the slopes. Repeated logging of the larger holdings has left much of the residual timber scattered in small tracts, often held by non-resident owners. Operators now face the necessity of ferreting out such tracts to maintain production. And a destitute rural population is urgently in need of a more adequate resource.

Another indication that this region is not burdened by a surplus of merchantable timber is the suggestion of lumbermen that National Forest timber be sold during the war without competitive bids to the operators most urgently in need, because bidding runs the stumpage prices too high!

Are they in the Deep South?

The Coastal Plain and Piedmont regions of the Deep South contain over 150 million acres of land wonderfully adapted to tree growth but not well suited for other purposes. All but a small fraction of the old-growth timber has been cut so that any surplus must be in second growth.

Almost three-fourths of this great acreage is in thrifty second growth, yet the growing stock is rated at less than half of what it should be. Some 10 million acres, mostly in the longleaf pine belt of the Coastal Plain, lie denuded. Only one-fourth of the total cubic volume of pine is sawlog material and almost three-fourths of that is in trees less than 16" in diameter. In spite of the ease of reproduction and the exceptionally rapid growth of the more valuable pines, hardwoods now account for almost 60 percent of the cubic volume of all trees.

With the rapid disappearance of old-growth timber the number of large mills has steadily declined. Closing of several mills in communities primarily dependent upon the forests has been reported in the press during the past year.

Recently one of the leading lumbermen of the South told me that 5 years hence only two major sawmills would be left in Florida. The young second growth is being combed relentlessly by thousands of small mills. And in addition a giant pulp industry consuming more than one-third of all the pulpwood used in the United States is now competing with the sawmills for desirable stumpage.

Perhaps the second growth in this region has been most prolific in southeastern Arkansas. Here, if anywhere, the alleged problems of surpluses should be observable in the community. But a trip through that section left me with impressions of prosperous towns and active, satisfied people; quite in contrast to what I saw in sections where timber was not so plentiful. Timber growing is a common topic of conversation in southeastern Arkansas, but I found no one complaining about too much.

Since we do not find surpluses a problem in regions where growth has been prolific, we must look to the West where the impact of industrial use has been more recent, and where original stands were heavier, if not more extensive. But before doing that, let's take a look at the Central and Lake States where timber depletion has been most severe.

What about the Central States?

The timber supply is vital to the great agricultural States of the Middle West. The situation became so acute in 1942 that two large farm cooperatives bought sawmills in distant forest regions in order to be sure of having the lumber they needed.

Had the forests of this region been given proper care from the beginning, farmers might still be able to meet many of their needs from local timber. Most of the older barns in southern Ohio and Indiana, for example, were built of yellow poplar. Yellow poplar grows almost as fast as any of our softwoods and is just as easily worked. But today it is far too precious to put into barns. It is no longer a significant part of the stock of the local lumber yards.

All the big pine operations are now gone from the Missouri Ozarks. Output of softwood lumber in Missouri in 1942 was only 30 million board feet. Yet in 1899 most of the three-fourths billion board feet of lumber cut in that State was softwood.

Throughout the hill country from eastern Ohio to western Missouri, millions of acres of once magnificent hardwood forests have degenerated into mere brush cover. Many of the hardwood industries of the Ohio and Mississippi Valleys must now pay heavy transportation charges for raw material from other regions in order to continue operation. Some of them face extinction.

Forest depletion and soil deterioration have left a relatively heavy rural population poverty-stricken. Here the blighting effects upon people of the exhaustion of national resources should dispel any illusion that scarcity is not a critical social problem.

What do we find in the Lake States?

The Lake States affords one of the most serious chapters of our forest history. Here are some 52 million acres of generally level forest land,

favorably located with reference to important industrial and agricultural sections. Extensive clear cutting and uncontrolled forest fire have made a large part of this area an economic liability.

This region, whose forests housed the cornbelt and rebuilt Chicago after the great fire, now imports five-eighths of the lumber needed to meet its own requirements, even after these have been curtailed to about 70 percent of the level which prevailed in the 1920's.

The white pine and red pine which contributed so bountifully to the development of the Middle West are now little more than memories. Although some old growth--chiefly hardwood--still remains, the most significant aspect is the large proportion of inferior species, notably jack pine and aspen, in the second growth.

More than two-fifths of the cubic foot growth is of aspen--a short-lived species of limited use. Should we cite this as a surplus, since most of it will rot and die before it can be used? Perhaps, but don't lose sight of the fact that output of lumber in the Lake States dropped from 8-1/2 billion board feet annually for the 2 decades prior to 1900 to about three-fourths of a billion in 1938 and 1939. And even under all the pressure for war production it did not rise above 1-1/4 billion in 1941 and 1942.

While we read of the closing of large sawmills at Rhinelander and Oconto, Wisconsin, during the past year, second growth in Minnesota is being exploited to supply Wisconsin pulp mills. And uncut timber is so scarce that destructive logging operations are being pushed into the rough and scenic Porcupine Mountains in spite of a storm of public protest against clear cutting. In the press competent foresters are reported as saying that at the current rate of cutting "less than five years will see the finish of this last great harvest of Michigan hardwood."

Can Surpluses be found in the Inland Empire?

The timber of Idaho and Montana was almost untouched up to 1900. But the wave of depletion is rolling through this country with startling speed. In Idaho the 5 northern counties were opened up first and were soon pretty thoroughly exploited. Output reached a peak of 705 million board feet in 1925. In 1937 it was only 292 million. Obviously payrolls in these northern counties declined in about the same ration as lumber production. Towns like Sandpoint and Coeur d'Alene were hard hit -- and Spokane turned its eyes from the panhandle of Idaho to the Grand Coulee Dam.

The increased output now coming from the five counties farther south rests on a precarious base. Only one-tenth of the 10 million acres of forest in North Idaho is in white pine sawtimber---yet this tenth is bearing the brunt of current cut. White pine output is now 2-1/2 times what the forests can sustain.

Are they in Eastern Oregon?

I know well the ponderosa pine country of the Northwest. I make the flat statement that no major pine producing unit in that area can continue long to supply anything like its present cut.

In Klamath County, Oregon, the largest ponderosa pine producing center, not

more than 5 of the 14 large mills now operating will be in existence 10 years hence. Only 1 has reasonable assurance of more than 25 years. Woods workers face migration or possibly a shift to industries not now in the picture.

A similar situation exists on the Deschutes plateau to the north. The City of Bend, which doubled in population between 1920 and 1940, as the lumber business expanded, faces inevitable retrenchment 10 or 15 years hence. The Deschutes Plateau, where lumbering is the major economic activity, now produces about 400 million board feet annually. This is more than three times its sustained-yield capacity. An annual payroll of about $5,000,000 is involved in the lumber industry here, but the impact of forest depletion will be felt by the merchants, the professional people, and the filling station keepers as well as by those employed in the sawmills.

Burns and Prineville are the sawmill centers for 2 Oregon units operating on a more stable basis. Large-scale lumbering is of more recent origin and operations have been carefully planned for integrated use of public and private timber. But there is not enough timber to sustain even these communities at the level of wartime cutting!

Are they on the West Coast?

Having looked in vain for timber surpluses in other important forest regions, we turn at last to the West Coast. It is possible that my friend believes that the fabulous forests of the Douglas-fir region alone are more than sufficient to supply the Nation's needs, for here in the rough mountainous corner of the country comprising only 6 percent of the Nation's commercial forest land is to be found one-third of all our standing sawtimber.

As forest depletion becomes more acute in other regions, we have come to draw more heavily upon the Douglas-fir region; and we shall have to continue to do so for many years. But this is costly. The freight rate to Chicago, for example, is about $17 per M board feet. And it is easy to overestimate the importance of this region in the national picture. Even under wartime pressure for production, lumber cut from this region has not constituted much more than 25 percent of the total. The stand of hardwoods is insignificant. And in any realistic appraisal of future supply, it is unlikely that this region will account for more than 10 percent of the Nation's timber requirements after the accessible virgin timber has been cut.

But even within this region, the apparent surplus is local in character. The only area still largely undeveloped is a portion of southern Oregon. In the older districts, notably around Puget Sound, the bulk of the readily accessible sawtimber has been removed. Sawmills have shut down and pulp mills have assumed greater importance. The available stand is no longer as large as the growing stock needed to sustain a cut commensurate with the growth capacity of the land.

Several years ago business men of Gray's Harbor adopted a slogan, "Two billion or bust!" They reached their first objective - and then the closing of saw-

mills brought them close to the second when the war came to the rescue.

The lower Columbia River district with 170 large mills and 40 billion feet of sawtimber is already feeling the pinch of scarcity. About half of the private sawtimber belongs to 2 large companies. Most of the other mills face difficulty in getting the timber they need for long-time operation.

Additional evidence of scarcity of high quality timber needed for special uses is reflected in pressure to obtain Sitka spruce and Douglas-fir for veneer logs from the Olympic National Park. If surpluses were a major problem, why should the forest industries clamor so loudly to open the Park for logging?

Finally, it must be emphasized that a substantial part of the old growth timber reported in the Pacific Northwest is of doubtful accessibility. Only about half of it was in a zone that could be operated under the price relationships which obtained in the period 1925-1929.

Are Industry Forestry Programs Based on Timber Surpluses?

In spite of the assertion that "the basic American forestry problem is not one of scarcities but of surpluses," I question whether many of the leaders in the forest industries believe that to be true. The good forestry programs adopted by many private owners would seem to point to an opposite view. For example:

Was it fear of surplus that led the Great Northern Paper Company which already owned 1-½ million acres of forest land in Maine to expand its holdings in the years just before the war? Has Finch, Pruyn and Company in New York been worried about surpluses in pursuing its forestry program on some 200,000 acres in the Adirondacks for the past 20 years? And did the Armstrong Forestry Company, with some 84,000 acres in Pennsylvania, undertake thinnings in young stands under the pressure of surpluses?

Was it troublesome surpluses that caused some 35 pulp companies in the South, most of them established there within the past 10 years, to acquire almost 5 million acres of forest land as a backlog for the future?

Was it a prospective surplus in the South that caused such operators as the Johns-Manville Company, the Chesapeake Corporation and the Chesapeake-Camp Corporation in Virginia, the Superior Pine Products Company in Georgia, the W. T. Smith Lumber Company and the Alger-Sullivan Lumber Company in Alabama, and others to adopt good forestry programs?

Is it to defend themselves against the dangers of surplus that such owners as the Crossett Lumber Company and the Fordyce Lumber Company in Arkansas, the Urania Lumber Company in Louisiana, and the Southern Kraft Division of the International Paper Company employ technical foresters to designate what trees to cut? If so, the danger must be acute, because the Crossett Company believes it necessary to have one forester for each 50,000 acres and Southern Kraft had 70 men in its forestry department in 1941.

Was it a surplus that led the Nekoosa-Edwards Paper Company in Wisconsin to operate a forest tree nursery and plant trees each year? And was it because of a surplus that the Goodman Lumber Company in Wisconsin began to conserve growing stock by selective logging?

