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MARKET PROSPECTS FOR MOUNTAIN STATES TIMBER

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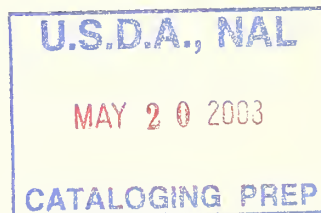
Research Paper 50

June 1957

MARKET PROSPECTS FOR MOUNTAIN STATES TIMBER

By

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Cover Photo:

A mature larch stand
in western Montana.

The prospects for more wood-using plants in the Rockies like the one below are related to three factors which will be considered separately in the following pages:

- The future timber needs of the United States.
- The capacity of forests in the South, West Coast, and other more favored regions to fill these needs.

Figure 1
A LODGEPOLE PINE MILL: SOUTH FORK
LUMBER COMPANY, BELGRADE, MONTANA

Shifts in the interregional competitive situation.



INTRODUCTION

Approximately 4 percent of the wood cut in the United States today comes from the eight mountain states.^{1/} Measured in carloads, this is a tremendous quantity of timber, but in terms of what these forests could produce, it does not look so large. The eight states have about 53 million acres of commercial forest or about 11 percent of the total commercial area in the country. While these forests are not as productive as those in some other regions, they do include 8 or 9 percent of the Nation's timber growing capacity. Thus, the Mountain States are contributing only part of what they might to the national woodpile.

Since World War II, timber output in the Mountain States has been increasing and there is every reason to suppose it will continue to increase to the point where the region will produce a greater proportion of the timber cut than it does now. However, that does not mean that every stand or every tree will be marketable at some future date. The timber of the Mountain West has a great range of utility, accessibility, and value. Except for ponderosa pine, white pine, and western red cedar--the gold plated species--these factors have retarded development. This situation has prevailed for so long that some people have become pessimistic concerning the outlook; others hardly more than cautiously optimistic. Events of the past few years have brightened the outlook. Nevertheless, the big question still is this: Will markets develop sufficiently that the Mountain States will be able to capitalize on all or most of its timber growing capacity? The purpose of this report is to answer that question. In doing that, we will rely heavily on three recent documents. They are:

Resources for Freedom, by the President's Materials
Policy Commission, 1952.

America's Demand for Wood 1929-1975, by Stanford
Research Institute, 1954.

Timber Resource Review, by the United States Forest
Service, preliminary draft, 1955.

In this report, we will review the national situation and attempt to interpret what that situation seems to mean to the regional outlook.

^{1/} Montana, Idaho, Wyoming, Utah, Nevada, Colorado, Arizona, and New Mexico.

POTENTIAL TIMBER DEMANDS IN THE UNITED STATES

The bigger and more prosperous the nation the bigger its appetite for raw materials. One quick look around the world is all that is necessary to see that consumption is closely correlated with strength, security, and prosperity. That being the case, if the United States is to continue to be prosperous it will need large quantities of natural resources. We can get a good idea of just how great our future wood needs will be by anticipating how much the population and economy of this country will grow.

THE POPULATION OF THE UNITED STATES SEEMS DESTINED TO GROW BY LEAPS AND BOUNDS

In 1900, there were 76 million people in the United States (fig. 2). By the middle of 1955, the number had climbed to 165 million-- more than twice as many. At one time, it was anticipated that the population of the country would begin to level off in the second half of the century. However, a continued rise for the foreseeable future now seems in prospect. In 1953, the Bureau of the Census made four long-range population projections based on different assumptions of fertility, mortality, and immigration (1).^{2/} It was estimated there would be between 199 million and 221 million people in this country by 1975. A later analysis by the Bureau in 1955 indicated the 1975 population will be between 207 and 229 million people (2).

Students of the subject are now saying that just as the population of the United States doubled in the first half of this century, it probably will double again in the second half century barring any major upsetting factor. The Atomic Energy Commission has estimated that with a medium rate of increase, there will be 300 million people in the United States by the year 2000 (8). In its long-range look at the wood situation in the Timber Resource Review, the Forest Service has based its estimates of future wood needs on the more conservative figure of 275 million people. Time alone will determine the net effect of all the biological, psychological, and political factors affecting the population trend. Nevertheless, there is complete agreement among the experts that if there is not a major change in the current trend, the population of the United States will continue to mushroom.

It is well to remember that the preceding projections are based on what appear to be conservative assumptions. From 1900 to 1940, the average population increase in the United States was 1.4 percent annually. During the next 15 years, the rate rose to 1.5 percent. A population of

^{2/} Numbers in parentheses refer to Literature Cited, p. 28.

275 million in 2000 would require only a 1.16 percent annual increase during the rest of the century.

**NATIONAL OUTPUT WILL
PROBABLY INCREASE MORE
RAPIDLY THAN POPULATION**

During the first half of the twentieth century, while the number of people was increasing 99 percent, the real income of the average individual rose 166 percent. In 1900, the real income was \$560 per person. By 1950, it had climbed to \$1,490.^{3/} In other words, there were not only more people but each person had more. As a result, the national output of goods and services (called gross national product) has climbed at an even more dramatic rate than population. Figure 3 shows the output of goods and services was five times larger in 1950 than in 1900. This is truly an amazing expansion.

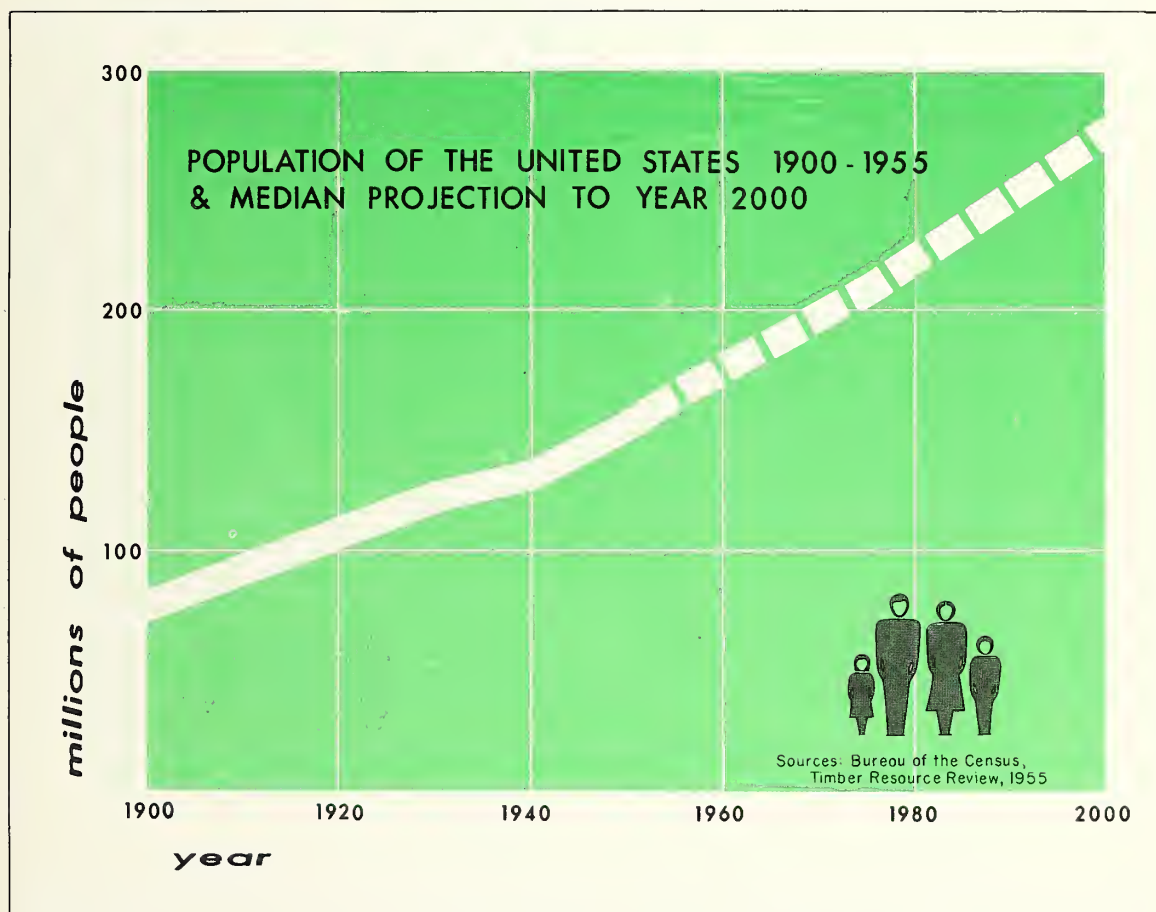


FIG. 2.

^{3/} All of the value figures in this report have been adjusted to eliminate the effect of the changing value of the dollar. The above figures are in 1950 dollars.

