TIMBER TRENDS IN THE UNITED STATES

FOREST SERVICE
U. S. DEPARTMENT OF AGRICULTURE
FOREST RESOURCE REPORT NO. 17

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Preface

This report is the latest in a series of periodic appraisals of the timber situation and outlook in the United States made by the Forest Service. The most recent of such studies prior to this "1962 Timber Appraisal" was the Timber Resource Review of 1952, published in final form in 1958 as "Timber Resources for America's Future." [1]

National reports on the Nation's timber situation are required from time to time to provide a basis for judging the general effectiveness of and needs for forestry programs. Forests in different regions show highly divergent trends in timber growth, inventories, and availability of wood products for industrial use. Continuing changes are evident in timber markets and utilization practices. And changing forestry policies and programs significantly affect the outlook for production of timber crops.

The timber supply situation and market opportunities for timber products are matters of far-reaching importance in the U.S. economy. Timber-based economic activities employ more than 3 million workers. In many parts of the country, timber industries constitute the primary economic base for income and employment. Values added attributable to timber harvesting, timber processing, manufacture of wood products, construction, and transportation and marketing of wood products in recent years have accounted for about $25 billion annually of the Nation's gross national product.

The information presented in this report has been gathered largely as part of the nationwide Forest Survey, authorized in section 9 of the McSweeney-McNary Forest Research Act of May 22, 1928, as amended. This act authorized and directed the Secretary of Agriculture to cooperate with State and other agencies:

> . . . in making and keeping current a comprehensive survey of the present and prospective requirements for timber and other forest products in the United States, and of timber supplies, including a determination of the present and potential productivity of forest land therein, and of such other facts as may be necessary in the determination of ways and means to balance the timber budget of the United States . . . .

This report on the nationwide timber situation and outlook supplements the forest surveys of individual States that are conducted periodically by the Forest Service in cooperation with various State agencies and private cooperators. Basic Statistics presented in Appendix 1, and much of the text material on timber supplies, represents in effect an updated summary of the information on timber supplies presented periodically in such State survey reports.

The first section of this report appraises recent trends in consumption of timber products in various markets, and develops projections of possible future demands for timber products. These demand projections extend to the year 2000, a long period from the standpoint of timber markets but a relatively short period for appraising most forestry programs. The element of uncertainty in such projections is obviously large. But forestry is of necessity a long-range undertaking and much of today's action in forestry must necessarily be for a distant future.

The second section presents an analysis of the Nation's timber supply situation as of January 1, 1963. Some comparisons between 1953 and 1963 also have been included to show recent changes in forest areas, timber volumes, growth, mortality, and cut.

The third section appraises prospective trends in timber supplies for the period 1963–2000 by major sections of the United States, and compares these supplies with the projected timber demands. These comparisons of timber supplies and demands provide an indication of the adequacy of the Nation's timber resources, and by implication, the adequacy of existing forestry programs.

No recommendations with regard to forestry policies and programs are included in this report. The information in timber supplies and demands presented here is intended to point up favorable and unfavorable aspects of the timber situation and outlook, and thus provide a technical basis for development of sound forestry programs by public forestry agencies, the forest industries, and other conservation groups.

[1] U.S. Department of Agriculture, Forest Service. Forest Resource Report No. 14, January 1958.

This study also has been confined to an appraisal of timber supplies and demands, as were previous reviews of the Nation's timber situation. The use of forest lands for recreation, wildlife, watershed management, and grazing of livestock is fully recognized as also of major importance, but these related uses and values of forests have not been covered in this study. Future demands for such nontimber use of forests, as well as conversion of existing forest land for residence, highways, and other nontimber uses, will surely become more important in future years as a result of growing pressures on all natural resources. More effective multiple use of forest lands will thus be increasingly necessary to meet demands for timber as well as other forest goods and services.

It is not feasible to list all of the many people who have contributed to this report. The general planning and conduct of this project was under the direction of H. R. Josephson, Director of Forest Economics and Marketing Research in the Forest Service. Basic statistics on forest resources and timber cut were compiled by the Forest Survey units at regional Forest Experiment Stations, with substantial cooperation from State Foresters, the forest industries, Regional Offices of the Forest Service, and other local groups.

Principal contributors to the analysis of demand for timber products included Dwight Hair, Wallace Christensen, Clark Row, David Herrick, and Joe F. Christopher. Projections of future timber supplies were developed principally by Robert W. Larson, with substantial contributions from Joe P. McClure, Mark Goforth, Albert R. Stage and Donald Gedney. S. Blair Hutchison, Carl Newport, Sam Guttenberg, H. S. Sternitzke and Ben Spada assisted in the analysis of data and final drafting of the report. Reviewers of preliminary drafts, both in the Forest Service and in other public and private agencies, made important contributions in both the analysis of data and development of the final report. The contributions of all participants in this project are gratefully acknowledged.

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Maintaining such a sizable proportion of the total raw materials used will require continuing improvements in productivity in the forest industries and effective marketing of wood products. Much technological progress has been made in recent years in the forest industries, as well as in industries producing competitive products. But current expenditures for research and development, for example, are very much less in the forest industries than in competing industries.

To keep pace with producers of competitive materials, and achieve potential markets for timber products improvements in technology will be needed to develop new or improved wood-based products, increase efficiency in use of wood in construction and in other markets, lower costs at all stages of timber production and utilization, and market wood products more effectively.

4. *Imports of timber products are likely to increase somewhat, but most of the timber required to supply future U.S. markets is expected to come from domestic forests.*

Imports of lumber, newsprint, and other forest products represented about 13 percent of the total roundwood consumed in supplying U.S. markets for timber products in 1962. Imports made up about 11 percent of the total lumber, 19 percent of the pulp and paper products, and about half the hardwood veneer and plywood used.

Some further increases in net imports of lumber and pulpwood products are expected, mainly from Canada which has extensive undeveloped softwood timber resources. Additional imports of hardwood veneer and plywood from tropical forests also are considered likely. In view of the prospective availability of timber resources in the United States, however, and other factors such as relative costs of wood supplies from different sources, it has been concluded that most timber products consumed in the United States will continue to come, as in the past, from domestic forests.

5. *Timber supply-demand relationships in the United States have generally improved over the past decade.*

Growth of both softwood and hardwood timber has been steadily rising in recent years as a result of increasingly effective forestry programs. Fire protection in particular has paved the way for extensive natural restocking of lands and a wave of young timber now reaching sufficient size to be counted in timber inventories. Planting, thinning, and other cultural work has contributed in a smaller way to a continuing buildup in stocking of forest lands and a rise in timber growth. In contrast to these favorable trends in timber volume, however, the quality of available timber supplies has continued to diminish.

Cutting of industrial timber products in U.S. forests has also increased in recent years but more slowly than growth. The total cut, including fuelwood, has declined slightly.

As the result of these divergent trends, growth of sawtimber in the East in 1962 exceeded the cut by a substantial margin—by 90 percent in the case of softwoods and 60 percent for hardwoods. In the West where most of the timber is still in old-growth stands, timber supplies available for harvest continued to exceed the actual cut.

6. *Prospective timber growth and inventories in the U.S.—with recent levels of forest management—appear sufficient to meet projected demands for the next two or three decades, but not in later years of this century.*

Projections of future "supplies" of timber include the total volume of growth in the East plus the allowable cut on public lands in the West and the prospective cut on private lands in the West. These total "supplies" of growing stock rise from about 17 billion cubic feet in 1962 to a peak of roughly 19 billion cubic feet around 1980. In terms of sawtimber, projected "supplies" rise from about 67 billion board feet in 1962 to roughly 74 billion board feet in 1980.

Beginning in the 1980's projected timber "supplies" decline under the assumption of recent levels of forest management, in contrast to a continuing rise in the projected cut. By 1990 projected supplies of sawtimber approximately equal the projected cut. By 2000 projected supplies fall short of the projected cut by about 16 percent, or roughly 13 billion board feet.

7. *Declining quality of timber resources represents a major problem for wood-using industries.*

The availability of different tree species, sizes, and grades also is of large importance in appraising the Nation's timber situation. Only part of the total volume of timber growth and inventories can be considered economically suitable raw material for the wood-using industries.

In most regions the major part of the timber cut still comes from preferred species of larger diameters, whereas most timber growth is on smaller trees and less desirable species. Much of the remaining higher quality timber in the East, moreover, occurs in widely scattered trees and much timber in the West is still economically inaccessible.

In eastern hardwood stands less than 10 percent of the total inventory volume is made up of trees more than 15 inches in diameter of species such as select white oaks, yellow birch, hard maple, ash, walnut, and yellow-poplar, for which there are well-established markets. Moreover, even in these larger trees the volume of upper grade

material is limited. In recent years about half the hardwood plywood and veneer used in the United States has been imported, partly at least because of the diminishing availability of suitable timber in U.S. forests.

Further declines in tree size and quality are to be expected if timber cut and growth follow the projections of this study and management continues at recent levels. Thus the proportion of the total cut of hardwoods coming from trees larger than 15 inches in diameter is projected to drop from 52 percent in 1962 to 32 percent by 2000. In western stands similar marked declines in the proportion of the cut from larger and more valuable trees are in prospect.

8. *The timber supply outlook is relatively favorable for the pulp and paper industry, but not as encouraging for the lumber and plywood industries.*

For industries dependent primarily upon wood fiber, including particularly the pulp and paper industry, the outlook for timber supplies appears relatively favorable—even though further adjustments to smaller timber and greater use of hardwoods appear necessary. In recent years this industry has achieved an impressive increase in use of hardwoods, from 14 percent of the total pulpwood used in 1950 to 20 percent in 1962. Use of chips from sawmill and plywood plant residues has increased even more sharply, rising from 6 percent of the total pulpwood used in 1950 to 21 percent in 1962. Further adaptations to available timber supplies appear to be technically feasible in this industry.

For the lumber and plywood industries, on the other hand, the timber supply situation in most regions is much less favorable. Trends in timber size and quality point to rising costs of production and increased marketing problems, unless marked improvements in technology are achieved. For these industries especially, the adequacy of raw material supplies does not depend on the total inventory of fiber, but rather on the operable supply of wood of desirable quality and sufficient size and volume to permit low-cost processing and production of salable products.

9. *Projected timber demands to the year 2000 could be met with more intensive forest management and utilization.*

The Nation's commercial forest lands have the capability of producing substantially more than the growth projected assuming recent levels of forest management. Thus if all the present area of commercial forest land in each region were managed as well as the better managed properties, the resulting "realizable growth" would in time reach an estimated 27.5 billion cubic feet, including 100 billion board feet of sawtimber. In contrast, projected growth with recent levels of management reaches a peak of about 65 billion board feet of sawtimber. Projected demands around the year 2000 total about 81 billion board feet.

A number of technical forestry measures could be strengthened to increase future supplies of timber in line with projected demands.

(a) Timber stand improvement today appears to represent the major technical opportunity for improving the timber supply situation over the next few decades. Most forest lands now support an increasingly heavy cover of vegetation. In many areas this includes a nucleus of desirable trees that could be developed by thinning, removal of cull trees, or other cultural work. In recent years stand improvement work in the United States has covered about 1.7 million acres annually—a sizable area but a small fraction of all young-growth forests.

(b) Planting or seeding of productive sites also offers opportunities for increasing future yields of timber, particularly in the period after 2000. Moreover, in some western forests shortening of the regeneration period after logging by prompt planting of desirable species would make possible an immediate increase in the allowable cut. In recent years tree planting has covered about 1.3 million acres annually. But more than 100 million acres of commercial forest land is at present either "nonstocked" or "poorly stocked" with trees of acceptable quality or species.

(c) Increased protection from fire, insects, disease, and other destructive agents offers additional possibilities for expanding wood supplies. Mortality losses have been greatly reduced in recent decades through intensified control efforts. But mortality in 1962 still totaled nearly 20 billion board feet, or the equivalent of 35 percent of the net growth of timber. Such losses to destructive agents could be reduced by intensifying fire and pest control, and by increased thinnings and other management measures to forestall mortality.

(d) Closer utilization of timber in the woods and in manufacturing plants also would stretch available timber supplies. Salvage of dead timber might be raised above recent levels of around 1 billion board feet annually through expansion of prelogging operations in old-growth stands and other salvage efforts. Greater use of logging residues and material now unused at sawmills and other manufacturing plants also could augment supplies of round timber. Continuing increases in efficiency in the forest industries similarly would permit a larger output of products from a given supply of raw material.

(e) Accelerated road construction programs, particularly in the Pacific coast and Rocky Moun-

tains, will be required before full advantage can be taken of opportunities for intensified timber utilization and management. Much of the forest land in these sections is still inaccessible for thinning and other cultural activities, and substantial volumes of timber will become available for harvesting only with completion of a major road system.

(f) Research and development efforts also will be of major importance—to provide the knowledge needed for more efficient management of forest resources and improved technology in the wood-using industries.

10. *Forest industries depend on farm and miscellaneous ownerships for half of their raw material requirements.*

Production of timber on lands owned by farmers and miscellaneous private owners is of key importance in the United States, particularly in the East. These ownerships include the major part of the commercial forest land in the United States—about 60 percent of the total. They contain about 40 percent of the current inventory of growing stock. In recent years they have furnished nearly half the total cut of pulpwood, saw logs, and other timber products used by the forest industries.

National forests and other public ownerships also must contribute a substantial part of an expanded cut in future decades, partly because of the uncertainty of achieving increased growth of timber on farm and miscellaneous private holdings. In addition, public forests contain well over half of the Nation's remaining supply of sawtimber, including much of the higher quality softwoods. These public forests have furnished about 25 percent of the total timber harvest in recent years.

Industrial holdings, which compose 13 percent of the commercial forest area, likewise are of major importance as a source of future timber supplies. Much timberland of high site quality is concentrated in these ownerships, and investment capital and forest management skills are generally available. Industry lands contain about 15 percent of the total growing stock volume. They have been furnishing about 26 percent of the total timber cut. Together with public forests, these properties can be expected to furnish much of the larger and higher quality timber available in the future.

11. *The long-range outlook and uncertainties of projections must be considered in formulating forestry programs.*

This appraisal of the Nation's timber situation indicates that supplies of timber over the next two or three decades could support a substantial expansion of markets for timber products, although trends in timber quality represent an increasingly serious problem.

Furthermore, projected demands to the year 2000 at least could be met if forestry programs were intensified more or less in line with recent trends, if present areas of forest land remain available, and if industrial technology is further developed to permit use of the kinds of timber prospectively available. The United States might also import somewhat larger volumes of timber products than assumed in this study, although economic prospects for increased imports appear much less promising than the physical availability of foreign timber supplies.

There are many uncertainties, however, in projecting timber demands and supplies over a period of several decades. Thus by the year 2000, and particularly in subsequent years, substantial areas of forest land could be lost to other uses. Such possible reductions in forest area together with increasing pressures on remaining forest lands for recreation, wildlife, and other uses in addition to timber could materially reduce available supplies of timber below projected levels.

It is also possible that population and economic activity, and resulting demands for timber, may be higher or lower than projected in this appraisal. Increasing world demands for timber products, for example, could result in export demands on U.S. forest resources beyond those assumed in this study. Continuation of a high rate of population growth also could lead to domestic demands for raw materials in the next century much in excess of the projections of this study.

Setting specific timber growth goals to achieve some ideal balance of supply and demand at future target dates thus involves many factors that must necessarily be appraised on a judgment basis. This is due in part to the many uncertainties involved in appraising distant markets, and in part to a lack of information on costs and responses of alternative timber growing programs. It seems evident, however, that some intensification of timber production efforts will be necessary if supplies of usable timber in the year 2000 are to reach the levels of projected demand.

Much progress has been made in improving the timber supply situation throughout the United States. And considerable progress has been made in expanding markets for industrial wood products. Much still remains to be done—on the one hand to achieve potential markets for wood in an increasingly competitive economy, and on the other to supply the amounts and qualities of timber that forest industries can profitably use in supplying tomorrow's markets for wood products.

The Outlook for Timber Demands

This section presents estimates of quantities of timber products that might be used in the United States in future years under specified assumptions relating to growth in population and economic activity and availability of raw materials. These estimates—called projected demands in this study—are compared with prospective timber supplies in the following sections.

The projected demands indicate levels of consumption that might be expected in the future if all the stated and implicit assumptions influencing demand and supply were realized. If future conditions differ appreciably from these assumptions, actual use of wood products would of course be expected to differ from the projected demands.

In developing these projections it has been necessary to depend in part on historical statistics. These contain within them implicit trends and relationships in such factors as prices, consumer tastes, and technological developments in industries producing both wood products and competing materials. Use of such data assumes in some degree continuation of trends similar to those that have prevailed in the past.

Insofar as possible, however, an attempt has been made to take into account new factors and changing relationships, and to adopt those assumptions and judgments as to future trends which at this time appear most reasonable. These assumptions and the methods employed in projecting different uses of wood products are indicated in some detail in following parts of this section.

The projections developed in this study extend to the year 2000. Such a long-range evaluation of prospective markets for wood products is considered necessary in view of the long cycle involved in growing timber crops, and the resulting necessity of judging today's forestry programs in the light of timber demands that may exist in a distant future.

BASIC ASSUMPTIONS

A primary influence on future demand for timber and other products will undoubtedly be the growth in general economic activity in the United States. Several measures of prospective growth, including population, households, gross national product, disposable personal income, and construction activity, have been used in the following analysis.

Population Projected to 325 Million in 2000

Between 1920 and 1962 the population of the United States increased approximately 75 percent, rising from 107 million people to about 187 million (table 1 and fig. 1). For the purpose of this study it has been assumed that population will rise to about 325 million persons by 2000. This would represent a compound annual growth rate of 1.5 percent annually, compared with an average rate of 1.4 percent from 1910 to 1930, about 0.9 percent from 1930 to 1945, and 1.7 percent from 1945 to 1960.

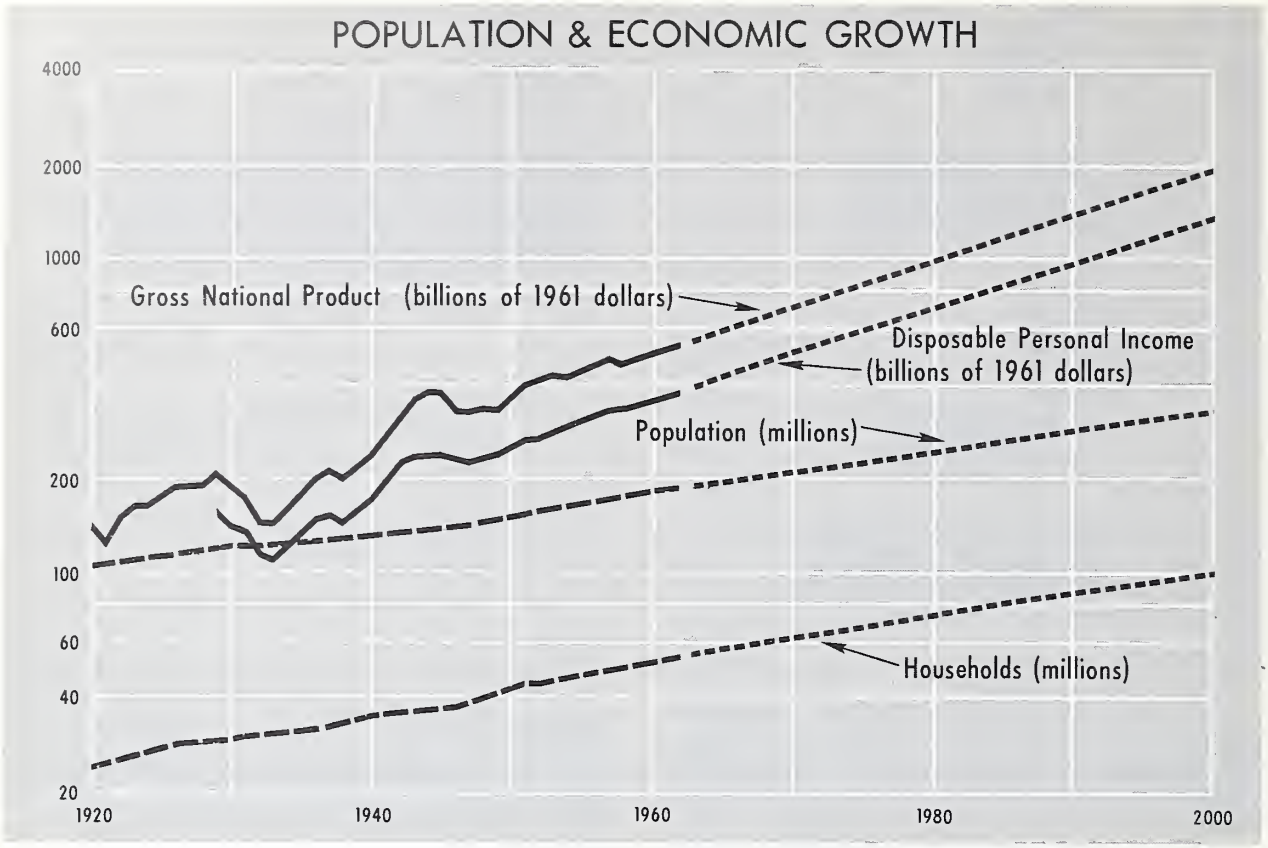

Figure 1

TABLE 1.—*Population and households in the United States, 1920–2000*

Year	Population		Households	
	Total	Annual rate of increase [1]	Number	Persons per household
	Million	*Percent*	*Million*	*Number*
1920	106.5	1.4	24.4	4.36
1930	123.2	1.5	29.9	4.12
1940	132.1	0.7	34.9	3.79
1950	152.3	1.4	43.0	3.54
1960	180.7	1.7	53.0	3.41
1962	186.7	----------	54.7	3.41
PROJECTIONS				
1970	208.0	1.4	62.5	3.33
1980	241.0	1.5	73.5	3.28
1990	280.0	1.5	86.2	3.25
2000	325.0	1.5	101.0	3.22

[1] Rates are averages for decade ending in specified year.

Sources: POPULATION: 1920–40, U.S. Department of Commerce, Bureau of the Census, *Historical Statistics of the United States*, 1960. 1950–62, "Estimates of the Population of the United States, January 1, 1950, to March 1, 1964." *Population Estimates*, 1964 (Current Population Reports, Series P–25, No. 283). Projections are derived from estimates published by the U.S. Department of Commerce, Bureau of the Census in "Projections of the Population of the United States by Age and Sex: 1964 to 1985 with Extensions to 2010." *Population Estimates* July 1964, (Current Population Reports, Series P–25, No. 286).

NUMBER OF HOUSEHOLDS: 1920–40, Bureau of the Census, *Census of Housing, 1950*, vol. I, Part 1, 1953. 1950 and 1960, Bureau of the Census, "Components of Inventory Change." *United States Census of Housing, 1960*, vol. IV, Part 1–A, 1962, and from unpublished data furnished by the Bureau of the Census. 1962, "Households and Families, by Type: 1962." *Population Characteristics*, 1962 (Current Population Reports, Series P–20, No. 119). Projections, 1970 and 1980, U.S. Department of Agriculture, Forest Service, derived from projections published by the U.S. Department of Commerce, Bureau of the Census, "Interim Revised Projections of the Number of Households and Families: 1965 to 1980." *Population Characteristics*, 1963 (Current Population Reports, Series P–20, No. 123). 1990 and 2000, derived from population estimates and assumed trend in number of persons per household.

This population projection approximates the median of a series of projections published by the U.S. Bureau of the Census in 1964.[1] Largely as a result of recent declines in fertility rates (fig. 2), the median of the new series of Census projections is roughly 10 percent lower than that of the preceding series prepared for the Senate Select Committee on Water Resources in 1960.[2]

A population of 325 million in 2000 is about 7 percent less than a "judgment" estimate of 351 million used by the Outdoor Recreation Resources Review Commission in 1962[3] and is slightly lower than a "medium" projection of 331 million persons adopted in a report issued in 1962 by Resources for the Future, Inc.[4] It is, however, materially above the figure of 275 million adopted by the Forest Service in 1952 in the Timber Resource Review.[5]

Numbers of households in the United States have been projected to increase from 54.7 million in 1962 to approximately 101 million in 2000 (table 1). This would involve a slight decline in average numbers of persons per household from 3.41 in 1962 to 3.22 in 2000.

Gross National Product May Rise 3.5 Times by 2000

The projection of gross national product adopted in this study increases from $546 billion in 1962 to $1,920 billion in 2000 (at 1961 prices) (table

[1] U.S. Department of Commerce, Bureau of the Census, "Projections of the Population of the United States by Age and Sex: 1964 to 1985 with Extensions to 2010." *Population Estimates*, July 1964, (Current Population Reports, Series P–25, No. 286).

[2] Senate Select Committee on National Water Resources, "Population Projections and Economic Assumptions." *Water Resources Activities in the United States*, 1960, (86th Cong. 2d sess., Committee Print No. 5).

[3] Outdoor Recreation Resources Review Commission Staff, National Planning Association, and U.S. Department of Labor, Bureau of Labor Statistics, *Projections to the Years 1976 and 2000: Economic Growth, Population, Labor Force, and Leisure, and Transportation*, 1962, (ORRRC Study Report No. 23).

[4] Resources for the Future, Inc., *Resources in America's Future, Patterns of Requirements and Availabilities, 1960–2000*. The Johns Hopkins Press, 1962. 1017 pp.

[5] U.S. Department of Agriculture, Forest Service, *Timber Resources for America's Future*, 1958. 713 pp. (Forest Resource Report No. 14).

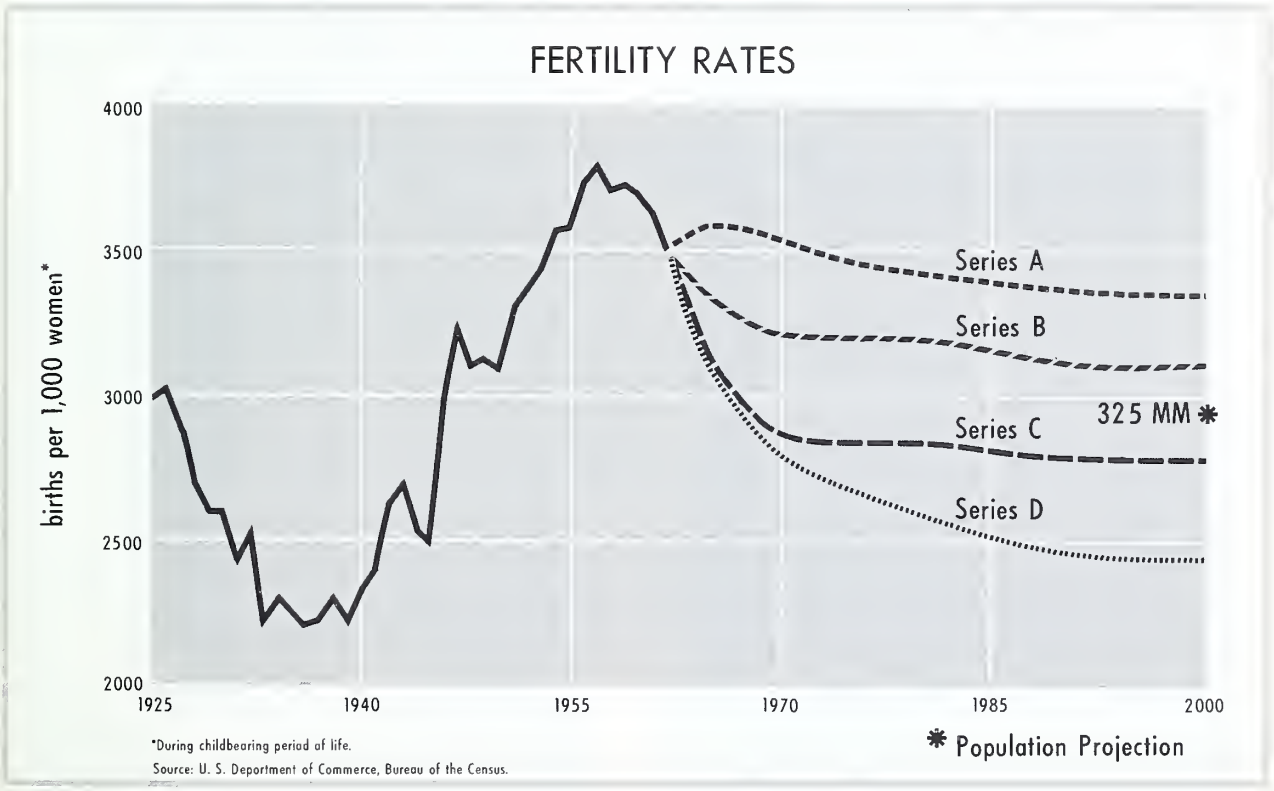

Figure 2

2 and fig. 1).[6] This would represent an average annual rate of increase of about 3.4 percent compared with 3.9 percent between 1940 and 1960, and about 3.2 percent in the period 1920–60.

This projection of gross national product was based on trends in employed labor force, average hours worked, and man-hour productivity as shown in table 2. It assumes an average unemployment rate of about 4 percent and an economy characterized by peace, but with a continued high level of military preparedness. An average increase in output per man-hour of about 2.4 percent annually is assumed in both the private and public sectors of the economy. This rate is slightly above that achieved by the total private economy in the 1909–60 period, and somewhat less than the average rate of 2.7 percent between 1950 and 1960.

[6] This estimate of GNP for the year 2000 is 13 percent below the figure of $2,200 adopted by Resources for the Future, Inc. (see footnote 4).

Projected Disposable Personal Income Also Rises 3.5 Times

A component of gross national product that is considered particularly relevant in projecting demand for certain timber products such as furniture and various grades of paper and board is disposable personal income, i.e., the monetary income of private persons after payment of personal taxes.

During the past several decades, disposable personal income has fluctuated narrowly around 70 percent of gross national product. Assuming this relationship continues, disposable personal income is projected from $379 billion in 1962 to $1,340 billion in 2000 (table 2 and fig. 1). In terms of per capita disposable personal income, the projection rises from $2,030 in 1962 to $4,120 in 2000.

TABLE 2.—*Economic growth in the United States, 1920–2000*

Year	Employed labor force	Average work week	Product per man-hour	Gross national product			Disposable personal income	
				Total	Annual rate of increase [1]	Per capita	Total	Per capita
	Millions	*Hours*	*1961 dollars*	*Billions of 1961 dollars*	*Percent*	*1961 dollars*	*Billions of 1961 dollars*	*1961 dollars*
1920				143.0		1,343		
1930	45.7	49.1	1.63	190.3	2.9	1,545	140.6	1,141
1940	48.1	45.1	2.10	236.8	2.2	1,793	170.2	1,288
1950	61.4	41.0	2.80	366.5	4.5	2,406	256.7	1,685
1960	69.2	39.0	3.66	511.1	3.4	2,828	355.7	1,968
1962	70.7			546.0		2,924	379.0	2,030
PROJECTIONS								
1970	82.5	37.0	4.48	710.0	3.4	3,410	500.0	2,400
1980	94.9	34.8	5.74	990.0	3.4	4,110	690.0	2,860
1990	109.7	32.6	7.40	1,380.0	3.4	4,930	960.0	3,430
2000	126.4	30.5	9.56	1,920.0	3.4	5,910	1,340.0	4,120

[1] Rates are averages for decade ending in specified year.

Sources: EMPLOYED LABOR FORCE: 1930–62, Office of the President, *Economic Report of the President*, January 1964.

AVERAGE WORK WEEK: 1930–60, computed from employed labor force and man-hour data.

PRODUCT PER MAN-HOUR: 1930–50, derived from data published by U.S. Department of Labor, Bureau of Labor Statistics, *Trends in Output per Man-hour in the Private Economy, 1909–1958*, 1959. 1960, Office of the President, *Economic Report of the President*, January 1962.

GROSS NATIONAL PRODUCT: 1920, derived from data published by the Joint Committee on the Economic Report, *Potential Economic Growth of the United States During the Next Decade*, 1954. 1930–62, Office of the President, *Economic Report of the President*, January 1962 and 1964.

DISPOSABLE PERSONAL INCOME: 1930–62, Office of the President, *Economic Report of the President*, January 1962 and 1964.

PROJECTIONS: U.S. Department of Agriculture, Forest Service, derived in part from data published by the Outdoor Recreation Resources Review Commission Staff, National Planning Association, and U.S. Department of Labor, Bureau of Labor Statistics, *Projections to the Years 1976 and 2000: Economic Growth, Population, Labor Force and Leisure, and Transportation*, 1962 (ORRRC Study Report No. 23).

Approximately Stable Relative Prices of Timber Products Assumed

In projecting demands for timber it has been assumed that future price trends for timber products between 1962 and 2000 will not differ significantly from price trends for competing materials, and that future "price induced" substitution between competing materials and timber products consequently will be limited. Implicit in this price assumption are the further assumptions (a) that adequate stumpage supplies will be available throughout the projection period to supply the projected demands for timber products, and (b) that technological progress in the forest industries will keep pace with that in industries producing competing materials.

Factors other than prices of competing materials also will undoubtedly continue to have a significant impact on the mix of raw materials consumed in the U.S. economy. Relative costs of installation and maintenance of alternative materials in housing or nonresidential construction, for example, have an influence on materials use. Factors such as changes in consumer preferences, changes in construction required by increasing urbanization, or the development of new products and new technology likewise may be expected to affect both the absolute level and the relative use of timber products and competing materials. In following sections dealing with specific uses of timber products an attempt has been made to allow for such nonprice factors, as well as materials prices, in projecting demands for lumber and other wood products.

Relative prices of lumber, i.e., actual prices in relation to average prices of all commodities, were fairly stable during the period from 1920 to World War II (fig. 3). During the boom years of the 1940's and the early 1950's demand-supply relationships for lumber and standing timber led to an accelerated rise in lumber prices, all time peaks in stumpage prices, and high levels of operating profits in the industry. By 1962, however, lumber prices had receded to a level about 15 percent below the postwar peak. In projecting demands it has been assumed that relative prices of lumber during the projection period would be within the range of prices prevailing during the 1950's.

It is of course possible that relative lumber prices will in fact show further increases in the future, especially near the end of the projection period when projected timber supplies will be of smaller size and poorer quality than currently available. Substantial and continued improvements in productivity in the lumber industry will be necessary to achieve stability of relative prices.

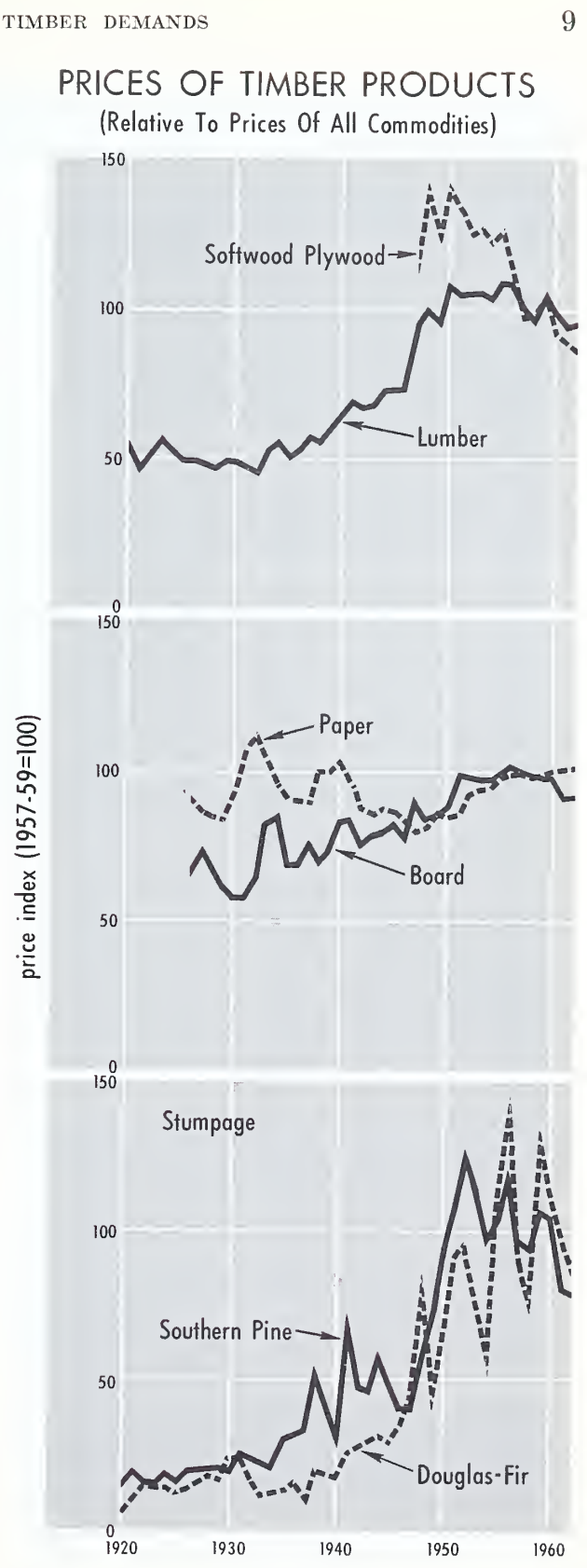

Figure 3

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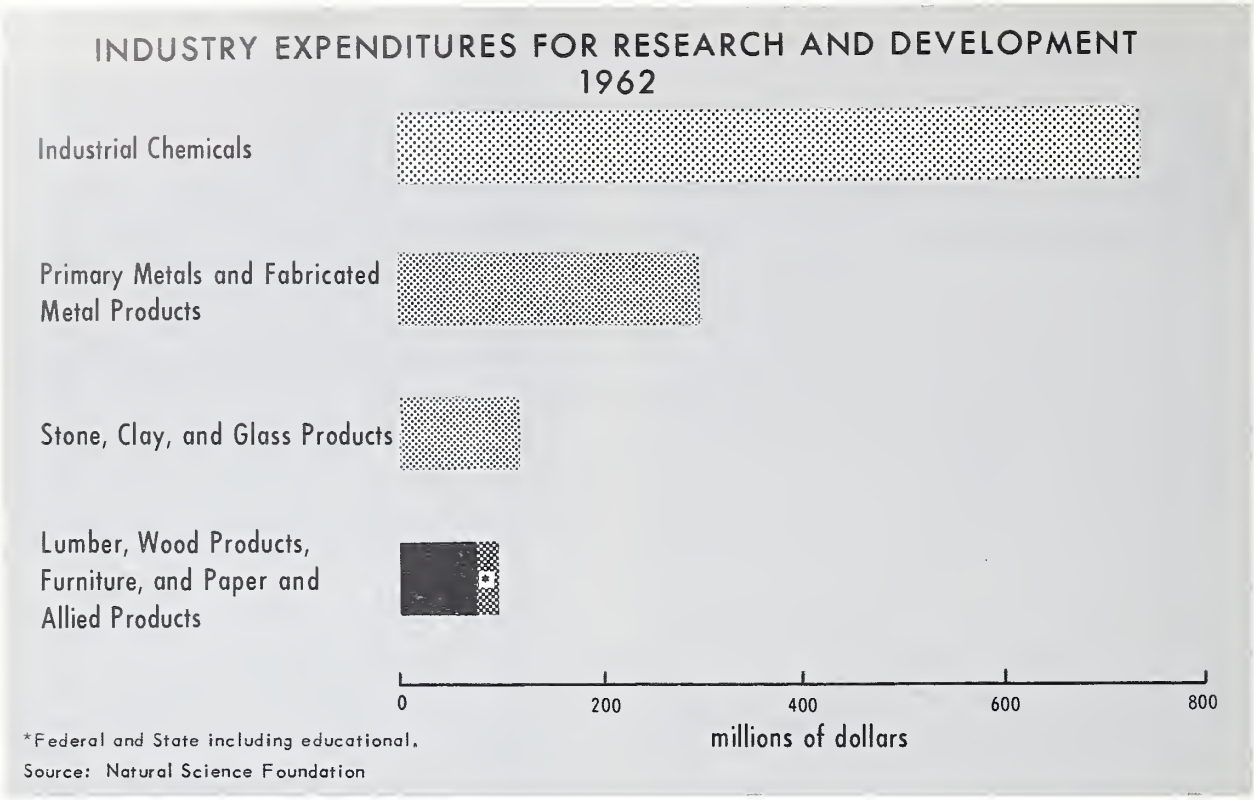

Figure 4

Such technical progress will be difficult to achieve, however, in view of the limited research and development activities in the fragmented lumber and related wood products industries in comparison with those of major competitors (fig. 4).

Should relative lumber prices increase significantly beyond the levels assumed, it is to be expected that demand for lumber will be lower than projected—with corresponding increases in demands for other products, including wood-based materials such as plywood and pulpwood products as well as nonwood materials.

In the case of softwood plywood, relative prices have dropped substantially since the late 1940's (fig. 3) along with the rapid expansion of the plywood industry, steady improvements in the technology of production, and the changing mix of plywood grades. It has been assumed in this analysis that future relative prices will approximate the average of the period 1955–62.

Long-term trends in relative prices of paper products have been fairly stable (fig. 3). Prices of paperboard showed a fairly strong upward trend for a number of years but have leveled off since about 1951. In view of the long history of successful improvements in technology in the pulp, paper and board industries, it seems reasonable to expect that recent relative price levels for the products of these industries will be maintained during the projection period.

TRENDS IN DEMAND FOR INDUSTRIAL RAW MATERIALS

In addition to population and general economic activity, trends in use of all industrial raw materials are likely to be of significance in projecting demands for important classes of raw materials such as timber products. Also, comparisons of prospective trends in demand for timber products with prospective trends in use of all raw materials provide some basis for judging the reasonableness of the projections of timber demand.

Industrial raw materials are defined to include: (a) agricultural nonfoods and wildlife products, such as cotton and other fibers, vegetable oils, hides, rubber, and furs; (b) minerals such as iron and other metallic ore, clay, sand, limestone, and sulfur, but not gold; and (c) all timber products except fuelwood. These materials are referred to as "physical structure materials" in Bureau of the Census publications.[7]

[7] U.S. Department of Commerce, Bureau of the Census. *Raw Materials in the United States Economy: 1900–61*, 1963, (Working Paper No. 6).

Use of Industrial Raw Materials Per Dollar of GNP Down 45 Percent Since 1920

Over the past several decades consumption of industrial raw materials has increased substantially but more slowly than GNP and its major components. Between 1920 and 1961, for example, consumption of industrial raw materials increased about 1.8 times—considerably less than the rise in gross national product (table 3 and fig. 5).

As a result of these different rates of growth, use of industrial raw materials per thousand dollars of GNP declined from an average of about $46 in the early 1920's to about $26 in 1961 (1954 dollars), a reduction of nearly 45 percent. Per capita use of industrial raw materials reached a maximum in the early 1950's and has since declined.

The drop in use of industrial raw materials per dollar of gross national product is attributed to such factors as refinements in manufacturing that add more value to given amounts of raw materials, relative increases in use of the cheaper raw materials, more complete utilization of raw materials, recycling of scrap and used materials, and relative increases in the services component of GNP.

In recent years the drop in materials use per dollar of gross national product has been somewhat overstated because of the exclusion of small quantitites of petroleum, gas, and coal used as industrial raw materials in the manufacture of plastics, rubber, nylon, and other related synthetic products. However, adjustment for such materials does not change the trends significantly.

Further Decline in Use of Industrial Raw Materials Per Dollar of GNP Expected, But Projected Use More Than Doubles by 2000

Some further decrease in the ratio of raw material consumption to gross national product appears likely, although at a slower rate than in the past. On the basis of a statistical and graphical analysis of past trends it was estimated that ratios of raw materials consumed per thousand dollars of gross national product might decline an additional 45 percent by 2000 (table 3 and fig. 5).

This assumed future trend in the ratio of materials use to gross national product, together with the projections of gross national product adopted in this study, indicates that total use of industrial raw materials will more than double by 2000.

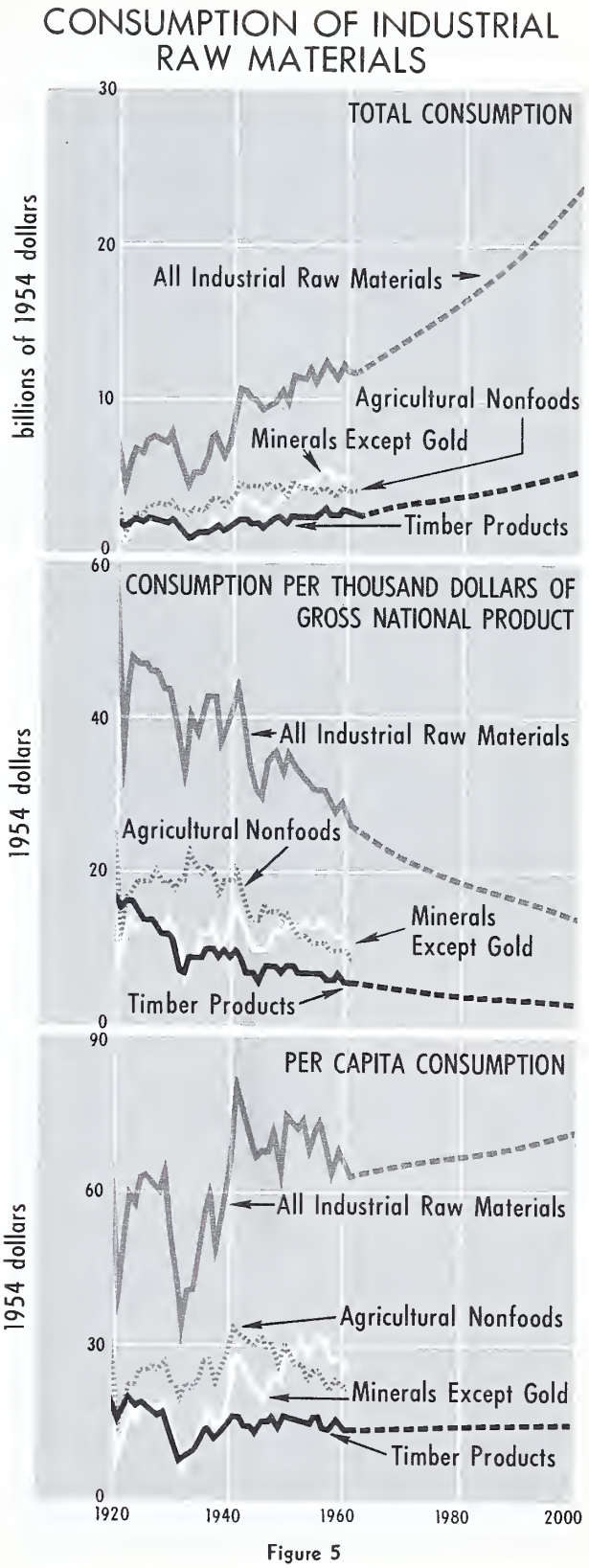

Figure 5

TABLE 3.—*Gross national product and consumption of industrial raw materials, 1920–2000*

Year	Gross national product		Consumption of industrial raw materials		
			Total	Per thousand dollars of GNP	Per capita
	Billions of 1961 dollars	*Billions of 1954 dollars*	*Billions of 1954 dollars*	*1954 dollars*	*1954 dollars*
1920	143.0	123.5	6.6	53.40	62.00
1930	190.3	164.5	6.6	40.10	53.60
1940	236.8	205.8	8.5	41.30	64.30
1950	366.5	318.1	11.5	36.20	75.50
1960	511.1	439.9	11.9	27.10	65.90
1961	518.7	447.7	11.7	26.10	63.70
PROJECTIONS					
1970	710.0	610.0	13.8	22.60	66.30
1980	990.0	860.0	16.4	19.10	68.00
1990	1,380.0	1,190.0	19.5	16.40	69.60
2000	1,920.0	1,650.0	23.8	14.40	73.20

NOTE: Industrial raw materials are identical to "physical structure materials" as used by the Bureau of the Census.

Sources: GROSS NATIONAL PRODUCT: 1920, derived from data published by the Joint Committee on the Economic Report, *Potential Economic Growth of the United States During the Next Decade*, 1954. 1930–61, Office of the President, *Economic Report of the President*, January 1962 and 1964.

CONSUMPTION OF INDUSTRIAL RAW MATERIALS: 1920–61, U.S. Department of Commerce, Bureau of the Census, *Raw Materials in the United States Economy: 1900–1961*, 1963, (Working Paper No. 6).

PROJECTIONS: U.S. Department of Agriculture, Forest Service.

TABLE 4.—*Construction expenditures and consumption of construction materials, 1920–2000*

Year	Construction expenditures [1]		Consumption of construction materials			
			Total	Per thousand dollars of construction expenditures	Per thousand dollars of GNP	Per capita
	Billions of 1961 dollars	*Billions of 1954 dollars*	*Billions of 1954 dollars*	*1954 dollars*	*1954 dollars*	*1954 dollars*
1920	19.1	15.7	2.8	178.30	22.70	26.30
1930	34.3	28.3	2.7	95.40	16.40	21.90
1940	34.5	28.5	3.0	105.30	14.60	22.70
1950	55.5	45.8	4.3	93.90	13.50	28.20
1960	74.7	61.7	5.0	81.00	11.40	27.70
1961	76.5	63.1	4.9	77.70	10.90	26.70
PROJECTIONS						
1970	98.0	81.2	6.1	75.10	10.00	29.30
1980	125.0	103.2	7.1	68.80	8.30	29.50
1990	156.0	128.3	8.3	64.70	7.00	29.60
2000	197.0	162.7	9.8	60.20	6.00	30.20

[1] Excludes farms and railroads.

Sources: CONSTRUCTION EXPENDITURES: 1920–50, derived from the U.S. Department of Commerce, Bureau of the Census publication *Historical Statistics of the United States*, 1960. 1960 and 1961 derived from the U.S. Department of Commerce, Business and Defense Services Administration's monthly report, *Construction Review*.

CONSUMPTION OF CONSTRUCTION MATERIALS: 1920–61, Bureau of the Census, *Raw Materials in the United States Economy: 1900–1961*, 1963, (Working Paper No. 6).

PROJECTIONS: U.S. Department of Agriculture, Forest Service.

Projected Construction Expenditures Nearly Triple by 2000

Trends in use of construction materials also are of significance in projecting demands for timber products since a large part of the consumption of lumber and plywood, for example, is used in various types of construction. Construction materials are defined to include (a) construction minerals such as sand and gravel, (b) ores of iron and ferro-alloy metals, and (c) construction timber, i.e., saw logs, veneer logs, and minor industrial wood products.

Over the past four decades expenditures for construction (excluding farms and railroads) have quadrupled, although with considerable cyclical fluctuation (table 4 and fig. 6).

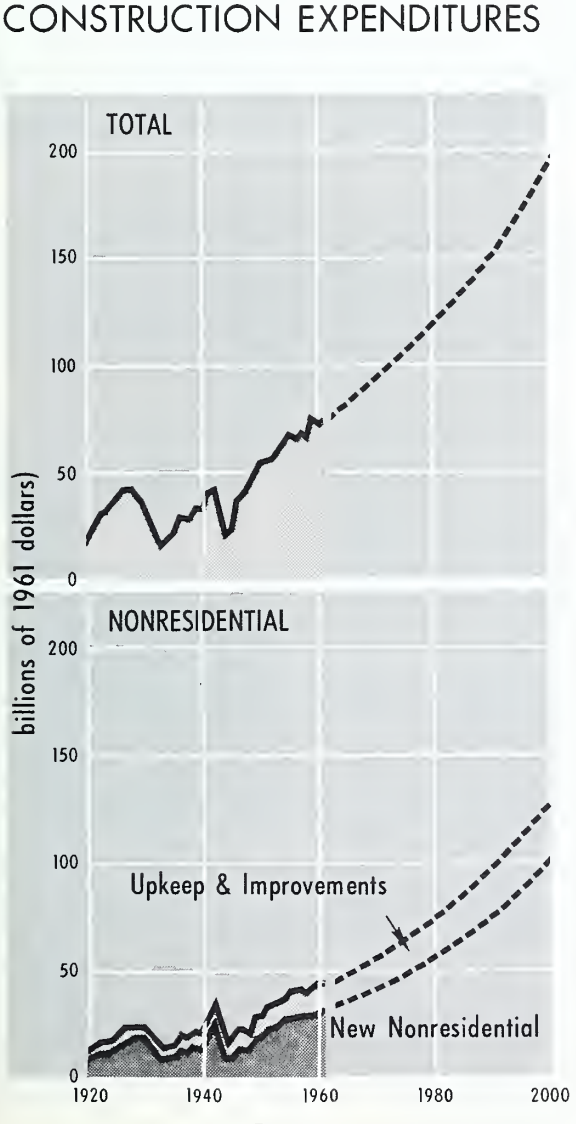

Figure 6

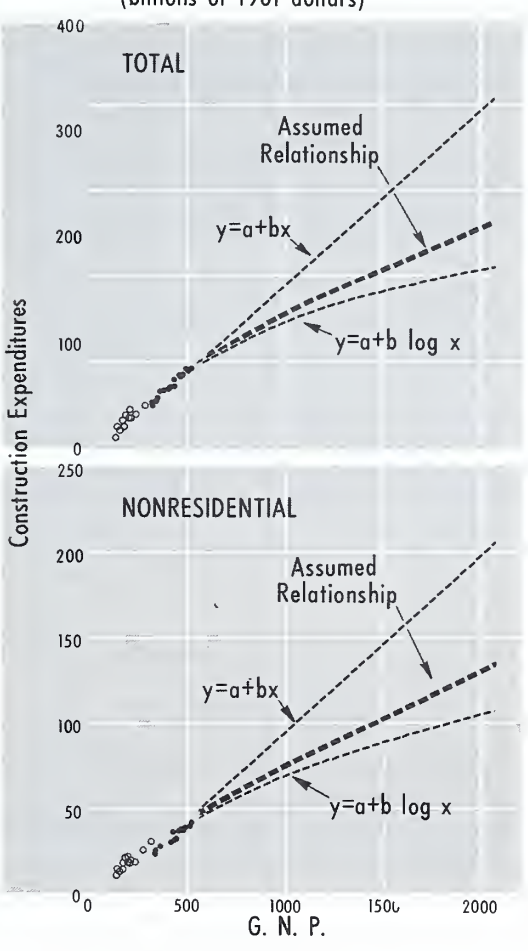

Figure 7

Construction expenditures during the period 1947–61 were closely related to GNP (fig. 7). A projection, derived from this past relationship, as modified by long-term trends in construction expenditures as a percent of GNP and judgment as to the changing outlook, showed a rise from $76.5 billion (at 1961 prices) in 1961 to $197 billion in 2000 (table 4). The projected value of $142.6 billion of new construction in 2000 (excluding upkeep and improvements) is substantially below recent projections of $219 billion by the U.S. Department of Commerce [8] and $281 billion by Resources for the Future, Inc.[9]

[8] U.S. Department of Commerce, Business and Defense Services Administration, *Construction Review*, vol. 7, No. 9, September 1961.

[9] Resources for the Future, Inc., *Resources in America's Future, Patterns of Requirements and Availabilities, 1960–2000*, p. 615. The Johns Hopkins Press, 1962.

For nonresidential construction, total expenditures were projected to increase from $45.5 billion in 1961 to $129.6 billion in 2000, including $101.8 billion for new construction and $27.8 billion for repairs and maintenance. Total expenditures for residential construction were projected from $31.0 billion in 1961 to $67.4 billion in 2000.

Total construction expenditures during the past 40 years have varied between 6 and 22 percent of GNP, with a slight downward trend. In the last decade expenditures have averaged about 15 percent of GNP, with nonresidential construction averaging about 8 percent of GNP, and residential construction including repairs, alterations, and additions 7 percent.

The projections adopted in this study indicate a further decline in construction expenditures as a percent of gross national product. Most of this drop reflects the expectation that residential construction will tend to increase in line with population and thus rise much more slowly than GNP. An expected continuation of the upward trend in the "services" component of GNP is also expected to lower the proportion of GNP devoted to nonresidential construction.

Projected Use of Construction Materials Doubles by 2000

Between 1920 and 1961 consumption of construction materials increased about 75 percent (table 4). Most of this growth was due to a rise in the use of construction minerals, although consumption of iron and ferro-alloy metals also rose until the early 1950's. Construction timber products did not show a well-defined trend.

While total consumption has increased substantially since the early 1920's, the use of construction materials per thousand dollars of construction expenditures has declined about 40 percent (table 4). This trend has been largely caused by such factors as technological advances in construction, improved materials, and an increase in the proportion of expenditures for such things as architectural and engineering services.

On the basis of a statistical and graphical analysis of past trends in use, it is estimated that consumption of all construction materials per thousand dollars of construction expenditures may decline an additional 23 percent by 2000 and use per thousand dollars of gross national product by about 45 percent (table 4).

Total use of construction materials, however, is projected to a level about double consumption in 1961. Per capita use of construction materials remains about the same as in the 1950's.

DEMAND FOR LUMBER AND PANEL PRODUCTS IN CONSTRUCTION

About three-quarters of the lumber and plywood consumed annually in the United States, plus substantial volumes of other wood products such as building board, are used in various kinds of construction.

RESIDENTIAL CONSTRUCTION

Residential construction is the largest market for lumber, plywood, and other panel products. Projections of demand have been derived in the

TABLE 5.—*Inventory of dwelling units, 1920–2000*

[Thousand units]

Year	Total inventory of dwelling units	Number of households			Vacant dwelling units
		Total	Nonfarm	Farm	
1920	24,552	24,352	17,601	6,751	200
1930	32,495	29,905	23,300	6,605	2,590
1940	37,325	34,855	27,748	7,107	2,470
1950	46,137	42,969	37,228	5,741	3,168
1960	58,468	52,955	49,407	3,548	5,513
PROJECTIONS					
1970	69,400	62,500			6,900
1980	81,700	73,500			8,200
1990	95,800	86,200			9,600
2000	112,200	101,000			11,200

Sources: INVENTORY OF DWELLING UNITS: 1920 and 1930, derived by addition of estimated vacancies to reported number of households. 1940, U.S. Department of Commerce, Bureau of the Census, *Housing 1940*, Part I, U.S. Summary. 1950 and 1960, Bureau of the Census, "Components of Inventory Change." *United States Census of Housing, 1960*, vol. IV, Part 1–A, 1962.

NUMBER OF HOUSEHOLDS: 1920–40, Bureau of the Census, *Census of Housing, 1950*, vol. I, Part 1, 1953. 1950 and 1960, Bureau of the Census, "Components of Inventory Change." *United States Census of Housing, 1960*, vol. IV, Part 1–A, 1962, and from unpublished data furnished by the Bureau of the Census.

VACANT DWELLING UNITS: 1920 and 1930, Bureau of the Census, *Historical Statistics of the United States, 1960*. Vacancy data for nonfarm were based on difference between reported number of nonfarm dwelling units standing and number of occupied nonfarm dwelling units. Farm vacancy for 1920 estimated at 1 percent of occupied farm dwelling units; for 1930, estimated at 3 percent of occupied farm dwelling units. 1940, Bureau of the Census, *Housing 1940*, Part I, U.S. Summary. 1950 and 1960, Bureau of the Census, "Components of Inventory Change." *United States Census of Housing, 1960*, vol. IV, Part 1–A, 1962.

PROJECTIONS: U.S. Department of Agriculture, Forest Service.

Residential construction is the largest market for lumber and panel products. F-508316

following analysis from (1) estimates of future requirements for new dwellings to provide for prospective increases in households, (2) prospective replacements of dwellings, (3) trends in the size and characteristics of new dwellings, and (4) trends in use of wood products in each type of dwelling.

Housing Inventories Nearly Double by 2000

The number of households in the United States more than doubled in the period 1920–60, rising from 24.4 million to about 53 million units (table 5). The projections of households show a further rise to approximately 101 million units in 2000.

Vacancies represent a significant part of the total housing inventory and constitute a substantial part of the demand for housing. Available data for recent years indicate vacancy ratios varying between 6.3 percent of the total housing inventory in 1940 and 10.2 percent in 1962 (table 6). It was assumed in this analysis that vacant dwelling units would continue to represent about 10 percent of the Nation's housing inventory. The total housing inventory, including vacancies, is thus projected to rise to about 112 million units in 2000 (table 5).

New Household Formation the Primary Source of Demand for Housing

In the decade 1950–60 about 73 percent of the housing units provided was attributable to an increase in households and the remainder to replacement of housing units (table 7). In the 1930's and 1940's the proportions of dwelling units provided for new households was even greater.

This dependence of the residential construction industry on new household formation is expected to diminish somewhat in the 1960's, but in the 1990's still amounts to an estimated 60 percent of the total projected housing demand.

The replacement of dwelling units also constitutes a major source of demand for materials.

TABLE 6.—*Residential vacancy rates by type of vacancy, 1940–62*

[Percent of all dwelling units]

Type of vacancy	1940	1950	1960 [1]	1962 [1]
Not for sale or rent [2]	0.4	1.7	2.8	2.9
Seasonal	1.8	2.5	2.7	3.0
Dilapidated	4.1	1.1	1.1	0.8
For sale or rent		1.6	3.5	3.5
Total vacancies	6.3	6.9	10.1	10.2

[1] Vacancy rates during the fourth quarter of the year.

[2] Includes units held off market for such reasons as: Rented or sold but awaiting occupancy, reserved for the owner's use as a second home, temporarily not on market for personal reasons of the owner, and not offered for rent or sale because of location in places of little demand for housing.

Sources: 1940, Housing and Home Finance Agency, *The Housing Situation, The Factual Background*, June 1949. 1950–62, U.S. Department of Commerce, Bureau of the Census, *Current Housing Reports*, 1963. (Series H–111, No. 31).

TABLE 7.—*Average annual number of dwelling units provided, by decades, 1920–2000*

[Thousand units]

Decade	Total units provided	Increase in inventory of dwelling units			Replacements
		Total	Nonfarm	Farm	
1920–29	909.3	794.3	794.6	−0.3	115.0
1930–39	592.5	483.0	399.1	+83.9	109.5
1940–49	1,089.2	881.2	1,008.8	−127.6	208.0
1950–59	1,686.1	1,233.1	1,513.0	−279.9	453.0
PROJECTIONS					
1960–69	1,800.0	1,090.0			710.0
1970–79	2,000.0	1,180.0			820.0
1980–89	2,400.0	1,410.0			990.0
1990–99	2,800.0	1,640.0			1,160.0

SOURCES: TOTAL UNITS PROVIDED: 1920–49, derived by adding estimated replacements to estimates of total increase in dwelling units. 1950–59, U.S. Department of Commerce, Bureau of the Census, "Components of Inventory Change." *United States Census of Housing, 1960*, vol. IV, Part 1–A, 1962.

REPLACEMENTS: 1920–49, demolition estimates as reported by Bureau of the Census, *Historical Statistics of the United States*, 1960. Disaster loss estimated at 1 percent of inventory per decade. Demolitions plus disaster loss estimated at slightly over one-half of total loss during the 1920's and at about two-thirds of total loss during the 1930's and 1940's. 1950–59, Bureau of the Census, "Components of Inventory Change." *United States Census of Housing, 1960*, vol. IV, Part 1–A, 1962.

PROJECTIONS: U.S. Department of Agriculture, Forest Service.

Replacements of dwelling units result from a number of factors, including disasters, demolition of obsolescent dwellings through urban renewal and other programs, migration and related abandonment of rural dwelling units, and conversion of dwelling units to other uses.

During the 1950's the rate of housing replacements averaged 453 thousand units annually (table 7). This was materially above the average of earlier years, including the boom period of the 1920's (fig. 8).

Looking to the future, it seems reasonable to expect that replacements will increase further in the expanding economy that is in prospect, and as the increasing impacts of urban renewal and other construction programs are felt. Thus, in the 1960's replacements are estimated at 710 thousand units a year. By the 1990's, estimated replacements average nearly 1.2 million units annually. The housing replacement rates assumed in developing these projections average about 1.2 percent of the housing inventory at the beginning of each decade, or somewhat more than the figure for the 1950's.

When the estimates of dwelling units required to house the Nation's expanding population are added to the estimated replacements it appears that about 1.8 million units will be required annually in the 1960's—slightly more than the average of 1.7 million units provided in the 1950's. By the 1990's, the estimated total number of units to be provided is projected at 2.8 million units per year—about 1.6 times the level of the 1950's (fig. 8).

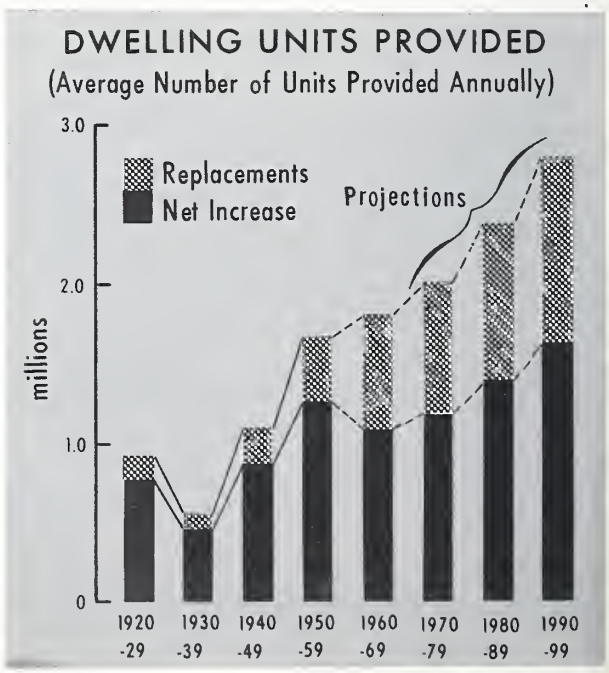

Figure 8

New Construction the Principal Source of Dwelling Units Provided

The total number of dwelling units provided includes (1) units supplied by new construction, (2) units derived by conversions, i.e., the creation of dwelling units from other space such as large single-family houses, rooming houses, and stores, and (3) mobile homes.

New construction, which accounted for 87 percent of the total units provided in the 1950's, has been by far the most important source of dwelling units provided (table 8).

Conversions were of considerable importance in the depression years of the 1930's and in the 1940's when materials shortages and production controls limited new construction. During these decades, conversions made up 25 percent of the units provided. As materials became more plentiful, however, conversions dropped to about 11 percent of the units provided in the 1950's.

Projections assume that new construction will compose around 90 percent of the total units provided in the years ahead—rising from an average of about 1.5 million units annually in the 1950's to approximately 1.6 million units by 1970 and to 2.7 million units by 2000. Mobile homes are projected to rise from the 1962 level of 112,000 to 200,000 in 2000. Conversions are estimated to drop to about 100,000 units a year, partly because there are likely to be fewer large, old, single-family houses suitable for division into two or more units. Rising incomes and higher standards of living which have been assumed also imply a decrease in demand for the type of housing resulting from conversions.

In total, the projections developed in this study indicate that approximately 79 million new dwelling units may be constructed in the 40-year projection period. This approximates the estimate of 83 million units published in a recent analysis in House and Home [10] based largely on

[10] ". . . Look Ahead . . ." *House and Home*, p. 218, March 1962.

TABLE 8.—*Dwelling units provided, by type of unit, 1920–2000*

[Thousand units]

Period or year	All types	New construction				Mobile homes	Net additions by conversions
		All starts	One-family	Two-family	Multifamily		
1920–29 [1]	909.3	803.4	527.1	109.0	167.3	----------	105.9
1930–39 [1]	592.5	365.1	304.5	15.3	45.3	----------	227.4
1940–49 [1]	1,089.2	864.6	718.5	41.5	104.6	28.5	196.1
1950–59 [1]	1,686.1	1,459.9	1,215.5	45.0	199.4	40.4	185.8
1960	----------	1,296.1	1,008.8	50.5	236.8	98.0	----------
1961	----------	1,365.4	989.3	50.0	326.1	86.0	----------
1962	----------	1,492.6	996.3	56.1	440.2	112.0	----------
PROJECTIONS							
1970	1,900.0	1,630.0	1,040.0	60.0	530.0	170.0	100.0
1980	2,200.0	1,920.0	1,180.0	70.0	670.0	180.0	100.0
1990	2,550.0	2,260.0	1,330.0	80.0	850.0	190.0	100.0
2000	3,000.0	2,700.0	1,530.0	90.0	1,080.0	200.0	100.0

[1] Data shown are annual averages for the decade.

Sources: NEW CONSTRUCTION: 1920–39, U.S. Department of Commerce, Bureau of the Census, *Historical Statistics of the United States*, 1960. Reported data revised to include farm dwelling starts based on year-built data reported for farm housing in the 1940 Census of Housing. 1940–49, housing starts for decade estimated at 82 percent of the total units provided less estimated number of mobile homes. Two- and multifamily starts were derived by applying to total starts the ratios of nonfarm total starts to nonfarm two- and multifamily starts as reported in *Historical Statistics of the United States 1960*. 1950–59, Bureau of the Census, "Components of Inventory Change." *United States Census of Housing, 1960*, vol. IV, Part 1–A, 1962. 1960 and 1962, U.S. Department of Commerce, Business and Defense Services Administration, *Construction Review*, March 1963.

MOBILE HOMES: 1940–49, estimates based on assumption that about 90 percent of the "trailer" dwelling units reported in the 1950 Census of Housing were built during the 1940–49 decade. 1950–59, Bureau of the Census, "Components of Inventory Change." *United States Census of Housing, 1960*, vol. IV, Part 1–A, 1962. 1960–62, Forest Service estimates derived from data supplied by the Mobile Home Manufacturers Association.

NET CONVERSIONS: 1920–49, estimates based on difference between "all types" of units provided and those provided under "new construction" and "mobile homes." 1950–59, Bureau of the Census, "Components of Inventory Change." *United States Census of Housing, 1960*, vol. IV, Part 1–A, 1962.

PROJECTIONS: U.S. Department of Agriculture, Forest Service.

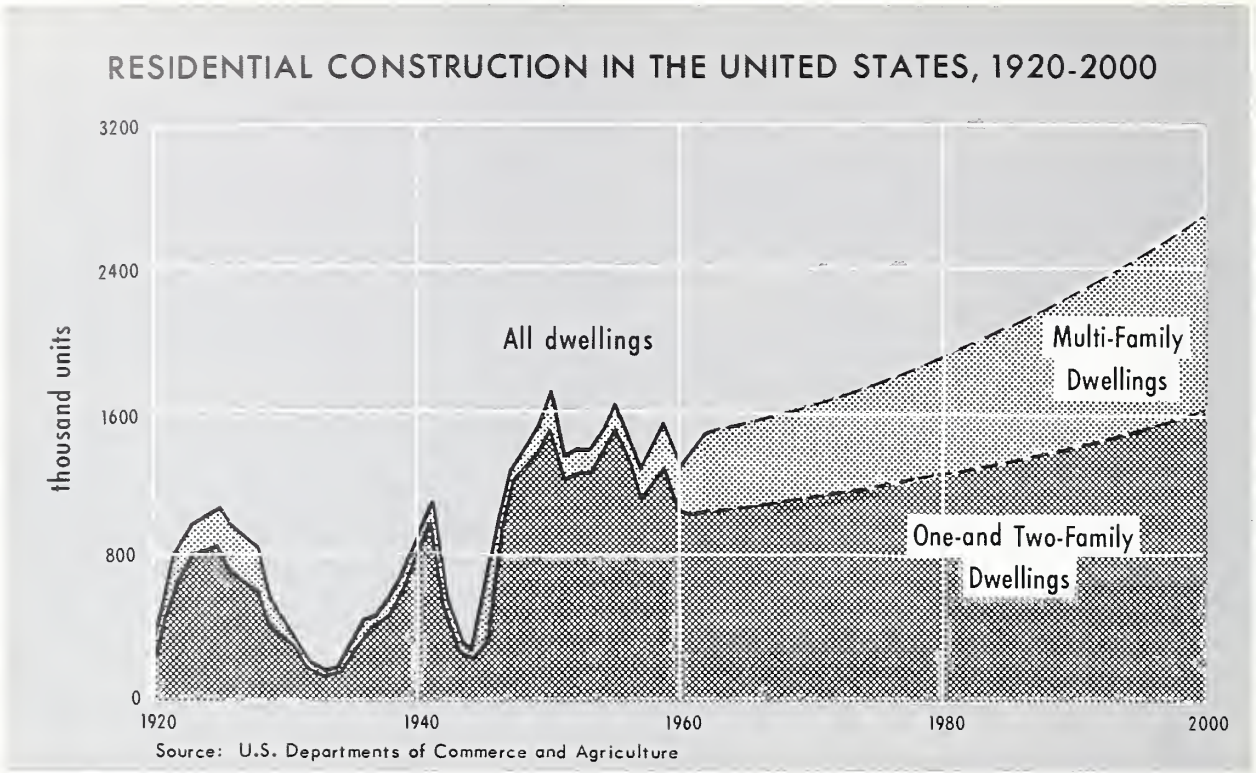

Figure 9

household formation and income data from the ORRRC Study Report No. 23.[11] It is, however, appreciably below a "medium" estimate of 109.6 million units in a recent report by Resources for the Future, Inc.[12]

Increased Proportion of Multifamily Units Expected

The amounts and kinds of wood products used per dwelling unit vary considerably between single-family, two-family, and multifamily structures. Because of such differences, trends in types of buildings constructed are of major significance in projecting timber demands.

Single-family dwelling units have long been of primary importance in residential construction in the United States (table 8 and fig. 9). During the period 1920–60 single-family dwellings made up between 66 and 92 percent of all dwelling units constructed annually, with an average of 79 percent for the period. This average is expected to decline substantially with an increase in the relative importance of multifamily structures.

During the late 1920's multifamily housing accounted for nearly a third of the dwelling units constructed but in the 1930's and 1940's, multifamily housing dropped to an average of about 12 percent of all new construction. In recent years multifamily housing construction has again increased in importance and in 1962 composed about 29 percent of all dwelling units started.

While there is much diversity in views regarding future trends, it seems likely that construction of multifamily housing will continue at higher levels than in the past. This expectation is based on such factors as the increasing density of population, rising land values, the growing size of metropolitan areas with attendant problems of commuting, expansion of urban renewal programs, and the prospective increase in numbers of young families and older age groups.

It has consequently been estimated that by 1980 multifamily housing will approximate 35 percent of all dwelling units constructed, and 40 percent by 2000 (table 8 and fig. 9). The "garden type" of multifamily housing, i.e., structures of less than 4 stories and generally containing less than 50 dwelling units, has accounted for more than three-fourths of all multifamily dwelling units built in recent years, and this proportion has been assumed for the future.

[11] Outdoor Recreation Resources Review Commission Staff, National Planning Association, and U.S. Department of Labor, Bureau of Labor Statistics, *Projections to the Years 1976 and 2000: Economic Growth, Population, Labor Force, and Leisure, and Transportation*, 1962. (ORRRC Study Report No. 23).

[12] Resources for the Future, Inc., *Resources in America's Future, Patterns of Requirements and Availabilities, 1960–2000*, p. 621. The Johns Hopkins Press, 1962.

Two-family dwelling units have averaged about 3.5 percent of all dwelling units constructed in recent decades. In the projections of future construction it has been assumed that two-family dwelling units will compose about 3 percent of the total units built.

Wood Use Varies Widely by Dwelling Unit Characteristics

Both the type and size of living quarters constructed influence the use of wood products in residential construction. One- and two-family dwelling units built in 1962, for example, used an estimated average of about 11,190 board feet of lumber, compared with 4,500 board feet per multifamily dwelling unit and 1,800 board feet per mobile home (table 9 and fig. 10). These figures represent gross volume of lumber required, including allowances for manufacturing and on-site losses.

These variations in lumber use reflect the fact that much of the multifamily housing is heavy construction where concrete and steel have strong competitive advantages However, in one- and two-family dwellings, lumber and other timber products are still preferred for many uses such as framing, sheathing, and flooring.

Use of materials within any given type of dwelling unit also varies rather widely with differences in structural characteristics. In prefabricated single-family dwelling units, for example, consumption of lumber per unit is substantially below the average of 12,560 board feet used in conventionally constructed units. In multifamily dwellings lumber use ranged from about 1,200 board feet per unit in high-rise apartments to 5,600 board feet in garden-type apartments.

Lumber use also varied considerably by regions of the country as a result of differences in climatic conditions, custom, and other factors. For example, in 1962 average use of lumber in FHA-inspected single-family housing ranged from a low of 6,100 board feet in Florida to 12,100 board feet in the South Atlantic region.

Average Use of Lumber Per Dwelling Unit Decreasing

Extensive changes in the amounts and kinds of wood materials consumed per dwelling unit have occurred with changing trends in types and sizes of housing constructed and with changes in construction methods and builder preferences. In the decade between 1952 and 1962, for example, the average use of lumber for all types of dwelling units dropped from 10,000 to 8,700 board feet (table 9 and fig. 11). This in part reflected the substantial increase in multifamily housing from 10 percent of total housing starts in 1952 to 29 percent in 1962. During the same period, prefabricated houses rose from less than 4 percent to about 18 percent of all one-family starts.