Was it a national surplus that gave the J. Neils Lumber Company the courage to undertake sustained-yield management for its relatively slow-growing ponderosa pine at Klickitat, Washington, and Libby, Montana?

Was it impending surpluses that led the Weyerhaeuser Timber Company, by far the largest private forest landowner in the West, to inaugurate a forestry program on its principal operations? And to establish the Clemons Tree Farm and the Vale Tree Farm in Washington for the husbanding of young timber? And I wonder if the Crown Zellerbach Company, West Fork Logging Company, and others who have adopted selective logging in the Northwest thought that surpluses might endanger the success of their operations.

Did a group of lumbermen in the Northwest deliberately undertake to add to a known surplus when they joined hands in the establishment of the fine cooperative tree nursery at Nisqually, Washington? And has the National Lumber Manufacturers Association itself been misleading timberland owners by encouraging them to enlist in the "Tree Farm" movement to grow more timber?

Frankly, I guess those folks, and many more I could name, undertook forestry because they were convinced it was good business in itself rather than as a response to regional or national timber scarcity. Nevertheless, all these industrial forestry programs clearly show that we are entering an era of timber growing and that the philosophy of timber exploitation must be left behind.

Perhaps the bug-a-boo of surpluses that has been raised is really one of excess sawmill capacity in some localities. At any rate pressure to liquidate speculative timberland investments has resulted in plant capacities that cannot be sustained and that frequently burden the operators with financial problems.

Or the bug-a-boo of surpluses may reflect the large volume of small, low-grade or inferior timber for which no assured market exists. Such material renders large areas unfit for commercial operation. Elsewhere it must remain in the woods often as waste.

I suspect that the real reason for the talk about surpluses is to counteract the suggestion that the public ought to require good forest practice on private lands. But the accomplishments of those timberland owners who already have forestry programs should convince anyone that destructive cutting is unnecessary.

My friend made reference to the "timber famine" publicity of the last half century," which, he said, "has helped to put the forest problem in a false national perspective." I agree that folks won't freeze for lack of shelter. And we won't have to eat off the ground for lack of lumber to build tables,

chairs, and floors. But that is not the point. A strong nation needs an abundance of resources and wood is one of the most versatile and indispensable raw materials known.

As a matter of fact, the timber shortage publicity of a previous generation has not been discredited. It was a significant factor in the establishment of the National Forests. It helped crystallize sentiment for organized fire protection. And it contributed to the far-reaching educational effort which has brought perhaps one-fifth of the private forest land under management.

These are substantial accomplishments. But in spite of them, the fact remains that the Nation's timber stand was reduced at least 37 percent in the 3 decades between 1909 and 1938. We have seen how the basis for forest industry has been lost in many localities as local supplies waned. People already go without the lumber they might use if the kind they need were readily available at reasonable price. Without the constructive results of the early publicity, timber shortage might have been even more widespread and acute.

To gloss over the facts of forest depletion is dangerous. We cannot continue indefinitely to allow destructive cutting, fire, and other forces to hold annual timber growth below the level of what can and should be used in an economy of abundance. The war is now accentuating the Nation's forest problem. It has highlighted shortages of critical species and of high grade timber. It has led to premature sacrifice of young growth to meet the huge requirements for low grade lumber. Yet total consumption has been no greater than in earlier years when timber was more plentiful.

I want to close by stating my conviction that a comprehensive legislative charter is needed to give effect to a well-rounded national forest policy and to strengthen the foundation for timely post-war action in the forestry field. Such a charter should provide for:

1. Regulation of practices on private forest land under federal leadership in more positive form than financial aid to the States alone. The States, however, should be given opportunity to enact and effectuate regulation, meeting standards defined in the federal law, themselves.

2. Better protection from fire, insects, and disease, and a broadening of public aids to facilitate good private forest management.

3. Public acquisition of forest lands where watershed or recreational values are so important, or growth conditions so adverse, that private owners cannot be expected to give the management required by the public interest, and of certain areas of merchantable timber, control of which may vitally invluence the management of adjacent National Forest lands or affect the welfare of dependent communities. There are perhaps 150 million acres of forest land now in private ownership for

> which public acquisition is the only solution. For much of this the task is one of reclamation in its truest sense - the return of unproductive land to productivity. The present condition of the land is the result of social errors; its return to productivity constitutes a proper public function.

Enactment and implementation of such a charter will give substantial assurance that we shall always have productive forests with plenty of timber at prices that will encourage use. Failure to act means an aggravated scarcity - not of forests but of commercial timber. Action is needed not so much to protect investments in timberlands and manufacturing facilities, important though they are, as to sustain the livelihood of the common people and to protect the value of their homes.

By building a strong forest economy, making constructive use of one-third of our land heritage, the program suggested will provide "a secure, an adequate, and a suitable supply" of timber for every man and will contribute to the structure of security and better living, which we hope will mark an enduring peace.

- - -

CONTRIBUTION OF FORESTS TO IRRIGATION

Address by Lyle F. Watts, Chief of the Forest Service, read by Regional Forester Peck at the Annual Meeting of the National Reclamation Association, Denver, Colorado, October 28, 1943.

Water is life. Nowhere in our country is that more realized than here in our West. Nowhere is there greater interest in the water problem. No one is more appreciative of the day-to-day value of water than the irrigation farmer. No organization is more concerned with the relation of water to the life and development of our West than the National Reclamation Association.

Water is life because of its relation to the soil and to the growing of crops. And this is the aspect of it that today directly concerns both of us - you, the water users, and we the foresters, as wild land managers. You, representing many and varied reclamation interests, are concerned mainly with problems growing out of the availability and use of water. We, the foresters, are concerned with the problem as to how best to handle the forest lands on which much of the water originates so that thirsty farm lands may have maximum quantities of usable water.

Most irrigation water is derived from mountain country, high above and often far distant from the irrigated area. Some of this water comes from snow banks above timber line, but most comes from that great area of mountain land which lies below timber line but well above the Plains. Here fall the deepest snows, the heaviest and most dependable rains. This is the area mostly covered by forests.

This western forest of spruce, of fir, of pine, of woodlands and chaparral - and covering about 250 million acres, is a multiple-purpose resource. It provides a variety of benefits which affect us all in one way or another. It serves a wide variety of purposes. Its values are enormous and cannot be appraised in full.

As a producer of wood, this forest contains some two-thirds of the entire standing timber of the country. In some instances, it is so close to markets and the wood is so useful that almost every sizable tree has commercial value. Such forests are a temptation to strip off the rich crop regardless of consequences. The deteriorated condition of some areas today bears silent witness that some one harvested the timber with no thought for other products and services. The condition on other areas shows that the ripe timber can be removed without destroying the cover.

Within the forest grow many lesser plants - grasses, herbs, and shrubs. The forage on these lands now feeds over 4 million cattle and 16,000,000 sheep during a part of the year. This mountain area is also the home of much of our big game - elk, deer, bear. Furthermore, it provides recreation for millions of our fellow citizens who turn to the hills to escape the heat of the valleys and the plains.

In addition to its value for timber, forage, recreation, or other purpose, this forest land has an enormous value as a water producer. In some localities, its value for watershed purposes may far exceed the value of any

(over)

other product or service. It is the primary source of perhaps 90 or 95 percent of all the water supplies found west of the 100th meridian. It is the fountainhead of every western stream used for irrigation, power, or domestic supply. It is the area from which most ground water basins are replenished. On the other hand, it is also the area which, if mistreated, produces many of the floods and the sediments which damage reservoirs, canals, and ditches. Because of these forest values and because of these relations, you, the water users of the West, have a direct and immediate concern in it.

The relation between forests and water has long been recognized. The first forest "reservations" to be set aside from the public lands were for watershed protection. Since then, the Congress has further recognized this relation by creating other public forests, by authorizing acquisition by purchase, donation, and exchange, of land to be added to the National Forests, and by providing annually for forest fire control not only for timber production, but in the interest of navigation, water conservation and flood control.

Practically all water users recognize the value of forest land as a producer of water. The support which the National Reclamation Association has given the forestry movement confirms this. However, it may not be amiss for me to present some of the more recent findings of our research, which help portray how much forests and water have in common.

Our Forest Service research program covers many activities - timber growing and protection, the economics of forestry, range management, the utilization of forest products, and the effects of land management on water. Of primary importance to you is the last. At four of our six western experiment stations, studies of these water relations are in progress. Some deal with how much of the water is used by trees; some with the effect of forests on streamflow; and some with the relation of forests and other natural vegetation to floods and erosion. Some are laboratory studies, others use small watersheds - singly, in pairs, or in triplicate - to obtain the needed data. In all of them, the practical problems of forest and water relations are kept constantly in mind.

The results of this research in forest influences are badly needed. They are needed to provide the basis for the management of the wild lands on the important watersheds of our country. They are also needed to help in the solution of some of your water problems. Just now, even though so badly needed, because of wartime conditions this research is on a strictly maintenance basis.

Now for some highlights from this research in forest influences.

1. Water users are interested in sustained streamflow. Each day that snow melt is delayed, each day that high flows are maintained, the more valuable water becomes, especially to those using water directly from the streams.

   Our research is finding that snow accumulations last longer in young stands that have been thinned than in dense woods. Consequently, it is believed that small openings here and there in sapling stands will help in delaying the snow melt. Best results are obtained when these openings are given a somewhat circular shape with a diameter about equal to the height of the surrounding trees. Snow that is held by the

branches gets to the ground, it is blown into these openings, it is shaded from the sun and protected from evaporation, and melting is delayed. How much the peak flows from a treated watershed can be retarded and how much longer the flow will be sustained as a result is yet to be determined. Also not yet determined is whether the operation will be a profitable one.

2. Water users are interested in the amount of water available for reservoir storage.

It now appears possible that application of certain forest practices can actually increase the water yield. The Rocky Mountain Forest Experiment Station has learned that additional run-off can be obtained by certain treatment given the high-mountain lodgepole pine forest. By a selective process which removes certain types of trees with large and heavy branches, a number of water losses can be prevented. First, there will be a saving of some 3 inches of water which otherwise would be lost through evaporation of snow caught by the crowns and which never reaches the ground. Then, another inch or more of the summer rains can be saved from evaporation. Although these summer rains in the Rockies do not generally increase stream flow, they do maintain the soil moisture so that at the end of the summer season, the soil is not thoroughly dried out. Consequently a smaller volume of snow melt is required to satisfy the moisture deficit and thereby to produce flow. All in all about 5 inches of water can be saved and made available through the kind of cutting practiced in this mature forest. If we can continue to get the same kind of results as we have in the past three years, in some areas at least, it may be possible to make available more water for irrigation purposes. This treatment is also practical from an economic standpoint as it produces timber enough to make the operation profitable.