Most economists seem agreed that the standard of living in the United States will continue to rise. If so, we can look forward to future production levels which far outstrip population gains. It has been estimated that the gross national product in 1975 would be about twice as high as it was in 1950 (10). Looking even further into the future, Forest Service economists have calculated that it would be perfectly reasonable to expect the gross national product to climb to almost 1,100 billion dollars by the year 2000.^{4/} This would be an annual increase of national output of about 2.7 percent annually which is less than the average 3.1 percent annual increase during the first half century. A 1,100 billion dollar gross national product would be a far cry from our 60 billion dollar economy of 1900 or even the 287 billion dollar figure of 1950. Nevertheless, if the terrific economic pace of recent years does not slack off, even this figure would be surpassed.

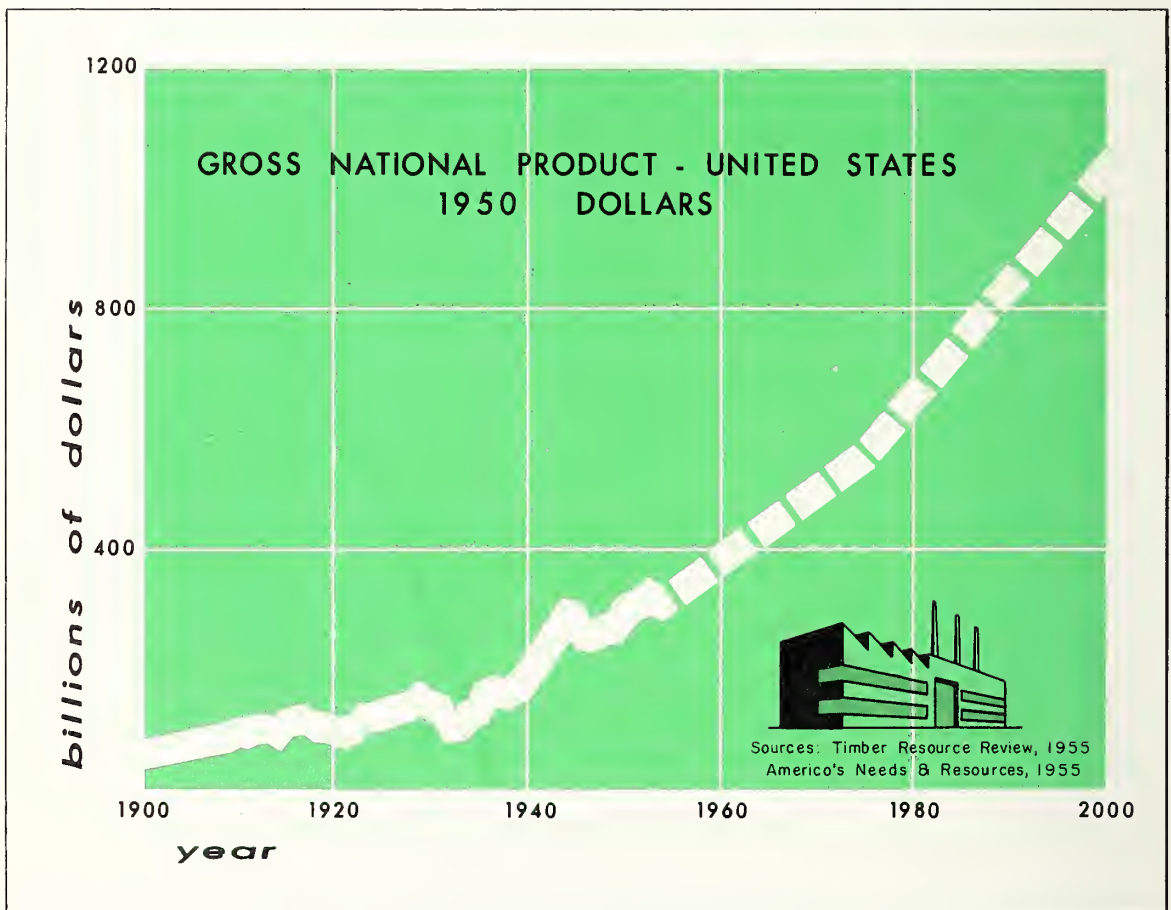
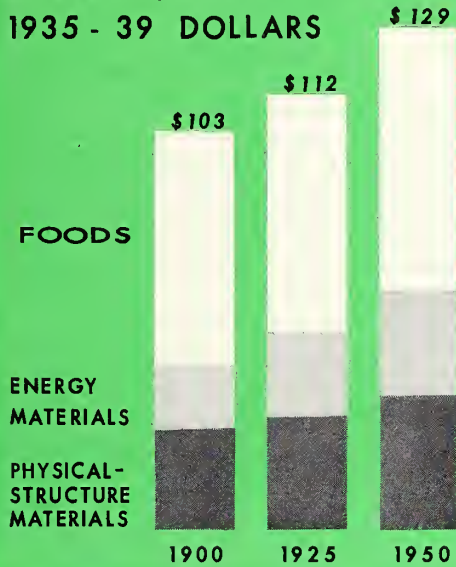


FIG. 3.

^{4/} In the Timber Resource Review, the Forest Service expressed its future income estimates in 1953 constant dollars. On this basis, the projected gross national product in 1975 was 630 billion dollars; in the year 2000 it was 1,200 billion dollars. The above are 1950 dollars.

**PER CAPITA CONSUMPTION OF
RAW MATERIALS IN THE
UNITED STATES.
1935 - 39 DOLLARS**



Source: U.S. Dept. Commerce.

FIG. 4

We can get some idea of the tremendous appetite of prosperity by considering how big a pile all the material required to sustain the average American for 1 year would make. Table 1 shows that this pile would weigh 18 tons (7).

Figure 5, on the following page, shows the national consumption of physical structure materials tripled in the past half century. Physical structure raw materials include all wood products except fuelwood. Consumption of this magnitude has, of course, put a heavy strain on the natural resources. Business Week magazine comments (3), "In the last half dozen years, conditions have changed. Raw materials stand blinking in an unaccustomed limelight. Instead of concentrating on how to produce the most product at lowest cost and sell it to the most people at the best price, businessmen are forced to worry about the ever-increasing consumption of materials."

Table 1.--Per capita consumption in the United States, 1950

	<u>Pounds</u>
Fuels	14,400
Construction materials	10,000
Metallic ores	5,100
Misc. nonmetallics	800
Agricultural products	<u>5,700</u>
	36,000

THE ALREADY HEAVY
LOAD ON THE NATURAL
RESOURCES WILL
INCREASE

As a
result of
constantly
richer living

and more people, total raw material needs of the Nation as a whole have climbed at a rapid rate. Today, the United States, with less than 10 percent of the "free world" population, consumes almost half of the raw materials used by the free world (7).

Per capita consumption of food products increased only 12 percent between 1900 and 1950. However, 64 percent more energy materials (oil, coal, etc.) was consumed per individual in 1950 than in 1900. Use of materials to make and build things (physical-structure materials) was up 31 percent on a per capita basis (fig. 4) (9).

Providing greater prosperity for a greater population in years to come will require even more lavish use of natural resources from both within the borders of the United States and without. The above-mentioned Business Week article quotes Henry G. Aubrey, economist of the New York Federal Reserve Bank, to the effect that the value of industrial materials imports in 1975 will be more than 2½ times greater than they were in 1948.

Figure 5 shows how the demand for physical structure materials may increase in the next half century if the United States continues to ride the crest. If the population of this country and its production rise as much as figures 2 and 3 suggest, resource use will rise correspondingly. The consumption of physical-structure raw materials may very well double between now and the end of the century.