Growth in the proportion of single-family houses built on concrete slab foundations was an addi-

TABLE 9.—*Lumber and panel products consumed per dwelling unit by type of unit, 1952–2000* [1]

Year	Lumber				Plywood and veneer				Building board [2]			
	All types	One- and two-family	Multi-family	Mobile homes	All types	One- and two-family	Multi-family	Mobile homes	All types	One- and two-family	Multi-family	Mobile homes
	Board feet	*Board feet*	*Board feet*	*Board feet*	*Square feet, 3/8-inch basis*	*Square feet, 3/8-inch basis*	*Square feet, 3/8-inch basis*	*Square feet, 3/8-inch basis*	*Square feet, 1/2-inch basis*	*Square feet, 1/2-inch basis*	*Square feet, 1/2-inch basis*	*Square feet, 1/2-inch basis*
1952	10,000				1,200							
1962	8,700	11,190	4,500	1,800	2,600	3,010	1,800	1,840	1,030	1,320	350	1,000
PROJECTIONS												
1970	7,990	10,740	4,280	1,800	2,920	3,610	1,820	1,870	1,110	1,480	360	1,020
1980	7,570	10,290	4,050	1,800	3,130	4,010	1,830	1,910	1,230	1,720	370	1,040
1990	7,290	10,070	3,920	1,800	3,240	4,260	1,840	1,950	1,420	2,100	380	1,060
2000	7,110	9,950	3,830	1,800	3,280	4,390	1,850	2,000	1,600	2,460	390	1,080

[1] Estimates include allowance for manufacturing and on-site waste.
[2] Includes insulation board, hardboard, and particleboard.

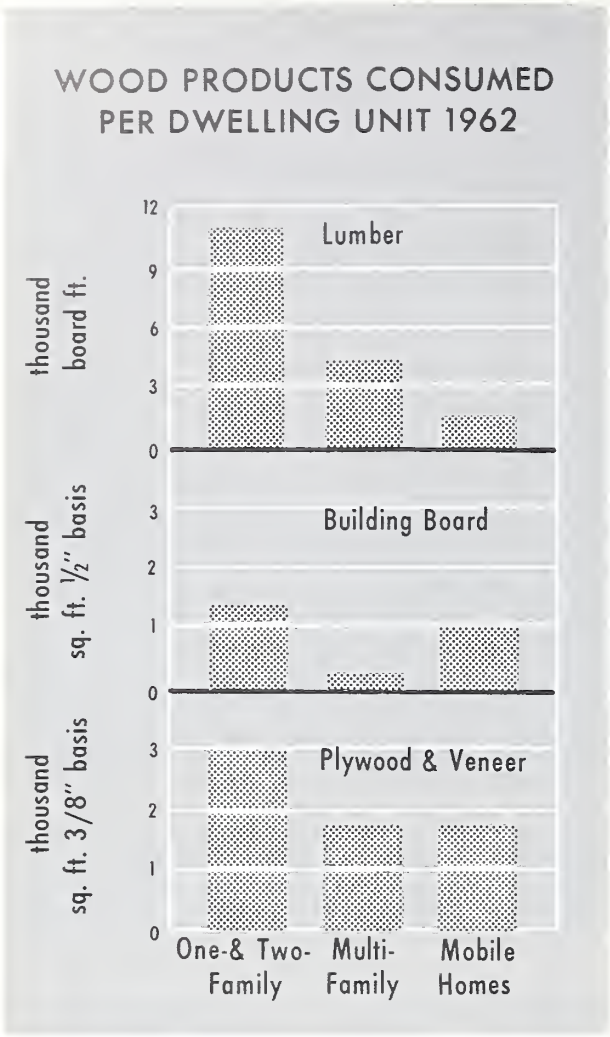

Figure 10

tional cause of the drop in lumber use per dwelling unit. In 1950 about 4 percent of single-family dwellings were constructed on concrete slabs.[13] By 1962 this had increased to an estimated 33 percent.[14] Lumber displacement in this type of construction occurs because of the elimination of girders, floor joists, and sills and the use of non-wood flooring laid directly on the slab.

Further Decline of 18 Percent in Average Lumber Use Per Dwelling Unit Assumed by 2000

In future years lumber is expected to maintain its position as a framing material, but some further displacement by plywood and building boards is anticipated in sheathing and non-structural uses. The proportion of single-family houses built on concrete slab foundations also appears likely to increase along with a further rise in the production of single-family prefabricated units. Reduction in the average use of lumber will also result from the projected increases in multifamily dwelling units.

As a partial offset to such trends, a moderate increase in average size of dwelling unit is considered likely under the assumptions of this study. With income per household projected to double by 2000, it seems reasonable to expect that the average size of dwelling unit constructed will continue to expand, assuming a continuation of the tendency of people to move into more spacious living quarters as their incomes rise. A recent

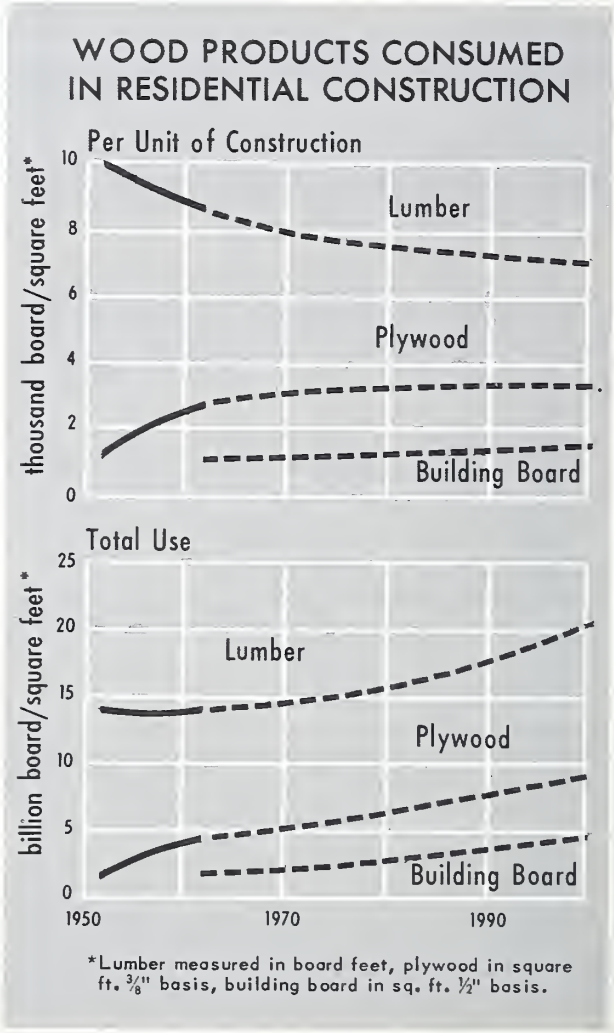

Figure 11

[13] U.S. Department of Labor, Bureau of Labor Statistics, *New Housing and Its Materials, 1940–56*, 1958, p. 27, and 1956, p. 28, Bul. No. 1231, August 1958.

[14] U.S. Department of Agriculture, Forest Service.

study in one northeastern city, for example, indicated that a doubling of family personal income was attended by an increase of about 25 percent in living area in single-family houses.[15]

Based on these various considerations, it was estimated that average lumber use for all dwelling units constructed would decrease to 7,110 board feet per unit by 2000 (table 9)—18 percent below the 1962 average. A slower rate of decrease in lumber use was assumed for the latter part of the projection period (fig. 11) in the expectation that in its remaining uses lumber will be able to withstand competition from competitive materials.

Average Use of Plywood Per Dwelling Unit Increasing

Savings in on-site costs in use of sheet materials has been a strong stimulus to expanded use of softwood plywood for sheathing, subflooring, and underlayment in residential construction. Plywood has also become increasingly popular for doors and cabinets, interior wall and ceiling panels, partitions, and for use in prefabricated dwellings and mobile homes. As a result of these and other factors use of plywood has increased rapidly and in 1962 averaged about 3,010 square feet per one- and two-family dwelling unit, about 1,800 square feet per unit of multifamily housing, and 1,840 square feet per mobile home (table 9 and fig. 10).

Some further increases in average plywood use per dwelling unit are anticipated, especially in single-family housing. On the basis of recent trends and projections of housing types constructed, it was estimated that average plywood use per dwelling unit will rise from 2,600 square feet in 1962 to about 3,280 square feet by 2000 (table 9 and fig. 11). Much of this increase in use of plywood is likely to be for roof sheathing. There also appears to be room for expanded use of plywood for subflooring and underlayment, although this may be offset in some degree by an anticipated rise in the proportion of single-family houses built on slab foundations and use of particleboard and hardboard in lieu of plywood.

Use of Building Board Also Increasing

Consumption of building board in residential construction also has increased in postwar years, particularly in wall sheathing in single-family homes. In 1962 an average of about 1,030 square feet (½-inch basis) of building board was used per dwelling unit constructed (table 9 and fig. 10). Insulation board accounted for about 80 percent of this total and hardboard and particle-

[15] Zaremba, J., *Economics of the American Lumber Industry*, p. 130, New York, Robert Spellers and Sons, 1963.

TABLE 10.—*Lumber and panel products consumed in residential construction, by type of dwelling unit, 1952–2000*

Year	Lumber				Plywood and veneer				Building board [1]			
	All types	One- and two-family	Multi-family	Mobile homes	All types	One- and two-family	Multi-family	Mobile homes	All types	One- and two-family	Multi-family	Mobile homes
	Million bd. ft.	*Million bd. ft.*	*Million bd. ft.*	*Million bd. ft.*	*Million sq. ft., ⅜-inch basis*	*Million sq. ft., ⅜-inch basis*	*Million sq. ft., ⅜-inch basis*	*Million sq. ft., ⅜-inch basis*	*Million sq. ft., ½-inch basis*	*Million sq. ft., ½-inch basis*	*Million sq. ft., ½-inch basis*	*Million sq. ft., ½-inch basis*
1952	13,010				1,675							
1962	13,960	11,780	1,980	200	4,170	3,170	790	210	1,650	1,390	150	110
PROJECTIONS												
1970	14,390	11,810	2,270	310	5,250	3,970	960	320	1,990	1,630	190	170
1980	15,890	12,860	2,710	320	6,580	5,010	1,230	340	2,590	2,150	250	190
1990	17,870	14,200	3,330	340	7,930	6,000	1,560	370	3,480	2,960	320	200
2000	20,620	16,120	4,140	360	9,510	7,110	2,000	400	4,630	3,990	420	220

[1] Includes insulation board, hardboard, and particleboard.

board about 20 percent. Although there has been a leveling off in use of insulation board in recent years, some further increases in use of building board per dwelling unit have been assumed over the projection period (table 9 and fig. 11).

Substantial Rise Projected in Total Use of Lumber and Panel Products

Projections of future use of lumber, derived from the projected levels of construction shown in table 8 and the lumber-use factors developed in table 9, rise from approximately 14 billion board feet in 1962 to an estimated 14.4 billion board feet by 1970 and to 20.6 billion feet by 2000 (table 10 and fig. 11).

Similar calculations for plywood show a rise from 4.2 billion square feet in 1962 to 5.2 billion square feet by 1970, and 9.5 billion square feet by 2000.

Use of building board in residential construction is projected from about 1.7 billion square feet (½-inch basis) in 1962 to 2.0 billion square feet in 1970, and about 4.6 billion square feet in 2000.

NEW NONRESIDENTIAL CONSTRUCTION

(Excluding Farms and Railroads)

New nonresidential construction, another major market for lumber and panel products, includes industrial, commercial, public, and other buildings; public utilities; sewer and water systems; highways; military facilities; and conservation and development projects. The only common unit of measure available for such diverse construction activity is the dollar value of new construction put in place.

Projected New Nonresidential Construction Expenditures Triple by 2000

Expenditures for new nonresidential construction have fluctuated rather widely over time (fig. 6), chiefly because of the effects of war and depressions. The long-term trend in expenditures has been strongly upward, however, reaching an annual rate of $33.9 billion in 1962 (table 11)—roughly 2.3 times the average of the 1920's.[16]

[16] Dollar value estimates of construction published by the Department of Commerce include "the cost of architectural and engineering fees, materials and service facilities installed, labor, overhead, and profit on construction operations . . ."

Much lumber and plywood is used in formwork and other facilitating roles in nonresidential construction.

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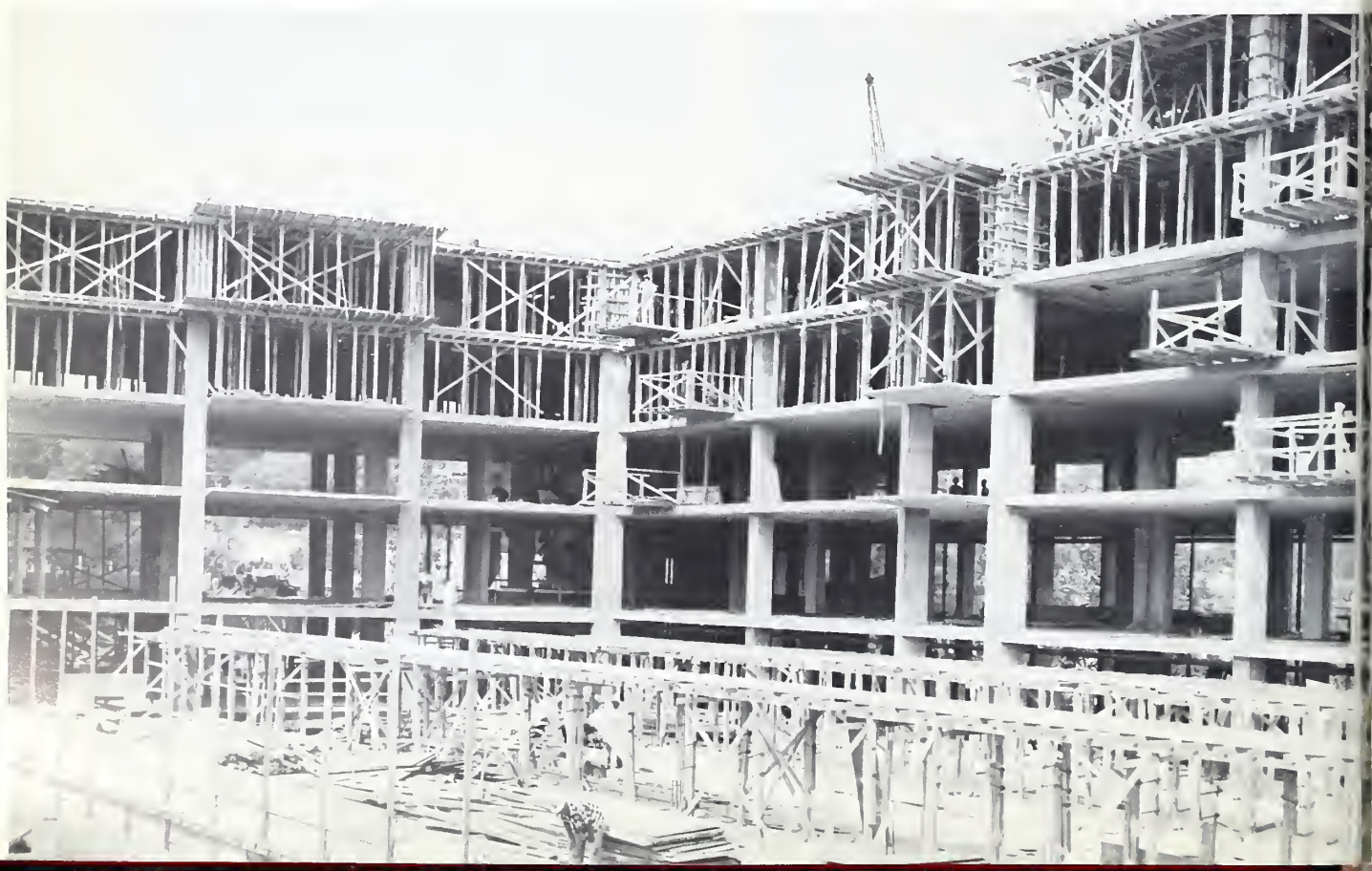

A statistical analysis of the relationship between construction expenditures and gross national product in the 1947–62 period, together with a graphic analysis of long-run trends in nonresidential construction expenditures as a percent of GNP, indicated that construction expenditures might rise to about $102 billion in 2000—3 times the level of 1962 (table 11). This projection is substantially below estimates of about $140 billion published by the Department of Commerce in 1961 [17] and $155 billion published by Resources for the Future in 1962.[18]

Nonresidential construction expenditures have ranged from a high of 9 percent of GNP during the boom years of the 1920's to about 6 percent during the 1950's with some downward trend during these recent decades. Projected expenditures involve a further drop from 6.2 percent of GNP in 1962 to about 5.3 percent by 2000.

During the period 1950–62, the percentage distribution of construction expenditures by kind of construction was as follows:

	Percent
Industrial buildings	9.4
Commercial buildings	12.1
Hotels, motels, etc	2.1
Other private buildings	9.4
Public buildings	17.5
Utilities, sewer and water	22.6
Highways	15.3
Military facilities	4.7
Public service (conservation and development)	5.6
All other	1.3
Total	100.0

This distribution of expenditures was essentially the same as the longer term average for the years 1920–62. Future allocations of total nonresidential construction expenditures among the various categories were therefore based upon these averages, tempered to some degree by judgment. Thus somewhat higher relative proportions of the projected total expenditures were allocated to highways, public services, and conservation and development projects and somewhat lower proportions to military facilities (table 11).

Five Billion Feet of Lumber Used in 1962

Consumption of lumber in new nonresidential construction decreased slowly between 1952 and

[17] U.S. Department of Commerce, Business and Defense Services Administration, *Construction Review*, vol. 7, No. 9, September 1961.

[18] Resources for the Future, Inc., *Resources in America's Future, Patterns of Requirements and Availabilities, 1960–2000*. The Johns Hopkins Press, 1962. 1017 pp.

TABLE 11.—*Expenditures for new nonresidential construction,*[1] *by construction classes, 1920–2000*

[Millions of 1961 dollars]

Period or year	All classes	Buildings					Public utilities and sewer and water systems	Highways	Military	Public service, conservation and development	All other
		Industrial	Commercial	Hotels, motels, etc.	Other	Public					
1920–29 [2]	14,871	2,056	2,783	767	1,708	1,744	3,309	1,519	78	543	364
1930–39 [2]	12,356	916	1,212	239	953	2,185	2,268	2,340	151	1,723	369
1940–49 [2]	15,705	1,584	1,116	180	856	3,436	3,017	1,436	2,675	1,164	241
1950–59 [2]	27,012	2,642	3,086	432	2,465	4,970	6,349	3,932	1,336	1,499	301
1960	32,091	2,870	4,298	936	3,220	4,902	6,624	5,405	1,408	1,895	533
1961	33,537	2,759	4,663	1,172	3,332	5,132	6,748	5,818	1,368	1,935	610
1962	33,897	2,767	4,817	1,232	3,472	5,008	6,680	6,059	1,237	1,976	649
PROJECTIONS											
1970	42,600	3,400	5,500	1,300	4,300	6,400	8,500	8,100	1,700	2,600	800
1980	57,400	4,600	7,800	1,400	5,200	8,600	11,500	11,200	2,000	4,000	1,100
1990	75,900	6,500	10,200	1,900	6,800	11,400	15,200	14,800	2,300	5,700	1,100
2000	101,800	8,700	14,200	2,500	8,700	15,300	20,400	20,400	2,000	8,100	1,500

[1] Excludes farms and railroads.

[2] Data shown are annual averages for the decade.

Sources: 1920–56, U.S. Department of Labor and U.S. Department of Commerce, statistical supplement to vol. 3 of Construction Review, *Construction Volume and Costs, 1915–1956*, 1958. 1957–62, derived from U.S. Department of Commerce, Bureau of the Census, "Value of New Construction Put in Place—." *Construction Reports*, July 1961. (No. C30–25, supplement) and U.S. Department of Commerce, Business and Defense Services Administration, *Construction Review*. Projections. U.S. Department of Agriculture, Forest Service.

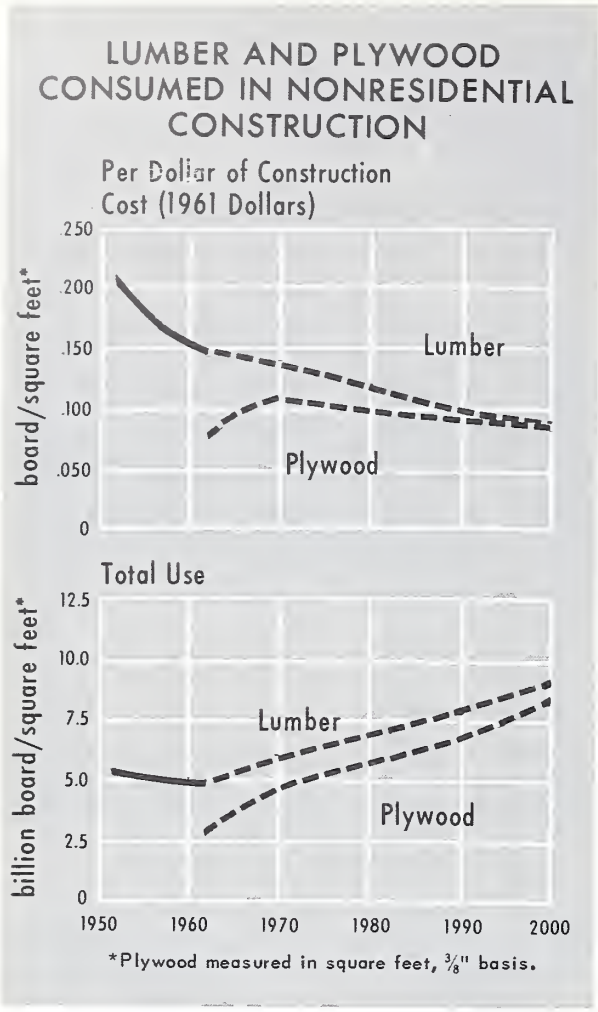

Figure 12

1962, falling from an estimated 5.4 billion board feet to 5.0 billion board feet (table 12 and fig. 12). In contrast, plywood consumption increased rapidly—rising from an estimated 135 million square feet in 1951 [19] to 2.8 billion square feet in 1962.

Surveys of wood used in sample construction projects across the Nation indicated a wide range in amounts of lumber and plywood used per dollar of construction expenditures. For all classes combined, wood use in 1962 averaged 0.15 board foot of lumber per dollar of expenditure, or about 30 percent less than the estimated average factor in 1952 (table 12). Use of plywood averaged about 0.08 square foot per dollar.

[19] Stanford Research Institute. *America's Demand for Wood 1929–1975.* Tacoma, Weyerhaeuser Timber Co., 1954.

Contractors interviewed in surveys of nonresidential construction indicated that use of lumber per dollar of expenditure is likely to decline further. Increasing use of metal scaffolds, substitution of rented metal forms for wood in concrete formwork, use of plastic-coated plywood with a longer service life, the trend toward larger buildings associated with growing urbanization, and changes in construction techniques which result in increased use of steel floor joists and precast and prestressed concrete floor members and panels all adversely affect use of lumber and plywood.

Structural wood items, on the other hand, appear to have a growth potential in nonresidential construction, particularly for arches, beams, rafters, and trusses, and in certain classes of buildings such as schools, churches, and warehouses. Wood roof trusses with metal connectors have been used increasingly in light construction. Recent trends in architectural styles for such buildings as light manufacturing industrial plants and schools also indicate some increase in single-story structures, where possibilities for lumber use are greater than in multiple-story buildings and other heavy construction.

After weighing apparent trends in various classes of nonresidential construction, it was assumed that use of lumber per dollar of expenditure may drop from 0.15 board foot in 1962 to 0.09 board foot by 2000 (table 12 and fig. 12).

TABLE 12.—*Lumber and plywood and veneer consumed in nonresidential construction, 1952–2000*

Year	Lumber		Plywood and veneer	
	Volume used	Use per dollar [1] of expenditure	Volume used	Use per dollar [1] of expenditure
	Million board feet	*Board feet*	*Million square feet, 3/8-inch basis*	*Square feet, 3/8-inch basis*
1952	5,400	0.21		
1962	5,000	.15	2,800	0.08
PROJECTIONS				
1970	6,000	0.14	4,700	0.11
1980	6,900	.12	5,600	.10
1990	8,000	.10	6,800	.09
2000	9,200	.09	8,500	.08

[1] 1961 dollars.

This would represent a reduction of about 40 percent, compared with a projected reduction of 25 percent in consumption of all construction materials per dollar of construction expenditure.

Future use of plywood per dollar of construction expenditure is projected to increase slightly during the 1960's, partly on the assumption that plywood has not fully completed its displacement of lumber in this field of construction. Thereafter, a drop in plywood use per dollar of expenditure is anticipated.

Substantial Increases Projected in Total Use of Lumber and Plywood

Projections of total lumber use, derived from the projected construction expenditures and assumed changes in wood use factors, rise from 5 billion board feet in 1962 to 6 billion board feet in 1970, and to 9.2 billion board feet in 2000.

Projections for plywood show a rise from 2.8 billion square feet in 1962 to 4.7 billion square feet in 1970, and to 8.5 billion square feet in 2000.

An estimated 1.0 billion square feet (½-inch basis) of building board was used in 1962 in nonresidential construction. This included an estimated 800 million square feet of insulation board (½-inch basis), about 700 million square feet of hardboard (⅛-inch basis), and some 26 million square feet of particleboard (¾-inch basis). Estimates of prospective demands for these products—amounting to roughly three times the level of consumption in 1962—are included in a later section on Demand for Pulpwood.

UPKEEP AND IMPROVEMENTS

In addition to new residential and new nonresidential construction covered in the preceding sections, the upkeep and improvement of residential and nonresidential structures (other than farms and railroads) also accounts for substantial use of wood products.

Expenditures for Residential Upkeep and Improvements Show Major Increases

Expenditures for upkeep and improvements of residential structures amounted to about $11.2 billion in 1962 (table 13). This included outlays for such purposes as painting, repair or replacement of siding and roofing, alterations and remodeling, and additions such as garages, patios, driveways, and fences.

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Over 5 billion board feet of lumber was for upkeep and improvements in 1962—mostly on residential buildings.

TABLE 13.—*Expenditures for repairs, alterations, and additions of residential structures, 1920–2000*

[1961 dollars]

Period or year	Total	Repairs	Alterations and additions
	Million dollars	*Million dollars*	*Million dollars*
1920–29 [1]	3,275	2,565	710
1930–39 [1]	3,872	3,110	762
1940–49 [1]	5,879	4,284	1,595
1950–59 [1]	10,604	6,862	3,742
1960	13,159	7,642	5,518
1961	13,805	8,219	5,586
1962	11,166	6,693	4,473
PROJECTIONS			
1970	16,000	10,000	6,000
1980	19,100	11,600	7,500
1990	22,400	13,400	9,000
2000	26,600	15,600	11,000

[1] Data shown are annual averages for the decade.

NOTE: Data for the years 1920–59 exclude farm households, 1960–62 and projections include all households.

Sources: 1920–56, U.S. Department of Labor and U.S. Department of Commerce, statistical supplement to vol. 3 of Construction Review, *Construction Volume and Costs, 1915–1956*, 1958. 1957–59, U.S. Department of Commerce, Business and Defense Services Administration, *Construction Review*. 1960–61, U.S. Department of Commerce, Bureau of the Census, Construction Reports, *Residential Alterations and Repairs* (series C50–6), July 1962. 1962, Bureau of the Census, Construction Reports, *Residential Alterations and Repairs* (series C50–8), November 1963. Projections, U.S. Department of Agriculture, Forest Service.

Expenditures for residential upkeep and improvements have shown trends similar to growth in GNP and number of households. On the basis of a statistical analysis of the relationship between expenditures and gross national product in the 1947–62 period and a graphic analysis of trends in expenditures per household, total expenditures for residential upkeep and improvements were projected from $11.2 billion in 1962 to $26.6 billion in 2000.

Nonresidential Expenditures for Repairs Also Increasing Rapidly

Expenditures for nonresidential repairs, including minor improvements but excluding major alterations or additions which are included in new construction, averaged about $12.2 billion in the period 1960–62 (table 14). Expenditures as a percent of gross national product have shown a slight downward trend—from an average of 2.9 percent in the 1920's to about 2.3 percent in 1962 (table 14).

In view of the projected decline in new nonresidential construction as a component of GNP, and continuing improvements in the quality of materials used in construction and in construction technology, some further decrease in the ratio of expenditures for repairs to 1.4 percent of GNP by 2000 has been assumed. This, along with a statistical analysis of the relation between expenditures and GNP in the period 1947–62, indicates that expenditures for nonresidential repairs may total about $27.8 billion annually by 2000.

About 5.4 Billion Board Feet of Lumber Used for Upkeep and Improvements in 1962

The volume of lumber used for upkeep and improvements of both residential and nonresidential structures amounted to an estimated 5.4 billion board feet in 1962 (table 15). The major part of the lumber consumed—about 4.4 billion board feet—was used on residential properties. The remaining billion board feet was used for nonresidential repairs and minor improvements.

Of the lumber used in residential upkeep and improvements, more than four-fifths went for framing, sheathing, and siding, according to recent field surveys in a number of sample cities. About 9 percent was used for doors, windows, cabinets, and other millwork. Flooring lumber made up about 6 percent of the total, and paneling and concrete forms each accounted for about 1 percent.

TABLE 14.—*Expenditures for repair of nonresidential structures* [1] *1920–2000*

[1961 dollars]

Period or year	Expenditures for repairs	Gross national product	Expenditures in relation to GNP
	Million dollars	*Billion dollars*	*Percent*
1920–29 [2]	5,002	171	2.9
1930–39 [2]	6,407	183	3.5
1940–49 [2]	7,147	326	2.2
1950–59 [2]	10,711	438	2.4
1960	12,098	511	2.4
1961	12,036	519	2.3
1962	12,558	546	2.3
PROJECTIONS			
1970	15,300	710	2.2
1980	18,700	990	1.9
1990	23,200	1,380	1.7
2000	27,800	1,920	1.4

[1] Excludes farms and railroads.
[2] Data shown are annual averages for the decade.

Sources: EXPENDITURES FOR REPAIRS: 1920–56, U.S. Department of Labor and U.S. Department of Commerce, statistical supplement to vol. 3 of Construction Review, *Construction Volume and Cost, 1915–1956*, 1958. 1957–62, U.S. Department of Commerce, Business and Defense Services Administration, *Construction Review*. Projections, U.S. Department of Agriculture, Forest Service.

TABLE 15.—*Lumber consumed in upkeep and improvements,* [1] *1962–2000*

Year	Total volume used	Residential repairs, alterations, and additions		Nonresidential repairs	
		Volume used	Use per dollar of expenditure [2]	Volume used	Use per dollar of expenditure [2]
	Million board feet	*Million board feet*	*Board feet*	*Million board feet*	*Board feet*
1962	5,400	4,400	0.394	1,000	0.080
PROJECTIONS					
1970	5,900	4,800	0.300	1,100	0.070
1980	6,500	5,300	.280	1,200	.060
1990	7,100	5,800	.260	1,300	.055
2000	7,800	6,400	.240	1,400	.050

[1] Excludes farms and railroads.
[2] 1961 dollars.

Of the lumber used in nonresidential repairs more than three-fourths was for framing, sheathing, and siding. Millwork items made up about 9 percent of this total, concrete forms and other facilitating uses about 4 percent, and paneling and flooring about 1 percent.

Projected Lumber Consumption Shows Substantial Rise by 2000

Lumber consumption for upkeep and improvements in 1962 was estimated at about 0.394 board foot per dollar of expenditure for residential properties and 0.080 board foot for nonresidential (table 15 and fig. 13). Declines in lumber use per dollar of expenditure are expected—to an estimated 0.240 board foot for residential and 0.050 board foot for nonresidential properties by 2000—in response to continuing changes in use of materials and types of construction and the general decrease in the use of all materials per dollar of construction expenditure.

This projected drop in wood-use factors is more than offset, however, by projected increases in total expenditures. As a consequence, estimates of total lumber use rise from 5.4 billion board feet in 1962 to 7.8 billion board feet in 2000 (fig. 13). This includes an estimated 6.4 billion board feet for residential upkeep and improvements and 1.4 billion board feet for nonresidential repairs.

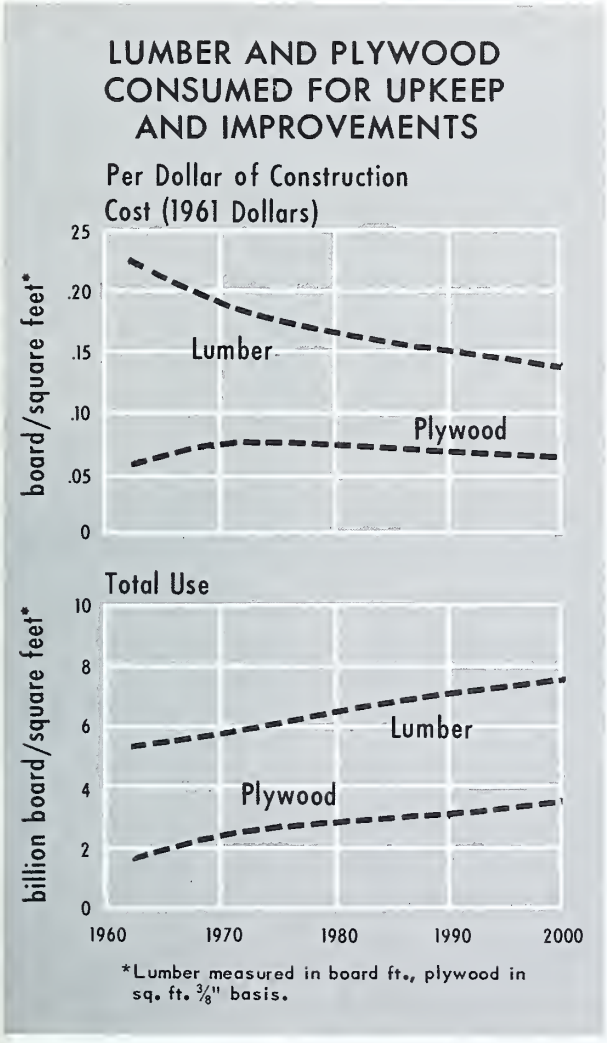

Figure 13

1.5 Billion Square Feet of Plywood Used in 1962—Projections Show Rise to 3.8 Billion Square Feet in 2000

The volume of plywood used for upkeep and improvements of residential and nonresidential structures totaled approximately 1.5 billion square feet (3/8-inch basis) in 1962 (table 16 and fig. 13).

An estimated two-thirds of the total plywood used went into residential repairs, alterations, and additions—mainly for sheathing, siding, partitions,

TABLE 16.—*Plywood and veneer consumed in upkeep and improvements,*[1] *1952–2000*

[3/8-inch basis]

Year	Total volume used	Residential repairs, alterations, and additions		Nonresidential repairs	
		Volume used	Use per dollar [2] of expenditure	Volume used	Use per dollar [2] of expenditure
	Million square feet	*Million square feet*	*Square feet*	*Million square feet*	*Square feet*
1952	600	356	0.036	244	0.024
1962	1,500	1,030	.092	470	.038
PROJECTIONS					
1970	2,600	1,800	0.11	800	0.05
1980	3,000	2,100	.11	900	.05
1990	3,400	2,400	.10	1,000	.04
2000	3,800	2,700	.10	1,100	.04

[1] Excludes farms and railroads.
[2] 1961 dollars.

and paneling. Smaller amounts were used for cabinets, flooring, and forms. Plywood used in nonresidential repairs went mostly into sheathing, partitions, paneling, doors, and cabinets.

In projecting future use of plywood in both residential upkeep and improvements and nonresidential repairs, it was assumed that use per dollar of expenditure would increase slightly as a result of some further displacement of lumber, then decline although at a slower rate than all construction materials. These projected use factors, when multiplied by the estimated construction expenditures shown in tables 13 and 14, indicate a potential demand of about 3.8 billion square feet of plywood in 2000.

About 625 Million Square Feet of Building Boards Used in 1962

About 625 million square feet (½-inch basis) of building boards was used for upkeep and improvements of residential and nonresidential structures in 1962, according to recent studies in a number of sample cities. This included about 400 million square feet (½-inch basis) of insulation board, 360 million square feet (⅛-inch basis) of hardboard, and 90 million square feet (¾-inch basis) of particleboard. Roughly 85 percent of the total was used for residential buildings, and about 15 percent for nonresidential structures.

Between 1952 and 1962, the volume of building board used for upkeep and improvements approximately doubled. Further substantial increases in potential future demand for these products are projected, as indicated in a later section on Demand for Pulpwood.

FARM STRUCTURES

Lumber, plywood, posts, poles, and other timber products are used to build and maintain farm structures such as barns, poultry houses, fencing, and feedracks. Although still an important market, striking changes in farming methods and farm construction, and a decrease in the number of farms from 6.5 million in 1929 to 3.7 million in 1959, have caused major changes in farm use of lumber and other wood products.

Farm Gross National Product and Construction Expected To Increase Moderately

Farm output as measured by "gross farm product," i.e., that part of the Nation's gross national product contributed by farms, amounted to an estimated $21.6 billion in 1962 (table 17). Projections show a rise in gross farm product to about $31.5 billion by 2000.

Lumber, poles, posts, and other timber products are used in farm structures.

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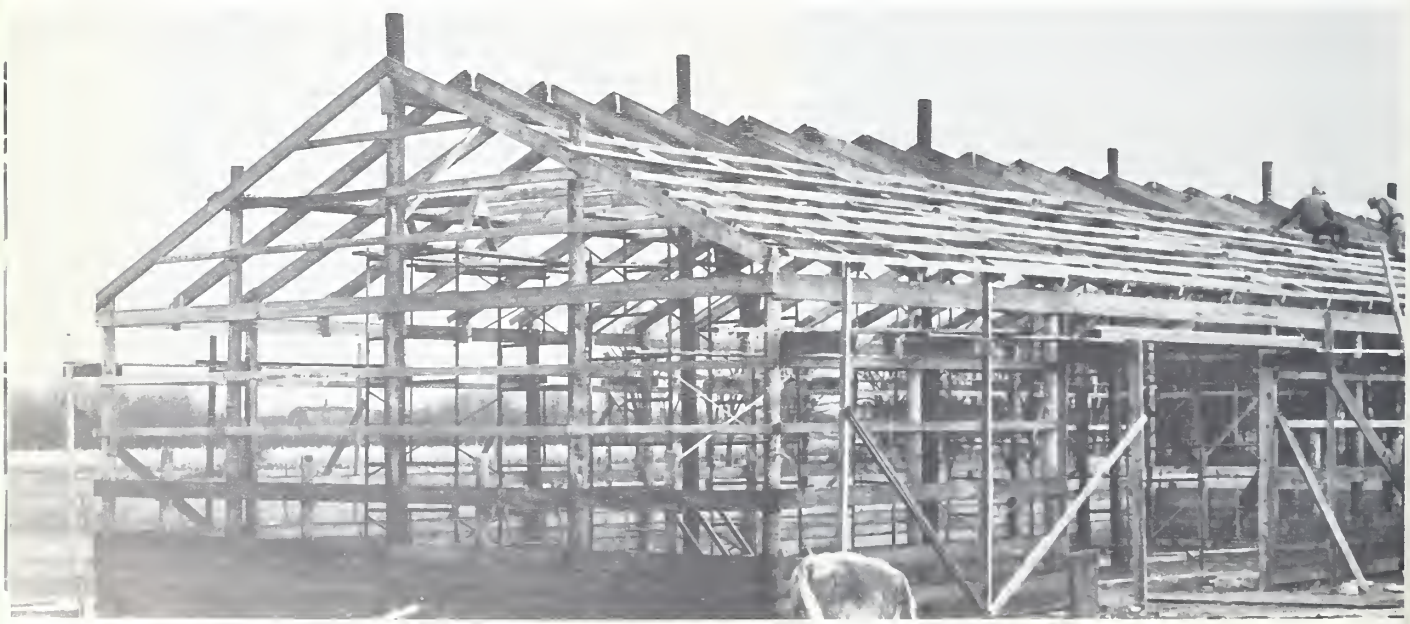


Farm construction expenditures for structures other than dwellings totaled about $1.4 billion in 1962—somewhat below the average of the 1950's but substantially above earlier periods (table 17). About two-thirds of these expenditures were for new construction and one-third for repairs.

TABLE 17.—*Farm output and construction expenditures, 1920–2000*

[1961 dollars]

Period or year	Gross farm product	Construction expenditures [1]			Construction expenditures as a percent of GFP
		Total	New structures	Repairs	
	Million dollars	*Million dollars*	*Million dollars*	*Million dollars*	*Percent*
1920–29 [2]	14,800	920	480	440	6.2
1930–39 [2]	15,600	620	210	410	4.0
1940–49 [2]	17,800	1,060	620	440	6.0
1950–59 [2]	19,200	1,540	1,040	500	8.0
1960	20,900	1,310	890	420	6.3
1961	21,400	1,470	980	490	6.9
1962	21,600	1,420	950	470	6.6
PROJECTIONS					
1970	23,500	1,530	1,060	470	6.5
1980	25,800	1,680	1,160	520	6.5
1990	28,500	1,850	1,280	570	6.5
2000	31,500	2,050	1,420	630	6.5

[1] Includes farm service buildings and structures, excludes dwellings.

[2] Data shown are annual averages for the decade.

Sources: GROSS FARM PRODUCT: 1920–28, U.S. Department of Commerce, Bureau of the Census, *Historical Statistics of the United States*, 1960. 1929–62, Office of the President, *Economic Report of the President*, January 1962 and 1963.

CONSTRUCTION EXPENDITURES FOR NEW STRUCTURES: 1920–56, U.S. Department of Labor and U.S. Department of Commerce, statistical supplement to vol. 3 of Construction Review, *Construction Volume and Costs, 1915–1956*, 1958. 1957–62, derived from U.S. Department of Commerce, Bureau of the Census, "Value of New Construction Put in Place—". *Construction Reports*, July 1961. (C30–25, supplement) and U.S. Department of Commerce, Business and Defense Services Administration, *Construction Review*.

CONSTRUCTION EXPENDITURES FOR REPAIRS: 1920–56, statistical supplement to vol. 3 of Construction Review, *Construction Volume and Costs, 1915–1956*, 1958. 1957–62, U.S. Department of Commerce, Business and Defense Services Administration, *Construction Review*.

PROJECTIONS: U.S. Department of Agriculture, Forest Service.

Farm construction expenditures as a percent of gross farm product have ranged from a low of 2 percent in 1933 to as much as 10 percent in 1951, with an average of about 6 percent over the period 1920–62. Projections of farm construction expenditures in future years have been based upon an assumed rate of 6.5 percent of gross farm product (including 4.5 percent for new structures and 2 percent for repairs)—about the same average rate as in the period 1956–62. Using this rate and the projected gross farm product, total construction expenditures were projected to rise from $1.4 billion in 1962 to about $2.1 billion in 2000 (table 17).

An Estimated 2 Billion Board Feet of Lumber Used on Farms in 1962

The total volume of lumber used for farm structures, excluding farm housing, was estimated at about 2 billion board feet in 1962 (table 18).[20] A marked downward trend in lumber use on farms has been attributed in large part to a decrease in number of farm buildings constructed. According to the Census of Agriculture, the number of farm service buildings constructed annually has declined from 877,000 in 1949 to an average of 209,000 for the years 1958 to 1960. This drop was offset in part by an increase in average floor area from 520 to 1,220 square feet per building.

[20] Estimates of wood use for farm service buildings in 1958–60 were derived from data in the 1960 Sample Survey of Agriculture showing number of new farm buildings constructed by types and regions (U.S. Bureau of the Census, U.S. Census of Agriculture: 1959, vol. V. Special Reports, Part 5, 1960, Sample Survey of Agriculture, Washington, D.C., 1962) together with wood-use factors showing amounts of lumber, plywood, and other building materials used in each major type of farm building in each section of the country. These factors were determined by field surveys in a number of farming areas plus judgment estimates of farm building specialists. Changes in farm construction expenditures between 1958 and 1962 were used to update estimates of wood use to 1962.

Lumber use in miscellaneous farm structures such as fencing was estimated from local studies of wood use on farms. (See for example, Beazley, Ronald I., and Lundgren, Allen L., *Farm Lumber Consumption and Use, East-Central Minnesota, 1954*. St. Paul, University of Minnesota, Agricultural Experiment Station, March 1961, 58 pp., illus. (Scientific Journal Series, Paper No. 4584); also unpublished data from a pilot survey of rural consumption of timber products in Missouri, 1958, U.S. Department of Agriculture, Forest Service, Washington, D.C.) These indicated that lumber used in miscellaneous farm structures equaled about 15 percent of all lumber used in new construction, and about 40 percent of lumber used in farm repairs.

TABLE 18.—*Lumber and plywood and veneer consumed in farm structures,[1] 1952–2000*

Year	Lumber		Plywood and veneer	
	Volume used	Use per dollar [2] of expenditure	Volume used	Use per dollar [2] of expenditure
	Million board feet	*Board feet*	*Million square feet 3/8-inch basis*	*Square feet 3/8-inch basis*
1952	4,500	2.47		
1962	2,000	1.41	210	0.15
PROJECTIONS				
1970	1,900	1.25	300	0.20
1980	1,900	1.15	400	.24
1990	1,900	1.05	500	.27
2000	1,900	.90	600	.29

[1] Includes farm service buildings and structures; excludes dwellings.
[2] 1961 dollars.

Changes in the type of farm structures built, as illustrated by the trend from conventional to pole type barns with metal roof and metal siding attached to poles set in the ground, have also caused some decrease in the use of lumber. The substitution of plywood and nonwood building materials has been another contributing factor.

Projections Show Not Much Change in Demand for Lumber—Increase for Plywood

In view of trends in farm construction and operation, projected use of lumber per dollar of farm construction expenditures in 2000 was reduced about 40 percent from present levels (table 18). Plywood, on the other hand, appeared likely to find increasing use in farm structures and factors for plywood used per dollar of construction were consequently increased.

Based on these assumed wood-use factors and projections of farm construction expenditures, projected demand for lumber on farms drops slightly by 1970 to a level of about 1.9 billion board feet a year. The projection for plywood shows a threefold increase to 600 million square feet annually by 2000.

In addition to lumber and plywood an estimated 55 million square feet of hardboard (⅛-inch basis) and about 5 million square feet of insulation board (½-inch basis) was used on farms in 1962. Projected demands for these products are included in the section on Demand for Pulpwood.

Substantial numbers of wood poles and posts are also used in construction and fencing on farms. Allowances for these items are included in the section on Demand for Miscellaneous Timber Products.

RAILROAD CONSTRUCTION AND MAINTENANCE

Use of wood products by railroads has been changing rapidly as a result of a reduction in railway mileage, new railway operating methods, and use of nonwood materials. However, fairly large volumes of lumber plus significant quantities of plywood are still used by railroads for ties, railway cars, bridges, and a variety of other structures.

Projected Use of Crossties Estimated at 28 Million Annually

Crossties represent the most important wood product consumed by railroads. The total number of crossties used annually has dropped from an average of about 96.4 million in the 1920's to an average of 29.5 million in the 1950's and an unusually low level of 16.1 million in the 1960–62 period (table 19 and fig. 14).

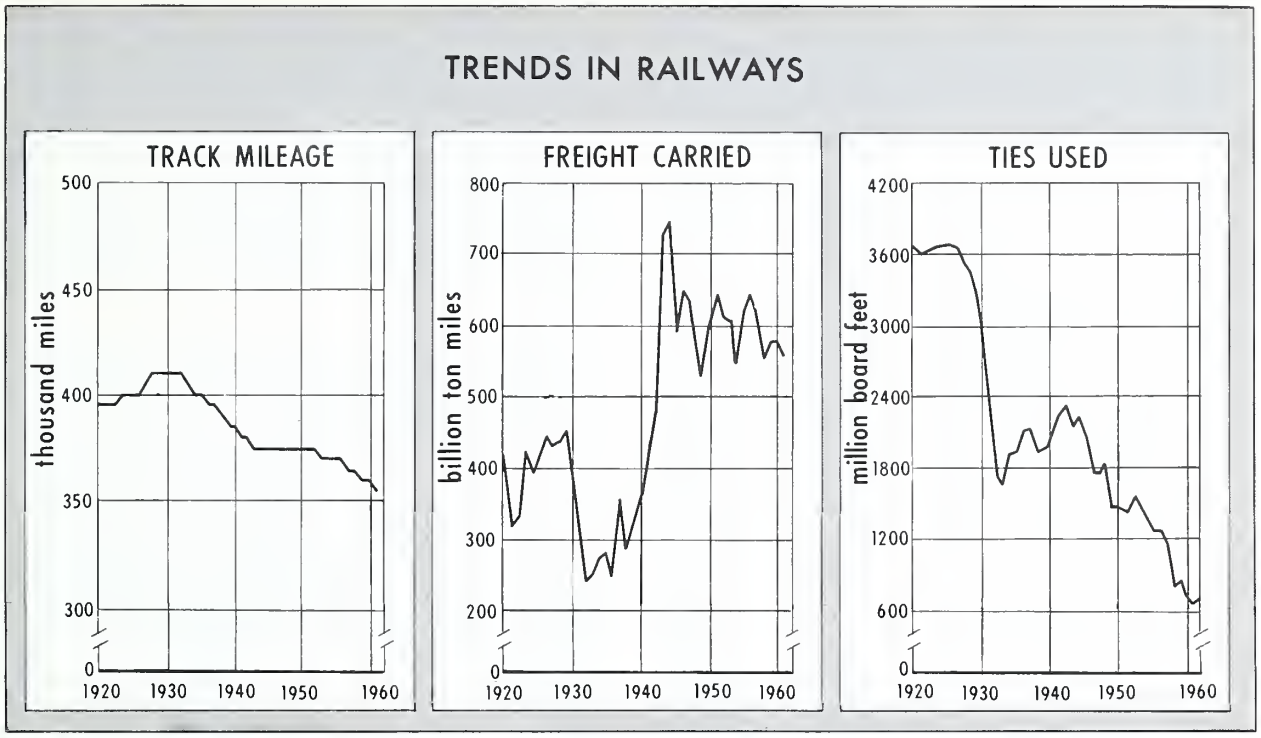


Figure 14

TABLE 19.—*Railway mileage and crossties consumed, 1920–2000*

Period or year	Mileage of track operated		Total crossties per mile of track	Crossties consumed						
				Total		In replacement			In new track	
	Total	Laid on crossties		Number	Volume per tie	Number	Number per mile	Apparent average life	Number	Track laid on crossties
	Thousand	*Thousand*	*Number*	*Thousand*	*Board feet*	*Thousand*	*Number*	*Years*	*Thousand*	*Miles*
1920–29 [1]	400.4	372.4		96,400	34	90,000			6,400	
1930–39 [1]	399.9	371.9	2,986	52,506	36	50,552	136	22	1,954	655
1940–49 [1]	378.3	351.8	3,000	48,353	38	45,111	128	23	3,242	1,080
1950–59 [1]	369.8	343.9	3,015	29,523	39	26,431	77	39	3,092	1,025
1960	360.6	335.3	3,017	17,633	39	15,424	46		2,209	730
1961	357.9	332.9	3,017	14,450	39	12,968	39		1,482	490
1962	354.5	329.6	3,018	16,261	39	14,484	44		1,777	590
PROJECTIONS										
1970	340.0	316.0	3,030	28,030	40	25,300	80	38	2,730	900
1980	335.0	312.0	3,045	28,340	40	25,600	82	37	2,740	900
1990	330.0	307.0	3,060	28,250	40	25,500	83	37	2,750	900
2000	330.0	307.0	3,060	28,250	40	25,500	83	37	2,750	900

[1] Data shown are annual averages for the decade.

Sources: MILEAGE OF TRACK OPERATED, NUMBER OF CROSSTIES USED IN REPLACEMENT: U.S. Interstate Commerce Commission, Bureau of Transport Economics and Statistics, 1920–53, *Statistics of Railways in the United States*, 1954–62, *Transport Statistics in the United States*.

MILEAGE OF TRACK LAID ON CROSSTIES, CROSSTIES PER MILE, NUMBER OF CROSSTIES USED IN NEW TRACK: U.S. Interstate Commerce Commission statistics (op. cit.) for class I railroads, adjusted for all railroads.

AVERAGE VOLUME PER TIE: U.S. Department of Agriculture, Forest Service, in cooperation with American Wood-Preservers' Association, *Wood Preservation Statistics*.

PROJECTIONS: U.S. Department of Agriculture, Forest Service.

The longrun downward trend in use of ties largely reflects a decline in railway mileage, increased average life of ties resulting from the use of wood preservatives, use of devices such as tie plates and end irons to reduce mechanical wear and splitting of ties, use of welded track, and a shift to diesel locomotives. The abnormally low level of consumption in 1960–62 apparently resulted mainly from deferment of track maintenance.

Some further decrease in railway track mileage to an estimated 330,000 miles in 2000 is anticipated (table 19). At the same time a moderate rise in the number of ties replaced annually per mile of track appears likely. Thus total crossties used in replacements total about 25.5 million annually in the projection period. Assuming continued construction of new track at the level of recent decades of about 900 miles a year, total demand for ties would approximate 28 million annually over the next few decades.

In terms of board feet, total use of ties averaged roughly 1.1 billion board feet a year during the 1950's (table 20). Projected demand is estimated at 1.2 billion board feet annually. Use of hewn ties has been decreasing rapidly in recent decades and it is assumed that practically all ties used in the future will be sawn ties.

TABLE 20.—*Crossties consumed by railroads, 1920–2000*

[Million board feet]

Year	Sawn ties			Hewn ties
	Total	Cross-ties	Switch and bridge ties	
1920–29 [1]	1,639	1,319	320	1,962
1930–39 [1]	1,215	1,020	195	870
1940–49 [1]	1,284	1,121	163	717
1950–59 [1]	1,101	990	111	161
1960	721	653	68	34
1961	609	541	68	23
1962	680	615	65	19
PROJECTIONS				
1970	1,200	1,120	80	
1980	1,210	1,130	80	
1990	1,210	1,130	80	
2000	1,210	1,130	80	

[1] Data shown are annual averages for the decade.

One-Fourth Billion Feet of Lumber Used for Car Construction and Repair

Lumber used for construction and repair of freight cars in 1962 amounted to an estimated 256 million board feet (table 21). This was markedly below the level of wood use in the 1950's, largely as a result of the limited construction of cars in 1962 and a low level of expenditures for repairs.

TABLE 21.—*Lumber and plywood and veneer consumed in construction and repair of railroad cars, 1928–2000*

Year	Lumber	Plywood and veneer
	Million board feet	*Million square feet, ⅜-inch basis*
1928	1,009	
1933	332	
1940	545	8
1948	536	14
1950–54 [1]	496	
1955–59 [1]	335	
1960	254	53
1961	212	56
1962	256	53
PROJECTIONS		
1970	250	100
1980	250	100
1990	250	100
2000	250	100

[1] Data shown are annual averages for the indicated period.

Sources: 1928–48, U.S. Department of Agriculture, Forest Service, *Lumber Used in Manufacture*, 1928, 1933, 1940; *Wood Used in Manufacture*, 1948. 1950–59, based on unpublished reports of Class I railroads to the Association of American Railroads showing volume of lumber purchases for cars, locomotives, and floating equipment, plus Forest Service estimates of lumber used by car builders. 1960–62, Forest Services estimates, based on dollar value of Class I railroad lumber purchases, use of lumber and plywood by car builders in 1960, and number of freight cars built. Projections, U.S. Department of Agriculture, Forest Service.

In order to carry anticipated increases in railway freight, it is estimated that increased numbers of new freight cars will be needed. This prospect, along with increased size of railway cars and loading practices that require heavier car decking, appears likely to cause some increase in use of lumber in car construction. Several other considerations also favor use of wood, including the problem of moisture condensation with metal,

greater insulating qualities of wood, and greater ease of repairing cars built with wood interiors. On the other hand, substitution of steel is continuing in all classes of cars, and in the case of refrigerator cars, plywood is also being used to some extent in lieu of lumber.

In the past, considerably more lumber has been used in the repair of freight cars than in the construction of new cars. Use of lumber for car repair has been declining, however, as a result of the changing types of cars in service; some further decline in lumber use for car repairs has been assumed.

Considering these trends, it has been estimated that use of lumber in car construction and repairs may approximate 250 million board feet of lumber annually in the decades ahead, plus modest amounts of plywood (table 21).

Use of lumber for new construction and for maintenance of buildings, bridges, and other structures on projects undertaken by railway personnel amounted to about 80 million board feet annually in the 1950's. It was estimated that consumption of lumber for miscellaneous railway structures would continue to approximate this recent average.

Projected Use of Lumber by Railroads Estimated at 1.5 Billion Board Feet Annually

Total demand for lumber for all railway uses, including crossties, switch and bridge ties, car construction and repair, and miscellaneous structures, are estimated to average about 1.5 billion board feet annually over the period 1962–2000 (tables 20 and 21). Projected demands for plywood average about 100 million square feet annually.

MINE CONSTRUCTION AND MAINTENANCE

Lumber, sawn mine ties, and round and split mine timbers have long been used in substantial quantities in the mining of coal and other minerals such as iron and copper. Changing mining practices in recent years, however, have resulted in sharp declines in the use of these wood products.

In 1962 the total volume of wood products used in mining operations included an estimated 330 million board feet of lumber, and 48 million cubic feet of round, split, and hewn products (table 22). These volumes were substantially below comparable estimates for 1950 and prior years.

TABLE 22.—*Wood consumed in mining, by type of mine, 1905–2000*

Year	Lumber			Round, split, and hewn products		
	Total	In coal mines	In other mines	Total	In coal mines	In other mines
	Million board feet	*Million board feet*	*Million board feet*	*Million cubic feet*	*Million cubic feet*	*Million cubic feet*
1905	436	242	194	166	135	31
1923	507	296	211	174	152	22
1935	467	347	120	113	102	11
1950	836	597	239	108	90	18
1962	330	182	148	48	41	7
PROJECTIONS						
1970	300	170	130	40	35	5
1980	330	200	130	45	40	5
1990	360	220	140	60	50	10
2000	400	240	160	60	50	10

One of the major causes of this decline in use of wood has been the drop in production of coal and other minerals from underground mines, where practically all wood products used in mining are consumed. Other factors include changes in mining techniques, such as the use of conveyor belt systems and rubber-tired vehicles, which have reduced the use of mine ties; metal roof bolts and steel arches, which have substituted on a large scale for wooden mine props; and greater use of preservatives, which has extended the service life of wood products.

The effects of these changes are illustrated by factors of wood use per ton of coal output developed in several national surveys of wood use in mining conducted periodically by the Forest Service, as follows:

Year:	*Lumber (board feet)*	*Roundwood (cubic feet)*
1905	0.62	0.34
1923	.45	.23
1935	.83	.24
1950	1.07	.16
1962	.41	.09

Small Increases Expected in Future Use of Wood in Mining

Recent appraisals of future requirements for coal and other sources of energy materials indicate

the likelihood of a reversal of the recent downward trend in coal output from underground mines.[21] Coal production from such mines has therefore been estimated to nearly double by 2000. Similar increases in output of other minerals also have been assumed.

Projections of future demand for lumber in mining, based on these expectations of increased output of coal and other ores from underground mines and the assumption of some further declines in use of wood per ton of output, rise from 330 million board feet in 1962 to an estimated 400 million board feet by 2000 (table 22). A small increase in future use of roundwood to an estimated 60 million cubic feet also is projected.

DEMAND FOR LUMBER AND PANEL PRODUCTS IN MANUFACTURES

In 1962 about 11 percent of the lumber and plywood and veneer used in the United States was consumed in the production of a wide variety of consumer and industrial "manufactured products," such as furniture, sports equipment, tool and broom handles, truck bodies, and machinery.

[21] U.S. Department of the Interior, Energy Policy Staff, *Supplies, Costs and Uses of the Fossil Fuels*, February 1963. Resources for the Future, Inc., *Resources in America's Future, Patterns of Requirements and Availabilities, 1960–2000*. The Johns Hopkins Press, 1962. 1017 pp. Scollon, T. Reed, "Trends in Utilization of Energy Resources in the U.S.," Sixth World Power Conference, Melbourne, Australia. October 1962.

Even larger quantities of wood products were used in the manufacture of flooring, millwork, laminated beams, mobile homes, railroad cars, containers, pallets, and other similar goods produced in manufacturing industries. However, trends in demands for wood in these uses are considered in other sections of this report dealing with construction, railroads, and shipping.

4.2 Billion Board Feet of Lumber Used for Manufactured Products in 1962

Lumber used in the manufactured products included in this section totaled an estimated 4.2 billion board feet in 1962. This was about 7 percent above the levels of use in 1948 and 1960.

Detailed data on lumber use by product in 1948 and 1960 are shown in table 23. In both years furniture was by far the most important product, requiring 53 percent of the total lumber used in 1948 and 59 percent in 1960. The remainder was widely distributed among other types of goods.

Manufacturers' Sales Correlated With Economic Indicators

Projected demands for lumber and other materials used in manufactured products have been derived from trends in sales of these products and trends in use of materials per dollar of sales. In projecting sales for the various industries that

More than 2 billion board feet of lumber used annually for furniture manufacture.

M-109815

manufacture wood products, correlations were developed to determine relationships between value of shipments of each industry and such independent variables as gross national product, disposable personal income, and industrial production. These analyses were made for each of the 23 product classes listed in table 23.

As an example of these correlations, figure 15 shows that per capita expenditures for household furniture were closely associated with per capita disposable income from 1929 to 1962. Between

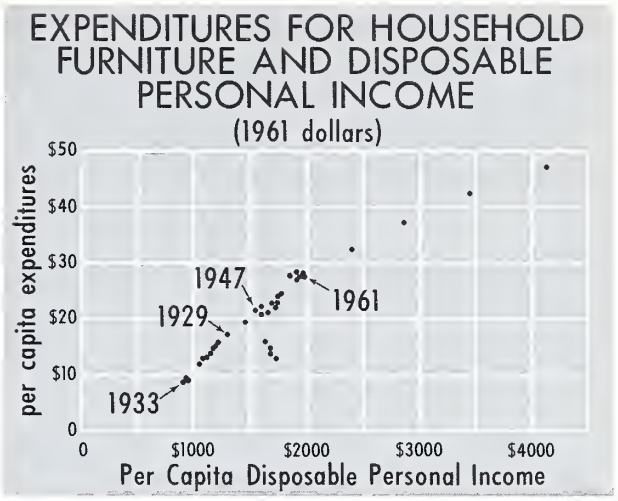


Figure 15

1929 and 1961, a change of 1 percent in per capita disposable income was accompanied, on the average, by a change of 1.35 percent in per capita sales of furniture. Some decline in this ratio has been evident and a further decline of 20 percent over the projection period was assumed.

From 1948 to 1962 the value of shipments of household furniture (in 1961 dollars) rose 82 percent, or an average of 4.4 percent per year. Estimates of prospective expenditures, based on projections of per capita consumption shown in figure 15 and the population assumptions adopted in this study, indicate a further rise from an index of 100 in 1962 to 290 by 2000 (table 24). This would represent an average increase in sales of 2.8 percent annually.

TABLE 23.—*Lumber consumed in manufactured products by product group, 1948 and 1960*

[Million board feet]

Product group	1948	1960
Furniture, household	1,965	2,088
Furniture, commercial and institutional	105	173
Consumer goods, income-sensitive:		
Sports equipment	55	87
Pianos and other musical instruments	53	51
Boat building and repair	93	50
Toys and games	54	56
Trunks and luggage	28	17
Total	283	261
Consumer goods, income-insensitive:		
Hand and garden tools	68	88
Brooms and brushes	59	89
Wood pencils	66	72
Caskets and other morticians' goods	155	93
Venetian blinds and window shades	37	32
Shoe findings and lasts	57	39
Wood matches	35	1
Total	477	414
Commercial equipment:		
Refrigerators and air conditioners	38	94
Fixtures and partitions	172	99
Signs and displays	45	25
Total	255	218
Industrial machinery and equipment:		
Patterns and jigs	105	71
Truck bodies and trailers	147	54
General machinery	27	49
Agricultural implements	68	25
Electrical equipment	66	70
Textile machine supplies	22	26
Total	435	295
Miscellaneous products	392	403
All products	3,912	3,852

Source: U.S. Department of Agriculture, Forest Service, *Wood Used in Manufacture*, 1948 and 1960.

Manufactured Products Show Differing Trends in Sales

Similar analyses for other products or product groups show differing relationships with the selected economic variables. For most products the projections indicate that the ratio of expenditures to income has been declining. For some items, such as agricultural implements, declining per capita sales have not been positively correlated with any general economic indicator. Further reductions in per capita expenditures for such products were assumed.

The indexes of prospective sales from such analyses are summarized in table 24 for the various product groups. These show a range in indexes

TABLE 24.—*Indexes of value of shipments of manufactured products, by product group, 1948–2000*

[1962=100]

Product group	1948	1960	1962	Projections			
				1970	1980	1990	2000
Furniture:							
Household	55	88	100	130	175	220	290
Commercial and institutional	51	91	100	125	175	250	340
Consumer goods:							
Income-sensitive	43	91	100	150	210	285	380
Income-insensitive	110	95	100	105	110	130	140
Commercial equipment	55	91	100	130	190	255	340
Industrial machinery and equipment	68	100	100	130	180	255	335

Sources: U.S. Department of Agriculture, Forest Service. Past data derived from U.S. Department of Commerce, Bureau of the Census reports, *Annual Survey of Manufactures* and related material.

of sales for the year 2000 from a low of 140 (1962 =100) for the income-insensitive consumer goods to an index of 380 for sales of income-sensitive consumer goods.

Lumber Use Per Dollar of Sales Dropping for Most Manufactured Products

Lumber use per dollar of sales has declined in recent years for practically all wood-using products (table 25). As with manufactured products in general, greater emphasis on style and quality and rising labor costs have tended to increase sales without expanding raw material requirements.

In addition, lumber has been extensively replaced by other wood products such as particleboard and plywood, and by nonwood materials such as plastics and metals. Further decreases in lumber use per dollar of sales have been assumed. By 2000 these decreases vary from 46 percent for income-insensitive consumer goods to 70 percent for industrial machinery and equipment.

Projections Show 26 Percent Rise in Lumber Use by 2000

For all products combined, projections of lumber use rise from 4.2 billion board feet in 1962 to 5.3 billion board feet by 2000—an increase of

TABLE 25.—*Lumber use per dollar* [1] *of manufacturers' sales by product group, 1948–2000*

[Board feet]

Product group	1948	1960	1962	Projections			
				1970	1980	1990	2000
Furniture:							
Household	0.977	0.650	0.615	0.500	0.390	0.320	0.270
Commercial and institutional	.318	.266	.255	.220	.190	.160	.130
Consumer goods:							
Income-sensitive	.279	.123	.111	.080	.060	.050	.040
Income-insensitive	.276	.274	.260	.225	.180	.155	.140
Commercial equipment	.184	.095	.088	.070	.060	.050	.040
Industrial machinery and equipment	.011	.005	.005	.004	.003	.002	.0015

[1] 1961 dollars.

TABLE 26.—*Lumber consumed in manufactured products, by product group, 1928–2000*

[Million board feet]

Product group	1928	1933	1940	1948	1960	1962	Projections			
							1970	1980	1990	2000
Furniture:										
Household	1,269	718	1,323	1,965	2,088	2,255	2,360	2,450	2,620	2,890
Commercial and institutional	-------	-------	-------	105	173	182	210	240	280	320
Consumer goods:										
Income-sensitive	304	76	214	283	261	257	280	310	330	350
Income-insensitive	368	279	521	477	414	412	360	320	320	320
Commercial equipment	331	92	125	255	218	221	240	290	330	360
Industrial machinery and equipment	1,169	274	323	435	295	293	300	310	290	290
Miscellaneous products	303	118	297	392	403	620	670	700	740	750
All products	3,744	1,557	2,803	3,912	3,852	4,240	4,420	4,620	4,910	5,280

about 26 percent (table 26 and fig. 16). The projections for the various product groups, however, show widely varying increases as indicated below.

Household furniture.—In 1962 some 2.3 billion board feet of lumber, or 53 percent of the total volume used for all manufacturers, went into household furniture. The projection shows a rise to 2.9 billion board feet by 2000, an increase of 28 percent over 1962.

Commercial and institutional furniture.—Lumber consumption in the manufacture of items such as office chairs, desks, tables, and file cabinets; wood desks and other school furniture; and church furniture amounted to about 182 million board feet in 1962. In spite of a prospective drop in lumber use per dollar, the large increases projected in the total sales result in a prospective rise in consumption to 320 million board feet in 2000.

Income-sensitive consumer goods.—Included in this group are items such as sports equipment, pianos and other musical instruments, boats, toys, and luggage, for which demand has risen sharply with increased income. Projected trends in lumber use vary widely among these products, but the total rises from 257 million board feet in 1962 to 350 million board feet in 2000.

Income-insensitive consumer goods.—Because sales are not increasing in proportion to income, and other materials are replacing wood in such items as brooms and brushes, caskets, shoe findings, lasts, and matches, lumber use for income-insensitive goods was projected to fall from 412 million board feet in 1962 to 320 million in 2000.

Commercial equipment.—Lumber use in water-cooling towers and other commercial refrigerating and air-conditioning equipment has increased substantially since 1948. Use of lumber for partitions and fixtures and for signs and advertising displays, on the other hand, has been dropping, partly because of the substitution of metal and greater use of plywood, hardboard, and particleboard. Projections for the group as a whole show a rise from 221 million board feet in 1962 to 360 million in 2000.

Industrial machinery and equipment.—Use of lumber in industrial and agricultural products, such as patterns and jigs, truck bodies and trailers, machines, electrical equipment, and agricultural implements, declined from about 435 million board feet in 1948 to 290 million in 1962. Largely because of the rather substantial increase projected in sales, lumber use has been projected to remain at about the 1962 level.

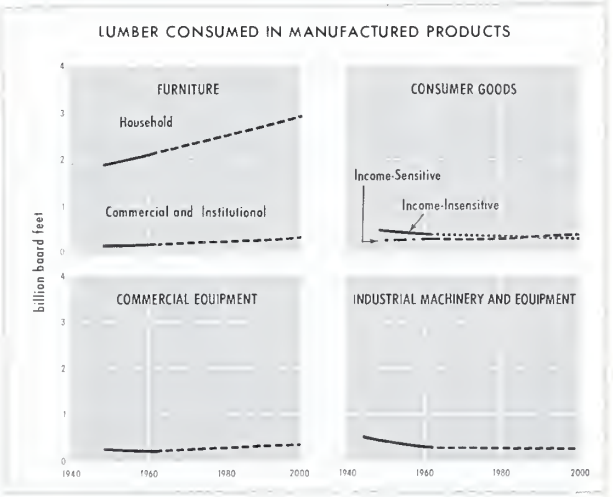


Figure 16

TABLE 27.—*Plywood and veneer consumed in manufactured products, by product group, 1948–2000*

[Million square feet, 3/8-inch basis]

Product group	1948	1960	1962	Projections			
				1970	1980	1990	2000
Furniture:							
Household	478	690	790	990	1,270	1,590	2,040
Commercial and institutional	51	87	95	110	150	220	300
Consumer goods:							
Income-sensitive	60	205	260	400	570	760	970
Income-insensitive	8	43	55	60	70	80	90
Commerical equipment	237	220	240	260	290	330	340
Industrial machinery and equipment	59	75	85	100	130	160	200
Miscellaneous products	130	282	350	400	490	570	690
All products	1,023	1,602	1,875	2,320	2,970	3,710	4,630

Miscellaneous products.—More than 600 million board feet of lumber was used in 1962 for spools and dowels, novelties, souvenirs, picture and mirror frames, ladders and scaffolding equipment, precut fencing, and other miscellaneous items. Projected demand for such miscellaneous products increases to about 750 million board feet in 2000.

Consumption of Plywood and Other Panel Products Increasing Rapidly

Consumption of plywood and veneer in the manufactured products covered in this section increased about 83 percent between 1948 and 1962, rising from slightly over a billion square feet (⅜-inch basis) to nearly 1.9 billion square feet (table 27 and fig. 17).

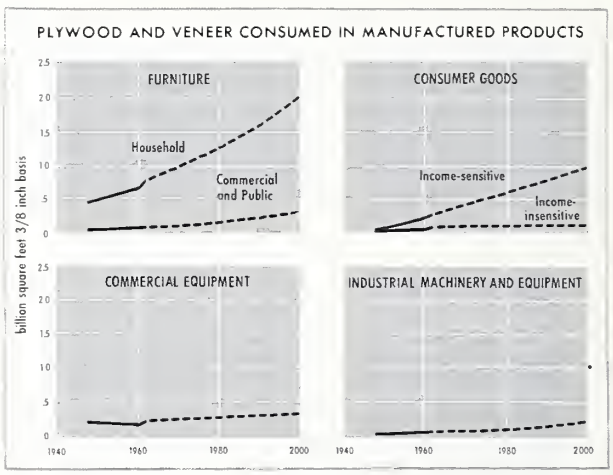


Figure 17

TABLE 28.—*Plywood and veneer use per dollar* [1] *of sales of manufactured products, by product group, 1948–2000*

[Square feet, ⅜-inch basis]

Product group	1948	1960	1962	Projections			
				1970	1980	1990	2000
Furniture:							
Household	0.238	0.215	0.215	0.210	0.200	0.195	0.190
Commercial and institutional	.141	.134	.135	.125	.125	.125	.125
Consumer goods:							
Income-sensitive	.060	.097	.110	.115	.115	.115	.110
Income-insensitive	.005	.028	.035	.035	.040	.040	.040
Commercial equipment	.171	.096	.095	.070	.060	.050	.040
Industrial machinery and equipment	.002	.001	.001	.001	.001	.001	.001

[1] 1961 dollars.

This rise was caused principally by the growth of sales, because use of plywood and veneer per dollar of shipments dropped slightly in most manufacturing industries (table 28). In the manufacture of household furniture, for example, plywood and veneer consumption fell from about 0.238 square foot (⅜-inch basis) per dollar of sales (1961 dollars) in 1948 to 0.215 square foot in 1962. In part, this reflected a rapid increase in use of particleboard and plastic laminates.

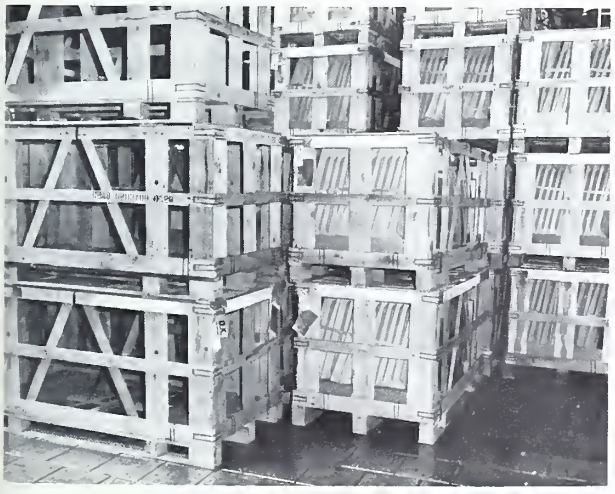
Projections for most product groups assume some further decline in the use of plywood and veneer per dollar of sales. Nevertheless, the expected growth in total sales is large enough to offset this, and projected demands for plywood and veneer rise to 4.6 billion square feet by 2000.

Consumption of hardboard, particleboard, and insulating board in manufacturing in 1962 totaled an estimated 575 million square feet (½-inch basis). Use of these products has been increasing steadily and further expansion appears to be in prospect. Projected demands for wood for these products are included in a later section on Demand for Pulpwood.

In 1960 manufacturing industries also consumed 290 million board feet of bolts that were made directly into turnery products and other manufactures. Future consumption is expected to remain at about this level. These volumes are included in a later section on Demand for Miscellaneous Timber Products.

DEMAND FOR LUMBER AND PANEL PRODUCTS IN SHIPPING

The manufacture of boxes and crates, pallets, wirebound veneer boxes, hampers, and baskets,



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Pallet containers—a growing use for wood.

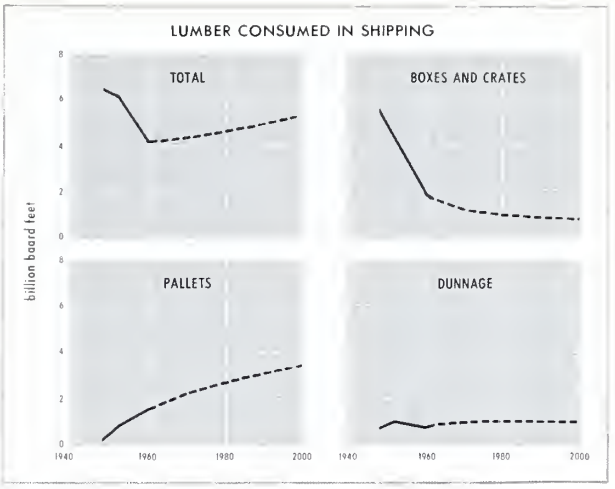

Figure 18

along with the dunnage and blocking and bracing required for the transportation, handling, and storage of industrial, agricultural, and military products represents a major market for lumber and panel products.

In 1962 lumber used in these shipping uses totaled about 4.3 billion board feet (table 29 and fig. 18). This included 1.8 billion board feet used in containers; 1.7 billion board feet in pallets; and 0.8 billion board feet in dunnage, blocking, and bracing.

Use of Lumber Containers Dropping Rapidly

Lumber used in containers has dropped substantially in recent years, largely as a result of a

TABLE 29.—*Lumber consumed in shipping, 1940–2000*

[Million board feet]

Year	Total	Boxes and crates	Pallets	Dunnage [1]
1940	----------	4,545	----------	----------
1944	----------	11,760	----------	----------
1948	6,450	5,500	200	750
1952	6,120	4,290	830	1,000
1960	4,280	1,920	1,560	800
1962	4,340	1,790	1,710	840
PROJECTIONS				
1970	4,300	1,200	2,200	900
1980	4,700	1,000	2,700	1,000
1990	5,100	900	3,200	1,000
2000	5,400	800	3,500	1,100

[1] Includes blocking and bracing.

major displacement of nailed, lock-corner, and wirebound boxes by corrugated and other fiber boxes, metal and fiber drums, and multiwall paper bags. Recent trends in use of various types of containers are indicated by the changes in manufacturers' sales between 1952 and 1962, as shown in the tabulation below.