3. Water users are also interested in the amount of water used or transpired by vegetation.

Although the western studies are not yet far along, results from two eastern studies are of interest. In one, a study of the amount of runoff from a small water shed and including both surface and subsurface flow, indicated that as much as 18 inches of water could be transpired by hardwood forest during a single season. However, it should be remembered that this was in an area with 80 inches of rainfall annually, that the trees were those with high moisture requirements, and that their roots were close to the water table throughout the entire growing season. The results of this study support the belief held by many throughout the west that cottonwoods and related vegetation along ditches and in areas with a high water table, will use about as much water per acre as farm crops. But, before you cut down all our willows and cottonwoods, be sure that the shade, beauty and confort of these trees, to say nothing of the firewood being produced, are not worth their cost in water.

Those of you who have watched the hourly flow of the smaller streams are acquainted with the daily variation in flow--highest flow at night, lowest flow during the hottest part of the day. We have

found that when the moisture-loving vegetation, even the brush, is removed from along stream banks this periodic drop in the afternoon was eliminated. Just how much water may be saved on the average we yet do not know. Indications are that it may amount to as much as 5 percent of the daily summer flow in some localities. What such treatment will do to the fishing remains to be seen: it may be so harmful as not to be desirable, even if economic.

4. Water users are also interested in knowing in advance how much water is to be available in the streams.

Although snow surveys are enabling excellent predictions to be made for water from the snow-pack, the increased flows from summer storms has heretofore been neglected. The Southwestern Forest and Range Station has, however, developed a method of predicting the summer flow delivered by Salt River into the Roosevelt Reservoir. This forecast, based upon the behavior of one of the small streams on the Sierra Ancha Experimental Forest, has permitted some astonishingly correct predictions. However, because of the great variability in summer rainfall and plant cover conditions, much greater refinement is needed before the method can be applied generally. At the Appalachian Station in western North Carolina, somewhat similar forecasts have been surprisingly accurate and are coming into use by the TVA and various power companies as a basis for operating hydro-electric reservoirs and plants.

5. Water users are interested in getting water for their crops when it is needed.

Since 1914, our Intermountain Station in Utah has had two small high mountain watersheds under observation. At first, one had a fairly good cover and the other a scanty one. Both were grazed in such a way as to maintain the density uniformly throughout the first five-year period. The surface runoff from the area with the scanty cover during the first 5-year period was 2.5 times that from the area with a denser cover. This excess water came off mostly as flash floods and carried 25 times the silt load of the other. After several years during which both small drainages were ungrazed the cover density was reversed. The reversal in use reversed the results. The area which orignally gave the smaller results has in the past five years become the high yielding area both in amount of surface runoff and silt, with the excess water again in the form of a silt-laden flash flood.

This helps explain why at times water users find ditches so clogged with sediments that water is unavailable. For example, Minersville in the Sevier Lake drainage and not far from the two watersheds, found itself not so long ago almost without water when its main canal could be used only 8 days in one season. Summer storms on depleted forest range lands resulted in flash floods which filled the main irrigation canal with sediments 6 times in one year. Two draglines were required to clean some 40,000 cubic yards of debris from the canal. As a result, local irrigation assessments were increased 500 percent and crop production on the irrigated lands was seriously curtailed.

I have attempted so far to present a few illustrations showing how our watershed research is providing information on specific water problems.

Let us see something of their application. Several years ago we made a survey of the watershed lands of the country. Of approximately 250 million acres of forest lands in the West we found that about 65 percent were critically significant in their water relations because of their location, soil, or character of cover. On an additional 25 percent these water relations were of sufficient consequence to warrant special concern.

Of these forest watershed lands about 130 million acres are in various types of public ownership or control. Some are State, county or municipal lands; some are Indian lands; some Parks, some public domain; the remainder, half of the total, are National Forests. About two-thirds of all these varied public lands have critical water relations. On many of them management and administrative practices are such as to safeguard water supplies. However, we must admit that some of these lands - and I do not exclude the National Forests - are not in as good shape as they ought to be. Furthermore, range conditions on some of the public lands are not satisfactory. Too many livestock and improper use of the range have sometimes resulted in deterioration of the natural cover. Fire-control measures have not yet been adequately intensified. Although timber cutting and logging on most public lands are usually done with due regard to water supplies, there are instances where satisfactory results are not obtained.

About 120 million acres of our western mountain watersheds are in private ownership. Of them, 60 million acres have major watershed influences, and 20 million have moderate influences. On those privately owned watershed lands where the timber has not been cut or where there has been but little grazing, conditions are as good as can be found anywhere. On some important watersheds, private owners have followed practices which have not injured either the water, the soil, or the future forest crop. Unfortunately, these owners are in the minority for most private owners have used and are using practices which are not only injuring the forests, but are damaging water relations as well. Logging on these lands is often done in such manner and grazing is often so heavy or the livestock so poorly managed that valley agricultural land values are threatened. Some already have been destroyed.

Let us take a look at one important watershed, the Boise River watershed in Idaho. Here recent investigations show that nearly 3 million cubic yards of sediment are annually contributed to the river from various abuses of the foothill and mountain slopes in that drainage, exclusive of the area above Anderson Ranch Dam. The cost of removing this eroded material from the reservoir, canals, and farm ditches has been estimated in excess of $350,000 each year. This is equivalent to an annual assessment of about $1 an acre for each acre of land on the 7,000 irrigated farms in this Boise area. Put in another way, each irrigated acre is indirectly paying a tax of $1 a year in large part because of present and past abuse of headwater lands. And there are indications that the amount of eroded material is increasing annually rather than decreasing. Furthermore, these losses are taking place in spite of the existing program of headwaters protection, administrative policies, and present legislation. That such losses are not decreasing is evidence we have not yet reached that level of protection and management which will insure the safety and well-being of this area.

Whose lands are involved? Everybody's. No single agency or individual is primarily responsible, but collectively, all agencies and owners are responsible. Some land is in Federal ownership, some in State or other local public hands, and the balance is privately owned. It is because of such scattered responsibilities that some positive action by all is necessary. Although conditions in the Boise area may not apply generally, they do show how the management of watershed lands can affect western agricultural economy.

What is needed to make sure that these watersheds are so handled that they will contribute to agriculture in maximum degree?

(1) Better fire control is needed.

(2) Deteriorated slopes must be rehabilitated.

(3) The vegetative cover be supplemented with engineering measures.

(4) Improved pastures must replace some natural range.

(5) Fewer livestock and better management on forest ranges are essential.

(6) Conservative logging practices must replace destructive ones.

Until these measures are adopted we shall continue to have situations where the water users in the lowlands will pay for avoidable lack of water, irregular flows and sedimentation, caused by land misuse on the slopes. How can they be put into effect?

Much of our high mountain watershed lands in the West are in public ownership. This suggests continuing vigilance on the part of the water users to see that these public lands are so used and administered as to safeguard water values. Where laws or regulations do not provide for adequate protection of watershed values, they should be amended or revised.

There is a sizeable acreage of forest watershed lands still in private ownership on which the vegetative balance is so delicate, or on which corrective action in case of misuse is so costly, or where the jumbled ownership pattern precludes proper handling, as to make public ownership the only feasible way of safeguarding the public interest. Here, too, the responsibility for seeing that the needed action is taken rests heavily upon the water users.

But there is much forest watershed land that can stay in private ownership so long as it is handled with regard to watershed values. In order to give this assurance some form of public control of forest and range practices is needed. I realize that this is regulation. I know full well that any limitation whatever of what one can do with his property is not popular. Yet where public interest in adequate water supply is so great I see no other effective assurance.

Public ownership of certain additional lands and public regulation of practices on private lands should be accompanied by certain essential public aids to the private owner. Public cooperation in protection against fire, insects, and disease should be broadened and strengthened. The public should participate in the cost of reseeding or reforesting the land where that is needed.

Technical advice and assistance in proper management to the property should be afforded. Credit adapted to the requirements of forestry should be provided. More research to improve the basis for management and utilization practices is necessary.

It is my firm belief that the only sound solution to the problem lies along the lines indicated: Better management of public watershed lands, public acquisition of certain other lands, and for the balance, public regulation and a strengthening of public assistance. For all of these more research is needed.

And again, I want to emphasize the fact that you, the water users of the West, have a vital stake in these lands.

Address by
Lyle F. Watts, Chief, Forest Service, U. S. D. A.
at meeting of
Wisconsin-Upper Michigan Section,
Society of American Foresters, Milwaukee, Wisconsin

September 20, 1943

- - -

War Activities of the Forest Service

The forests of the United States are being called upon for a tremendous output of materials essential to the war. The indispensability of wood and of wood products becomes more apparent with each month and the difficulties of meeting the demands become more acute as the tempo of war increases. Truly, wood is one of the critical materials in this conflict.

Under these circumstances the Forest Service is devoting its energies to projects that contribute to the war effort. Peacetime activities have been put on the shelf for the duration to the extent consistent with our public responsibilities.

To meet wartime demands the National Forests are being made to contribute to national needs as never before. Despite shortages of manpower to handle the timber-sale business, the cut from the National Forests in the past fiscal year, established an all-time high. The total cut was 2,359,473,000 board feet -- 7 percent more than the previous year and 83 percent above 1939. The value of the timber cut exceeded 8-1/2 million dollars.

I mentioned the handicap of manpower shortage. It will interest you to know that the Forest Service has lost to the armed forces more than 1,500 men and women with civil service status. I need not tell this audience that

(Over)

the proportion of young, technically trained, timber, range, and wildlife men has been high. These are the people who did most of the cruising, scaling, marking and supervision for timber sales, and it has been difficult indeed to increase timber sales in the face of this loss. Yet it has been done. Standards of work may have suffered somewhat, but we think that this has not been too serious.

Of special importance is the program for obtaining Sitka spruce from the National Forests of Alaska. Working under the most difficult winter conditions, contractors engaged by the Forest Service delivered the first raft of logs to Puget Sound in January. The yield of aircraft quality lumber from the Alaskan logs is exceeding all expectations. Including hemlock and spruce not suitable for aircraft, which are being sold to Alaskan sawmills for military use there, output is approaching the goal of 10 million board feet per month which was set at the outset. It will probably not be possible to maintain this output through the coming winter months.

The National Forest range has also been making an important wartime contribution. Careful management, including continued progressive adjustment of livestock numbers to the carrying capacity of the range, is helpful toward the maximum production of meat, wool and hides without damage to the resource. Stockmen are being urged to market their livestock early to ameliorate the domestic food situation and to supply greatly expanded western consuming centers with grass-fat beef.

Going beyond the National Forests, the Forest Service has been collaborating actively with the War Production Board, the Office of Price Administration, and other agencies in studying requirements, supplies and

output of forest products and in providing a wide range of allied information. The Branch of Research has brought together a group of men headed most energetically by George Trayer, who recently represented the Forest Service on a mission sent to England to study the problems of lumber supply. They have shown outstanding versatility and resourcefulness. As an example of the extent to which W.P.B. has learned to depend on our men, the Requirements and Supplies section has recently been asked to provide information on the quantity, character and style of winter underwear which would be needed for logging operations in northern New England and the Lake States.