Just what the ultimate result of the growing pressure on our natural resources will be no one can say for sure at this time. It will depend upon the extent of domestic supplies and the effect of advancing technology on both the use and availability of these supplies. It will also

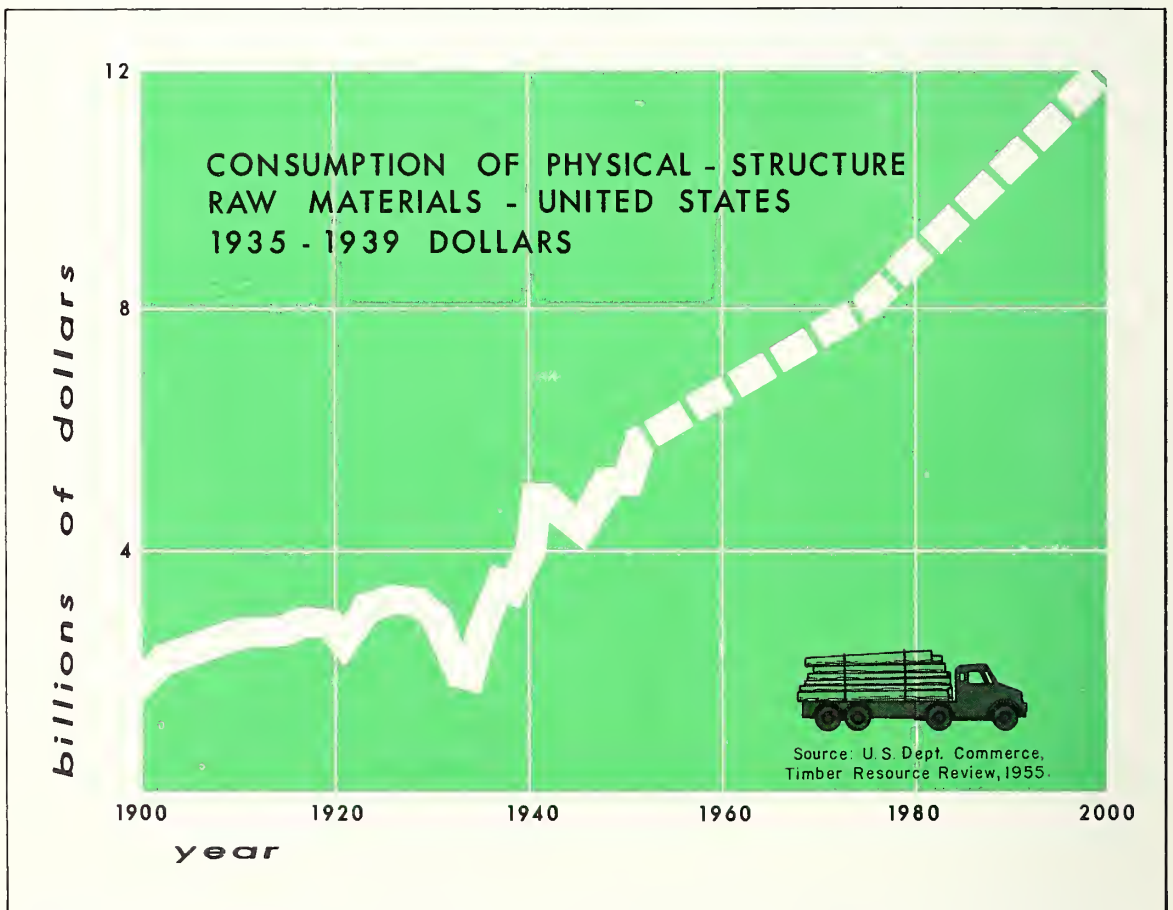


FIG. 5

depend upon the availability of resources elsewhere in the world. As the standard of living of the backward nations improves, they will increasingly become competitors for their own resources. At present these are imponderables but we do know that the future of this Nation will depend as much upon the dynamics of supply as upon anything else.

Some observers express a certain degree of alarm about the explosive population-resource problem. To them the mushroomlike growth of population is building up an appalling load for world resources. Others tend to be more optimistic on the grounds that advancing technology will, as in the past, enable us to make better and cheaper products from less material, poorer quality material, more expensive material, and substitute material. In any case, of one thing we can be sure: As national and world needs for materials mount, the value and importance of those resources available to us will increase.

WOOD HAS BOTH LOST
AND GAINED IN THE
COMPETITION WITH
OTHER MATERIALS

Raw materials are an essential ingredient of production for which there is no substitute. However, in most cases, there are alternative materials to choose between for specific uses. Wood competes with steel, concrete, glass, oil, and many other products. To properly appraise the effect of this competition on past and future timber product consumption, we need to consider three classes of wood products separately: (4, 5).

1. Fuelwood
2. Lumber
3. Other timber products

Fuelwood has been the principal timber product casualty in the battle of raw materials. There are no really good figures on fuelwood consumption at the beginning of this century. However, one recent guess is that the roundwood burned in 1900 may have totaled 90 million cords. A good deal of slabwood and other industrial waste wood was burned besides that. In 1952, something like 30 million cords of roundwood were consumed for fuel--one-third as much as in 1900 (fig. 6). In this same period, the total use of all energy materials more than tripled (9).

Anyone whose life has spanned the period from the wood stove to the gas furnace knows the reason why wood has declined as a source of heat. In most places, natural gas, coal, oil, and electricity have taken over the kitchen stove, the furnace, and the parlor heater, because of convenience, economy, or both. Only in the fireplace is wood today without a serious challenger.

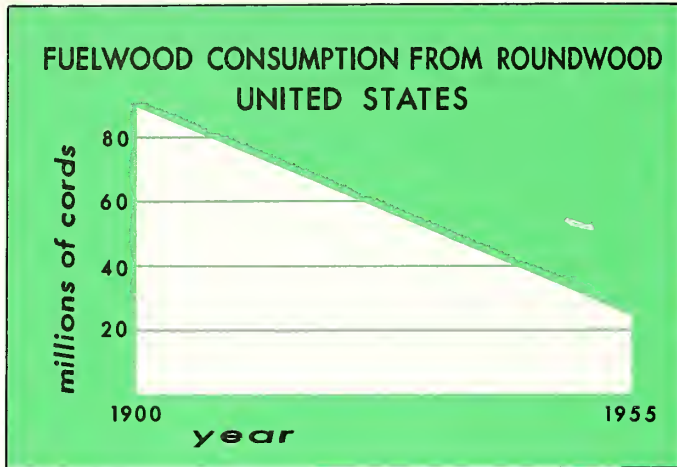


FIG. 6

Lumber consumption has varied greatly from year to year and period to period. From the beginning of the present century to the middle 1930's, the over-all trend was down. However, since then the trend has been upward and in the early 1950's lumber consumption was only slightly lower than in the years of peak use at the start of the century (fig. 7).

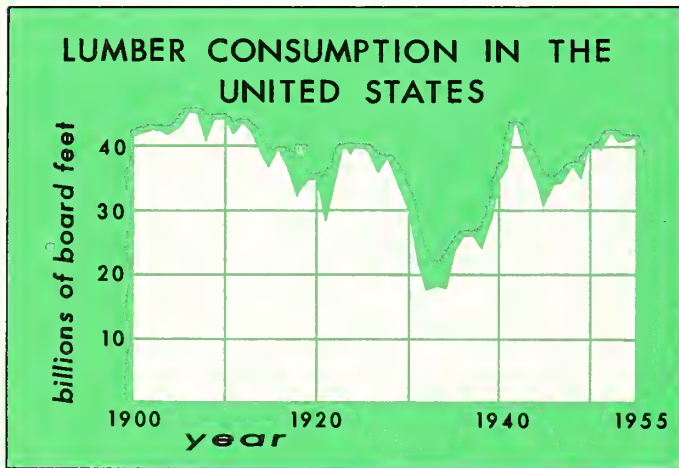


FIG. 7

While lumber consumption today isn't much lower than a half century ago, lumber certainly does not rate as high as it once did among the industrial raw materials. The reason is, of course, that while lumber has barely been holding its own, the total use of raw materials has greatly increased. Today, lumber is relatively only one-third as important among the physical structure raw materials as it was in 1900.

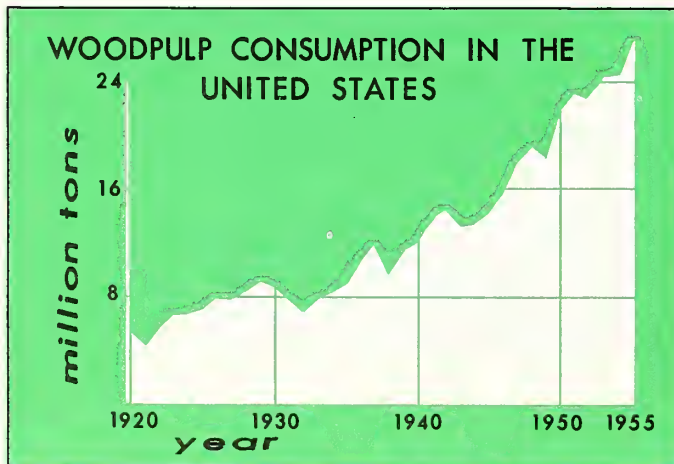


FIG. 8

• • • • •

The story of paper, paperboard, and plywood is different--very different. These products are in a heady upward swirl of rising popularity. Figure 8 shows the dramatic rise of pulpwood consumption between 1920 and 1952. Pulp products have not only held their own in relation to metals and other raw materials, they have gained a progressively larger

share of the total market. Whereas the consumption of all physical-structure raw materials in the United States increased 83 percent between 1920 and 1952, pulpwood consumption more than quadrupled (5).