	Percent change in sales
Nailed and lock-corner boxes	−57
Wirebound boxes	−5
Veneer containers	−15
Corrugated and solid fiber boxes	+92
Fiber cans, tubes, and drums	+104
Shipping sacks and multiwall bags	+36
Metal barrels, drums, and pails	+37

The loss of markets for wooden boxes was attributable to several factors, including high cost of materials per unit of capacity, relatively heavier weight of wooden containers, and greater difficulty in automating packaging and shipping operations. In addition, the increasing transportation of merchandise by truck and greater use of pallets have permitted use of containers that offer less protection to merchandise than wood containers. Wooden boxes and related containers have, however, continued to be used where products require special protection, as in the shipment of instruments, glass, and ceramics.

In view of continuing improvements in use and performance of corrugated and other containers, including development of wet strength fiber products, and plastic materials for shipments requiring special protection, some further substitution for nailed and lock-corner boxes is expected to occur. For all types of containers lumber use in 2000 was projected at 0.8 billion board feet—about 55 percent below the level of 1962 (table 29).

Use of Wood for Pallets Growing Steadily

Between 1952 and 1962, lumber consumption in pallets rose from 0.8 billion board feet to 1.7 billion board feet, mainly as a result of new methods of materials handling, the development of new types of pallets, and expanded construction of facilities geared to use of pallets. Although in the future several factors such as improved design may tend to reduce consumption of lumber for pallets, the increase in number of pallets built is expected to more than compensate. Lumber use for pallets built has therefore been projected from 1.7 billion board feet in 1962 to 3.5 billion board feet in 2000 (table 29).

Lumber Use for Dunnage Has Not Changed Appreciably in Last Decade But Some Increase Likely

About 840 million board feet of lumber was used as dunnage, blocking, and bracing in the loading of railway cars, ships, and trucks in 1962. Reductions in such uses have been relatively minor during the past decade in spite of trends toward palletized shipping by truck and increased bulk shipments. The demand for lumber for dunnage, blocking, and bracing has been projected to rise to about 1.1 billion board feet in 2000 (table 29).

Plywood Use in Shipping Expected to Double by 2000—Not Much Change in Veneer

Approximately 520 million square feet of plywood (⅜-inch basis) was used for the manufacture of boxes, crates, pallets, and dunnage in 1962—an increase of nearly 27 percent over 1952 (table 30). During the same decade, consumption of veneer for baskets, hampers, wirebound boxes and crates, and other containers dropped from about a billion square feet to 700 million square feet (⅜-inch basis).

On the basis of these recent trends and prospective increases in industrial and farm output, use of plywood in shipping has been projected to rise to about 1.1 billion square feet by 2000. Use of veneer has been assumed to remain at about the 1962 level.

TABLE 30.—*Plywood and veneer consumed in shipping, 1948–2000*

[Million square feet, ⅜-inch basis]

Year	Total	Plywood	Veneer
1948	1,672	312	1,360
1952	1,440	410	1,030
1960	1,140	480	660
1962	1,220	520	700
PROJECTIONS			
1970	1,400	700	700
1980	1,600	900	700
1990	1,700	1,000	700
2000	1,800	1,100	700

MISCELLANEOUS AND RESIDUAL USES OF LUMBER AND PANEL PRODUCTS

The specific end uses covered in previous sections accounted for nearly all of the apparent consumption of lumber and panel products in 1962. The remaining volumes—amounting to about a billion board feet of lumber and 0.2 billion square feet of plywood—were presumably used for a wide variety of miscellaneous purposes, including "do-it-yourself" projects such as construction of furniture, bulletin boards, and boats; the building of miscellaneous structures such as picnic tables, signs, and foot bridges; made-on-the-job advertising and display structures; wood products used for teaching woodworking in schools; and scenery and staging for theatrical productions.

Part of these residual volumes may properly belong in the statistics for construction, manufacturing, and shipping presented earlier. Some underestimate of wood use in these various categories may have occurred since the estimates were necessarily based on surveys and special studies that involve both sampling errors and unknown reporting biases.

These residual volumes are relatively small, however, and no attempt was made to allocate them to specific end uses. In the projections of wood use shown in the following section, an allowance has been made for these miscellaneous and residual items.

SUMMARY OF DEMAND PROJECTIONS FOR LUMBER

Consumption of lumber in all uses in 1962 amounted to an estimated 37.3 billion board feet (table 31). This was slightly below average consumption over the period 1948–62 (fig. 19).[22]

New residential construction has been the most important market for lumber, accounting for about 37 percent of total consumption in 1962 (table 31). Other construction accounted for another 37 percent of the total, and manufacturing and shipping each about 12 percent.

Projected Demands Rise to 53.5 Billion Board Feet by 2000

Projections of lumber demands show a gradual rise from 37.3 billion board feet in 1962 to 39.7 billion feet in 1970 and 53.5 billion feet in 2000 (table 31 and fig. 19). This upward trend assumes

[22] Data in this figure are based on Census estimates of lumber production and net imports. Forest Service estimates of lumber production in 1952 based on special surveys of log and lumber production indicated an output approximately 2 billion board feet higher than reported by the Census in that year. Forest Service estimates of saw log production in 1962 developed from both Census and local sources were approximately 1 billion board feet higher than the Census estimate of lumber production.

TABLE 31.—*Summary of lumber consumption, by end use and per capita use, 1952–2000*

End use	1952	1962	Projections			
			1970	1980	1990	2000
	Million board feet	*Million board feet*	*Million board feet*	*Million board feet*	*Million board feet*	*Million board feet*
Construction:						
Residential	13,010	13,960	14,400	15,900	17,900	20,600
Nonresidential	5,400	5,000	6,000	6,900	8,000	9,200
Upkeep and improvements	5,700	5,400	5,900	6,500	7,100	7,800
Farming	4,500	2,000	1,900	1,900	1,900	1,900
Railroads	2,000	940	1,500	1,500	1,500	1,500
Mining	780	330	300	300	400	400
Total	31,390	27,630	30,000	33,000	36,800	41,400
Manufactured products	3,950	4,240	4,400	4,600	4,900	5,300
Shipping and materials handling	6,120	4,340	4,300	4,700	5,100	5,400
Miscellaneous and residual		1,090	1,000	1,100	1,200	1,400
Total use	41,460	37,300	39,700	43,400	48,000	53,500
	Board feet	*Board feet*	*Board feet*	*Board feet*	*Board feet*	*Board feet*
Total use per capita	263	200	191	180	171	165

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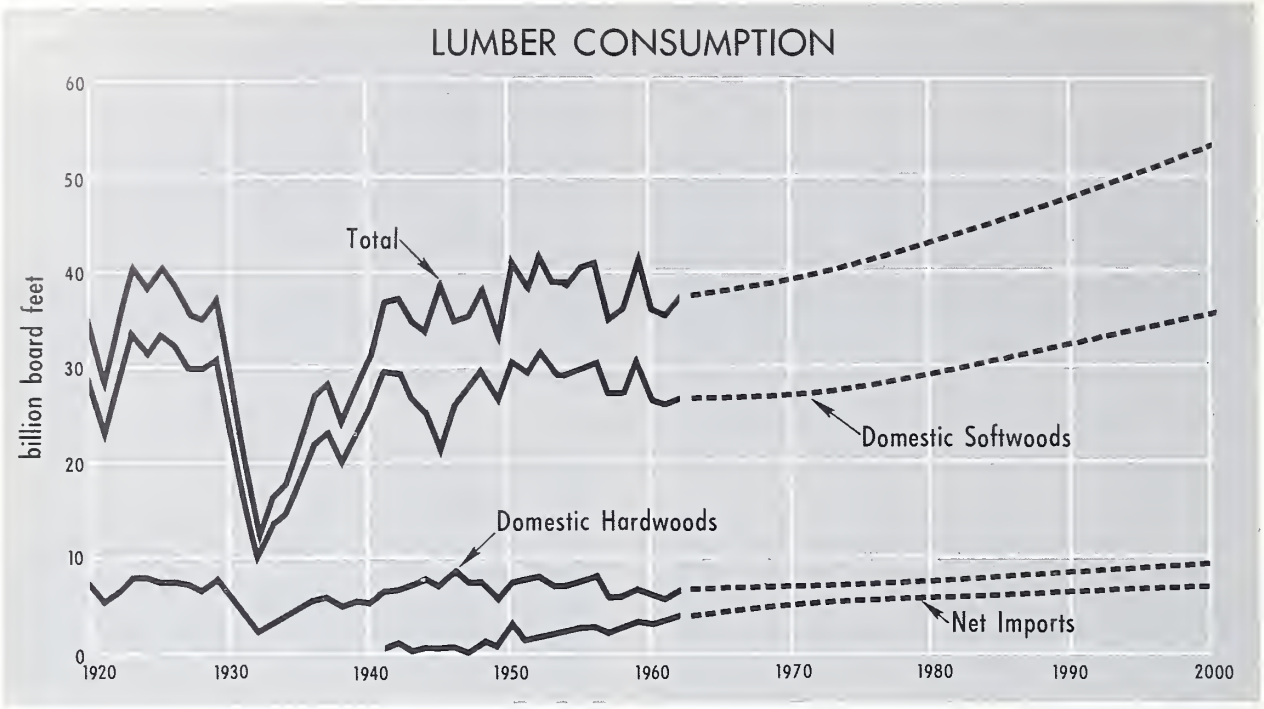

Figure 19

TABLE 32.—*Lumber consumption, net imports, and domestic production, by softwoods and hardwoods, 1920–2000*

[Billion board feet]

Year	All species			Softwoods			Hardwoods		
	Consumption	Net [1] imports	Domestic production	Consumption	Net [1] imports	Domestic production	Consumption	Net [1] imports	Domestic production
1920	34.7	(0.3)	35.0	27.4	(0.2)	27.6	7.3	(0.1)	7.4
1930	28.1	(1.2)	29.3	22.4	(.8)	23.2	5.7	(.4)	6.1
1940	31.0	(.2)	31.2	25.5	(.1)	25.6	5.5	(.1)	5.6
1950	40.9	2.9	38.0	33.3	2.7	30.6	7.6	.2	7.4
1952	41.5	1.8	39.7	33.2	1.7	31.5	8.1	.1	8.0
1960	36.0	3.1	32.9	29.6	2.9	26.7	6.4	.1	6.2
1962	37.3	4.1	33.2	30.8	4.0	26.8	6.5	.2	6.4
PROJECTIONS									
1970	39.7	5.1	34.6	32.2	4.9	27.3	7.5	0.2	7.3
1980	43.4	5.8	37.6	35.2	5.5	29.7	8.2	.3	7.9
1990	48.0	6.5	41.5	38.9	6.1	32.8	9.1	.4	8.7
2000	53.5	7.0	46.5	43.3	6.5	36.8	10.2	.5	9.7

[1] Figures in parentheses are net exports.

NOTE: Individual columns may not add to totals because of rounding.

Sources: U.S. Department of Commerce, Bureau of the Census, except 1952 figure for domestic production which is a Forest Service estimate based on special surveys of log and lumber production that indicated an output approximately 2.2 billion board feet higher than reported by the Census in that year. Projections: U.S. Department of Agriculture, Forest Service.

in effect that substitution of other materials for lumber in housing, shipping, and other uses will proceed at a slower pace in the future than in the past, and that such displacement of lumber will be more than offset by growth factors associated with the projected major expansion of the Nation's economy.

Domestic Production Nearly 90 Percent of Consumption in 1962

The domestic lumber industry supplied 89 percent of the lumber consumed in 1962 and net imports 11 percent. Net imports of 4.1 billion board feet represented a peak in a trend that has been rising fairly rapidly since World War II (table 32 and fig. 19).

Total imports in 1962 included 4.6 billion board feet of softwoods and 0.3 billion board feet of hardwoods, both obtained chiefly from Canada. Lumber exports in 1962 included 0.6 billion board feet of softwoods and 0.1 billion board feet of hardwoods.

Net imports have been projected to rise to 7 billion board feet by 2000—roughly the same proportion of total consumption as in 1962. Production of domestic lumber is projected from about 33 billion board feet in 1962 to 46.5 billion board feet by 2000.

Softwoods Compose 83 Percent of Total Lumber Consumption

Softwoods accounted for 83 percent of the lumber used in 1962—about the same proportion that has prevailed over the past 40 years (table 32). Trends in lumber markets, as described in earlier sections, indicate little prospective change in this proportion.

For some years after World War II, used lumber was of considerable importance in urban areas of the East and in farming areas, both for upkeep and improvements and for new construction. Such reuse of materials from demolished buildings has declined sharply, however, largely as a result of mechanized demolition. Projections of lumber demand developed in this section are therefore considered as applying to new lumber.

Projected Per Capita Consumption Drops 18 Percent by 2000

Per capita consumption of lumber has dropped materially in the past few decades from about 325 board feet in 1920 to 263 board feet in 1952 and 200 board feet in 1962 (table 31 and fig. 20). The

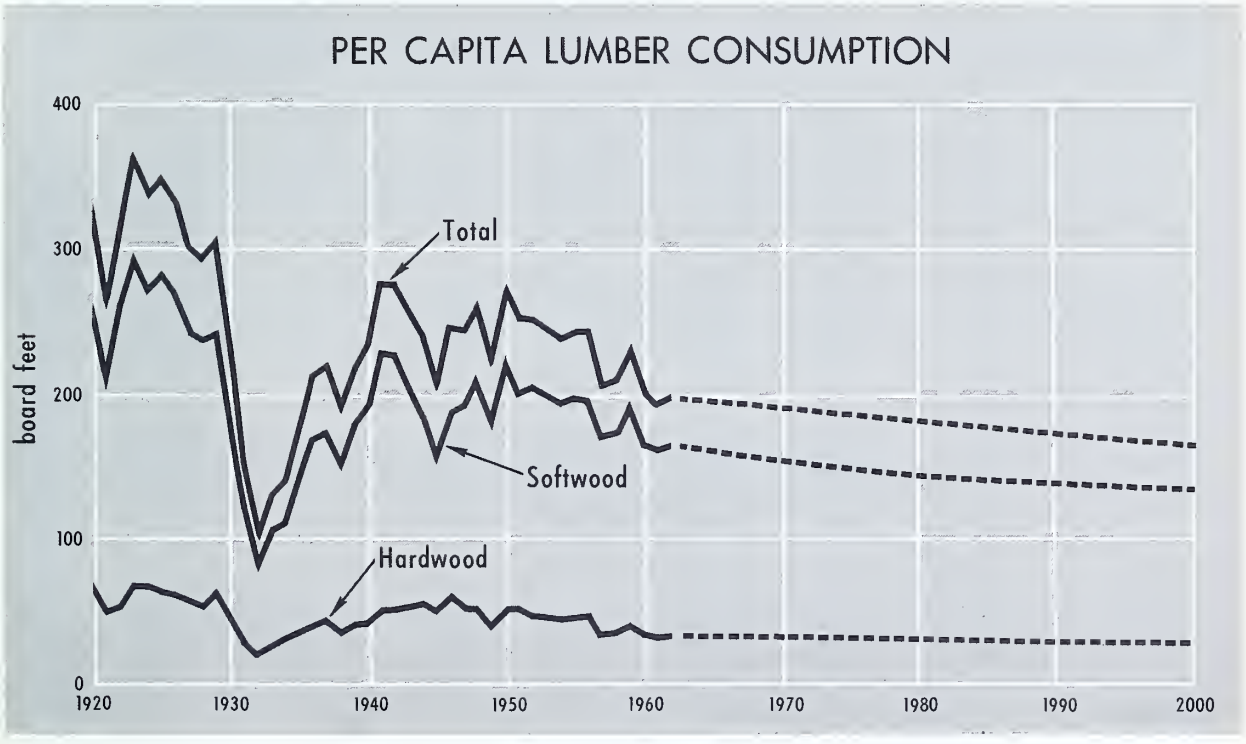

Figure 20

projection of lumber demand adopted in this study shows a continued decline to 191 board feet per capita in 1970 and 165 board feet in 2000.

SUMMARY OF DEMAND PROJECTIONS FOR PLYWOOD AND VENEER

Consumption of plywood and veneer for the various end uses described earlier totaled 12 billion square feet (⅜-inch basis) in 1962 (table 33). Residential construction was the most important single use, followed by nonresidential construction, manufactured products, and upkeep and improvements.

Softwood plywood consumption, together with small amounts of softwood veneer, totaled about 9.3 billion square feet in 1962—77 percent of the total of all species used. The major market for this plywood was residential construction.

Consumption of hardwood plywood and veneer amounted to 2.8 billion square feet in 1962—23 percent of the total. Hardwood plywood has been used primarily for paneling and containers. Most of the hardwood veneer has been used in furniture and containers.

Projected Demand for Plywood and Veneer Increases 2.6 Times by 2000

Projected demands for plywood and veneer rise from 12 billion square feet in 1962 to 31.5 billion square feet in 2000 (table 33 and fig. 21). Use of softwood plywood and veneer is projected at 23.5 billion square feet—about 75 percent of total consumption—and hardwood plywood and veneer at 8 billion square feet.

Per capita use of plywood and veneer has been rising steadily from 33 square feet in 1952 to 64 square feet in 1962. This is projected to 97 square feet in 2000 (fig. 22).

The volume of logs used in production of the veneer and plywood consumed in the United States

TABLE 33.—*Summary of plywood and veneer consumption, by end use, species group, and per capita use, 1962–2000*

[⅜-inch basis]

Item	1962	Projections			
		1970	1980	1990	2000
BY END USE					
Construction:	*Million square feet*	*Million square feet*	*Million square feet*	*Million square feet*	*Million square feet*
Residential	4,170	5,300	6,600	7,900	9,500
Nonresidential	2,800	4,700	5,600	6,800	8,500
Upkeep and improvements	1,500	2,600	3,000	3,400	3,800
Farming and railroads	260	400	500	600	700
Total	8,730	13,000	15,700	18,700	22,500
Manufactured products	1,870	2,300	3,000	3,700	4,600
Shipping and materials handling	1,220	1,400	1,600	1,700	1,800
Miscellaneous and residual	200	1,200	1,700	2,400	2,600
Total use	12,020	17,900	22,000	26,500	31,500
BY SPECIES GROUP					
Softwoods	9,250	14,400	17,000	20,000	23,500
Hardwoods	2,770	3,500	5,000	6,500	8,000
Total	12,020	17,900	22,000	26,500	31,500
PER CAPITA					
	Square feet	*Square feet*	*Square feet*	*Square feet*	*Square feet*
Total use	64	86	91	95	97

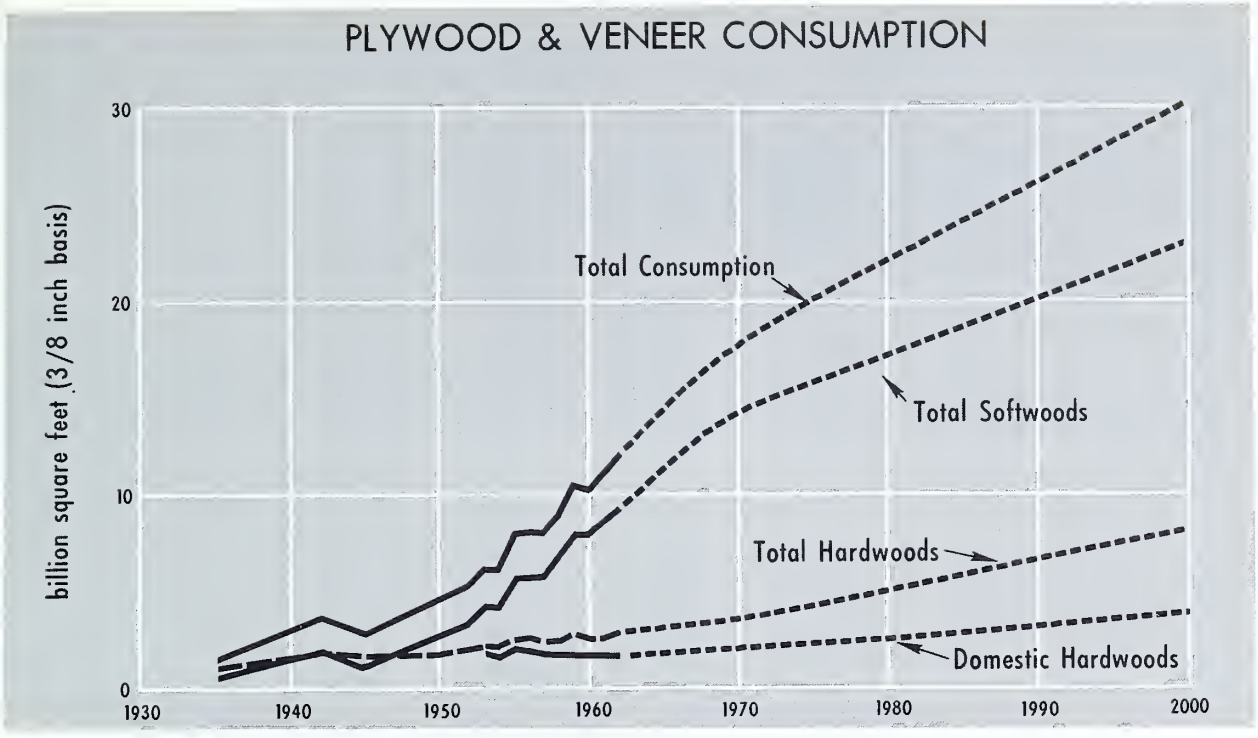

Figure 21

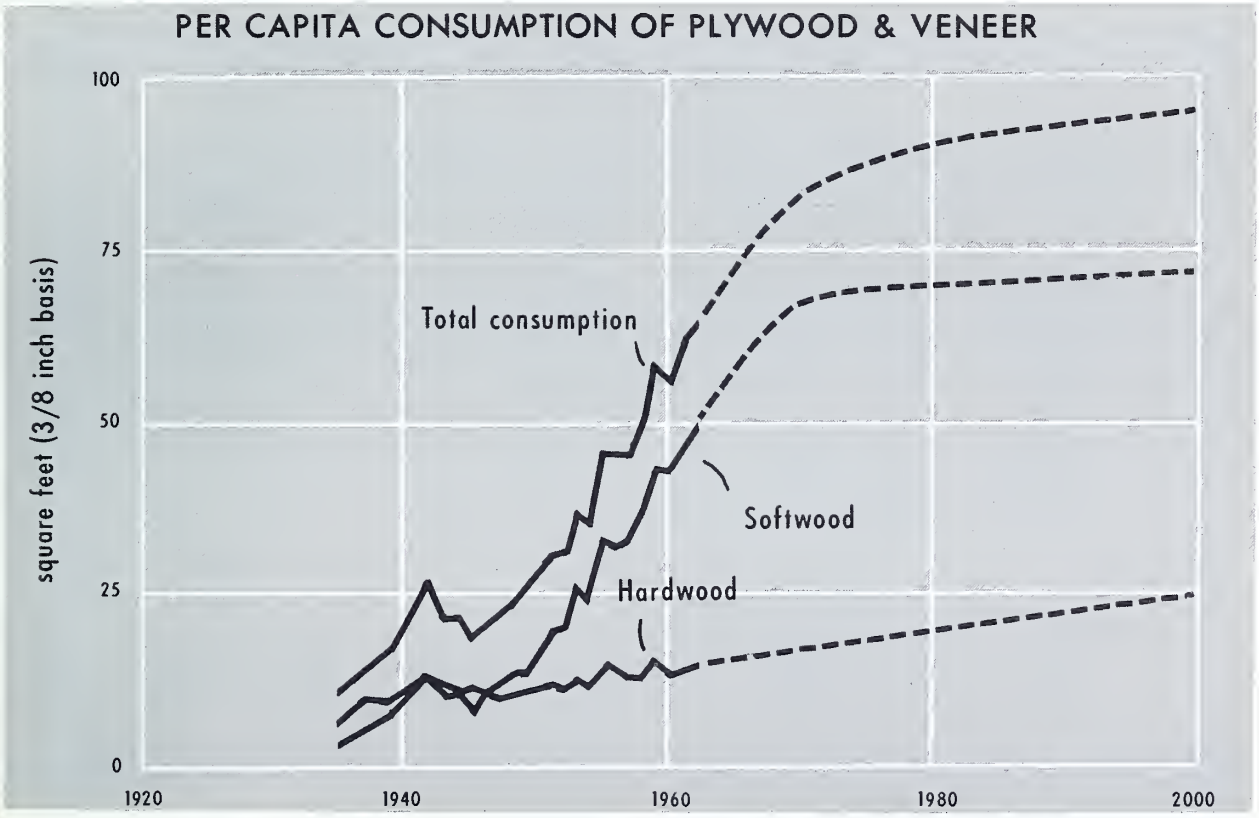

Figure 22

in 1962 amounted to 6.8 billion board feet (table 34). Projected demands for veneer and plywood in 2000 would require about 18.3 billion board feet of logs—some 2.7 times the level of consumption in 1962.

Softwood logs are expected to account for most of the increase, with use rising from 4.9 billion board feet in 1962 to 12.4 billion board feet in 2000. The volume of hardwood logs required to meet projected demands for hardwood veneer and plywood rises from 1.8 billion board feet in 1962 to 5.9 billion board feet in 2000.

Imports Provided 46 Percent of Hardwood Veneer and Plywood in 1962

Imports of hardwood plywood and veneer (table 34) have become of substantial importance, increasing from the equivalent of 13 percent of hardwood veneer log requirements in 1952 to 46 percent in 1962. Hardwood plywood from Japan and other foreign countries has accounted for most of these imports, with smaller amounts from Canada. Imports of hardwood logs have been of some importance in the past but have declined to the point where log exports in 1962 exceeded imports by a small margin.

In the domestic hardwood plywood and veneer industry the chief species utilized are gum, yellow birch, oak, hard maple, yellow-poplar, cherry, and walnut. Supplies of veener logs of these choice species have been declining—explaining in part the recent major rise in use of imported veneer and plywood. Continued heavy dependence on foreign sources of veneer logs has therefore been assumed.

Domestic softwood logs are the raw material for practically all of the softwood plywood and veneer consumed in the United States. Douglas-fir is the major species used in the manufacture of softwood plywood, making up 88 percent of the total softwood veneer logs used in 1962. An increasing variety of other softwoods are being utilized, however, including western hemlock, western pines, larch, true firs, redwood, cedar, and southern pines. Although changes in plywood tariffs might affect the outlook, it has been assumed that softwood plywood markets in the United States will continue to be supplied almost entirely by the domestic industry.

TABLE 34.—*Consumption, net imports, and domestic production of plywood and veneer in terms of log requirements, 1935–2000*

[Million board feet, International ¼-inch log scale [1]]

Year	All species			Softwoods			Hardwoods		
	Consumption	Net imports [2]	Production	Consumption	Net imports [2]	Production	Consumption	Net imports [2]	Production
1935	986	(11)	997	386	[3] (22)	408	600	11	589
1942	2,084	(27)	2,111	956	----------	956	1,128	(27)	1,155
1945	1,650	(21)	1,671	618	(37)	655	1,032	16	1,016
1952	3,082	148	2,934	1,851	(7)	1,858	1,231	155	1,076
1955	4,561	513	4,048	2,913	(4)	2,917	1,648	517	1,131
1960	5,784	640	5,144	4,142	6	4,136	1,642	634	1,008
1961	6,254	670	5,584	4,611	8	4,603	1,643	662	981
1962	6,776	860	5,916	4,938	6	4,932	1,838	854	984
PROJECTIONS									
1970	10,300	1,300	9,000	7,600	----------	7,600	2,700	1,300	1,400
1980	12,500	1,900	10,600	8,900	----------	8,900	3,600	1,900	1,700
1990	15,300	2,600	12,700	10,500	----------	10,500	4,800	2,600	2,200
2000	18,300	3,400	14,900	12,400	----------	12,400	5,900	3,400	2,500

[1] Converted from local log rule basis by factor of approximately 1.20 for softwoods and 1.25 for hardwoods.

[2] Includes net imports of plywood and veneer; net imports of hardwoods also include logs. Figures in parentheses are net exports.

[3] Includes mixed plywoods not specified by species.

Sources: U.S. Department of Agriculture, Forest Service, and U.S. Department of Commerce, Bureau of the Census.

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Pulpwood production is important in most sections of the country.

DEMAND FOR PULPWOOD

About 25 percent of the domestic roundwood cut in 1962, plus substantial amounts of plant byproducts, was used in the production of wood pulp. In estimating future demands for pulpwood, projections were first developed for the major grades of paper and board. These estimates were then converted into required amounts of wood pulp, to which were added estimates for wood pulp used in the manufacture of nonpaper products. The final step was to convert these total wood pulp requirements into volumes of pulpwood.

Consumption of Paper and Board Increasing Rapidly

Total consumption of all grades of paper and board in 1962 amounted to 42.4 million tons (table 35). This was 2½ times the level of 1940, and more than five times the tonnage used in 1920.

Container board was the most important individual grade, accounting for 22 percent of the total 1962 consumption. This was followed by newsprint (18 percent), bending board (12 percent), coarse and industrial paper (12 percent), and other grades (36 percent).

Projections of demand derived from a statistical analysis of recent trends in consumption of the major grades of paper and board rise from 42.4 million tons in 1962 to 52.7 million tons in 1970 (table 35 and fig. 23). This is somewhat below projections recently made by the Department of Commerce,[23] which show a total projected demand ranging between 55.6 and 61.8 million tons by 1970, and a "medium" projection of 54.9 million tons published in a recent study by Resources for the Future, Inc.[24]

Projected demand in 2000 is estimated at 115.5 million tons—about 2.7 times consumption in 1962. Per capita demand is projected to rise from 456 pounds in 1962 to 711 pounds in 2000 (table 36 and fig. 23).

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[23] Report of the Committee on Interstate and Foreign Commerce, *Pulp, Paper and Board Supply-Demand*, 1963, (88th Cong., 1st sess., House Report No. 693).

[24] Resources For The Future, Inc. *Resources in Americas Future, Patterns of Requirements and Availabilities, 1960–2000.* The Johns Hopkins Press, 1962. 1017 pp.

TABLE 35.—*Paper and board consumption by grade, 1920–2000*

[Million tons]

Year	Total paper and board	Paper								Board				
		Total paper	Newsprint	Groundwood paper	Book paper[1]	Fine paper	Coarse and industrial paper	Sanitary and tissue paper	Construction paper	Total board	Container board	Bending board	Building board	Other board
1920	7.8	5.5	2.2	0.2	0.9	0.4	1.2	0.2	0.4	2.3				
1930	12.3	8.4	3.5	.2	1.4	.7	1.8	.4	.5	3.9	1.9	1.0	0.1	0.9
1940	16.8	10.6	3.7	.6	1.6	.7	2.6	.7	.7	6.2	3.3	1.4	.2	1.3
1950	29.1	16.8	5.9	.7	2.6	1.2	3.7	1.4	1.4	12.3	5.8	3.1	1.2	2.1
1960	39.2	22.0	7.3	.9	3.8	1.8	4.7	2.2	1.4	17.2	8.2	4.6	1.9	2.5
1962	42.3	23.2	7.5	.9	4.0	2.0	5.0	2.4	1.4	19.1	9.5	4.8	2.1	2.8
PROJECTIONS														
1970	52.7	28.3	9.0	1.0	5.0	2.4	6.0	3.2	1.6	24.4	12.0	6.7	2.7	3.1
1980	69.3	36.4	11.2	1.2	6.6	3.3	7.7	4.7	1.7	32.9	16.5	9.0	3.7	3.6
1990	90.0	46.3	13.9	1.3	8.8	4.3	9.8	6.4	1.8	43.7	22.1	12.2	5.2	4.2
2000	115.5	58.5	17.1	1.5	11.4	5.7	12.4	8.6	1.9	57.0	29.2	16.1	6.8	4.9

[1] Includes coated printing and converting paper.

NOTE: Figures in columns may not add to totals because of rounding.

Sources: 1920–40, American Paper and Pulp Association, *The Statistics of Paper*, 1960, reporting statistics published by the U.S. Department of Commerce, and Report of the Committee on Interstate and Foreign Commerce, *Pulp, Paper and Board Supply-Demand*, August 21, 1963 (88th Cong., 1st sess., Union Calendar No. 292, House Report 693). 1950–62, U.S. Department of Commerce, Bureau of the Census, Current Industrial Reports, *Pulp, Paper and Board*, Annual, and Business and Defense Services Administration, *Pulp, Paper and Board*, Quarterly. Projections, U.S. Department of Agriculture, Forest Service.

TABLE 36.—*Per capita consumption of paper and board, by grade, 1920–2000*

[Pounds]

Year	Total paper and board	Paper								Board				
		Total paper	Newsprint	Groundwood paper	Book paper[1]	Fine paper	Coarse and industrial paper	Sanitary and tissue paper	Construction paper	Total board	Container board	Bending board	Building board	Other board
1920	146	103	41	3	17	8	23	4	7	43				
1930	201	137	57	4	22	12	29	6	7	64	30	17	2	15
1940	255	162	57	9	25	11	39	11	10	93	50	21	2	20
1950	382	221	77	9	34	15	49	18	19	161	76	41	16	28
1960	434	243	81	10	42	19	52	24	15	191	91	51	21	28
1962	453	249	80	10	43	22	53	26	15	204	101	51	22	30
PROJECTIONS														
1970	507	272	87	10	48	23	58	31	15	235	115	64	26	30
1980	575	302	93	10	55	27	64	39	14	273	137	75	31	30
1990	643	331	99	9	63	31	70	46	13	312	158	87	37	30
2000	711	360	105	9	70	35	76	53	12	351	180	99	42	30

[1] Includes coated printing and converting paper.

NOTE: Figures in columns may not add to totals because of rounding.

Sources: 1920–40, American Paper and Pulp Association, *The Statistics of Paper*, 1960, reporting statistics published by the U.S. Department of Commerce, and Report of the Committee on Interstate and Foreign Commerce, *Pulp, Paper and Board Supply-Demand*, August 21, 1963. (88th Cong., 1st sess., Union Calendar No. 292, House Report 693.) 1950–62, U.S. Department of Commerce, Bureau of the Census, Current Industrial Reports, *Pulp, Paper and Board*, Annual, and Business and Defense Services Administration, *Pulp, Paper and Board*, Quarterly. Projections, U.S. Department of Agriculture, Forest Service.

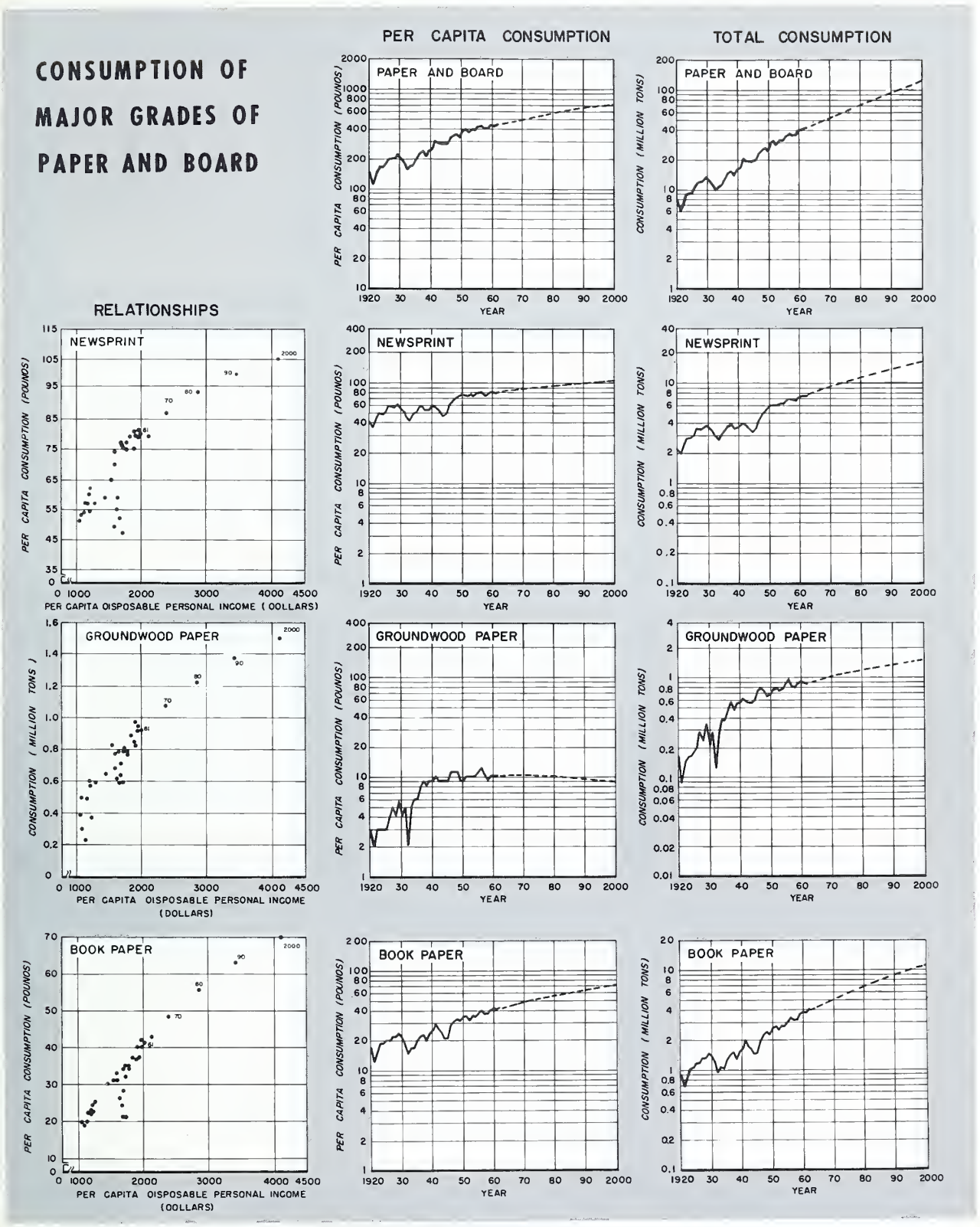
CONSUMPTION OF MAJOR GRADES OF PAPER AND BOARD
RELATIONSHIPS
PER CAPITA CONSUMPTION
TOTAL CONSUMPTION
PAPER AND BOARD
NEWSPRINT
GROUNDWOOD PAPER
BOOK PAPER
PER CAPITA CONSUMPTION (POUNDS)
CONSUMPTION (MILLION TONS)
PER CAPITA DISPOSABLE PERSONAL INCOME (DOLLARS)
PER CAPITA DISPOSABLE PERSONAL INCOME (DOLLARS)
YEAR

Figure 23

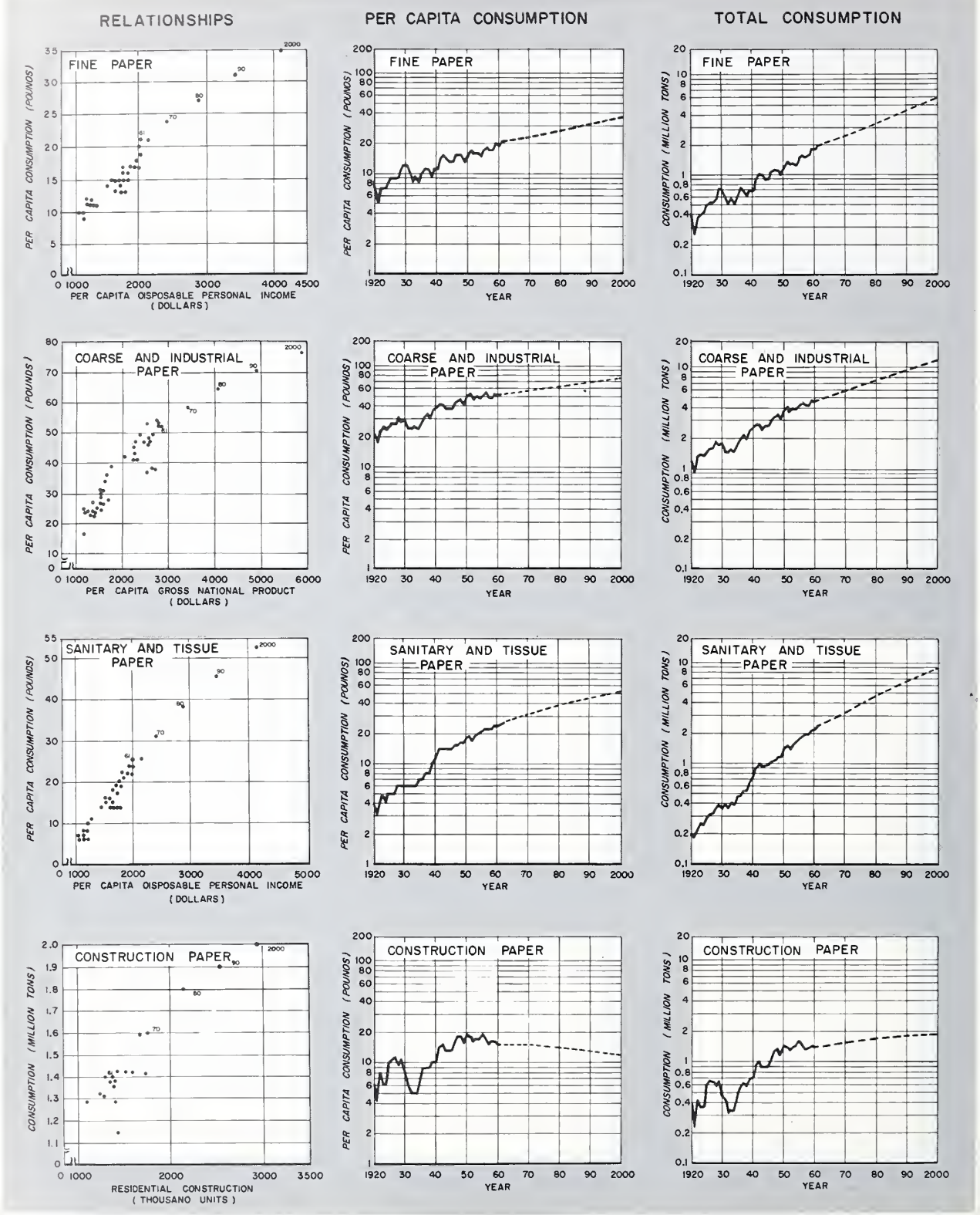
RELATIONSHIPS
PER CAPITA CONSUMPTION
TOTAL CONSUMPTION
FINE PAPER
PER CAPITA CONSUMPTION (POUNDS)
PER CAPITA DISPOSABLE PERSONAL INCOME (DOLLARS)
CONSUMPTION (MILLION TONS)
YEAR
COARSE AND INDUSTRIAL PAPER
PER CAPITA GROSS NATIONAL PRODUCT (DOLLARS)
SANITARY AND TISSUE PAPER
CONSTRUCTION PAPER
RESIDENTIAL CONSTRUCTION (THOUSAND UNITS)

Figure 23

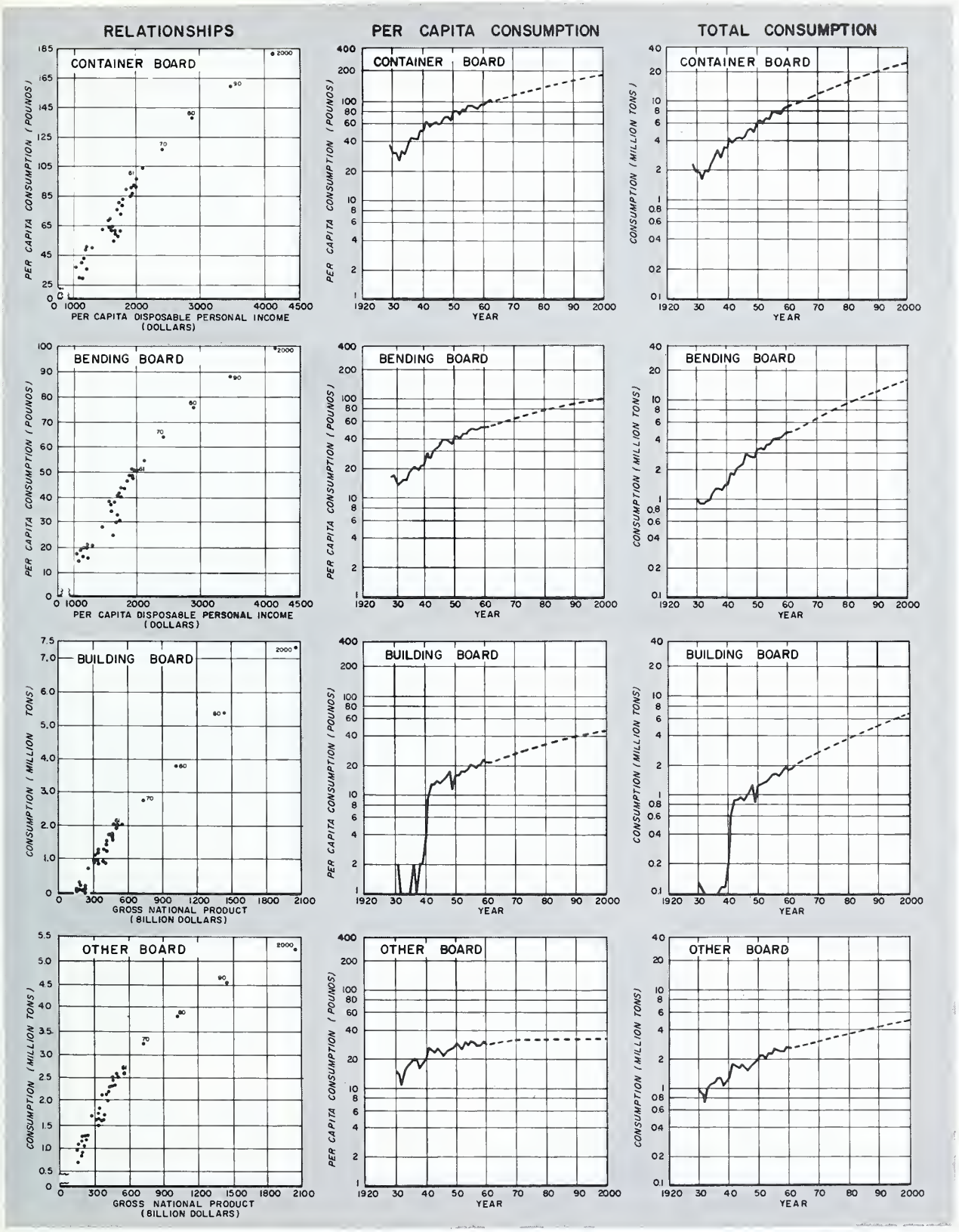
RELATIONSHIPS
PER CAPITA CONSUMPTION
TOTAL CONSUMPTION
CONTAINER BOARD
BENDING BOARD
BUILDING BOARD
OTHER BOARD
PER CAPITA CONSUMPTION (POUNDS)
CONSUMPTION (MILLION TONS)
PER CAPITA DISPOSABLE PERSONAL INCOME (DOLLARS)
GROSS NATIONAL PRODUCT (BILLION DOLLARS)
YEAR

Figure 23

Projected Demands for Most Grades of Paper and Board Substantially Above Present Levels

Projections of demand for individual grades of paper and board indicate rather wide variations in rates of growth.

Newsprint.—About 90 percent of the newsprint consumed in the United States is used in printing newspapers. Most of the remainder goes into comic books, handbills, shopping news, and similar items. Between 1950 and 1962, consumption of newsprint increased from 5.9 million tons to 7.4 million tons, while per capita consumption rose from 77 pounds to 80 pounds. Projections of per capita demand show a further rise to 105 pounds by 2000. This projected increase in per capita use, together with the assumed population of 325 million persons, indicates a total demand for newsprint in 2000 of approximately 17.1 million tons.

Groundwood paper.—Most groundwood paper is used in printing catalogs, directories, periodicals, and books, or consumed in the manufacture of products such as sales books, office forms, and adding machine paper. Consumption of this grade has slowly increased from 0.7 million tons in 1950 to 0.9 million tons in 1962. Projections indicate a further slow increase to about 1.5 million tons in 2000.

Book paper.—Book paper, including coated printing and converting paper, is composed of a large group of papers used in printing books, magazines, brochures, pamphlets, and similar items or in the manufacture of products such as envelopes and tablets. Total consumption increased from 2.6 million tons in 1950 to 4.0 million tons in 1962, and per capita consumption from 34 pounds to 43 pounds. Projected per capita demand in 2000 is 70 pounds and total demand 11.4 million tons.

Fine paper.—Fine paper includes a variety of writing papers, manifold and onionskin papers, cover and text papers, and various kinds of index and printed cards. In the 1950–62 period, total consumption rose from about 1.2 million tons to nearly 2 million tons, and per capita consumption from 15 to 22 pounds. Per capita demand is projected to 35 pounds in 2000 and total demand to 5.7 million tons.

Coarse and industrial paper.—Coarse paper is used for shipping sacks, bags, wrapping paper, glassine and vegetable parchment papers, creping papers, and envelope stock. Industrial paper is used for products such as cable paper, tabulating cards, tags, blotting paper, filter paper, abrasive paper, and special absorbent paper. Between 1950 and 1962 total consumption of these papers increased from 3.7 to 5.1 million tons. Per capita consumption in the same period rose from 49 pounds to 54 pounds. Projections indicate a further rise in per capita demand to 76 pounds, and in total demand to 12.4 million tons in 2000.

Sanitary and tissue paper.—This group includes tissues, towels, napkins, and related papers. Total consumption in 1962 amounted to 2.4 million tons, a million tons above the 1.4 million tons used in 1950. In the same period, per capita consumption rose from 18 pounds to 26 pounds. Per capita demand in 2000 has been projected to 53 pounds and total demand to 8.6 million tons.

Construction paper.—Construction paper is largely composed of roofing felts, with smaller amounts of related building papers. Consumption in 1962 amounted to 1.4 million tons, about the same as in 1950. Per capita consumption in this period showed a decline from 19 pounds to 15 pounds. Projections show a continued decline in per capita demand to 12 pounds by 2000, but an increase in total demand to about 1.9 million tons.

Container board.—Container board, the most important grade of paper and board in terms of tonnage, is used for solid-fiber and corrugated shipping containers. Consumption in 1962 amounted to 9.5 million tons—nearly double the 5.8 million tons consumed in 1950. Per capita consumption in the same period rose from 76 pounds to 102 pounds. Projections indicate a further rise in per capita use to 180 pounds by 2000, and in total demand to 29.2 million tons. Although these are large increases, the projected annual rate of growth in consumption drops from a trend level average of 4.5 percent in 1947–62 to 2.8 percent in the 1990's.

Bending board.—Bending board includes both folding boxboard used in the manufacture of folding cartons and special food board used in the manufacture of containers for such items as frozen foods and hot and cold drinks. Between 1950 and 1962, the use of bending board rose from 3.1 million tons to 5.0 million tons, while per capita consumption increased from 41 pounds to 53 pounds. Per capita demand has been projected to 99 pounds in 2000, and total demand to 16.1 million tons.

Building board.—Previous sections have indicated the growing importance of building board, i.e., insulation board, hardboard, and particleboard. As shown in the following tabulation, the primary end use for building board in 1962 was residential construction, followed by nonresidential construction.

End use:	*Billion square feet, ½-inch basis*
Residential construction	1.7
Nonresidential construction	1.0
Upkeep and improvements	.6
All construction	3.3
Manufactured products	.6
Miscellaneous and residual	.2
All uses	4.1

There have been divergent trends in consumption of the three major types of building board in recent years (table 37). Insulation board, used largely for residential sheathing, has not shown much change, averaging 2.7 billion square feet per year from 1952 to 1962. In contrast, consumption of hardboard in furniture, fixtures, millwork and cabinets, doors, paneling, siding, advertising displays, lockers, and various other products roughly tripled in the same period. Use of particleboard as core stock in wood veneer and plastic-overlay furniture and such items as panels, fixtures, doors, sheathing, and underlayment also showed a rapid increase from about 105 million square feet in 1955 to over 600 million square feet in 1962.

Since 1947 there has been a fairly close relationship between per capita consumption of building boards and per capita gross national product. On the basis of this relationship and the analysis of demands for building board for individual end uses presented in earlier sections, it has been estimated that demands for building board by 2000 will be about 3.2 times the level of 1962. Measured in tons, projected demands for insulation and hardboard rise from 2.1 million tons in 1962 to 6.8 million tons in 2000. Projected per capita use rises from 23 pounds to 42 pounds.

TABLE 37.—*Apparent consumption of building board, 1947–62*

[Million square feet, ½-inch basis]

Year	Total	Insulation board	Hardboard	Particleboard
1947	2,277	2,091	186	----
1950	2,512	2,284	228	----
1952	2,507	2,262	245	----
1955	3,456	2,958	393	105
1960	3,787	2,843	542	402
1961	3,936	2,882	575	479
1962	4,085	2,720	760	605

Source: U.S. Department of Commerce, Bureau of the Census.

Other board.—The term "other board" includes setup boxboard used in such products as shoe boxes; tube, can and drum stock; liners for gypsum plasterboard; cardboard; wet machine board; and other miscellaneous grades. Consumption of this group of products rose from 2.1 million tons in 1950 to 2.5 million tons in 1955—a level that was maintained without substantial change through 1962. Per capita consumption also increased in the 1950–55 period from 28 to 30 pounds but subsequently declined to 28 pounds in 1962. Projected demands show a slight rise in per capita use to 30 pounds and a total demand of 4.9 million tons by 2000.

Nearly Nine-Tenths of U.S. Paper and Board Consumption Supplied by Domestic Industry

In 1962 nearly 90 percent of the paper and board consumed in the United States, or 37.6 million tons, was supplied by domestic mills (table 38). Total imports, consisting chiefly of newsprint, totaled about 5.8 million tons and exports about 1 million tons. Both imports and exports have increased steadily since 1950, while net imports have shown little change.

TABLE 38.—*Consumption, net imports, and domestic production of paper and board, 1920–2000*

[Million tons]

Year	Consumption	Net imports	Domestic production
1920	7.8	0.6	7.2
1930	12.3	2.1	10.2
1940	16.8	2.3	14.5
1950	29.1	4.7	24.4
1960	39.2	4.8	34.4
1962	42.4	4.8	37.6
PROJECTIONS			
1970	52.7	5.2	47.5
1980	69.3	5.6	63.7
1990	90.0	5.9	84.1
2000	115.5	7.2	108.3

Sources: 1920–50, American Paper and Pulp Association, *The Statistics of Paper*, 1960, reporting statistics published by the U.S. Department of Commerce. 1960–62, U.S. Department of Commerce, Bureau of the Census, Current Industrial Reports, *Pulp, Paper and Board*, Annual, and Business and Defense Services Administration, *Pulp, Paper and Board*, Quarterly. Projections, U.S. Department of Agriculture, Forest Service.

Large increases in potential demands for paper and board are in prospect in various regions of the world, according to a recent study of the FAO.[25] Because of limited supplies of pulping materials in many countries and the relatively advanced technology of pulp and paper production in Canada and the United States, it seems likely that both the United States and Canada will be able to export increasing tonnages of paper and board products as well as wood pulp. Some further increases in U.S. imports from Canada, particularly newsprint, are also considered likely. The net effect of these anticipated trends would be to increase both net imports and domestic production (table 38).

New Wood Pulp is the Principal Fibrous Material Used in the Manufacture of Paper and Board

Some 28.6 million tons of wood pulp was consumed by U.S. paper and board mills in 1962—about 74 percent of all fibrous materials used by the U.S. paper and board industry (table 39). Consumption of waste paper amounted to 9.1 million tons, and other fibers such as rags, straw, and bagasse 1.0 million tons.

[25] Food and Agriculture Organization of the United Nations, *World Demand for Paper to 1975*. Rome, 1960.

Wood pulp has been displacing other fibrous materials in the manufacture of paper and board. Between 1950 and 1962, for example, the use of wood pulp per ton of paper and board produced in the United States increased from an average of 0.68 ton to 0.76 ton (table 39 and fig. 24). In the same period, use of waste paper per ton of paper and board produced declined from 0.33 ton to 0.24 ton. Other fibrous materials such as straw, bagasse, and rags dropped from 0.06 ton to about 0.03 ton.

On the basis of recent trends in use of fibrous materials in the manufacture of each of the 11 major grades of paper and board, it was estimated that average use of wood pulp per ton of paper and board produced would rise to about 0.83 ton by 2000 (table 39 and fig. 24). Use of waste paper per ton was assumed to drop to about 0.17 ton, and other fibrous materials to about 0.02 ton.

Demand for Wood Pulp May Total 91 Million Tons by 2000

Estimates of prospective wood pulp requirements for domestic manufacture of paper and board (plus small quantities of pressed and molded pulp goods) based upon the projections of domestic

TABLE 39.—*Fibrous materials consumed in the manufacture of paper and board, 1919–2000*

Year	Consumption of fibrous materials				Consumption of fibrous materials per ton of paper and board produced			
	Total	Wood pulp	Waste paper	Other	Total	Wood pulp	Waste paper	Other
	Million tons	*Million tons*	*Million tons*	*Million tons*	*Tons*	*Tons*	*Tons*	*Tons*
1919	6.6	4.0	1.9	0.7	1.11	0.67	0.31	0.13
1929	11.6	6.3	3.8	1.4	1.04	.57	.35	.13
1935	11.0	6.4	3.6	1.0	1.05	.62	.34	.09
1940	15.5	9.8	4.7	1.0	1.07	.68	.32	.07
1945	19.0	10.8	6.8	1.3	1.09	.62	.39	.08
1950	25.9	16.5	8.0	1.4	1.06	.68	.33	.06
1955	31.8	21.5	9.0	1.3	1.06	.71	.30	.05
1960	35.7	25.7	9.0	1.0	1.04	.75	.26	.03
1961	36.6	26.7	9.0	.9	1.03	.75	.25	.03
1962	38.6	28.6	9.1	1.0	1.03	.76	.24	.03
PROJECTIONS								
1970	48.9	37.0	10.9	1.0	1.03	0.78	0.23	0.02
1980	65.0	51.0	12.7	1.3	1.02	.80	.20	.02
1990	84.9	68.1	15.1	1.7	1.02	.82	.18	.02
2000	109.4	88.8	18.4	2.2	1.02	.83	.17	.02

NOTE: Figures in columns may not add to total because of rounding.

Sources: 1919–62 United States Pulp Producers Association, Inc., *Wood Pulp Statistics* (annual) reporting statistics of the U.S. Department of Commerce. Projections, U.S. Department of Agriculture, Forest Service.

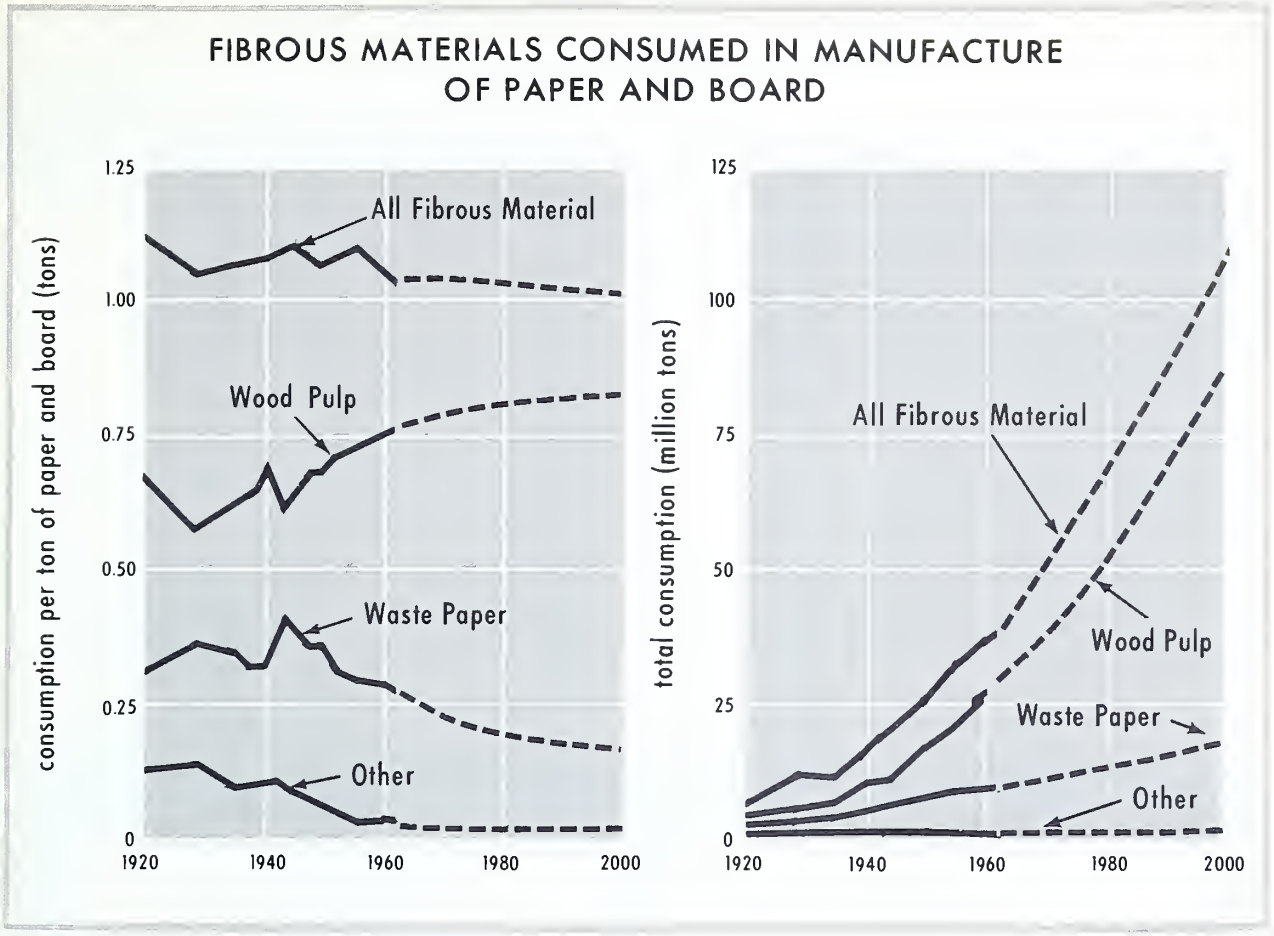

Figure 24

production of paper and board and assumed trends in use of fibrous materials, rise from 28.6 million tons in 1962 to 37.0 million tons in 1970 [26] and to 88.8 million tons in 2000 (table 39). Projected demands for waste paper total 18.4 million tons in 2000, and other fibrous materials 2.2 million tons.

In addition to pulps used for paper and board, approximately 1.1 million tons of dissolving pulps were consumed in the United States in 1962, mainly for such products as rayon, cellophane, nitrocellulose, films, and plastics. Projections based on relationships between consumption of dissolving pulp and gross national product in the period 1947–61 indicate a potential rise in demand to about 2 million tons by 2000 (table 40).

Projected demands for all grades of wood pulp thus amount to about 90.8 million tons by 2000—slightly more than three times consumption in 1962 (table 41).

[26] Estimates of the U.S. Department of Commerce for 1970 range from 39.4 to 44.1 million tons.

Largest Increase in Demand Expected for Sulfate and Semichemical Pulps

Consumption trends for the five major types of wood pulp used in the manufacture of paper and board, including sulfite, sulfate, groundwood, semichemical, and defibrated or exploded pulps, have shown striking differences (table 40 and fig. 25). Between 1950 and 1962, for example, use of sulfate pulp in U.S. mills rose from 8.4 million to 17.3 million tons and semichemical pulps from 0.7 million to 2.5 million tons. Groundwood and defibrated or exploded pulps showed modest increases, while consumption of sulfite and soda pulps declined slightly.

Further substantial increases in use of sulfate and semichemical pulps have been assumed, with lesser increases for other grades of pulp (table 40 and fig. 25). These estimates were derived from the projected demands for individual grades of paper and board and estimates of the mix of wood

TABLE 40.—*Apparent consumption of wood pulp by type, 1920–2000*

[Million tons]

Year	Total	Dissolving	Sulfite	Sulfate	Soda	Ground-wood	Semi-chemical	Defibrated, exploded, and screenings
1920	4.7	----------	2.1	0.4	0.5	1.8	----------	----------
1930	6.4	----------	2.6	1.4	.5	1.9	----------	----------
1940	9.7	0.3	2.7	3.9	.5	1.8	0.2	0.3
1950	17.1	.7	3.2	8.4	.6	2.5	.7	1.1
1960	26.6	1.0	3.1	15.2	.5	3.6	2.0	1.3
1962	29.5	1.1	3.0	17.3	.4	3.7	2.5	1.4
PROJECTIONS								
1970	38.2	1.2	3.1	23.5	.5	4.4	3.6	1.9
1980	52.4	1.4	3.4	33.3	.5	5.7	5.2	2.9
1990	69.7	1.7	3.7	45.4	.5	7.1	7.4	3.9
2000	90.8	2.0	4.4	59.8	.5	8.8	10.1	5.2

NOTE: Data prior to 1940 may not add to totals because of the inclusion in the totals of wood pulps not shown separately by type. In other years, figures in columns may not add to totals because of rounding.

Sources: 1920–40, United States Pulp Producers Association, Inc., *Wood Pulp Statistics*, 1963, reporting statistics published by the U.S. Department of Commerce. 1950–62, U.S. Department of Commerce, Bureau of the Census, Current Industrial Reports, *Pulp, Paper and Board*, Annual, and Business and Defense Services Administration, *Pulp, Paper and Board*, Quarterly. Projections, U.S. Department of Agriculture, Forest Service.

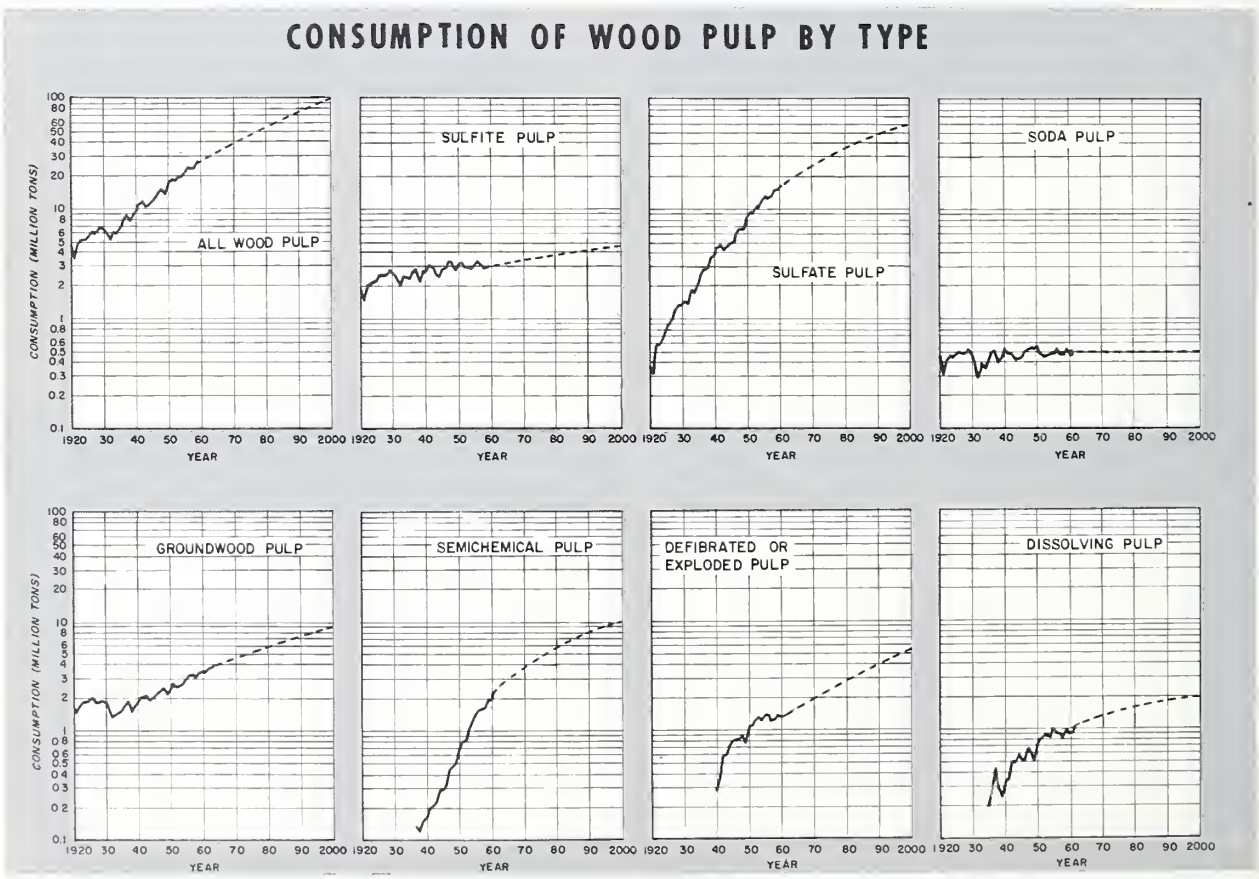

Figure 25

pulps required for each grade. Since most grades of paper and board can be manufactured from a variety of pulp mixtures and other fibrous materials, projections of potential use of the various types of pulp necessarily have a much larger measure of uncertainty than projections for all grades of pulp combined.

Net Imports Make Up 5 Percent of Wood Pulp Consumed in the U.S.

Imports of wood pulp in 1962 amounted to 2.8 million tons and exports 1.2 million tons (table 41). A rise in pulp exports is considered likely in view of prospective increases in world demands for pulp, paper, and board; limited supplies of high-quality fiber resources in the heavy pulp and paper consuming areas of the world such as Western Europe and Japan; and the growing competitive ability of U.S. industry to supply certain grades of pulp. However, in view of the large increases in projected demands for wood pulp in the United States, it has been assumed that imports will rise to an even greater extent, with a consequent increase in net imports from 1.6 million tons in 1962 to about 5.1 million tons by 2000.

TABLE 41.—*Consumption, net imports, and domestic production of wood pulp, 1920–2000*

[Million tons]

Year	Consumption	Net imports	Domestic production
1920	4.7	0.9	3.8
1930	6.4	1.8	4.6
1940	9.7	.7	9.0
1950	17.1	2.3	14.8
1960	26.6	1.2	25.3
1962	29.5	1.6	27.9
PROJECTIONS			
1970	38.2	1.9	36.3
1980	52.4	2.3	50.1
1990	69.8	3.6	66.2
2000	90.8	5.1	85.7

Sources: 1920–40, United States Pulp Producers Association, Inc., *Wood Pulp Statistics*, 1963, reporting statistics published by the U.S. Department of Commerce. 1950–62, U.S. Department of Commerce, Bureau of the Census, Current Industrial Reports, *Pulp, Paper and Board*, Annual, and Business and Defense Services Administration, *Pulp, Paper and Board*, Quarterly. Projections, U.S. Department of Agriculture, Forest Service.

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Projected Demand for Pulpwood Nearly Triples by 2000

The total pulpwood required to produce the pulp, paper, and board products consumed in the United States in 1962 amounted to 52.8 million cords (table 42 and fig. 26). This included 42.8 million cords of domestic pulpwood, 1.3 million cords of pulpwood from Canada, and the equivalent of 8.8 million cords of wood in the form of net imports of paper, board, and wood pulp.

The projections of demand for pulp, paper, and board indicate a prospective requirement for some 141.5 million cords of pulpwood by 2000.[27] It is further estimated that about 125.5 million cords, or 89 percent of these requirements, may be supplied from domestic forests, with about 16 million cords coming from net imports of pulpwood, wood pulp, paper, and board.

The volume of net imports of pulpwood, including the pulpwood equivalent of pulp, paper, and board imported from Canada and other countries, has been fairly stable since the late 1940's. In terms of relative importance, however, net imports have dropped from about a third of the total U.S. pulpwood requirements in 1940 to about a fifth of the total in 1962. A continued decline in the proportion of foreign pulpwood used in supplying U.S. markets for pulp, paper, and board has been projected to about a tenth of the total demand in 2000.

Twenty Percent of Pulpwood From Plant Byproducts in 1962

Production of pulp chips from plant byproducts at sawmills, veneer mills, and other wood-using plants has increased rapidly in recent years and in 1962 amounted to about 9 million cords, some 20 percent of all pulpwood consumed at U.S. mills in that year. Unused coarse residues at primary

[27] In converting projected demands for wood pulp to volumes of pulpwood required, it was assumed that the average ratio of pulpwood used per ton of sulfite and sulfate pulps would decline about 10 percent from the averages of recent years of about 2 cords per ton for sulfite pulp and 1.8 cords per ton for sulfate pulp. Such declines are anticipated in response to increasing use of the higher yield hardwoods and technological improvements in pulping processes. For other grades of pulp, it was assumed that current ratios of pulpwood use, i.e., about 2.2 cords per ton for dissolving pulp, 1.1 cords per ton for semichemical pulp, and about 1 cord per ton for groundwood and defibrated or exploded pulps, would not change significantly.

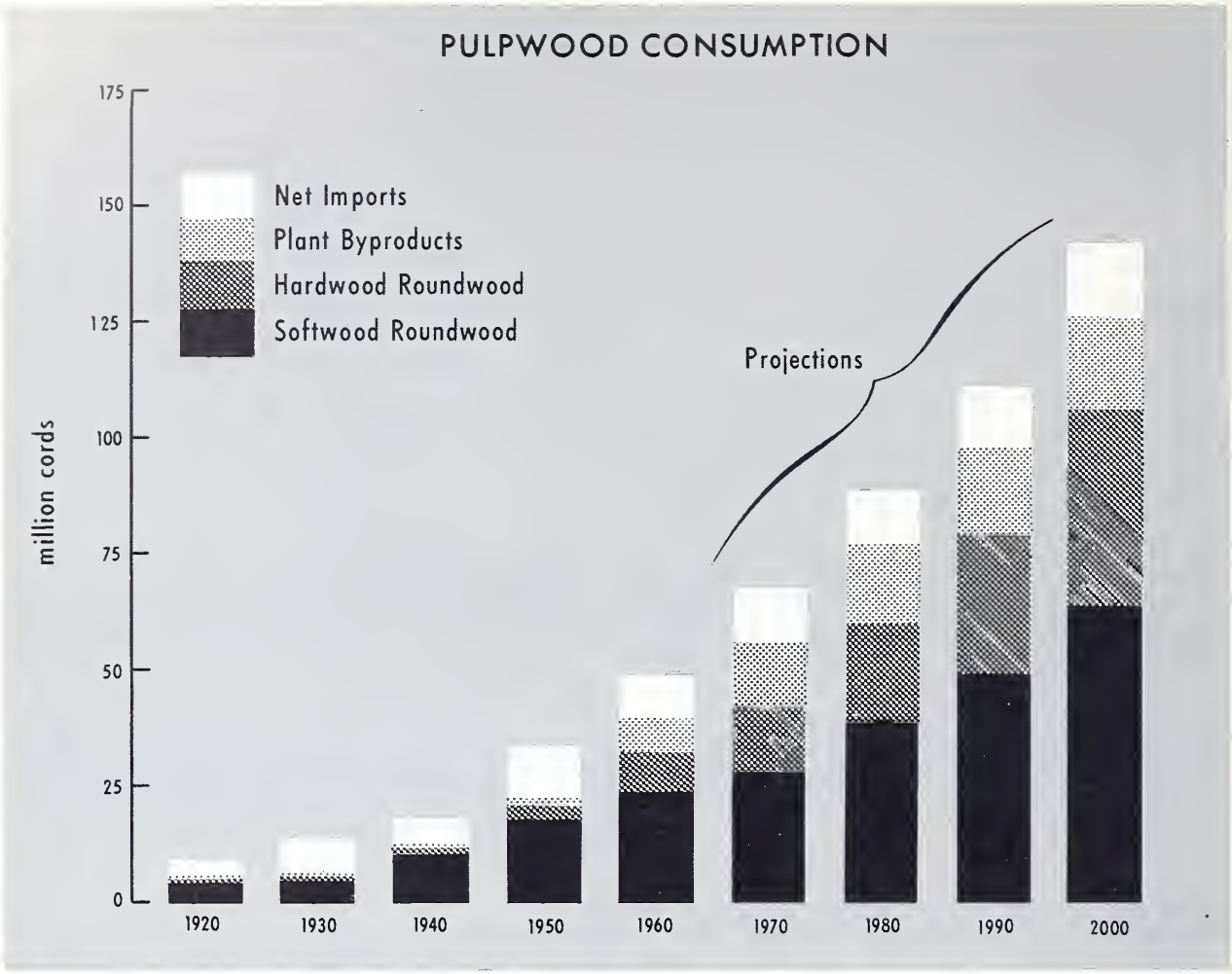

Figure 26

manufacturing plants in 1962 amounted to an estimated 4.5 million cords of softwoods and 2.3 million cords of hardwoods. Unused sawdust and other fine residues were equivalent to an additional 7.3 million cords of softwoods and 2.9 million cords of hardwoods.