During the past year the Forest Service has also given a lot of study to the problem of stimulating the production of lumber and other forest products. It was recognized early in 1942 that output was lagging and that small mills in particular were having difficulties with radical shifts of markets and complicated procedures incident to doing business in wartime. The Forest Service joined with the War Production Board in proposing a plan to utilize its far-flung field organization and to enlist cooperation of state agencies to extend aid to owners and operators and otherwise to stimulate maximum output. This plan was violently opposed by the lumber industry which saw in it a threat of federal regulation of cutting practices, and alleged that the need for the proposed services did not exist.

After months of delay, during which some of the proposals were put into operation without Forest Service assistance, the original plan was dropped. Yet the War Production Board, facing increasing shortages in lumber supply, found that additional effort to maintain output of forest products was essential. A modified plan, the Timber Production War Project,

now in operation in a number of eastern states, uses our facilities to provide service, especially to small operators, in meeting the many inevitable procedures incident to total war; to aid in securing a timber supply for mills not now adequately provided with standing timber; to aid in obtaining firm contracts for the output of logs and lumber; and to provide technical guidance to assure efficient use of available manpower and equipment. The state forestry departments and extension services are collaborating actively in the program. It is worth noting that the President's approval of the modified plan was subject to the understanding that where federal aids were advanced, there must be provision to prevent destructive forest practices.

Even before this plan was put into operation, 76 foresters assigned by the Forest Service in cooperation with the States to marketing projects, involving 285 counties in eastern States under the Norris-Doxey Farm Forestry Act, have been instrumental in stepping up production locally and in channeling farm timber into essential war industries.

Protection of the forests from fire has assumed new significance as a result of the war and this has been recognized in emergency appropriations by Congress. To the normal problem of minimizing damage to forest resources, has been added the necessity of maintaining uninterrupted service from power plants, transmission lines, railroads, and industrial plants in forested areas, the need to prevent smoke palls which might interfere with air transport or aircraft warning service, and the threat of sabotage. Military installations and the presence of large numbers of soldiers in and near forested areas added to the hazard while the difficulties of fire control were enhanced by the shortage of trained guards and fire fighters. Indicative

of the potential disruption and damage to war industry and transportation which forest fires may cause, as well as of the importance of wood in the war, is the record of two enemy incendiary bombings which occurred in the forests of western Oregon. Fortunately neither resulted in a serious outbreak.

I presume foresters here are generally aware of the prominent place the Forest Products Laboratory is taking in the war effort. To me the work being done at the Laboratory is simply unbelievable. In providing data and specifications on the use of wood for aircraft; in designing economical crates and containers for all sorts of military supplies and equipment, including anti-aircraft guns, armored trailers and cars, as well as munitions and other supplies; in training inspectors for aircraft wood and packaging; and in broadening the use of plywood, plastics and other chemical derivatives of wood, outstanding contributions have been made.

Less well known, perhaps, is the progress that has been made by research in increasing output and conserving labor in the critical naval stores industry. Using chemical treatments, gum yields in commercial operations have been increased 25 percent. For the long pull substantial progress has also been made in the selection and rooting of strains of pine yielding 2 to 3 times as much gum as their associates of the same size and vigor.

Valuable assistance has been rendered the military in camouflage planting problems. Some of this work was only possible because of accumulated knowledge gained from pre-war investigations. On the other hand, some of the newer findings will have permanent value for the future. For example, treatments to reduce transpiration may permit forest planting

to be done at almost any season of the year and may extend the area that may be successfully planted to much more adverse sites.

I should not close this brief sketch of the wartime activities of the Forest Service without reference to the guayule rubber project, the success of which will, I believe, lead to early authorization for expansion beyond the limitation established last spring when it appeared that further use of irrigated land for guayule might interfere unnecessarily with food production. On June 30 over 23,000 acres had been planted. It is probable that the project will be expanded to an area of 150,000 acres within the next three years. Much of the expansion, if undertaken, will be in Texas and the Southwest where competition for food cropland and for labor is not so acute as in California. Seven nurseries, aggregating about 3,100 acres in extent, are ready with sufficient stock for next year's planting. About 400 tons of high quality rubber were manufactured from mature shrub harvested in 1942. Experimental plantings of Russian dandelion and of goldenrod are also being carried forward. It is planned to harvest part of the 1943 plantings of both these crops in order to extract a few tons of rubber for testing purposes.

Planning for Peace

Productive forests constitute so vital a part of the national economy that we must not fail, while making the utmost contribution to wartime needs, to be planning for peace. Demobilization of the armed forces and the release of labor from war industries is likely to be accompanied by a period when it may be necessary to undertake a very large program of public works in order to provide full employment.

Forests and intermingled forest range offer a large field for public works that may be readily developed in post-war years. Restoration of forests on non-productive land by planting; rehabilitation of run-down forests by weeding, thinning, and pruning, and other timber stand improvement; range reseeding; fire hazard reduction; control of injurious insects and diseases; expansion in the forest recreational facilities; and improvements of the wildlife habitat; all call for a large amount of labor with a minimum of other expense. Such work can be quickly started and easily suspended without excessive loss when the need for employment declines. It is work which is worth while in itself and should be carried forward on public forests as a continuing program in any event.

Beyond that there is need for a large amount of construction for the development, protection and utilization of public forest areas. Only half of the road system planned for the National Forests is now built and of satisfactory standard. Shifts in range management to make the National Forests contribute most fully to the livestock economy of the West under changing conditions will require new water developments, additional fencing, and other improvements. The success of the partly completed Arroyo Seco flood control project on the Los Angeles National Forest in stabilizing one-fourth million cubic yards of channel debris during heavy storms last January and the effective protection afforded valley lands, home sites and public utilities by range reseeding and contour ditching in the Intermountain region indicate that we have only begun the upstream work which is desirable for watershed protection and flood control.

The volume and geographic distribution of work in these fields may be greatly expanded by pushing the acquisition of millions of acres of forest land which seem destined for public ownership.

In planning for public works, I am anxious that foresters do not lose sight of the fact that the need for emergency public works can be kept down as the volume of employment furnished by private industry is kept up. In communities primarily dependent upon forest industries, the level of permanent industry that can be sustained is directly related to the economic productivity of the adjacent forest land. Far more fundamental then, than relying on the forest as a source of relief employment, is a forest policy that will contribute to the security and stability of private employment by assuring continued productivity of forest lands.

If the forests are to make their optimum contribution to the welfare of the Nation, it will be necessary to provide for better care and management than they have thus far received. An economy of abundance depends upon maintaining the productivity of natural resources at a high level; yet today, after decades of agitation and educational effort, the bulk of the cutting on private forest lands is not under any plans for perpetuating the productivity of the resource and one-third of the private forest area, including a large part of the best timber-growing land in the South is still without organized fire protection.

Looking to the future, there is good reason to believe that post-war needs for lumber and other forest products will, in the aggregate, continue at or near the wartime level. Declining needs for war purposes will be offset by pent-up demands for housing, wider application of new techniques

for using wood in construction of all kinds, the upward trend in utilization of pulp and paper products and other developments. Moulded plywood developed for aircraft will doubtless find post-war use in automobiles, furniture, and perhaps other items. Plastics made largely or entirely from wood have only begun to find commercial uses. And the manufacture of alcohol from sawmill waste is indicative of the field which may be opened by chemical research and industrial engineering.

With pressure from abroad to help supply the huge quantities of lumber that will be needed for the reconstruction of war-torn Europe added to a domestic demand already almost double the rate of annual saw-timber growth, it should be obvious that only by the most aggressive measures can we hope to bring saw-timber growth in line with needs.

Forest Regulation Needed

Some familiarity with this region and with 3 regions in the West, coupled with trips that I have recently taken into the deep South and the Northeast convince me that comprehensive forest legislation, including but not limited to regulation of cutting practices, is now more urgently needed than ever before. In making this statement I am not in the least overlooking or discounting the many examples of good forest management by private owners in almost every section of the country.

In this region I need no more than mention such operations as the Goodman Lumber Company or the Nekooska-Edwards Paper Co. Out in Oregon and Montana the J. Neils Lumber Company has a sustained-yield program fully equalling in intensity National Forest operations in the ponderosa pine type. The fire protection system on the Clemens Tree Farm of the Weyerhaeuser Lumber Company in Washington goes far beyond what we have been able to provide for the National Forests.

Without prejudice to what is going on in other regions, I believe I was most stirred by what I saw in the South. In the Forest Service we have always emphasized the social value of productive forests and have striven to make the National Forests contribute effectively to the welfare of local people. But nowhere have the public forests done any better than Mr. Harley Langdale who is building up an intensive forestry program on about 100,000 acres near Valdosta, Georgia. Mr. Langdale is not only going far beyond minimum requirements in turpentine practices and timber cutting, but he is providing improved living conditions for the people who work on his property. Houses are refurbished, fish ponds are constructed, and bird food is planted to insure good hunting. It was reported to me that Mr. Langdale's war output had not been handicapped by labor problems as has been so generally the case in the South and elsewhere.

And to refer to Crossett, Arkansas, which has so often been cited as an outstanding example of integrated utilization and community development. The thing that impressed me most was current plans to split the 5 districts, into which the half million acre property had previously been divided, so that the 10 technical men responsible for timbermarking and other forestry work would average only about 50,000 acres each. They talk in terms of a 10-year cutting cycle. Here again is an intensity of management equal to that of the National Forests.

But with all these and the many others that might be listed, I saw much more destructive cutting than good forestry. To me the basic facts on the Nation's forestry situation are clear enough. We do not need any

further refinement of statistics or survey of war impacts, desirable as that may be, to determine what our policy should be. The war has served to exaggerate the trend of forest deterioration and depletion which was only partially and temporarily relieved during the depression of the thirties.

There is nothing to be gained by dodging the fact that, except in localities where virgin timber still dominates, we cannot continue indefinitely to cut more than we grow without impairing future forest productivity. But our land has the capacity and we should have the determination to meet the challenge. For if we take steps to improve and build up the productive growing stock by Nation-wide application of good forest practices, the annual growth can be increased to a level which will supply our people and industries with ample timber for all foreseeable needs at reasonable cost, and a margin will be left for export or for emergency use.

The most urgent need is to stop destructive cutting so that the productivity of every acre now bearing merchantable timber may be retained. I want to say with all the force I have that Nation-wide regulation of cutting practices on private forest land under strong federal leadership is absolutely essential if needless destruction of productive growing stock is to be stopped.

It is unfortunate that a well-financed publicity campaign sponsored by the forest industries during the recent past should tend to cultivate public complacency when the situation with respect to our forest resources is so unsatisfactory. As head of the agency chiefly concerned with the public interest in maintaining the productivity of our forests, I cannot let the misleading publicity of the forest industries pass unchallenged.

This campaign creates the impression that little not already being done on private land is needed to assure the Nation ample timber supplies for the future. It implies an inevitable increase of annual growth when as foresters we know that the usable growth depends upon merchantable growing stock and that it cannot increase if destruction of the productive growing stock is indefinitely continued. It exaggerates the extent and adequacy of industry progress in good forest practice.

Since a forthright facing of the facts would not be inconsistent with the alleged objectives of the industry, namely "to perpetuate the supply of forest products through sound forest management and to promote understanding of forest ownership and enterprise." I cannot escape the conclusion that the real object of this campaign is to ward off public regulation which was recommended in one form by the Department of Agriculture in 1940, brought before Congress in several forms since then and proposed for legislation in 14 States during the past winter.