The advance of softwood plywood as an industrial raw material has been even more remarkable. In 1925, a census of production showed a total output of 153 million square feet (3/8-inch basis). As more and more uses have been found for this utilitarian product, output has soared. In 1952, softwood plywood production was estimated to be 3.2 billion square feet--21 times as great as in 1925.

When the ups and downs of the individual timber products other than fuelwood are added together, we find that the 10,237,000 cubic feet of industrial wood consumed in 1952 was an all-time high, 17 percent higher than the consumption in 1900. This is, of course, a considerably smaller increase than was experienced by other physical-structure raw materials. Nevertheless, as figure 9 shows, wood has held its own in recent years. This chart compares wood consumption (except fuelwood)



FIG 9

as a ratio to the consumption of all other physical-structure materials. An increasing ratio means that wood consumption is expanding more rapidly than the consumption of other raw materials. A decreasing ratio means that wood is lagging behind the other materials. In discussing the data shown in figure 9, the Forest Service's Timber Resource Review points out:

. . . it appears quite certain that other physical-structure raw materials were displacing timber products in a rather drastic fashion over the period 1900 into the 1930's. However, a part of that observed lag in timber products consumption was due, not to displacement by other materials, but to improvements in the timber products themselves--improvements such as preservative treatment of railroad ties, engineering design that made a smaller piece of wood do the job formerly done by a larger piece, and reduction of material waste in fabrication processes.

In more recent times (1940's and 1950-52), timber products appear to have held comparatively firm against the competition of other physical-structure materials. If there has been net displacement of timber, it has been to a rather mild extent. In other words, the losses sustained by lumber, cooperage, and other items have largely been offset by gains in use of other products such as paper, paperboard, nonpaper products of woodpulp and wood fiber, plywood, and the like.

Insofar as can be judged from the foregoing consideration of factors influencing the past consumption of timber products, there are no grounds for lack of confidence in the competitive position of timber against other materials. In spite of the fact that lumber, the major timber product, has lost ground to other timber products and to nonwood materials, the nonfuel demand for timber over the past twenty years has almost kept step with demand for the nonfuel materials that compete with timber.

To understand the trends of wood consumption, we need only review the history of this country's development. When the first settlers came, timber was one of the most available of all raw materials. This availability came from the fact that it was more widely dispersed than such competing materials as coal and more readily workable than other materials such as the metal ores. A man needed only a few tools to provide both shelter and fuel. As communities developed, relatively simple manufacturing establishments could provide lumber, lath, and shingles in large amounts. The lack of industrial means made it necessary to fabricate such intricate mechanisms as clocks from wood because it was

locally available, cheaper, and easier to work than metal in the machines of those days.

As the United States began to develop its industrial muscles, we began to more cheaply fabricate and distribute products made from other raw materials. This brought these other materials to the fore. For many purposes, natural gas, glass, steel, aluminum, and other competing products are now either cheaper or more convenient than wood.

Our rise in living standards has in part been due to the shift from simple products to more complex ones which offer advantages of one sort or another. Thus it seems fair to consider the change which has taken place, not so much as a decline of wood in importance as it is a rise of other materials to their proper place in a highly industrialized economy. In any case, the explosive growth of the paper, paperboard, and plywood industries in the past two decades and the strength of the lumber market in recent years, leave no doubt that wood is just as much a raw material of the machine age as it was of the pioneer days.

OUR WOOD NEEDS WILL
INCREASE IN THE NEXT
HALF CENTURY

That the demand for industrial wood will increase in the coming decades there can be no doubt. The question is: How great will the increase be? This will depend in large part on the capacity of wood to stay competitive from a price standpoint. Pulp and veneer products have been highly competitive in the past. Lumber has been less so. Future timber supplies, availability of these supplies, and technological progress will influence wood prices in years to come. However, the same resource and technological factors will be affecting the prices of competing products so the situation is far from simple or one-sided.

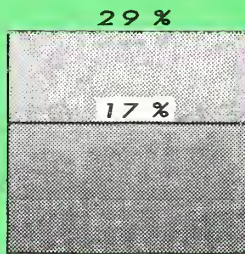
Because the problem is so complicated, the Forest Service has not attempted to make a single estimate of potential demands for wood but rather to indicate a possible range of potential demands. On one extreme is the demand situation which would prevail if wood holds its own among the raw materials, at the other is the demand situation if there is a substantial further substitution of other materials for wood. Figure 10 tells the story in brief. If the United States remains prosperous

It will probably need 17 to 30 percent more wood in 1975 than was consumed in 1952.

It will probably need 48 to 80 percent more wood in 2000 than was consumed in 1952.

THE NATION WILL NEED MORE WOOD

70% 1975
17% to 29%
more than in
1952



70% 2000
47% to 80%
more than in
1952

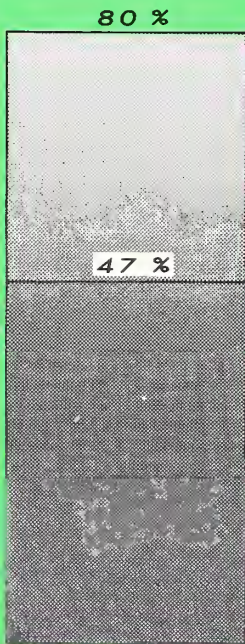


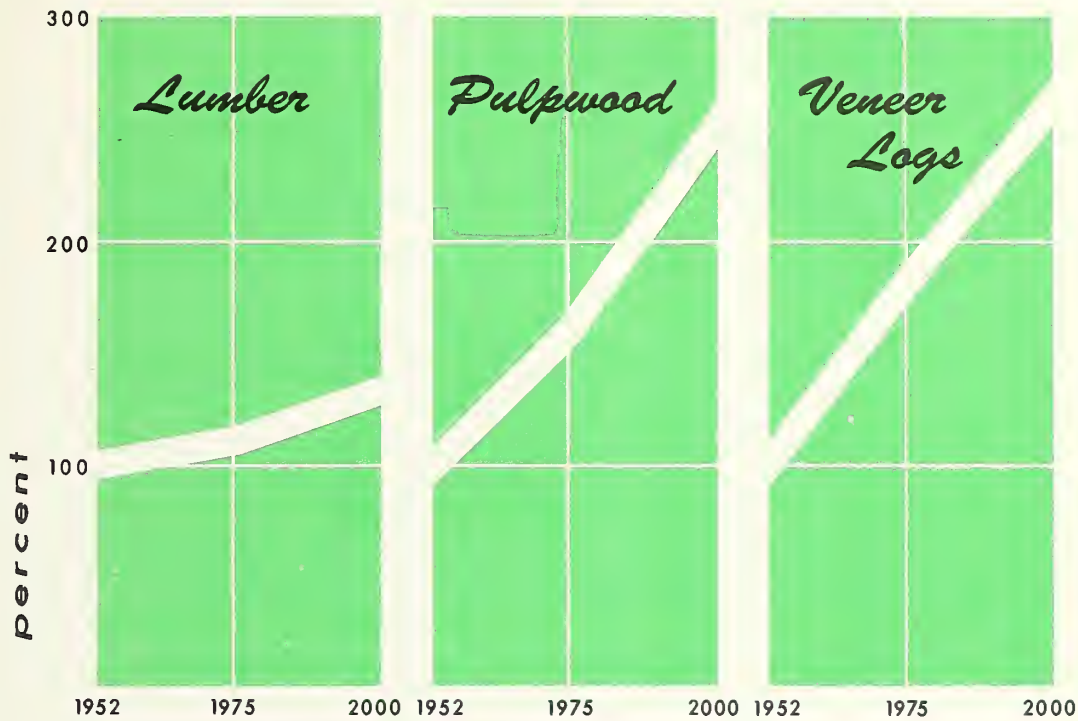
FIG. 10

The demands for wood products are not, of course, going to increase uniformly. For example, figure 11 indicates the minimum potential demand for lumber one-half century hence is one-third greater than today. On the other hand, even the most conservative estimates of future pulpwood and veneer needs are 2½ times present consumption.

The most recent other study of long-range timber needs was the one by the Stanford Research Institute already mentioned. Its estimates of potential wood consumption agree very closely with the minimum estimates of the Timber Resource Review.

The cut of timber will not need to increase as much as the use of wood because we are making constantly more efficient use of the trees we cut. Pulpmills are now using more of the slabs and other waste material from sawmills than they did a few years ago. The West Coast hardboard industry depends almost entirely on this type of material. The Stanford Research Institute has estimated that 1.5 million cords of residual material from sawmills were pulped in the United States during 1952. This was about 6 percent of the total pulpwood consumption that year. There also has been better utilization in the woods. In the South Atlantic States, for example,

TREND OF POTENTIAL MINIMUM DEMANDS



From Timber Resource Review, 1955

FIG. 11

some 450,000 cords or 12 percent of the entire pulpwood cut during 1952 came from the tops of trees harvested for lumber.