Although not all of these residues can be considered as economically available for pulping, some increase in use of available residues is considered likely, partly because of continuing integration and larger producing units in the wood-using industries. Also, a larger production of residues is anticipated with the projected increases in output of lumber, veneer, and plywood, and reduced use of slabs, sawdust, and other materials for fuel. A rise in the use of plant byproducts by the pulp industry to 20 million cords in 2000 has therefore been assumed.

Projected demands for domestic round pulpwood in 2000 thus amount to 105.5 million cords, or slightly more than three times the consumption in 1962.

Hardwoods Projected From 26 Percent of Total Round Pulpwood to 40 Percent by 2000

Softwoods composed about 74 percent of the round pulpwood produced in the United States in 1962, and most of the plant byproducts used for pulp. The percentage of hardwoods has been steadily growing, however, rising from 11 percent of the total round pulpwood produced in 1940 to 26 percent in 1962.

Improvements in pulping processes, the availability of large volumes of hardwoods at relatively low cost per ton of fiber, and the improvement of many grades of paper with addition of hardwood pulps have all favored use of an increasing variety of hardwood species. Further expansion in use of hardwoods has been assumed, rising to an estimated 40 percent of the total round pulpwood output in 2000.

TABLE 42.—*Pulpwood consumption, production, and net imports, 1920–2000*

[Million cords]

Year	Total apparent consumption	Consumption of pulpwood in U.S. mills						Net imports of pulp, paper, and board (pulpwood equivalent)
		Total	Domestic production				Net pulpwood imports	
			Total	Softwood roundwood	Hardwood roundwood	Plant byproducts		
1920	8.2	6.1	4.9	4.2	0.5	0.2	1.2	2.1
1930	13.2	7.2	5.7	4.5	.7	.6	1.5	6.0
1940	18.0	13.7	12.4	10.8	1.3	.3	1.4	4.3
1950	33.7	23.6	20.7	16.5	2.9	1.3	1.4	10.0
1952	35.4	26.5	25.0	19.8	3.6	1.6	2.1	8.9
1960	48.7	40.5	40.0	24.5	8.1	7.4	1.2	8.2
1961	50.3	42.2	40.3	24.0	8.1	8.2	1.2	8.1
1962	52.9	44.1	42.8	24.9	8.9	9.0	1.3	8.8
PROJECTIONS								
1970	67.5	58.0	56.5	28.5	13.5	14.5	1.5	9.5
1980	88.5	78.5	77.0	39.0	21.0	17.0	1.5	10.0
1990	111.0	99.5	98.0	49.0	30.0	19.0	1.5	11.5
2000	141.5	127.0	125.5	63.5	42.0	20.0	1.5	14.5

NOTE: Figures in columns may not add to totals because of changes in inventories and rounding.

Sources: Domestic pulpwood consumption 1920–62, total production 1950–62, plant byproducts production 1920–40, U.S. Department of Commerce, Bureau of the Census, *Pulp, Paper and Board*, Annual. Total production 1920–40 and breakdown by softwoods and hardwoods 1920–62, estimates of the U.S. Department of Agriculture, Forest Service, derived from data published by the U.S. Department of Commerce. Plant byproducts 1950–62, estimates of the U.S. Department of Agriculture, Forest Service, derived from data published by the American Pulpwood Association, Forest Service, and the U.S. Department of Commerce. Imports, Bureau of the Census, *United States Imports of Merchandise for Consumption*, Annual.

DEMAND FOR MISCELLANEOUS TIMBER PRODUCTS

A variety of miscellaneous industrial timber products made up about 4 percent of the total volume of roundwood produced in the United States in 1962. Fuelwood accounted for an additional 11 percent of the total.

Use of Most Miscellaneous Industrial Timber Products Declining

Over the years, the volume of miscellaneous timber products consumed in the United States has declined substantially. Not much change is expected in the future although as indicated below individual products are likely to show divergent trends.

Cooperage Logs and Bolts.—In earlier years of the century the volume of wood used in the manufacture of barrels, kegs, pails, and tubs made of wood staves amounted to approximately 1.8 billion board feet annually. New technology, changes in consumer purchasing habits, and new packaging techniques steadily reduced demands for cooperage. By 1962 wood use had dropped to about 283 million board feet, equivalent to 42 million cubic feet of roundwood.

In 1962 log consumption in the manufacture of tight cooperage was estimated at 208 million board feet, a level somewhat below the average of recent years. The manufacture of bourbon barrels was the mainstay of the industry, accounting for approximately half the volume of wood used for tight cooperage. Food barrels represented nearly a third of the total volume, and chemical and other miscellaneous barrels each accounted for another 10 percent.

The manufacture of slack cooperage has continued to decline in recent years with wood use dropping from 272 million board feet in 1953 to about 75 million board feet in 1962. Over 80 percent of the volume of wood consumed for

slack cooperage was utilized in barrels for food, hardware, and nails.

Future trends in consumption of timber for tight cooperage will depend in considerable part upon Federal regulations relating to use of bourbon barrels and to some extent on further changes in technology and shipping practices. With a continuation of present regulations, it seems likely that demand for tight cooperage will show some increase. In the slack cooperage industry, on the other hand, further declines appear likely as a result of continuing competition from paperboard and other types of containers. For the cooperage industry as a whole it is estimated that future demands for cooperage logs and bolts may continue to approximate the level of 1962.

Poles.—Use of wood poles for utility and other construction has been relatively stable in recent years. In the period 1953–62, for example, the volume of poles given preservative treatment averaged about 76 million cubic feet annually.

Total pole consumption in 1962, including both treated and a relatively small volume of untreated poles, was estimated at approximately 7 million pieces, or 92 million cubic feet. Numbers of poles in use by utility companies have steadily increased over the years with the rapid growth in transmission lines. Use of poles in farm construction has also been rising. In view of the anticipated expansion of the Nation's economy and construction activities and growing needs for pole replacements, some further increase in consumption of wooden poles over the next few decades to an average of roughly 100 million cubic feet per year has been assumed.

Piling.—Treated wood piling used in the construction of docks, bridges, and buildings averaged about 15 million cubic feet a year in the period 1953–62. An estimated 10 million cubic feet of untreated piling also was used annually in this period. Total consumption thus averaged about 25 million cubic feet a year. In view of projected increases in nonresidential construction, an average annual use of about 30 million cubic feet of wood piling over the next several decades has been assumed.

Fence Posts.—Use of wooden fence posts for farm fencing and other purposes such as highway barricades and yard enclosures declined from an estimated 900 million posts in 1920 to approximately 170 million posts (109 million cubic feet) in 1962. This was a result of several factors including substitution of steel and other materials, greater use of wood preservatives, and changes in farm practices and farm sizes that involve less use of fencing. On the basis of expected trends in farming and highway construction it is estimated that future use of wooden posts may continue near recent levels.

Mine Timbers.—Use of round, split, and hewn mine timbers declined from an estimated 174 million cubic feet in 1923 to 108 million cubic feet in 1950 and to 48 million cubic feet in 1962. A modest increase in use of roundwood in mining to approximately 60 million cubic feet by 2000 has been assumed.

Other Industrial Wood.—About 157 million cubic feet of roundwood, plus an estimated 40 million cubic feet of plant byproducts, was used in 1962 for a wide variety of products such as charcoal and wood distillation products, shingles, excelsior, hewn ties, turnery products, and miscellaneous farm timbers. Past trends in use of these different products have been mixed, and some further drop in demand to an estimated 140 million cubic feet of roundwood per year has been assumed.

Total Miscellaneous Industrial Wood.—Total consumption of the industrial roundwood products described above amounted to 465 million cubic feet in 1962—roughly one-third less than consumption in 1952. In addition to these roundwood products, an estimated 40 million cubic feet of plant byproducts was used in 1962, primarily for charcoal. Several million tons of pine stumps also have been used each year in the production of naval stores, and until recently, dead chestnut wood was used for tannin extract and pulp and paper; estimates for these items have not been included.

Although use of most miscellaneous timber products has been declining, it appears that in many cases trends in consumption may have leveled off, and for some products such as poles and piling future demands seem likely to increase. It has therefore been estimated that demands for all miscellaneous industrial timber products combined will continue at an annual rate of about 460 million cubic feet of roundwood.

Demand for Fuelwood Substantial But Declining

The total volume of fuelwood consumed in 1962 was estimated at 27 million cords, or 2,025 million cubic feet. This included approximately 517 million cubic feet of roundwood from growing stock, 606 million cubic feet of roundwood from other sources such as dead and cull trees, and the equivalent of 900 million cubic feet of plant byproducts such as slabs and edgings. Fuelwood cut from roundwood was used almost entirely for domestic heating and cooking. Plant byproducts were used both for domestic purposes and for steam power in wood processing plants.

Consumption of fuelwood has dropped sharply during recent decades as oil, gas, coal, and electricity have been increasingly substituted both for home cooking and heating and for industrial uses, and it is anticipated that use of fuelwood will continue to decline. An estimated 12 million cords has been assumed for 2000, of which about 60 percent might be obtained in the form of roundwood and 40 percent as plant byproducts.

SUMMARY OF DEMAND PROJECTIONS IN TERMS OF ROUNDWOOD

Total consumption of the major timber products used in the United States in 1952 and 1962, and projected demands for the period 1970–2000, are summarized in table 43 in terms of the standard units of measure used for each major product. Also included in this table are estimates of net imports, domestic production of major products, and roundwood used in manufacture of the domestic products.

The projections indicate that by 2000 demand for both pulpwood and veneer logs may rise 2.7 times and the demand for lumber increase about 43 percent over the levels of use in 1962. Demand for minor industrial products, on the other hand, is projected at the same level as in 1962, while the projection for fuelwood consumption shows a continuing decline.

Because of many uncertainties in projecting demands over an extended period, the projected totals for all products combined are more likely to be achieved than the projected demand for any single product such as lumber. Interproduct competition has become increasingly important over the years as evidenced by the displacement of sheathing lumber by panel products, the inroads of fiber containers in a field formerly dominated by shipping lumber, and the growing use of rayon and other synthetic fibers. It is thus possible that while the demand for lumber may be lower than that projected, this would be offset by stronger demands than those projected for plywood, pulpwood, and other timber products.

TABLE 43.—*Summary of consumption, net imports, and domestic production of timber products in the United States, 1952–2000*

Product	1952	1962	Projections			
			1970	1980	1990	2000
Lumber:						
Consumption—million board feet [1]	41,460	37,300	39,700	43,400	48,000	53,500
Net imports—do	1,752	4,130	5,100	5,800	6,500	7,000
Domestic production—do	39,708	33,170	34,600	37,600	41,500	46,500
Domestic roundwood [2]—do	39,480	34,105	35,600	38,600	42,500	47,500
Veneer logs:						
Consumption—million board feet [1]	3,082	6,776	10,300	12,500	15,300	18,300
Net imports [3]—do	148	860	1,300	1,900	2,600	3,400
Domestic production—do	2,934	5,916	9,000	10,600	12,700	14,900
Domestic roundwood—do	2,934	5,916	9,000	10,600	12,700	14,900
Pulpwood:						
Consumption [4]—million std. cds	35.4	52.9	67.5	88.5	111.0	141.5
Net imports—do	11.0	10.1	11.0	11.5	13.0	16.0
Domestic production—do	25.1	42.8	56.5	77.0	98.0	125.5
Domestic roundwood—do	23.5	33.8	42.0	60.0	79.0	105.5
Miscellaneous industrial wood:						
Consumption—million cubic feet	758	505	500	500	500	500
Net imports—do	[5]	[5]				
Domestic production—do	758	505	500	500	500	500
Domestic roundwood—do	699	465	460	460	460	460
Fuelwood:						
Consumption [6]—million std. cds	58.6	26.9	22.0	18.0	15.0	12.0
Net imports—do	[5]	[5]				
Domestic production—do	58.6	26.9	22.0	18.0	15.0	12.0
Domestic roundwood—do	27.2	15.0	13.2	10.8	9.0	7.2

[1] International ¼-inch rule.

[2] The difference between domestic production of lumber and domestic roundwood production (saw logs) in 1962 and later years largely reflects the practice of converting to pulp chips a portion of the lower grade material in saw logs. The 1952 estimate was based on a special Forest Service survey of log and lumber production.

[3] Including equivalent log volumes of imported veneer and plywood.

[4] Including equivalent log volumes of imported pulp and paper and board, plus plant byproducts.

[5] Less than 0.1 unit.

[6] Including equivalent log volumes of plant byproducts.

Some Implicit Allowances Made for New Products

No specific allowances have been made in the projections for possible new uses of wood such as the manufacture of wood-based chemicals or other products that are as yet unknown. The projection techniques used, however, do involve some implicit allowances for new products and new uses. Projections for pulp and paper, for example, are based essentially on past consumption trends which reflect a long history of innovations of new products and uses, such as fiber containers, tissues, industrial papers, photographic films, rayon, and a wide variety of other items.

Conversely, it is also possible that advancing technology in the manufacture of products from fossil fuels or other nonwood materials may continue as in the past to displace some wood-based products that are now important in the U.S. economy.

Timber Products Supplied Largely From Domestic Sources

Forests of the United States supplied about 89 percent of the saw logs consumed in 1962, 87 percent of the veneer logs, 81 percent of the pulp and paper, and practically all of the miscellaneous industrial wood and fuelwood consumed (table 43).

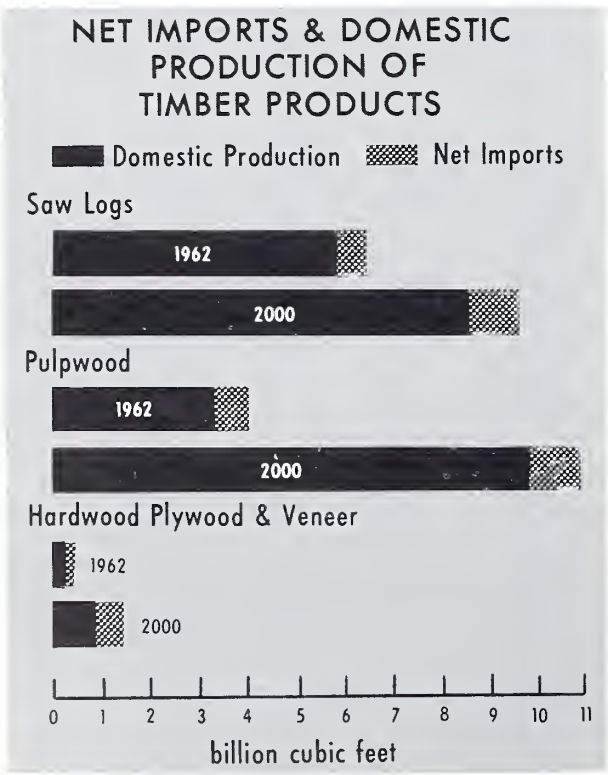

Figure 27

Net imports of lumber and veneer products have increased since 1952, whereas net imports of pulpwood products have declined slightly. Recent increases in lumber imports reflect some gain in advantages held by Canadian lumber producers. On the other hand, former Canadian advantages in the production of pulp and paper appear to have been offset by developing technology in the U. S. pulp and paper industry.

Some further increases in imports of lumber have been assumed, as indicated previously (fig. 27). Increases in both imports and exports of pulpwood products also are considered likely, with an increase in the volume of net imports. The relative importance of such net imports of pulpwood is projected to decline, however, from 19 percent of the total U.S. demand in 1962 to 11 percent in 2000. Considerable amounts of hardwood plywood and veneer are imported from tropical countries and substantial further increases in such hardwood imports also have been assumed.

Most Products From Roundwood, But Use of Plant Byproducts Increasing

Practically all of the domestic production of saw logs and veneer logs has been from roundwood—logs and bolts. In the case of pulpwood, however, roundwood accounted for only 78 percent of the total domestic production in 1962, with 22 percent from plant byproducts. Of the fuelwood used in 1962, about 56 percent came from roundwood and 44 percent from plant byproducts.

The total volume of slabs, edgings, and other plant byproducts used for pulpwood, fuel, or other products in 1962 amounted to 1.5 billion cubic feet (table 44). An additional 1.3 billion cubic feet of plant residues, or the equivalent of nearly 17 million cords, was left unused at primary processing plants in 1962. This included about 0.5 billion cubic feet of coarse residues suitable for chipping, and 0.8 billion cubic feet of fine residues, largely sawdust. About three-quarters of the coarse residues were softwoods, located mainly in the West and South.

Expanding use of the coarse residues produced at sawmills and other manufacturing plants is expected as wood requirements rise in the pulp and paper industry. In addition, the successful experience of some pulp producers in using sawdust indicates the likelihood of a substantial expansion in use of fine residues. Some plant

TABLE 44.—*Plant residues, by section, use, and type of residues, 1962*

[Million cubic feet]

Section and use	All species			Softwoods			Hardwoods		
	Total	Coarse [1]	Fine [2]	Total	Coarse	Fine	Total	Coarse	Fine
North:									
Used for pulp	18			8			10		
Used for fuel and miscellaneous products	146			34			112		
Unused	132	61	71	39	20	19	93	41	52
South:									
Used for pulp	289			242			47		
Used for fuel and miscellaneous products	223			114			109		
Unused	510	148	362	284	53	231	226	95	131
Rocky Mountain:									
Used for pulp	65			65					
Used for fuel and miscellaneous products	5			5					
Unused	195	91	104	194	90	104	1	1	
Pacific Coast:									
Used for pulp	336			336					
Used for fuel and miscellaneous products	389			389					
Unused	435	230	205	426	227	199	9	3	6
Total U.S.:									
Used for pulp	708			651			57		
Used for fuel and miscellaneous products	763			542			221		
Unused	1,272	530	742	943	390	553	329	140	189

[1] Unused material suitable for chipping, such as slabs, edgings, and veneer cores.
[2] Unused sawdust, shavings, etc., not suitable for chipping.

byproducts now used as fuel—equivalent to roughly 12 million cords in 1962—also are likely to be diverted to the pulp industry as use of fuelwood declines. With these considerations in mind, use of plant residues for pulpwood was projected to increase from 9 million cords in 1962 to 20 million cords in 2000.

Total Roundwood Consumption 11.8 Billion Cubic Feet in 1962

Estimates of roundwood consumption for different timber products shown in table 43 in standard units are summarized in table 45 in terms of cubic feet of roundwood used for each product.

Total consumption of roundwood in the United States has been fairly stable during the past two decades. Use of industrial roundwood, however, has shown an upward trend, with a rise of about 4 percent between 1952 and 1962 (fig. 28).

In 1962 the volume of all roundwood used in producing wood products for U.S. markets totaled 11.8 billion cubic feet. This included 10.7 billion cubic feet of industrial roundwood and 1.1 billion cubic feet of fuelwood.

Saw logs represented by far the most important product—accounting for 50 percent of the total volume of roundwood consumed in 1962. Pulpwood made up another 28 percent of the total, veneer logs 8 percent, miscellaneous industrial products 4 percent, and fuelwood 10 percent.

Projected Total Demand for Roundwood Nearly Doubles by 2000

The estimate of roundwood volumes required to meet projected demands for lumber and other timber products rises from 11.8 billion cubic feet in 1962 to 21.3 billion cubic feet in 2000 (table 45). For industrial wood, projected demands rise from 10.7 billion cubic feet to 20.8 billion cubic feet.

These projections of roundwood requirements have been calculated in cubic feet on the basis that available supplies of timber in the future would be similar in size to the timber cut in 1962 and that utilization factors—e.g., board feet of lumber produced per thousand cubic of saw logs, and square feet of plywood per thousand cubic feet of veneer logs—would not change appreciably.

TABLE 45.—*Summary of domestic production, net imports, and consumption of roundwood, by product and source, 1952–2000*

[Million cubic feet]

Product	1952	1962	Projections			
			1970	1980	1990	2000
DOMESTIC ROUNDWOOD PRODUCTION						
Saw logs:						
Softwoods	4,921	4,224	4,400	4,770	5,250	5,870
Hardwoods	1,225	1,047	1,100	1,190	1,310	1,470
Total	6,146	5,271	5,500	5,960	6,560	7,340
Veneer logs:						
Softwoods	249	708	1,090	1,280	1,510	1,780
Hardwoods	173	149	210	260	330	380
Total	422	857	1,300	1,540	1,840	2,160
Pulpwood:						
Softwoods	1,550	1,886	2,190	3,000	3,770	4,890
Hardwoods	273	717	1,060	1,640	2,340	3,280
Total	1,823	2,603	3,250	4,640	6,110	8,170
Miscellaneous industrial wood:						
Softwoods	326	239	230	230	230	230
Hardwoods	373	227	230	230	230	230
Total	699	466	460	460	460	460
All industrial wood:						
Softwoods	7,046	7,057	7,910	9,280	10,760	12,770
Hardwoods	2,044	2,140	2,600	3,320	4,210	5,360
Total	9,090	9,197	10,510	12,600	14,970	18,130
Fuelwood:						
Softwoods	476	207	180	140	110	80
Hardwoods	1,532	916	810	670	570	460
Total	2,008	1,123	990	810	680	540
All products:						
Softwoods	7,522	7,264	8,090	9,420	10,870	12,850
Hardwoods	3,576	3,056	3,410	3,990	4,780	5,820
Total	11,098	10,320	11,500	13,410	15,650	18,670
NET IMPORTS						
Saw logs	270	650	800	910	1,020	1,090
Veneer logs	30	110	190	300	380	490
Pulpwood roundwood	870	720	760	780	830	1,060
All products	1,170	1,480	1,750	1,990	2,230	2,640

TABLE 45.—*Summary of domestic production, net imports, and consumption of roundwood, by product and source, 1952–2000*—Continued

[Million cubic feet]

Product	1952	1962	Projections			
			1970	1980	1990	2000
CONSUMPTION FROM ALL SOURCES						
Saw logs	6,416	5,921	6,300	6,870	7,580	8,430
Veneer logs	452	967	1,490	1,840	2,220	2,650
Pulpwood	2,693	3,323	4,010	5,420	6,940	9,230
Miscellaneous industrial wood	699	466	460	460	460	460
All industrial wood	10,260	10,677	12,260	14,590	17,200	20,770
Fuelwood	2,008	1,123	990	810	680	540
All products	12,268	11,800	13,250	15,400	17,880	21,310

Projections of growth and inventories presented in a later section, however, show a marked drop in the average size of timber prospectively available, and hence a prospective drop in the recovery of lumber and plywood per cubic foot of logs. Although possible changes in softwood lumber standards and further improvements in technology would tend to increase product recovery per cubic foot of logs, some net reductions in product yields per cubic foot of logs have been considered likely, as indicated in table 48.

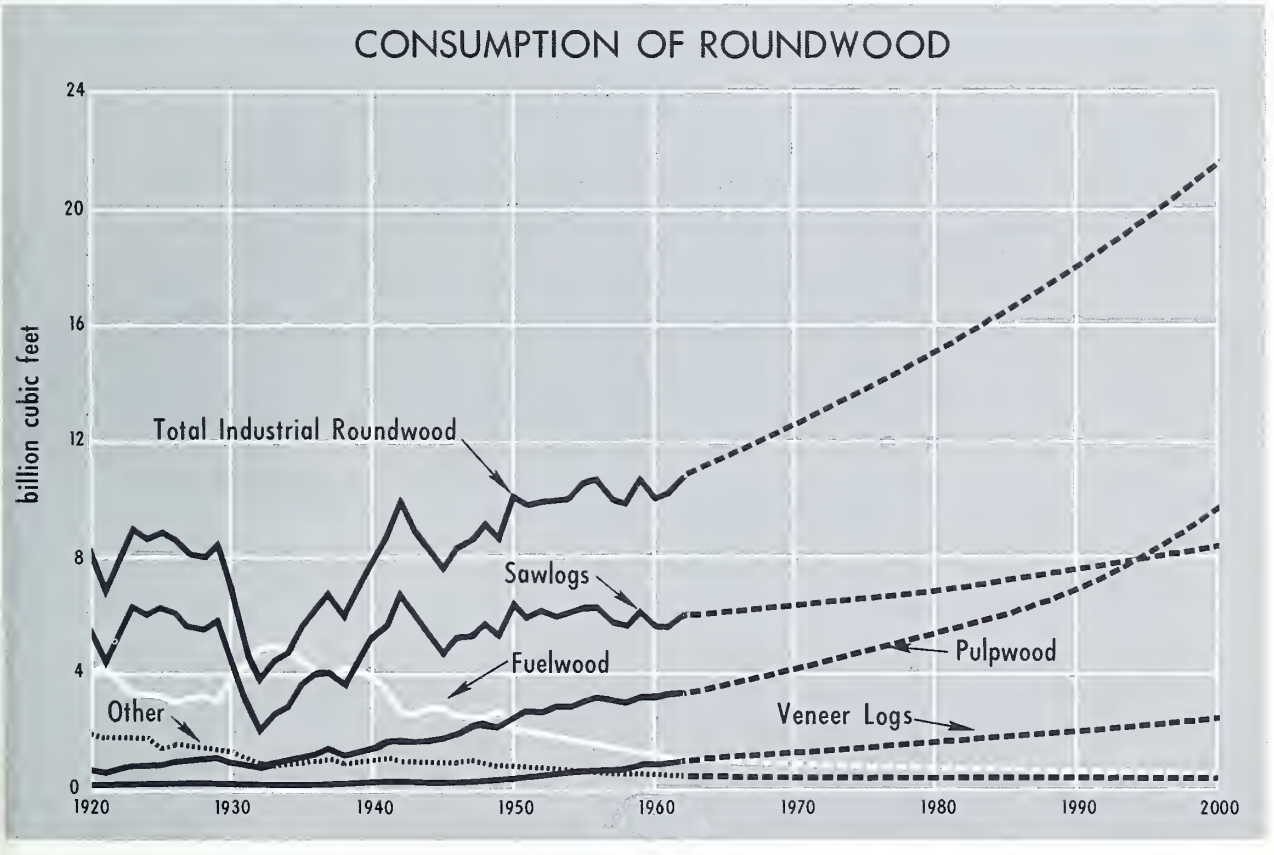

Figure 28

Projected demands for all industrial roundwood in 2000, amounting to an estimated 20.8 billion cubic feet, would represent about 21 percent of the total industrial raw materials that might be consumed in the United States in that year, according to the analysis of prospective raw materials use presented earlier in the section on Trends in Demand for Industrial Raw Materials (fig. 29). This would be slightly less than the average of about 22.5 percent during the period 1931–61.

Slight Increase in Per Capita Demand for Industrial Roundwood Projected

Per capita consumption of all roundwood timber products combined, including both domestic roundwood and net imports, amounted to 63 cubic feet in 1962 (fig. 30). This was about 19 percent below the figure of 78 cubic feet per capita in 1952. For industrial roundwood, per capita use has shown a much slower decline, from 65 cubic feet in 1952 to 57 cubic feet in 1962.

Projections of per capita demand for industrial roundwood show a prospective rise to 64 cubic feet by 2000. Rather substantial increases in per capita use were projected for round pulpwood and modest increases for veneer logs, whereas further reductions were indicated in per capita use of saw logs, miscellaneous industrial wood, and fuelwood.

U.S. Forests Supply About 87 Percent of Total Roundwood

Domestic forests supplied about 10.3 billion cubic feet of roundwood products in 1962, or 87 percent of the total roundwood consumed in U.S. markets (table 45). Net imports represented about 1.5 billion cubic feet, or 13 percent of the total roundwood used.

It is estimated that net imports will continue to supply about the same proportion of total demands for industrial wood over the projection period. Demands for domestic roundwood are thus projected to 18.7 billion cubic feet by 2000.

TABLE 46.—*Domestic timber production, by product, section, and species group, 1962*

Section and species group	Saw logs (lumber)	Veneer logs	Pulpwood		Miscellaneous industrial wood		Fuelwood	
			Round-wood	Plant by-products	Round-wood	Plant by-products	Round-wood	Plant by-products
	Million board feet	*Million board feet*	*Million cords*	*Million cords*	*Million cubic feet*	*Million cubic feet*	*Million cords*	*Million cords*
North:								
Softwoods	1,090	1	3.9	0.1	40	1	0.4	0.5
Hardwoods	2,880	245	3.7	.1	138	14	6.4	1.7
Total	3,970	246	7.6	.2	178	15	6.8	2.2
South:								
Softwoods	6,486	16	16.8	3.2	120	6	1.5	1.8
Hardwoods	3,773	740	5.0	.6	86	12	6.0	1.6
Total	10,259	756	21.8	3.8	206	18	7.5	3.4
Rocky Mountain:								
Softwoods	3,604	131	.2	.9	18	----------	.2	.1
Hardwoods	17	(1)	(1)	----------	2	----------	(1)	----------
Total	3,621	131	.2	.9	20	----------	.2	.1
Pacific Coast:								
Softwoods	16,155	4,784	3.6	4.5	61	7	.5	6.2
Hardwoods	128	(1)	.5	----------	(1)	----------	(1)	----------
Total	16,283	4,784	4.1	4.5	61	7	.5	6.2
All Regions:								
Softwoods	27,335	4,932	24.5	8.7	239	14	2.6	8.6
Hardwoods	6,798	985	9.2	.7	226	26	12.4	3.3
Total	34,133	5,917	33.7	9.4	465	40	15.0	11.9

[1] Negligible.

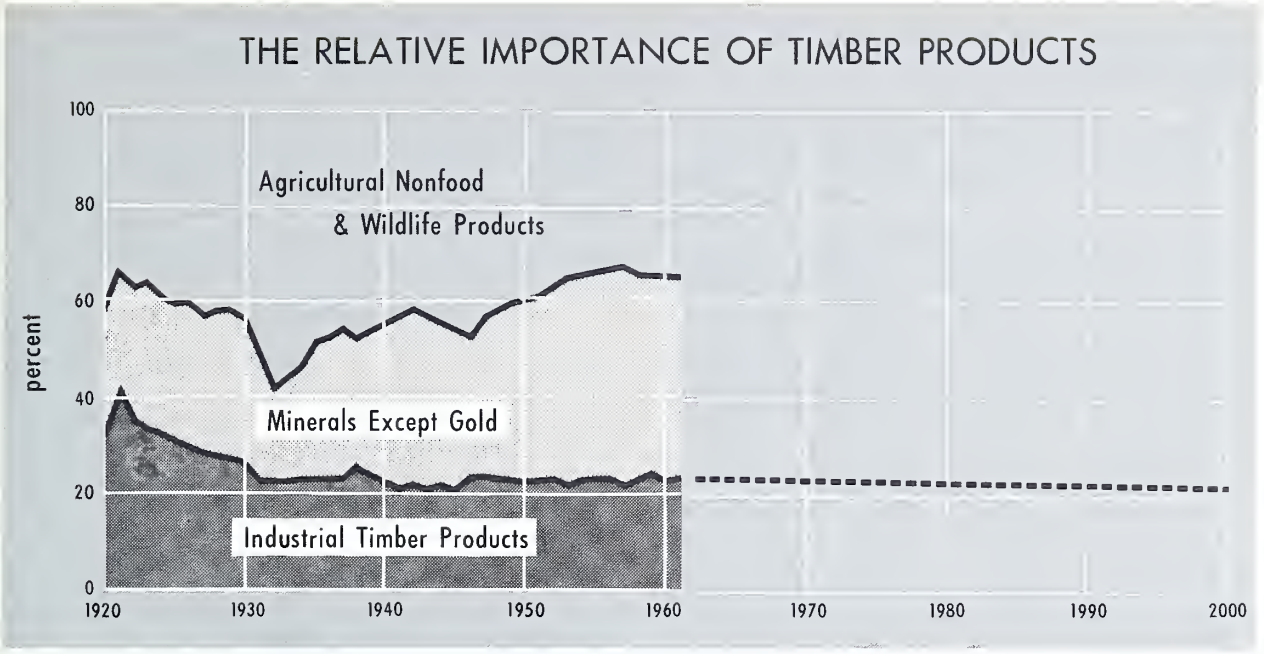

Figure 29

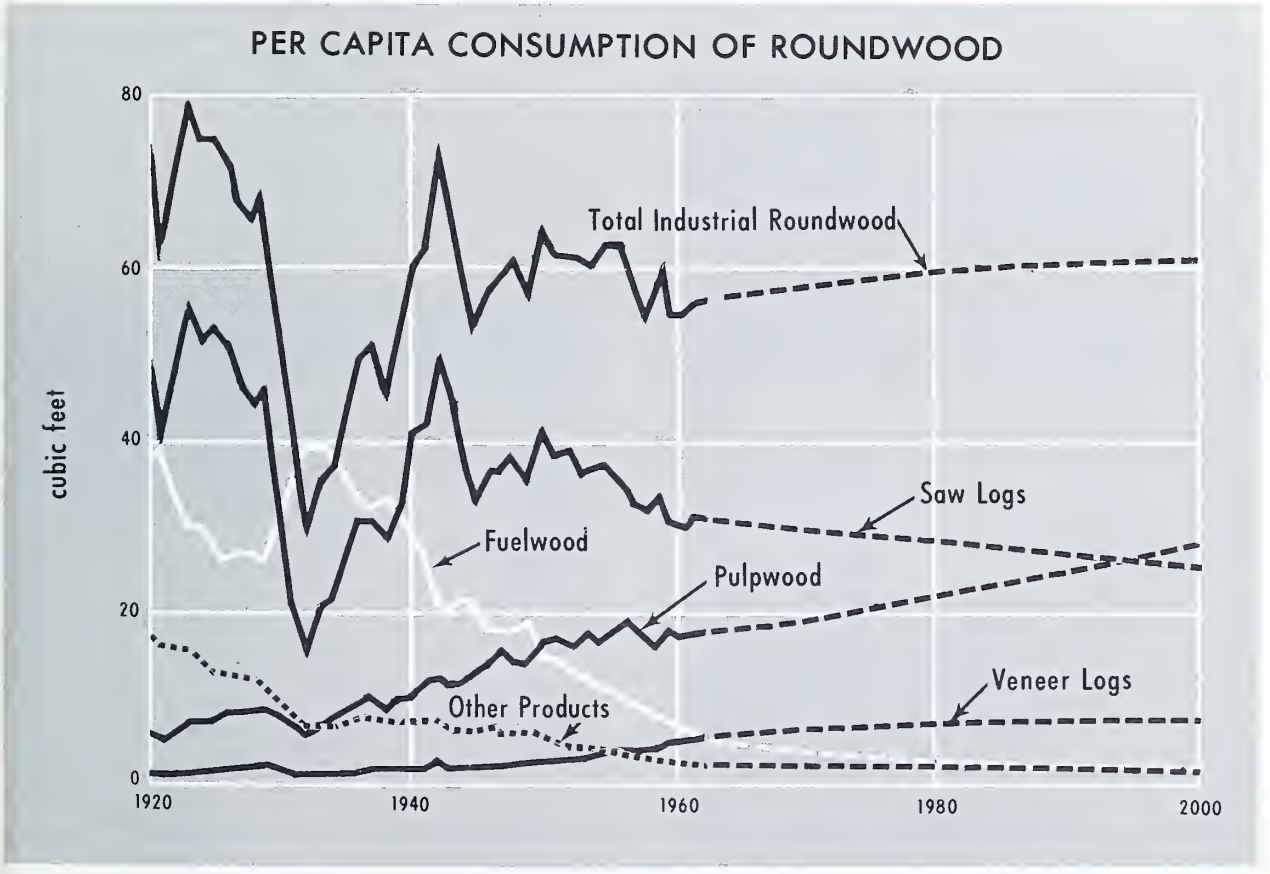

Figure 30

The West of Major Importance in Production of Saw Logs and Veneer Logs

About 58 percent of the saw logs produced in the United States in 1962 were cut in western regions, 30 percent in the South, and 12 percent in the North (table 46 and fig. 31). About 83 percent of the total veneer log production also came from western forests, reflecting the fact that the Pacific Coast States have been almost the sole source of softwood "peeler" logs. Nearly all hardwood veneer logs, on the other hand, were produced in the East, mainly in the South.

Pulpwood production was concentrated in the East in 1962—about 59 percent of the total coming from the South and 18 percent from the North. The West supplied 23 percent of the total pulpwood produced. Miscellaneous industrial timber products and fuelwood likewise were produced mainly in the southern and northern sections of the country.

Figure 31

SUMMARY OF DEMAND PROJECTIONS IN TERMS OF TIMBER CUT

In order to provide comparable estimates of timber demands and supplies, projected demands for saw logs and other products have been converted to estimates of domestic "timber cut," i.e., removals of timber products from growing stock and sawtimber on commercial forest lands in the United States.

The conversion involved several steps, including (a) the deduction of net imports from the total demand for saw logs and other products to determine amounts required from domestic sources, (b) the deduction of plant byproducts from the total domestic requirements for pulpwood and other products to determine the required domestic roundwood output, (c) the deduction from domestic roundwood output of volumes derived from cull and dead trees or from other nongrowing stock sources, and (d) the addition to domestic roundwood output of allowances for logging residues from growing stock.

86 Percent of Roundwood Cut From Growing Stock in 1962

Of the total domestic roundwood cut in 1962 about 8.9 billion cubic feet came from that part of the timber inventory that is defined as growing stock (table 47 and fig. 32). An additional 1.4 billion cubic feet of roundwood was obtained from dead and down timber, cull trees, noncommercial forest land, or other nongrowing stock sources.

Figure 32

TABLE 47.—*Domestic timber production by product and source, 1962*

Product	Standard unit	Total quantity	Output from growing stock		Output from other roundwood [1]		Output from plant byproducts in standard units
			In standard units	In cubic feet	In standard units	In cubic feet	
		Million units	*Million units*	*Million cu. ft.*	*Million units*	*Million cu. ft.*	*Million units*
Saw logs	Board feet [2]	34,133	31,816	4,936	2,289	335	28
Veneer logs and bolts	Board feet [2]	5,917	5,014	725	903	132	----
Pulpwood	Cords	43	30	2,353	3	250	10
Miscellaneous industrial wood:							
Cooperage	Board feet [2]	216	195	29	21	3	----
Piling	Linear feet	42	41	25	[3]	[3]	----
Poles	Pieces	7	7	92	[3]	1	----
Posts	Pieces	169	121	79	48	30	----
Mine timbers	Cubic feet	48	40	40	9	9	----
Other industrial [4]	Cubic feet	197	115	115	42	42	40
Total	----	----	----	380	----	85	----
All industrial wood	----	----	----	8,394	----	802	----
Fuelwood	Cords	27	7	517	8	606	12
All products	----	----	----	8,911	----	1,409	----

[1] Includes output from cull trees, dead trees, and trees less than 5.0 inches in diameter on commercial forest land and output from trees on noncommercial and nonforest lands.

[2] International ¼-inch rule. For sawlogs log scale volume was assumed to equal lumber tally.

[3] Less than 0.5 million units or cubic feet.

[4] Includes hewn ties, box bolts, shingle logs, excelsior bolts, turnery bolts, chemical wood, and bolts for other miscellaneous products.

Nearly all saw logs were produced from growing stock, whereas about 15 percent of the veneer logs produced in the United States in 1962 came from dead and cull trees. Nearly 10 percent of the round pulpwood output also came from such nongrowing stock sources. In the case of fuelwood, more than half the total roundwood used came from cull and dead trees and other nongrowing stock sources.

For all round products combined, 86 percent came from growing stock in 1962 and 14 percent from nongrowing stock sources. It was estimated that the proportion of roundwood products derived from growing stock would increase somewhat over the projection period to about 90 percent of all roundwood, with corresponding reductions in the percentages obtained from dead and cull trees or other nongrowing stock sources. This assumption is based on the expectation that available supplies of salvable dead timber will decrease with the steady reduction in the area of old-growth timber that is taking place. Also, increased thinnings and other cutting to anticipate mortality is considered likely to result from further road development and better management practices.

Timber Cut Projected To Rise 86 Percent by 2000

In contrast to the slight rise in total output of industrial roundwood from all sources between 1952 and 1962, shown in table 45, the estimated timber cut from growing stock dropped about 6 percent between 1952 and 1962 (table 48). The cut of sawtimber, however, was approximately the same in both years. These divergent trends in total roundwood output and in timber cut appear to have resulted largely from greater use of nongrowing stock material and closer utilization of tops and other formerly unused portions of felled trees.

Projections of timber cut from growing stock—assuming no changes in available sizes of timber in the future—rise from 10.1 billion cubic feet in 1962 to 18.8 billion cubic feet in 2000 (table 48). Projections for sawtimber rise from 48.4 billion board feet in 1962 to 83.9 billion board feet by 2000.

TABLE 48.—*Timber cut from growing stock and sawtimber, by product and species group, 1952–2000*

Product	1952	1962	Projections			
			1970	1980	1990	2000
GROWING STOCK—MILLION CUBIC FEET						
Sawlogs:						
Softwoods	4,602	3,947	4,120	4,460	4,910	5,490
Hardwoods	1,199	989	1,030	1,120	1,230	1,380
Total	5,801	4,936	5,150	5,580	6,140	6,870
Veneer logs:						
Softwoods	219	579	930	1,120	1,350	1,630
Hardwoods	173	146	180	230	290	350
Total	392	725	1,110	1,350	1,640	1,980
Pulpwood:						
Softwoods	1,407	1,725	1,980	2,720	3,410	4,420
Hardwoods	248	628	960	1,480	2,110	2,970
Total	1,655	2,353	2,940	4,200	5,520	7,390
Miscellaneous industrial wood:						
Softwoods	278	203	200	200	200	200
Hardwoods	301	177	170	170	170	170
Total	579	380	370	370	370	370
Fuelwood:						
Softwoods	232	93	80	60	50	40
Hardwoods	734	424	370	310	260	210
Total	966	517	450	370	310	250
Total timber products:						
Softwoods	6,738	6,547	7,310	8,560	9,920	11,780
Hardwoods	2,655	2,364	2,710	3,310	4,060	5,080
Total	9,393	8,911	10,020	11,870	13,980	16,860
Logging residues:						
Softwoods	749	644	640	730	790	890
Hardwoods	615	593	650	760	890	1,070
Total	1,364	1,237	1,290	1,490	1,680	1,960
Total timber cut:						
Softwoods	7,487	7,191	7,950	9,290	10,710	12,670
Hardwoods	3,270	2,957	3,360	4,070	4,950	6,150
Total	10,757	10,148	11,310	13,360	15,660	18,820
Adjusted [1] total timber cut:						
Softwoods	7,487	7,191	8,000	9,400	11,400	14,400
Hardwoods	3,270	2,957	3,500	4,300	5,500	7,200
Total	10,757	10,148	11,500	13,700	16,900	21,600

Footnote at end of table.

TABLE 48.—*Timber cut from growing stock and sawtimber, by product and species group, 1952–2000*—Con.

Product	1952	1962	Projections			
			1970	1980	1990	2000
SAWTIMBER—MILLION BOARD FEET						
Saw logs:						
Softwoods	----------	24,859	25,940	28,110	30,930	34,600
Hardwoods	----------	6,159	6,430	6,960	7,660	8,580
Total	34,535	31,018	32,370	35,070	38,590	43,180
Veneer logs:						
Softwoods	----------	4,047	6,450	7,770	9,320	11,300
Hardwoods	----------	973	1,240	1,580	2,040	2,410
Total	2,562	5,020	7,690	9,350	11,360	13,710
Pulpwood:						
Softwoods	----------	4,967	5,920	7,910	9,640	12,130
Hardwoods	----------	2,200	2,870	4,320	5,980	8,130
Total	4,607	7,167	8,790	12,230	15,620	20,260
Miscellaneous industrial wood:						
Softwoods	----------	937	930	930	930	930
Hardwoods	----------	626	620	620	620	620
Total	2,206	1,563	1,550	1,550	1,550	1,550
Fuelwood:						
Softwoods	----------	133	110	90	70	50
Hardwoods	----------	676	600	490	420	340
Total	2,218	809	710	580	490	390
Total timber products:						
Softwoods	----------	34,943	39,350	44,810	50,890	59,010
Hardwoods	----------	10,634	11,760	13,970	16,720	20,080
Total	46,128	45,577	51,110	58,780	67,610	79,090
Logging residues:						
Softwoods	----------	1,805	1,970	2,200	2,540	2,950
Hardwoods	----------	1,019	1,060	1,260	1,500	1,810
Total	2,712	2,824	3,030	3,460	4,040	4,760
Total timber cut:						
Softwoods	36,546	36,748	41,320	47,010	53,430	61,960
Hardwoods	12,294	11,653	12,820	15,230	18,220	21,890
Total	48,840	48,401	54,140	62,240	71,650	83,850
Adjusted [1] total timber cut:						
Softwoods	36,546	36,748	41,300	45,600	51,800	59,500
Hardwoods	12,294	11,653	12,700	14,800	17,700	21,500
Total	48,840	48,401	54,000	60,400	69,500	81,000

[1] Adjusted for expected reductions in the size of trees available for cutting in the future.

The growth projection analysis described in a later section indicated that if this projected cut of sawtimber were removed from the Nation's forests in future years, the size of timber available for cutting would steadily decrease. Under these circumstances it was concluded that more of the cut of pulpwood would be shifted to smaller sizes of trees than was the case in 1962. The projected cut of sawtimber was therefore adjusted downward to 81 billion board feet in 2000, and by somewhat lesser amounts in 1980 and 1990 (table 48). It was also concluded that recovery of lumber and plywood per cubic foot of logs would decline in the future with smaller tree diameters, particularly in the last decade of this century, although this would be offset in part by expected improvements in technology in the forest industries. Both factors of changing tree size and improved technology are reflected in the estimate of 21.6 billion cubic feet of growing stock cut in 2000 associated with the projected cut of 81 billion board feet of sawtimber.

Logging Residues Composed 12 Percent of Timber Cut in 1962

Logging residues from growing stock amounted to an estimated 1.2 billion cubic feet in 1962, including 2.8 billion board feet from the sawtimber inventory (table 48). These logging residues, representing about 12 percent of the total timber cut, consisted mainly of trees or sections of trees that were included in inventory statistics but were not utilized after the timber was logged. In addition, considerable volumes of growing stock have been lost in stand improvement and land clearing operations, including losses of timber on areas converted to agricultural, residential, and recreational uses.

In deriving projections of timber cut, proportions of logging residues have been decreased only

TABLE 49.—*Timber cut in the United States, by species, 1962*

Species	Growing stock		Sawtimber	
	Volume cut	Percent of total cut	Volume cut	Percent of total cut
	Million cubic feet	*Percent*	*Million board feet*	*Percent*
Eastern softwoods:				
Southern pines	2,460	24.2	8,220	17.0
White and red pines	138	1.4	539	1.1
Spruce and fir	210	2.1	628	1.3
Cypress	64	.6	265	.5
Other	180	1.8	635	1.3
Total	3,052	30.1	10,287	21.2
Western softwoods:				
Douglas-fir	2,012	19.8	13,215	27.3
Ponderosa and Jeffrey pine	605	6.0	3,644	7.5
Western white and sugar pine	134	1.3	829	1.7
Western hemlock	422	4.2	2,774	5.7
True firs	405	4.0	2,546	5.3
Redwood	171	1.7	1,068	2.2
Spruce	96	.9	579	1.2
Other	294	2.9	1,806	3.8
Total	4,139	40.8	26,461	54.7
Total softwoods	7,191	70.9	36,748	75.9
Hardwoods:				
Select oaks	527	5.2	2,200	4.5
Other oaks	672	6.6	2,568	5.3
Hickory	141	1.4	506	1.1
Yellow birch	59	.6	221	.5
Hard maple	130	1.3	505	1.0
Sweetgum	290	2.8	1,156	2.4
Ash, walnut, cherry	95	.9	367	.8
Yellow-poplar	133	1.3	653	1.3
Other	910	9.0	3,477	7.2
Total hardwoods	2,957	29.1	11,653	24.1
All species	10,148	100.0	48,401	100.0

slightly on the assumption that closer utilization of timber removed in logging may be largely offset by timber losses in timber stand improvement and land clearing operations.

Softwoods Made Up 71 Percent of Total Cut in 1962

Western softwoods made up 41 percent of the total growing stock cut in 1962, eastern softwoods 30 percent, and hardwoods 29 percent (table 49). Southern yellow pines represented the most important species group, accounting for 24 percent of the total cut. Douglas-fir accounted for another 20 percent, oaks 12 percent, and ponderosa and Jeffrey pines 6 percent.

In terms of sawtimber, western softwoods were of somewhat greater relative importance, accounting for 55 percent of the total cut in 1962. Douglas-fir made up 27 percent of the total,

TABLE 50.—*Timber cut from growing stock and sawtimber, by product and species group, 1962*

Product	All species	Softwoods			Hardwoods
		Total	Eastern	Western	
GROWING STOCK—MILLION CUBIC FEET					
Roundwood products:					
Saw logs	4,936	3,947	1,245	2,702	989
Veneer logs and bolts	725	579	3	576	146
Pulpwood	2,353	1,725	1,385	340	628
Cooperage	29	4	4	0	25
Piling	25	22	19	3	3
Poles	92	92	76	16	[1]
Posts	79	41	34	7	38
Mine timbers	40	7	4	3	33
Other industrial	115	37	14	23	78
Total industrial wood	8,394	6,454	2,784	3,670	1,940
Fuelwood	517	93	81	12	424
Total roundwood	[2] 8,911	6,547	2,865	3,682	2,364
Logging residues	1,237	644	187	457	593
Total timber cut	10,148	7,191	3,052	4,139	2,957
SAWTIMBER—MILLION BOARD FEET					
Roundwood products:					
Saw logs	31,018	24,859	6,760	18,099	6,159
Veneer logs and bolts	5,020	4,047	19	4,028	973
Pulpwood	7,167	4,967	2,644	2,323	2,200
Cooperage	195	20	20	----------	175
Piling	128	115	96	19	13
Poles	510	509	416	93	1
Posts	150	78	48	30	72
Mine timbers	65	18	12	6	47
Other industrial	514	197	40	157	318
Total industrial wood	44,768	34,810	10,055	24,755	9,958
Fuelwood	809	133	56	77	676
Total roundwood	45,577	34,943	10,111	24,832	10,634
Logging residues	2,824	1,805	176	1,629	1,019
Total timber cut	48,401	36,748	10,287	26,461	11,653

[1] Less than 0.5 million cubic feet.
[2] Not including 1.4 billion cubic feet from nongrowing stock sources, and the equivalent of 1.6 billion cubic feet of plant byproducts.

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southern pines 17 percent, oaks 10 percent, and ponderosa and Jeffrey pines 7.5 percent.

The relative importance of softwoods varied rather widely by products (table 50). Thus 80 percent of the saw logs and veneer logs cut from growing stock in 1962 were softwoods, compared with 73 percent for pulpwood, 53 percent for miscellaneous products, and 18 percent for fuelwood.

Relative Importance of Western Softwoods Increasing

Marked changes in the geographic location of timber cutting have occurred in recent years. The cut of western softwoods, for example, increased about 4 billion board feet between 1952 and 1962 as a result of heavier cutting in both the Pacific coast and the Rocky Mountains (table 51). The cut of eastern softwoods, on the other hand, declined by some 3.8 billion board feet between 1952 and 1962, mainly as a result of reduced southern pine lumber production. The cut of hardwoods declined about 0.6 billion board feet in this decade in spite of an appreciable rise in cutting of western hardwoods.

In terms of sawtimber cut, the West was of primary importance in 1962 with 56 percent of the total cut of all species combined. In terms of total growing stock cut, however, the South was the leading producing region with 42 percent of the total.

In the projections of timber cut it was estimated that softwoods may drop from 71 percent of the total growing stock cut in 1962 to 67 percent of the adjusted total by 2000 (table 48), mainly as a result of an expected increase in the relative use of hardwood pulpwood. In the case of sawtimber, softwoods are projected to drop from 76 percent in 1962 to 73 percent of the adjusted total by 2000.

The projections of timber cut described in this section thus indicate the likelihood of a very substantial increase in cutting pressures in the Nation's forests. How well these projected demands for timber can be met from prospective timber supplies is appraised in the following sections.

TABLE 51.—*Timber cut from growing stock and sawtimber, by section and species group, 1962*

Section	All species		Softwoods		Hardwoods	
	1962	Change from 1952	1962	Change from 1952	1962	Change from 1952
GROWING STOCK—MILLION CUBIC FEET						
North	1,696	−230	560	−136	1,136	−94
South	4,236	−831	2,492	−558	1,744	−273
Total East	5,932	−1,061	3,052	−694	2,880	−367
Rocky Mountain	652	+223	647	+221	5	+2
Pacific coast	3,564	+229	3,492	+177	72	+52
Total West	4,216	+452	4,139	+398	77	+54
Total U.S	10,148	−609	7,191	−296	2,957	−313
SAWTIMBER—MILLION BOARD FEET						
North	6,126	−530	1,881	−479	4,245	−51
South	15,375	−4,274	8,406	−3,325	6,969	−949
Total East	21,501	−4,804	10,287	−3,804	11,214	−1,000
Rocky Mountain	3,839	+1,385	3,822	+1,376	17	+9
Pacific coast	23,061	+2,980	22,638	+2,629	423	+351
Total West	26,900	+4,365	26,460	+4,005	440	+360
Total U.S	48,401	−439	36,747	+201	11,654	−640

Forest Land and Timber Resources

This section describes the Nation's forest land and timber resources as of the beginning of 1963, and indicates recent trends in forest areas, timber volumes, growth, and growth-cut relationships.

These data provide a measure of recent progress in forestry, some indication of current forestry problems, and a base from which to appraise prospective trends in future timber supplies. In addition, information on the volume, quality, and availability of timber supplies is considered of particular significance for appraising industrial opportunities and problems in the wood-using industries.

This analysis is concerned primarily with the national situation. Because of the geographic importance of timber supplies to wood-using plants and to forestry programs, however, considerable information on resources is presented by major sections of the country, including the North, South, Rocky Mountains, and Pacific coast (figure 33). Since more local statistics also are of particular importance as a guide to many of the Nation's public and private forestry programs, detailed basic statistics by States have been included in appendix 1.

FOREST LAND

The area and location of forest land along with its productive capacity, stocking, and ownership are significant factors in appraising opportunities for improving future timber growth and inventories.

Nation One-Third Forested

After more than three centuries of settlement and development, forests still occupy 759 million acres, or one-third of the 2.3 billion acres of land in the 50 States (table 52 and fig. 34). Two-thirds of this forest area—or 509 million acres—is defined as "commercial" forest land, i.e., suitable and available for the growing of continuous crops of saw logs or other industrial timber products.

These commercial forests include areas that vary from highly productive timberlands to poor sites that are marginal for timber growing. Some of the areas classed as commercial are at present economically inaccessible for logging operations

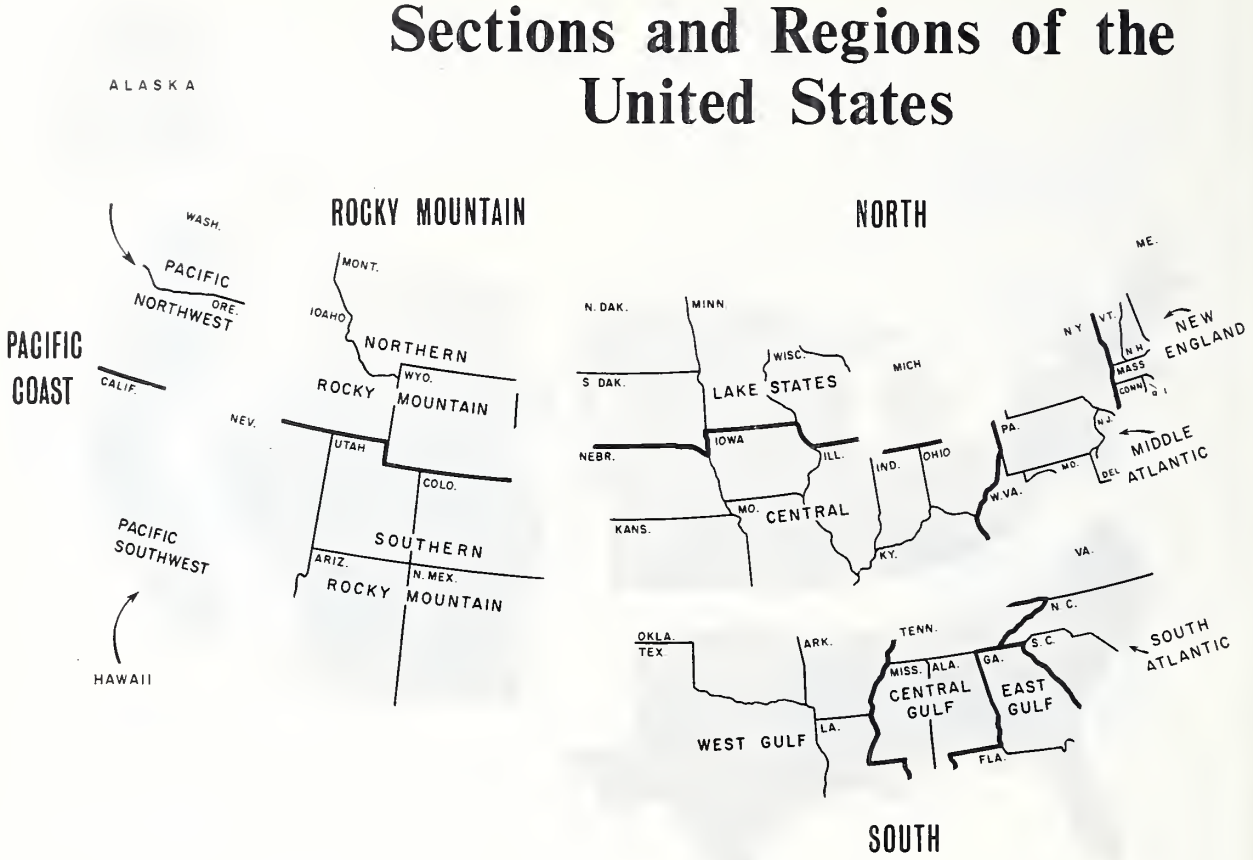

Figure 33

TABLE 52.—*Land area of the United States, by type of land and section, January 1, 1963*

Type of land	Total U.S.		North	South	Rocky Mountains	Pacific coast
	Area	Proportion				
	Thousand acres	*Percent*	*Thousand acres*	*Thousand acres*	*Thousand acres*	*Thousand acres*
Commercial forest land	[1] 508,845	22.4	171,789	201,069	65,623	70,364
Noncommercial forest land:						
Unproductive	234,012	10.3	2,589	17,956	70,499	142,968
Productive-reserved	16,008	.7	4,062	1,279	7,200	3,467
Total	250,020	11.0	6,651	19,235	77,699	146,435
Total forest land	758,865	33.4	178,440	220,304	143,322	216,799
Cropland	448,305	19.7	269,017	110,342	42,166	26,780
Other land	1,064,173	46.9	181,768	182,045	369,852	330,508
Total land area	2,271,343	100.0	629,225	512,691	555,340	574,087

[1] Not included in this analysis are roughly 320,000 acres of forest land in Puerto Rico.

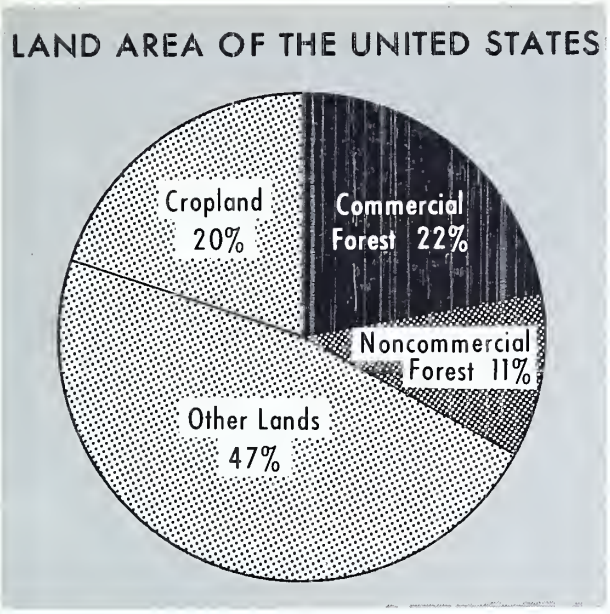

Figure 34

under present cost and price conditions. Other areas are either nonstocked or support low-quality or sparse stands of timber. Many of these lands are used for recreation or other purposes in addition to timber growing. All of these lands, however, are considered suitable for producing timber crops, now or prospectively, under some level of protection and management.

One-third of the total forest area, or 250 million acres, is classified as "noncommercial," either because of low productivity for timber growing, or in the case of some public lands, because of legal reservation for recreation and other nontimber uses.

Commercial Forests Mainly in the East

Although the total forest area is fairly evenly divided between the East and the West, nearly three-fourths of the commercial forest land is concentrated in the East (table 52 and fig. 35). The South alone has 39 percent of the total area of commercial forests, the North 34 percent, and the West 27 percent.

America's forests also are unevenly distributed by States. In North Dakota and Nevada, for example, less than 1 percent of the land area is commercial forest. On the other hand, Maine has 87 percent of its acreage in commercial forest, and Washington and Oregon west of the Cascades 73 percent.

Commercial Forest Area Continues To Increase

Since the original settlement of this country, there has been a continuing encroachment on forest lands, for farms, cities, highways, and other purposes. Over the past few decades, however, abandonment of cropland in certain areas and reversion to timber growing has more than offset such losses of forest land.

During the decade prior to 1953, for example, additions to the forest acreage exceeded withdrawals by 24 million acres.[30] In the 10 years from 1953 to 1963 the increase in forest area continued, although at a slower rate with a net addition of 7.6 million acres to the commercial forest area (table 53).[31]

Most of the change in the commercial forest area between 1953 and 1963 occurred in the South, where there was a net increase of 6.7 million acres. Except in the East Gulf States, where forest areas declined about 2 percent largely as a result of conversion of forests to pasture, all regions of the South gained commercial forest acreage, particularly the Central Gulf region—Alabama, Mississippi, and Tennessee. Here commercial forest land increased 8 percent in the 1953–63 decade.

These net gains in forest area in both the South and North reflected sweeping changes in the agricultural economy. Areas of cropland har-

[30] U.S. Department of Agriculture, Forest Service, *Timber Resources for America's Future*, Forest Resource Report No. 14, January 1958.

[31] The estimated area of commercial forest land on January 1, 1953, was 489 million acres. New statistics from the Forest Survey in the West and other minor changes such as the inclusion of Hawaii resulted in an upward revision of the 1953 estimates to 509 million acres.

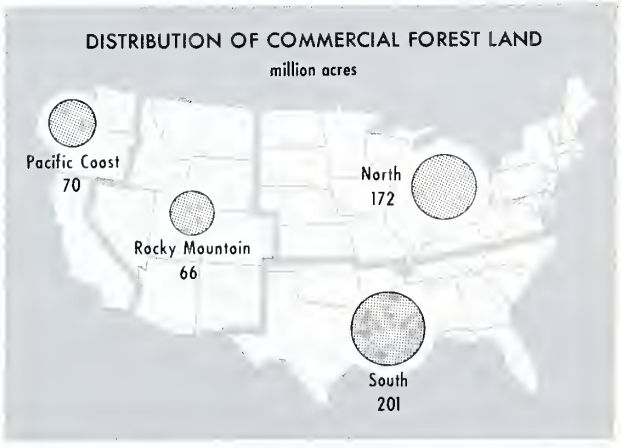

Figure 35

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Much of the recent gain in forest land area is attributable to reforestation of abandoned farmland.

TABLE 53.—*Changes in commercial forest land, by region, 1953 and 1963*

Region	Area Jan. 1, 1963	Change Jan. 1, 1953–Jan. 1, 1963	
	Thousand acres	*Thousand acres*	*Percent*
New England	31,451	+425	+1.4
Middle Atlantic	43,888	+1,663	+3.9
Lake States	52,392	−49	−0.1
Central	44,058	−952	−2.2
Total North	171,789	+1,087	+0.6
South Atlantic	47,604	+1,452	+3.1
East Gulf	44,772	−716	−1.6
Central Gulf	53,361	+3,864	+7.2
West Gulf	55,332	+2,113	+3.8
Total South	201,069	+6,713	+3.3
Pacific Northwest	51,884	−325	−0.6
Pacific Southwest	18,480		
Northern Rocky Mountain	39,287	+45	+0.1
Southern Rocky Mountain	26,336	+65	+0.2
Total West	135,987	−215	−0.2
All regions	508,845	+7,585	+1.5

vested declined 10 percent in the 1950's, while the rural population dropped about 12 percent.

In terms of timber supplies, trends in land use have not been so favorable. Much of the land lost to timber growing is of relatively high timber growing capability, and often the timber standing on such land is not utilized. Most areas reverting to forest, on the other hand, are wornout farmlands that must be restocked either artificially or naturally before they can produce timber crops at some future date.

One-Third of the Forest Is Noncommercial for Timber Production

There are about 250 million acres of noncommercial forest in the 50 States. Some 16 million acres of these forests in public ownership are suitable for timber growing but are legally withdrawn for such uses as State and National Parks and National Forest wilderness areas. Most of this "productive-reserved" area is in Federal ownership. Two-thirds of it is in the West.

There are also about 234 million acres of "unproductive" forest land incapable of producing more than approximately 25 cubic feet of industrial wood per acre per year and thus considered unsuitable for sustained production of timber crops. About 112 million acres of these unproductive forest lands are located in Alaska, 101 million acres in other parts of the West, and 21 million acres in the East.

A large part of this unproductive forest land in the Western States supports pinyon and juniper, open woodlands of oak or other hardwoods, subalpine forests, and chaparral. The timber growing on these lands is suitable mainly for fuelwood or other low-quality products such as fence posts. Nearly two-thirds of these lands are in Federal ownership.

Although these noncommercial forest areas are of limited national significance from a timber standpoint, they nevertheless have substantial values for other purposes such as watersheds, recreation, and the production of forage for domestic animals and wildlife.

Interior Alaska Forests Included in Noncommercial Acreage

In addition to the forest lands of coastal Alaska—comprising 6 million acres of commercial and 7 million acres of noncommercial forest—there are in the interior of Alaska an estimated 105 million acres of forest land. These forests cover about 32 percent of the total land area of 333 million acres in the interior. Detailed statistics of these interior forests are not yet available and thus in this study, as in the Timber Resource Review of 1952, none of the forest land in Interior Alaska has been included in tabulations of commercial forest area.

Perhaps 22 million acres of the forests in Interior Alaska may prove to have a timber growth potential in excess of 20 cubic feet per acre annually. These more productive areas are of potential importance for timber production, even though opportunities for large-scale industrial use of forests in this area currently appear somewhat distant.

The forest cover in the interior of Alaska is made up largely of a mosaic of stands of varying species and ages, reflecting the numerous and recurrent fires that have burned in the past. The occurrence of permanently frozen ground (permafrost) also contributes to the diversity of vegetation. Forest types are generally mixed, with spruce, birch, and aspen the predominating species.

Some of the forest area is occupied by fairly heavy stands. Other areas are capable of producing substantial volumes of timber but have been largely denuded or are stocked with young trees as a result of past fires. The more productive forest lands are located mainly on the Kenai Peninsula and along the valleys of the Yukon, Susitna, Copper, and Tanana Rivers.

Prior to statehood, over 99 percent of the land in Interior Alaska was under the jurisdiction of the Bureau of Land Management of the U.S. Department of the Interior. The Statehood Act of 1958, however, provided for the selection of about 104 million acres by the State of Alaska. As of January 1, 1963, about 12.7 million acres had been selected and 0.7 million acres patented under this act.

The total volume of timber now standing on the more productive forest lands in interior Alaska is estimated to be roughly equivalent to some 2.5 percent of the total volume of growing stock on commercial forest lands of the United States. Because of the large proportion of immature stands, the average volume of timber on these lands averages less than 2,000 board feet per acre.

Net growth in interior Alaska currently is very low as a result of both site conditions and the low levels of stocking resulting from past fire and other destructive agents. Most of the interior, moreover, is economically inaccessible and timber harvesting to date has been mostly limited to local cutting of rough lumber, houselogs, and fuelwood. In time, however, these forests may well supply increasing volumes of forest products for the people of Alaska and an expanding world population.

TIMBER GROWING CAPABILITY

The Nation's forest lands differ widely in terms of their inherent capacity to grow crops of industrial wood. Although precise techniques for determining the growth capacity of forest land are still in early stages of development, a classification by broad productivity groupings is of value in appraising future timber growing possibilities.

One-Third of the Commercial Forest Land Has Nearly Half the Growth Potential

The Nation's timber growing capacity is concentrated on a relatively small portion of the total commercial forest land. According to the preliminary estimates now available, about 8 percent of the commercial forest area has the capacity to grow in excess of 120 cubic feet per acre annually

TABLE 54.—*Commercial forest land in the United States, by productivity class and by section, January 1, 1963*

Productivity class	Total U.S.[1]		North		South		Rocky Mountains		Pacific coast	
	Million acres	*Percent*	*Million acres*	*Percent*	*Million acres*	*Percent*	*Million acres*	*Percent*	*Million acres*	*Percent*
120 cu. ft. or more	43	8.5	2	1.2	16	8.0	1	1.5	24	34.3
85–120 cu. ft	117	22.9	30	17.4	63	31.3	9	13.6	15	21.4
50–85 cu. ft	232	45.6	95	55.2	93	46.3	20	30.3	24	34.3
25–50 cu. ft	117	23.0	45	26.2	29	14.4	36	54.6	7	10.0
All classes	509	100.0	172	100.0	201	100.0	66	100.0	70	100.0

[1] Extrapolated from partial data for each section.

(table 54). An additional 23 percent of the total area is capable of growing from 85 to 120 cubic feet per acre. These lands, composing 31 percent of the Nation's total commercial forest, are capable of producing roughly half of the potential growth.

Commercial forest lands of medium quality, capable of producing from 50 to 85 cubic feet per acre annually, make up about 46 percent of the total area. Somewhat less than a fourth of the total area is capable of producing between 25 and 50 cubic feet per acre annually. The relatively low productive capacity of these poorer sites tends to reduce possibilities for investments in timber growing, although this acreage can still be expected to grow considerable timber for industrial use.

Pacific Coast States Have the Highest Productivity

The highest concentration of commercial forest lands capable of producing more than 120 cubic feet of growth per acre annually is in the Pacific Coast States, notably in the forests of western Washington, western Oregon, and northern California (figure 36). In this section there are about 24 million acres of this highly productive land, and a total of 39 million acres with a capacity in excess of 85 cubic feet per acre. This area has a relatively small amount of forest that will not produce more than 50 cubic feet per acre annually.

Southern States Have a Large Area of Productive Lands

Almost 80 million acres in the South have the capacity to produce 85 cubic feet or more of timber per acre and about 16 million acres could produce in excess of 120 cubic feet annually. The better timber growing lands in the South are found mainly in the Coastal Plain from North Carolina to Texas, including the slash pine forests of southern Georgia, for example, and loblolly pine areas in Louisiana and southern Arkansas. The Mississippi Delta and other stream bottoms slicing through the Coastal Plain also contain many valuable hardwood forests capable of high yields.

One-Fifth of North's Area Has High Productivity

The North ranks behind the Pacific coast and South in average timber growing capacity, but nevertheless has about 32 million acres or one-fifth of its area capable of growing more than 85 cubic feet per acre annually. About three-fourths of the forest land in the North has the capability of producing in excess of 50 cubic feet per acre per year.

Rocky Mountains Have Varied Capability

The Rocky Mountain forests include a wide range of timber growing capabilities but on the average are somewhat less productive than forests in other sections. An estimated 10 million acres of commercial forests in the Rockies are capable of growing more than 85 cubic feet per acre annually. These more productive lands are located mainly in Idaho and western Montana. More than half of the commercial forest land in this section is of relatively low site capability, and much of it under current conditions is economically inoperable for timber harvesting and management.

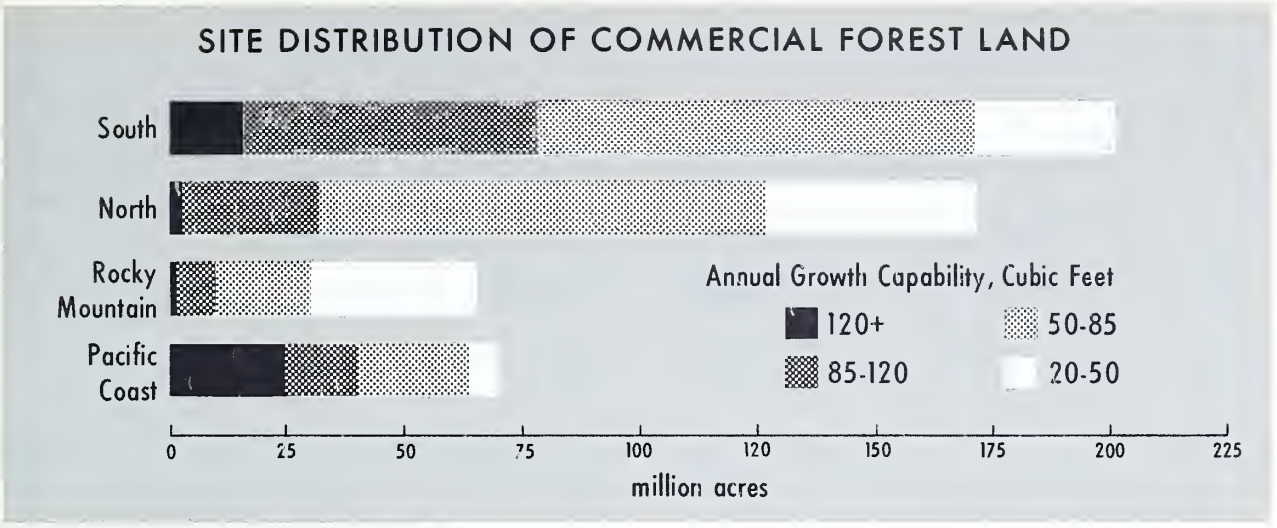

Figure 36

FOREST TYPES

Several hundred tree species in the United States grow in a multitude of combinations of species or forest types. From a management standpoint, forest types often provide valuable guides to the species the land is most capable of growing.

Softwood and Hardwood Types About Equal in Area

Hardwood forest types occupy about 53 percent of the Nation's commercial forest land, and softwood types 47 percent (table 55). However, distribution of types differs sharply between the East and the West.

There is a slightly larger area of softwood types in the West—about 125 million acres—than in the East, where softwood types total 115 million acres. Hardwood types, on the other hand, are concentrated almost exclusively in the East. Here they exceed the area of softwood types by more than 2 to 1.

East of the Great Plains, oak-hickory forests dominate the forest landscape. This is by far the most extensive timber type in the United States. The loblolly-shortleaf pine type ranks second nationally, followed by oak-gum-cypress, Douglas-fir, ponderosa pine, and the maple-birch-beech type. Together these six types occupy more than half of the commercial forest area in the United States.

TABLE 55.—*Commercial forest land in the United States, by forest-type groups, January 1, 1963*

Type group	Total area	Proportion of total
	Thousand acres	*Percent*
EASTERN TYPE GROUPS		
Softwood types:		
Loblolly-shortleaf pine	57,995	11.4
Longleaf-slash pine	25,977	5.1
Spruce-fir	19,638	3.9
White-red-jack pine	11,120	2.2
Total	114,730	22.6
Hardwood types:		
Oak-hickory	115,963	22.8
Oak-gum-cypress	37,788	7.4
Oak-pine	26,941	5.3
Maple-beech-birch	33,318	6.5
Aspen-birch	23,715	4.7
Elm-ash-cottonwood	20,403	4.0
Total	258,128	50.7
WESTERN TYPE GROUPS		
Softwood types:		
Douglas-fir	37,352	7.3
Ponderosa pine	35,997	7.1
Lodgepole pine	15,796	3.1
Fir-spruce	15,616	3.0
Hemlock-Sitka spruce	10,008	2.0
White pine	5,003	1.0
Larch	3,532	.7
Redwood	1,596	.3
Total	124,900	24.5
Hardwood types	11,087	2.2
All groups	508,845	100.0

Southern Pines Predominate in Eastern Softwood Types

The most extensive eastern softwood forest type is loblolly-shortleaf pine, which accounts for half of the eastern softwood acreage (table 55 and fig. 37). Nearly a fourth of the eastern softwood area is occupied by the longleaf-slash pine type. These southern-pine types are largely confined to a 300-mile-wide belt extending along the Atlantic Ocean and the Gulf of Mexico from New Jersey to Texas. Together they make up 40 percent of the South's commercial forest land. They compose the major softwood timber-producing area in the East.

Only 20 percent of the commercial forests in the North support softwood types. These include primarily the spruce-fir and white-red-jack pine types in the northern Lake States and northern New England.

Hardwood Types Largely Oak

The oak-hickory type, the most widespread of all eastern types, occupies almost half of the eastern hardwood area (table 55). This type is composed of a large number of species in many local associations growing on a wide variety of sites. Oak-hickory stands in general present serious problems for forest managers because of the poor saw log quality of most trees left after cutting, and the lack of markets for the huge overburden of small and low-grade timber in many of these types.