I think it fair to state that the need for public regulation is now recognized by many informed people. But conservation leaders are not in agreement as to the responsibility of the Federal Government in such regulation. It is my firm belief that regulation by state action unsupported by strong federal legislation cannot be effective. Furthermore, I do not believe that financial aid to the States to meet the costs of regulation will induce reluctant or strongly independent States to enact appropriate

regulatory legislation. Nor will it give adequate assurance that the level of practices will be set at a satisfactory level. In order that Nation-wide regulation of cutting practices may come promptly and be reasonably uniform in standards and enforcement, federal legislation is needed. This should as a minimum prescribe standards for required forest practices and authorize the Secretary of Agriculture (1) to determine whether practices adopted by the States conform to such standards (2) to inspect enforcement of state laws, and (3) to take direct action where suitable state legislation is not enacted and where enforcement or the practices are not adequate.

Of the three major lines of public action which I would advocate for a comprehensive national program in forestry--namely, regulation of forest practices on private lands, aid to forest landowners, and increased public ownership--regulation has invoked the most controversy.

It is quite probable that the larger part of the job of public acquisition will fall to the Federal Government. This does not in the least discount the desirability of an enlarged program of state and community forests.

The Federal Government should also play an important part in the aids and incentives offered to private landowners. Federal contributions loom large in fire control and extension services. Forest research has made its most substantial contributions in the work of the federal forest experiment stations and the Forest Products Laboratory. The forest survey would be a hopeless jumble if left to uncoordinated state action. The fields of forest credit and forest insurance could not be safely underwritten on a state basis. All these clearly call for action on a national level.

In the light of the significance of forest conservation for national defense and national welfare, the interdependence of States in regard to timber supply, and the extent to which the Federal Government must function in the fields just mentioned, it is strange that the question of federal responsibility in respect to regulation of cutting practices has appeared so controversial.

Without prejudice to the capacity and ability of several strong States to shoulder the public responsibility for keeping forest lands within their borders productive, it is true that many of the States where action is most urgent, will have great difficulty in handling the job effectively. And only under federal leadership can the public have assurance of uniformity of policy between States and of freedom from undesirable competitive conditions arising either from temptation or pressure in individual States to keep standards low.

The time has come to look beyond the exigencies of war to assure full and continued productivity of our vital natural resources. A comprehensive forest policy in which regulation of forest practices must go hand in hand with better protection, expansion of public aids, increased public ownership and continuing research will prove indispensable in the structure of security which we hope will mark an enduring peace.

UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE

ADDRESS REPLY TO
CHIEF, FOREST SERVICE
AND REFER TO

WASHINGTON

I
INFORMATION
Special Articles

July 22, 1943

Regional Forester
All Regions (with copy to Stations for information)

Dear Sir:

Enclosed is a copy of the summer issue of "Free America" containing the article "Forest Depletion - A Community Problem", by Chief Lyle F. Watts. We are also sending you a mimeograph copy of the article in sufficient quantity to supply your Supervisors. This shows the original text, the omissions made by the magazine being indicated by parentheses.

Very truly yours,

Dana Parkinson

DANA PARKINSON, Chief
Division of Information and Education

Enclosure

FOREST DEPLETION - A COMMUNITY PROBLEM

by
Lyle F. Watts
Chief, Forest Service
U. S. Department of Agriculture

(Published in "Free America", Summer Issue 1943. Omissions made by the magazine are shown in parenthesis.)

Forest conservation is no longer a subject which can be effectively discussed in generalities. From the standpoint of timber supply, as well as recreation and watershed protection, the critical character of our forestry problem can only be understood by going behind the over-all statistics for the nation as a whole and viewing the situation regionally, locally and in its component parts. It is necessary to get right down to the individual worker who wants security in his job and a permanent home for his family.

For more than 50 years the question of the nation's timber supply has been a matter of major public concern. The people were first aroused in the days of Gifford Pinchot and Theodore Roosevelt by predictions of an early "timber famine." Then with the culmination of agricultural expansion, and the acceleration of industrial life, public concern waned. Declining consumption of lumber, substitution of other materials for construction, furniture and other fields originally dominated by wood, and chronic threat of overproduction from mill capacity in excess of demand, led many to believe that Pinchot had been wrong, even though whole regions had been so thoroughly stripped of merchantable timber that local forest industry was little more than a memory.

Prolific second growth in parts of the Northeast and most of the South seemed to many to discount forever the possibility that a national timber shortage would materialize. Concern about timber for the future was further allayed by technological developments foreshadowing a much wider use of wood by chemical conversion. To many the prospect that pulping and chemical processes might completely supplant the use of wood in its natural form seemed so real that any forestry beyond protection from fire seemed quite needless and futile.

But continued exploitation at a rate far in excess of current growth, disturbing increases in the area of non-productive land suitable only for forests, and inescapable social and economic maladjustments in many cut-over regions led others to realize that the problem remained critical. These far-sighted leaders realized that, in spite of substantial progress with respect to national forests, systematic fire protection, and management for sustained yield by many private operators, cumulative forest depletion was still undermining at hundreds of points an indispensable part of the foundation on which national prosperity had been built.

(A comprehensive analysis, made in 1932 in response to a Senate resolution, failed to bring the divergent points of view together. Exponents of laissez-faire pointed out that as a result of the drastic slump in production and a raising of growth estimates as forest survey data became available, an approximate balance between growth and drain had been reached. But output of forest products during that period was at a discouragingly low level. In 1933 lumber output dropped to less than one-fourth the previous peak. In 1938 it had recovered only half the loss. Unemployment was a problem of major proportions throughout the country. Surely we do not wish to measure progress in terms of that period. But even then, concentration of attention on national and regional statistics masked the precarious position of many forest communities throughout the country.)

Now under the exigencies of war, requirements for forest products are again on the level which prevailed in the years before the depression. Scarcity of metals, coupled with spectacular developments in the use of wood for structural purposes and challenging vistas of new fields of use for plywood, plastics, and chemical products, now focus attention on wood as an indispensable and versatile raw material which should enjoy large and perhaps expanding outlets so long as it is abundantly available at a reasonable price.

In the light of accelerated forest depletion brought on by the war and the better outlook for future wood utilization, the problem of timber supply presses anew for solution. But even before this country entered the war, a Joint Congressional Committee confirmed the conclusion of the Forest Service that the public interest in continued productivity of private forest lands could only be protected by public control of cutting and other closely related practices on such lands.

A large part of the strategy of those who oppose public action going beyond cooperation and aid in protection and management, is based on a philosophy of complacency - using statistics for the nation as a whole to support the thesis that there is really no cause for concern. The impression is created that progress in forestry has been so widespread in recent years that a satisfactory balance between growth and drain is only temporarily deferred by wartime activity. Rapid liquidation of virgin timber in the West is glossed over as necessary to forestall losses from insects and disease and as beneficial in releasing additional areas for new growth. Viewing the picture solely on a statistical basis, it has been argued that wartime forest depletion is not serious anyway inasmuch as annual lumber cut has not exceeded 2% of the total remaining stand of merchantable sawtimber. Such complacency is dangerous.

Perhaps the most significant fact is that our eastern forests, constituting three-fourths of our total commercial forest area, now contain less sawtimber than the 6% of our forest land in western Washington and Oregon. Our continued ability to draw heavily upon the remaining virgin forests of the Northwest neither keeps mills running

nor provides employment for people in the depleted forest regions of the East. It doesn't give much help to the forest community in Michigan or Louisiana, whose sawmills have been closed for lack of timber, to know that there are 70 billion feet of almost untouched timber in Douglas County, Oregon. It doesn't help Klamath County in the pine region just over the mountains, where the timber resource is being liquidated three times faster than it ought to be!

It doesn't even help communities in other parts of the Douglas-fir region itself, where excessive timber depletion has already begun to sap the vitality of this last virgin source of forest wealth. For the Puget Sound, Gray's Harbor and the Lower Columbia River areas are already experiencing drastic shrinkage in industrial employment based on sawmills and woods operations.

Existence of a substantial area of virgin timber in the Porcupine Mountains of Michigan did not forestall the recent closing of the last big sawmill in Rhinelander, Wisconsin, only 100 miles distant, at a time when the nation's need for lumber was most acute.

(The transient prosperity which results from uncoordinated sawmill development on a scale far in excess of the sustained yield capacity of the land is nowhere better illustrated than in the Ponderosa pine region of central and eastern Oregon. Klamath Falls and Bend are two bustling, overbuilt lumber communities that face inevitable and drastic retrenchment before long.)

In 1920 Klamath County had a population of only 4,800 and relatively small lumber output. Construction of modern sawmills was followed by rapid increase in population. In 1940 the census disclosed almost 40,000 people. Lumber cut, already at a 400 million bd. ft. level in 1925, exceeded 700 million by 1940. But analysis of the resource situation indicates that only five of the 15 mills now in operation will remain 10 years hence. Only one has reasonable assurance of a life of 25 years or longer. And this situation exists in spite of the fact that two-thirds of the remaining timber is on public lands where light selective logging has been or will be practiced to maintain productivity. The fact is, as things are going, it is unlikely that an output of more than 200 million bd. ft. can be sustained indefinitely. That gives a measure of the extent of readjustment which must be made within the next 20 years.

(A similar situation exists at Bend. Doubling of population between 1920 and 1940 indicates the extent of the social and economic structure which has been built without possibility of support for more than another decade or so.) The local people and the State will have to pay dearly and long for the short-lived boom which has been stimulated by uncontrolled exploitation of the private timber.

Used at close.

Even in agricultural sections of the East, productive woodland on individual farms has a significance which cannot be expressed in national statistics. Through a well developed forestry enterprise, net income of dairy farms in central New York, for example, may be increased about 15% on the average. Such an enterprise need not compete seriously with other farm activities as to time. It offers opportunity to more completely utilize available labor and equipment. It gives farmers a larger degree of independence and security. It may spell the difference between a profitable and a submarginal farm unit. Such economic benefits to thousands of farmers should not be neglected. They cannot be offset by the large-scale, highly mechanized logging operations of the Northwest. Nor will careful management of public forests, no matter how widely they may be distributed, compensate fully for these values which are inherent in the property of individuals living and working on the land.

The forest problem of any community or region cannot be viewed solely as one of balancing annual growth against forest drain. When the process of forest liquidation is allowed to take its course unchecked, the reduction of industrial activity which follows exhaustion of merchantable timber will eventually lead to a balance between growth and drain at a level where the contribution of the forests to the economic life of the community is at a vanishing point!

Last summer the "model" town of Elizabeth, La., was left stranded when its major industry, a large sawmill, ceased operation because, as reported in a lumber trade journal, "The timber has been raked and scraped to the last available and purchasable tree."

In February of this year the entire town of Weirgate, Texas, was sold to a wrecking company after a life of only 25 years in which some 100,000 acres of virgin longleaf pine were stripped. Its sawmill, logging and turpentine operations are reported to have provided support for some 2,000 people.