Opportunities for better and more complete use of timber certainly have not been exhausted. The Stanford Institute estimates that use of sawmill residues by pulpmills will increase from the 1.5 million cords of 1952 to 9.4 million cords by the end of the century. The authors of the Timber Resource Review are equally optimistic of the probability of squeezing more wood from the timber, anticipating that 7 percent less sawtimber cut will be required per unit of product in 2000 than in 1952.

SAWTIMBER GROWTH MAY HAVE TO BE MORE THAN DOUBLED

Satisfying the ravenous appetite of a healthy growing nation for timber products is not likely to be any easier than the task of filling a teenage boy. Perhaps the biggest result of the recent national appraisals of the forestry situation has been to emphasize that fact. Whatever view one takes of future wood requirement trends in the United States, it is

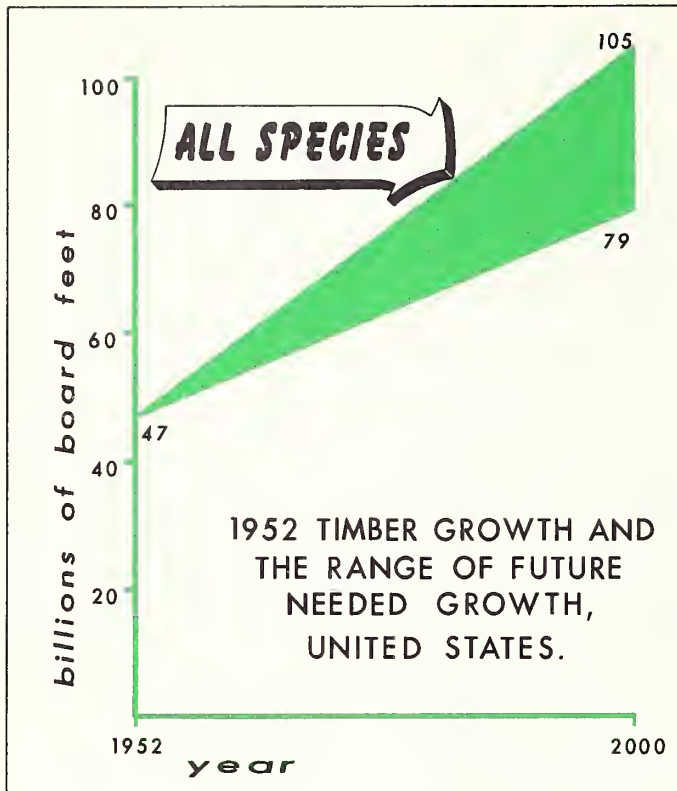


FIG. 12

apparent the country has an enormous potential for wood consumption and the forestry job is larger than previously realized.

Figures 12 and 13 present the long-range estimates of needed growth as developed by the Timber Resource Review. In contrast with a 1952 total sawtimber growth of 47 billion board feet, from 79 to 105 billion board feet of annual growth will be required by the year 2000. Softwood sawtimber growth alone will have to increase from 28 billion to between 57 and 76 billion board feet. The Timber Resource Review has aptly described the higher of these two estimates as a "tremendous challenge." The lower one is no small challenge in itself.

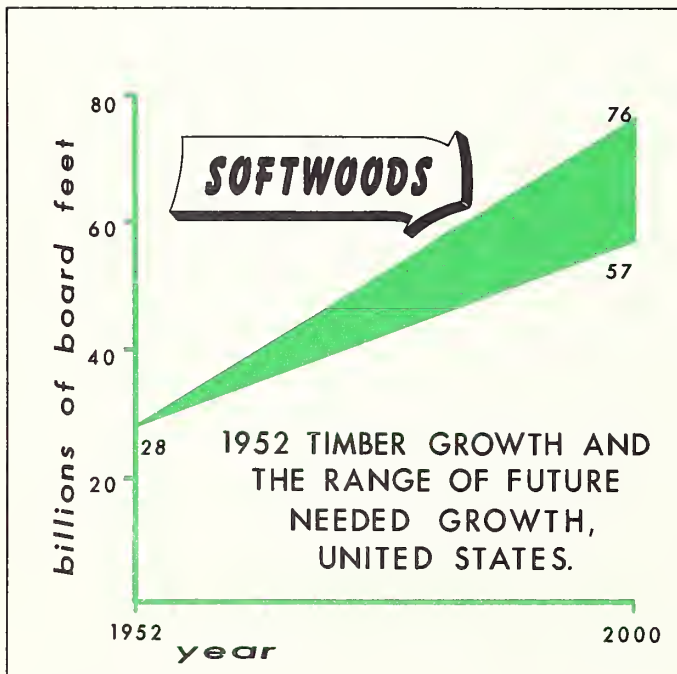


FIG. 13

These calculations of future needed timber growth are not predictions of future consumption because future consumption will depend on the availability and price of the wood. Rather, they are estimates of the timber growth which we should have to maintain a strong and prosperous United States. If there continues to be enough of other physical-structure raw materials at reasonable prices to permit substantial further substitution of these materials for wood, the timber growth needed for future prosperity may be in the neighborhood of 79 billion board feet

annually. If substitutes are not cheaply abundant (and they may not be because other resources have their own supply problems) one of the requirements for the kind of economic development we have been talking about may be an annual sawtimber growth of 105 billion board feet.

The United States resource situation seems to boil down to this

THE NATION IS GROWING RAPIDLY.

THIS GROWTH PRESAGES A DRAMATIC INCREASE IN THE ALREADY ENORMOUS CONSUMPTION OF RAW MATERIALS.

FOR THAT REASON ONE OF THE GREAT CHALLENGES OF THE FUTURE WILL BE THE CHALLENGE OF NATURAL RESOURCES.

IF WE ARE TO GROW IN NUMBERS WITHOUT SACRIFICING OUR STANDARD OF LIVING OR NATIONAL SECURITY, MANY RESOURCE PROBLEMS MUST BE SOLVED.

ONE OF THESE PROBLEMS IS TO SUBSTANTIALLY INCREASE THE ANNUAL OUTPUT OF TIMBER PRODUCTS.



Figure 14. A lodgepole pine stand, Wasatch National Forest. It is inconceivable that the estimated timber needs for prosperity during the next half century can be met without drawing heavily upon forests of the Rocky Mountains. The eight Mountain States have 8 or 9 percent of the Nation's timber-growing capacity, much of which has been unused or lightly used.

FACTORS WHICH FAVOR TIMBER INDUSTRY EXPANSION HERE

It is perhaps too soon to say how much expansion there will be in timber utilization in the Rocky Mountains or what form that expansion will take. Before the timber of the Rocky Mountains can be fully utilized, there are many technical and economic problems to solve. Nevertheless, there are several indications that the growing need for wood in the United States promises an increase in use of Rocky Mountain timber to a level more nearly in line with the producing capacity of the forest.

THE UNITED STATES HAS NO EXCESS OF TIMBER GROWING CAPACITY

The idea that timber is an inexhaustible resource was long ago abandoned, but it was commonly believed until recently that this country has more than enough commercial forest land to meet all future timber needs. It is now clear that while there may be enough forest land there is no excess. Moreover, there will be enough forest land only if all or most of it is kept in a good state of productivity.

The theoretical maximum timber growth in the United States is high, perhaps as high as 200 billion board feet annually. However, this much growth cannot be achieved with present limited knowledge of timber growing and under present economic conditions. In other words, only when we know considerably more than we do now about timber growing and when cost is less of a deterrent will it be possible to grow four times as much timber in the United States as in 1952. The Timber Resource Review has described this biological potential "as a great untapped resource available when and to the extent that the advance of technical knowledge permits and economic circumstances justify its development."

Insofar as can be seen now neither the technical knowledge, economic conditions, nor ownership pattern will permit achieving this theoretical goal in the coming few decades. However, Forest Service timber growth specialists feel that an annual growth of 101 billion board feet can be realized if the forestry effort were intensified to the degree that would seem to be justified under the kind of national economy visualized for the future. This "realizable growth" is about half the theoretical potential.

Figure 15, on the next page, compares the estimated realizable growth with probable future wood needs. It suggests that to meet wood needs at the end of the century will take all or nearly all of the growth capacity of the United States which can be harnessed at that time. From this it may be inferred that Rocky Mountain timber will eventually be in greater demand than it is now.