The relatively valuable swamp and bottomland forests of the oak-gum-cypress and elm-ash-cottonwood types cover more than one-fifth of the hardwood area in the East. Two-thirds of these lowland types are in the South, with the largest concentration—10 million acres—in the Missis-

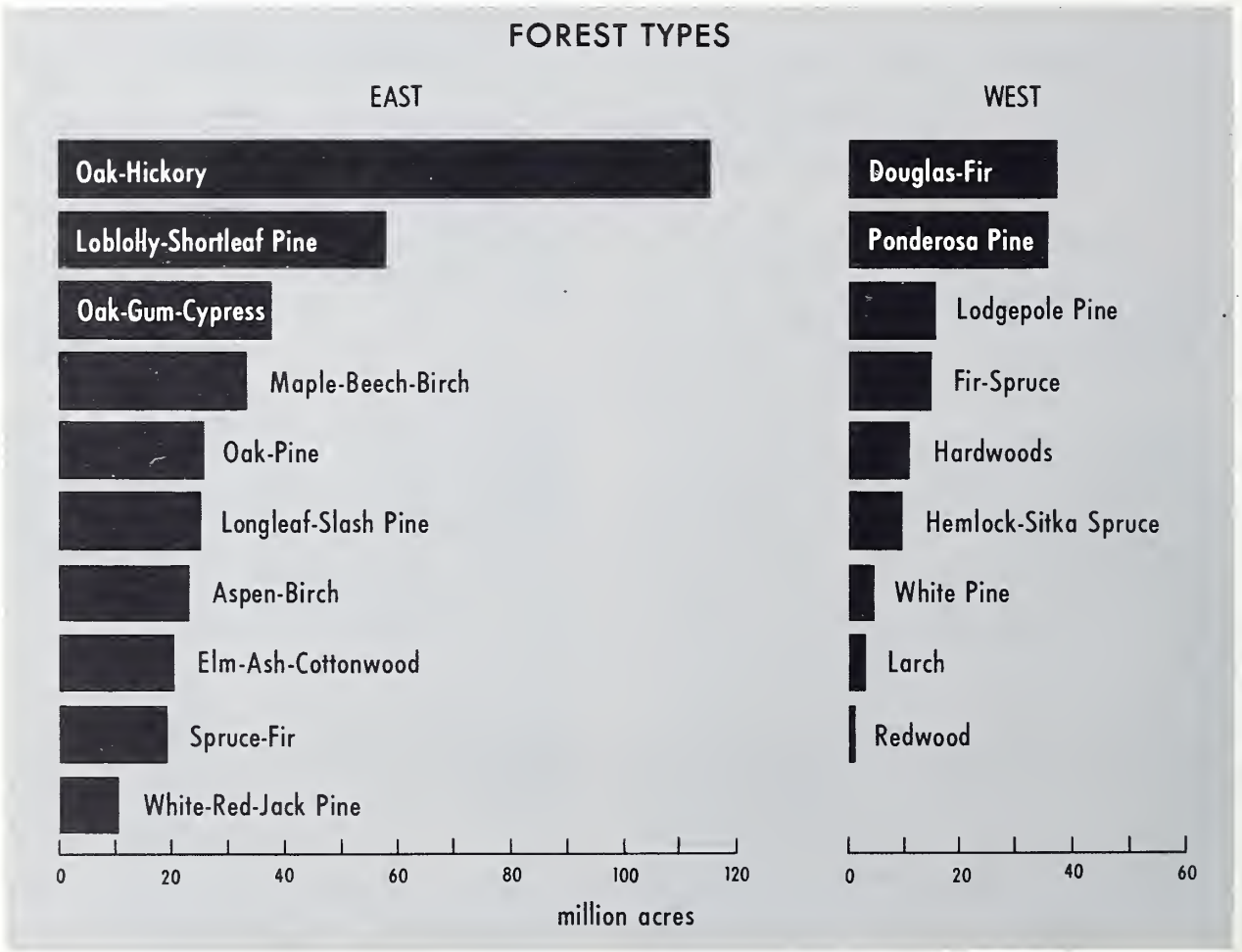

Figure 37

sippi Delta. These types are notable not only for a rich variety of species growing on some of the inherently most productive hardwood sites in America, but also because they contain a large part of the remaining supply of high-quality hardwood.

The maple-beech-birch type group, representing about 13 percent of hardwood types, is about equally distributed among the New England, Middle Atlantic, and Lake States regions. In these types yellow birch and sugar maple are the preferred species for the long-established lumber and veneer industries.

The oak-pine type is largely concentrated in the South, where it frequently represents a residual stand left after cutting of merchantable pine in mixed pine-hardwood forests. Much of this type is better adapted to growing pine than commercial hardwoods. Through cultural practices such as cull hardwood removal, extensive areas have been reconverted to productive pine types, and other stands offer similar opportunities.

The aspen-birch types are pioneer associations that have invaded large areas of cutover land in the North. A considerable portion of this type occurs on productive land that formerly supported pine. Here there is an opportunity to increase the acreage of pine type through planting or other stand conversion measures. Some portions of these types are reverting to maple, beech, or birch, or to spruce and fir. In other areas where aspen is important to the pulp industry, attempts are being made to maintain the existing cover.

Douglas-Fir and Ponderosa Pine Most Extensive Types in West

Nearly 30 percent of the commercial forest land in the West carries stands in which Douglas-fir predominates (table 55). Most of this type is on the Pacific coast, mainly in the outstandingly productive area west of the Cascades, but Douglas-fir stands also are widespread in the Rocky Mountain States.

The ponderosa pine type almost matches the Douglas-fir type in area and importance. Ponderosa pine occupies a large acreage in eastern Oregon and Washington and is the most extensive commercial forest type in California and the Rocky Mountains.

Together, the Douglas-fir and ponderosa pine types are the Nation's principal current sources of softwood timber for the production of lumber and plywood. None of the other western types approaches either of them in acreage, although in the aggregate these other types make up 46 percent of the commercial forests in the West. Several of these other types are important sources of timber products, particularly those containing species noted for high quality and specialty uses, such as western white pine, sugar pine, and redwood.

The hemlock-Sitka spruce type, particularly important for pulpwood, occupies nearly all of the commercial forest land in coastal Alaska and is the characteristic type along the coast in Oregon and Washington. Lodgepole pine and spruce-fir types are widely distributed at high elevations in the West and are receiving increasing attention for industrial development. The larch type in the Northern Rocky Mountain Region is an important source of both saw logs and poles. Hardwood types, located principally in western Oregon and Washington, occupy 8 percent of the commercial forest land in the West.

STOCKING OF FOREST LANDS

In past forest surveys stocking classifications have been used as a measure of occupancy of land by "growing-stock trees," i.e., all live trees except cull trees. Such classifications, however, ordinarily do not provide an adequate measure of the "condition" of the forest or its potential for management. In current forest surveys stocking data are therefore being compiled to show occupancy of land by major classes of growing stock and other cover, including (a) *desirable* trees, i.e., the kind of well-formed, sound, vigorous trees that forest managers aim to grow, (b) *acceptable* trees, which include other trees meeting the minimum requirements for growing stock but too poor in quality and/or vigor to qualify as desirable trees, (c) *sound culls* or *rough* trees, (d) *rotten culls*, and (e) *inhibiting shrubs* or other cover. Stocking by these classes is determined from tallies of trees on clusters of 10 variable plots distributed over approximately 1 acre.

Desirable Trees Occupy Limited Portion of Forest Area

Stocking by tree classes is as yet available for only a limited portion of the United States, but recent figures for Georgia provide an illustration of the proportions of commercial forest lands occupied by different classes of cover as follows:

	Percent
Desirable trees	30
Acceptable trees	38
Total growing stock	68
Cull trees	11
Nonstocked with trees	21
Total	100

The nature of stocking on commercial forest lands in the East also is illustrated by related data on tree occupancy in several southern States (table 56). In Georgia, for example, 70 percent of the commercial forest area was found to be 70 percent or better stocked with all live trees and about 55 percent with growing stock trees, but only 7 percent of the total area was 70 percent or better stocked with desirable trees.

TABLE 56.—*Percent of commercial forest land 70 percent or better stocked with all trees, growing stock trees, and desirable trees*

State	70 percent or better stocked with all trees	70 percent or better stocked with growing-stock trees	70 percent or better stocked with desirable growing-stock trees
Alabama	77	49	7
Georgia	70	55	7
Illinois	86	51	4
Tennessee	69	32	1

Area Condition Data Indicate Forestry Opportunities

An additional procedure recently developed for interpreting area occupancy in more meaningful terms than can be done by average stocking percentages involves classifying the forest into "area condition classes," as follows:

CLASS 1.—Areas 70 percent or more stocked with "desirable" trees. Most stands in this category do not require any special treatment to insure a high level of growth, although some stands, particularly in the West, require thinning to maintain high growth rates.

CLASS 2.—Areas 40 to 70 percent stocked with desirable trees and having favorable conditions for improved stocking. Here again no special treatment is ordinarily required.

CLASS 3.—Areas 40 to 70 percent stocked with desirable trees and with more than 30 percent of the area controlled by other trees, inhibiting vegetation, and/or surface conditions that prevent occupancy by desirable trees.

CLASS 4.—Areas less than 40 percent stocked with desirable trees but expected to restock naturally.

CLASS 5.—Areas less than 40 percent stocked with desirable trees and requiring planting and/or stand conversion to improve stocking.

In the few States where condition class data are available, only a small proportion of the total forest area falls in the top two condition classes (table 57). Thus in Georgia only 7 percent of the commercial forest area was in class 1 and 6 percent in class 2.

TABLE 57.—*Percent of commercial forest land in selected States, by area-condition class, Jan. 1, 1963*

States	Condition class				
	1	2	3	4	5
Alabama	7	12	17	4	60
Florida	9	4	32	1	54
Georgia	7	6	22	1	64
Illinois	4	3	28	27	38
Tennessee	1	4	9	5	81

Stocking Increasing in Most Forests

Deforested and poorly stocked areas throughout the United States have slowly been upgraded by better fire protection, natural regeneration, and planting. Particular improvements in the East were evident during the decade 1953–63, when nonstocked lands, i.e., with less than 10 percent stocking of growing-stock trees, decreased by an estimated 21 percent. Areas of stands more than 70 percent stocked with growing-stock trees increased about 12 percent in the East in the same period.

Further evidence of increasing stand density in the South is found in a 17-percent rise in average basal area of southern forests in the period 1953–63, as shown by the following tabulation of basal area per acre in square feet in trees over 1 inch in diameter:

Class of tree	*1953*	*1963*	*Percent change*
Growing stock	45.8	54.3	+18.5
Culls	15.3	17.1	+11.8
All trees	61.1	71.4	+16.9

Many Stands Overstocked

Substantial acreages, especially in the Rocky Mountains, support far too many trees per acre

for acceptable growth. These overly dense stands include (a) stands in which utilizable growth could be increased with cultural treatment; (b) stands wherein overstocking has persisted so long as to substantially reduce the feasibility of increasing growth through treatment; and (c) stagnated stands in which prolonged overstocking has virtually eliminated all means of improving growth in the existing stands. In many stands of the latter class, moreover, trees are too small to permit economic harvesting.

Overstocking is not a general problem in most regions, but the continuing buildup of inventories on many areas is reaching the point where thinning or other stand improvement measures are becoming increasingly necessary to maintain growth in quantity and quality.

One-Fifth of Forest Area Still Less Than 40 Percent Stocked

About 111 million acres of commercial forest land has less than 40 percent stocking, based on the old occupancy standards for growing-stock trees. This includes not only areas that have recently reverted to forest, but also nonstocked and partially stocked areas that reflect results of past cutting, fire, or grazing.

About 35 million acres of this land is nonstocked, i.e., having less than 10 percent occupancy by growing-stock trees. Much of this area, moreover, is occupied by brush or other vegetation that inhibits restocking of desirable trees. Three-fourths of this nonstocked land is located in the East, primarily in the Lake States and East Gulf regions. The adequacy of stocking varies rather widely by States, as indicated by stocking data in appendix 1.

STAND-SIZE CLASSES

The distribution of forest land by stand-size class provides an indication of the major source of industrial timber for the next several decades, and the location of prospective timber growth and inventories. As in the case of site quality and total stocking, the age and size of timber on the land also provides some economic measure of the forest resource.

Much of the Nation's forest land is poorly stocked. F–478126

About 8 Percent of the Nation's Forests in Old-Growth Stands

Old-growth sawtimber stands, now found only in the West, occupied about 43 million acres, or approximately 8 percent of the commercial forest area (table 58). Two-thirds of the remaining old-growth area, and a larger proportion of the old-growth timber volumes, was in the Pacific Coast States. Some of these old-growth stands are made up entirely of virgin timber. Others are composed of residual trees, frequently highly defective, that were left in earlier logging operations. Many stands are of mixed characteristics, especially in the ponderosa pine type, and are classified according to predominance of old or young growth.

One-Third of the Nation's Forest in Young-Growth Sawtimber Stands

The area of young-growth sawtimber stands, amounting to 166 million acres at the beginning of 1963, was about four times as large as the area of old-growth timber (table 58). This distinction between old-growth and young-growth is only approximate, however, because in the West, especially in the Rocky Mountains, many small-sawtimber stands were classified as young-growth regardless of their age.

Between 1953 and 1963 the area of young-growth sawtimber stands rose about 25 percent. The largest acreages of these stands are in the South and the North (fig. 38).

Poletimber and Seedling and Sapling Stands Largely in East

Forests that are characterized mainly by poletimber trees also make up about one-third of the commercial forest area. More than 4 out of 5 of these acres are in the East, with roughly equal shares in the North and South. These stands can be expected to contribute importantly to the sawtimber supply during the next few decades, particularly on the better sites. Opportunities for enhancing the rate of sawtimber development by thinning and other stand-improvement treatments are substantial in many of these stands.

Seedling and sapling stands occupy about one-fifth of all commercial forests, with about 8 out of 9 acres of such stands in the East. In most regions very few of these stands will be operable before the end of the century.

Timber Volumes Concentrated on Limited Areas

Stands that contain more than 5,000 board feet per acre cover only 21 percent of the commercial forest land (table 59). They contain roughly three-fourths of the total national inventory of sawtimber. Most of these relatively heavy-volume stands are in the West, where they cover nearly half the commercial forest area. In the East they cover about 11 percent of the commercial forest land.

TABLE 58.—*Commercial forest land, by stand-size class and section, January 1, 1963*

Stand-size class	Total U.S.		North	South	Rocky Mountains	Pacific coast
	Area	Proportion				
	Thousand acres	*Percent*	*Thousand acres*	*Thousand acres*	*Thousand acres*	*Thousand acres*
Sawtimber stands:						
Old-growth	42,869	8.4			13,933	28,936
Young-growth	166,076	32.6	52,974	68,828	24,706	19,568
Total	208,945	41.0	52,974	68,828	38,639	48,504
Poletimber stands	164,794	32.4	64,808	71,580	19,063	9,343
Seedling and sapling stands	99,573	19.6	39,327	49,254	4,352	6,640
Nonstocked areas	35,533	7.0	14,680	11,407	3,569	5,877
All classes	508,845	100.0	171,789	201,069	65,623	70,364

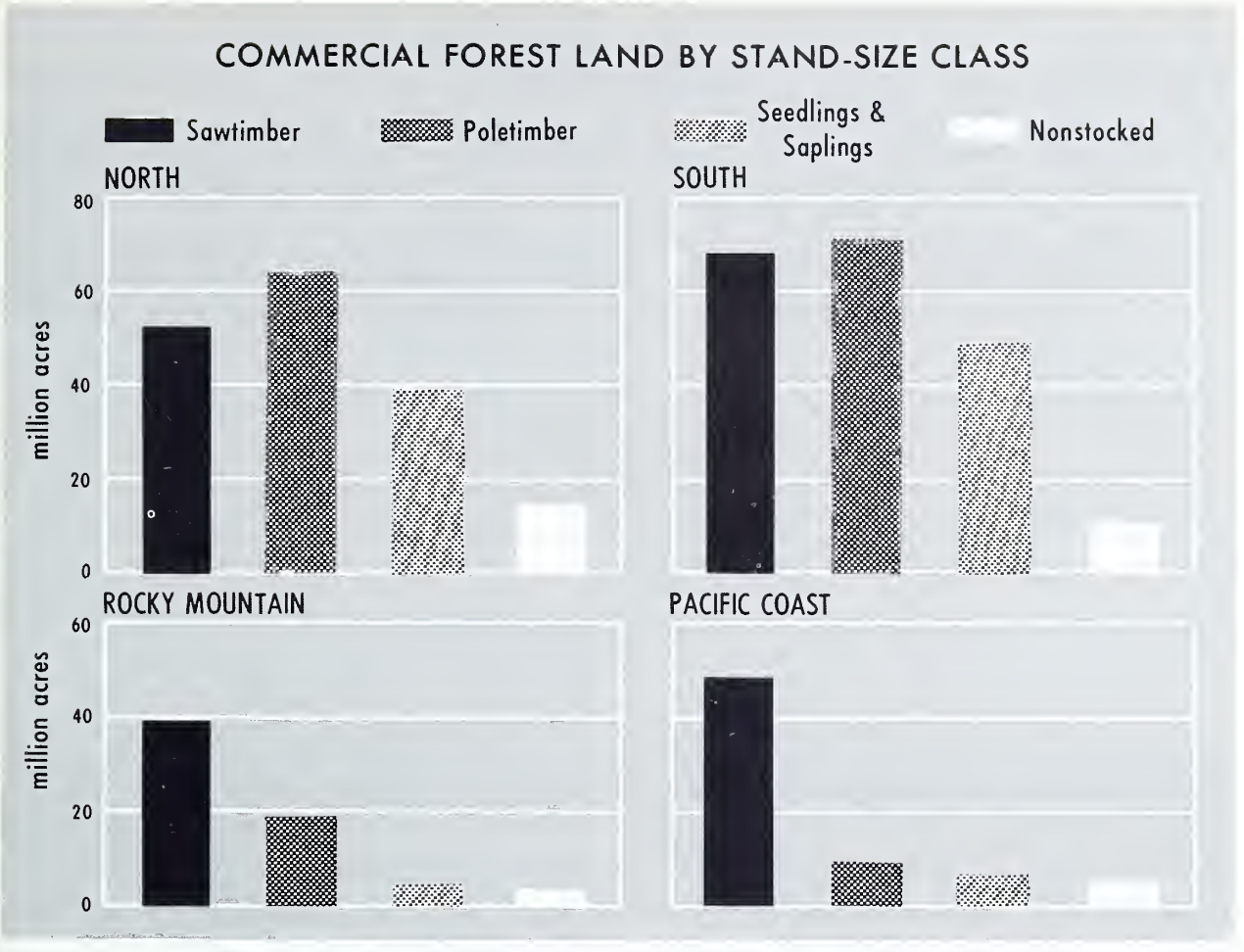

Figure 38

Stands with 1,500 to 5,000 board feet per acre occupy about 23 percent of the commercial forest area; and stands with less than 1,500 board feet per acre about 56 percent of the total area. Volumes per acre in most of these stands are too light to support saw-log operations, although some areas of aspen, jack pine, and spruce-fir, for example, are operable for pulpwood. Thus a major part of the commercial forest is at present unmerchantable from a logging standpoint. Many areas now supporting limited volumes of timber will of course produce commercial crops of timber in time.

TABLE 59.—*Commercial forest land, by sawtimber volume classes and section, January 1, 1963*

Sawtimber volume per acre	Total U.S.		North		South		Rocky Mountains		Pacific coast	
	Million acres	*Percent*	*Million acres*	*Percent*	*Million acres*	*Percent*	*Million acres*	*Percent*	*Million acres*	*Percent*
Less than 1,500 bd. ft	286	56	120	70	127	63	25	38	14	20
1,500–5,000 bd. ft	118	23	35	20	51	25	21	32	11	16
More than 5,000 bd. ft	105	21	17	10	23	12	20	30	45	64
All classes	509	100	172	100	201	100	66	100	70	100

TIMBER INVENTORIES

The quantity and quality of standing timber are both of fundamental importance in appraising the Nation's forest situation. Timber inventories not only represent the reservoir of basic raw material from which forest industries must draw their requirements but they also represent the base for future growth.

Growing Stock 90 Percent of Total Timber Volume

The commercial forests of the United States contained 699 billion cubic feet of sound wood as of January 1, 1963 (table 60). Ninety percent of this total volume, or 628 billion cubic feet, was classed as growing stock. The remaining 10 percent consisted of sound wood volume in cull trees and salvable dead trees.

Nearly two-thirds of the total timber inventory was in sawtimber trees, i.e., trees of sufficient size and of suitable form and soundness to contain at least one saw log. Sawtimber is given special emphasis in later sections of this study because the bulk of industrial wood is cut from sawtimber trees, including not only lumber and veneer and plywood, but also much pulpwood and other products.

Growing Stock 69 Percent Softwood; Sawtimber 81 Percent Softwood

Softwoods predominate in the Nation's timber inventory, accounting for 69 percent of the 628 billion cubic feet of growing stock in 1963 (table 61). Hardwoods made up 31 percent of the total. The proportions of softwoods varied widely by section, from 23 percent in the North to 95 percent on the Pacific coast.

The sawtimber inventory included an even larger proportion of softwoods—about 81 percent of the total inventory of 2,537 billion board feet of all species. Hardwoods constituted 19 percent of the total sawtimber inventory.

West Has 57 Percent of Growing Stock and 72 Percent of Sawtimber

The geographic distribution of timber volumes differs drastically from the distribution of the forest area. Although Western States have only one-fourth of the commercial forest acreage, they have 57 percent of the Nation's growing stock and 72 percent of the sawtimber of all species (table 62 and fig. 39).

Old-growth timber, located mainly in Oregon and Washington, accounted for roughly 30 percent of the total sawtimber inventory in 1963. It is largely because of these old-growth stands that the West had about 86 percent of the total softwood sawtimber.

TABLE 60.—*Volume of timber on commercial forest land, by class of material, January 1, 1963*

Class of timber	All species		Softwoods			Hardwoods
	Volume	Proportion	Total	Eastern	Western	
	Million cu. ft.	*Percent*	*Million cu. ft.*	*Million cu. ft.*	*Million cu. ft.*	*Million cu. ft.*
Sawtimber trees:						
Saw-log portions	403,753	58	322,517	51,708	270,809	81,236
Upper stems	52,430	7	32,671	9,139	23,532	19,759
Total	456,183	65	355,188	60,847	294,341	100,995
Poletimber trees	171,699	25	78,894	33,147	45,747	92,805
Total growing stock	627,882	90	434,082	93,994	340,088	193,800
Salvable dead trees	16,748	2	15,737	141	15,596	1,011
Sound cull trees	32,045	5	6,292	3,710	2,582	25,753
Rotten cull trees	22,167	3	6,027	1,084	4,943	16,140
All classes	698,842	100	462,138	98,929	363,209	236,704

TABLE 61.—*Volume of growing stock and sawtimber on commercial forest land, by section and by softwoods and hardwoods, January 1, 1963*

GROWING STOCK

Section	All species		Softwoods		Hardwoods	
	Volume	Proportion	Volume	Proportion	Volume	Proportion
	Million cu. ft.	*Percent*	*Million cu. ft.*	*Percent*	*Million cu. ft.*	*Percent*
North	136,469	100.0	31,306	23	105,163	77
South	134,086	100.0	62,688	47	71,398	53
Rocky Mountains	98,724	100.0	93,360	95	5,364	5
Pacific coast	258,603	100.0	246,728	95	11,875	5
Total	627,882	100.0	434,082	69	193,800	31

SAWTIMBER

	Million bd. ft.	*Percent*	*Million bd. ft.*	*Percent*	*Million bd. ft.*	*Percent*
North	309,774	100.0	66,627	22	243,147	78
South	412,070	100.0	224,757	55	187,313	45
Rocky Mountains	418,392	100.0	408,870	98	9,522	2
Pacific coast	1,396,563	100.0	1,357,768	97	38,795	3
Total	2,536,799	100.0	2,058,022	81	478,777	19

Growing Stock Inventories Up 5 Percent Since 1953; Sawtimber Down 1 Percent

During the 1953–63 decade growing stock inventories increased roughly 32 billion cubic feet, while sawtimber volumes dropped about 24 billion board feet (table 63).

TABLE 62.—*Proportion of growing stock and sawtimber, by sections, January 1, 1963*

GROWING STOCK

Section	All species	Softwoods	Hardwoods
	Percent	*Percent*	*Percent*
North	22	7	54
South	21	14	37
Rocky Mountains	16	22	3
Pacific coast	41	57	6
United States	100	100	100

SAWTIMBER

North	12	3	51
South	16	11	39
Rocky Mountains	17	20	2
Pacific coast	55	66	8
United States	100	100	100

These estimates of change must be considered as approximations, however, because of sampling errors involved in estimates of timber inventories, growth, and cut, and the necessity of updating or backdating timber inventory data collected over a period of years. These changes were computed from the most recent forest surveys updated to 1963 and revised estimates for 1953 that are substantially higher than those published in "Timber Resources for America's Future." Upward revisions of timber inventory estimates for 1953 were based primarily on new area and volume data from recent surveys in a number of States for which only preliminary estimates were

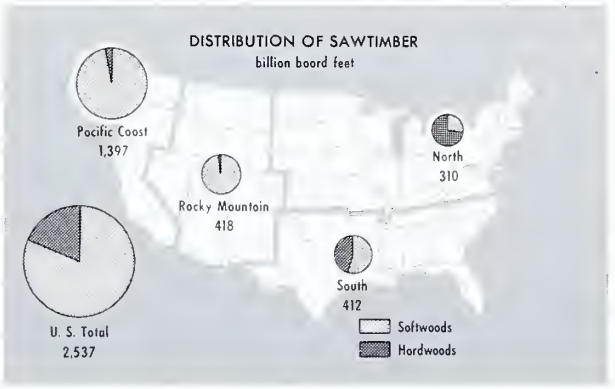

Figure 39

TABLE 63.—*Change in growing stock and sawtimber inventories on commercial forest land, by section and by softwoods and hardwoods, Jan. 1, 1953 to January 1, 1963*

GROWING STOCK

Section	All species		Softwoods		Hardwoods	
	Million cu. ft.	*Percent*	*Million cu. ft.*	*Percent*	*Million cu. ft.*	*Percent*
North	+24,418	+22	+4,653	+17	+19,765	+23
South	+14,291	+12	+10,124	+19	+4,167	+6
Rocky Mountains	+3,819	+4	+3,368	+4	+451	+9
Pacific coast	−10,489	−4	−12,493	−5	+2,004	+20
United States	+32,039	+5	+5,652	+1	+26,387	+16

SAWTIMBER

	Million bd. ft.	*Percent*	*Million bd. ft.*	*Percent*	*Million bd. ft.*	*Percent*
North	+45,216	+17	+5,031	+8	+40,185	+20
South	+37,955	+10	+36,845	+20	+1,110	+1
Rocky Mountains	+3,335	+1	+1,941	----------	+1,394	+17
Pacific coast	−110,614	−7	−118,224	−8	+7,610	+24
United States	−24,108	−1	−74,407	−3	+50,299	+12

available in 1953. Rather substantial upward adjustments in sawtimber inventories in the Rocky Mountain regions also resulted from a reduction in sawtimber size standards from 11.0 inches d.b.h. to 9.0 inches.

Most of the recent increase in growing stock inventories was in northern hardwoods. Increases in the South were mainly in softwoods but with some increases in hardwoods, often at the expense of preferred softwoods. In the West softwood inventories have continued to decline with the continued heavy cutting in old-growth stands.

Heaviest Volumes of Timber Per Acre Found in the West

Average inventories per acre differ considerably between sections, as shown by the following tabulation:

	Growing stock per acre (cubic feet)	*Sawtimber per acre (board feet)*
Section:		
North	790	1,800
South	670	2,050
Rocky Mountains	1,500	6,380
Pacific coast	3,680	19,850
United States	1,230	4,990

These sectional differences reflect the concentration of old-growth timber on the Pacific coast, past cutting history, and the relative productivity of commercial forest lands in the several sections.

Because of locational advantages, however, eastern timber values are much greater per unit volume than the low average volumes per acre would imply. Southern pines, for example, are the basis of a multi-billion-dollar pulp and paper industry that consumes some 55 percent of the Nation's output of round pulpwood. The North is an important producer of specialty pulps and veneer from its hardwood resources.

Despite the fairly heavy concentration of timber in the Rocky Mountains, the rugged topography, lack of roads, shipping rates to principal markets, and generally small size of trees in parts of that section impede industrial development. Practically all the timber in that section, however, is made up of desirable softwood species suitable for construction and other uses.

Douglas-fir the Leading Softwood Species

Almost one-fourth of the sawtimber in the United States is Douglas-fir (table 64). Western hemlock, an associate of Douglas-fir in the Pacific coast section, ranks second with 11 percent of the total sawtimber volume, and ponderosa pine third with nearly 10 percent of the total. Southern pines rank fifth with about 8 percent of the total sawtimber and 10 percent of the growing stock.

The degree to which sawtimber volumes are concentrated in the West is indicated by the fact that the inventory of western hemlock alone is almost as great as the total volume of all softwoods in the East, and the volume of Douglas-fir and hemlock together substantially exceeds the entire timber inventory of all species in the East.

Oaks Are the Principal Hardwoods

There are many different species of hardwoods, none of which compares individually with the major softwoods in volume. Collectively, the oaks have the greatest volume, composing 7 percent of the total sawtimber inventory and 34 percent of the hardwood sawtimber volume. Yellow birch, hard maple, sweetgum, ash, walnut, black cherry, and yellow-poplar—the more valuable species—make up almost one-quarter of the hardwood inventory.

Cull Trees a Serious Problem

Cull trees contained an estimated 54 billion cubic feet of sound wood as of January 1, 1963 (table 60). Although these cull trees are defined as unmerchantable for saw logs now or in the future, in some areas they are being increasingly cut for pulpwood. Cull trees preempt much space that might otherwise be used for production of desirable growing stock.

The inventory of dead timber considered potentially salvable was estimated at about 17 billion cubic feet. The West had about 97 percent of this salvable dead timber and the East 3 percent. This dead wood differs from cull timber in that harvesting possibilities are frequently better and dead trees do not compete with growing stock.

TIMBER QUALITY

Although the Nation's total volume of timber is impressive, it includes a variety of species and tree qualities with a wide range of suitability for timber products. Hence figures on timber resources in terms of volume alone have serious limitations in appraising the Nation's usable supply of timber.

Quality a Critical Factor to Forest Industries

No single index can adequately assess timber quality and value because tree size, tree and log grade, and species characteristics all must be considered. Managers of wood-using plants must therefore analyze resource statistics from the standpoint of specific product requirements and economically available supplies in specific operating areas.

A major portion of the present timber inventory can be classed as merchantable under current price and cost levels, and much small timber will in time grow into merchantable sizes. However, a sizable portion of the existing timber inventory, particularly in eastern hardwood stands, consists of small trees or low-value species. Substantial volumes of timber in remote areas of the West, and in scattered trees in the East, also cannot be profitably logged today because of problems of accessibility or low volumes per acre.

Cull trees seriously limit usable growth in many stands.
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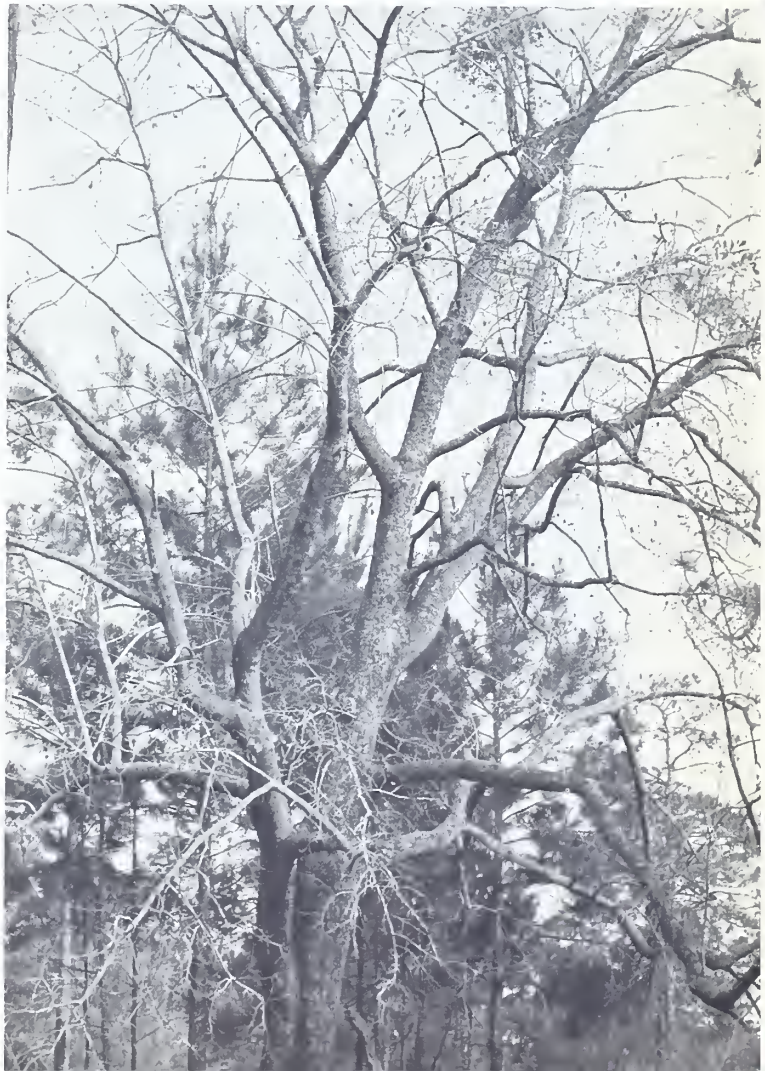

TABLE 64.—*Volume of growing stock and sawtimber on commercial forest land, by species, Jan. 1, 1963*

Species	Growing stock		Sawtimber	
	Volume	Proportion	Volume	Proportion
	Million cu. ft.	*Percent*	*Million bd. ft.*	*Percent*
Eastern softwoods:				
Southern pines	60,355	9.6	211,925	8.4
Spruce and fir	13,055	2.1	20,629	.8
White and red pines	6,245	1.0	21,255	.8
Cypress	3,961	.6	15,346	.6
Other	10,378	1.7	22,229	.9
Total	93,994	15.0	291,384	11.5
Eastern hardwoods:				
Select white and red oaks	28,563	4.5	77,867	3.1
Other oaks	32,407	5.2	85,387	3.4
Hickory	11,076	1.8	28,488	1.1
Hard maple	10,378	1.6	25,764	1.0
Ash, walnut, and black cherry	10,054	1.6	22,923	.9
Sweetgum	10,024	1.6	25,879	1.0
Yellow-poplar	6,753	1.1	21,202	.8
Yellow birch	4,854	.8	11,594	.5
Other	62,452	9.9	131,356	5.2
Total	176,561	28.1	430,460	17.0
Total, eastern	270,555	43.1	721,844	28.5
Western softwoods:				
Douglas-fir	106,073	16.9	602,622	23.8
Western hemlock	49,902	7.9	269,935	10.6
True firs	48,244	7.7	234,780	9.3
Ponderosa and Jeffrey pines	45,448	7.2	241,722	9.5
Spruce	28,883	4.6	155,404	6.1
White and sugar pines	9,052	1.5	53,083	2.1
Redwood	5,542	.9	31,257	1.2
Other	46,944	7.5	177,835	7.0
Total	340,088	54.2	1,766,638	69.6
Western hardwoods	17,239	2.7	48,317	1.9
Total, western	357,327	56.9	1,814,955	71.5
All species	627,882	100.0	2,536,799	100.0

As a result of such "quality" factors, lumber and veneer plants—particularly those dependent on hardwoods—are experiencing increasing difficulties in obtaining the quality of timber needed for profitable operations.

Some of the continuing decline in quality of timber has been offset by technological improvements in logging and manufacturing, and by development of new products such as hardboard and particleboard. Further technological changes are undoubtedly to be expected. But quality of timber resources nevertheless can be expected to continue to be of major importance in determining the competitive strength of the timber industries.

Small Proportions of Eastern Hardwoods in Upper Grades

Forest survey classifications of eastern hardwood sawtimber trees by standard log grades showed the following distribution of sawtimber volumes:

Grade:	*Percent*
No. 1 Factory lumber logs	11
No. 2 Factory lumber logs	18
No. 3 Factory lumber logs	48
Tie and timber logs	23
Total	100

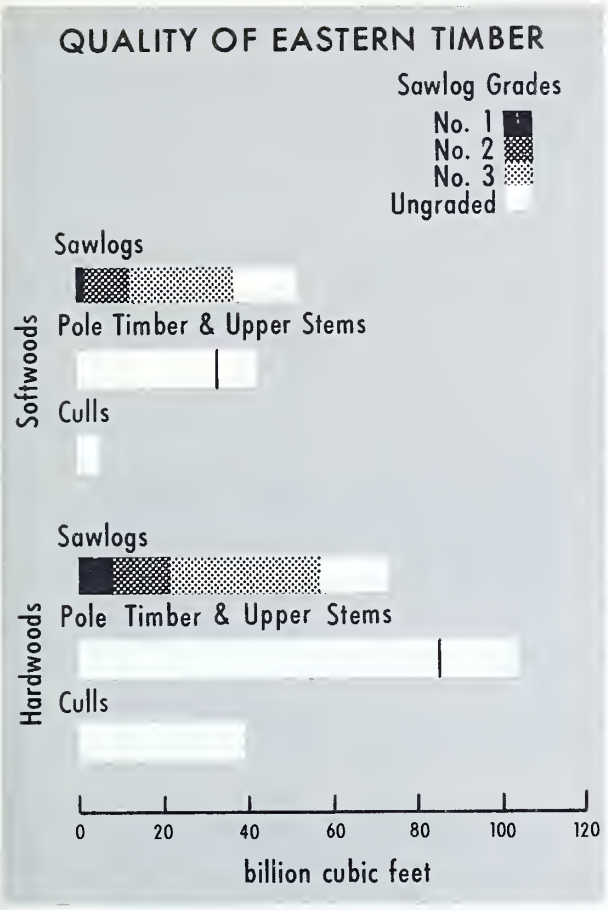

Figure 40

This hardwood log-grade pattern, also illustrated in figure 40, is largely a reflection of the small size of most hardwood timber and high-grading practices that remove only the better quality trees. Because small trees can produce only lower grade logs, a preponderance of lower grade material in the inventory must be expected even under intensive management. However, the present log-grade distribution is far from that needed to support strong forest industries.

Supplies of Large Hardwoods Limited

Timber size is a significant factor with all species because larger trees are cheaper to log and process, and tend to have higher product value than smaller tree sizes. The factor of log and tree size is particularly important in the case of hardwoods used for lumber or veneer. Even though many small-size hardwood trees are being pulped, inventories of larger timber are essential to maintain the competitive position of most forest industries. At present, however, only 11 percent of the total volume of eastern hardwoods is in trees 19 inches and larger (table 65 and fig. 41).

Quality Less Critical for Eastern Softwoods

The quality situation for eastern softwoods is in general better than for hardwoods, partly

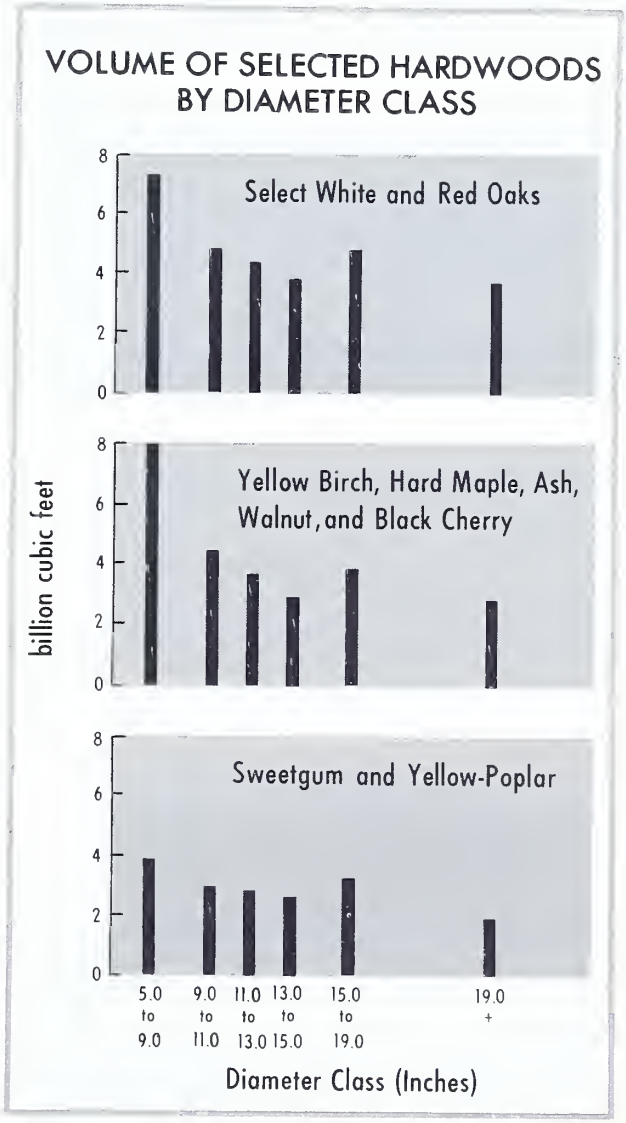

Figure 41

TABLE 65.—*Volume of growing stock, by species and diameter classes, January 1, 1963*

[Million cubic feet]

Species	All diameters	5.0 to 9.0 inches	9.0 to 11.0 inches	11.0 to 15.0 inches	15.0 to 19.0 inches	19.0 to 29.0 inches	29.0 inches and larger
Eastern softwoods:							
Southern pines	60,354	17,946	11,757	18,584	8,683	3,294	90
Spruce and fir	13,055	8,090	2,207	2,030	585	142	1
White and red pines	6,245	1,638	940	1,802	1,032	741	92
Cypress	3,961	757	581	1,302	733	478	110
Other	10,379	4,717	1,692	2,304	976	626	64
Total	93,994	33,148	17,177	26,022	12,009	5,281	357
Eastern hardwoods:							
Select white and red oaks	28,563	7,438	4,742	8,052	4,624	3,223	484
Other oaks	32,407	8,891	5,276	8,378	5,337	4,017	508
Hickory	11,076	3,206	1,879	3,009	1,742	1,136	104
Hard maple	10,378	3,202	1,711	2,491	1,616	1,273	85
Ash, walnut, and black cherry	10,054	3,160	1,847	2,875	1,469	663	40
Sweetgum	10,024	2,590	1,647	2,980	1,784	959	64
Yellow-poplar	6,753	1,339	1,008	2,075	1,406	840	85
Yellow birch	4,854	1,500	829	1,093	690	670	72
Other	62,452	23,141	10,952	14,454	8,118	5,173	614
Total	176,561	54,467	29,891	45,407	26,786	17,954	2,056
Western softwoods:							
Douglas-fir	106,073	7,636	5,973	12,253	12,319	25,374	42,518
Western hemlock	49,902	2,840	2,024	5,825	5,991	15,614	17,608
True firs	48,244	6,140	3,909	6,985	6,429	11,629	13,152
Ponderosa and Jeffrey pines	45,448	3,617	2,503	5,520	6,075	14,490	13,243
Spruce	28,883	2,310	2,262	4,667	4,431	7,602	7,611
White and sugar pines	9,052	519	420	1,135	1,091	2,495	3,392
Redwood	5,542	283	208	489	463	1,248	2,851
Other	46,944	11,461	6,147	8,360	5,599	8,112	7,265
Total	340,088	34,806	23,446	45,234	42,398	86,564	107,640
Western hardwoods	17,239	5,710	2,759	4,014	2,397	1,880	479
All species	627,882	128,131	73,273	120,677	83,590	111,679	110,532

because of end-use requirements. Proportions of the different log grades in southern pines, for example, are estimated as follows:

Grade:	*Percent*
1	3
2	19
3	48
4	30
Total	100

The new southern pine plywood industry is expected to utilize mainly the larger sizes of grade 2 and 3 logs, which now make up about two-thirds of the volume of southern pine sawtimber. These log grades, except when coarse-grained, are also well adapted to production of dimension lumber. Southern pines also produce a sizable proportion of clear wood in trees no more than 20 inches in diameter.

A relatively small part of the volume of southern pine is now concentrated in larger diameters above 15 inches (fig. 42). West of the Mississippi River the diameter distribution of southern pines is the most favorable. East of the Mississippi volumes of timber above 15 inches are limited, but supplies of smaller timber are now sufficient to sustain the present cut and permit some buildup in numbers of the larger trees.

Diameter Distribution of Douglas-fir and Ponderosa Pine Dominated by Large Timber

More than 40 billion cubic feet of Douglas-fir, or 40 percent of the total volume of this species, is made up of trees 29 inches in diameter and larger (table 65 and fig. 42). It is this concentration in

the larger sizes of high-quality timber that has made it possible for Douglas-fir to hold its rank as the Nation's number one lumber and plywood species.

Western Washington and western Oregon have 55 percent of the total Douglas-fir inventory with 40 percent of the total in Oregon alone. Currently, 57 percent of the sawtimber volume in these States is in trees 29 inches in diameter and larger.

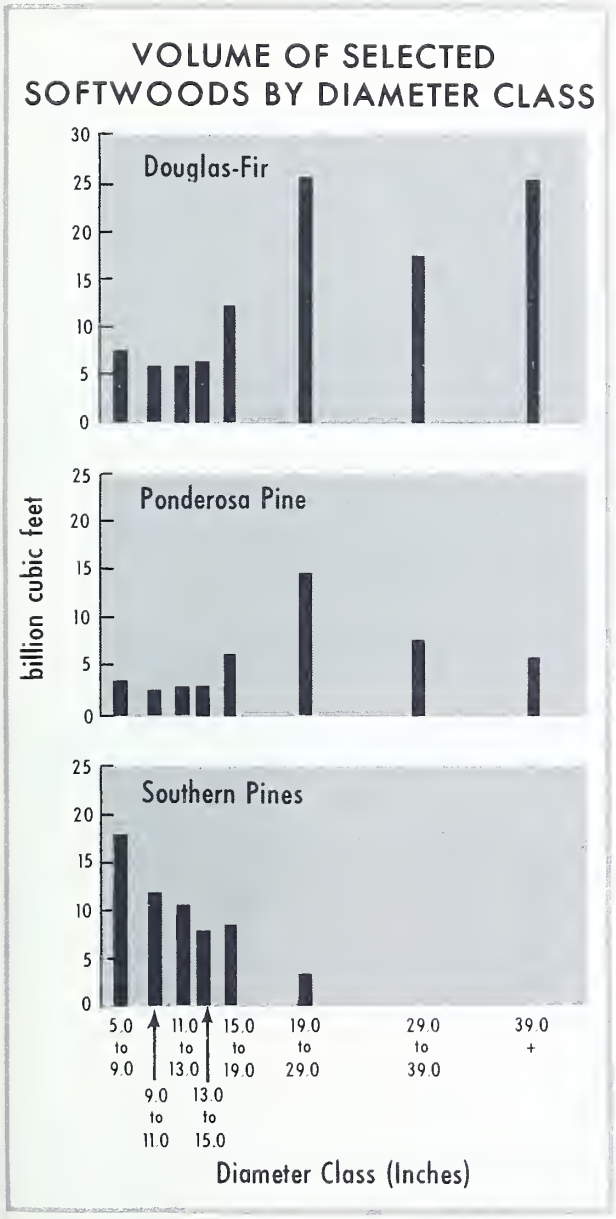

Figure 42

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Much of the timber on the Pacific coast is large trees.

The ponderosa pine situation is much like that of Douglas-fir, with a concentration of volume in trees 19 inches in diameter and larger. Eastern Washington, eastern Oregon, northern California, and Idaho contain about two-thirds of the total ponderosa pine volume in the West and four-fifths of the pine timber over 29 inches.

Quality of Western Softwoods Declining

As the virgin timber has been liquidated in better stands in the West, the average size and quality of the remaining inventory has gone down. This is particularly evident where operations have been forced to move back into the mountains to poorer sites and stands, or into young-growth timber. For example, records of the Columbia River Log Scaling and Grading Bureau show that average log volume dropped from 599 board feet in 1952 to 457 board feet in 1962.

Continuing shifts in wood markets and in the structure of the forest products industries in the West have tended to offset much of this decline in timber quality. For example, production and use of construction lumber grades have increased relative to demand for select grades of lumber. Also, much of the spectacular expansion in plywood production has been for sheathing grades not requiring high-quality veneer logs.

TIMBER GROWTH

Net growth along with inventory levels provides a measure of the amount of timber cutting that can be sustained. In young-growth forests in the eastern United States, net growth estimates, less allowances for a desirable buildup of inventories, provide a measure of sustainable cut. In old-growth stands in the West, however, the "allowable" cut consists mainly of the excess timber inventory that may be harvested while reducing inventories to desired levels.

The growth estimates in this section represent the net annual increment on the 1962 inventory of sawtimber and poletimber trees, using "trend level" growth rates and mortality losses. Estimates include (a) growth on trees above 5.0 inches in diameter at the beginning of the year, plus (b) the volume of "ingrowth," i.e., the total volume of young timber that becomes measurable during the year by reaching 5.0 inches in diameter for growing stock and 9.0 or 11.0 inches for sawtimber, minus (c) the average annual mortality from natural agents such as fire, insects, and disease.

Net Annual Sawtimber Growth Up 14 Percent Since 1952

There has been a general improvement in the timber growth picture in the United States since 1952. Net growth of growing stock is estimated to have increased roughly 12 percent in this decade (table 66). Net annual sawtimber growth increased by an estimated 14 percent, or 6.5 billion board feet annually to a total of nearly 55 billion board feet per year.

Excepting the Rocky Mountains all sections have shared in the recent increase in net growth in softwoods, but increases have been especially marked in the Pacific Coast States. For these States annual sawtimber growth was estimated to be 27 percent higher in 1962 than in 1952.

TABLE 66.—*Net annual growth of growing stock and sawtimber, by softwoods and hardwoods and by section, 1962*

GROWING STOCK

Section	All species			Softwoods			Hardwoods		
	Growth 1962	Change since 1952		Growth 1962	Change since 1952		Growth 1962	Change since 1952	
	Million cu. ft.	*Million cu. ft.*	*Percent*	*Million cu. ft.*	*Million cu. ft.*	*Percent*	*Million cu. ft.*	*Million cu. ft.*	*Percent*
North	4,830	+540	+13	1,040	+70	+7	3,790	+470	+14
South	7,470	+830	+12	4,360	+810	+23	3,110	+20	+1
Rocky Mountains	930	−110	−11	870	−130	−13	60	+20	+50
Pacific coast	3,030	+480	+19	2,760	+390	+16	270	+90	+50
Total	16,260	+1,740	+12	9,030	+1,140	+14	7,230	+600	+9

SAWTIMBER

	Million bd. ft.	*Million bd. ft.*	*Percent*	*Million bd. ft.*	*Million bd. ft.*	*Percent*	*Million bd. ft.*	*Million bd. ft.*	*Percent*
North	12,470	+1,860	+18	2,800	+310	+12	9,670	+1,550	+19
South	25,330	+2,400	+10	16,950	+2,830	+20	8,380	−430	−5
Rocky Mountains	3,570	−550	−13	3,460	−610	−15	110	+60	+120
Pacific coast	13,480	+2,830	+27	12,660	+2,510	+25	820	+320	+64
Total	54,850	+6,540	+14	35,870	+5,040	+16	18,980	+1,500	+9

In the East, only in the case of southern hardwoods was there an apparent decline in net growth.

Net Growth Averages 108 Board Feet Per Acre

Net annual growth per acre in 1962 varied rather widely between sections, as shown by the following averages for all species combined:

Section:	*Cubic feet*	*Board feet*
North	28	73
South	37	126
Rocky Mountains	14	54
Pacific coast	43	192
U.S. average	32	108

This relatively low level of current sawtimber growth reflects in part the limited stocking of sawtimber trees resulting from past cutting and fire. A large amount of growing space is now occupied by inhibiting brush or defective trees that limit the growth of growing stock. Also, many stands are as yet too young to include sawtimber trees or are on relatively low sites. Some of these stands, including about one-fourth of all northern timber types and half of Lake States types, consist of short-rotation species that are harvested mainly for pulpwood. Average net growth per acre in the West also reflects the fact that considerable areas still support old-growth timber where mortality to a large degree offsets the gross growth.

There are, however, sizable areas of young forests at the threshold of the sawtimber-size class; as these stands mature, sawtimber growth may be expected to increase further.

About 70 Percent of Net Growth in the East

Except for a few scattered remnants of virgin forest, the commercial forest land in the East has all been cut over—some of it several times. This is in contrast with the Western States, where roughly a third of the forest area is still classed as old-growth.

Because of this cutting history, plus the concentration of 73 percent of the commercial forest land in the East, the lion's share of the net annual sawtimber growth—nearly 70 percent—is now in eastern States (table 66). This concentration of timber growth in the East is in marked contrast to the distribution of inventory volumes, as shown by the following proportions of national totals:

Section and species	*Commercial forest area (percent)*	*Sawtimber inventory (percent)*	*Sawtimber growth (percent)*	*Sawtimber cut (percent)*
East:				
Softwoods	22	11	36	21
Hardwoods	51	17	33	23
West:				
Softwoods	25	70	29	55
Hardwoods	2	2	2	1
U.S. Total	100	100	100	100

Southern pines accounted for 45 percent of the softwood sawtimber growth in 1962, in contrast to 10 percent of the softwood inventory and about 22 percent of the total softwood cut in the Nation (table 67 and fig. 43). Douglas-fir accounted for only 15 percent of the total net growth of softwood sawtimber, although this species made up almost 30 percent of the total softwood sawtimber inventory and one-third of the total cut.

In relation to inventory and growth, a disproportionate share of the timber cut has been Douglas-fir, ponderosa pine, and a few other particularly sought-after species, as indicated under the heading Timber Cut in the section on The Outlook for Timber Demands. Those species made up 53 percent of the western softwood inventory in 1962 but supplied 71 percent of the total sawtimber cut in the West. The trend is toward an increasing proportion of the cut from the less desired species, however, as adjustments in utilization are made to use available species.

Growth-Cut Situation Relatively Favorable in the East

Growth of eastern softwood sawtimber in 1962 was 92 percent higher than the cut, while hardwood sawtimber growth exceeded the cut by 63 percent (table 67). This favorable growth-cut relationship in the East was partly a result of substantially improved fire protection in recent decades and extensive planting programs, and partly a result of recent reductions in the timber harvest.

The present excess of growth over cut of southern pine is resulting in an important buildup of timber volumes and tree sizes in many parts of the South. If continued this will in time permit production of better quality and lower cost products, and thus add to the competitive strength of the forest industries in that section.

TABLE 67.—*Relationships between net annual growth and timber cut, by species, 1962*

Species	Growing stock			Sawtimber		
	Growth	Cut	Ratio growth to cut	Growth	Cut	Ratio growth to cut
	Million cu. ft.	*Million cu. ft.*		*Million bd. ft.*	*Million bd. ft.*	
Eastern softwoods:						
Southern pines	4,222	2,460	1.7	16,291	8,220	2.0
Spruce and fir	496	210	2.4	1,007	628	1.6
White and red pines	186	137	1.4	754	539	1.4
Cypress	182	65	2.8	785	265	3.0
Other	318	179	1.8	891	634	1.4
Total	5,404	3,051	1.8	19,728	10,286	1.9
Western softwoods:						
Douglas-fir	1,	2,012	.6	5,252	13,215	.4
True firs	583	405	1.4	2,470	2,545	1.0
Ponderosa and Jeffrey pines	488	606	.8	2,375	3,645	.7
Western hemlock	453	422	1.1	2,115	2,774	.8
Western white and sugar pines, redwood, spruce, and other	978	695	1.4	3,926	4,282	.9
Total	3,623	4,140	.9	16,138	26,461	.6
Total softwoods	9,027	7,191	1.3	35,866	36,747	1.0
Hardwoods:						
Oak	2,357	1,198	2.0	6,691	4,769	1.4
Hickory	420	142	3.0	1,148	506	2.3
Other	4,461	1,617	2.8	11,149	6,379	1.7
Total hardwoods	7,238	2,957	2.4	18,988	11,654	1.6
All species	16,265	10,148	1.6	54,854	48,401	1.1

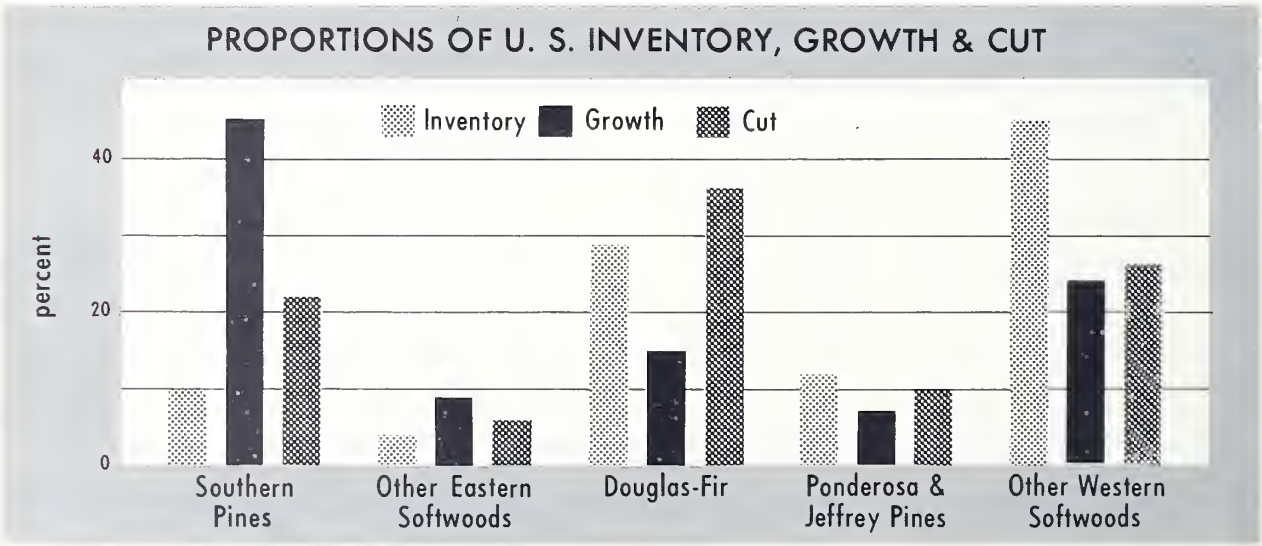

Figure 43

Hardwood Growth-Cut Relationships Conceal Problems of Quality

The current excess of growth over cut in the East does not represent an immediate opportunity for a general increase in cutting in all areas, particularly for hardwoods. Growth is now occurring mainly in smaller trees, whereas the large trees sought after by industry are becoming progressively harder to find. For example, the total growth of all oaks 5.0 inches and larger was almost double the cut in 1962. Growth of oak sawtimber (trees 11.0 inches and larger) exceeded the cut by only 40 percent, while inventories of bigger trees on which the hardwood industries primarily depend have continued to decline.

About three-fifths of the current hardwood sawtimber growth also is concentrated on less desirable species such as beech, hickory, and various species of upland oaks on sites that do not produce much timber of high grade. Moreover, in many areas these less desirable species are encroaching on sites suitable for pine, spruce, or preferred hardwoods.

Cut in West Not Excessive in Relation to Mature Reserves

Growth of softwood sawtimber in the West in 1962 averaged about 61 percent of the current cut (table 67). The excess of cut over growth was especially evident in the case of Douglas-fir and ponderosa pine. For true firs and minor species growth and cut were roughly in balance.

The desirable level of timber cut in the West, however, is not tied directly to current annual growth. Because the present timber inventory exceeds that required for long-run sustained yield, an excess of cut over growth is necessary to achieve a more regulated forest containing a desirable balance of growing stock by age classes.

In lieu of growth-cut relationships, more appropriate comparisons are indicated for national forests in the West by relationships between actual cut and allowable cut in 1962 as follows:

	Actual cut	*Allowable cut*
	(Million board feet)[1]	
Section:		
Pacific coast	7,500	8,100
Rocky Mountains	2,186	3,600
Total	9,686	11,700

[1] International ¼-inch rule.

A somewhat similar excess of cut over net growth is also appropriate on many other public and private ownerships in the West where old-growth timber is being liquidated.

MORTALITY

Losses of timber caused by fire, insects, and other destructive natural agents have a significant impact on the level of net growth, and reduction of such losses consequently represents an important means of increasing future timber supplies (table 68).

TABLE 68.—*Mortality of growing stock and sawtimber, by section and by softwoods and hardwoods*

GROWING STOCK

Species group	Total U.S.		North	South	Rocky Mountains	Pacific coast
	Volume	Proportion				
	Million cu. ft.	*Percent*	*Million cu. ft.*	*Million cu. ft.*	*Million cu. ft.*	*Million cu. ft.*
Softwoods	3,583	64	461	464	907	1,751
Hardwoods	2,046	36	1,072	838	86	50
All species	5,629	100	1,533	1,302	993	1,801

SAWTIMBER

	Million bd. ft.	*Percent*	*Million bd. ft.*	*Million bd. ft.*	*Million bd. ft.*	*Million bd. ft.*
Softwoods	15,039	76	796	1,385	3,798	9,060
Hardwoods	4,696	24	2,007	2,347	180	162
All species	19,735	100	2,803	3,732	3,978	9,222

Mortality Equivalent to More Than One-third Net Growth

Mortality from all causes in recent years has amounted to about 5.6 billion cubic feet of growing stock annually, including 3.6 billion cubic feet of softwoods and 2.0 billion cubic feet of hardwoods (table 68). Sawtimber mortality totaled 19.7 billion board feet in 1962, including 15.0 billion board feet of softwoods and 4.7 billion board feet of hardwoods. These figures represent "trend level" estimates based upon measurement of year-to-year endemic losses plus allowances for sporadic major losses by fire, blowdown, or other events of unusual severity.

Mortality of growing stock in 1962 thus was equivalent to about one-third of the net growth of growing stock, and to roughly 36 percent of the net growth of sawtimber (fig. 44).

In addition to the trees 5.0 inches and larger that are included in estimates of mortality, destructive agents cause a large annual growth loss of other sorts. Retarded growth rates of live trees resulting from attacks by insects, disease, or dwarfmistletoe, loss of trees under 5.0 inches, and delays in restocking of areas burned, all add to the growth loss from destructive agents. Defects caused by borers in southern hardwoods, for example, also reduce the grade and value of standing timber. Such additional impacts on growth were not estimated in this study but may well equal or exceed the estimated volume of mortality.

Softwood Mortality Mainly in West; Hardwood in East

About 9 billion board feet of softwood sawtimber has been killed annually in the Pacific coast section in recent years, and 4 billion board feet in the Rocky Mountains (table 68). These losses represented about 85 percent of the total softwood mortality in the United States. In Washington and Oregon alone, the volume of timber dying from natural causes has amounted to approximately 7 billion board feet annually in recent years. Much of this loss, moreover, has been in overmature trees containing relatively large proportions of high-grade material.

Hardwoods accounted for about one-fourth of the sawtimber mortality in 1962. Because hardwood losses are for the most part widely dispersed and because dead hardwood timber deteriorates rapidly, very little of this dead timber has been classed as salvable.

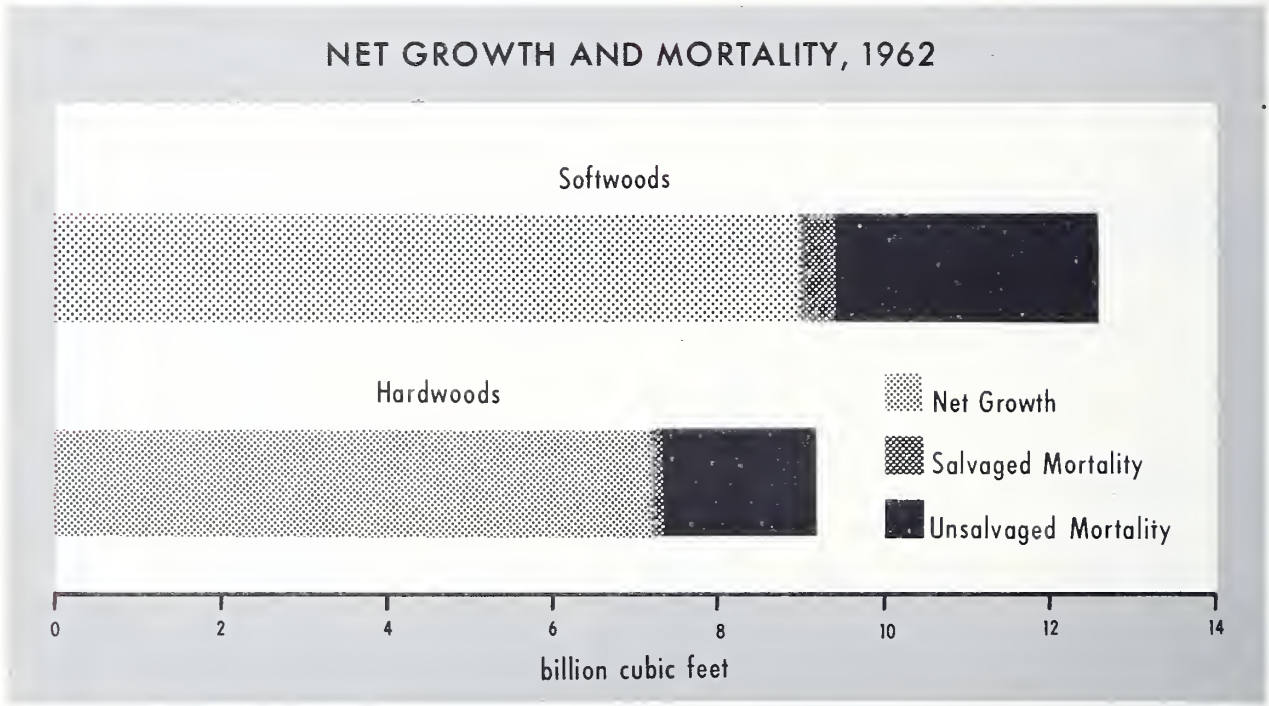

Figure 44

Variety of Causes for Mortality

Determination of the cause of mortality of standing timber is extremely difficult in many cases, partly because two or more causes of injury, such as fire and insects, may be evident. A rough approximation of mortality of sawtimber by cause in 1962 is indicated in the following tabulation:

	Growing stock		*Sawtimber*	
Cause:	*(Billion cu. ft.)*	*(Percent)*	*(Billion bd. ft.)*	*(Percent)*
Fire	0.3	6	1.3	7
Insects	1.2	21	5.4	27
Disease	1.2	21	3.8	19
Weather and other	1.8	32	5.7	29
Unknown	1.1	20	3.5	18
All causes	5.6	100	19.7	100

Insects are an important cause of mortality.

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Salvage of Mortality Increasingly Important

The timber killed by destructive agents is not always a total loss, for a considerable volume of dead wood is salvaged each year by the timber industries. In 1962 about one-half billion cubic feet of dead timber, or 5 percent of the total domestic roundwood output, was used for lumber, plywood, and other products (fig. 44).

Lack of roads and low concentration of salvable trees per acre have made it uneconomic to completely salvage the dead timber. However, the high value of much of this dead wood and local needs for logs suggest that high priority be given to intensified road construction and closer utilization of salvable dead timber, especially in the West.

FOREST OWNERSHIP

The condition of forest lands, the amount and kind of forest management applied, and prospective timber growth all depend to a great extent upon the decisions of several million individuals, corporations, and public owners of forests. Ownership thus represents a key factor in assessing forest inventory trends and the outlook for the Nation's timber supply.

Seventy-two Percent of Commercial Forest and 53 Percent of Timber Privately Owned

The early settlement of America was predicated on private land ownership and the historical policy of the United States with respect to State lands and the public domain was expeditious transfer to private ownership. As a result, nearly three-fourths of the Nation's commercial forest area, or 367 million acres, is in private ownership today (table 69).

National forests, made up largely of lands reserved from the public domain, include about 19 percent of the commercial forest land in the Nation. Other Federal, State, and local public holdings comprise about 9 percent.

Since 1953 the area of public forests has declined about 1.5 million acres, or 1 percent, in part as a result of reclassification of commercial forest land to wild or wilderness areas, and in part a shifting of Indian lands held in trust to private ownership.

TABLE 69.—*Commercial forest land in the United States, by type of ownership and section, Jan. 1, 1963*

Type of ownership	Total U.S.		North	South	Rocky Mountains	Pacific coast
	Area	Proportion				
	Thousand acres	*Percent*	*Thousand acres*	*Thousand acres*	*Thousand acres*	*Thousand acres*
Federal:						
National forest	96,804	19	10,265	10,476	43,398	32,665
Bureau of Land Management	5,426	1	81	27	2,076	3,242
Bureau of Indian Affairs	6,461	1	1,198	251	2,816	2,196
Other Federal	4,485	1	964	3,308	31	182
Total Federal	113,176	22	12,508	14,062	48,321	38,285
State	20,844	4	12,751	2,164	2,340	3,589
County and municipal	7,848	2	6,748	656	83	361
Forest industry:						
Pulp and paper	35,022	7	10,797	21,614	----------	2,611
Lumber	26,113	5	2,996	12,551	2,535	8,031
Other	5,493	1	523	3,257	----------	1,713
Total industry	66,628	13	14,316	37,422	2,535	12,355
Farm	151,017	30	55,503	78,897	8,769	7,848
Miscellaneous private	149,332	29	69,963	67,868	3,575	7,926
All ownerships	508,845	100	171,789	201,069	65,623	70,364

Public forest holdings contain a relatively large proportion of the Nation's timber inventory. The national forests alone, with 19 percent of the commercial area, include 46 percent of the sawtimber and 37 percent of the total growing stock (table 70 and fig. 45). In the West, where most of these public forests are concentrated, even larger proportions of the growing stock inventory are in national forests and other public ownerships—69 percent on the Pacific coast, for example.

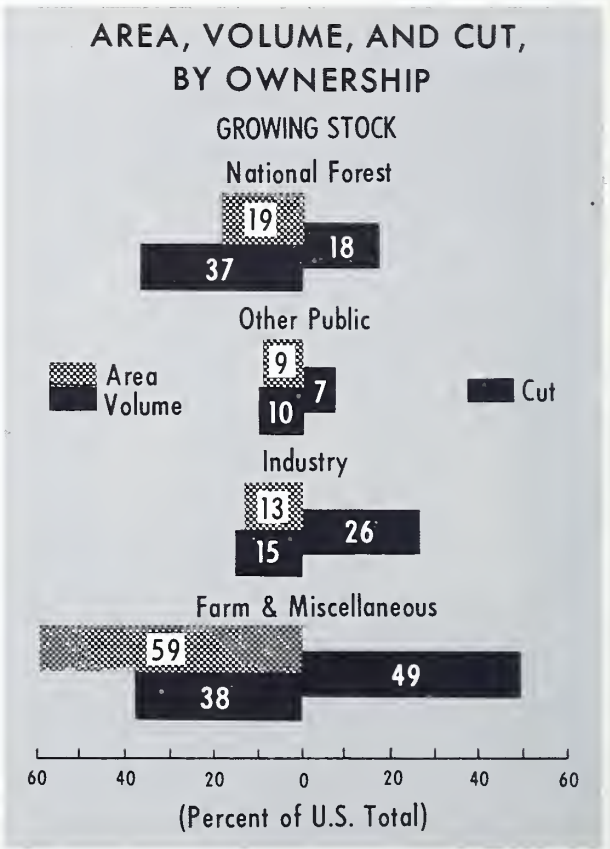

Figure 45

Forest Industry Ownership Increasing

Forest industries own 13 percent of the commercial forest land, including some of the most productive timberlands in the Nation. These industrial forests contain 16 percent of the sawtimber volume.

Nearly 60 percent of the industrially owned forest lands are in the South and close to 20 percent on the Pacific coast (table 69). On the other hand, over 62 percent of the industrially owned sawtimber is in the Pacific coast section (table 70). Lands held by wood-using industries are largely in holdings of more than 50,000 acres.

Pulp and paper companies, with 35 million acres of forest land largely concentrated in the South, represent the largest class of industrial

owners. The distinction between pulp and paper ownerships and holdings of other forest industries has become less and less meaningful, however, as production of pulp, lumber, veneer, and other wood products has become more closely integrated within large companies.

The area of commercial forest land in industrial ownership increased about 10 percent, or 6 million acres, between 1953 and 1963. Practically all of the buildup of industrial properties was due to expansion of pulp and paper industry holdings, particularly in the South, where forest land acquisition has gone hand in hand with major investments in pulping facilities. Some acquisitions of commercial forest land by the forest industries were by purchase of large timber-holding companies. Others were obtained through purchase of farm or other small private holdings or local disposition of public holdings. There have also been many transfers from lumber to pulp and paper company ownerships.

A number of problems, such as rising land prices and increasing difficulties in acquiring timber tracts of substantial size, may tend to limit further expansion of industrial holdings. Many companies have attempted to improve their wood supply situation not only by major investments in timber management on their own lands but also by maintaining a market for wood produced by farmers and other small owners, by exchanging logs, and by providing technical forestry assistance to nonindustrial landowners and wood producers.

The leasing of forest land by wood-using firms has also become of increasing importance in the East. It is estimated that some 20 pulp companies in the South presently hold long-term leases or cutting rights on more than a million acres of forest land. Leasing of surface rights permits owners to retain title and the benefits resulting from the presence of oil or other subsurface resources while the lessees assume responsibilities for management of the timber.

Farmers and Miscellaneous Private Owners of Major Importance

About 30 percent of the commercial forest land is in farm ownerships and another 29 percent belongs to other nonindustrial private owners (table 69). These other owners include a great variety of business and professional people, housewives, wage earners, mining and landholding companies, and other owner groups. Most of them are engaged in occupations or enterprises not directly connected with timber growing.

Some of these lands, particularly in the South and Pacific coast sections, are in large holdings of

TABLE 70.—*Ownership of growing stock and sawtimber on commercial forest land, by type and section, January 1, 1963*

GROWING STOCK

Type of ownership	Total U.S.		North	South	Rocky Mountains	Pacific coast
	Volume	Proportion				
	Million cu. ft.	*Percent*	*Million cu. ft.*	*Million cu. ft.*	*Million cu. ft.*	*Million cu. ft.*
Natonal forest	234,284	37	8,696	10,212	72,007	143,369
Other public	62,506	10	14,683	4,046	9,347	34,430
Forest industry	93,606	15	14,577	30,034	4,217	44,778
Farm and miscellaneous private	237,486	38	98,513	89,794	13,153	36,026
All ownerships	627,882	100	136,469	134,086	98,724	258,603

SAWTIMBER

	Million bd. ft.	*Percent*	*Million bd. ft.*	*Million bd. ft.*	*Million bd. ft.*	*Million bd. ft.*
National forest	1,155,108	46	16,475	36,172	304,531	797,930
Other public	266,182	10	26,796	12,958	41,355	185,073
Forest industry	398,935	16	28,925	102,994	19,555	247,461
Farm and miscellaneous private	716,574	28	237,578	259,946	52,951	166,099
All ownerships	2,536,799	100	309,774	412,070	418,392	1,396,563

railroads and timber-holding companies which in many respects resemble forest industry holdings. Most of the land in farm and miscellaneous holdings, however, fall in the category of "small ownerships."

The commercial forest acreage in these nonindustrial private ownerships rose about 3 million acres between 1953 and 1963, or about 1 percent. Most of this gain was a result of natural or artificial conversion of abandoned farmland to forest. Within this group of ownerships, transfer from farm to investment and recreation ownerships has also become increasingly important.

Most farm and miscellaneous private lands have been cut over—in some cases many times. As a result they contain only 28 percent of the sawtimber and 38 percent of the growing stock in the United States today, in contrast to 59 percent of the commercial forest acreage (fig. 45). Nevertheless these farm and miscellaneous private lands in recent years have supplied about half the Nation's cut of growing stock. Thus, in spite of relatively low inventory volumes per acre, they continue to be of primary importance in supplying wood to the forest industries.

Because more than half the commercial forest land is concentrated in farm and miscellaneous private holdings, these holdings are of major importance as a source of future timber supplies. The relatively large harvests on these lands and the potential productivity and location of these properties with respect to markets also add to their significance.

The general level of management on these lands, however, is below that attained on most public and industrial lands. Good markets are often lacking for the low-quality timber that predominates on many such holdings and for the small and irregular lots of forest products that are typically available from them. Many owners are unfamiliar with forestry opportunities and procedures, or lack the capital necessary for stand improvement, planting, or carrying charges, or are just not interested in timber growing. The small size of many holdings results in limited returns and difficult problems of management.

The Ownership Picture Differs Widely Between Sections

About 92 percent of the commercial forest lands in the South, and 81 percent in the North, are privately owned (table 70 and fig. 46). In the West, on the other hand, only 32 percent of the commercial forest land is privately owned.