With these industries eliminated, a forest survey might well show that forest growth now exceeded drain in these localities. But this would mean little to the people who had looked to these industries for employment. Neither would it help meet the country's wartime need for lumber.

In the long run productive capacity rather than a balance between growth and drain is the only valid criterion of progress. And the amount of usable wood that can be produced annually is a function of the merchantable growing stock or forest capital upon which it accrues.

The seriousness of the depletion of growing stock in the eastern regions is brought out by the following comparative estimates of sawtimber stands:

	1919	1938	Reduction
	billion bd. ft.		
Eastern hardwoods	459.7	265.6	42%
Southern yellow pine	257.7	196.8	23%
Other eastern softwoods	133.3	80.2	40%

The reductions indicated are probably very conservative because the earlier estimates generally reported less timber than was actually on the ground in terms of utilization standards of the later estimates. Thus in a period of 20 years, the ability to sustain communities dependent upon Southern yellow pine was reduced about one-fourth and the basis for other eastern softwood production, as well as the hardwood industries, was almost cut in half.

(But no cold figures can express the distress, the months of uncertainty and the personal loss to the thousands of families that had to give up their homes and seek new employment when "their" mills closed.)

On the other side of the picture development of the full productive capacity of forest lands implies a decentralization and diversification of industry which should be wholesome and stimulating in its social significance. Because of their low value in relation to bulk, most forest products cannot well stand transportation for long distances. Primary conversion plants therefore, must be kept close to the timber. In addition, the full utilization, which is an inseparable attribute of intensive forest management, encourages establishment in the rural communities of new industries using or fabricating wood in various forms.

The town of Crossett, Arkansas, affords an outstanding example of such sound industrial and community development based on far-sighted and intensive forest management. Here pulp and paper manufacture were first added to the original lumber industry to provide effective utilization for much of the lower grade material, especially that yielded by early cuttings in second growth pines. Then a wood distillation plant was established as an outlet for the hardwood which was impeding growth of the pine in some areas. Each new development has created additional employment in the community without the threat of future collapse because each has been planned in relation to the productive capacity of the forest.

In every forest region individual operators have recognized the economic advantages of permanence for their industries and stability for the dependent communities. The number of cases where a start has been made on long-range forest management to insure a sustained supply of raw material for local industries has grown tremendously in the past decade. Many sound industrial forestry programs have been under way for longer periods.

To name just a few operations about which I have first-hand knowledge, the future holds real promise for the welfare of the com-

munities dependent upon the operations of the Weyerhaeuser Timber Company at Longview, Wash., the West Fork Logging Co. at Mineral, Wash., the Hines Lumber Co. at Burns, Ore., the Kinzua Lumber Co. at Kinzua, Ore., the J. Neils Lumber Co. at Libby, Mont., the Sawyer-Goodman Lumber Co. at Marinette, Wis. To this list anyone familiar with the South and East could readily add scores of other names.

Individual communities, with aroused leadership, can do much to insure optimum development of local forest resources and thus obtain maximum security for their people and institutions. By cooperation and planning, industry can be geared to the current capacity of the land to produce. In the new regions steps may be taken to check or discourage over-expansion. Incentives can be provided to stimulate secondary processing and fabrication of finished products to facilitate utilization of waste and to provide employment for labor released when curtailment of primary forest operations is necessary. In the older regions new industries can be stimulated for utilization of the particular species or sizes of material which can be harvested in the process of improving and building up productive growing stock.

However, as the problems of all forest communities are added together, it becomes apparent that, if the social and economic benefits of sound forest development are to be realized on a national scale, we cannot leave the solution entirely to individual operators or the local communities. The necessary financial aids and other safeguards for decentralized private enterprise are often beyond the capacity of local communities to supply. And all too frequently the communities lack strength and foresight to withstand the pressures of selfish industrial or political interests.

Federal action is needed and national welfare demands public regulation of basic forest practices, supported by public aid and assistance to private forest land owners on a large scale. For the sustained yield we should achieve on a community basis is not measured in board feet alone. It is something much broader. Sustained yield of forest products at a high level implies reasonable security for labor and a substitution of a family man for the transient bunk-house worker characteristic of the pioneer lumber industry. It justifies confidence in building, buying and improving homes. It assures a continuity of business for the local butcher, baker and candlestick-maker. It helps to maintain the tax base by stabilizing timber values on the one hand and by putting a firm foundation under real estate, business and civic improvement values on the other. The school system, the social life, and the health agencies of the community are part and parcel of sustained yield.

To a very large degree achievement of the President's goal of freedom from want and freedom from fear is inherent in the prosperous and stable communities which permanently productive forests will induce.

# # #

Forest Depletion--A Community Problem

By LYLE F. WATTS

FOREST conservation is no longer a subject which can be effectively discussed in generalities. From the standpoint of timber supply, as well as recreation and watershed protection, the critical character of our forestry problem can only be understood by going behind the over-all statistics for the nation as a whole and viewing the situation regionally, locally and in its component parts. It is necessary to get right down to the individual worker who wants security in his job and a permanent home for his family.

For more than 50 years the question of the nation's timber supply has been a matter of major public concern. The people were first aroused in the days of Gifford Pinchot and Theodore Roosevelt by predictions of an early "timber famine." Then with the culmination of agricultural expansion, and the acceleration of industrial life, public concern waned. Declining consumption of lumber, substitution of other materials for construction, furniture, and other fields originally dominated by wood, and chronic threat of overproduction from mill capacity in excess of demand, led many to believe that Pinchot had been wrong, even though whole regions had been so thoroughly stripped of merchantable timber that local forest industry was little more than a memory.

Prolific second growth in parts of the Northeast and most of the South seemed to many to discount forever the possibility that a national timber shortage would

materialize. Concern about timber for the future was further allayed by technological developments foreshadowing a much wider use of wood by chemical conversion. To many the prospect that pulping and chemical processes might completely supplant the use of wood in its natural form seemed so real that any forestry beyond protection from fire seemed quite needless and futile.

But continued exploitation at a rate far in excess of current growth, disturbing increases in the area of non-productive land suitable only for forests, and inescapable social and economic maladjustments in many cut-over regions led others to realize that the problem remained critical. These far-sighted leaders realized that, in spite of substantial progress with respect to national forests, systematic fire protection, and management for sustained yield by many private operators, cumulative forest depletion was still undermining at hundreds of points an indispensable part of the foundation on which national prosperity had been built.

Now under the exigencies of war, requirements for forest products are again on the level which prevailed in the years before the depression. Scarcity of metals, coupled with spectacular developments in the use of wood for structural purposes and challenging vistas of new fields of use for plywood, plastics, and chemical products, now focus attention on wood as an indispensable and versatile raw material which should enjoy large and perhaps expanding outlets so long as it is abundantly available at a reasonable price.

In the light of accelerated forest depletion brought on by the war and the better outlook for future wood utilization, the problem of timber supply presses anew for solution. But even before this country entered the war, a Joint Congressional Committee confirmed the conclusion of the Forest Service that the public interest in continued productivity of private forest lands could only be protected by public control of cutting and other closely related practices on such lands.

A large part of the strategy of those who oppose public action going beyond cooperation and aid in protection and management, is based on a philosophy of complacency—using statistics for the nation as a whole to support the thesis that there is really no cause for concern. The impression is created that progress in forestry has been so widespread in recent years that a satisfactory balance between growth and drain is only temporarily deferred by wartime activity. Rapid liquidation of virgin timber in the West is

Comuunications

To the Editors:

It was a very great pleasure to see your excellent publication. In these days when so much propaganda is being devoted to poisoning the minds of people with falsities about planning, world governments, controls and other inventions of the devil for the enslavement of the human soul, it is refreshing to find a publication devoted exclusively to pleading the cause of decentralization and individual independence.

This is an issue fundamental to the outcome of the present world conflict—in fact, I would say that it is *the* issue which faces humanity at the present time.

L. D. BYRNE
Edmonton, Alberta

* * *

To the Editors:

I'm persuaded that the need for more publications which are of the type, and advocate the principles, of FREE AMERICA, was never as great as at present. The comparative indifference of numerous other publications which deal with our various social and economic problems, to the importance of the principles which are so ably expounded in every issue of your publication, may be said to be almost deplorable. I'm wondering if more could not be accomplished by keeping before our readers the evils of centralization and awakening them to the existence, extent, and immediate effect of those evils, than by trying to focus their attention on the benefits of decentralization when, and if, it is accomplished sometime in the dim and distant future. I believe that most Americans are much more interested in something that *immediately* affects them adversely, than they are in something that *may* affect them favorably sometime in the future.

It is a well-known fact that certain "interests" have succeeded in monopolizing practically all of our natural resources and public utilities. These same interests are now engaged in a tremendous effort to produre a monopolization of the land of our nation, and God help America if they succeed in doing so; in fact, they have already succeeded to an appalling extent.

The Agricultural Census of 1940 reveals that there are 6,100,000 farms in the United States, of which 264,225 are farms of the "big business" type, containing 500 or more acres. The value of these farms, exclusive of the buildings, was $5,104,493,545, nearly one-fourth of the value of all our farm lands; in other words, 4 per cent of the farms had 25 per cent of all farm land values. The report goes on to say that one-ninth of the farms have one-half of the total land values. It also says that there are 60,000 farm families whose average income was $19,831 the previous year, and who are among the one-tenth of the American farmers who received the major portion of the $5 billion in government payments made to farmers during the past eight years. (How generous the "paternalistic" government is in giving aid to those who don't need it; how niggardly in giving it to those who do need it.)

Should we not do all we can to awaken the American people to the evils of centralization and the dangers which will surely result therefrom? I still have enough faith in the people of America to believe that their apparent apathy will disappear when and if they come to a realization of their true situation.

GEORGE F. CURRY
Martins Ferry, Ohio

* * *

To the Editors:

A few suggestions as to future articles for FREE AMERICA. I'd like to see more articles on simple old fashioned food . . . and where one can buy basic things. I'd like to see more histories of couples who have moved to the country from the city and are making a go of it. Real honest to goodness cases. These efforts are too isolated . . . and there should be more . . . perhaps there are more than we realize. I'd like to see some articles on the basic requirements needed for any one who feels the urge to change his mode of living. The main thing I feel is that the self sufficient will survive this, and any other wars. Perhaps self reliant is better. And all in the family must be in accord. They must make up their minds that courage and faith are their major strength.

WALTER KOCH
Stormville, N. Y.

* * *

To the Editors:

I like your main attack on keeping independent by means of production for own use while having a city vocation near a suburban or rural district. There is no doubt that rationing will continue some time after the war, and there will doubtlessly be a period of retrenchment in our national economy. FREE AMERICA should provide a way to cushion the shock of adjustment to peace time activities.

MORRIS SKLUTE
St. Petersburg, Florida

glossed over as necessary to forestall losses from insects and disease and as beneficial in releasing additional areas for new growth. Viewing the picture solely on a statistical basis, it has been argued that wartime forest depletion is not serious anyway inasmuch as annual lumber cut has not exceeded two per cent of the total remaining stand of merchantable sawtimber. Such complacency is dangerous.