FORESTS ELSEWHERE
HAVE NOT KEPT UP
WITH PAST DEMAND

A growing need for Rocky Mountain timber is already being foreshadowed by supply problems in other timber regions. Between 1940 and 1954 the real or constant dollar price of softwood lumber rose 48 percent. During that period the lumber industry enjoyed unparalleled prosperity so there was every incentive to increase production. However, a corresponding gain in softwood production did not take place. To learn the reason for that we must look at the history of timber industry development. During the past several centuries the center of gravity of the lumber industry has shifted from one part of the country to another as virgin areas have opened up, boomed, then settled back to a more modest rate of production. The trend continues on. California and southwest Oregon are having a timber boom which has seen lumber production more than double in a decade. The Mountain States are experiencing a more modest expansion. Figure 16 tells the story at a glance. In these two regions softwood production has responded to the strong demand reflected in rising prices. In the rest of the continental United States, which has two-thirds of the



FIG. 15

SOFTWOOD LUMBER PRODUCTION 1940 - 1954

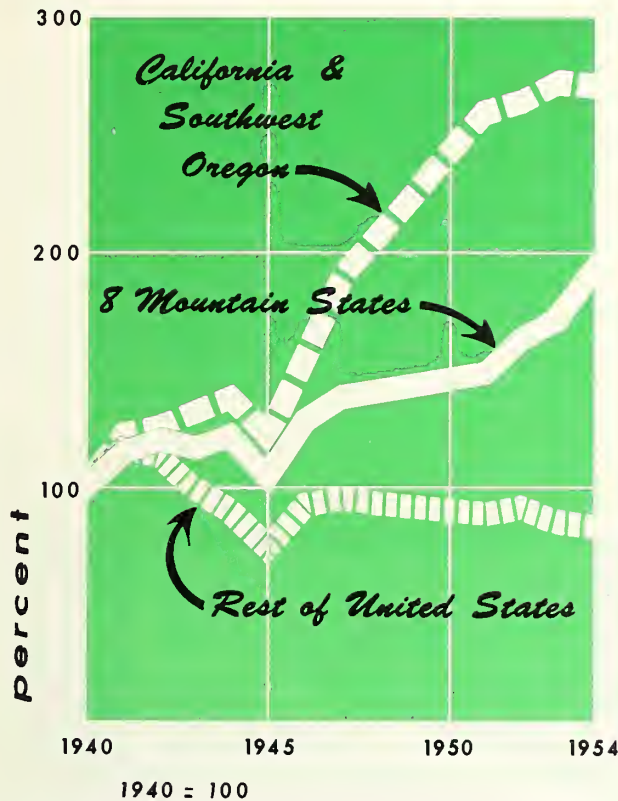


FIG. 16

location of the natural resources. This means, of course, that Rocky Mountain timber will have more of a market close to home in years to come.

Between 1910 and 1955, the number of people in the United States increased 80 percent. In the same period, population in the 11 Western States rose more than 230 percent. This pattern of development is going to continue for some time yet because settlement in the West--in the Mountain States particularly--is still relatively low in relation to the capacity of the resources to support people. How rapidly the Mountain States' population will increase or how high it will climb depends upon industrial opportunities which cannot be completely evaluated at this time. We do know, however, that there is considerable chance to expand manufacturing. Moreover, the region has extensive resources of oil, shale, coal, phosphates, and other minerals to be developed. The fabulous oil shale deposits of Colorado and Utah alone will support a great expansion of industry and population. Water, farm land, and timber offer still other opportunities. The Mountain States may confidently look forward to continued healthy growth.

softwood timber area, softwood lumber production actually declined (11). This can only mean that there was not enough timber available in those parts of the country to permit an expansion of cut in response to the opportunity. Unavailability can be due either to a shortage of timber or a rise in logging and milling costs sufficiently to offset the price gains. Since the areas which haven't responded to the opportunity have been proved economically loggable, lumber production primarily has declined in these places because of a physical shortage of timber.

CHANGING POPULATION PATTERNS ARE BRINGING MARKETS CLOSER

Migration is bringing about a more even distribution of people in the Nation; that is a distribution ever more closely related to the

The Stanford Research Institute has estimated that the 5.9 million people in the eight Mountain States will increase to 9.6 million by 1975 (6). Considering the untapped resources in these states, it seems likely that if there are 275 million people in the United States by the end of the century there will be at least 13.6 million in the Mountain States by 2000--more than twice as many as now (fig. 17).

The prospect of a substantially greater home market for Rocky Mountain timber is of major significance. Up to now, the distance of this timber from its principal markets has been a serious handicap. The average freight-car load of lumber from sawmills in the Mountain States travels 1,500 miles before it reaches a consumer.

The system for making rail freight rates is designed to ease the distance handicap by setting lower per-mile costs for long hauls than short ones. The long distance of this region from the principal markets is nonetheless a handicap as table 2, compiled from the Interstate Commerce Commission data, shows.

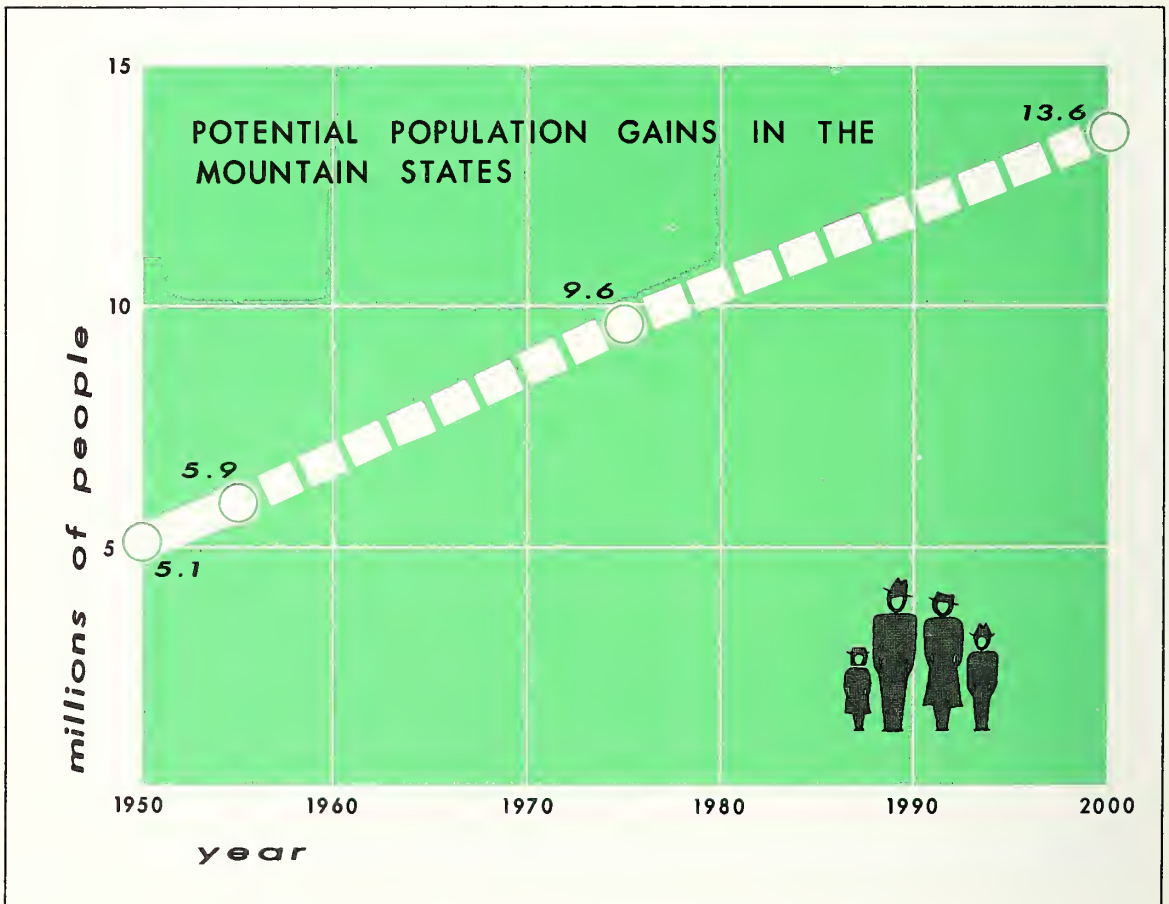


FIG. 17

Table 2.--Average rail freight bill paid by lumber producers in selected states--1954

<u>State</u>	<u>Dollars per ton of lumber</u>
Alabama	\$11.15
Georgia	10.94
Minnesota	6.77
New York	9.63
Arizona	15.50
Montana	17.86
Oregon	21.51
Washington	18.43

There is reason to suppose the Mountain States will always be a timber exporting region. Nevertheless, the prospective population growth and resulting growth of local markets should lighten the freight handicap of the Rocky Mountain timber industries and make them more competitive in the national lumber market.