Ownership of timber inventories shows roughly the same regional distribution (fig. 47). Thus the major part of the sawtimber in the East is on

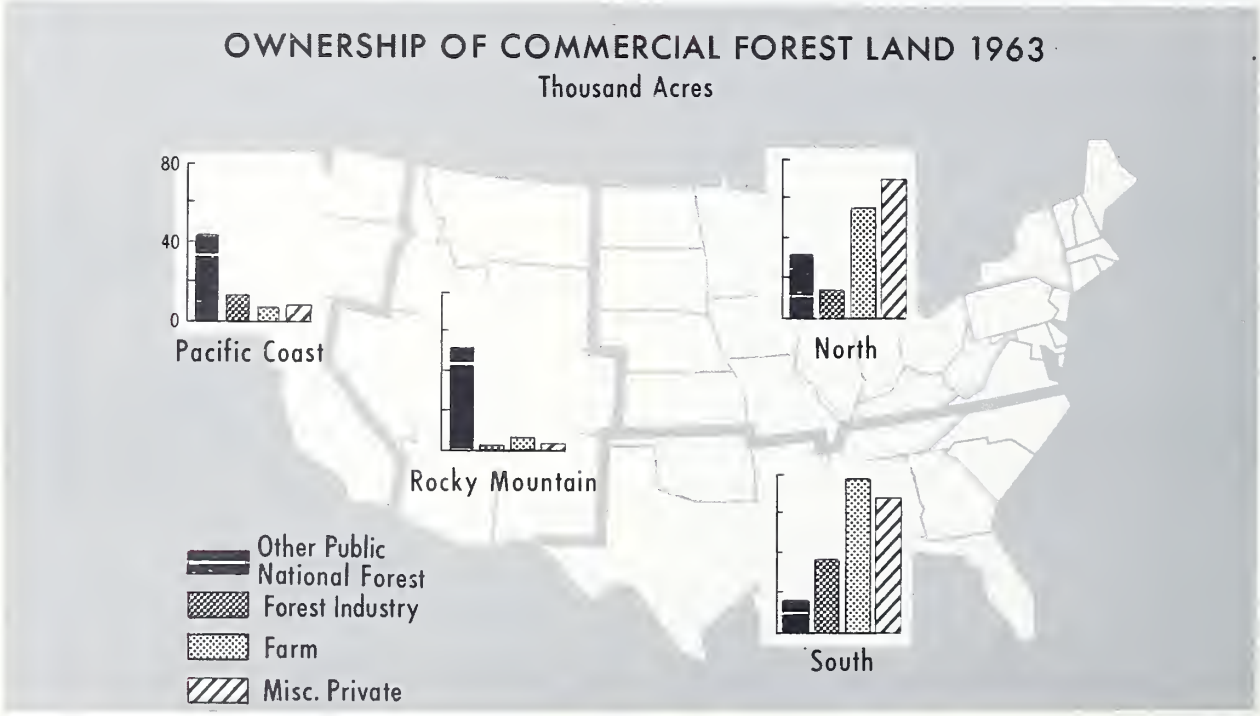

Figure 46

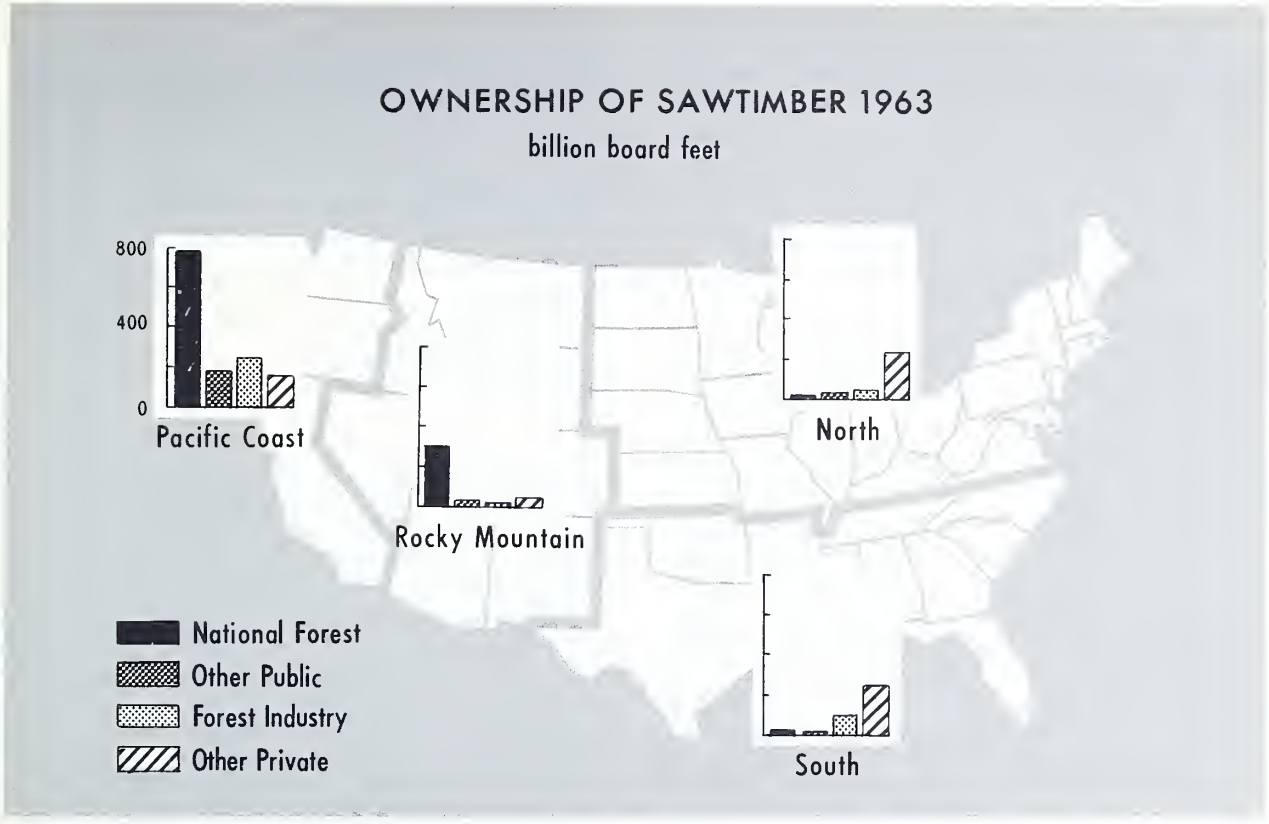

Figure 47

TABLE 71.—*Ownership of growing stock and sawtimber, by softwoods and hardwoods, January 1, 1963*

GROWING STOCK

Type of ownership	Total		Softwoods		Hardwoods	
	Volume	Proportion	Volume	Proportion	Volume	Proportion
	Billion cu. ft.	*Percent*	*Billion cu. ft.*	*Percent*	*Billion cu. ft.*	*Percent*
National forest	235	37	219	51	16	8
Other public	63	10	47	11	16	8
Forest industry	93	15	71	16	22	12
Farm and other private	237	38	97	22	140	72
All ownerships	628	100	434	100	194	100

SAWTIMBER

	Billion bd. ft.	*Percent*	*Billion bd. ft.*	*Percent*	*Billion bd. ft.*	*Percent*
National forest	1,155	46	1,121	54	34	7
Other public	266	10	233	11	33	7
Forest industry	399	16	343	17	56	12
Farm and other private	717	28	361	18	356	74
All ownerships	2,537	100	2,058	100	479	100

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private lands; whereas the bulk of the present standing timber in the West, particularly in the Rocky Mountains, is on national forests and other public lands.

Softwoods Concentrated on Public Lands—Hardwoods on Private Lands

Public holdings include 61 percent of the softwood growing stock in the Nation, but only 16 percent of the hardwoods (table 71). A much larger percentage of the softwood sawtimber—two-thirds of the total—is in public holdings, mainly in the national forests.

This concentration of the preferred softwoods in public ownership together with the inventory-cut relationships illustrated in figure 45, points to increasing dependence on publicly held stumpage in the near future. Utilization of timber in the national forests and other public holdings has been steadily increasing, but full development is still limited by lack of adequate roads. This is particularly the situation in the more remote and mountainous areas of both the Rocky Mountains and the Pacific coast.

About 86 percent of the Nation's hardwood sawtimber is on private lands—roughly 12 percent on forest industry holdings and 74 percent in farm and miscellaneous private ownerships (table 71). This hardwood timber inventory is widely distributed over large numbers of farm and other nonindustrial holdings on which forest management is generally lacking. In all types of ownership most of the hardwood timber is in trees of relatively small diameter and low quality.

Growth-Cut Relationships Differ Between Ownerships

Forest industry lands supply a higher proportion of the cut than that indicated by the area owned, while farm and miscellaneous private lands contribute lower proportions of the growth and cut than the area in these holdings (table 72 and fig. 45). Proportions of growth and cut also differ sharply from the distribution of inventory volumes. Thus the share of the Nation's growth and cut in national forests is substantially less than the proportion of total inventories.

Both growth and cut per acre on lands belonging to forest industries in 1962 were substantially above the average of all ownerships (fig. 48).

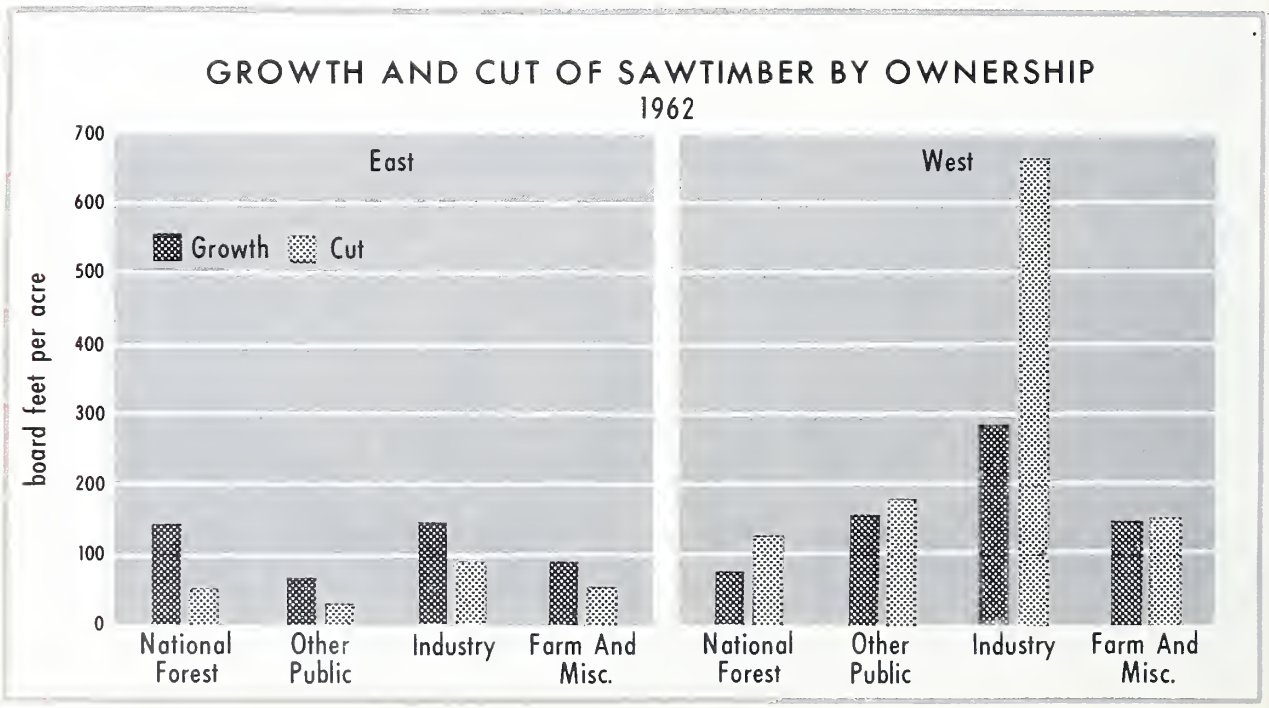

Figure 48

TABLE 72.—*Proportions of commercial forest area, inventories, growth, and cut in the U.S., by ownership*

[Percent]

Ownership	Commercial forest area	Growing stock			Sawtimber		
		Inventory	Growth	Cut	Inventory	Growth	Cut
National forest	19	37	14	18	46	16	22
Other public	9	10	8	7	10	8	8
Forest industry	13	15	20	26	16	22	30
Farm and miscellaneous	59	38	58	49	28	54	40
Total	100	100	100	100	100	100	100

AVAILABILITY OF WORLD TIMBER RESOURCES

In addition to domestic timber supplies the availability of timber products in foreign countries also represents an important factor in appraising the timber situation in the United States. Although exports of timber products are of substantial importance to some sectors of the U.S. timber industry, for many years the United States has imported larger volumes of wood products than it has exported, and this status as a net importer is considered likely to continue.

Canada the Principal Source of Imports

Canada has been by far the principal supplier of imported timber products in the past. Canada also has large undeveloped softwood timber resources that are physically suitable for expanded production of pulp and paper products and lumber. With the exception of the U.S.S.R. and Scandinavia, there are no other major sources of softwood timber in the world outside the United States and Canada.

Canadian forests cover an estimated 1,095 million acres, of which approximately 619 million acres are classed as "productive" forest land. This is substantially more than the area of 509 million acres classed as "commercial" forest land in the United States. Some 407 million acres of the productive forest lands in Canada are further classified as "accessible," or economically operable under current economic conditions. The remaining areas consist of more remote forest lands, largely in the far North where transportation facilities have not yet been developed and utilization costs are relatively high.

The net merchantable volume of standing timber on the productive forest lands in Canada amounts to an estimated 710 billion cubic feet. As in the case of forest land, this is greater than the figure of 628 billion cubic feet of timber in the United States in growing stock trees above 5.0 inches in diameter. Tree sizes classed as sawtimber total about 2,008 billion board feet in Canada—about 80 percent as much as in the United States.

More than four-fifths of the total timber volume in Canada is made up of softwoods, as shown by the following tabulation:

Species:	*Percent of total*
Spruce	36
Balsam fir	12
Jack and lodgepole pines	15
Hemlock	9
Cedar	5
Douglas-fir	4
Other softwoods	2
Total softwoods	83
Hardwoods	17
All species	100

Canada's timber resources are widely distributed among the provinces. British Columbia, however, has about 52 percent of the total timber volume, about 60 percent of the total softwood volume, and more than 65 percent of the sawtimber. This concentration of the larger sawtimber sizes is reflected in the large and increasing volume of lumber shipments from this area to United States markets. In 1962, for example, lumber shipments from British Columbia to the United States reached 3.0 billion board feet, or two-thirds of the 4.6 billion feet of lumber imports from all of Canada.

The central and Atlantic group of provinces, including particularly Ontario and Quebec, contain a third of the merchantable timber, and a major part of the developed forest industries in Canada. The Prairie provinces and Northern

Territories contain about 14 percent of the merchantable timber; as a result of the relative remoteness of this region from North American markets, its forest resources are still largely undeveloped.

Timber Cut in Canada About 3.4 Billion Cubic Feet

Production of timber products has been steadily rising in Canada to an estimated 3.4 billion cubic feet of roundwood in 1962 (table 73). This was equivalent to about 30 percent of the roundwood produced in the United States.

Exports to the United States in 1962 included nearly half the lumber produced in Canada, 60 percent of the paper and board, and 2 percent of the plywood. In terms of roundwood used in making timber products, more than half the total production in Canada in recent years has gone into products exported to the United States.

Allowable Annual Cut in Canada Could Be Tripled

Potential future production by Canadian forest industries is substantially greater than recent levels of output, according to findings of the Forestry Study Group of the Royal Commission

TABLE 73.—*Production of forest products in Canada and exports*[1] *to the United States, specified years, 1930–62*

Year	All products[2]		Lumber		Pulpwood		Wood pulp	
	Production	Exports to U.S.	Production	Exports to U.S.	Production	Exports to U.S.	Production	Exports to U.S.
	Billion cu. ft.	*Billion cu. ft.*	*Billion bd. ft.*	*Billion bd. ft.*	*Million cords*	*Million cords*	*Million tons*	*Million tons*
1930	2.5	0.7	4.0	1.1	6.0	1.4	3.6	0.7
1940	2.7	.7	4.6	.7	8.7	1.4	5.3	.8
1950	3.0	1.5	6.6	3.1	13.4	1.4	8.5	1.7
1952	3.2	1.4	6.8	2.3	14.8	2.1	9.0	1.6
1954	3.1	1.5	7.2	2.8	14.7	1.6	9.7	1.7
1956	3.5	1.6	7.7	3.2	17.5	1.9	10.7	2.0
1958	2.9	1.5	7.2	3.2	12.8	1.3	10.1	1.8
1960	3.5	1.7	8.0	3.7	16.6	1.2	11.5	2.0
1962[6]	3.4	1.9	8.8	4.6	15.0	1.2	12.1	2.4

Year	Paper and board		Veneer[3]		Plywood[4]		Misc. products[5]	
	Production	Exports to U.S.	Production	Exports to U.S.	Production	Exports to U.S.	Production	Exports to U.S.
	Million tons	*Million tons*	*Million sq. ft.*	*Million sq. ft.*	*Million sq. ft.*	*Million sq. ft.*	*Million cu. ft.*	*Million cu. ft.*
1930	2.9	2.0	----------	----------	----------	----------	857	----------
1940	4.3	2.6	----------	5	----------	67	747	----------
1950	6.8	4.9	401	348	486	50	465	31
1952	7.2	5.0	446	402	596	57	454	25
1954	7.6	5.0	510	524	890	71	375	25
1956	8.5	5.3	1,568	621	1,305	81	354	21
1958	8.1	5.0	1,131	456	1,532	42	332	17
1960	8.9	5.3	1,092	508	1,639	43	312	20
1962[6]	8.9	5.3	1,053	682	2,052	57	----------	23

[1] Differences in product classification and reporting procedures may cause Canadian export figures to differ from Canadian imports as reported in the U.S.

[2] In terms of roundwood used in making lumber, pulp, paper, etc.

[3] Includes only veneer made for sale as veneer.

[4] 1/4-inch basis in 1960 and 1962; reported exports prior to 1960 are total of all thicknesses.

[5] Including logs, poles, piling, fuelwood, etc., and equivalent volume of shingles and shakes.

[6] Preliminary.

Source: Dominion Bureau of Statistics, Industry and Merchandising Division.

on Canada's Economic Prospects.[32] This comprehensive study of Canadian timber requirements, resources, and prospects indicates that Canada possesses sufficient timber resources to support an allowable annual cut by 1980 of some 9.5 billion cubic feet—nearly three times the volume of timber products cut in 1962.

This estimate of the prospective allowable cut in Canada appears quite low in relation to comparable figures for the United States, but presumably reflects the fact that Canadian forests on the average are of appreciably lower inherent productivity. The Canadian study also emphasized that this estimate of the volume of timber physically available for cutting requires economic qualification, for it is not certain how much of an increased cut could be made available at a cost that would permit it to be sold in competition either with nonwood materials or with the forest products of the United States and other countries.

The situation relating to further expansion of timber industries in British Columbia also is indicated in an analysis of timber prospects in that Province recently prepared by the British Columbia Forest Service.[33] According to this study, in British Columbia the lumber industry has expanded into practically all portions of the Province which contain a preponderance of timber suitable primarily for lumber. In these developed areas the timber resource base has been almost completely allocated and permissible cuts almost fully committed. Since some decline in lumber production is considered likely in the coastal areas of the Province where forest industry has long been developed, it was concluded that little or no net increase in lumber production in developed portions of the Province is likely in the near future.

In the more remote parts of British Columbia, on the other hand, there is still an unused allowable cut estimated at approximately 1.1 billion cubic feet annually—an amount sufficient to support an increase in pulp and paper output, for example, of possibly 7 million tons annually. Timber supply and cost conditions in these remaining undeveloped portions of British Columbia are such that primary exploitation will have to be undertaken by the pulp and paper industry, and use of the comparatively minor portion of the timber suitable for lumber will be possible mainly as a byproduct of future integrated operations.

[32] Royal Commission on Canada's Economic Prospects. *The Outlook for the Canadian Forest Industries, 1957.*

[33] Pogue, H. M. British Columbia Forest Service. *Progress to September 1962 and future prospects of the British Columbia sustained yield forest program.* Statement prepared for the U.S. Tariff Commission.

How much actual increase in cut can be achieved economically in various parts of Canada in future years will of course depend upon many factors, including the total size of the U.S. and world market for timber products, future price levels for timber and competing products, trends in wages and other costs, exchange rates, improvements in forest management, the success of the forest industries in developing new technologies that will reduce the costs of logging, transportation, and manufacturing of timber products, and the resource development policies followed in the United States and Canada.

It is concluded that even with some expansion of domestic consumption of timber products in Canada, and further increases in exports to other parts of the world, somewhat larger shipments of Canadian softwood timber products to the United States are possible, as indicated in the section on The Outlook for Timber Demands.

Other Regions of the World Likely To Supply Hardwood Imports

It also appears likely that other regions of the world, particularly Asia, South America, and Africa, will supply rather substantial imports, especially hardwood veneer and plywood. Although information on the world's forest resources is scanty, there is undoubtedly a huge potential flow of wood products from tropical forests. The area of hardwood forests in South America, Africa, and Asia, for example, totals an estimated 5.2 billion acres.[34]

Most of the tropical forests are characterized by a wide variety of hardwood species, few of which are of commercial value at present. Also, much of the timber in these forests is currently considered to be economically inaccessible. Nevertheless, in view of such factors as the volume of timber in these tropical forests and growing pressures in many countries to develop industries based on available resources, it appears reasonable to expect increases in the flow of imported hardwood products.

[34] Food and Agriculture Organization of the United Nations. *World Forest Inventory,* 1958.

The Outlook For Timber Supplies

This section appraises prospective trends in timber growth and inventories between 1962 and the year 2000 in relation to projected timber demands. These estimates of future timber supplies have been made in the light of forest conditions described in the section on Forest Land and Timber Resources, and on the assumption that levels of timber management in the future will be roughly similar to those of recent years. Some indications of possible improvements in timber supplies resulting from intensified forest management have also been included.

Projections Intended as Guides to Programs

These supply projections when compared with projected demands provide a measure of the adequacy of the Nation's timber resources, and an indication of the changes in forestry programs necessary to supply sufficient raw material for the forest industries. These projections are not predictions, and it is unlikely that they will be fully realized. Nevertheless, by showing prospective supply-demand relationships, and long-term implications of current trends in forest conditions and programs, they provide a guide for desirable changes in forestry activities.

A number of projections made in the past have indicated that a continuation of the trends then existing would result in a shortage of timber in the United States. Partly as a result of these anticipations, action has been taken to avoid such undesirable consequences, both by adjustments to make more complete use of available timber supplies and particularly by greatly expanded efforts to grow additional timber. To the extent that projections disclose the need for corrective action, and such action is taken, the principal aim in making them is achieved.

Projections Subject to Many Uncertainties

Any long-term projection of timber supplies or timber demands is subject to many uncertainties. Longrun effects of the varied factors influencing timber growth under the many different conditions that exist in the Nation's forests are as yet imperfectly understood. Changes in management intensity and their effects can only be approximated. Unforeseen circumstances could result in future forest conditions and management programs significantly different from those indicated by current trends.

The reliability of projections consequently decreases the farther they are extended into the future, and each projection must be considered as falling within a steadily widening band of uncertainty. For this reason frequent and regular checking of the actual course of events is necessary to allow ample time for realinement of action programs.

The target date for the projections in this section is the year 2000—a seemingly distant date but a relatively short-term target in the business of growing timber. Most of the trees that will be suitable for harvesting in the year 2000 are now in the ground, or must be established in the very near future.

No attempt has been made to estimate prospective supplies and demands beyond the year 2000 even though a major part of the benefits from current forestry efforts in planting, stand improvement, and other measures will be realized after that date. It is also likely that rapidly rising populations and raw material requirements will increasingly magnify the pressure of people on all natural resources. Consequently, an analysis extending only to 2000 will undoubtedly understate the raw material problems of the next century.

PROJECTION PROCEDURES

The projections of timber growth and inventories presented in this section have been derived for the four major sections of the country—the North, South, Rocky Mountain, and Pacific coast—through use of a "stand projection" procedure that is described in detail in appendix 3.

In brief, the first step in this procedure required the compilation of current stand and stock tables as of January 1, 1963, for each forest region, by updating the latest timber survey information available. These tables showed numbers and volumes of trees by 2-inch diameter classes, by softwoods and hardwoods in the East, and by ownership classes in the West.

Annual changes in numbers of trees by diameter classes were then computed for the period 1963–2000, using a total volume of cut as indicated in the following section on Cutting Assumptions, and radial growth rates, mortality rates, and

TABLE 74.—*Sawtimber cut in the United States, by sections, 1952–2000*

[Billion board feet]

Section	1952	1962	Allocated cut			
			1970	1980	1990	2000
Pacific coast:						
National forest	2.8	7.5	8.3	8.5	8.7	8.9
Other owners	17.3	15.6	16.3	15.7	15.4	15.4
Total	20.1	23.1	24.6	24.2	24.1	24.3
Rocky Mountains:						
National forest	1.0	2.2	2.8	3.6	4.1	4.2
Other owners	1.4	1.6	1.7	1.9	2.0	2.1
Total	2.4	3.8	4.5	5.5	6.1	6.3
South:						
Softwoods	11.7	8.4	10.5	14.3	19.5	26.1
Hardwoods	7.9	7.0	6.9	7.6	8.6	10.1
Total	19.6	15.4	17.4	21.9	28.1	36.2
North:						
Softwoods	2.4	1.9	1.8	2.0	2.5	3.2
Hardwoods	4.3	4.2	5.3	6.8	8.7	11.0
Total	6.7	6.1	7.1	8.8	11.2	14.2
United States:						
Softwoods	36.5	36.7	41.0	45.6	51.8	59.5
Hardwoods	12.3	11.7	12.6	14.8	17.7	21.5
Total	48.8	48.4	53.6	60.4	69.5	81.0

cutting rates by diameter classes as estimated from available survey measurements. Cutting rates by diameter classes were derived in some cases from permanent plots on which tallies showed the proportion of tree sizes cut between inventories. In other cases cutting rates were obtained from stump counts taken at the time of inventories, or from utilization studies on sample logging operations. In addition to these variables the projection procedure requires estimates of numbers of trees growing into the 2-inch diameter class each year.

This projection procedure also provided for annual or periodic modification of these input variables in response to prospective changes in stand conditions resulting from the expected development of stands or from changes in management or cutting assumptions. Thus modifications in net growth rates to reflect changes in prospective basal area, mortality, and ingrowth, for example, were made throughout the projection period.

CUTTING ASSUMPTIONS

The total volume of sawtimber cut each year of the projection period was established for each section and region by a judgment allocation of the projected "timber cut" for the United States described in the section on The Outlook for Timber Demands. These allocated cuts, shown in tables 74 and 75, were based upon such factors as past trends in output of timber products and other considerations, as follows:

(1) In the Pacific coast section, it was assumed that the presently estimated allowable cut on national forests and other public lands, and the estimated prospective cut on private lands based on past trends in cutting and anticipated changes in growth and inventories, would be fully utilized over the projection period.

(2) In the Rocky Mountain section, it was assumed that cutting on the national forests would rise to about 90 percent of the prospective allowable cut by 1980 and to 100 percent by the year 1990. For other public and private lands an estimate was made of the prospective cut based on trends in cutting and available inventories.

(3) In the East, the projected cuts of softwoods and hardwoods for all ownerships combined were calculated as residuals by deducting the allocated cuts for western sections from the total national

TABLE 75.—*Growing stock cut in the United States, by sections, 1952–2000*

[Billion cubic feet]

Section	1952	1962	Allocated cut			
			1970	1980	1990	2000
Pacific coast:						
National forest	0.5	1.2	1.4	1.4	1.4	1.5
Other owner	2.8	2.4	2.7	2.8	2.9	3.2
Total	3.3	3.6	4.1	4.2	4.3	4.7
Rocky Mountains:						
National forest	.2	.3	.5	.7	.8	.8
Other owners	.2	.3	.3	.4	.4	.4
Total	.4	.6	.8	1.1	1.2	1.2
South:						
Softwoods	3.1	2.5	2.7	3.6	5.1	7.4
Hardwoods	2.0	1.7	1.9	2.2	2.8	3.7
Total	5.1	4.2	4.6	5.8	7.9	11.1
North:						
Softwoods	.7	.6	.5	.6	.9	1.2
Hardwoods	1.3	1.1	1.5	2.0	2.6	3.4
Total	2.0	1.7	2.0	2.6	3.5	4.6
United States:						
Softwoods	7.5	7.2	8.0	9.4	11.4	14.4
Hardwoods	3.3	2.9	3.5	4.3	5.5	7.2
Total	10.8	10.1	11.5	13.7	16.9	21.6

projected cut. These residual cuts were allocated between the North and South on the basis of prospective timber supplies in these sections.

LAND USE AND MANAGEMENT ASSUMPTIONS

In projecting timber growth and inventories it is apparent that assumptions as to areas available and levels of protection and other management activities will have major impacts on the timber supply outlook.

Gains and Losses of Forest Land Assumed To Balance by 2000

During the past few decades the area of commercial forest land has increased slightly, as pointed out in the section on Forest Land and Timber Resources. Additional net increases in forest land areas in the near future also are indicated in a recent U.S. Department of Agriculture study of projected land-use requirements.[35] This study concluded that approximately 50 million acres of cropland may be retired from agricultural production by 1980. Possibly several million acres of this land might be planted to trees or revert naturally to forest, with the remainder devoted to other uses.

In contrast to such gains in forest area, continuing diversions of forest to other uses such as residential areas, industrial sites, highways, airports, reservoirs, and transmission lines will be necessary to service the Nation's rapidly growing population. Thus, possible gains in forest area in the next two decades appear likely to be offset by losses of forest in the latter part of this century. It was therefore assumed for the purpose of developing growth projections that the Nation will have approximately the same amount of commercial forest area in 2000 as in 1962.

Continued Effectiveness of Fire Control Assumed

In long-range projections, the regeneration rate, i.e., the number of trees from both natural and planted sources growing into the 2-inch diameter class each year, is an important growth factor. Much of the recent improvement in timber growth has been due to high regeneration rates since the

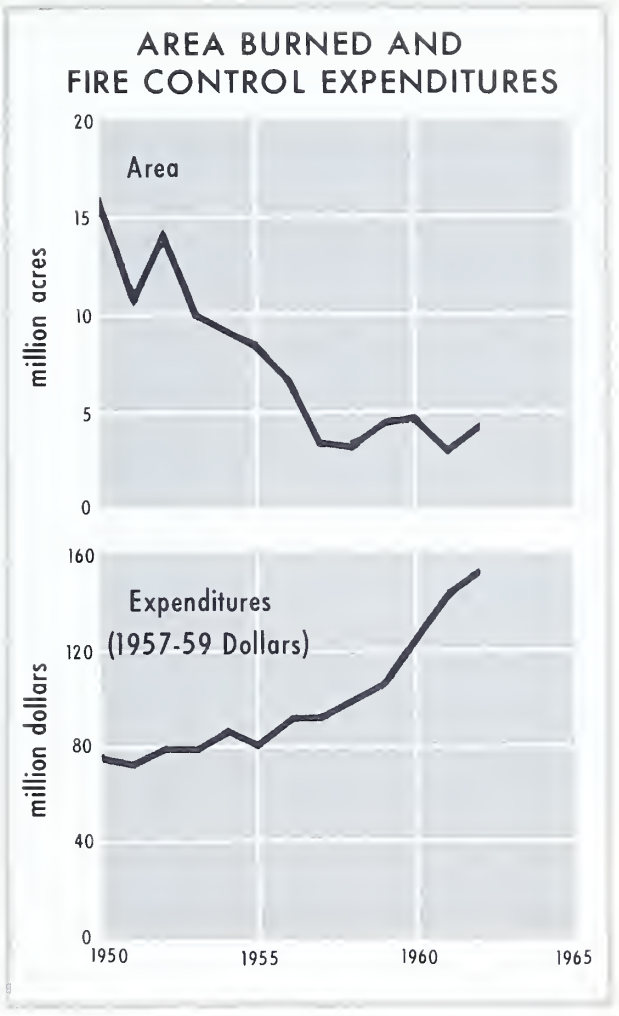

Figure 49

1930's resulting from both increased fire protection and tree planting.

Outstanding progress has been made in recent years in extending fire protection and reducing the area burned annually (table 76 and fig. 49). Areas burned in 1960–62, for example, averaged about 3.9 million acres a year, or 0.51 percent of the total forest area.

This reduction in area burned greatly increased the regeneration rates and the number of seedlings that survive to grow into the 2-inch diameter class each year. This increase in sapling ingrowth due to high natural regeneration rates has accounted for a large part of the improvement in timber growth since the 1950's. In projecting timber supplies, it was assumed that protection efforts would continue at approximately recent levels.

[35] U.S. Department of Agriculture. *Land and Water Resources.* Washington, D.C. May 1962.

TABLE 76.—*Expenditures for forest fire protection, area protected, and area burned, 1950–62*

Year	Expenditures for fire protection	Forest area protected [1]	Forest area burned [1]
	Millions of 1957–59 dollars	*Million acres*	*Million acres*
1950	74	558	15.5
1951	70	561	10.8
1952	78	566	14.2
1953	78	571	10.0
1954	85	585	8.8
1955	80	589	8.1
1956	90	592	6.6
1957	93	593	3.4
1958	99	594	3.3
1959	107	741	4.2
1960	124	745	4.5
1961	143	755	3.0
1962	153	754	4.1

[1] Includes both commercial and noncommercial forest lands.

Recent Levels of Management Also Assumed

Tree planting activities expanded rapidly during the 1950's to a peak of 2.1 million acres in 1959, followed by a decline to 1.4 million acres in 1962 (fig. 50). In the period 1957–61 about 26 percent of the total planting was attributable to the temporary influence of the Soil Bank tree planting program.

In projecting growth it was assumed that planting and natural regeneration rates would continue at approximately the level of 1962.

Stand improvement work, including such measures as thinnings and cull tree removal, covered an estimated 1.7 million acres in 1962. Continuation of this level of stand treatment programs was assumed in developing the growth projections described below.

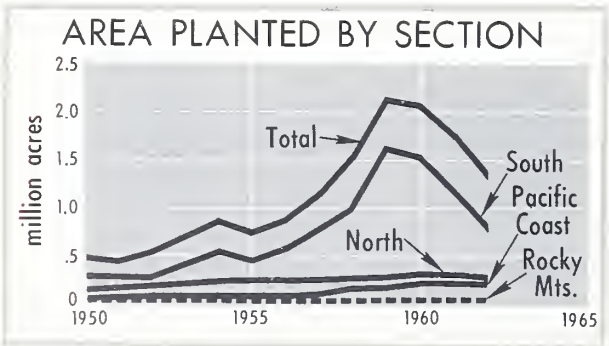

Figure 50

TIMBER SUPPLY OUTLOOK IN PACIFIC COAST

The Pacific Coast States of Alaska, Washington, Oregon, California, and Hawaii have 70 million acres of commercial forest land. Although this represents only 14 percent of all commercial forests in the United States, the Pacific coast has 55 percent of the Nation's total sawtimber volume, and 66 percent of the softwood sawtimber inventory (fig. 51). Some areas of commercial forest in this section are of low growth capability, but almost 56 percent of the total area is capable of producing more than 85 cubic feet of timber per acre per year.

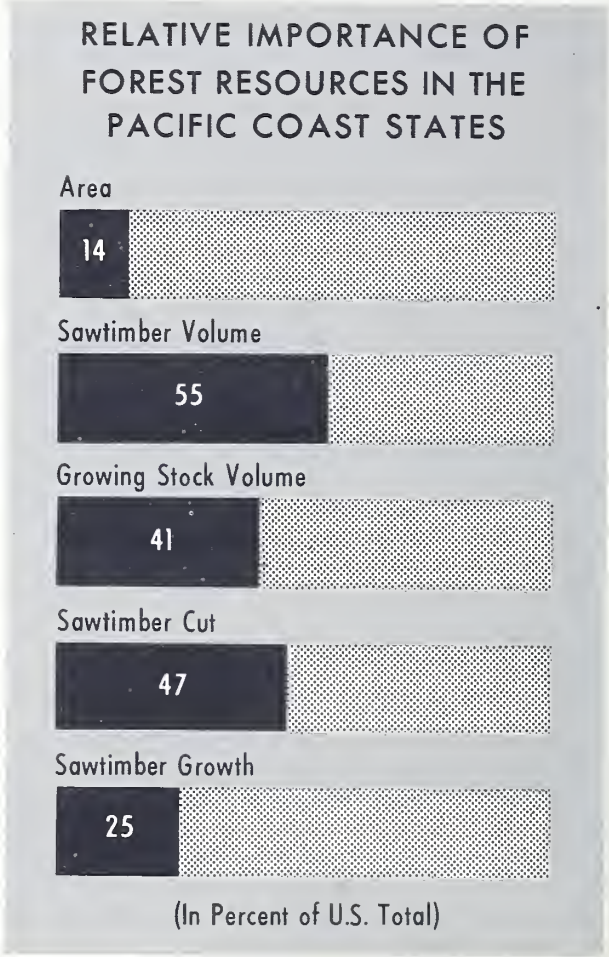

Figure 51

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Old-growth stands provide the major part of the timber cut on the Pacific coast.

This section also has been supplying about 59 percent of all the softwood lumber produced in the United States, virtually all of the softwood plywood, and one-fifth of the woodpulp. About 62 percent of the total softwood sawtimber cut in 1962 was from the Pacific coast. Because of the large volume and relatively high quality of the remaining timber inventory, this section will continue to supply a large share of the Nation's wood products for decades to come.

Total Projected Cut on Pacific Coast Increases Slightly

In 1962 about 23 billion board feet of sawtimber was cut in the Pacific Coast States (table 77). Under the cutting assumptions described earlier in this section the projected cut would rise slightly to about 24 billion board feet by the year 2000 (fig. 52). This is a much smaller increase than has been projected for any other section of the country. The reason is that the Pacific coast is already carrying a major share of the total cut in the Nation—a situation both possible and desirable because of the huge inventory of sawtimber still available in this part of the country.

Increases in Cut Anticipated on Public Lands

On the national forests of the Pacific coast the projected cut increases about 19 percent in the period 1962–2000—from an actual cut of 7.5 billion board feet to 8.9 billion board feet, International ¼-inch rule. Part of this increase is due to the expectation that by 1980 the actual cut will rise to the presently estimated allowable cut of 8.5 billion board feet for all areas including coastal Alaska. Part is due to an expected increase in use of thinnings or other material not now included in the regulated cut. Some of the increase arises from differences between the Scribner rule used locally in establishing the allowable cut and the International ¼-inch rule used in this report.

The projected cut on lands other than national forests decreases about 1 percent between 1962 and 2000—from 15.6 billion board feet to 15.4 billion. However, these overall figures hide diverse trends in the projected cut for the several owner groups and in subsections of the Pacific Coast States.

In Oregon and Washington, for example, lands managed by other public agencies such as the

TABLE 77.—*Timber cut, net growth, and inventories of sawtimber and growing stock in the Pacific coast, by ownership, 1952–2000*

SAWTIMBER IN BILLION BOARD FEET

Ownership	1952	1962	Projections			
			1970	1980	1990	2000
National forest:						
Cut	2.8	7.5	8.3	8.5	8.7	8.9
Net growth	3.2	3.5	3.9	4.3	5.0	5.6
Inventory	814.3	797.9	761.0	717.0	678.0	643.0
Other lands:						
Cut	17.3	15.6	16.3	15.7	15.4	15.4
Net growth	7.4	10.0	10.9	11.9	12.4	12.6
Inventory	692.9	598.7	554.0	508.0	473.0	444.0
Total:						
Cut	20.1	23.1	24.6	24.2	24.1	24.3
Net growth	10.6	13.5	14.8	16.2	17.4	18.2
Inventory	1,507.2	1,396.6	1,315.0	1,225.0	1,151.0	1,087.0

GROWING STOCK IN BILLION CUBIC FEET

National forest:						
Cut	0.5	1.2	1.4	1.4	1.4	1.5
Net growth	.7	.8	.9	1.0	1.1	1.2
Inventory	143.9	143.4	140.0	136.0	134.0	131.0
Other lands:						
Cut	2.8	2.4	2.7	2.8	2.9	3.2
Net growth	1.9	2.3	2.5	2.7	2.8	2.9
Inventory	125.2	115.2	113.0	112.0	111.0	109.0
Total:						
Cut	3.3	3.6	4.1	4.2	4.3	4.7
Net growth	2.6	3.1	3.4	3.7	3.9	4.1
Inventory	269.1	258.6	253.0	248.0	245.0	240.0

Bureau of Land Management, the Bureau of Indian Affairs, and the States of Washington and Oregon make up 17 percent of the commercial forest area. The cut from these lands is projected to increase from 2.5 to 3.3 billion board feet between 1962 and 2000 because of expected improvements in growth rates, more complete utilization of all species, and early achievement of full allowable cuts. These lands are managed under policies similar to those applied to national forests, and allowable cuts are designed to assume orderly conversion of the predominantly old-growth sawtimber inventory.

Allowable cut estimates for both national forests and other public lands also have been calculated in such a way as to allow for the growing importance of competing uses of forest lands. Allowances have thus been made for impacts of landscape management on timber output on those areas being specially handled to maintain scenic values, and for key recreation areas, roads, and other uses that will occupy portions of the commercial forest land. Many such modifications in use of timberlands have already taken place and other changes in forest use are still under consideration in the Pacific coast area.

Declining Cut Expected on Private Lands

On private forests, which have been providing a major although decreasing portion of the total Pacific coast cut, future cutting is expected to decline by an estimated 12 percent by 2000. In California, the projected cut drops by 86 percent and in Oregon by 9 percent by the year 2000. In Washington, on the other hand, the private cut is estimated to increase by 34 percent by 2000 because of the large area of young sawtimber stands reaching merchantable size.

Those trends in cutting must inevitably be reflected in many shifts in industrial plant locations. In many areas there is now an excess of installed capacity of sawmills and plywood plants. Recent expansion of timber sales on public lands has partially offset the depletion of private timber and stabilized many local situations, but in other areas this has not compensated for the decline of private timber supplies. Drastic reductions of log supplies in western Washington over the past two or three decades led to a shift

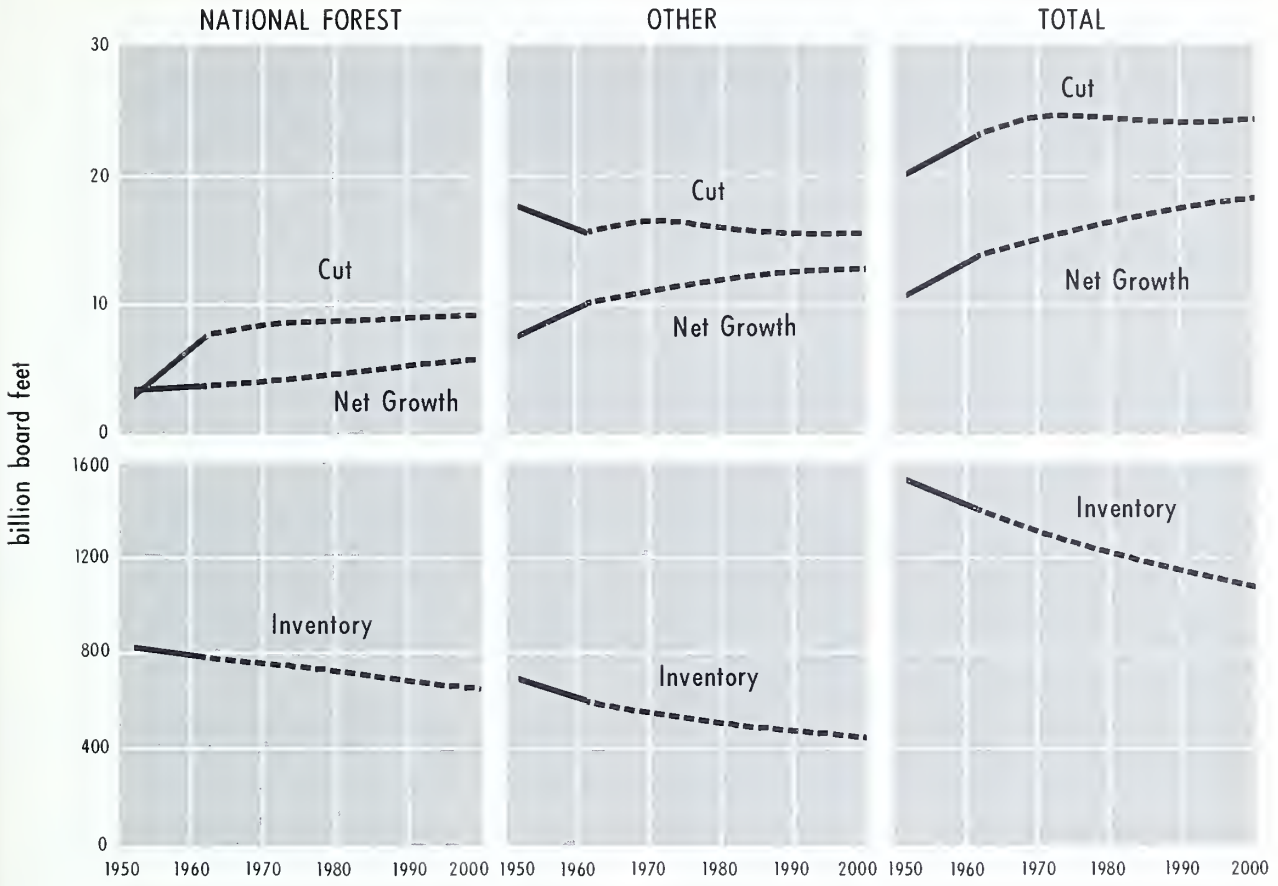

Figure 52

of mill capacity to western Oregon, but cutting has now reduced the inventory on western Oregon private lands to the extent that existing industrial capacity cannot be maintained there. Within the near future a sizable expansion of industrial capacity in western Washington again appears possible because of a continuing buildup of young stands on private lands cut over in the past century.

Size of Available Timber Expected To Decline

In the conversion from old-growth to young growth operations, the size of timber cut on the Pacific coast will necessarily decline. In 1962 nearly two-thirds of the total cut was produced from trees 29 inches in diameter and larger—compared with a projected 27 percent in 2000 (table 78).

TABLE 78.—*Distribution of timber cut on the Pacific coast, by diameter classes and by ownerships, 1962 and 2000*

Diameter at breast height (inches)	All ownerships		National forests		Other lands	
	1962	2000	1962	2000	1962	2000
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
5.0–11.0	5	13	3	5	6	17
11.0–15.0	5	15	4	6	6	19
15.0–19.0	6	16	5	9	6	20
19.0–29.0	20	29	23	28	19	29
29.0+	64	27	65	52	63	15
Total	100	100	100	100	100	100

The anticipated drop in the proportion of such larger timber in the cut from non-national forest lands, from 63 percent in 1962 to 15 percent in 2000, is particularly important, since two-thirds of the total log harvest in this section is expected to be still coming from these lands in 2000. These prospective declines in average size of timber harvested will require continuing adjustments by the timber industries.

About 35 Percent Increase in Sawtimber Growth Projected by 2000

Forest management efforts in the Pacific Coast States in recent years have consisted mainly of harvesting methods designed to assure regeneration, intensive fire protection, measures to reduce losses from insects and diseases, and the planting and reseeding of about 200,000 acres annually. Projections of net growth were made on the assumption that these recent levels of management would continue.

With this management assumption, and the allocated cut indicated previously, sawtimber growth is projected to climb steadily during the rest of the century from 13.5 billion board feet in 1962 to 18.2 billion board feet in 2000—a rise of nearly 5 billion board feet (table 77 and fig. 52).

This rapid upswing of net growth reflects in the main the past liquidation of old stands having little net growth and their replacement by young, vigorous stands that have reached or will reach sawtimber size before the year 2000. Cutting of private timber has been going on longer and has been heavier than the cut on public lands. Hence the buildup of sawtimber growth is mainly concentrated on nonnational forest lands, reaching 12.6 billion board feet by 2000, compared with 5.6 billion board feet on national forests.

These projections for the Pacific coast section indicate that by 2000 the sawtimber cut will still exceed sawtimber growth by about 6 billion board feet annually. However, as conversion from an old-growth to a young growth economy will be still continuing throughout this period, it is not necessary that growth equal the cut in this century. With present cutting policies it will be nearly a century before the old-growth timber is completely liquidated on the public holdings.

Projected Sawtimber Inventories Decline More than 20 Percent by 2000

Under the cutting and management assumptions adopted, sawtimber inventories in the Pacific coast section are projected to decline from 1,397 billion board feet in 1962 to 1,087 billion board feet in 2000.

In the forests of western Washington and Oregon, which contain half the sawtimber on the Pacific coast, growing stock could be reduced by an estimated one-third under current levels of management, and by considerably more with intensified management, and still sustain a relatively high level of cut. This outcome would of course be contingent upon harvesting practices that result in a desirable distribution of tree sizes while the reduction in volume is taking place.

As in the case of timber cut, sizable changes in the size distribution of timber inventories are in prospect. Volumes in trees over 29 inches in diameter, for example, drop from 43 percent of the total 1962 inventory on national forests to 27 percent of the projected inventory in the year 2000 (table 79). On other lands the projected volume in these larger diameters drops from 36 percent in 1962 to 7 percent by 2000. It is evident, therefore, that by 2000 the conversion of old-growth forests will have progressed considerably further on private holdings than on the national forests.

TABLE 79.—*Distribution of inventory volumes on the Pacific coast, by diameter classes, 1963 and 2000*

Tree diameter (inches)	All ownerships		National forests		Other ownerships	
	1962	2000	1962	2000	1962	2000
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
5.0–11.0	12	21	10	18	14	26
11.0–15.0	11	20	10	16	14	24
15.0–19.0	11	17	10	14	12	20
19.0–29.0	26	24	27	25	24	23
29.0+	40	18	43	27	36	7
Total	100	100	100	100	100	100

With present levels of management, average net growth rates for sawtimber on the Pacific coast, particularly in the national forests, are expected to remain relatively low over the projection period because of the large area remaining in old-growth and continued heavy mortality losses, as shown by the following tabulation of growth as a percent of inventory:

Year:	*National forests*	*Other properties*
1962	0.44	1.67
2000	.87	2.83

Timber Supplies Could Be Substantially Increased

In addition to having the highest average site capacity and the greatest timber volume in the United States, the Pacific coast offers outstanding possibilities for increasing usable wood supplies above projected levels. Action along five lines, described below, could be taken to increase wood supplies.

(1) *Closer utilization.*—In spite of outstanding progress in utilizing timber in logging operations, nearly 400 million cubic feet of logging residues, including 1.5 billion board feet of material included in the sawtimber inventory, have been left behind annually on logged-over areas on the Pacific coast. An additional 230 million cubic feet of unused coarse residues also are available annually at sawmills and other manufacturing plants in this section. These woods and mill residues are primarily suitable for the pulp and paper industry.

Greater salvage of dead timber also could augment available timber supplies. In 1962 about 393 million cubic feet of the timber harvest in this section came from dead and cull trees, or about 11 percent of the total roundwood production. Although this figure is large, it represents only part of the potential salvage. There is a backlog of about 10 billion cubic feet of salvable dead and cull timber in the Pacific coast section. Part of the annual mortality loss, which totals about 1.8 billion cubic feet per year, adds regularly to this backlog.

Salvage opportunities are particularly promising in western Oregon and Washington, where the average annual mortality in old-growth stands is more than 350 board feet per acre, mainly in big Douglas-fir and hemlock trees. At present about a fourth of the salvable dead timber in old-growth stands is within a quarter-mile of existing roads.

Further increases in usable timber supplies might be achieved by changes in utilization standards and practices. For example, if utilization were to improve to a point where trees down to 9 inches were utilized, and if the width of the saw kerf were reduced in manufacturing lumber, the yield of timber products could be increased roughly 11 percent.

(2) *Cultural treatments.*—Relatively little work has been done in thinning and otherwise improving Pacific coast stands, although this is a highly important means of raising timber yields in both the immediate future and in the long run. In western Washington and Oregon alone, there are 5 million acres supporting young stands in which commercial thinning would make possible an increase in the log harvest. This area could produce an estimated 1¾ billion board feet annually of usable wood from thinnings, without reducing the final harvest from these stands. There are also opportunities to increase the quantity and quality of yields beyond the year 2000 by cultural work in younger stands.

(3) *Accelerated regeneration.*—Almost 16 million acres in the Pacific coast—or 22 percent of the commercial forest area—is either nonstocked or poorly stocked. Planting of the better sites on these areas would make possible a higher level of future yields. Shortening the regeneration period after logging also would permit some immediate increase in the annual allowable cut.

(4) *Improved protection.*—Fires still kill about 0.7 billion board feet annually on the Pacific coast, despite increased intensity of fire control in recent years. In ponderosa pine stands, both insects and dwarfmistletoe also cause serious losses. Increased protection efforts to control fires, dwarfmistletoe, and other pests could add significantly to future timber yields.

(5) *Road construction.*—Intensive timber management requires an adequately developed road system, but many old-growth stands on the Pacific coast are not yet accessible. Even areas that were logged several decades ago are often inaccessible for thinning or other cultural work because logging roads were not maintained or because railroads were used in logging and then abandoned. In national forests in California only half of the basic road system has been completed. In Washington and Oregon access roads are inadequate on about one-third of the national forest land.

Realization of projected cuts on the Pacific coast will require road construction in the national forests at a sufficiently rapid rate to permit a substantial increase in the timber harvest from high-risk areas, salvable dead trees, and commercial thinnings.

Through such accelerated management and development measures annual timber growth in the Pacific coast section might eventually be very substantially increased, as indicated by the following growth estimates:

	Growing stock (billion cu. ft.)	*Sawtimber (billion bd. ft.)*
1962	3.1	13.5
Projected 2000	4.1	18.2
Longrun realizable	5.0	23.0

Much Depends on How the Public Timber Is Managed

In the past most of the timber cut in the Pacific coast has come from private lands, and this situation is expected to continue between now and

2000. However, the cut on public lands in the long run may equal or exceed the cut from private lands in supplying industrial wood. About 70 percent of the sawtimber volume in the Pacific coast is on national forests and other public lands, and 60 percent of the commercial forest area is publicly owned, as shown by the following tabulation:

Ownership:	*Percent of sawtimber volume*	*Percent of commercial forest area*
National forest	57.1	46.4
Other Federal, State and local	13.3	13.6
Forest industry	17.7	17.6
Farm and miscellaneous	11.9	22.4
Total	100.0	100.0

TIMBER SUPPLY OUTLOOK IN THE ROCKY MOUNTAINS

The 66 million acres of commercial forest in the Rocky Mountain section make up 13 percent of the commercial forest area in the United States (fig. 53). They contain 17 percent of the Nation's inventory of sawtimber—roughly equal to the volume in the South. During the past decade this section has contributed about 5 percent of the total cut in the United States.

Parts of the Rocky Mountain forest area have long supported substantial forest industries, and in some areas there is now more industrial plant capacity than can be kept supplied with logs with current levels of timber management. This is the situation in the Inland Empire of northern Idaho and western Montana and much of the pine area of the southern Rockies. However, the main range of the Rocky Mountains is still a frontier area insofar as industrial capacity is concerned. As a result, of all the sections in the United States, the timber resource is least developed in the Rocky Mountain States. Thus in Washington and Oregon the annual sawtimber cut is 1.8 percent of the inventory; in the Rocky Mountains it is 0.9 percent.

Considerable Increase in Cut Anticipated in the Rockies

The assumed allocation of timber cut in the Rockies rises from an actual cut of 3.8 billion board feet in 1962 to 6.3 billion board feet in 2000—an increase of 66 percent (table 80 and fig. 54). As indicated in the section on cutting assumptions, this includes the prospective cut on private lands; on national forests it includes a buildup of the timber harvest to the estimated allowable cut by 1990.

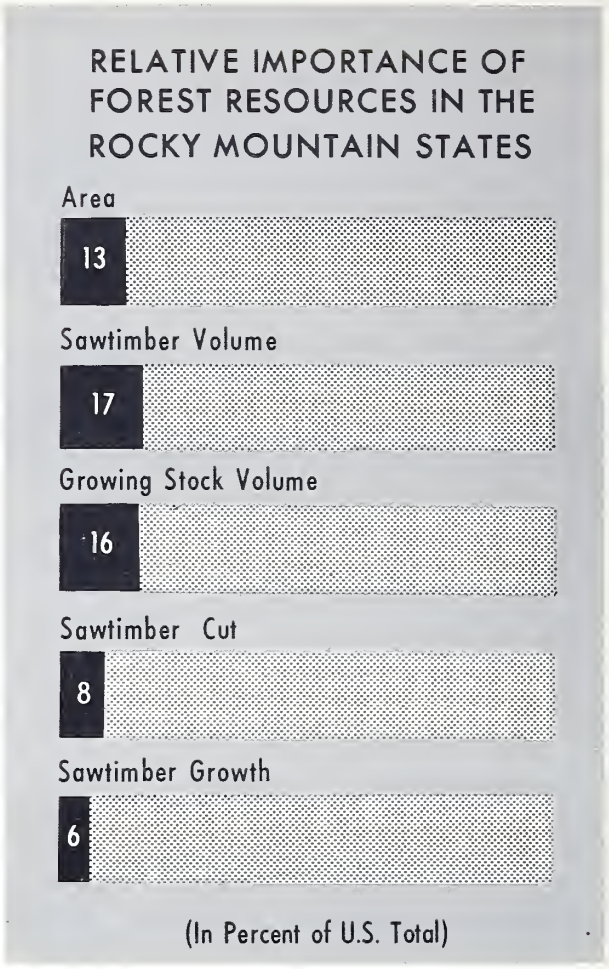

Figure 53

In the period 1952–62, the sawtimber cut in the Rocky Mountains rose 58 percent, or 1.4 billion board feet. This was in contrast to a decline in cut in the South and North, and an increase of 15 percent or 3 billion board feet on the Pacific coast.

The projected increase in cut in the Rocky Mountains is large, but it still represents a relatively modest rate of use of the timber inventory. In 1962 the cut of 2.2 billion board feet on the national forests was only 0.7 percent of the sawtimber inventory. This is projected to 1.2 percent of the inventory by 1980 and to 1.5 percent by 2000.

Numerous Areas in Rockies Currently Inoperable

Many parts of the Rocky Mountains are still unsuited for commercial logging at present price

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Much of the forest in the Rocky Mountains is still undeveloped.

and cost levels because of lack of roads, rough topography, and low volumes of timber per acre. Much of the land classed as commercial is of relatively low timber growing capacity. The feasibility of logging in this section will certainly improve as the road system in the national forests is extended. But a major expansion of road construction will be required to make the entire forest area accessible. With present levels of appropriations, no more than 70 percent of the planned national forest road system would be completed by the year 2000.

The current allowable cut on national forests in this section is also limited by the need to protect recreation and watershed values. Outstanding scenery, wildlife, and other outdoor attractions require modification of timber growing plans in many localities. In addition, many steep, unstable slopes that would "unravel" if logged, or are difficult to regenerate after logging, cannot be considered operable under present technology.

There are, on the other hand, a number of factors favoring an expansion of cutting in the Rockies. Population growth in the West is improving markets for Rocky Mountain timber. Installation of more efficient sawmills in some cases could improve the competitive strength of the lumber industry. And trends in manufacturing technology and marketing favor establishment of more closely integrated industries producing plywood and woodpulp as well as lumber.

Projected Cut Exceeds Growth Through 2000

Growth of sawtimber in the Rocky Mountain section was only slightly less than the cut in 1962. If the cut rises as projected, however, by the year 2000 the timber harvest would be about 1½ billion board feet higher than the growth. This would be an acceptable situation until such time as the sawtimber inventory is reduced to levels required for sustained yield. Between 1962 and 2000 the sawtimber inventory would drop about 10 percent under the conditions projected.

The cut allocated to the Rocky Mountains during the remainder of this century is predicated on the large reserve of merchantable timber in this section, much of which is overmature and subject to heavy mortality losses. Except for protection, current management efforts will not significantly increase the amount of timber that could be made available for cutting during the rest of this century.

TABLE 80.—*Timber cut, allowable cut, net growth, and inventory in the Rocky Mountains, 1952–2000*

SAWTIMBER IN BILLION BOARD FEET

Ownership	1952	1962	Projections			
			1970	1980	1990	2000
National forest:						
Cut	1.0	2.2	2.8	3.6	4.1	4.2
Allowable cut	3.6	3.6	3.7	3.9	4.1	4.2
Growth	2.3	2.5	2.6	2.9	3.1	3.3
Inventory	283.3	304.5	301.0	297.0	289.0	279.0
Other lands:						
Cut	1.4	1.6	1.7	1.9	2.0	2.1
Growth	1.0	1.1	1.3	1.4	1.5	1.5
Inventory	131.7	113.9	115.0	110.0	105.0	100.0
Total:						
Cut	2.4	3.8	4.5	5.5	6.1	6.3
Growth	3.3	3.6	3.9	4.3	4.6	4.8
Inventory	415.0	418.4	416.0	407.0	394.0	379.0

GROWING STOCK IN BILLION CUBIC FEET

National forest:						
Cut	0.2	0.3	0.5	0.7	0.8	0.8
Allowable cut	.7	.7	.7	.8	.8	.9
Growth	.6	.7	.6	.7	.7	.8
Inventory	65.0	72.0	72.0	73.0	73.0	72.0
Other lands:						
Cut	.2	.3	.3	.4	.4	.4
Growth	.2	.2	.3	.3	.3	.3
Inventory	29.9	26.7	28.0	27.0	27.0	26.0
Total:						
Cut	.4	.6	.8	1.1	1.2	1.2
Growth	.8	.9	.9	1.0	1.0	1.1
Inventory	94.9	98.7	100.0	100.0	100.0	98.0

Size of Trees Cut Expected To Decline

About 62 percent of the total timber cut in the Rockies in 1962 came from trees above 19.0 inches in diameter (table 81). This is projected to drop to about 42 percent of the total cut on national forests by 2000, and to 31 percent on private lands. As in other sections, continued adjustments of the forest industries to smaller sizes of timber, as well as to a changing mix of species, will be required.

Intensified Management Necessary To Sustain Cut

With present levels of management in the Rockies, the projected timber cut probably could not be continued beyond the time when excess sawtimber inventories have been liquidated. The efforts going into stand regeneration, thinning, and control of insects and diseases are not creating an adequate succession of young, vigorous, properly stocked stands necessary for a sustained high level of output over the next century.

TABLE 81.—*Distribution of timber cut in the Rocky Mountains, by diameter classes, and by ownerships, 1962 and 2000*

Diameter at breast height (inches)	All ownerships		National forest		Other lands	
	1962	2000	1962	2000	1962	2000
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
5.0–9.0	4	7	4	7	2	6
9.0–15.0	18	32	20	30	16	38
15.0–19.0	16	22	16	21	17	25
19.0+	62	39	60	42	65	31
Total	100	100	100	100	100	100

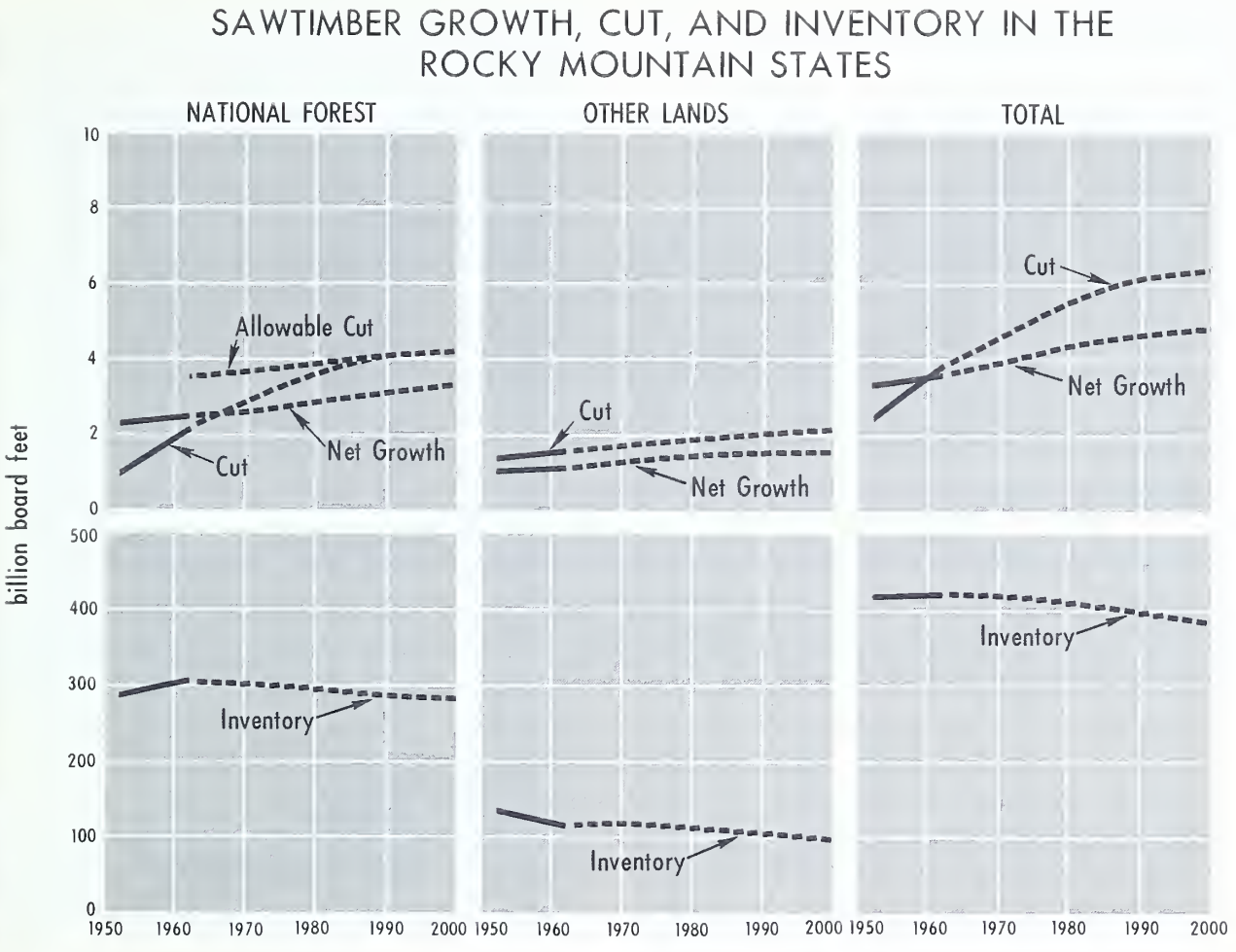

Figure 54

Sawtimber growth and allowable cut might ultimately be raised to at least three times the 1962 level, even after making allowances for possible reductions of timber yields for watershed protection, recreation, and inoperability of some areas. This will take time—a century and more—and considerably more management effort than has been applied so far. Particular emphasis will be needed along several lines if yields are to be increased substantially. These include the following:

(1) Greater efforts in assuring prompt regeneration of cutover areas with the right species. Also, stand reestablishment on the more productive sites that are now nonstocked or poorly stocked could add to future yields. Basic to such progress in regeneration, as well as other management activities, is an intensification of research to solve critical regeneration problems, particularly in spruce, lodgepole pine, and Douglas-fir types.

(2) An expansion of thinning and other cultural work in young stands where overstocking is a serious problem and the forest will respond to treatment. Failure to maintain proper stand densities and spacing will lengthen rotations and result in many overcrowded stands that produce little or no usable wood.

(3) Extensive road construction to permit more intensive timber management and closer utilization of available timber resources. Since many proposed harvesting operations on national forests in this section cannot bear the costs of developing permanent roads, public funds will be necessary to complete a transportation system that will permit multiple-use management of the forest resources. In many areas development of improved and low-cost methods of logging also will be necessary to prevent undue damage to soils and watershed values.

(4) Increased protection of timber from fire, insects, and disease and greater salvage of timber lost to destructive agents.

Rocky Mountain Forests Predominantly in Public Ownership

The Rocky Mountain States have 43 percent of all the federally owned or managed commercial forest land in the United States. About two-thirds of the 66 million acres of commercial forest in the Rocky Mountains is in national forests, and three-fourths is publicly owned. Utilization of timber on these public lands has been slight; as a result more than 80 percent of the remaining timber inventory in this section is in public ownership. The long-range development of timber resources in the Rocky Mountains is thus primarily a problem of public forestry.

THE TIMBER SUPPLY OUTLOOK IN THE SOUTH

The South has produced more timber products than any other section of the United States in the past century. It is currently the Nation's chief supplier of pulpwood, poles, and piling. Forests of the West now supply a larger share of the total sawtimber cut, but in the long run when the western old-growth reserves have been cut the Nation must once again rely heavily upon the South. The Southern States have 39 percent of the Nation's commercial forest land and nearly half the timber growth (fig. 55).

Construction of many pulpmills in the South during the past few decades is but a preview of the industrial expansion possible in this section if the forests are effectively managed. The 201 million acres of commercial forests have several factors in their favor, chief of which are the rapid growth rates permitting relatively short rotations, accessibility for logging, and nearness to principal markets. On the other hand, the South has a major problem in realizing its growth potential in that a high proportion of the commercial forest area belongs to small owners, most of whom have shown little interest in intensifying timber management.

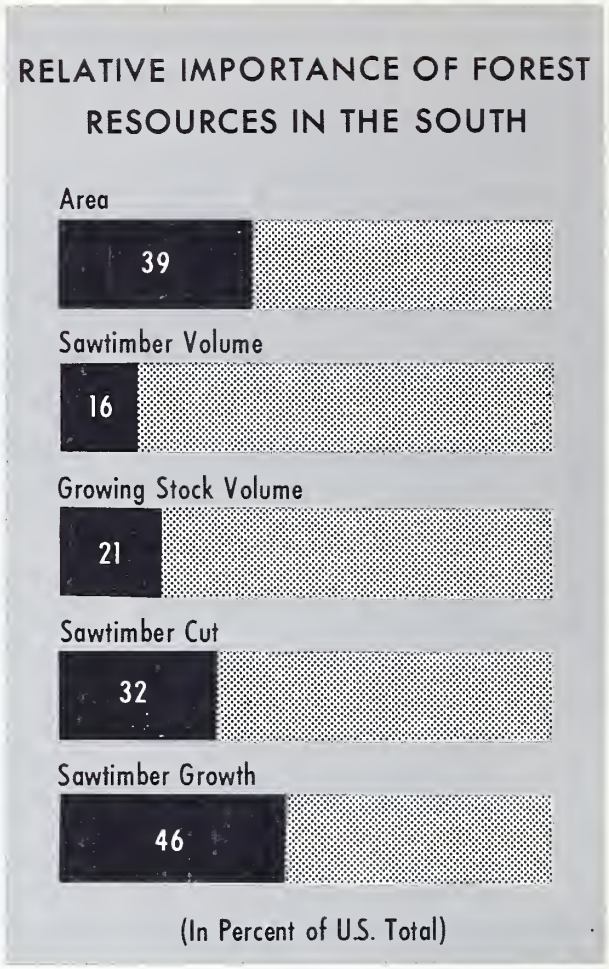

Figure 55

Allocated Cut of Softwoods in 2000 Almost 3 Times the 1962 Cut

More than 15 billion board feet of sawtimber was cut in the South in 1962, including 8.4 billion feet of softwoods and 7.0 billion feet of hardwoods (table 82 and fig. 56). With the cutting assumptions adopted, the softwood cut would triple by 2000 to about 26 billion board feet.

This projected increase in softwood cut is in marked contrast to a decline of 28 percent in the softwood sawtimber cut between 1952 and 1962. In this period thousands of small southern sawmills ceased operations in the face of expanding competition from western and Canadian lumber producers. At least part of this reduction in lumber cut must be attributed in turn to the inability of many sawmills to obtain timber of adequate size and quality. Other reasons for the decline in softwood cut included a sharp drop in consumption of fuelwood.

Projected Softwood Growth Rises Until 1980, Then Declines

With recent levels of forest management, and a rise in cut as projected, net growth of softwood

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Young-growth stands in the South provide a base for industrial expansion.

sawtimber in the South would increase from 16.9 billion board feet in 1962 to an estimated 22 billion board feet in 1980 (table 82 and fig. 56). Thereafter projected growth declines to a balance with cut in 1990, and to about 7.5 billion board feet less than the projected timber cut by 2000. Projected growth of all growing stock shows a similar trend.

These growth projections are based on indications that a continuation of recent levels of protection, natural regeneration, planting, and timber stand improvement would not be adequate to maintain the present area of softwood types. An estimated 2.9 million acres in the South have been restocking naturally to softwoods each year, and during the 1958–62 period an average of 1.7 million acres were planted or seeded with pine. Nearly 1.4 million acres underwent stand improvement. Nevertheless, the area of softwood types dropped almost a million acres between 1952 and 1962. With recent levels of management, it is estimated that the acreage of softwood types would continue to decrease—from 81 million acres in 1962 to 77 million acres by 2000.

There are also signs that the greatly improved fire protection of recent years is building up "rough" or ground cover that may slow down natural regeneration. If this continues, an increase in prescribed burning and planting or direct seeding would be necessary to maintain natural regeneration rates.

The increasing stocking of southern pine stands, resulting from more intensive fire protection and other forestry activities, is indicated by a 12 percent rise in average basal area per acre between 1952 and 1962. Further increases in basal area per acre (in square feet) are anticipated, as follows:

Year:	*All live trees*	*Growing stock trees*
1952	48	45
1963	60	57
1970	75	71
1980	92	87
1990	104	99
2000	98	93

The projected downturn in growth of softwood sawtimber after 1980 would be due in part to the prospective shrinkage in area of softwood types, but mainly would reflect the effects of such increases in density of stands.

Under intensified management, only about 84 square feet of basal area per acre on 74 million acres of softwood types would be required to produce the 26 billion board feet of cut allocated to southern softwoods in the year 2000. However, this would require repeated thinnings to concentrate basal area on fewer stems and to maintain desirable spacing and age-class distribution of growing stock, plus other measures to insure regeneration and limited mortality losses.

TABLE 82.—*Timber growth, allocated cut, and inventory of sawtimber and growing stock in the South, 1952–2000*

SAWTIMBER IN BILLION BOARD FEET

Species group	1952	1962	Projections			
			1970	1980	1990	2000
Softwoods:						
Cut	11.7	8.4	10.5	14.3	19.5	26.1
Growth	14.1	16.9	18.8	21.9	19.7	18.6
Inventory	187.9	224.7	293.0	376.1	408.8	352.2
Hardwoods:						
Cut	7.9	7.0	6.9	7.6	8.6	10.1
Growth	8.8	8.4	8.5	8.1	7.1	6.8
Inventory	186.2	187.3	200.3	214.3	209.3	183.5
Total:						
Cut	19.6	15.4	17.4	21.9	28.1	36.2
Growth	22.9	25.3	27.3	30.0	26.8	25.4
Inventory	374.1	412.0	493.3	590.4	618.1	535.7

GROWING STOCK IN BILLION CUBIC FEET

Softwoods:						
Cut	3.1	2.5	2.7	3.6	5.1	7.4
Growth	3.5	4.4	4.8	5.5	5.0	4.8
Inventory	52.6	62.7	80.4	99.6	109.2	92.8
Hardwoods:						
Cut	2.0	1.7	1.9	2.2	2.8	3.7
Growth	3.1	3.1	3.2	3.2	2.9	2.8
Inventory	67.2	71.4	77.4	87.2	90.2	86.3
Total:						
Cut	5.1	4.2	4.6	5.8	7.9	11.1
Growth	6.6	7.5	8.0	8.6	7.8	7.6
Inventory	119.8	134.1	157.8	186.8	199.4	179.1

Projected Softwood Inventories Increase Considerably

Because of the excess of growth over cut expected during the next two decades, the softwood sawtimber inventory in the South is estimated to rise about 82 percent between 1962 and 1990 (table 82 and fig. 56). Thereafter, with present levels of management, projected inventories decline.

By 2000 inventories would still be much higher than in 1962, but would fall short of the inventory volume required to sustain the projected cut in tree sizes comparable to those now being harvested. Thus the projected cut of softwood trees above 15 inches in diameter, for example, declines from 30 percent of the total cut in 1962 to 24 percent by the year 2000 (table 83).

Allocated Cut of Hardwoods Exceeds Projected Growth by 1980

The projected cut of hardwood sawtimber increases from 7.0 billion board feet in 1962 to 10.1 billion board feet in 2000—a rise of 44 percent (table 82 and fig. 56). Growth of hardwood sawtimber in 1962, amounting to 8.4 billion board feet was slightly below the estimated 1952 growth, primarily as a result of high mortality arising from drought and the increasing density of many hardwood stands.