Perhaps the most significant fact is that our eastern forests, constituting three-fourths of our total commercial forest area, now contain less sawtimber than the six per cent of our forest land in western Washington and Oregon. Our continued ability to draw heavily upon the remaining virgin forests of the Northwest neither keeps mills running nor provides employment for people in the depleted forest regions of the East. It doesn't give much help to the forest community in Michigan or Louisiana, whose sawmills have been closed for lack of timber, to know that there are 70 billion feet of almost untouched timber in Douglas County, Oregon. It doesn't help Klamath County in the pine region just over the mountains, where timber resource is being liquidated three times faster than it ought to be.

It doesn't even help communities in other parts of the Douglas-fir region itself, where excessive timber depletion has already begun to sap the vitality of this last virgin source of forest wealth. For the Puget Sound, Gray's Harbor and the Lower Columbia River areas are already experiencing drastic shrinkage in industrial employment based on sawmills and wood operations.

Existence of a substantial area of virgin timber in the Porcupine Mountains in Michigan did not forestall the recent closing of the big sawmill in Rhinelander, Wisconsin, only 100 miles distant, at the very time when the nation's need for lumber was most acute.

In 1920 Klamath County had a population of only 4,800 and relatively small lumber output. Construction of modern sawmills was followed by rapid increase in population. In 1940 the census disclosed almost 40,000 people. Lumber cut, already at 400 million bd. ft. level in 1925, exceeded 700 million by 1940. But analysis of the resource situation indicates that only five of the 15 mills now in operation will remain 10 years hence. Only one has reasonable assurance of a life of 25 years or longer. And this situation exists in spite of the fact that two-thirds of the remaining timber is on public lands where light selective logging has been or will be practiced to maintain productivity. The fact is, as things are going, it is unlikely that an output of more than 200 million bd. ft. can be sustained indefinitely. That gives a measure of the extent of readjustment which must be made within the next 20 years.

Even in agricultural sections of the East, productive woodland on individual farms has a significance which cannot be expressed in national statistics. Through a well developed forestry enterprise, net income of dairy farms in central New York, for example, may be increased about 15 per cent on the average. Such an enterprise need not compete seriously with other farm activiites as to time. It offers opportunity to more completely utilize available labor and equipment. It gives farmers a larger degree of independence and security. It may spell the difference between a profitable and a submarginal farm unit. Such economic benefits to thousands of farmers should not be neglected. They cannot be offset by the large-scale, highly mechanized logging operations of the Northwest. Nor will careful management of public forests, no matter how widely they may be distributed, compensate fully for these values which are inherent in the property of individuals living and working on the land.

The forest problem of any community or region cannot be viewed solely as one of balancing annual growth against forest drain. When the process of forest liquidation is allowed to take its course unchecked, the reduction of industrial activity which follows exhaustion of merchantable timber, will eventually lead to a balance between growth and drain at a level where the contribution of the forests to the economic life of the community is at a vanishing point.

Last summer the "model" town of Elizabeth, La., was left stranded when its major industry, a large sawmill, ceased operation because, as reported in a lumber trade journal, "The timber has been raked and scraped to the last available and purchasable tree."

In February of this year the entire town of Weirgate, Texas, was sold to a wrecking company after a life of only 25 years in which some 100,000 acres of virgin longleaf pine were stripped. Its sawmill, logging and turpentine operations are reported to have provided support for some 2,000 people.

With these industries eliminated, a forest survey might well show that forest growth now exceeded drain in these localities. But this would mean little to the people who had looked to these industries for employment. Neither

would it help meet the country's wartime need for lumber.

In the long run productive capacity rather than a balance between growth and drain is the only valid criterion of progress. And the amount of usable wood that can be produced annually is a function of the merchantable growing stock or forest capital upon which it accrues.

The seriousness of the depletion of growing stock in the eastern region is brought out by the following comparative estimates of sawtimber stands:

	1919	1938	
	billion bd. ft.		Reduction
Eastern hardwoods	459.7	256.6	42%
Southern yellow pine	257.7	196.8	23%
Other eastern softwoods	133.3	80.2	40%

The reductions indicated are probably very conservative because the earlier estimates generally reported less timber than was actually on the ground in terms of utilization standards of the later estimates. Thus in a period of 20 years, the ability to sustain communities dependent upon Southern yellow pine was reduced about one-fourth and the basis for other eastern softwood production, as well as the hardwood industries, was almost cut in half.

On the other hand, development of the full productive capacity of forest lands implies a decentralization and divesification of industry which should be wholesome and stimulating in its social significance. Because of their low value in relation to bulk, most forest products cannot well stand transportation for long distances. Primary conversion plants, therefore, must be kept close to the timber. In addition, the full utilization, which is an inseparable attribute of intensive forest management, encourages establishment in the rural communities of new industries using or fabricating wood in various forms.

The town of Crossett, Arkansas, affords an outstanding example of such sound industrial and community development based on far-sighted and intensive forest management. Here pulp and paper manufacture were first added to the original lumber industry to provide effective utilization for much of the lower grade material, especially that yielded by early cuttings in second growth pines. Then a wood distillation plant was established as an outlet for the hardwood which was impeding growth of the pine in some areas. Each new development has created additional employment in the community without the threat of future collapse because each has been planned in relation to the productive capacity of the forest.

In every forest region individual operators have recognized the economic advantages of permanence for their industries and stability for the dependent communities. The number of cases where a start has been made on long-range forest management to insure a sustained supply of raw material for local industries has grown tremendously in the past decade. Many sound industrial forestry programs have been under way for longer periods.

Individual communities, with aroused leadership, can do much to insure optimum development of local forest resources and thus obtain maximum security for their people and institutions. By cooperation and planning, industry can be geared to the current capacity of the land to produce. In the new regions steps may be taken to check or discourage overexpansion. Incentives can be provided to stimulate secondary processing and fabrication of finished products to facilitate utilization of waste and to provide employment for labor released when curtailment of primary forest operations is necessary. In the older regions new industries can be stimulated for utilization of the particular species or sizes of material which can be harvested in the process of improving and building up productive growing stock.

However, as the problems of all forest communities are added together, it becomes apparent that, if the social and economic benefits of sound forest developments are to be realized on a national scale, we cannot leave the solution entirely to individual operators or the local communities. The necessary financial aids and other safeguards for decentralized private enterprise are often beyond the capacity of local communities to supply. And all too frequently the communities lack strength and foresight to withstand the pressures of selfish industrial or political interests.

Federal action is needed and national welfare demands public regulation of basic forest practices, supported by public aid and assistance to private forest land owners on a large scale. For the sustained yield we should achieve on a community basis is not measured in board feet alone. It is something much broader. Sustained yield of forest products at a high level implies reasonable security for labor and a substitution of the family man for the transient bunkhouse worker characteristic of the pioneer lumber industry. It justifies confidence in building, buying, and improving homes. It assures a continuity of business for the local butcher, baker, and candlestick-maker. It helps to maintain the tax base by stabilizing timber values on the one hand and by putting a firm foundation under real estate, business, civic improvement values on the other. The school system, the social life, and the health agencies of the community are part and parcel of sustained yield.

The local people and the State will have to pay dearly and long for the short-lived boom which has been stimulated by uncontrolled exploitation of the private timber.

PUBLIC WORKS PROGRAMS FOR FOREST DEVELOPMENT

by

L. F. Watts
Chief, Forest Service
U. S. Department of Agriculture

PUBLIC WORKS PROGRAMS FOR FOREST DEVELOPMENT

by
L. F. Watts
Chief, Forest Service
U. S. Department of Agriculture

(Delivered by R. E. Marsh, Assistant Chief of the Forest Service, at Meeting of the American Civic and Planning Association, Omaha, Nebraska, June 14, 1943)

Scope of the Program

It is appropriate that a discussion of works programs on our forest lands should follow the discussion of water power, reclamation, and flood control. Management of forest lands is vitally related to projects in these fields. Measures for the protection and improvement of forests on the headwaters of major streams contribute inevitably and materially to the safeguarding of water power installations, of reservoirs impounding water for reclamation projects, and of various flood control structures; they increase their efficiency, and prolong their period of usefulness. A forest-work program, no less than power and reclamation projects, opens up new fields of economic activity and develops new sources of national income.

At the outset, let me point out that it is not my intention to confine this discussion to the National Forests. The National Forests comprise only a small part of the land capable of producing timber of commercial quality and quantity. They by no means measure the opportunities for advancing our post-war economy through forest work.

Justification for extending a public works program to private forest lands need hardly be sought. The public has a large stake in the forest as a natural resource, irrespective of ownership, and has already assumed large responsibility for the protection of all forest lands from fire, insects, and disease. Forest planting on farm lands has been subsidized for years, and public loans have been made for the construction of privately owned timber-processing plants. Indeed, the scope of public work on private forest lands might be greatly expanded, were it backed by assurance that such lands would be kept productive and managed with due regard for the public interest. Meanwhile, public ownership gives greatest assurance that improvements and facilities constructed as public works projects will be adequately maintained and that the public interest will have priority in the management of the resource.

Advantages of Forest Work

Before outlining the activities that may be undertaken for the development of our forests, it is worth while to point out certain characteristics of forest work that justify its place in a comprehensive program of public works.

(Over)

For one thing, forest lands are widely distributed and are available for useful employment in many parts of the country. For another thing, most of the tools and equipment needed for this work are not highly specialized and are generally ready at hand. Much of the work can be done with simple hand tools. Trucks, tractors, bulldozers, graders, air compressors, and concrete mixers--the heavy equipment most generally needed--are standard items in commercial use, and experienced operators and mechanics can generally be picked up in any community. Under adequate technical direction forestry projects can absorb a large number of unskilled men.

Forest work can be readily organized to be handled from camps. Problems of the homeless worker and of overcrowded urban areas may be relieved by this means; but the work is also particularly adapted to the employment of local residents in rural localities. Where need for rural employment and supplementary farm income is greatest, a large volume of potential forest work is generally available.

Beyond all this, to my mind one of the most significant aspects of any program for post-war public works in the forest is what this kind of work may mean to the young men returning from war. A great responsibility rests upon those of us who will have a part in taking them back into pursuits of peace. These are most certainly and satisfyingly assured in the useful, healthful, absorbing tasks involved in a forest works program.

Finally, forest work is suitable for a prominent place in a public works program because it does not compete with any established industry. Instead, it tends to facilitate and enlarge the field for private industry.

Forest Activities Adapted to Public Works

Acquisition of Forest Land

Millions of acres of forest land in private ownership have been reduced to nonproductive condition by shifts from crop agriculture, by erosion, destructive forest practices, or fire. Because so long a time must elapse before these lands can again yield income, the cost of rehabilitation is often more than private owners may be expected to bear. Public ownership offers the best opportunity of restoring such land to economic productivity. Much of it should be brought into the National Forests by purchase and exchange. State, county, and municipal forests should also absorb a substantial acreage. Also, where the public interest in non-income-producing benefits is paramount, as on critical watersheds, public ownership is essential. During the past 20 years the Forest Service has been studying local conditions throughout the country in order to determine the location, extent, and priority of forest lands that should be in public ownership.