LIQUIDATION OF WEST COAST VIRGIN TIMBER IS LESSENING COMPETITION FROM THERE

Since its start, the timber industry of the Rocky Mountains has been overshadowed, and in some cases overwhelmed, by the larger and better situated West Coast industry. Though farther away from the principal markets, Coast plants have enjoyed the more than compensating advantage of having the world's finest bodies of timber. Wonderful virgin stands of large, high-quality trees have enabled the West Coast industry to dominate the national lumber market for a half century or more.

Now the West Coast is well along in the liquidation of its virgin timber and in the shift from a virgin to second-growth economy. The transition is occurring more rapidly than most people realize. In 1953 there was 20 percent less old-growth sawtimber in the Douglas-fir sub-region of Washington and Oregon than in 1945. No one should assume the Douglas-fir region will not always be a major source of the Nation's wood but it is to be expected that its competitive advantage will lessen

somewhat as the virgin trees pass from the picture. Second-growth Douglas-fir stands lack some of the quality and therefore some of the value of their virgin predecessors. Table 3 compares the grade recovery of old-growth and second-growth Douglas-fir. The negligible amount of select lumber in second-growth Douglas-fir is a disadvantage as the West Coast industry has been strongly competitive partly because of its ability to produce clear-grade boards of large sizes.

Table 3.--Lumber recovery from West Coast Douglas-fir

<u>Grade</u>	<u>Old growth</u>	<u>Second growth</u>
D & better select	27.1	-
Select structural & No. 1 common	41.9	85.7
No. 2 common	19.1	12.1
No. 3 common	<u>11.9</u>	<u>2.2</u>
	100.0	100.0

It is difficult to say how much these trends mean in dollars and cents. However, it has been estimated by one observer that where other factors are equal virgin West Coast timber on the average is worth \$10 more per thousand board feet on the stump than second-growth timber. Whatever the difference, any decline in the worth of that timber helps the outlook for Rocky Mountain species.

THE MOUNTAIN STATES HAVE
THE KIND OF TIMBER WHICH
WILL BE IN SHORTEST SUPPLY

Recent studies of the national timber situation indicate that the more difficult timber supply problems in years to come will involve the higher quality woods. Soft-textured softwoods are included in this general category. They have always been in great demand and they will continue to be in demand. For that reason, we can attach special significance to the fact that 39 of the 53 million acres of commercial forest in the Mountain States grow soft-textured softwoods, (fig. 18). Included in this category are the ponderosa pine, white pine, lodgepole pine, and spruce-fir types.

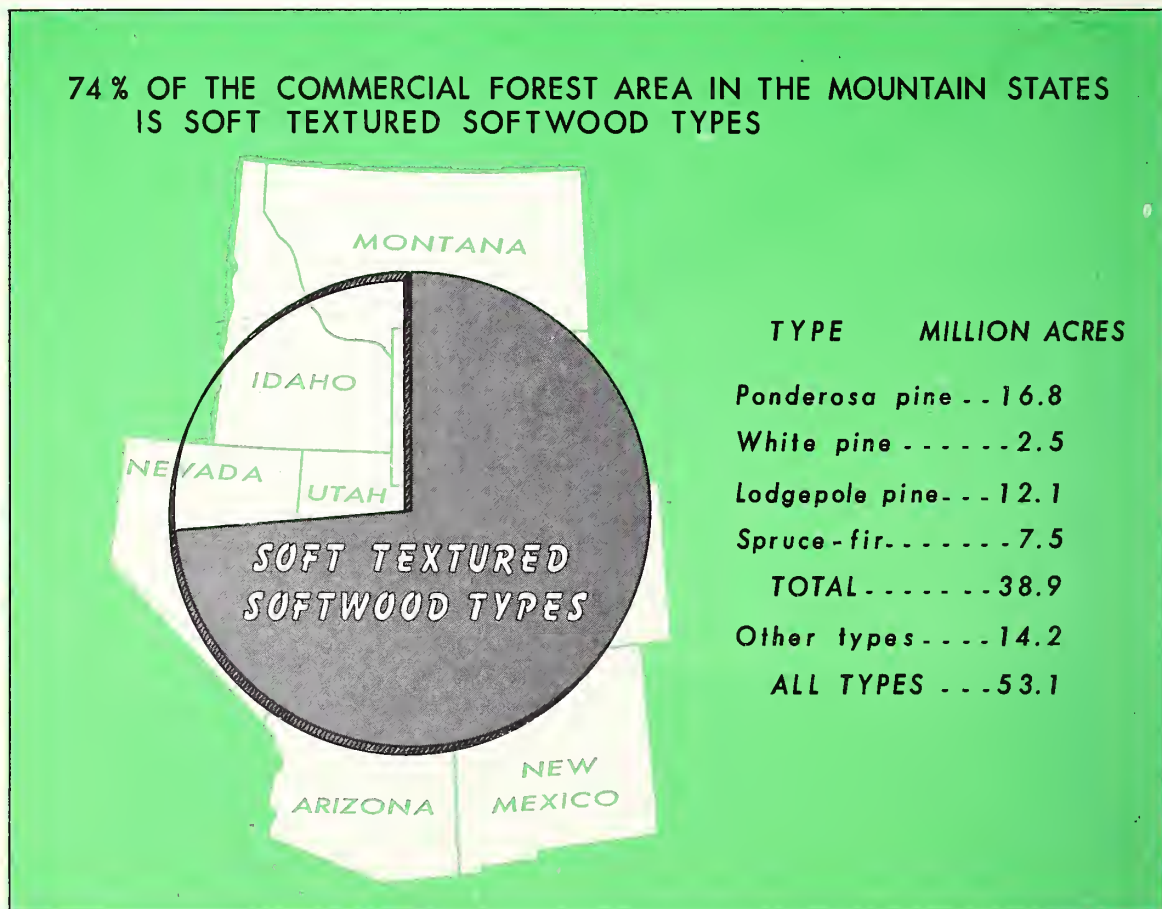


FIG. 18

These 39 million acres represent nearly 40 percent of the soft-textured softwood area in the United States and over 50 percent of that area in the West. To them we add at least part of the 2.9 million acres of hardwoods in the Mountain States. Some of the hardwood area bears fine aspen timber which is suitable for core stock for doors and for excelsior, both of which are quality uses.

Ponderosa pine and white pine have long been recognized as quality woods. But, there may be some raised eyebrows at the inclusion of spruce and lodgepole pine in this category.

Events of the past several years in northern Idaho, northeastern Washington, and western Montana have established the right of spruce to be considered a quality lumber species. Despite its many attributes, spruce for years was regarded as one of the less marketable lumber species. So great was the skepticism that when it became necessary to undertake a huge timber salvage program to combat the spruce bark beetle, fears were expressed as to the market reaction. In 1950, 16 million board feet of spruce were cut on the national forests of that area. Some felt that to greatly increase the cut above that figure would depress prices.

Here is what happened. Spruce logging in the national forests of northeastern Washington, northern Idaho, and Montana climbed from 16 million board feet in 1950 to 31 million board feet in 1951 and up to 432 million in 1955. Despite the 27-fold increase in cut, the price of spruce lumber has more or less maintained its relative place with other lumber prices.

The explanation appears to be this. In 1950 and prior years so little spruce was produced that it was not handled by itself. Spruce was sawed along with other species. It was dried along with other species in a manner designed for these other species. As a consequence, best use was not being made of the spruce. With the advent of the salvage program, spruce was produced in sufficient quantities to be handled separately and properly. An aggressive effort was made to sell it and from all indications this species is now firmly established in the lumber market.

Less than 20 years ago, lodgepole pine was regarded as a weed species because typically it is a small tree. Since then it too has been coming into its own, first gaining recognition as a pulping species and more recently for lumber.

The great asset of lodgepole pine is the high percentage of the better common grades it produces (table 4). While it isn't possible to get much select lumber from this species, on the other hand the sawmill man is not plagued with a high proportion of low-value No. 4 and No. 5 common boards. Sawed properly, 85 to 90 percent of the lumber will be Nos. 1, 2, and 3 common boards which are good selling items. These grades



Figure 19. Lodgepole pine makes excellent knotty paneling, a purpose for which it is finding increasing market. Even the 15 or 20 percent of the lumber which is only 4 inches wide may be used for this purpose. Pictured are five lodgepole pine panels, each made up of two to four boards edge-glued. These panels are being produced in a "pilot plant" gluing operation by the Downer Lumber Company, Livingston, Montana.

Table 4.--Comparative grade yields ponderosa pine and lodgepole pine

	Ponderosa pine <u>percent</u>	Lodgepole pine <u>percent</u>
Selects	13.8	0.4
Shop	15.3	-
Nos. 1 and 2 common	11.0	47.6
No. 3 common	23.3	37.0
No. 4 common	17.6	12.2
No. 5 common	6.2	0.4
Box, molding, shorts	<u>12.8</u>	<u>2.4</u>
Total	100.0	100.0

make excellent knotty paneling and are finding an increasing market for that purpose (fig. 19).