TABLE 83.—*Distribution of timber cut in the South, by diameter classes, and by softwoods and hardwoods, 1962 and 2000*

Diameter at breast height (inches)	Total		Softwoods		Hardwoods	
	1962	2000	1962	2000	1962	2000
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
5.0–9.0	15	23	20	24	8	22
9.0–11.0	15	21	17	21	10	17
11.0–15.0	31	30	33	31	27	27
15.0–19.0	22	17	20	16	25	20
19.0+	17	9	10	8	30	14
Total	100	100	100	100	100	100

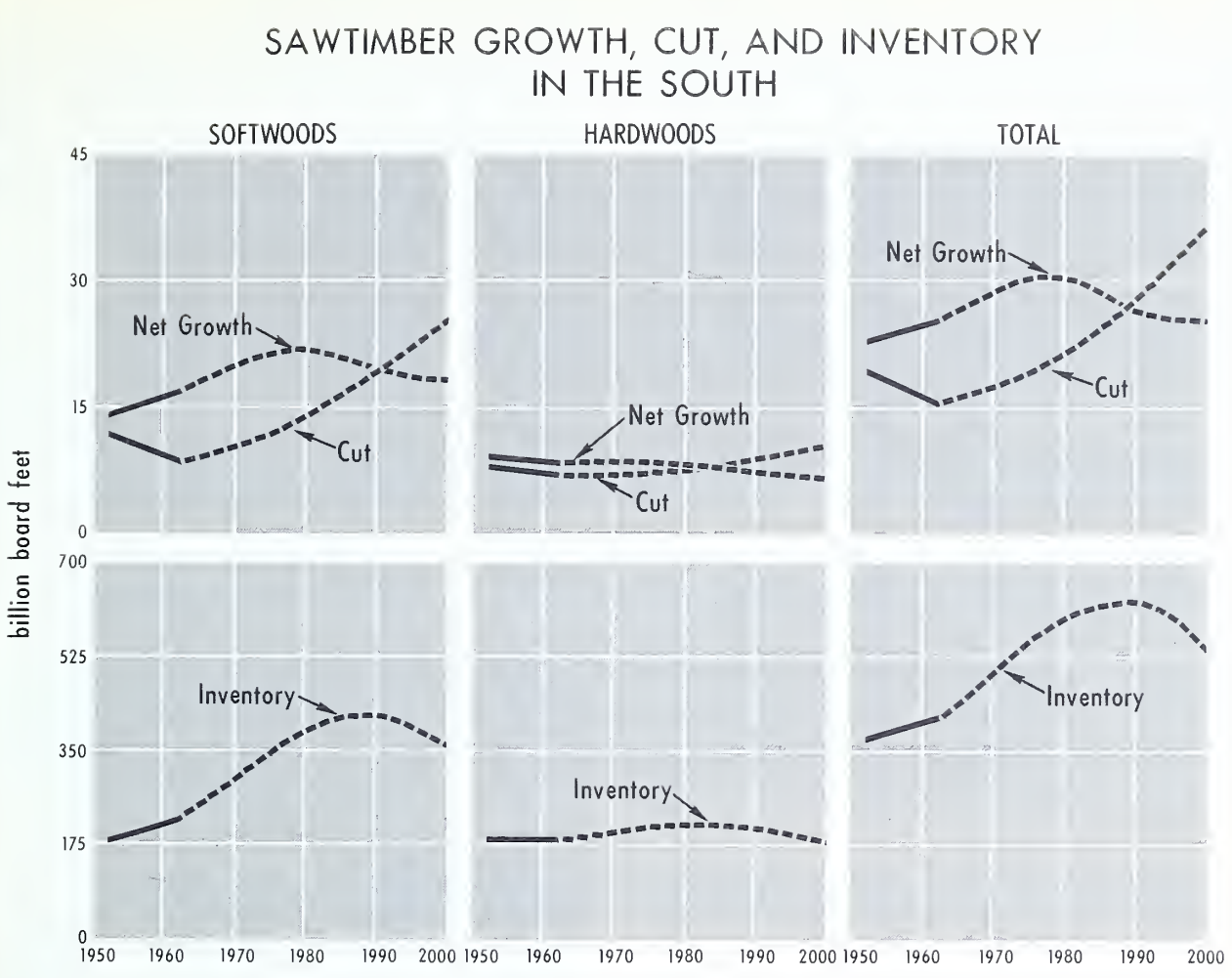

Figure 56

Projected growth of hardwood sawtimber, with the allocated cut and recent levels of management, rises slightly and then declines to an estimated 6.8 billion board feet by 2000. In spite of a projected increase in the area of hardwood types from 120 million acres in 1963 to 124 million acres by 2000, this trend is anticipated because continuing increases in density of hardwood stands are expected to result in some reductions of per-acre growth.

Numbers of hardwood trees below sawtimber size have increased considerably in recent years. As a result, basal area of southern hardwood stands has been steadily building up—by 12 percent between 1952 and 1962, for example. Further increases are anticipated as shown by the following estimates of basal area in square feet per acre:

Year:	*All trees*	*Growing stock trees*
1952	71	46
1963	79	53
1970	87	58
1980	98	66
1990	103	69
2000	105	70

Hardwood Tree Size and Quality of Major Importance

Quality of logs for lumber and plywood is strongly related to log diameter, particularly in the case of hardwoods. Projections of hardwood inventories show a marked decrease in relative volumes of trees above 15 inches in diameter—from 15 percent of the total inventory in 1962 to 10 percent in 2000 (table 84). Proportions of

these larger trees in the projected cut also show an accompanying decline from 55 percent of the total cut in 1962 to 34 percent by 2000 (table 83).

The hardwood supply situation also is greatly influenced by the quality of hardwood stands. In 1962 about 33 percent of the basal area of southern hardwood timber 1.0 inch and larger was in cull trees. Many other trees qualifying as "growing stock" also contain considerable cull volume or are of poor form. With a continuation of present levels of management, cull trees and low-quality growing stock may be expected to continue to preempt a large share of the total growing space in southern forests.

Growth Could Be Raised to the Level of Allocated Cut

Growth of both softwoods and hardwoods more than keeps pace with the allocated cut in the South until about 1990, but thereafter falls below the rising projection of cut. By 2000 a projected deficiency of growth amounts to nearly 7.5 billion board feet for softwoods and about 3.3 billion board feet for hardwoods. Growth could be increased to this level of projected cut, but only with a considerable intensification of timber management activities.

TABLE 84.—*Distribution of hardwood timber inventories in the South, by diameter classes, 1962–2000*

[Percent of basal area per acre]

Tree diameter (inches)	1962	Projections		Required to maintain present diameter distribution of cut
		1980	2000	
1.0–8.9	56	57	63	34
9.0–14.9	29	30	27	38
15.0+	15	13	10	28
Total	100	100	100	100

Particular emphasis would be needed along several lines.

(1) Periodic thinning of most softwood stands and many hardwood stands to control density and spacing, species composition, and age class distribution. Failure to maintain proper stand densities and spacing will result in further increases in basal area per acre and reductions in growth.

(2) Conversion of hardwood stands to pine in some areas would have to be increased over present efforts so as to offset expected declines in areas of softwood types.

(3) Extensive stand improvement on at least 150 million acres would also be needed, especially in hardwood and oak-pine types, to reduce the excessive stocking of culls and undersirable trees and to obtain a better distribution of desirable species and tree sizes. Such efforts, moreover, would be required on hundreds of thousands of small properties which compose a major part of the commercial lands in the South.

(4) Intensified regeneration efforts to assure prompt stocking of recently cut areas with the proper species. Also, increased effort will be needed to reestablish stands on the more productive sites that are now inadequately stocked with trees of acceptable form and species, nonstocked, or poorly stocked.

THE TIMBER SUPPLY OUTLOOK IN THE NORTH

The North has about 172 million acres of commercial forest land—a third of the national total (fig. 57). This section has about 22 percent

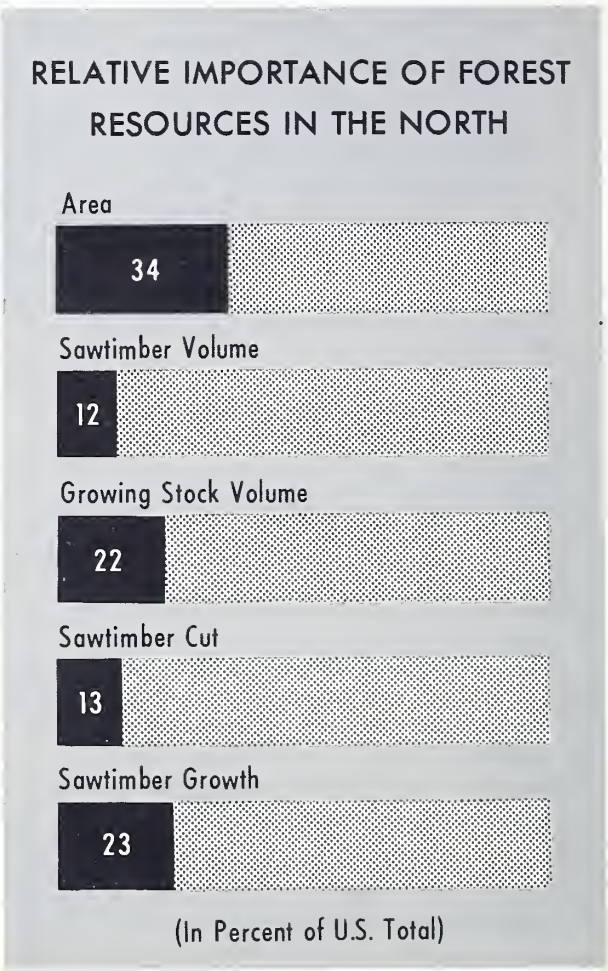

Figure 57

F–422477

The North is primarily a hardwood-producing area.

of the Nation's growing stock, and 12 percent of the total sawtimber. In recent years the North has provided about 11 percent of the cut of saw logs and veneer logs, and 18 percent of the Nation's pulpwood.

This is primarily a hardwood producing area, although softwoods also are important locally. Extreme diversity of hardwood species, wide variation in site capability, and large numbers of small forest properties characterize most of this section.

The Allocated Cut in the North More Than Doubles by 2000

The allocated cut of softwood sawtimber in this section rises from 1.9 billion board feet in 1962 to 3.2 billion board feet by 2000 (table 85 and fig. 58). This contrasts with a 21 percent drop in cut between 1952 and 1962 that reflects such factors as inadequate supplies of large sawtimber and increasing competition from the West.

For hardwood sawtimber, the allocated cut almost triples between 1962 and 2000, from 4.2 billion board feet to 11.0 billion board feet. This is again in contrast to a decline between 1952 and 1962 that also can be attributed in part to reduced supplies of higher quality timber. The increase in allocated cut in the North is much greater than for the South, mainly because the current cut in the North is so much lower than prospective supplies.

Growth and Inventories Projected To Rise and Then Decline

Growth of softwood sawtimber in the North in 1962 was about 50 percent more than the cut (table 84 and fig. 57). If forestry continues at recent levels, and the cut rises as allocated, softwood forests in the North would be growing more sawtimber than the amount cut for the next several decades. By 2000, however, the allocated cut would slightly exceed the projected growth.

A similar outlook is projected for hardwood sawtimber. Growth of hardwoods exceeded the cut in 1962 by 5.5 billion board feet, but this excess of growth over cut would disappear around 1990 under the management and cutting assumptions adopted.

Inventories of softwood sawtimber in the North rose 8 percent between 1952 and 1962, while hardwood sawtimber volumes rose 20 percent.

TABLE 85.—*Timber growth, allocated cut, and inventory of sawtimber and growing stock in the North, 1952–2000*

SAWTIMBER IN BILLION BOARD FEET

Species group	1952	1962	Projections			
			1970	1980	1990	2000
Softwoods:						
Cut	2.4	1.9	1.8	2.0	2.5	3.2
Growth	2.5	2.8	3.1	3.3	3.3	3.1
Inventory	61.6	66.6	75.0	89.0	100.0	103.0
Hardwoods:						
Cut	4.3	4.2	5.3	6.8	8.7	11.0
Growth	8.1	9.7	10.5	10.7	10.2	9.7
Inventory	203.0	243.2	286.6	333.1	359.6	358.9
Total:						
Cut	6.7	6.1	7.1	8.8	11.2	14.2
Growth	10.6	12.5	13.6	14.0	13.5	12.8
Inventory	264.6	309.8	361.6	422.1	459.6	461.9
GROWING STOCK IN BILLION CUBIC FEET						
Softwoods:						
Cut	0.7	0.6	0.5	0.6	0.9	1.2
Growth	1.0	1.0	1.2	1.2	1.2	1.1
Inventory	26.6	31.3	36.0	43.0	50.0	54.3
Hardwoods:						
Cut	1.3	1.1	1.5	2.0	2.6	3.4
Growth	3.3	3.8	3.9	3.7	3.3	3.3
Inventory	85.4	105.2	125.1	147.9	163.5	166.9
Total:						
Cut	2.0	1.7	2.0	2.6	3.5	4.6
Growth	4.3	4.8	5.1	4.9	4.5	4.4
Inventory	112.0	136.5	161.1	190.9	213.5	221.2

This buildup was primarily a result of greatly improved fire protection in recent decades and relatively low levels of cutting. A continued buildup in stand volumes seems likely, even with a rapid rise in the allocated timber cut. Thus under the conditions assumed, the total sawtimber stand by 1990 would be almost 50 percent greater than in 1962.

As in the South, the proportion of larger size timber available for cutting decreases significantly under the cutting and management assumptions adopted (table 86). The feasibility of substantially raising the total cut in spite of such reductions in size of available timber will depend chiefly on the ability of forest industries to adjust to smaller timber. This should not be a serious problem for pulpmills, but could be critical for the lumber and veneer industries, which depend primarily on large logs of walnut, yellow birch, hard maple, and other high-value species.

Demands for Nontimber Uses Could Reduce Projected Timber Supplies

The forest area available for timber production could change materially in the North before the year 2000. Expanding cities, withdrawals of land for highway rights-of-way and reservoirs, and development of forest areas for recreation all are making inroads into the forest area available for production of timber crops.

Many northern States, for example, have embarked on sizable programs of public land acquisi-

TABLE 86.—*Distribution of timber cut in the North, by diameter classes and by softwoods and hardwoods, 1962 and 2000*

Diameter at breast height (inches)	Total		Softwoods		Hardwoods	
	1962	2000	1962	2000	1962	2000
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
5.0–9.0	20	17	24	29	17	13
9.0–11.0	12	22	13	26	12	20
11.0–15.0	22	34	23	31	22	35
15.0–19.0	23	17	21	11	23	19
19.0+	23	10	19	3	26	13
Total	100	100	100	100	100	100

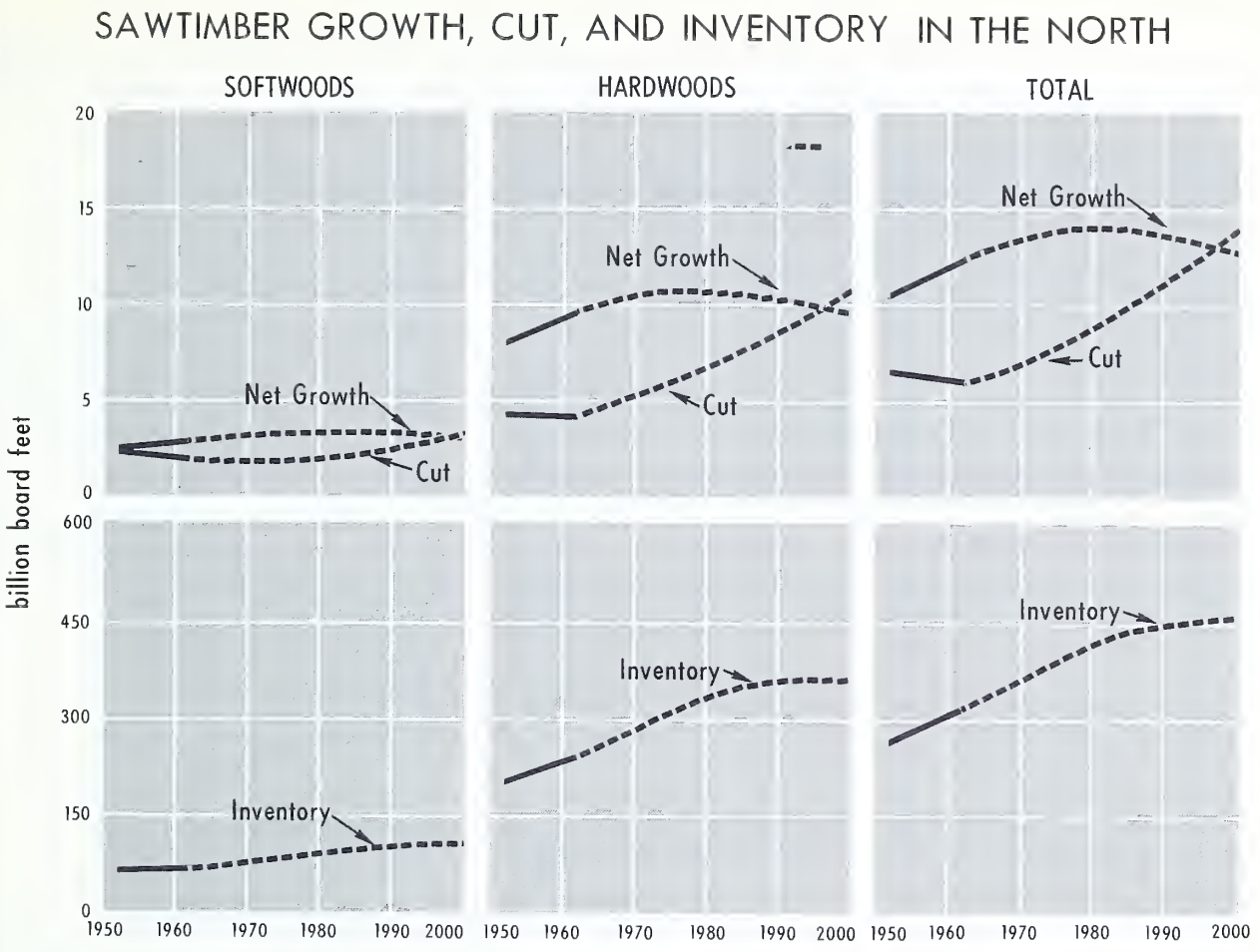

Figure 58

tion for recreational use, and while such acquisition does not always preclude logging, some restrictions on timber harvesting on these lands are likely. Much of the land acquired or developed for recreation, moreover, includes areas such as river and lake borders which have relatively high productivity for timber growing. Thus available growth and inventories in the North could be significantly less than the volumes projected.

Stand Improvement of Particular Importance in the North

As indicated in the section on Forest Land and Timber Resources, most forest lands in the North are now fairly well covered with tree growth, although much of it consists of relatively poor growing stock trees or culls. Also, stand density is steadily building up in the northern stands and sizable further increases are projected, as shown by the following tabulation of basal area per acre (in square feet):

Year:	*All live trees*	*Growing stock trees*
1962	77	68
1970	85	75
1980	95	84
1990	102	90
2000	106	93

Average stand densities of the magnitude projected would involve serious overstocking in many stands and a general decline in growth rates. Thinning of stands and cull tree removal would therefore have to be materially stepped up to maintain conditions favorable to improvement in growth and quality. In many well-stocked stands on productive sites such timber stand improvement work promises to yield early returns, particularly where pulpwood markets can be further expanded. In other cases where markets for small and defective hardwoods are lacking, such timber stand improvement work will require investments for long periods before returns can be expected.

Increased tree planting on productive sites could add to future timber supplies in some areas. Improved protection against insects and diseases would also increase volumes of usable wood in the future, and in the case of pests such as the white pine weevil improve timber quality as well.

Timber supplies in the North must be obtained largely from the 73 percent of the forest area that is in private ownership, mostly in relatively small holdings. National forests and other public holdings make up only 19 percent of the commercial forest in this section, and holdings of forest industries 8 percent.

NATIONAL SUPPLY-DEMAND RELATIONSHIPS

The projections of timber demands, growth, and inventories developed in this study show changing relationships over the next few decades. Continuing problems of timber quality also are in prospect as a result of a gradual shift of a large part of the cut from old-growth stands and larger trees to younger growth.

Timber Supplies Exceed Projected Demands for Two or Three Decades But Not in 2000

The cut of softwood sawtimber in 1962, amounting to 36.7 billion board feet, was about equal to the growth, but was much less than the estimated "supply" of 48.5 billion board feet. This "supply" was made up of net growth in the East plus the prospective cut of timber in the West (table 87 and fig. 59).

With recent levels of management, projections of "supply" appear sufficient to meet projected demands until about 1990. By 2000, however,

TABLE 87.—*Timber cut, growth, supply, and inventories in the United States, 1952–2000*

SAWTIMBER IN BILLION BOARD FEET

Species group	1952	1962	Projections			
			1970	1980	1990	2000
Softwoods:						
Cut	36.5	36.7	41.0	45.6	51.8	59.5
Growth	30.0	35.9	39.7	44.8	44.0	43.7
Supply [1]		48.5	51.5	54.8	52.8	51.9
Inventory	2,132.4	2,058.0	2,053.0	2,053.8	2,012.8	1,882.4
Hardwoods:						
Cut	12.3	11.7	12.6	14.8	17.7	21.5
Growth	17.4	19.0	19.9	19.7	18.3	17.5
Inventory	428.5	478.8	532.9	590.7	609.9	581.2
All species:						
Cut	48.8	48.4	53.6	60.4	69.5	81.0
Growth	47.4	54.9	59.6	64.5	62.3	61.2
Supply [1]		67.0	70.9	74.0	70.5	68.8
Inventory	2,560.9	2,536.8	2,585.9	2,644.5	2,622.7	2,463.6

GROWING STOCK IN BILLION CUBIC FEET

Softwoods:						
Cut	7.5	7.2	8.0	9.4	11.4	14.4
Growth	7.7	9.0	10.1	11.2	10.8	10.8
Supply [1]		10.2	11.0	11.9	11.6	11.8
Inventory	428.4	434.1	452.3	473.7	487.5	468.7
Hardwoods:						
Cut	3.3	2.9	3.5	4.3	5.5	7.2
Growth	6.6	7.3	7.3	7.0	6.4	6.4
Inventory	167.4	193.8	219.6	252.0	270.4	269.6
All species:						
Cut	10.8	10.1	11.5	13.7	16.9	21.6
Growth	14.3	16.3	17.4	18.2	17.2	17.2
Supply [1]		17.2	18.2	18.8	17.8	18.0
Inventory	595.8	627.9	671.9	725.7	757.9	738.3

[1] Supply is defined as the sum of growth in the East, allowable cut on public lands in the West, and prospective cut on private lands in the West.

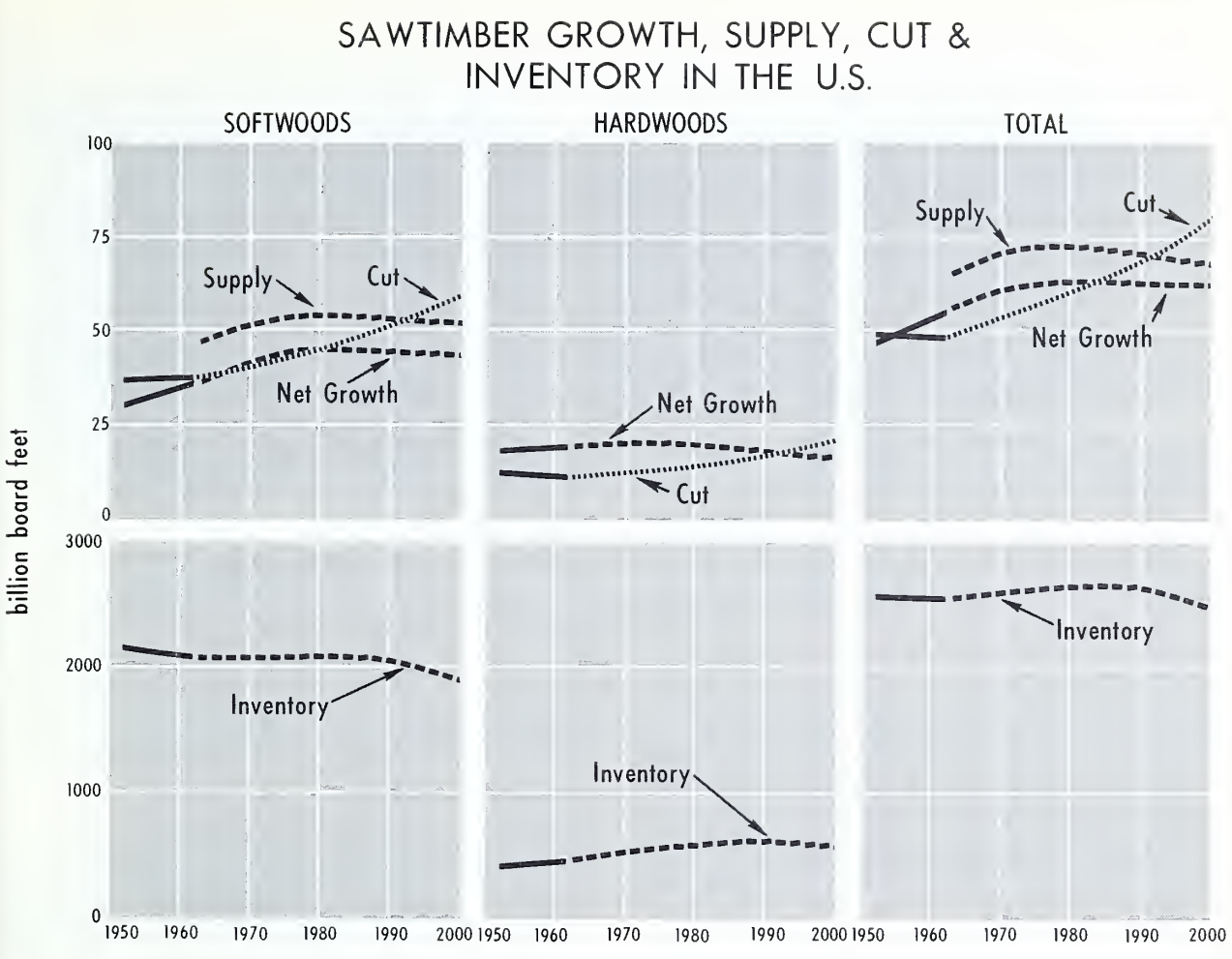

Figure 59

the projected "supply" would fall short of the projected cut by an estimated 2.6 billion cubic feet of softwood growing stock and 7.6 billion board feet of softwood sawtimber.

The cut of hardwoods in 1962, amounting to 11.7 billion board feet, was far less than hardwood growth of 19 billion board feet. Over the next few decades the projected excess of growth over cut steadily diminishes, however, to a balance of growth and cut around 1990, and an increasing annual deficit thereafter. By 2000 this projected deficit amounts to about 4.0 billion board feet.

Trends in Timber Size and Quality of Major Concern

The forest industries undoubtedly will not be able to process and market all of the species, sizes, and qualities of trees that make up timber growth and inventories. Consequently, future supplies of merchantable sizes and species of timber may be substantially smaller than indicated by estimates of total volumes in the Nation's forests.

Over the next few decades, the proportion of larger diameter trees in the timber harvest is expected to drop with assumed levels of cutting and management. Thus in eastern softwoods the cut from trees above 15 inches in diameter is projected to fall from 33 percent of the total cut in 1962 to 22 percent by 2000 (fig. 60). For hardwoods, the projected cut from trees above 15 inches drops from 52 percent in 1962 to 33 percent by 2000.

In the West a relatively small change in size composition is expected in national forests by 2000, but on other lands a drastic decline in the proportion of the cut from trees above 29 inches in diameter is expected—from 57 percent in 1962 to 14 percent by 2000 (fig. 61).

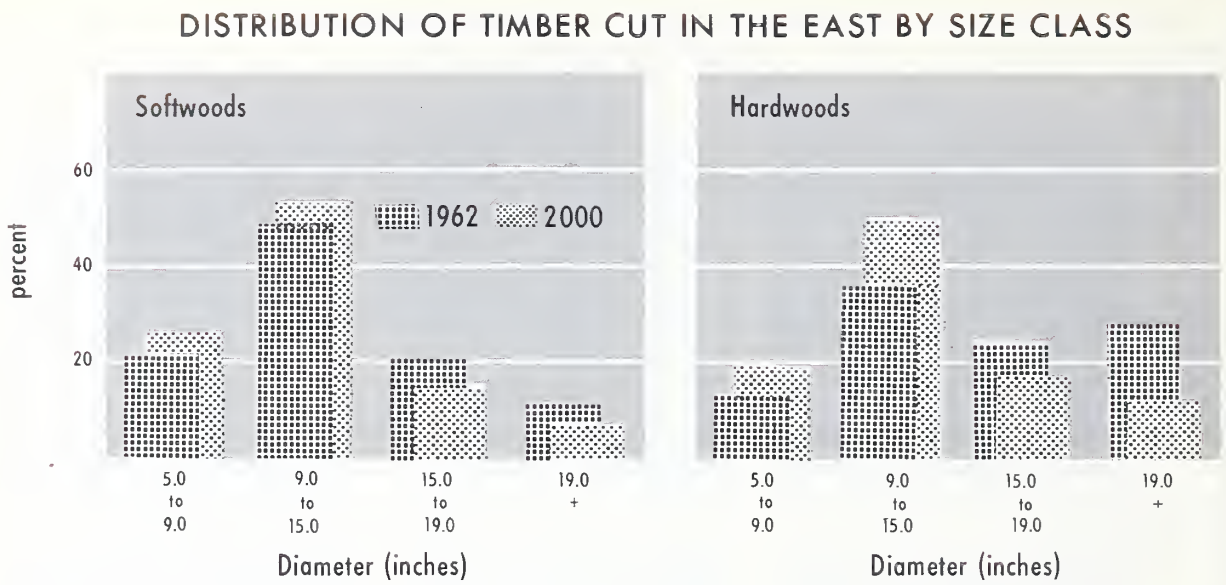

Figure 60

Thus to meet projected timber demands, increased reliance must be placed on smaller trees—as well as on less desirable species for which current markets are scarce or nonexistent.

For industries dependent upon wood fiber, the timber supply outlook is relatively favorable in spite of the changes taking place in stand structure and composition. The situation with regard to sawmills and plywood plants is much less satisfactory in view of the size and quality of timber prospectively available, and the resulting problems of increasing costs and markets.

Improved Technology a Critical Factor

The importance of changes in timber size and quality is difficult to appraise precisely in view of the technological progress already made in uti-

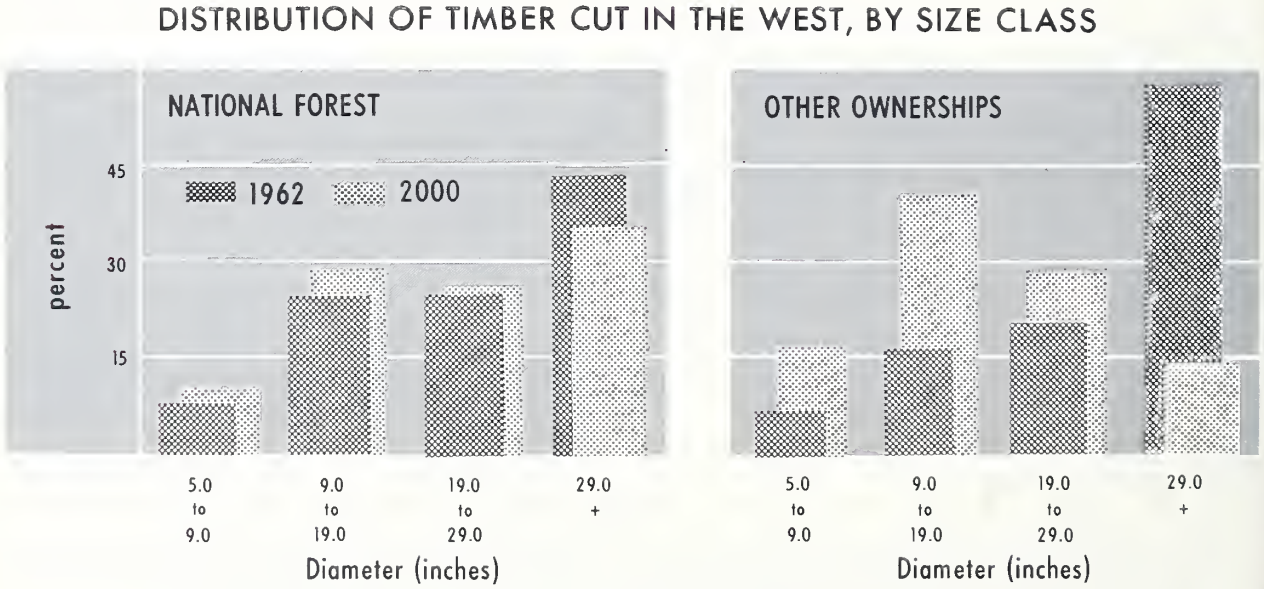

Figure 61

lizing poorer raw material than was formerly accepted in producing most timber products. As a result of research and technical developments, the pulp industry today utilizes a wide variety of species, tree sizes, and residues, including many of the lower grade hardwoods that were unmerchantable a few years ago. New materials such as hardboard, particleboard, and plastic laminates have been substituted on an increasing scale for higher quality lumber and veneer in such uses as furniture, siding, and paneling. While the total amounts of these latter products still represent a small percentage of the lumber used, these developments are indicative of the adaptations to available raw materials that may be achieved through research and development.

Further technological progress in the forest industries undoubtedly is to be expected, both in development of new or modified products and in the use of existing timber supplies. But technological improvements have been greater in other industries producing materials that compete with timber. And research and development expenditures of competing industries still far exceed those of the forest industries.

Accelerated research and other efforts to improve technology in the forest industries thus appear essential, both to permit use of the timber supplies available and to achieve potential markets for timber products. Rather than depend entirely upon the uncertain prospects of new technology to maintain healthy wood-using industries, however, there is also much to be said for investments in timber management to grow the kinds and quality of raw material that can be economically used by the forest industries.

Closer Utilization Would Stretch Timber Supplies

About 20 percent of the pulp and paper made in the United States in 1962 was produced from chipped residues of other industries. About 11 percent of the timber cut in the Pacific coast was from dead and cull trees. These were but two signs of the progress being made toward more utilization of available wood supplies.

Increasing use of plant residues in the future has been assumed in this analysis, but there are also opportunities to relieve pressures on standing timber by other advances in utilization. Thus on the Pacific coast an estimated 1.5 billion board feet of the sawtimber inventory volume has been left behind annually as logging residues on cutover areas. Inventories of salvable dead timber in this section total about 41 billion board feet, and smaller quantities of such material are also available in other regions. About half a billion cubic feet of dead timber has been salvaged annually for saw logs and other products in recent years. This could be increased by expanding prelogging operations in old-growth stands and by other salvage efforts.

Improvements in technology in sawmills and other manufacturing plants also could further increase product output from available log supplies.

Growth Could Be Increased Far Above Projected Levels

The projections of softwood sawtimber growth developed in this analysis rise some 25 percent, or 9 billion board feet, over the next couple of decades. Projected growth of hardwood sawtimber rises about 4 percent, or roughly 1 billion board feet.

These levels of prospective growth fall considerably short of the "realizable" growth that could be obtained in time if all the present area of commercial forest land in each region were managed as well as the better managed properties. Estimates of such realizable growth compiled some years ago for the 1952 Timber Resource Review, for example, totaled about 27.5 billion cubic feet of growing stock and 100 billion board feet of sawtimber.

Stand Improvement of Major Importance in Improving Supply Outlook

Forestry in the United States up to now has been focused primarily on protection and stand regeneration. Much progress has been made as a result of these programs, and some additional growth could be obtained in the future by intensified efforts along both lines.

In the future, however, increased thinning and other timber stand improvement appear to represent the major opportunity for improving the timber supply outlook. In recent years stand improvement work has covered about 1.7 million acres annually—a sizable area but a very small part of the total commercial forest land.

In eastern hardwood forests timber stand improvement is of particular significance in view of the large basal area in cull trees and the increasing density of growing stock trees. Only a small proportion of the trees now occupying growing space can be classed as desirable. The removal of culls, and thinning to favor the better quality

trees and the more desirable species, could greatly improve both hardwood timber quality and volumes in coming decades.

Much of the eastern softwood forest has been understocked in the past, and the timber inventory present consequently has grown rapidly. With the thickening up of stands resulting from more effective fire control, thinning will be increasingly desirable to improve stand composition, reduce mortality, and shorten the time required to produce merchantable trees.

In western regions present levels of timber culture are not sufficient to sustain any major increases in cut. But future yields could be greatly increased with accelerated management. Western forests include many dense stands in which thinning would be desirable to make use of the growth capacity and to favor superior trees. Commercial thinning is becoming increasingly feasible in many areas, and numerous young stands on productive sites offer promising investment opportunities.

Increased Planting and Protection Also Would Increase Future Yields

Prompt establishment of vigorous young stands of desirable species following logging continues to be an important problem in the West and in many parts of the East as well. In addition, there are some 36 million acres of commercial forest lands presently nonstocked with growing stock trees, and 76 million acres of forest land that are poorly stocked.

Tree planting efforts in recent years have covered about 1.3 million acres annually, including considerable areas of abandoned farmlands. Expansion of planting on the more productive sites where prospective yields in volume and value are greatest would permit increases in timber harvests in the future, especially in the years after 2000. Shortening the regeneration period after logging by planting of desirable species also would make possible an immediate increase in allowable cut in some western forests.

Further reduction of mortality from fire, insects, and other destructive agents could likewise have a sizable effect on future wood supplies. Annual losses to these destructive agents in 1962 amounted to nearly 20 billion board feet, or the equivalent of about 36 percent of the net growth of timber. Such losses could be reduced both through intensified fire and pest control programs and through more intensive timber management, including thinning and other measures to forestall mortality losses.

In all of these management activities—regeneration, protection, and cultural work—research will be necessary to provide the knowledge needed for more efficient and abundant production of both timber and the related goods and services produced on forest lands.

Road Development Essential in the West

Much of the forest land in the West is still inaccessible for thinning or other management activities, and some mature timber resources will become economically available for harvesting only with completion of a major road system. Substantial investments in road construction will thus be necessary to permit closer utilization of available timber, more intensive cultural work, improved protection, and effective multiple-use management of timber and related resources.

Ownership of Major Significance in Forest Management

The extent to which timber management will be intensified in the future must depend in considerable part on the decisions of several million owners of farm and other nonindustrial private forests. They own the major part of this Nation's commercial forest land—about 60 percent of the total—and almost 40 percent of the current inventory of growing stock. These lands also provide almost 40 percent of all the roundwood products used by the forest industries.

Partly because of the uncertainty of intensified timber growing efforts on farm and miscellaneous holdings, relatively intensive management of the 28 percent of the commercial forest land in national forests and other public holdings also appears necessary if projected demands are to be met. These public holdings contain nearly half the growing stock inventory and more than half of the sawtimber. They furnish about 25 percent of the total cut.

Industrial holdings, which account for 13 percent of the commercial forest, likewise play an especially important role in supplying timber products because of such considerations as the high productivity and relatively heavy stocking of these lands, and the availability of capital and management skills.

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Construction of access roads is basic to timber harvesting and improvement of forest management.

Future Consumption of Timber Dependent on Many Uncertain Supply and Demand Factors

Actual consumption of timber products in future years will depend both upon timber supplies forthcoming as a result of public and private forestry efforts, and the rate at which markets for timber products can be expanded. There are obviously many uncertainties in appraising long-range trends in both timber supplies and demands.

On the supply side, for example, losses of forest land to other uses may be considerable by the year 2000. In addition, an increasing portion of the area classed as commercial forest is also used for related or competing purposes such as recreation, wildlife habitat, or water protection as well as timber growing. Because of these impacts of competing uses, the supply of timber available for harvesting by the forest industries in the year 2000 may be significantly less than projected in this study. Intensification of forest management programs, on the other hand, could greatly increase future timber supplies.

On the demand side, it is possible that population and economic activity in the United States will expand more rapidly or more slowly than is assumed here, and that demands for timber and other raw materials will consequently differ from the projections developed in this study. New uses, new export or domestic markets for wood, and unforeseen changes in technology, also could materially change the outlook for timber demands.

Establishment of specific growth goals to achieve some ideal balance of timber supply and demand at future target dates thus must be largely a matter of judgment—both because of the many uncertainties in appraising distant markets for timber and competing materials, and current lack of information on the costs and responses of timber growing progress. It seems evident, however, that achievement of the levels of projected demand for timber around the end of this century will require some intensification of forest management and protection, as well as continuing technical adjustments in the forest industries to use the kind of timber prospectively available.

This analysis has been limited to a period ending in the year 2000, a relatively short time in the business of growing timber. With continued growth in numbers of people and economic output beyond the year 2000, the estimates of timber demands projected in this study may in time seem modest indeed. A long lead time is necessary in timber production. Hence judgments regarding such longer range market possibilities and prospective timber supply problems also must be considered in the formulation of today's forestry programs.

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APPENDIX I

Basic Statistics

TABLE 1.—*Land areas in the United States, by major class of land, section, region, and State, January 1, 1963*

(Thousand acres)

Section, region, and State	Total land area [1]	Forest land				Crop land [1]	Other land [2]
		Total	Commercial	Productive reserved	Unproductive		
New England:							
Connecticut	3,135	1,990	1,973	11	6	351	794
Maine	19,848	17,425	17,169	158	98	1,078	1,345
Massachusetts	5,035	3,288	3,259	18	11	445	1,302
New Hamsphire	5,769	5,019	4,907	24	88	306	444
Rhode Island	677	434	430	4		55	188
Vermont	5,937	3,730	3,713	10	7	983	1,224
Total	40,401	31,886	31,451	225	210	3,218	5,297
Middle Atlantic:							
Delaware	1,266	392	391	1		496	378
Maryland and D.C.	6,358	2,920	2,897	20	3	1,951	1,487
New Jersey	4,813	2,229	2,120	67	42	892	1,692
New York	30,681	14,450	12,002	2,377	71	7,121	9,110
Pennsylvania	28,805	15,186	15,089	97		6,595	7,024
West Virginia	15,411	11,469	11,389	46	34	1,551	2,391
Total	87,334	46,646	43,888	2,608	150	18,606	22,082
Lake States:							
Michigan	36,492	19,699	19,121	338	240	9,957	6,836
Minnesota	51,206	19,047	17,056	518	1,473	21,930	10,229
North Dakota	44,452	439	424	3	12	27,707	16,306
South Dakota (east)	41,990	438	395	3	40	18,305	23,247
Wisconsin	35,011	15,588	15,396	29	163	12,250	7,173
Total	209,151	55,211	52,392	891	1,928	90,149	63,791
Central:							
Illinois	35,795	3,871	3,761	45	65	23,960	7,964
Indiana	23,158	4,018	3,960	58		13,878	5,262
Iowa	35,861	2,620	2,595	25		26,402	6,839
Kansas	52,511	1,668	1,664	4		29,624	21,219
Kentucky	25,512	10,891	10,840	51		9,927	4,694
Missouri	44,248	15,296	14,977	91	228	18,170	10,782
Nebraska	49,032	1,162	1,140	14	8	22,828	25,042
Ohio	26,222	5,171	5,121	50		12,255	8,796
Total	292,339	44,697	44,058	338	301	157,044	90,598
Total, North	629,225	178,440	171,789	4,062	2,589	269,017	181,768
South Atlantic:							
North Carolina	31,403	20,862	20,216	338	308	6,415	4,126
South Carolina	19,374	11,640	11,559	74	7	4,035	3,699
Virginia	25,496	16,492	15,829	259	404	4,427	4,577
Total	76,273	48,994	47,604	671	719	14,877	12,402
East Gulf:							
Florida	34,721	19,904	18,474	93	1,337	3,401	11,416
Georgia	37,295	26,365	26,298	13	54	7,458	3,472
Total	72,016	46,269	44,772	106	1,391	10,859	14,888
Central Gulf:							
Alabama	32,678	21,770	21,742	21	7	6,028	4,880
Mississippi	30,223	18,008	17,976	32		7,093	5,122
Tennessee	26,728	13,907	13,643	264		8,499	4,322
Total	89,629	53,685	53,361	317	7	21,620	14,324
West Gulf:							
Arkansas	33,599	21,591	21,530	61		8,436	3,572
Louisiana	28,868	16,576	16,512	57	7	4,907	7,385
Oklahoma	44,088	9,235	5,299	46	3,890	14,044	20,809
Texas	168,218	23,954	11,991	21	11,942	35,599	108,665
Total	274,773	71,356	55,332	185	15,839	62,986	140,431
Total, South	512,691	220,304	201,069	1,279	17,956	110,342	182,045
Pacific Northwest:							
Alaska	365,481	118,487	5,761	194	[3] 112,532	24	246,970
Oregon	61,599	30,739	26,613	681	3,445	5,380	25,480
Washington	42,694	23,050	19,510	1,312	2,228	7,910	11,734
Total	469,774	172,276	51,884	2,187	118,205	13,314	284,184
Pacific Southwest:							
California	100,207	42,541	17,391	1,194	23,956	12,966	44,700
Hawaii	4,106	1,982	1,089	86	807	500	1,624
Total	104,313	44,523	18,480	1,280	24,763	13,466	46,324

See footnotes at end of table.

TABLE 1.—*Land areas in the United States, by major class of land, section, region, and State, January 1, 1963*—Continued

(Thousand acres)

Section, region, and State	Total land area [1]	Forest land				Crop land [1]	Other land [2]
		Total	Commercial	Productive reserved	Unproductive		
Northern Rocky Mountain:							
Idaho	52, 933	21, 815	15, 823	1, 867	4, 125	5, 784	25, 334
Montana	93, 271	22, 048	17, 300	1, 356	3, 392	15, 078	56, 145
South Dakota (west)	6, 892	1, 399	1, 311	20	68	860	4, 633
Wyoming	62, 343	9, 777	4, 853	2, 580	2, 344	2, 738	49, 828
Total	215, 439	55, 039	39, 287	5, 823	9, 929	24, 460	135, 940
Southern Rocky Mountain:							
Arizona	72, 688	19, 902	3, 870	223	15, 809	1, 586	51, 200
Colorado	66, 486	22, 583	12, 275	465	9, 843	11, 033	32, 870
Nevada	70, 264	12, 036	109	27	11, 900	787	57, 441
New Mexico	77, 766	18, 807	6, 083	503	12, 221	2, 292	56, 667
Utah	52, 697	14, 955	3, 999	159	10, 797	2, 008	35, 734
Total	339, 901	88, 283	26, 336	1, 377	60, 570	17, 706	233, 912
Total, West	1, 129, 427	360, 121	135, 987	10, 667	213, 467	68, 946	700, 360
Total, all regions	2, 271, 343	758, 865	508, 845	16, 008	234, 012	448, 305	1, 064, 173

[1] Source: 1959 Census of Agriculture.

[2] Includes pasture and rangeland, swampland, industrial and urban areas, and other nonforest lands.

[3] Some part of this area in Interior Alaska is expected to meet standards for commercial forest land but detailed survey data for the Interior are not yet available.

TABLE 2.—*Area of commercial forest land in the United States, by ownership, section, region, and State, January 1, 1963*

(Thousand acres)

Section, region, and State	All ownerships	Federal					State	County and municipal	Forest industry				Farmer	Miscellaneous private
		Total	National forests	Bureau Land Management	Indian	Miscellaneous			Total	Pulp and paper	Lumber	Other		
New England:														
Connecticut	1, 973	1				1	122	32	3	2	1		349	1, 466
Maine	17, 169	66	39			27	64	75	6, 521	6, 172	246	103	1, 715	8, 728
Massachusetts	3, 259	29				29	280	90	259	217	32	10	512	2, 089
New Hampshire	4, 907	579	569			10	66	52	793	674	79	40	725	2, 692
Rhode Island	430						13	13					62	342
Vermont	3, 713	231	223			8	79	19	528	442	64	22	1, 364	1, 492
Total	31, 451	906	831			75	624	281	8, 104	7, 507	422	175	4, 727	16, 809
Middle Atlantic:														
Delaware	391	1				1	8		124	50	62	12	191	67
Maryland	2, 897	54				54	128	32	57	23	28	6	953	1, 673
New Jersey	2, 120	17				17	237		4	1	2	1	251	1, 611
New York	12, 002	98				98	714	83	1, 172	504	553	115	3, 011	6, 924
Pennsylvania	15, 089	485	450			35	2, 659	156	442	177	221	44	2, 909	8, 438
West Virginia	11, 389	883	869			14	-144	9	530	172	342	16	2, 821	7, 002
Total	43, 888	1, 538	1, 319			219	3, 890	280	2, 329	927	1, 208	194	10, 136	25, 715
Lake States:														
Michigan	19, 121	2, 540	2, 420	9	21	90	3, 695	85	1, 548	946	485	117	3, 841	7, 412
Minnesota	17, 056	2, 813	2, 141	64	516	92	3, 304	3, 416	715	630	48	37	3, 344	3, 464
North Dakota	424	118		1	63	54	10						173	123
South Dakota (east)	395	173		2	168	3	21						201	
Wisconsin	15, 396	1, 910	1, 372	5	423	110	541	2, 615	933	713	220		6, 372	3, 025
Total	52, 392	7, 554	5, 933	81	1, 191	349	7, 571	6, 116	3, 196	2, 289	753	154	13, 931	14, 024
Central:														
Illinois	3, 761	229	188			41	11		17		17		2, 216	1, 288
Indiana	3, 960	177	112			65	115	2	9		9		2, 883	774
Iowa	2, 595	13	3		1	9	22	2					2, 282	276
Kansas	1, 664	1				1							1, 160	503
Kentucky	10, 840	575	438			137	77		308		308		5, 188	4, 692
Missouri	14, 977	1, 361	1, 310			51	199	25	279		279		9, 228	3, 885
Nebraska	1, 140	66	43		6	17	11	1					908	154
Ohio	5, 121	88	88				231	41	74	74			2, 844	1, 843
Total	44, 058	2, 510	2, 182		7	321	666	71	687	74	613		26, 709	13, 415
Total, North	171, 789	12, 508	10, 265	81	1, 198	964	12, 751	6, 748	14, 316	10, 797	2, 996	523	55, 503	69, 963

TABLE 2.—*Area of commercial forest land in the United States, by ownership, section, region, and State, January 1, 1963*—Con.

(Thousand acres)

Section, region, and State	All ownerships	Federal					State	County and municipal	Forest industry				Farmer	Miscellaneous private
		Total	National forests	Bureau Land Management	Indian	Miscellaneous			Total	Pulp and paper	Lumber	Other		
South Atlantic:														
North Carolina	20,216	1,247	963		52	232	254	36	4,047	1,678	1,361	1,008	13,327	1,305
South Carolina	11,559	837	543			294	153	23	2,503	1,995	305	203	5,637	2,406
Virginia	15,829	1,277	1,085			192	88	52	1,630	818	487	325	10,163	2,619
Total	47,604	3,361	2,591		52	718	495	111	8,180	4,491	2,153	1,536	29,127	6,330
East Gulf:														
Florida	18,474	1,640	1,030	3	19	588	540	40	5,285	4,489	478	318	3,485	7,484
Georgia	26,298	1,674	741			933	111	24	4,686	3,891	477	318	14,865	4,938
Total	44,772	3,314	1,771	3	19	1,521	651	64	9,971	8,380	955	636	18,350	12,422
Central Gulf:														
Alabama	21,742	799	630	3		166	157	45	4,074	1,868	1,814	392	7,632	9,035
Mississippi	17,976	1,267	1,108	4	12	143	55	397	2,888	1,578	1,157	153	5,834	7,535
Tennessee	13,643	834	591			243	344	21	946	323	344	279	5,745	5,753
Total	53,361	2,900	2,329	7	12	552	556	463	7,908	3,769	3,315	824	19,211	22,323
West Gulf:														
Arkansas	21,530	2,641	2,373	3		265	194	11	4,028	1,537	2,416	75	5,613	9,043
Louisiana	16,512	704	575	11		118	176	5	3,223	1,774	1,267	182	2,808	9,596
Oklahoma	5,299	423	219	3	167	34	60		984		984		1,353	2,479
Texas	11,991	719	618		1	100	32	2	3,128	1,663	1,461	4	2,435	5,675
Total	55,332	4,487	3,785	17	168	517	462	18	11,363	4,974	6,128	261	12,209	26,793
Total, South	201,069	14,062	10,476	27	251	3,308	2,164	656	37,422	21,614	12,551	3,257	78,897	67,868
Pacific Northwest:														
Alaska	5,761	5,585	5,304	252	25	4	146							30
Oregon	26,613	15,379	12,545	2,477	354	3	769	154	5,009	1,116	3,602	291	3,329	1,973
Washington	19,510	8,159	6,160	187	1,686	126	2,001	199	4,401	1,351	2,935	115	2,567	2,183
Total	51,884	29,123	24,009	2,916	2,065	133	2,916	353	9,410	2,467	6,537	406	5,896	4,186
Pacific Southwest:														
California	17,391	9,153	8,656	326	131	40	186	8	2,945	144	1,494	1,307	1,586	3,513
Hawaii	1,089	9				9	487						366	227
Total	18,480	9,162	8,656	326	131	49	673	8	2,945	144	1,494	1,307	1,952	3,740
Northern Rocky Mountain:														
Idaho	15,823	11,817	11,310	404	102	1	940		1,204		1,204		1,229	633
Montana	17,300	11,801	10,578	612	595	16	601	38	1,047		1,047		2,002	1,811
South Dakota (west)	1,311	966	957	8		1	63		17		17		223	42
Wyoming	4,853	3,883	3,364	395	124		111		55		55		622	182
Total	39,287	28,467	26,209	1,419	821	18	1,715	38	2,323		2,323		4,076	2,668
Southern Rocky Mountain:														
Arizona	3,870	3,701	2,551	5	1,145		34		69		69		46	20
Colorado	12,275	8,907	8,384	415	103	5	190	45	14		14		2,649	470
Nevada	109	32	30	2									11	66
New Mexico	6,083	4,118	3,441	80	589	8	161		129		129		1,447	223
Utah	3,999	3,096	2,783	155	158		240						540	128
Total	26,336	19,854	17,189	657	1,995	13	625	45	212		212		4,693	907
Total, West	135,987	86,606	76,063	5,318	5,012	213	5,929	444	14,890	2,611	10,566	1,713	16,617	11,501
Total, all regions	508,845	113,176	96,804	5,426	6,461	4,485	20,844	7,848	66,628	35,022	26,113	5,493	151,017	149,332

TABLE 3.—*Area of commercial forest land in the United States, by stand-size class, section, region, and State, January 1, 1963*

(Thousand acres)

Section, region, and State	All areas	Sawtimber stands			Poletimber stands	Seedling and sapling stands	Nonstocked areas
		Total	Old growth	Young growth			
New England:							
Connecticut	1,973	334		334	1,065	529	45
Maine	17,169	6,777		6,777	7,933	1,900	559
Massachusetts	3,259	395		395	1,557	1,271	36
New Hampshire	4,907	1,747		1,747	2,316	677	167
Rhode Island	430	14		14	234	169	13
Vermont	3,713	1,774		1,774	1,415	340	184
Total	31,451	11,041		11,041	14,520	4,886	1,004
Middle Atlantic:							
Delaware	391	211		211	129	45	6
Maryland	2,897	1,416		1,416	896	451	134
New Jersey	2,120	535		535	720	724	141
New York	12,002	5,029		5,029	4,276	2,406	291
Pennsylvania	15,089	4,033		4,033	7,151	3,416	489
West Virginia	11,389	5,605		5,605	3,105	2,445	234
Total	43,888	16,829		16,829	16,277	9,487	1,295
Lake States:							
Michigan	19,121	3,009		3,009	6,119	6,845	3,148
Minnesota	17,056	2,387		2,387	8,520	4,294	1,855
North Dakota	424	62		62	169	156	37
South Dakota (east)	395	58		58	158	145	34
Wisconsin	15,396	2,133		2,133	4,923	5,787	2,553
Total	52,392	7,649		7,649	19,889	17,227	7,627
Central:							
Illinois	3,761	2,148		2,148	957	613	43
Indiana	3,960	2,019		2,019	1,299	582	60
Iowa	2,595	1,006		1,006	830	287	472
Kansas	1,664	632		632	680	188	164
Kentucky	10,840	4,705		4,705	3,827	1,734	574
Missouri	14,977	4,085		4,085	4,349	3,563	2,980
Nebraska	1,140	320		320	300	115	405
Ohio	5,121	2,540		2,540	1,880	645	56
Total	44,058	17,455		17,455	14,122	7,727	4,754
Total, North	171,789	52,974		52,974	64,808	39,327	14,680
South Atlantic:							
North Carolina	20,216	8,537		8,537	6,987	4,013	679
South Carolina	11,559	4,776		4,776	3,404	2,655	724
Virginia	15,829	7,184		7,184	6,623	1,744	278
Total	47,604	20,497		20,497	17,014	8,412	1,681
East Gulf:							
Florida	18,474	3,993		3,993	4,233	3,741	6,507
Georgia	26,298	8,768		8,768	4,817	11,959	754
Total	44,772	12,761		12,761	9,050	15,700	7,261
Central Gulf:							
Alabama	21,742	7,103		7,103	8,943	5,588	108
Mississippi	17,976	4,220		4,220	8,650	4,710	396
Tennessee	15,643	2,877		2,877	6,793	3,864	109
Total	53,361	14,200		14,200	24,386	14,162	613
West Gulf:							
Arkansas	21,530	6,900		6,900	8,850	5,200	580
Louisiana	16,512	8,360		8,360	5,150	2,150	852
Oklahoma	5,299	870		870	2,150	2,130	149
Texas	11,991	5,240		5,240	4,980	1,500	271
Total	55,332	21,370		21,370	21,130	10,980	1,852
Total, South	201,069	68,828		68,828	71,580	49,254	11,407
Pacific Northwest:							
Alaska	5,761	5,166	4,783	383	215	321	59
Oregon	26,613	18,406	9,717	8,689	3,513	3,765	929
Washington	19,510	11,811	5,429	6,382	4,641	2,424	634
Total	51,884	35,383	19,929	15,454	8,369	6,510	1,622
Pacific Southwest:							
California	17,391	12,798	8,703	4,095	763	76	3,754
Hawaii	1,089	323	304	19	211	54	501
Total	18,480	13,121	9,007	4,114	974	130	4,255

TABLE 3.—*Area of commercial forest land in the United States, by stand-size class, section, region, and State, January 1, 1963*—Con.

(Thousand acres)

Section, region, and State	All areas	Sawtimber stands			Poletimber stands	Seedling and sapling stands	Nonstocked areas
		Total	Old growth	Young growth			
Northern Rocky Mountain:							
Idaho	15,823	8,741	4,666	4,075	3,911	1,598	1,573
Montana	17,300	8,284	3,081	5,203	6,311	1,576	1,129
South Dakota (west)	1,311	708		708	542	45	16
Wyoming	4,853	2,919	15	2,904	1,588	235	111
Total	39,287	20,652	7,762	12,890	12,352	3,454	2,829
Southern Rocky Mountain:							
Arizona	3,870	3,579	2,150	1,429	130	21	140
Colorado	12,275	6,352	449	5,903	4,990	499	434
Nevada	109	79	41	38	26	1	3
New Mexico	6,083	5,348	2,959	2,389	440	159	136
Utah	3,999	2,629	572	2,057	1,125	218	27
Total	26,336	17,987	6,171	11,816	6,711	898	740
Total, West	135,987	87,143	42,869	44,274	28,406	10,992	9,446
Total, all regions	508,845	208,945	42,869	166,076	164,794	99,573	35,533

TABLE 4.—*Area of commercial forest land in the United States, by sawtimber-volume class, section, region, and State, January 1, 1963*

(Thousand acres)

Section, region, and State	Sawtimber volume per acre [1]			
	Total	Less than 1,500 board feet	1,500 to 5,000 board feet	More than 5,000 board feet
New England:				
Connecticut	1,973	1,639	291	43
Maine	17,169	10,392	5,361	1,416
Massachusetts	3,259	2,864	354	41
New Hampshire	4,907	3,160	1,397	350
Rhode Island	430	416	14	
Vermont	3,713	1,939	1,150	624
Total	31,451	20,410	8,567	2,474
Middle Atlantic:				
Delaware	391	180	108	103
Maryland	2,897	1,481	936	480
New Jersey	2,120	1,585	390	145
New York	12,002	6,973	3,415	1,614
Pennsylvania	15,089	11,056	3,096	937
West Virginia	11,389	5,007	4,561	1,821
Total	43,888	26,282	12,506	5,100
Lake States:				
Michigan	19,121	16,112	2,144	865
Minnesota	17,056	14,669	1,557	830
North Dakota	424	362	25	37
South Dakota (east)	395	337	23	35
Wisconsin	15,396	13,262	1,231	903
Total	52,392	44,742	4,980	2,670
Central:				
Illinois	3,761	1,730	1,354	677
Indiana	3,960	1,936	677	1,347
Iowa	2,595	1,589	639	367
Kansas	1,664	1,032	563	69
Kentucky	10,840	6,135	2,093	2,612
Missouri	14,977	12,454	2,410	113
Nebraska	1,140	820	284	36
Ohio	5,121	2,581	1,040	1,500
Total	44,058	28,277	9,060	6,721
Total, North	171,789	119,711	35,113	16,965
South Atlantic:				
North Carolina	20,216	11,679	5,222	3,315
South Carolina	11,559	6,783	2,541	2,235
Virginia	15,829	8,645	4,397	2,787
Total	47,604	27,107	12,160	8,337
East Gulf:				
Florida	18,474	14,481	2,937	1,056
Georgia	26,298	16,677	6,654	2,967
Total	44,772	31,158	9,591	4,023
Central Gulf:				
Alabama	21,742	12,226	6,897	2,619
Mississippi	17,976	13,756	3,180	1,040
Tennessee	13,643	9,172	3,637	834
Total	53,361	35,154	13,714	4,493
West Gulf:				
Arkansas	21,530	14,630	5,150	1,750
Louisiana	16,512	8,152	5,500	2,860
Oklahoma	5,299	4,429	760	110
Texas	11,991	6,751	3,720	1,520
Total	55,332	33,962	15,130	6,240
Total, South	201,069	127,381	50,595	23,093
Pacific Northwest:				
Alaska	5,761	375	221	5,165
Oregon	26,613	6,096	4,642	15,875
Washington	19,510	5,925	3,572	10,013
Total	51,884	12,396	8,435	31,053
Pacific Southwest:				
California	17,391	1,128	2,079	14,184
Hawaii	1,089	967	114	8
Total	18,480	2,095	2,193	14,192
Northern Rocky Mountain:				
Idaho	15,823	6,804	3,859	5,160
Montana	17,300	7,439	4,220	5,641
South Dakota (west)	1,311	603	650	58
Wyoming	4,853	1,881	1,502	1,470
Total	39,287	16,727	10,231	12,329
Southern Rocky Mountain:				
Arizona	3,870	285	1,366	2,219
Colorado	12,275	5,090	4,436	2,749
Nevada	109	30	69	10
New Mexico	6,083	999	4,272	812
Utah	3,999	1,353	1,000	1,646
Total	26,336	7,757	11,143	7,436
Total, West	135,987	38,975	32,002	65,010
Total, all regions	508,845	286,067	117,710	105,068

[1] Net volume, International ¼-inch log rule.

TABLE 5.—*Proportions of commercial forest land in the United States, by occupancy class of growing stock, section, region, and State, January 1, 1963*

(Percent)

Section, region, and State	Occupancy of growing-stock trees				
	Total	70 or more	40–70	10–40	Nonstocked
New England:					
Connecticut	100	83.6	13.7	0.4	2.3
Maine	100	83.8	10.5	2.4	3.3
Massachusetts	100	80.8	17.8	.3	1.1
New Hampshire	100	83.0	11.0	2.6	3.4
Rhode Island	100	88.8	7.8	.4	3.0
Vermont	100	77.2	8.5	9.3	5.0
Average	100	82.6	11.3	2.9	3.2
Middle Atlantic:					
Delaware	100	78.8	13.6	6.1	1.5
Maryland	100	72.3	18.1	5.0	4.6
New Jersey	100	81.8	10.0	1.6	6.6
New York	100	49.9	40.6	7.1	2.4
Pennsylvania	100	70.4	21.5	4.9	3.2
West Virginia	100	63.5	28.8	5.6	2.1
Average	100	63.8	27.7	5.5	3.0
Lake States:					
Michigan	100	27.6	28.9	27.0	16.5
Minnesota	100	38.0	33.7	17.4	10.9
North Dakota	100	12.0	38.5	40.8	8.7
South Dakota (east)	100	12.2	38.5	40.7	8.6
Wisconsin	100	24.0	32.5	26.9	16.6
Average	100	29.7	31.6	24.1	14.6
Central					
Illinois	100	51.3	33.5	14.1	1.1
Indiana	100	35.3	43.7	19.5	1.5
Iowa	100	23.6	29.1	29.1	18.2
Kansas	100	8.3	25.6	56.2	9.9
Kentucky	100	77.2	15.8	1.7	5.3
Missouri	100	11.9	31.0	37.2	19.9
Nebraska	100	6.1	18.4	40.0	35.5
Ohio	100	68.4	21.9	8.6	1.1
Average	100	40.4	26.9	21.9	10.8
Average, North	100	50.9	25.7	14.9	8.5
South Atlantic:					
North Carolina	100	62.1	23.0	11.6	3.3
South Carolina	100	55.2	24.5	14.0	6.3
Virginia	100	65.4	23.4	9.4	1.8
Average	100	61.5	23.5	11.5	3.5
East Gulf:					
Florida	100	25.9	19.7	19.2	35.2
Georgia	100	55.5	29.6	12.1	2.8
Average	100	43.3	25.5	15.0	16.2
Central Gulf:					
Alabama	100	49.2	40.7	9.4	.7
Mississippi	100	57.5	27.5	13.2	1.8
Tennessee	100	32.0	56.4	10.4	1.2
Average	100	47.6	40.3	10.9	1.2
West Gulf:					
Arkansas	100	69.2	19.3	9.8	1.7
Louisiana	100	53.6	28.0	13.7	4.7
Oklahoma	100	47.4	32.1	19.0	1.5
Texas	100	59.6	28.8	9.9	1.7
Average	100	60.4	25.2	11.8	2.6
Average, South	100	53.4	28.9	12.2	5.5
Pacific Northwest:					
Alaska	100	87.6	8.3	3.1	1.0
Oregon	100	57.6	25.2	13.7	3.5
Washington	100	53.9	30.2	12.7	3.2
Average	100	59.5	25.2	12.2	3.1
Pacific Southwest:					
California	100	28.6	30.4	19.4	21.6
Hawaii	100	13.5	22.3	18.2	46.0
Average	100	27.8	29.9	19.3	23.0
Northern Rocky Mountain:					
Idaho	100	28.3	32.2	29.6	9.9
Montana	100	43.1	26.0	24.4	6.5
South Dakota (west)	100	15.2	76.4	7.2	1.2
Wyoming	100	24.4	56.2	17.1	2.3
Average	100	33.9	33.9	25.0	7.2
Southern Rocky Mountain:					
Arizona	100	52.0	32.2	12.2	3.6
Colorado	100	29.0	47.2	20.3	3.5
Nevada	100	40.4	30.3	26.6	2.7
New Mexico	100	56.3	26.9	14.6	2.2
Utah	100	30.0	22.7	46.6	.7
Average	100	38.9	36.5	21.8	2.8
Average, West	100	43.8	30.6	18.7	6.9
Average, all regions	100	50.0	28.2	14.9	6.9

TABLE 6.—*Area of commercial forest land east of Rocky Mountains, by forest type, section, region, and State, January 1, 1963*

(Thousand acres)

Section, region, and State	Total, all types	Softwood types					Hardwood types						
		Total	White-red-jack pine	Longleaf-slash pine	Loblolly-shortleaf pine	Spruce-fir	Total	Oak-pine	Oak-hickory	Oak-gum-cypress	Elm-ash-cotton-wood	Maple-beech-birch	Aspen-birch
New England:													
Connecticut	1,973	96	96				1,877		1,375		298	110	94
Maine	17,169	10,023	1,625		15	8,383	7,146	12	275		303	5,112	1,444
Massachusetts	3,259	755	562		165	28	2,504	46	1,325		285	563	285
New Hampshire	4,907	2,441	1,386			1,055	2,466		603		119	1,301	443
Rhode Island	430	8	8				422	3	314		78		27
Vermont	3,713	1,045	417			628	2,668		71		73	2,237	287
Total	31,451	14,368	4,094		180	10,094	17,083	61	3,963		1,156	9,323	2,580
Middle Atlantic:													
Delaware	391	198			198		193	21	76	96			
Maryland	2,897	772	7		762	3	2,125	206	1,353	461	24	81	
New Jersey	2,120	692	17		666	9	1,428	129	838	165	128	38	130
New York	12,002	1,941	1,045		161	735	10,061	52	1,890	6	869	5,520	1,724
Pennsylvania	15,089	892	525		363	4	14,197	178	8,611	55	252	3,896	1,205
West Virginia	11,389	700	89		584	27	10,689	115	7,477	148	611	2,338	
Total	43,888	5,195	1,683		2,734	778	38,693	701	20,245	931	1,884	11,873	3,059
Lake States:													
Michigan	19,121	4,501	1,942			2,559	14,620		2,142		1,166	5,568	5,744
Minnesota	17,056	5,910	1,355			4,555	11,146		1,080		2,045	1,049	6,972
North Dakota	424	4	[1] 4				420		81		217		122
South Dakota (east)	395	70	[1] 70				325				325		
Wisconsin	15,396	2,775	1,138			1,637	12,621		2,948		1,494	3,013	5,166
Total	52,392	13,260	4,509			8,751	39,132		6,251		5,247	9,630	18,004
Central:													
Illinois	3,761	35			35		3,726	12	2,232	17	1,442	14	9
Indiana	3,960	145	76		69		3,815	69	2,240	129	942	397	38
Iowa	2,595						2,595		1,278		1,219	78	20
Kansas	1,664						1,664		891		773		
Kentucky	10,840	296	18		278		10,544	685	7,402	137	1,508	812	
Missouri	14,977	330			330		14,647	640	11,333	410	2,179	85	
Nebraska	1,140	286	[1] 286				854		146		708		
Ohio	5,121	206	14		192		4,915	98	2,915	54	1,243	600	5
Total	44,058	1,298	394		904		42,760	1,504	28,437	747	10,014	1,986	72
Total, North	171,789	34,121	10,680		3,818	19,623	137,668	2,266	58,896	1,678	18,301	32,812	23,715
South Atlantic:													
North Carolina	20,216	8,846	215	2,224	6,392	15	11,370	2,119	5,657	3,343		251	
South Carolina	11,559	5,412		1,373	4,039		6,147	1,061	1,989	3,097			
Virginia	15,829	4,614	121		4,493		11,215	1,440	8,763	959		53	
Total	47,604	18,872	336	3,597	14,924	15	28,732	4,620	16,409	7,399		304	
East Gulf:													
Florida	18,474	10,062		9,677	385		8,412	860	2,503	5,049			
Georgia	26,298	13,411	18	6,137	7,256		12,887	3,714	4,028	5,145			
Total	44,772	23,473	18	15,814	7,641		21,299	4,574	6,531	10,194			
Central Gulf:													
Alabama	21,742	9,436		1,999	7,437		12,306	4,835	5,106	2,271	94		
Mississippi	17,976	6,947		2,163	4,784		11,029	2,850	4,237	3,431	511		
Tennessee	13,643	1,863	86		1,777		11,780	936	9,743	675	224	202	
Total	53,361	18,246	86	4,162	13,998		35,115	8,621	19,086	6,377	829	202	
West Gulf:													
Arkansas	21,530	6,951			6,951		14,579	2,148	7,878	4,077	476		
Louisiana	16,512	6,153		1,919	4,234		10,359	1,978	1,767	5,967	647		
Oklahoma	5,299	1,062			1,062		4,237	517	3,380	270	70		
Texas	11,991	5,852		485	5,367		6,139	2,217	2,016	1,826	80		
Total	55,332	20,018		2,404	17,614		35,314	6,860	15,041	12,140	1,273		
Total, South	201,069	80,609	440	25,977	54,177	15	120,460	24,675	57,067	36,110	2,102	506	
Total, East	372,858	114,730	11,120	25,977	57,995	19,638	258,128	26,941	115,963	37,788	20,403	33,318	23,715

[1] Ponderosa pine type.

TABLE 7.—*Area of commercial forest land in the West, by forest type and ownership, section, region, and State, January 1, 1963*

(Thousand acres)

Section, region, and State	Total all types			Softwood types					
				Total			Douglas-fir		
	All ownerships	Public	Private	All ownerships	Public	Private	All ownerships	Public	Private
Pacific Northwest:									
Alaska	5,761	5,731	30	5,537	5,508	29			
Oregon	26,613	16,302	10,311	24,138	15,690	8,448	10,820	6,495	4,325
Washington	19,510	10,359	9,151	18,172	10,114	8,058	8,683	4,215	4,468
Total	51,884	32,392	19,492	47,847	31,312	16,535	19,503	10,710	8,793
Pacific Southwest:									
California	17,391	9,347	8,044	17,371	9,333	8,038	4,402	2,315	2,087
Hawaii	1,089	496	593						
Total	18,480	9,843	8,637	17,371	9,333	8,038	4,402	2,315	2,087
Northern Rocky Mountain:									
Idaho	15,823	12,749	3,074	15,275	12,354	2,921	4,798	4,230	568
Montana	17,300	12,439	4,861	16,901	12,170	4,731	4,555	3,181	1,374
South Dakota (west)	1,311	1,029	282	1,311	1,029	282			
Wyoming	4,853	3,994	859	4,508	3,748	760	701	635	66
Total	39,287	30,211	9,076	37,995	29,301	8,694	10,054	8,046	2,008
Southern Rocky Mountain:									
Arizona	3,870	3,735	135	3,807	3,674	133	165	164	1
Colorado	12,275	9,142	3,133	9,398	7,094	2,304	1,451	1,056	395
Nevada	109	32	77	88	26	62			
New Mexico	6,083	4,114	1,969	5,677	3,905	1,772	1,131	684	447
Utah	3,999	3,336	663	2,717	2,419	298	646	507	139
Total	26,336	20,359	5,977	21,687	17,118	4,569	3,393	2,411	982
Total, West	135,987	92,805	43,182	124,900	87,064	37,836	37,352	23,482	13,870

Section, region, and State	Softwood types								
	Hemlock-Sitka spruce			Redwood			Ponderosa pine		
	All ownerships	Public	Private	All ownerships	Public	Private	All ownerships	Public	Private
Pacific Northwest:									
Alaska	5,537	5,508	29						
Oregon	1,366	636	730	10	3	7	7,577	5,023	2,554
Washington	2,899	1,334	1,565				3,470	2,159	1,311
Total	9,802	7,478	2,324	10	3	7	11,047	7,182	3,865
Pacific Southwest:									
California	6	1	5	1,586	130	1,456	6,069	3,517	2,552
Hawaii									
Total	6	1	5	1,586	130	1,456	6,069	3,517	2,552
Northern Rocky Mountain:									
Idaho	167	112	55				2,624	1,800	824
Montana	33	29	4				3,656	2,051	1,605
South Dakota (west)							1,288	1,008	280
Wyoming							992	449	543
Total	200	141	59				8,560	5,308	3,252
Southern Rocky Mountain:									
Arizona							3,509	3,388	121
Colorado							2,347	1,180	1,167
Nevada							55	16	39
New Mexico							3,978	2,904	1,074
Utah							432	400	32
Total							10,321	7,888	2,433
Total, West	10,008	7,620	2,388	1,596	133	1,463	[1] 35,997	23,895	12,102

See footnotes at end of table.

TABLE 7.—*Area of commercial forest land in the West, by forest type and ownership, section, region, and State, January 1, 1963*—Continued

(Thousand acres)

Section, region, and State	Softwood types								
	White pine			Lodgepole pine			Larch		
	All ownerships	Public	Private	All ownerships	Public	Private	All ownerships	Public	Private
Pacific Northwest:									
Alaska									
Oregon	252	233	19	1,554	1,210	344	392	331	61
Washington	137	116	21	778	548	230	471	342	129
Total	389	349	40	2,332	1,758	574	863	673	190
Pacific Southwest:									
California	2,254	1,352	902	301	227	74			
Hawaii									
Total	2,254	1,352	902	301	227	74			
Northern Rocky Mountain:									
Idaho	2,178	1,529	649	3,023	2,797	226	730	459	271
Montana	181	160	21	5,357	4,226	1,131	1,939	1,474	465
South Dakota (west)									
Wyoming				1,968	1,848	120			
Total	2,359	1,689	670	10,348	8,871	1,477	2,669	1,933	736
Southern Rocky Mountain:									
Arizona									
Colorado				2,207	1,791	416			
Nevada	1		1	16	5	11			
New Mexico									
Utah				592	549	43			
Total	1		1	2,815	2,345	470			
Total, West	5,003	3,390	1,613	15,796	13,201	2,595	3,532	2,606	926

Section, region, and State	Softwood types			Hardwood types		
	Fir-spruce					
	All ownerships	Public	Private	All ownerships	Public	Private
Pacific Northwest:						
Alaska				224	223	1
Oregon	2,167	1,759	408	2,475	612	1,863
Washington	1,734	1,400	334	1,338	245	1,093
Total	3,901	3,159	742	4,037	1,080	2,957
Pacific Southwest:						
California	2,753	1,791	962	20	14	6
Hawaii				1,089	496	593
Total	2,753	1,791	962	1,109	510	599
Northern Rocky Mountain:						
Idaho	1,755	1,427	328	548	395	153
Montana	1,180	1,049	131	399	269	130
South Dakota (west)	23	21	2			
Wyoming	847	816	31	345	246	99
Total	3,805	3,313	492	1,292	910	382
Southern Rocky Mountain:						
Arizona	133	122	11	63	61	2
Colorado	3,393	3,067	326	2,877	2,048	829
Nevada	16	5	11	21	6	15
New Mexico	568	317	251	406	209	197
Utah	1,047	963	84	1,282	917	365
Total	5,157	4,474	683	4,649	3,241	1,408
Total, West	15,616	12,737	2,879	11,087	5,741	5,346

[1] The total area of ponderosa pine type in the United States is 36,357,000 acres including 360,000 acres east of the Rocky Mountains (see table 6).