Acquisition of forest land by the public should, then, be an important part of a public-works plan. The consolidation of existing and the establishment of new public-forest units may provide larger opportunity for public works in sections where the field is limited and the need for employment great.

The very process of acquisition on a large scale requires much labor, since it involves preliminary field examination, survey, appraisal, title examination, etc. For such work the Forest Service maintains a skeleton organization of experienced and skilled men, upon which an employment program could be rapidly expanded to handle field and office work requisite to care for several millions of acres a year, without delay, at any time that funds are made available.

Fire Protection

Protection against fire is indispensable in the conservation of forest resources. Some degree of protection is now afforded 75 percent of the forest land in the United States, but this protection is by no means adequate. An area almost as large as Montana and Idaho, mainly in the South, is still without organized protection. The urgent task of providing organized protection for forest lands not now so protected and of intensifying protection elsewhere, should be a major objective of a post-war public works program.

A wide variety of projects are involved such as provision for detecting, reporting, and attacking forest fires in the shortest possible time. These involve comprehensive area surveys, mapping of forest fuel types, analysis of the most effective lookout coverage, and location of essential transportation and communication facilities. Lookout towers and cabins must be erected, telephone lines set up, and transportation facilities, landing fields, water holes, fire-crew barracks, equipment warehouses, and radio stations provided. All these detection and suppression activities will absorb large numbers of workers; but the largest volume of employment will be used in hazard-reduction tasks, such as the felling of snags, the construction of fire-breaks, and the elimination of inflammable material along trails, roads, and railroads and in the vicinity of camp grounds and recreational areas.

For such work on the existing National Forests and other public lands, not counting maintenance and other activities, about 1 million man-months would be needed, and four-fifths of this would be for hazard reduction. Obviously most of this work would be in the West where the bulk of the public lands are located. Estimates of the additional manpower required for the protection of private forest lands are not available; but it is generally recognized that present protective efforts on private land are less than half of what is needed, and that the volume of hazard reduction is fully as great as on comparable public land.

Control of insects and disease is another forest-protection activity for which the needed labor is not ordinarily available. Elimination of currant and gooseberry bushes in the white pine regions in order to eradicate blister rust makes the most immediate call for men. Bark beetle control is an important activity in the ponderosa pine forests of the West. In the East, control of the Dutch elm disease and gypsy moth may require many workers.

Resource Development

But protection against fire and other destructive forces is only the beginning of the job of developing the nation's forest resource. If we are to maintain economic timber production, a huge amount of work in

reforestation and timber stand improvement must be undertaken. Through misuse and neglect, large areas have been rendered nonproductive; also much of the land in second growth is only partly productive, because of inadequate stocking, the presence of inferior species and cull trees, and the inroads of fire, insects, and disease.

The forests on other large areas have been wrecked by natural catastrophes such as fires and storms. An example is the great Tillamook burn in western Oregon, where almost one-quarter of a million acres of forest, mostly heavy timber, was destroyed within a few August days in 1933. The land, nearly all privately owned, is now little better than a barren waste -- perhaps even worse, for it constitutes a potential source of conflagrations that may sweep into surrounding unburned forests. Naturally of high productivity, it could be rehabilitated but this would necessitate a longer period of waiting than most private owners are willing to contemplate.

Another example is the central New England area, where the great hurricane of September 1938 blew down hundreds of thousands of acres of timber, seriously damaged many hundreds of thousands besides, and created a worse forest-fire hazard than the region had previously known. Here again, the resources of many of the private landowners have been inadequate to undertake the necessary measures of rehabilitation.

Estimates for 1938 indicated that for the country as a whole some 77 million acres were in need of planting. The magnitude of this job can be realized when I tell you that through all the years up to 1940 only 3½ million acres had been planted successfully by all agencies, public and private. A program involving the planting of 32 million acres in a period of 25 years by or with the assistance of public agencies has been suggested. This program would require the expansion of existing nursery facilities to at least 3 times their present capacity. This nursery expansion should begin now, in order that the seedling and transplant trees may be ready for the men seeking employment in the post-war period.

Those men will be needed also for cultural operations such as weeding, thinning, pruning, and cutting or girdling of overtopping and worthless trees, to improve the quality and quantity of timber in second-growth forests and on restocking areas. Such work requires efficient technical supervision and, handled on a large scale, presents a problem of organization and administration. But it calls only for simple skills and inexpensive tools.

Selection of forest lands for timber stand improvement work should be governed largely by economic considerations. Work should be concentrated first on relatively accessible areas where prospective timber values are high. A 25-year program involving some 65 million acres has been suggested.

A permanent system of roads and trails is essential for effective management and use of public and private forest lands. Construction of roads will provide access to the large bodies of unreserved virgin timber still untapped in the West, especially the Northwest, and will facilitate sustained-yield forest management everywhere. Roads, trails, and landing fields make areas of potential fire risk quickly and easily accessible, and also open up the scenic and sporting resources of the forests for public enjoyment.

Road construction will constitute an important part of a works program on public forest lands. To a large extent, it must be considered a public responsibility on other lands also, because public and private lands are often intermingled and because access to a given forest area is usually determined by topography of adjacent country rather than property lines. For the country as a whole, we shall need to construct more than 12,000 miles of forest highways, 105,000 miles of forest development roads, and 160,000 miles of trails. Two-thirds of the highway construction is needed on Federal lands and about two-thirds of the forest development roads and trails on private lands. Completion of the entire road and trail system would require some 8 million man-months of work.

Other activities in the development of forest resources need only be mentioned to indicate the scope of potential forest work. Upstream watershed improvements to control run-off, prevent erosion, equalize streamflow, and conserve an environment favorable for fish, constitute a field that we are only beginning to understand, but to which research and experience of the past 10 years point the way. Development and use of the forage resources on national-forest ranges also present opportunities for worth while public works. Improvement of stock driveways, range reseeding, control of rodents and noxious weeds and improvement of water supplies are some of the important activities that will contribute to the development of the forest range resource.

The increase in recreational use of the National For sts is evidence of public appreciation of the recreational facilities installed during the past decade. Additional camp grounds, mountain trails, ski-runs, shelters, etc., are certain to be well used. Again public works may serve as a medium for furthering the construction of such recreational improvements. New development should not, of course, encroach upon the 14 million acres which have been set aside as wilderness areas.

Research and Administrative Improvements

As more and more private forest land is put under management, and as more intensive use is made of the national and other public forests, the need increases for extending and refining the technical basis for forest and range management and for more efficient and diversified use of forest products. The research staff of the Forest Service could, if it had the manpower, do much more than it has ever done in carrying experimental operations beyond the test-tube stage. A public-works program could be used to provide the labor for extensive installations of research facilities, such as those for watershed studies at San Dimas, California, and to carry out pilot-plant operations which may well extend beyond experimental cuttings, such as those at Crossett, Arkansas, to include logging technique.

Other opportunities for public works are found in the construction of offices, dwellings, repair shops, storage depots, communication systems, fences, and other permanent improvements required in administration of the public forests.

It is estimated that the miscellaneous improvements required for recreation, research, and administrative purposes could provide 1,600,000 man-months of employment about equally divided between public and private lands.

Significance of the Forest Work Program

The critical situation of the Nation's forest resource is the most potent argument for the large program of forest work that I have outlined, and for giving it high priority. The economic welfare of the country is vitally affected by the productivity of our forest lands.

Wartime scarcity of strategic materials has shown how indispensable wood is to the economy of the Nation. Tremendous demands for timber products for a wide range of war uses have accelerated the trend of depletion, which was only partially and temporarily relieved in the depression of the early thirties. There is much evidence to lead us to believe that, if full employment is achieved after the war, wood requirements will remain at a high level.

As the Nation's timber situation becomes more acute, the National Forests have to provide a larger share of our total timber supply than hitherto. Growing dependence on these forests is indicated by a 70 percent increase in volume of timber sold from them in 2 years--more than double the rate of increase in lumber output for the country as a whole. Without violating established wilderness areas, other undeveloped portions of the National Forests should be opened up as soon as possible so that timber now inaccessible may be reached as needed. Furthermore, timber stand improvement and other management measures that will result in the production of timber of large size and high quality should be carried out over large areas. The importance of such measures has been forcibly emphasized by difficulties in obtaining supplies of certain items during the past year.

I have emphasized the importance of increased public ownership in the solution of the Nation's forest problem. But that should not conceal the fact that a large part of the best timber-producing land should remain in private ownership. Encouraging progress in forest practice has been made by private owners, both large and small. Especially during the immediate pre-war years the number of operating companies that employed foresters and took steps through selective cutting, reforestation, and special protective measures to insure a continuous supply of raw material for their mills increased markedly. Demonstrations of operating results, good reproduction, and gratifying growth of young timber in many forest regions have largely eliminated doubts as to the financial soundness of long-range forest planning for private owners under favorable conditions.

But with one-third of the Nation's standing timber confined to the 6 percent of our commercial forest land in the western part of Oregon and Washington, and with forest growing stock in all parts of the East and South entirely inadequate to sustain the current rate of cutting, we cannot look with complacency on continued widespread destructive cutting and the indiscriminate harvesting of immature timber. The achievement of good practice on private lands is still so far from the ultimate goal and the threat to timber depletion in many communities is so real, as still to be a matter of national concern. As a nation, our dependence on our timber supply is too vital to permit its dissipation through ignorance, carelessness, or selfish exploitation on the part of the private owner. I am convinced that continued productivity of the forest land not in public ownership can be assured only by public regulation

of cutting and related forest practices. Furthermore, I believe that such regulation to stop destructive cutting practices cannot be left to the States alone but will require as a minimum strong Federal leadership and a large measure of Federal participation.

But if the public is to impose restrictions on forest practices on private lands, the public must assist forest-land owners to meet the problems of forest management. Protection against fire, insects, and disease must be extended and intensified. Denuded land must be planted. Deteriorated stands must be rehabilitated. Methods of cutting must be adapted to silvicultural principles established by painstaking research. Technical assistance is needed in organizing forest operations, developing new uses for wood, and finding ways to eliminate waste. Small forest owners especially need help in cooperative organization to facilitate good forest management and orderly marketing of their products. The public may also encourage good practices by providing credit, insurance, and tax adjustments to meet special conditions applicable to forest enterprises.

Summary

The public works which have been suggested would contribute directly toward the maintenance and restoration of forest productivity which is at the heart of the Nation's forest problem. And increased forest productivity creates further opportunity for future employment in the woods and for sustained activity in the forest industries. It is a channel through which will flow increased national income. Forest productivity means community welfare.

Constructive, physical work on projects which contribute to the common welfare, such as those we have been discussing, should help to develop in young men seeking re-employment after the war a sound idealism and a sense of social responsibility. They will then be better prepared to do their part in communities throughout the Nation in creating the better society toward which all of us are striving.