Lodgepole pine is relatively a newcomer to the quality lumber market and it has yet to fully establish itself. Furthermore, there are more sawmills doing a poor job of manufacturing this species than there are doing a good job. Poorly sawed, poorly dried lumber of any

species is not likely to draw top prices. However, the evidence indicates that properly manufactured, properly sold lodgepole pine lumber need not take a back seat in the market place. Well manufactured lodgepole pine in some instances is already drawing just as good prices grade for grade as ponderosa pine.^{5/}

The opportunities do not lie entirely with soft-textured softwoods. Larch, for example, is a structural type wood with very special attributes which will be in increasing demand. Rocky Mountain Douglas-fir which suffers in comparison with the big virgin trees of the West Coast is going to be more competitive with the second-growth Douglas-fir of that region.

THE MOUNTAIN STATES HAVE MUCH PULPABLE WOOD

Although it seems that the primary emphasis should be on the development of a lumber industry to make the most of timber quality, there is nonetheless a big opportunity for pulp, paper, and composition board plants in the Mountain States. Much wood is suitable only for fiber use. Figures 20 and 21 show that there is a notable scarcity of pulp and composition board plants in the Mountain States. Eleven or twelve 200-ton pulpmills would have to be constructed before production capacity would be equal to the local consumption of paper products. The situation is more or less the same with composition boards.

^{5/} For a more complete discussion see Intermountain Station Research Paper 46, "Lodgepole Pine--A Lumber Species," by John H. Wikstrom.

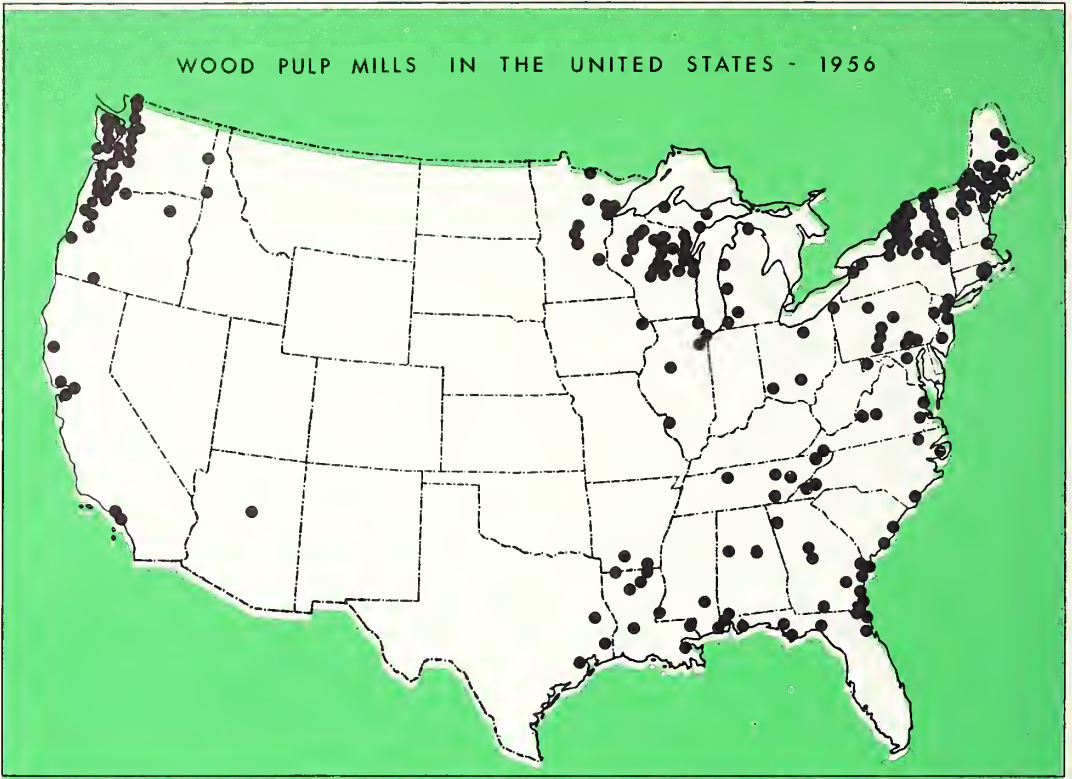


FIG. 20

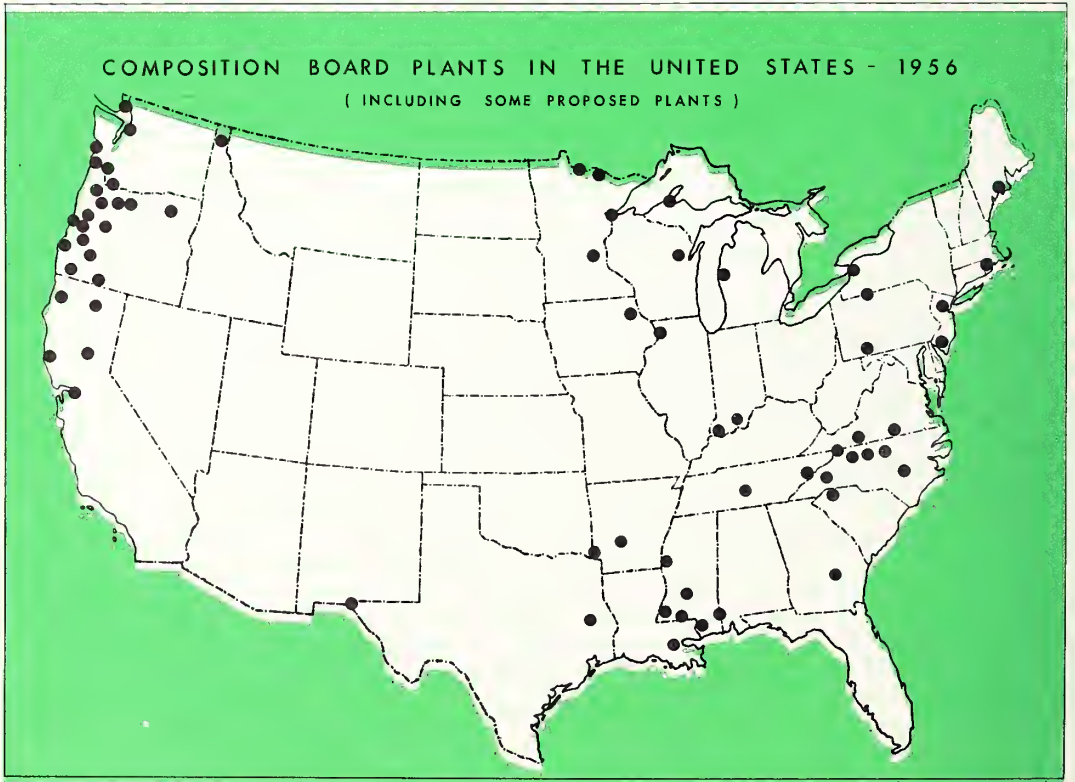


FIG. 21

Fiber industry prospects in the Mountain States may be briefly summarized this way. As figure 8 on page 8 indicated, the prospects are for greatly increased consumption of paper and other wood fiber products in the Nation. Since much of the available raw material is in the Mountain States, a substantial expansion of the industry in this region is almost assured.

The opportunities are accented by the fact that the region has not shared a proportionate part of the development in the past. It is hardly a prediction that expansion will take place, because several plants are already being constructed and others are planned.

THERE IS EVERY

REASON FOR OPTIMISM

Time, and time alone, will answer some of the questions raised in the preceding pages, but we can be sure of certain things

IT WILL BE IMPOSSIBLE TO MEET POTENTIAL DEMANDS FOR WOOD LESS THAN ONE-HALF CENTURY HENCE WITHOUT DRAWING HEAVILY ON MOUNTAIN STATES TIMBER.

THE SHIFTING TIMBER SUPPLY SITUATION BETWEEN REGIONS IS STEADILY IMPROVING THE COMPETITIVE OUTLOOK FOR MOUNTAIN STATES TIMBER.

POPULATION GROWTH IN THE MOUNTAIN STATES WILL PROVIDE GREATLY EXPANDED LOCAL MARKETS.

TIMBER THEREFORE WILL BECOME AN INCREASINGLY IMPORTANT ECONOMIC ASSET TO THE REGION.

IN 1950 25,000 PEOPLE WERE EMPLOYED BY THE TIMBER INDUSTRIES OF THE MOUNTAIN STATES.

THE FORESTS HAVE THE CAPACITY TO SUPPORT AN INDUSTRY PAYROLL OF AT LEAST 150,000 PEOPLE.

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