TABLE 8.—*Net volume of timber on commercial forest land in the United States, by class of timber, softwoods and hardwoods, section, region, and State, January 1, 1963*

(Million cubic feet)

Section, region and State	Total, all timber			Growing-stock trees								
				Total			Sawtimber trees			Poletimber trees		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
New England:												
Connecticut	1,830	148	1,682	1,536	117	1,419	655	63	592	881	54	827
Maine	20,762	13,170	7,592	17,848	11,679	6,169	7,937	5,411	2,526	9,911	6,268	3,643
Massachusetts	2,510	590	1,920	2,027	510	1,517	784	262	522	1,243	248	995
New Hampshire	5,358	2,862	2,496	4,679	2,537	2,142	2,214	1,500	714	2,465	1,037	1,428
Rhode Island	264	23	241	210	17	193	61	10	51	149	7	142
Vermont	5,038	1,212	3,826	4,395	1,143	3,252	1,949	623	1,326	2,446	520	1,926
Total	35,762	18,005	17,757	30,695	16,003	14,692	13,600	7,869	5,731	17,095	8,134	8,961
Middle Atlantic:												
Delaware	564	246	318	535	238	297	320	156	164	215	82	133
Maryland	3,941	850	3,091	3,695	833	2,862	2,240	503	1,737	1,455	330	1,125
New Jersey	1,546	323	1,223	1,462	314	1,148	878	179	699	584	135	449
New York	16,123	2,995	13,128	14,147	2,757	11,390	7,896	1,899	5,997	6,251	858	5,393
Pennsylvania	16,459	1,027	15,432	14,929	955	13,974	7,003	646	6,357	7,926	309	7,617
West Virginia	12,794	587	12,207	11,843	567	11,276	7,010	345	6,665	4,833	222	4,611
Total	51,427	6,028	45,399	46,611	5,664	40,947	25,347	3,728	21,619	21,264	1,936	19,328
Lake States:												
Michigan	14,428	3,541	10,887	12,520	3,233	9,287	5,241	1,535	3,706	7,279	1,698	5,581
Minnesota	10,334	3,688	6,646	9,802	3,607	6,195	2,821	1,312	1,509	6,981	2,295	4,686
North Dakota	428		428	310		310	135		135	175		175
South Dakota (east)	548	12	536	398	11	387	179	9	170	219	2	217
Wisconsin	10,498	1,594	8,904	8,866	1,499	7,367	3,180	829	2,351	5,686	670	5,016
Total	36,236	8,835	27,401	31,896	8,350	23,546	11,556	3,685	7,871	20,340	4,665	15,675
Central:												
Illinois	2,409	16	2,393	2,344	16	2,328	1,524	6	1,518	820	10	810
Indiana	3,692	36	3,656	3,359	33	3,326	2,201	16	2,185	1,158	17	1,141
Iowa	1,982	4	1,978	1,644	4	1,640	1,281	1	1,280	363	3	360
Kansas	1,379	9	1,370	1,158	9	1,149	823	5	818	335	4	331
Kentucky	11,102	677	10,425	8,687	671	8,016	4,630	452	4,178	4,057	219	3,838
Missouri	6,203	353	5,850	5,021	338	4,683	2,202	188	2,014	2,819	150	2,669
Nebraska	563	114	449	437	104	333	335	81	254	102	23	79
Ohio	5,137	118	5,019	4,617	114	4,503	3,017	79	2,938	1,600	35	1,565
Total	32,467	1,327	31,140	27,267	1,289	25,978	16,013	828	15,185	11,254	461	10,793
Total, North	155,892	34,195	121,697	136,469	31,306	105,163	66,516	16,110	50,406	69,953	15,196	54,757
South Atlantic:												
North Carolina	22,278	8,996	13,282	18,701	8,445	10,256	11,905	5,859	6,046	6,796	2,586	4,210
South Carolina	9,197	4,416	4,781	8,122	4,258	3,864	5,395	2,989	2,406	2,727	1,269	1,458
Virginia	16,232	4,698	11,534	13,693	4,350	9,343	8,065	2,696	5,369	5,628	1,654	3,974
Total	47,707	18,110	29,597	40,516	17,053	23,463	25,365	11,544	13,821	4 15,151	5,509	9,642
East Gulf:												
Florida	9,474	4,977	4,497	7,145	4,758	2,387	4,832	3,353	1,479	2,313	1,405	908
Georgia	19,059	10,352	8,707	17,518	10,096	7,422	10,836	6,724	4,112	6,682	3,372	3,310
Total	28,533	15,329	13,204	24,663	14,854	9,809	15,668	10,077	5,591	8,995	4,777	4,218
Central Gulf:												
Alabama	16,300	7,813	8,487	14,448	7,673	6,775	9,672	5,672	4,000	4,776	2,001	2,775
Mississippi	10,920	4,486	6,434	8,436	4,424	4,012	5,122	3,103	2,019	3,314	1,321	1,993
Tennessee	9,072	1,315	7,757	7,475	1,282	6,193	4,310	821	3,489	3,165	461	2,704
Total	36,292	13,614	22,678	30,359	13,379	16,980	19,104	9,596	9,508	11,255	3,783	7,472
West Gulf:												
Arkansas	15,217	5,975	9,242	12,702	5,909	6,793	8,411	4,654	3,757	4,291	1,255	3,036
Louisiana	18,000	5,844	12,156	15,204	5,704	9,500	10,687	4,479	6,208	4,517	1,225	3,292
Oklahoma	2,535	632	1,903	1,608	618	990	965	463	502	643	155	488
Texas	10,602	5,230	5,372	9,034	5,171	3,863	6,333	3,924	2,409	2,701	1,247	1,454
Total	46,354	17,681	28,673	38,548	17,402	21,146	26,396	13,520	12,876	12,152	3,882	8,270
Total, South	158,886	64,734	94,152	134,086	62,688	71,398	86,533	44,737	41,796	47,553	17,951	29,602
Pacific Northwest:												
Alaska	36,159	35,808	351	35,064	34,718	346	33,117	32,826	291	1,947	1,892	55
Oregon	99,513	92,791	6,722	95,123	89,203	5,920	83,333	79,792	3,541	11,790	9,411	2,379
Washington	76,473	71,314	5,159	72,898	67,946	4,952	59,771	56,949	2,822	13,127	10,997	2,130
Total	212,145	199,913	12,232	203,085	191,867	11,218	176,221	169,567	6,654	26,864	22,300	4,564

TABLE 8.—*Net volume of timber on commercial forest land in the United States, by class of timber, softwoods and hardwoods, section, region, and State, January 1, 1963*—Continued

(Million cubic feet)

Section, region and State	Total, all timber			Growing-stock trees								
				Total			Sawtimber trees			Poletimber trees		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
Pacific Southwest:												
California	56,280	55,795	485	55,298	54,861	437	50,125	49,999	126	5,173	4,862	311
Hawaii	447		447	220		220	175		175	45		45
Total	56,727	55,795	932	55,518	54,861	657	50,300	49,999	301	5,218	4,862	356
Northern Rocky Mountain:												
Idaho	30,464	30,164	300	26,514	26,244	270	21,755	21,691	64	4,759	4,553	206
Montana	30,108	29,791	317	26,770	26,486	284	20,341	20,158	183	6,429	6,328	101
South Dakota (west)	1,007	1,001	6	996	991	5	685	683	2	311	308	3
Wyoming	8,777	8,382	395	7,458	7,134	324	5,221	5,127	94	2,237	2,007	230
Total	70,356	69,338	1,018	61,738	60,855	883	48,002	47,659	343	13,736	13,196	540
Southern Rocky Mountain:												
Arizona	6,599	6,266	333	6,236	6,116	120	5,753	5,697	56	483	419	64
Colorado	22,114	18,503	3,611	17,337	14,897	2,440	12,218	11,519	699	5,119	3,378	1,741
Nevada	153	128	25	151	126	25	110	109	1	41	17	24
New Mexico	8,350	7,523	827	7,437	6,876	561	6,281	5,938	343	1,156	938	218
Utah	7,620	5,743	1,877	5,825	4,490	1,335	4,249	3,853	396	1,576	637	939
Total	44,836	38,163	6,673	36,986	32,505	4,481	28,611	27,116	1,495	8,375	5,389	2,986
Total, West	384,064	363,209	20,855	357,327	340,088	17,239	303,134	294,341	8,793	54,193	45,747	8,446
Total, all regions	698,842	462,138	236,704	627,882	434,082	193,800	456,183	355,188	100,995	171,699	78,894	92,805

Section, region, and State	Sound cull trees			Rotten cull trees			Salvable dead trees		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
New England:									
Connecticut	217	27	190	77	4	73			
Maine	1,647	1,062	585	1,267	429	838			
Massachusetts	383	76	307	100	4	96			
New Hampshire	423	303	120	256	22	234			
Rhode Island	42	6	36	12		12			
Vermont	321	56	265	322	13	309			
Total	3,033	1,530	1,503	2,034	472	1,562			
Middle Atlantic:									
Delaware	18	6	12	11	2	9			
Maryland	167	16	151	79	1	78			
New Jersey	48	6	42	36	3	33			
New York	1,162	193	969	814	45	769			
Pennsylvania	1,029	57	972	501	15	486			
West Virginia	250	16	234	701	4	697			
Total	2,674	294	2,380	2,142	70	2,072			
Lake States:									
Michigan	696	105	591	1,198	199	999	14	4	10
Minnesota	188	26	162	336	51	285	8	4	4
North Dakota	70		70	48		48			
South Dakota (east)	90	1	89	60		60			
Wisconsin	591	35	556	1,031	58	973	10	2	8
Total	1,635	167	1,468	2,673	308	2,365	32	10	22
Central:									
Illinois	52		52	8		8	5		5
Indiana	65	3	62	268		268			
Iowa	225		225	113		113			
Kansas	118		118	103		103			
Kentucky	283	3	280	1,962	3	1,959	170		170
Missouri	530	13	517	652	2	650			
Nebraska	93	9	84	28	1	27	5		5
Ohio	168	3	165	352	1	351			
Total	1,534	31	1,503	3,486	7	3,479	180		180
Total, North	8,876	2,022	6,854	10,335	857	9,478	212	10	202
South Atlantic:									
North Carolina	3,030	514	2,516	539	33	506	8	4	4
South Carolina	1,027	153	874	46	4	42	2	1	1
Virginia	2,321	338	1,983	212	8	204	6	2	4
Total	6,378	1,005	5,373	797	45	752	16	7	9

TABLE 8.—*Net volume of timber on commercial forest land in the United States, by class of timber, softwoods and hardwoods, section, region, and State, January 1, 1963*—Continued

(Million cubic feet)

Section, region, and State	Sound cull trees			Rotten cull trees			Salvable dead trees		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
East Gulf:									
Florida	2,286	202	2,084	42	16	26	1	1	
Georgia	1,074	204	870	456	41	415	11	11	
Total	3,360	406	2,954	498	57	441	12	12	
Central Gulf:									
Alabama	1,285	93	1,192	503	17	486	64	30	34
Mississippi	1,903	43	1,860	572	16	556	9	3	6
Tennessee	902	17	885	665	4	661	30	12	18
Total	4,090	153	3,937	1,740	37	1,703	103	45	58
West Gulf:									
Arkansas	1,535	21	1,514	922	22	900	58	23	35
Louisiana	1,848	57	1,791	878	61	817	70	22	48
Oklahoma	677	11	666	243	1	242	7	2	5
Texas	1,175	35	1,140	353	4	349	40	20	20
Total	5,235	124	5,111	2,396	88	2,308	175	67	108
Total, South	19,063	1,688	17,375	5,431	227	5,204	306	131	175
Pacific Northwest:									
Alaska	95	93	2	771	768	3	229	229	
Oregon	1,025	306	719	283	258	25	3,082	3,024	58
Washington	459	304	155	579	556	23	2,537	2,508	29
Total	1,579	703	876	1,633	1,582	51	5,848	5,761	87
Pacific Southwest:									
California	87	53	34	696	682	14	199	199	
Hawaii	184		184	42		42	1		1
Total	271	53	218	738	682	56	200	199	1
Northern Rocky Mountain:									
Idaho	493	484	9	1,843	1,826	17	1,614	1,610	4
Montana	273	258	15	369	354	15	2,696	2,693	3
South Dakota (west)	2	1	1	3	3		6	6	
Wyoming	103	99	4	85	60	25	1,131	1,089	42
Total	871	842	29	2,300	2,243	57	5,447	5,398	49
Southern Rocky Mountain:									
Arizona	229	93	136	120	43	77	14	14	
Colorado	276	220	56	1,172	282	890	3,329	3,104	225
Nevada				2	2				
New Mexico	285	186	99	178	50	128	450	411	39
Utah	595	485	110	258	59	199	942	709	233
Total	1,385	984	401	1,730	436	1,294	4,735	4,238	497
Total, West	4,106	2,582	1,524	6,401	4,943	1,458	16,230	15,596	634
Total, all regions	32,045	6,292	25,753	22,167	6,027	16,140	16,748	15,737	1,011

TABLE 9.—*Net volume in sawtimber trees on commercial forest land in the United States, by saw log portion and upper stem, softwoods and hardwoods, section, region, and State, January 1, 1963*

(Million cubic feet)

Section, region, and State	Total sawtimber trees			Saw log portion			Upper stem		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
New England:									
Connecticut	655	63	592	495	51	444	160	12	148
Maine	7,937	5,411	2,526	7,019	4,825	2,194	918	586	332
Massachusetts	784	262	522	613	230	383	171	32	139
New Hampshire	2,214	1,500	714	1,939	1,341	598	275	159	116
Rhode Island	61	10	51	48	9	39	13	1	12
Vermont	1,949	623	1,326	1,556	502	1,054	393	121	272
Total	13,600	7,869	5,731	11,670	6,958	4,712	1,930	911	1,019
Middle Atlantic:									
Delaware	320	156	164	279	140	139	41	16	25
Maryland	2,240	503	1,737	1,706	402	1,304	534	101	433
New Jersey	878	179	699	752	159	593	126	20	106
New York	7,896	1,899	5,997	6,321	1,528	4,793	1,575	371	1,204
Pennsylvania	7,003	646	6,357	5,876	573	5,303	1,127	73	1,054
West Virginia	7,010	345	6,665	6,554	309	6,245	456	36	420
Total	25,347	3,728	21,619	21,488	3,111	18,377	3,859	617	3,242
Lake States:									
Michigan	5,241	1,535	3,706	4,121	1,190	2,931	1,120	345	775
Minnesota	2,821	1,312	1,509	2,412	1,050	1,362	409	262	147
North Dakota	135	----------	135	111	----------	111	24	----------	24
South Dakota (east)	179	9	170	148	7	141	31	2	29
Wisconsin	3,180	829	2,351	2,528	671	1,857	652	158	494
Total	11,556	3,685	7,871	9,320	2,918	6,402	2,236	767	1,469
Central:									
Illinois	1,524	6	1,518	1,314	6	1,308	210	----------	210
Indiana	2,201	16	2,185	1,926	11	1,915	275	5	270
Iowa	1,281	1	1,280	969	1	968	312	----------	312
Kansas	823	5	818	666	4	662	157	1	156
Kentucky	4,630	452	4,178	4,596	418	4,178	34	34	----------
Missouri	2,202	188	2,014	2,022	133	1,889	180	55	125
Nebraska	335	81	254	262	71	191	73	10	63
Ohio	3,017	79	2,938	2,620	69	2,551	397	10	387
Total	16,013	828	15,185	14,375	713	13,662	1,638	115	1,523
Total, North	66,516	16,110	50,406	56,853	13,700	43,153	9,663	2,410	7,253
South Atlantic:									
North Carolina	11,905	5,859	6,046	9,421	4,767	4,654	2,484	1,092	1,392
South Carolina	5,395	2,989	2,406	3,974	2,284	1,690	1,421	705	716
Virginia	8,065	2,696	5,369	6,109	2,138	3,971	1,956	558	1,398
Total	25,365	11,544	13,821	19,504	9,189	10,315	5,861	2,355	3,506
East Gulf:									
Florida	4,832	3,353	1,479	3,635	2,619	1,016	1,197	734	463
Georgia	10,836	6,724	4,112	8,180	5,278	2,902	2,656	1,446	1,210
Total	15,668	10,077	5,591	11,815	7,897	3,918	3,853	2,180	1,673
Central Gulf:									
Alabama	9,672	5,672	4,000	7,884	4,817	3,067	1,788	855	933
Mississippi	5,122	3,103	2,019	4,329	2,824	1,505	793	279	514
Tennessee	4,310	821	3,489	3,272	718	2,554	1,038	103	935
Total	19,104	9,596	9,508	15,485	8,359	7,126	3,619	1,237	2,382
West Gulf:									
Arkansas	8,411	4,654	3,757	6,880	4,333	2,547	1,531	321	1,210
Louisiana	10,687	4,479	6,208	8,447	4,167	4,280	2,240	312	1,928
Oklahoma	965	463	502	804	422	382	161	41	120
Texas	6,333	3,924	2,409	5,226	3,641	1,585	1,107	283	824
Total	26,396	13,520	12,876	21,357	12,563	8,794	5,039	957	4,082
Total, South	86,533	44,737	41,796	68,161	38,008	30,153	18,372	6,729	11,643
Pacific Northwest:									
Alaska	33,117	32,826	291	31,700	31,437	263	1,417	1,389	28
Oregon	83,333	79,792	3,541	77,499	74,206	3,293	5,834	5,586	248
Washington	59,771	56,949	2,822	55,587	52,963	2,624	4,184	3,986	198
Total	176,221	169,567	6,654	164,786	158,606	6,180	11,435	10,961	474
Pacific Southwest:									
California	50,125	49,999	126	43,656	43,530	126	6,469	6,469	----------
Hawaii	175	----------	175	161	----------	161	14	----------	14
Total	50,300	49,999	301	43,817	43,530	287	6,483	6,469	14

TABLE 9.—*Net volume in sawtimber trees on commercial forest land in the United States, by saw log portion and upper stem, softwoods and hardwoods, section, region, and State, January 1, 1963*—Continued

(Million cubic feet)

Section, region, and State	Total sawtimber trees			Saw log portion			Upper stem		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
Northern Rocky Mountain:									
Idaho	21,755	21,691	64	20,100	20,042	58	1,655	1,649	6
Montana	20,341	20,158	183	18,533	18,390	143	1,808	1,768	40
South Dakota (west)	685	683	2	619	618	1	66	65	1
Wyoming	5,221	5,127	94	4,820	4,748	72	401	379	22
Total	48,002	47,659	343	44,072	43,798	274	3,930	3,861	69
Southern Rocky Mountain:									
Arizona	5,753	5,697	56	5,164	5,130	34	589	567	22
Colorado	12,218	11,519	699	11,087	10,555	532	1,131	964	167
Nevada	110	109	1	90	89	1	20	20	
New Mexico	6,281	5,938	343	5,866	5,546	320	415	392	23
Utah	4,249	3,853	396	3,857	3,555	302	392	298	94
Total	28,611	27,116	1,495	26,064	24,875	1,189	2,547	2,241	306
Total, West	303,134	294,341	8,793	278,739	270,809	7,930	24,395	23,532	863
Total, all regions	456,183	355,188	100,995	403,753	322,517	81,236	52,430	32,671	19,759

TABLE 10.—*Net volume of growing stock on commercial forest land in the United States, by ownership, softwoods and hardwoods, section, region, and State, January 1, 1963*

(Million cubic feet)

Section, region, and State	All ownerships			National forest			Other public			Forest industry			Farmer and miscellaneous private		
	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods
New England:															
Connecticut	1,536	117	1,419				162	12	150	2		2	1,372	105	1,267
Maine	17,848	11,679	6,169	69	24	45	172	113	59	7,389	4,844	2,545	10,218	6,698	3,520
Massachusetts	2,027	510	1,517				264	63	201	159	42	117	1,604	405	1,199
New Hampshire	4,679	2,537	2,142	880	291	589	117	71	46	720	426	294	2,962	1,749	1,213
Rhode Island	210	17	193				16		16				194	17	177
Vermont	4,395	1,143	3,252	398	104	294	121	31	90	606	158	448	3,270	850	2,420
Total	30,695	16,003	14,692	1,347	419	928	852	290	562	8,876	5,470	3,406	19,620	9,824	9,796
Middle Atlantic:															
Delaware	535	238	297				11	5	6	194	86	108	330	147	183
Maryland	3,695	833	2,862				280	63	217	58	13	45	3,357	757	2,600
New Jersey	1,462	314	1,148				91	20	71	3	1	2	1,368	293	1,075
New York	14,147	2,757	11,390				1,269	276	993	1,379	269	1,110	11,499	2,212	9,287
Pennsylvania	14,929	955	13,974	586	28	558	2,792	180	2,612	434	29	405	11,117	718	10,399
West Virginia	11,843	567	11,276	1,288	143	1,145	476	28	448	683	20	663	9,396	376	9,020
Total	46,611	5,664	40,947	1,874	171	1,703	4,919	572	4,347	2,751	418	2,333	37,067	4,503	32,564
Lake States:															
Michigan	12,520	3,233	9,287	1,501	553	948	1,968	737	1,231	1,294	502	792	7,757	1,441	6,316
Minnesota	9,802	3,607	6,195	1,713	905	808	4,107	1,724	2,383	578	284	294	3,404	694	2,710
North Dakota	310		310				96		96				214		214
South Dakota (east)	398	11	387				159	11	148				239		239
Wisconsin	8,866	1,499	7,367	783	132	651	1,838	470	1,368	595	106	489	5,650	791	4,859
Total	31,896	8,350	23,546	3,997	1,590	2,407	8,168	2,942	5,226	2,467	892	1,575	17,264	2,926	14,338
Central:															
Illinois	2,344	16	2,328	120	11	109	44		44	8	1	7	2,172	4	2,168
Indiana	3,359	33	3,326	51	5	46	149	8	141	9	1	8	3,150	19	3,131
Iowa	1,644	4	1,640	1		1	23		23				1,620	4	1,616
Kansas	1,158	9	1,149										1,158	9	1,149
Kentucky	8,687	671	8,016	499	151	348	189	41	148	299	16	283	7,700	463	7,237
Missouri	5,021	338	4,683	712	175	537	95	7	88	100	9	91	4,114	147	3,967
Nebraska	437	104	333	23	5	18	15	4	11				399	95	304
Ohio	4,617	114	4,503	72	3	69	229	7	222	67	2	65	4,249	102	4,147
Total	27,267	1,289	25,978	1,478	350	1,128	744	67	677	483	29	454	24,562	843	23,719
Total, North	136,469	31,306	105,163	8,696	2,530	6,166	14,683	3,871	10,812	14,577	6,809	7,768	98,513	18,096	80,417
South Atlantic:															
North Carolina	18,701	8,445	10,256	1,097	312	785	414	249	165	2,901	1,436	1,465	14,289	6,448	7,841
South Carolina	8,122	4,258	3,864	632	479	153	237	153	84	1,355	734	621	5,898	2,892	3,006
Virginia	13,693	4,350	9,343	940	189	751	378	182	196	1,415	660	755	10,960	3,319	7,641
Total	40,516	17,053	23,463	2,669	980	1,689	1,029	584	445	5,671	2,830	2,841	31,147	12,659	18,488

TABLE 10.—*Net volume of growing stock on commercial forest land in the United States, by ownership, softwoods and hardwoods, section, region, and State, January 1, 1963*—Continued

(Million cubic feet)

Section, region, and State	All ownerships			National forest			Other public			Forest industry			Farmer and miscellaneous private		
	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods
East Gulf:															
Florida	7,145	4,758	2,387	556	486	70	326	275	51	2,207	1,492	715	4,056	2,505	1,551
Georgia	17,518	10,096	7,422	867	337	530	833	618	215	2,926	1,910	1,016	12,892	7,231	5,661
Total	24,663	14,854	9,809	1,423	823	600	1,159	893	266	5,133	3,402	1,731	16,948	9,736	7,212
Central Gulf:															
Alabama	14,448	7,673	6,775	558	368	190	272	148	124	3,366	2,193	1,173	10,252	4,964	5,288
Mississippi	8,436	4,424	4,012	1,168	916	252	306	186	120	1,840	1,220	620	5,122	2,102	3,020
Tennessee	7,475	1,282	6,193	561	254	307	407	88	319	530	84	446	5,977	856	5,121
Total	30,359	13,379	16,980	2,287	1,538	749	985	422	563	5,736	3,497	2,239	21,351	7,922	13,429
West Gulf:															
Arkansas	12,702	5,909	6,793	1,900	1,168	732	468	55	413	4,944	3,331	1,613	5,390	1,355	4,035
Louisiana	15,204	5,704	9,500	608	440	168	266	103	163	4,562	2,800	1,762	9,768	2,361	7,407
Oklahoma	1,608	618	990	171	105	66	39	2	37	563	407	156	835	104	731
Texas	9,034	5,171	3,863	1,154	987	167	100	73	27	3,425	2,271	1,154	4,355	1,840	2,515
Total	38,548	17,402	21,146	3,833	2,700	1,133	873	233	640	13,494	8,809	4,685	20,348	5,660	14,688
Total, South	134,086	62,688	71,398	10,212	6,041	4,171	4,046	2,132	1,914	30,034	18,538	11,496	89,794	35,977	53,817
Pacific Northwest:															
Alaska	35,064	34,718	346	32,809	32,591	218	2,073	1,950	123				182	177	5
Oregon	95,123	89,203	5,920	51,751	50,613	1,138	16,617	15,268	1,349	16,726	15,526	1,200	10,029	7,796	2,233
Washington	72,898	67,946	4,952	29,646	29,494	152	13,496	12,421	1,075	19,092	17,500	1,592	10,664	8,531	2,133
Total	203,085	191,867	11,218	114,206	112,698	1,508	32,186	29,639	2,547	35,818	33,026	2,792	20,875	16,504	4,371
Pacific Southwest:															
California	55,298	54,861	437	29,163	28,905	258	2,145	2,128	17	8,960	8,900	60	15,030	14,928	102
Hawaii	220		220				99		99				121		121
Total	55,518	54,861	657	29,163	28,905	258	2,244	2,128	116	8,960	8,900	60	15,151	14,928	223
Northern Rocky Mountain:															
Idaho	26,514	26,244	270	20,561	20,461	100	2,060	2,001	59	1,528	1,485	43	2,365	2,297	68
Montana	26,770	26,486	284	17,906	17,705	201	2,254	2,244	10	2,253	2,250	3	4,357	4,287	70
South Dakota (west)	996	991	5	782	782		48	47	1	10	10		156	152	4
Wyoming	7,458	7,134	324	6,046	5,870	176	579	525	54	55	51	4	778	688	90
Total	61,738	60,855	883	45,295	44,818	477	4,941	4,817	124	3,846	3,796	50	7,656	7,424	232
Southern Rocky Mountain:															
Arizona	6,236	6,116	120	4,452	4,382	70	1,602	1,557	45	94	91	3	88	86	2
Colorado	17,337	14,897	2,440	13,796	12,044	1,752	782	650	132	20	20		2,739	2,183	556
Nevada	151	126	25	38	17	21				100	100		13	9	4
New Mexico	7,437	6,876	561	3,791	3,717	74	1,454	1,389	65	157	127	30	2,035	1,643	392
Utah	5,825	4,490	1,335	4,635	3,687	948	568	438	130				622	365	257
Total	36,986	32,505	4,481	26,712	23,847	2,865	4,406	4,034	372	371	338	33	5,497	4,286	1,211
Total, West	357,327	340,088	17,239	215,376	210,268	5,108	43,777	40,618	3,159	48,995	46,060	2,935	49,179	43,142	6,037
Total, all regions	627,882	434,082	193,800	234,284	218,839	15,445	62,506	46,621	15,885	93,606	71,407	22,199	237,486	97,215	140,271

TABLE 11.—*Net volume of sawtimber on commercial forest land in the United States, by ownership, softwoods and hardwoods, section, region, and State, January 1, 1963*

(Million board feet, International ¼-inch log rule)

Section, region, and State	All ownerships			National forest			Other public		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
New England:									
Connecticut	2,277	190	2,087				194	17	177
Maine	31,282	20,657	10,625	139	52	87	290	191	99
Massachusetts	2,553	851	1,702				236	83	153
New Hampshire	9,011	5,859	3,152	1,792	640	1,152	228	165	63
Rhode Island	192	27	165				25	1	24
Vermont	9,113	2,784	6,329	940	287	653	248	76	172
Total	54,428	30,368	24,060	2,871	979	1,892	1,221	533	688
Middle Atlantic:									
Delaware	1,255	546	709				15	7	8
Maryland	8,792	1,669	7,123				659	125	534
New Jersey	3,543	604	2,939				133	22	111
New York	31,983	7,009	24,974				2,558	560	1,998
Pennsylvania	27,732	2,351	25,381	1,053	90	963	5,194	440	4,754
West Virginia	30,399	1,565	28,834	2,941	452	2,489	1,136	108	1,028
Total	103,704	13,744	89,960	3,994	542	3,452	9,695	1,262	8,433
Lake States:									
Michigan	26,496	7,400	19,096	2,793	1,174	1,619	3,465	1,442	2,023
Minnesota	15,519	6,560	8,959	1,841	1,234	607	6,100	3,266	2,834
North Dakota	637		637				196		196
South Dakota (east)	757	52	705				321	52	269
Wisconsin	16,296	4,201	12,095	1,135	324	811	3,476	1,505	1,971
Total	59,705	18,213	41,492	5,769	2,732	3,037	13,558	6,265	7,293
Central:									
Illinois	8,576	28	8,548	365	6	359	153		153
Indiana	12,565	62	12,503	192	9	183	472	15	457
Iowa	6,194	6	6,188	5		5	81		81
Kansas	4,280	10	4,270				3		3
Kentucky	29,261	2,485	26,776	1,628	552	1,076	607	152	455
Missouri	12,612	879	11,733	1,341	486	855	201	16	185
Nebraska	1,672	423	1,249	79	20	59	54	14	40
Ohio	16,777	409	16,368	231	8	223	751	21	730
Total	91,937	4,302	87,635	3,841	1,081	2,760	2,322	218	2,104
Total, North	309,774	66,627	243,147	16,475	5,334	11,141	26,796	8,278	18,518
South Atlantic:									
North Carolina	55,443	28,006	27,437	3,135	1,036	2,099	1,268	826	442
South Carolina	24,991	13,990	11,001	2,099	1,731	368	708	464	244
Virginia	37,120	12,701	24,419	2,552	747	1,805	1,101	615	486
Total	117,554	54,697	62,857	7,786	3,514	4,272	3,077	1,905	1,172
East Gulf:									
Florida	22,034	15,253	6,781	1,685	1,501	184	1,113	971	142
Georgia	47,856	29,408	18,448	2,807	1,220	1,587	2,799	2,288	511
Total	69,890	44,661	25,229	4,492	2,721	1,771	3,912	3,259	653
Central Gulf:									
Alabama	46,602	28,307	18,295	2,968	1,553	515	878	512	366
Mississippi	26,364	17,111	9,253	4,805	4,302	503	952	650	302
Tennessee	20,653	4,328	16,325	1,906	1,006	900	1,214	310	904
Total	93,619	49,746	43,873	8,779	6,861	1,918	3,044	1,472	1,572
West Gulf:									
Arkansas	42,348	26,363	15,985	6,607	4,850	1,757	1,530	234	1,296
Louisiana	52,280	25,140	27,140	2,392	2,037	355	939	402	537
Oklahoma	4,754	2,483	2,271	663	544	119	95	9	86
Texas	31,625	21,667	9,958	5,453	4,775	678	361	241	120
Total	131,007	75,653	55,354	15,115	12,206	2,909	2,925	886	2,039
Total, South	412,070	224,757	187,313	36,172	25,302	10,870	12,958	7,522	5,436
Pacific Northwest:									
Alaska	182,555	180,930	1,625	170,928	169,816	1,112	10,661	10,168	493
Oregon	536,309	515,879	20,430	298,859	294,915	3,944	96,701	92,626	4,075
Washington	373,065	358,661	14,404	166,040	165,667	373	65,753	62,806	2,947
Total	1,091,929	1,055,470	36,459	635,827	630,398	5,429	173,115	165,600	7,515
Pacific Southwest:									
California	303,912	302,298	1,614	162,103	161,200	903	11,631	11,563	68
Hawaii	722		722				327		327
Total	304,634	302,298	2,336	162,103	161,200	903	11,958	11,563	395

TABLE 11.—*Net volume of sawtimber on commercial forest land in the United States, by ownership, softwoods and hardwoods, section, region, and State, January 1, 1963*—Continued

(Million board feet, International ¼-inch log rule)

Section, region, and State	All ownerships			National forest			Other public		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
Northern Rocky Mountain:									
Idaho	126,801	126,484	317	94,985	94,822	163	11,074	11,021	53
Montana	112,637	111,799	838	75,479	74,883	596	9,454	9,423	31
South Dakota (west)	3,430	3,423	7	2,687	2,687		178	177	1
Wyoming	28,324	27,939	385	23,871	23,762	109	1,850	1,747	103
Total	271,192	269,645	1,547	197,022	196,154	868	22,556	22,368	188
Southern Rocky Mountain:									
Arizona	28,287	28,098	189	19,954	19,877	77	7,479	7,378	101
Colorado	64,258	60,477	3,781	52,793	50,135	2,658	2,611	2,359	252
Nevada	572	565	7	87	84	3	2	2	
New Mexico	31,742	29,872	1,870	16,415	16,205	210	6,586	6,367	219
Utah	22,341	20,213	2,128	18,260	16,552	1,708	2,121	1,989	132
Total	147,200	139,225	7,975	107,509	102,853	4,656	18,799	18,095	704
Total, West	1,814,955	1,766,638	48,317	1,102,461	1,090,605	11,856	226,428	217,626	8,802
Total, all regions	2,536,799	2,058,022	478,777	1,155,108	1,121,241	33,867	266,182	233,426	32,756

Section, region, and State	Forest industry			Farmer and miscellaneous private		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
New England:						
Connecticut	4		4	2,079	173	1,906
Maine	13,143	8,695	4,448	17,710	11,719	5,991
Massachusetts	217	72	145	2,100	696	1,404
New Hampshire	1,376	1,021	355	5,615	4,033	1,582
Rhode Island				167	26	141
Vermont	1,237	378	859	6,688	2,043	4,645
Total	15,977	10,166	5,811	34,359	18,690	15,669
Middle Atlantic:						
Delaware	516	225	291	724	314	410
Maryland	114	22	92	8,019	1,522	6,497
New Jersey	7	1	6	3,403	581	2,822
New York	2,693	590	2,103	26,732	5,859	20,873
Pennsylvania	805	68	737	20,680	1,753	18,927
West Virginia	1,719	54	1,665	24,603	951	23,652
Total	5,854	960	4,894	84,161	10,980	73,181
Lake States:						
Michigan	3,602	1,332	2,270	16,636	3,452	13,184
Minnesota	915	531	384	6,663	1,529	5,134
North Dakota				441		441
South Dakota (east)				436		436
Wisconsin	1,012	275	737	10,673	2,097	8,576
Total	5,529	2,138	3,391	34,849	7,078	27,771
Central:						
Illinois	32	8	24	8,026	14	8,012
Indiana	32	2	30	11,869	36	11,833
Iowa				6,108	6	6,102
Kansas				4,277	10	4,267
Kentucky	1,052	59	993	25,974	1,722	24,252
Missouri	202	23	179	10,868	354	10,514
Nebraska				1,539	389	1,150
Ohio	247	6	241	15,548	374	15,174
Total	1,565	98	1,467	84,209	2,905	81,304
Total, North	28,925	13,362	15,563	237,578	39,653	197,925
South Atlantic:						
North Carolina	8,682	4,761	3,921	42,358	21,383	20,975
South Carolina	4,245	2,429	1,816	17,939	9,366	8,573
Virginia	4,382	2,197	2,185	29,085	9,142	19,943
Total	17,309	9,387	7,922	89,382	39,891	49,491
East Gulf:						
Florida	7,057	4,782	2,275	12,179	7,999	4,180
Georgia	8,160	5,570	2,590	34,090	20,330	13,760
Total	15,217	10,352	4,865	46,269	28,329	17,940

TABLE 11.—*Net volume of sawtimber on commercial forest land in the United States, by ownership, softwoods and hardwoods, section, region, and State, January 1, 1963*—Continued

(Million board feet, International ¼-inch log rule)

Section, region, and State	Forest industry			Farmer and miscellaneous private		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
Central Gulf:						
Alabama	11,974	8,686	3,288	31,682	17,556	14,126
Mississippi	5,473	4,493	980	15,134	7,666	7,468
Tennessee	1,385	298	1,087	16,148	2,714	13,434
Total	18,832	13,477	5,355	62,964	27,936	35,028
West Gulf:						
Arkansas	20,515	16,326	4,189	13,696	4,953	8,743
Louisiana	16,178	11,581	4,597	32,771	11,120	21,651
Oklahoma	1,884	1,583	301	2,112	347	1,765
Texas	13,059	10,257	2,802	12,752	6,394	6,358
Total	51,636	39,747	11,889	61,331	22,814	38,517
Total, South	102,994	72,963	30,031	259,946	118,970	140,976
Pacific Northwest:						
Alaska				966	946	20
Oregon	96,874	91,905	4,969	43,875	36,433	7,442
Washington	101,923	97,032	4,891	39,349	33,156	6,193
Total	198,797	188,937	9,860	84,190	70,535	13,655
Pacific Southwest:						
California	48,664	48,423	241	81,514	81,112	402
Hawaii				395		395
Total	48,664	48,423	241	81,909	81,112	797
Northern Rocky Mountain:						
Idaho	8,144	8,105	39	12,598	12,536	62
Montana	9,624	9,615	9	18,080	17,878	202
South Dakota (west)	35	35		530	524	6
Wyoming	178	175	3	2,425	2,255	170
Total	17,981	17,930	51	33,633	33,193	440
Southern Rocky Mountain:						
Arizona	437	431	6	417	412	5
Colorado	62	61	1	8,792	7,922	870
Nevada	449	449		34	30	4
New Mexico	626	523	103	8,115	6,777	1,338
Utah				1,960	1,672	288
Total	1,574	1,464	110	19,318	16,813	2,505
Total, West	267,016	256,754	10,262	219,050	201,653	17,397
Total, all regions	398,935	343,079	55,856	716,574	360,276	356,298

TABLE 12.—*Net volume of growing stock on commercial forest land in the East, by species, section, region, and State, January 1, 1963*

(Million cubic feet)

Section, region, and State	Softwoods										Hardwoods	
	All softwoods	White and red pine	Jack pine	Longleaf and slash pine	Shortleaf and loblolly pine	Other yellow pines	Spruce and balsam fir	Hemlock	Cypress	Other softwoods	All hardwoods	Select white oaks
New England:												
Connecticut	117	47				1		66		3	1,419	163
Maine	11,679	1,461	13			27	7,622	968		1,588	6,169	9
Massachusetts	510	255	5			42	21	176		11	1,517	87
New Hampshire	2,537	1,092				12	1,031	401		1	2,142	53
Rhode Island	17	14				3					193	21
Vermont	1,143	102					654	313		74	3,252	
Total	16,003	2,971	18			85	9,328	1,924		1,677	14,692	333
Middle Atlantic:												
Delaware	238				187	50				1	297	56
Maryland	833	13			480	293		35		12	2,862	394
New Jersey	314				17	237		26		34	1,148	176
New York	2,757	816	17			68	789	980		87	11,390	329
Pennsylvania	955	258				194		494		9	13,974	1,153
West Virginia	567	83			62	231	66	121		4	11,276	963
Total	5,664	1,170	17		746	1,073	855	1,656		147	40,947	3,071
Lake States:												
Michigan	3,233	561	386				937	547		802	9,287	440
Minnesota	3,607	549	815				1,661			582	6,195	373
North Dakota											310	39
South Dakota (east)	11									11	387	17
Wisconsin	1,499	457	229				245	303		265	7,367	534
Total	8,350	1,567	1,430				2,843	850		[1] 1,660	23,546	1,403
Central:												
Illinois	16				11				4	1	2,328	402
Indiana	33	1				21				11	3,326	499
Iowa	4									4	1,640	290
Kansas	9									9	1,149	240
Kentucky	671	8			283	233		73	7	67	8,016	1,278
Missouri	338				310				9	19	4,683	1,049
Nebraska	104		1							103	333	37
Ohio	114	5				80				29	4,503	596
Total	1,289	14	1		604	334		73	20	[2] 243	25,978	4,391
Total, North	31,306	5,722	1,466		1,350	1,492	13,026	4,503	20	3,727	105,163	9,198
South Atlantic:												
North Carolina	8,445	190		313	5,980	1,409	29	109	308	107	10,256	1,085
South Carolina	4,258	22		546	2,991	352		1	319	27	3,864	234
Virginia	4,350	136			3,052	985		87	46	44	9,343	1,555
Total	17,053	348		859	12,023	2,746	29	197	673	178	23,463	2,874
East Gulf:												
Florida	4,758			2,672	355	212			1,485	34	2,387	17
Georgia	10,096	54		3,702	5,320	419		9	588	4	7,422	514
Total	14,854	54		6,374	5,675	631		9	2,073	38	9,809	531
Central Gulf:												
Alabama	7,673			1,704	5,502	350			87	30	6,775	575
Mississippi	4,424			873	3,277	129			125	20	4,012	310
Tennessee	1,282	121			514	437		104	38	68	6,193	847
Total	13,379	121		2,577	9,293	916		104	250	118	16,980	1,732
West Gulf:												
Arkansas	5,909				5,706				173	30	6,793	807
Louisiana	5,704			493	4,435	81			693	2	9,500	373
Oklahoma	618				615					3	990	57
Texas	5,171			248	4,841				79	3	3,863	234
Total	17,402			741	15,597	81			945	38	21,146	1,471
Total, South	62,688	523		10,551	42,588	4,374	29	310	3,941	372	71,398	6,608

See footnotes at end of table.

TABLE 12.—*Net volume of growing stock on commercial forest land in the East, by species, section, region, and State, January 1, 1963*—Continued

(Million cubic feet)

Section, region, and State	Hardwoods															
	Select red oaks	Other white oaks	Other red oaks	Hickory	Yellow birch	Hard maple	Soft maple	Beech	Sweetgum	Tupelo and black gum	Ash	Cottonwood and aspen	Basswood	Yellow-poplar	Black walnut	Other hardwoods
New England:																
Connecticut	379	90	110	80	117	45	258	26	2	1	47	2	6	27	-------	66
Maine	215	-------	-------	-------	971	967	1,242	703	-------	-------	302	661	42	-------	-------	1,057
Massachusetts	392	41	80	13	113	135	319	60	1	2	56	29	34	3	-------	152
New Hampshire	304	-------	35	-------	343	264	287	275	-------	-------	44	66	2	-------	-------	469
Rhode Island	50	-------	34	9	6	-------	55	-------	-------	1	7	6	-------	-------	-------	4
Vermont	101	-------	-------	-------	580	956	350	492	-------	-------	119	118	32	-------	-------	504
Total	1,441	131	259	102	2,130	2,367	2,511	1,556	3	4	575	882	116	30	-------	2,252
Middle Atlantic:																
Delaware	14	3	62	-------	-------	-------	36	11	53	21	-------	-------	-------	24	-------	17
Maryland	330	218	357	137	31	28	223	89	321	91	37	7	7	381	20	191
New Jersey	185	114	217	30	-------	-------	119	13	64	33	42	3	6	63	2	81
New York	936	270	35	181	1,132	2,394	1,663	1,308	-------	-------	641	477	499	47	3	1,475
Pennsylvania	2,308	1,680	472	330	697	1,223	1,678	716	35	13	507	474	348	344	27	1,969
West Virginia	1,304	1,256	1,165	1,100	161	647	615	707	12	187	248	-------	359	1,157	108	1,287
Total	5,077	3,541	2,308	1,778	2,021	4,292	4,334	2,844	485	345	1,475	961	1,219	2,016	160	5,020
Lake States:																
Michigan	663	-------	207	57	398	1,682	880	304	-------	-------	320	2,068	386	-------	14	1,868
Minnesota	205	-------	-------	-------	17	138	97	-------	-------	-------	419	3,025	347	-------	-------	1,574
North Dakota	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	43	123	26	-------	-------	79
South Dakota (east)	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	46	223	5	-------	-------	96
Wisconsin	1,072	-------	331	89	233	760	416	40	-------	-------	340	1,923	430	-------	10	1,189
Total	1,940	-------	538	146	648	2,580	1,393	344	-------	-------	1,168	7,362	1,194	-------	24	4,806
Central:																
Illinois	150	81	351	235	18	64	178	8	55	11	158	95	16	21	45	440
Indiana	229	42	447	327	-------	266	127	148	63	37	202	38	39	152	78	632
Iowa	177	-------	53	76	-------	30	136	-------	-------	-------	67	143	-------	-------	63	605
Kansas	69	34	-------	30	-------	-------	-------	-------	-------	-------	43	241	17	-------	94	381
Kentucky	415	653	1,505	1,104	-------	220	172	480	175	199	213	30	138	518	123	793
Missouri	238	704	1,378	444	-------	43	48	-------	25	19	85	33	-------	1	102	514
Nebraska	4	1	-------	1	-------	-------	-------	-------	-------	-------	32	162	7	-------	4	85
Ohio	266	234	514	443	-------	249	222	206	-------	-------	275	28	-------	242	95	1,133
Total	1,548	1,749	4,248	2,660	18	872	883	842	318	266	1,075	770	217	934	604	4,583
Total, North	10,006	5,421	7,353	4,686	4,817	10,111	9,121	5,586	806	615	4,293	9,975	2,746	2,980	788	16,661
South Atlantic:																
North Carolina	482	751	1,339	670	14	35	598	135	1,266	1,728	254	7	102	1,044	27	719
South Carolina	80	175	666	178	1	4	231	24	751	830	175	22	-------	207	4	282
Virginia	591	1,090	1,636	891	12	66	425	201	626	406	134	2	72	959	77	600
Total	1,153	2,016	3,641	1,739	27	105	1,254	360	2,643	2,964	563	31	174	2,210	108	1,601
East Gulf:																
Florida	6	207	481	112	-------	2	147	5	226	629	147	-------	-------	24	-------	384
Georgia	255	539	1,396	510	1	6	406	37	1,056	1,396	226	4	7	531	6	532
Total	261	746	1,877	622	1	8	553	42	1,282	2,025	373	4	7	555	6	916
Central Gulf:																
Alabama	223	513	1,304	803	1	11	126	97	938	833	226	12	27	410	8	668
Mississippi	108	311	775	265	-------	5	56	66	739	459	90	86	10	120	4	608
Tennessee	351	754	1,022	861	8	119	208	118	238	210	167	67	47	451	88	637
Total	682	1,578	3,101	1,929	9	135	390	281	1,915	1,502	483	165	84	981	100	1,913
West Gulf:																
Arkansas	342	987	1,357	768	-------	6	46	33	905	357	197	70	9	7	24	878
Louisiana	152	875	1,363	877	-------	4	152	188	1,632	1,421	599	110	5	20	-------	1,729
Oklahoma	34	269	190	165	-------	-------	7	-------	43	27	33	20	2	-------	1	142
Texas	127	643	990	290	-------	9	21	41	798	231	134	3	5	-------	3	334
Total	655	2,774	3,900	2,100	-------	19	226	262	3,378	2,036	963	203	21	27	28	3,083
Total, South	2,751	7,114	12,519	6,390	37	267	2,423	945	9,218	8,527	2,382	403	286	3,773	242	7,513

[1] Includes 11 million cubic feet of ponderosa pine.
[2] Includes 98 million cubic feet of ponderosa pine.

TABLE 13.—*Net volume of growing stock on commercial forest land in the West, by species, section, region, and State, January 1, 1963*

(Million cubic feet)

Section, region, and State	Softwoods										
	All softwoods	Douglas-fir	Ponderosa and Jeffrey pine	True firs	Western hemlock	Sugar pine	Western white pine	Redwood	Sitka spruce	Engelmann and other spruces	Western larch
Pacific Northwest:											
Alaska	34,718			68	21,131				11,317	4	
Oregon	89,203	46,639	12,425	10,319	7,953	962	741	40	1,202	739	1,181
Washington	67,946	22,763	4,466	11,214	19,255		564		526	767	1,444
Total	191,867	69,402	16,891	21,601	48,339	962	1,305	40	13,045	1,510	2,625
Pacific Southwest:											
California	54,861	17,761	10,496	13,804	71	3,798	314	5,502	34		
Hawaii											
Total	54,861	17,761	10,496	13,804	71	3,798	314	5,502	34		
Northern Rocky Mountain:											
Idaho	26,244	7,775	3,166	4,557	581		2,356			1,797	1,362
Montana	26,486	6,247	2,481	3,253	911		315			2,145	4,075
South Dakota (west)	991		945							46	
Wyoming	7,134	901	696	644						1,694	
Total	60,855	14,923	7,288	8,454	1,492		2,671			5,682	5,437
Southern Rocky Mountain:											
Arizona	6,116	398	5,240	275						153	
Colorado	14,897	1,590	1,017	2,409						6,404	
Nevada	126		74	39		2				1	
New Mexico	6,876	1,100	4,008	750						837	
Utah	4,490	899	434	912						1,217	
Total	32,505	3,987	10,773	4,385		2				8,612	
Total, West	340,088	106,073	45,448	48,244	49,902	4,762	4,290	5,542	13,079	15,804	8,062

Section, region, and State	Softwoods				Hardwoods				
	Western redcedar	Incense cedar	Lodgepole pine	Other softwoods	All hardwoods	Cottonwood and aspen	Red alder	Oak	Other western hardwoods
Pacific Northwest:									
Alaska	1,014		20	1,164	346	306	36		4
Oregon	1,448	830	2,395	2,329	5,920	82	2,640	814	2,384
Washington	4,751		1,750	446	4,952	332	3,401	58	1,161
Total	7,213	830	4,165	3,939	11,218	720	6,077	872	3,549
Pacific Southwest:									
California		1,747	928	406	437	6	9	131	291
Hawaii					220				220
Total		1,747	928	406	657	6	9	131	511
Northern Rocky Mountain:									
Idaho	757		3,775	118	270	264			6
Montana	579		6,124	356	284	224			60
South Dakota (west)					5			5	
Wyoming			2,768	431	324	324			
Total	1,336		12,667	905	883	812		5	66
Southern Rocky Mountain:									
Arizona				50	120	120			
Colorado			3,286	191	2,440	2,434			6
Nevada		2	7	1	25	14	11		
New Mexico				181	561	561			
Utah			971	57	1,335	1,335			
Total		2	4,264	480	4,481	4,464	11		6
Total, West	8,549	2,579	22,024	5,730	17,239	6,002	6,097	1,008	4,132

TABLE 14.—*Net volume of sawtimber on commercial forest land in the East, by species, section, region, and State, January 1, 1963*

(Million board feet, International ¼-inch log rule)

Section, region, and State	Softwoods										Hardwoods	
	All soft woods	White and red pine	Jack pine	Longleaf and slash pine	Shortleaf and loblolly pine	Other yellow pines	Spruce and balsam fir	Hemlock	Cypress	Other soft-woods	All hard-woods	Select white oaks
New England:												
Connecticut	190	58				2		129		1	2,087	303
Maine	20,657	4,741	22			70	11,627	1,908		2,289	10,625	10
Massachusetts	851	526	1			30	21	272		1	1,702	107
New Hampshire	5,859	3,141				16	1,789	913			3,152	8
Rhode Island	27	24				3					165	35
Vermont	2,784	302					1,579	820		83	6,329	
Total	30,368	8,792	23			121	15,016	4,042		2,374	24,060	463
Middle Atlantic:												
Delaware	546				502	44					709	120
Maryland	1,669	32			1,114	358		132		33	7,123	1,034
New Jersey	604				21	452		78		53	2,939	540
New York	7,009	2,451	19			140	1,791	2,487		121	24,974	862
Pennsylvania	2,351	784				421		1,137		9	25,381	2,401
West Virginia	1,565	209			121	682	171	375		7	28,834	2,584
Total	13,744	3,476	19		1,758	2,097	1,962	4,209		223	89,960	7,541
Lake States:												
Michigan	7,400	2,049	445				1,540	2,146		1,220	19,096	1,062
Minnesota	6,560	2,582	1,560				1,728			690	8,959	885
North Dakota											637	74
South Dakota (east)	52									52	705	32
Wisconsin	4,201	1,970	293				244	1,303		391	12,095	1,201
Total	18,213	6,601	2,298				3,512	3,449		[1] 2,353	41,492	3,254
Central:												
Illinois	28				6				21	1	8,548	1,722
Indiana	62	2				47			2	11	12,503	1,894
Iowa	6									6	6,188	1,077
Kansas	10									10	4,270	762
Kentucky	2,485	58			1,288	689		337	37	76	26,776	3,463
Missouri	879				820				52	7	11,733	2,785
Nebraska	423		1							422	1,249	102
Ohio	409	17				260				132	16,368	2,373
Total	4,302	77	1		2,114	996		337	112	[2] 665	87,635	14,178
Total, North	66,627	18,946	2,341		3,872	3,214	20,490	12,037	112	5,615	243,147	25,436
South Atlantic:												
North Carolina	28,006	802		870	20,015	3,985	139	578	1,400	217	27,437	2,910
South Carolina	13,990	134		1,637	9,767	1,026		7	1,356	63	11,001	641
Virginia	12,701	562			9,671	1,763		401	235	69	24,419	3,854
Total	54,697	1,498		2,507	39,453	6,774	139	986	2,991	349	62,857	7,405
East Gulf:												
Florida	15,253			8,633	1,436	510			4,595	79	6,781	83
Georgia	29,408	243		11,234	14,964	1,088		29	1,846	4	18,448	1,287
Total	44,661	243		19,867	16,400	1,598		29	6,441	83	25,229	1,370
Central Gulf:												
Alabama	28,307			6,530	20,202	1,115			410	50	18,295	1,731
Mississippi	17,111			3,394	12,501	526			646	44	9,253	884
Tennessee	4,328	568			1,558	1,341		522	229	110	16,325	2,101
Total	49,746	568		9,924	34,261	2,982		522	1,285	204	43,873	4,716
West Gulf:												
Arkansas	26,363				25,364				949	50	15,985	1,822
Louisiana	25,140			2,080	19,501	380			3,173	6	27,140	1,192
Oklahoma	2,483				2,483						2,271	120
Texas	21,667			1,172	20,093				395	7	9,958	786
Total	75,653			3,252	67,441	380			4,517	63	55,354	3,920
Total, South	224,757	2,309		35,550	157,555	11,734	139	1,537	15,234	699	187,313	17,411

See footnotes at end of table.

TABLE 14.—*Net volume of sawtimber on commercial forest land in the East, by species, section, region, and State, January 1, 1963*—Continued

(Million board feet, International ¼-inch log rule)

Section, region, and State	Hardwoods															
	Select red oaks	Other white oaks	Other red oaks	Hickory	Yellow birch	Hard maple	Soft maple	Beech	Sweet-gum	Tupelo and black gum	Ash	Cotton-wood and aspen	Bass-wood	Yellow-poplar	Black Walnut	Other hard-woods
New England:																
Connecticut	647	68	289	109	149	36	208	55	----	2	43	----	8	119	----	51
Maine	396	----	----	----	2,581	2,965	1,308	1,062	----	----	412	554	94	----	----	1,243
Massachusetts	500	20	131	8	97	204	219	87	----	----	59	2	96	11	----	161
New Hampshire	398	----	9	----	757	597	271	524	----	----	94	33	6	----	----	455
Rhode Island	57	----	35	9	2	----	21	----	----	1	5	----	----	----	----	----
Vermont	259	----	----	----	1,519	2,035	353	1,142	----	----	133	88	47	----	----	753
Total	2,257	88	464	126	5,105	5,837	2,380	2,870	----	3	746	677	251	130	----	2,663
Middle Atlantic:																
Delaware	35	3	125	----	----	----	62	46	127	53	----	----	----	92	----	46
Maryland	910	423	956	314	29	32	364	282	817	228	53	2	7	1,338	38	296
New Jersey	483	149	759	66	----	----	182	34	182	75	94	1	8	234	7	125
New York	2,208	112	70	330	3,154	6,042	2,530	3,624	----	----	1,230	324	1,204	125	13	3,146
Pennsylvania	5,234	2,444	1,228	705	828	1,732	2,191	1,884	----	54	875	149	863	1,042	73	3,678
West Virginia	3,711	3,239	3,880	2,589	342	1,489	981	1,984	25	607	462	----	932	3,115	247	2,647
Total	12,581	6,370	7,018	4,004	4,353	9,295	6,310	7,854	1,151	1,017	2,714	476	3,014	5,946	378	9,938
Lake States:																
Michigan	1,677	----	571	127	1,290	4,562	1,628	1,100	----	----	553	1,445	870	----	41	4,170
Minnesota	601	----	----	----	80	465	238	----	----	----	744	2,427	1,041	----	----	2,478
North Dakota	----	----	----	----	----	----	----	----	----	----	74	173	100	----	----	216
South Dakota (east)	----	----	----	----	----	----	----	----	----	----	84	407	8	----	----	174
Wisconsin	2,766	----	595	102	616	1,914	584	106	----	----	506	773	835	----	31	2,066
Total	5,044	----	1,166	229	1,986	6,941	2,450	1,206	----	----	1,961	5,225	2,854	----	72	9,104
Central:																
Illinois	752	254	1,338	620	40	234	624	46	236	41	428	462	66	97	114	1,474
Indiana	1,111	116	1,720	1,039	----	981	502	795	187	138	624	172	159	663	244	2,158
Iowa	727	----	204	188	----	118	562	----	----	----	243	732	----	----	235	2,102
Kansas	219	102	----	96	----	----	----	----	----	----	167	898	64	----	362	1,600
Kentucky	1,806	2,655	5,802	3,134	----	617	383	2,302	545	686	494	145	602	2,151	315	1,676
Missouri	882	1,390	3,080	848	----	116	200	----	72	57	189	170	----	7	321	1,616
Nebraska	18	3	----	5	----	----	----	----	----	----	114	663	24	----	13	307
Ohio	1,247	684	2,076	1,278	----	995	746	976	----	----	887	144	----	968	303	3,691
Total	6,762	5,204	14,220	7,208	40	3,061	3,017	4,119	1,040	922	3,146	3,386	915	3,886	1,907	14,624
Total, North	26,644	11,662	22,868	11,567	11,484	25,134	14,157	16,049	2,191	1,942	8,567	9,764	7,034	9,962	2,357	36,329
South Atlantic:																
North Carolina	1,539	1,871	3,487	1,959	55	71	1,136	349	3,599	5,075	632	22	250	2,939	65	1,478
South Carolina	262	540	1,891	563	4	8	582	83	2,193	2,475	357	71	----	707	13	611
Virginia	1,874	2,546	4,217	2,313	21	170	978	654	1,635	1,135	280	4	227	3,076	185	1,250
Total	3,675	4,957	9,595	4,835	80	249	2,696	1,086	7,427	8,685	1,269	97	477	6,722	263	3,339
East Gulf:																
Florida	28	682	1,480	361	----	7	345	22	591	1,827	372	----	----	56	----	927
Georgia	884	1,340	3,909	1,441	2	12	781	126	2,390	3,039	534	21	19	1,515	16	1,132
Total	912	2,022	5,389	1,802	2	19	1,126	148	2,981	4,866	906	21	19	1,571	16	2,059
Central Gulf:																
Alabama	769	1,251	3,625	1,998	----	30	279	391	2,407	2,288	628	38	68	1,218	23	1,551
Mississippi	165	764	1,578	641	----	7	83	256	1,568	1,235	222	386	36	315	4	1,109
Tennessee	1,297	1,787	2,828	2,045	28	300	407	431	642	565	424	328	137	1,341	223	1,441
Total	2,231	3,802	8,031	4,684	28	337	769	1,078	4,617	4,088	1,274	752	241	2,874	250	4,101
West Gulf:																
Arkansas	723	2,389	3,030	1,579	----	----	84	113	2,194	1,171	522	242	21	17	58	2,020
Louisiana	373	3,081	3,484	2,907	----	5	328	707	4,419	4,278	1,622	389	8	56	----	4,291
Oklahoma	83	488	445	384	----	----	13	----	96	94	90	72	4	----	4	378
Texas	379	1,589	2,555	730	----	20	43	130	1,954	706	356	8	8	----	8	686
Total	1,558	7,547	9,514	5,600	----	25	468	950	8,663	6,249	2,590	711	41	73	70	7,375
Total, South	8,376	18,328	32,529	16,921	110	630	5,059	3,262	23,688	23,888	6,039	1,581	778	11,240	599	16,874

[1] Includes 52 million board feet of ponderosa pine.

[2] Includes 416 million board feet of ponderosa pine.

TABLE 15.—*Net volume of sawtimber on commercial forest land in the West, by species, section, region, and State, January 1, 1963*

(Million board feet, International ¼-inch log rule)

Section, region, and State	Softwoods								
	All softwoods	Douglas-fir	Ponderosa and Jeffrey pine	True firs	Western hemlock	Sugar pine	Western white pine	Redwood	Sitka spruce
Pacific Northwest:									
Alaska	180,930			468	105,371				66,593
Oregon	515,879	293,548	73,665	46,082	46,770	5,416	4,295	276	6,074
Washington	358,661	118,446	24,439	56,527	110,921		2,975		3,225
Total	1,055,470	411,994	98,104	103,077	263,062	5,416	7,270	276	75,892
Pacific Southwest:									
California	302,298	98,973	58,398	75,303	397	23,223	1,808	30,981	142
Hawaii									
Total	302,298	98,973	58,398	75,303	397	23,223	1,808	30,981	142
Northern Rocky Mountain:									
Idaho	126,484	40,495	18,509	23,241	3,130		13,754		
Montana	111,799	29,193	12,405	14,287	3,346		1,605		
South Dakota (west)	3,423		3,222						
Wyoming	27,939	4,215	2,545	2,187					
Total	269,645	73,903	36,681	39,715	6,476		15,359		
Southern Rocky Mountain:									
Arizona	28,098	2,130	23,751	1,203					
Colorado	60,477	6,481	4,261	8,917					
Nevada	565		331	177		7			
New Mexico	29,872	4,883	18,177	2,603					
Utah	20,213	4,258	2,019	3,785					
Total	139,225	17,752	48,539	16,685		7			
Total, West	1,766,638	602,622	241,722	234,780	269,935	28,646	24,437	31,257	76,034

Section, region, and State	Softwoods						Hardwoods				
	Engelmann and other spruces	Western larch	Western redcedar	Incense cedar	Lodgepole pine	Other softwoods	All hardwoods	Cottonwood and aspen	Red alder	Oak	Other western hardwoods
Pacific Northwest:											
Alaska	20		4,093		105	4,280	1,625	1,499	120		6
Oregon	3,474	6,052	8,007	4,785	5,659	11,776	20,430	475	10,064	2,474	7,417
Washington	3,078	5,839	28,060		2,954	2,197	14,404	1,333	9,202	37	3,832
Total	6,572	11,891	40,160	4,785	8,718	18,253	36,459	3,307	19,386	2,511	11,255
Pacific Southwest:											
California			2	8,275	3,239	1,557	1,614	10	45	524	1,035
Hawaii							722				722
Total			2	8,275	3,239	1,557	2,336	10	45	524	1,757
Northern Rocky Mountain:											
Idaho	11,177	6,892	3,494		5,436	356	317	317			
Montana	11,618	21,955	2,478		13,496	1,416	838	762			76
South Dakota (west)	201						7			7	
Wyoming	8,663				8,689	1,640	385	385			
Total	31,659	28,847	5,972		27,621	3,412	1,547	1,464		7	76
Southern Rocky Mountain:											
Arizona	778					236	189	189			
Colorado	30,634				9,497	687	3,781	3,770			11
Nevada	3			12	33	2	7	4	3		
New Mexico	3,495					714	1,870	1,870			
Utah	6,229				3,670	252	2,128	2,128			
Total	41,139			12	13,200	1,891	7,975	7,961	3		11
Total, West	79,370	40,738	46,134	13,072	52,778	25,113	48,317	12,742	19,434	3,042	13,099

TABLE 16.—*Net volume of growing stock on commercial forest land in the North, by species, diameter class, and region, January 1, 1963*

(Million cubic feet)

Region and diameter class (inches)	Total all species	Softwoods						Hardwoods								
		Total	Southern yellow pines	Eastern white and red pines	Spruce and balsam fir	Cypress	Other softwoods	Total	Sleet white and red oaks	Other white and red oaks	Hickory	Yellow birch	Hard maple	Sweetgum	Ash, walnut, and black cherry	Yellow-poplar	Other hardwoods
New England:																	
5.0–7.0	6,798	4,003	15	315	2,942		731	2,795	298	62	18	261	332	2	127		1,695
7.0–9.0	7,395	4,132	27	463	2,720		922	3,263	407	78	26	345	377		169	1	1,860
9.0–11.0	5,757	2,853	15	489	1,663		686	2,904	345	91	27	375	337	1	137		1,591
11.0–13.0	3,945	1,977	12	463	993		509	1,968	259	65	21	287	320		92	2	922
13.0–15.0	2,667	1,302	5	429	527		341	1,365	209	39	4	230	261		48	9	565
15.0–17.0	1,711	773	4	270	289		210	938	108	28	4	180	231		43	4	340
17.0–19.0	988	377	2	169	104		102	611	58	19	2	142	208		18	7	157
19.0–29.0	1,353	539	4	328	90		117	814	83	8		292	299		14	7	111
29.0+	81	47		45			2	34	7			18	2		3		4
Total	30,695	16,003	84	2,971	9,328		3,620	14,692	1,774	390	102	2,130	2,367	3	651	30	7,245
Middle Atlantic:																	
5.0–7.0	6,499	872	311	140	151		270	5,627	938	762	263	350	595	55	450	135	2,079
7.0–9.0	7,893	1,064	418	167	178		301	6,829	1,131	934	298	364	775	56	595	217	2,459
9.0–11.0	7,885	1,014	391	167	160		296	6,871	1,312	898	277	338	734	72	686	312	2,242
11.0–13.0	6,881	887	311	177	131		268	5,994	1,225	857	293	195	533	73	683	342	1,793
13.0–15.0	5,483	691	197	147	104		243	4,792	1,102	691	220	175	417	60	459	277	1,391
15.0–17.0	4,195	472	111	138	68		155	3,723	807	594	176	146	329	56	313	266	1,036
17.0–19.0	2,870	289	40	93	34		122	2,581	563	425	113	105	266	54	152	192	711
19.0–29.0	4,482	355	40	133	29		153	4,127	933	626	130	298	591	59	146	243	1,101
29.0+	423	20		8			12	403	137	62	8	50	52		6	32	56
Total	46,611	5,664	1,819	1,170	855		1,820	40,947	8,148	5,849	1,778	2,021	4,292	485	3,490	2,016	12,868
Lake States:																	
5.0–7.0	8,330	2,560		206	1,238		1,116	5,770	461	92	32	71	365		290		4,459
7.0–9.0	7,543	2,105		241	857		1,007	5,438	605	110	35	95	451		307		3,835
9.0–11.0	5,648	1,180		219	382		579	4,468	698	111	34	105	463		264		2,793
11.0–13.0	3,766	856		236	191		429	2,910	531	83	17	99	392		216		1,572
13.0–15.0	2,516	566		197	74		295	1,950	419	65	18	96	305		130		917
15.0–17.0	1,593	383		154	59		170	1,210	262	33	6	69	233		76		531
17.0–19.0	1,025	238		108	25		105	787	179	24	3	39	163		50		329
19.0–29.0	1,367	418		178	16		224	949	182	19	1	70	197		35		445
29.0+	108	44		28	1		15	64	6	1		4	11		1		41
Total	31,896	8,350		1,567	2,843		[1] 3,940	23,546	3,343	538	146	648	2,580		1,369		14,922
Central:																	
5.0–7.0	3,285	203	145	2			56	3,082	607	741	466	2	107	40	232	77	810
7.0–9.0	3,934	259	201	1			57	3,675	794	929	500	3	127	53	265	100	904
9.0–11.0	4,323	288	234	1			53	4,035	916	1,035	474	6	120	48	307	124	1,005
11.0–13.0	3,627	221	172	1		2	46	3,406	862	829	372	2	100	39	245	125	832
13.0–15.0	3,172	144	109	1		2	32	3,028	736	694	292	1	102	33	251	128	791
15.0–17.0	2,617	78	43	2		3	30	2,539	580	560	217	1	79	30	209	129	734
17.0–19.0	1,891	40	20	1		2	17	1,851	432	390	124	1	65	25	129	92	593
19.0–29.0	3,764	51	14	2		11	24	3,713	843	723	195	2	155	46	202	149	1,398
29.0+	654	5		3			2	649	169	96	20		17	4	16	10	317
Total	27,267	1,289	938	14		20	[2] 317	25,978	5,939	5,997	2,660	18	872	318	1,856	934	7,384
Total North:																	
5.0–7.0	24,912	7,638	471	663	4,331		2,173	17,274	2,304	1,657	779	684	1,399	97	1,099	212	9,043
7.0–9.0	26,765	7,560	646	872	3,755		2,287	19,205	2,937	2,051	859	807	1,730	109	1,336	318	9,058
9.0–11.0	23,613	5,335	640	876	2,205		1,614	18,278	3,271	2,135	812	824	1,654	121	1,394	436	7,631
11.0–13.0	18,219	3,941	495	877	1,315	2	1,252	14,278	2,877	1,834	703	583	1,345	112	1,236	469	5,119
13.0–15.0	13,838	2,703	311	774	705	2	911	11,135	2,466	1,489	534	502	1,085	93	888	414	3,664
15.0–17.0	10,116	1,706	158	564	416	3	565	8,410	1,757	1,215	403	396	872	86	641	399	2,641
17.0–19.0	6,774	944	62	371	163	2	346	5,830	1,232	858	242	287	702	79	349	291	1,790
19.0–29.0	10,966	1,363	58	641	135	11	518	9,603	2,041	1,376	326	662	1,242	105	397	399	3,055
29.0+	1,266	116		84	1		31	1,150	319	159	28	72	82	4	26	42	418
Total	136,469	31,306	2,841	5,722	13,026	20	9,697	105,163	19,204	12,774	4,686	4,817	10,111	806	7,366	2,980	42,419

[1] Includes 11 million cubic feet of ponderosa pine.

[2] Includes 98 million cubic feet of ponderosa pine.

TABLE 17.—*Net volume of growing stock on commercial forest land in the South, by species, diameter class, and region, January 1, 1963*

(Million cubic feet)

Region and diameter class (inches)	Total all species	Softwoods						Hardwoods									
		Total	Southern yellow pines	Eastern white and red pines	Spruce and balsam fir	Cypress	Other softwoods	Total	Select white and red oaks	Other white and red oaks	Hickory	Yellow birch	Hard maple	Sweetgum	Ash, walnut, and black cherry	Yellow-poplar	Other hardwoods
South Atlantic:																	
5.0–7.0	4,889	2,280	2,166	32	2	14	66	2,609	411	662	177	5	13	278	76	227	760
7.0–9.0	6,557	3,229	3,071	42	2	56	58	3,328	559	872	229	2	17	358	119	289	883
9.0–11.0	6,906	3,201	3,025	50	2	87	37	3,705	610	908	268	3	17	413	128	318	1,040
11.0–13.0	6,373	2,865	2,655	51	4	121	34	3,508	608	815	285	3	14	407	106	342	928
13.0–15.0	5,356	2,108	1,889	49	6	133	31	3,248	557	693	247	4	15	388	88	336	920
15.0–17.0	3,746	1,381	1,232	33	4	91	21	2,365	396	518	181	3	10	292	62	247	656
17.0–19.0	2,559	853	760	21	2	58	12	1,706	286	374	131	2	7	211	45	178	472
19.0–29.0	3,679	1,044	801	64	7	88	84	2,635	507	684	187	5	11	270	43	261	667
29.0+	451	92	29	6	.....	25	32	359	93	131	34	.....	1	26	4	12	58
Total	40,516	17,053	15,628	348	29	673	375	23,463	4,027	5,657	1,739	27	105	2,643	671	2,210	6,384
East Gulf:																	
5.0–7.0	2,974	1,836	1,634	3	.....	192	7	1,138	102	314	69	.....	1	149	53	44	406
7.0–9.0	4,362	2,940	2,604	4	.....	319	13	1,422	98	341	85	.....	2	204	66	78	548
9.0–11.0	4,974	3,316	2,921	4	.....	384	7	1,658	125	386	89	1	2	237	66	90	662
11.0–13.0	4,261	2,804	2,375	10	.....	415	4	1,457	122	333	87	.....	.....	195	56	106	558
13.0–15.0	3,122	1,833	1,500	10	.....	313	10	1,289	96	296	86	.....	1	195	45	81	489
15.0–17.0	1,944	1,023	841	3	.....	178	1	921	61	255	75	.....	.....	108	32	46	344
17.0–19.0	1,198	527	434	3	.....	90	.....	671	68	191	44	.....	1	78	27	42	220
19.0–29.0	1,653	530	354	17	.....	155	4	1,123	104	444	83	.....	.....	105	32	62	293
29.0+	175	45	17	.....	.....	27	1	130	16	63	4	.....	1	11	2	6	27
Total	24,663	14,854	12,680	54	.....	2,073	47	9,809	792	2,623	622	1	8	1,282	379	555	3,547
Central Gulf:																	
5.0–7.0	3,245	1,516	1,462	6	.....	3	45	1,729	186	493	194	1	11	252	70	57	465
7.0–9.0	4,920	2,267	2,198	16	.....	11	42	2,653	329	770	310	1	20	328	95	108	692
9.0–11.0	5,559	2,470	2,420	10	.....	11	29	3,089	407	866	399	1	35	355	111	161	754
11.0–13.0	4,886	2,312	2,243	10	.....	30	29	2,574	381	687	319	1	14	293	94	139	646
13.0–15.0	4,120	1,834	1,760	21	.....	25	28	2,286	360	589	260	.....	12	256	89	179	541
15.0–17.0	2,884	1,271	1,205	17	.....	28	21	1,613	244	454	167	.....	9	168	48	107	416
17.0–19.0	1,893	774	703	20	.....	42	9	1,119	157	289	103	2	14	107	48	90	309
19.0–29.0	2,587	889	764	19	.....	87	19	1,698	308	457	169	3	19	150	62	115	415
29.0+	265	46	31	2	.....	13	.....	219	42	74	8	.....	1	6	4	25	59
Total	30,359	13,379	12,786	121	.....	250	222	16,980	2,414	4,679	1,929	9	135	1,915	621	981	4,297
West Gulf:																	
5.0–7.0	3,684	1,530	1,466	.....	.....	51	13	2,154	214	771	206	.....	4	341	99	2	517
7.0–9.0	5,307	2,352	2,228	.....	.....	111	13	2,955	298	960	298	.....	5	474	147	4	769
9.0–11.0	6,016	2,855	2,751	.....	.....	99	5	3,161	329	981	311	.....	3	521	148	3	865
11.0–13.0	5,813	2,956	2,825	.....	.....	128	3	2,857	296	844	245	.....	3	528	137	5	799
13.0–15.0	5,441	2,666	2,531	.....	.....	133	2	2,775	289	798	243	.....	2	513	136	4	790
15.0–17.0	4,415	2,078	1,953	.....	.....	124	1	2,337	255	661	212	.....	1	375	120	3	710
17.0–19.0	3,266	1,452	1,335	.....	.....	117	.....	1,814	168	522	184	.....	.....	280	97	3	560
19.0–29.0	4,350	1,455	1,317	.....	.....	137	1	2,895	263	1,056	371	.....	1	329	129	3	743
29.0+	256	58	13	.....	.....	45	.....	198	14	81	30	.....	.....	17	4	.....	52
Total	38,548	17,402	16,419	.....	.....	945	38	21,146	2,126	6,674	2,100	.....	19	3,378	1,017	27	5,805
Total, South:																	
5.0–7.0	14,792	7,162	6,728	41	2	260	131	7,630	913	2,240	646	6	29	1,020	298	330	2,148
7.0–9.0	21,146	10,788	10,101	62	2	497	126	10,358	1,284	2,943	922	3	44	1,364	427	479	2,892
9.0–11.0	23,455	11,842	11,117	64	2	581	78	11,613	1,471	3,141	1,067	5	57	1,526	453	572	3,321
11.0–13.0	21,333	10,937	10,098	71	4	694	70	10,396	1,407	2,679	936	4	31	1,423	393	592	2,931
13.0–15.0	18,039	8,441	7,680	80	6	604	71	9,598	1,302	2,376	836	4	30	1,352	358	600	2,740
15.0–17.0	12,989	5,753	5,231	53	4	421	44	7,236	956	1,888	635	3	20	943	262	403	2,126
17.0–19.0	8,916	3,606	3,232	44	2	307	21	5,310	679	1,376	462	4	22	676	217	313	1,561
19.0–29.0	12,269	3,918	3,236	100	7	467	108	8,351	1,182	2,641	810	8	31	854	266	441	2,118
29.0+	1,147	241	90	8	.....	110	33	906	165	349	76	.....	3	60	14	43	196
Total	134,086	62,688	57,513	523	29	3,941	682	71,398	9,359	19,633	6,390	37	267	9,218	2,688	3,773	20,033

Table 18.—*Net volume of growing stock on commercial forest land in the West, by species, diameter class, and region, January 1, 1963*

(Million cubic feet)

Region and diameter class (inches)	Total all species	Softwoods								Hardwoods		
		Total	Douglas-fir	Ponderosa and Jeffrey pines	Western white and sugar pines	Western hemlock	True firs	Redwood	Spruce	Other softwoods	Total	Oaks	Other hardwoods
Pacific Northwest:													
5.0–7.0	6,942	5,605	1,514	415	28	1,081	930	----	331	1,306	1,337	138	1,199
7.0–9.0	9,421	7,817	2,353	570	52	1,445	1,252	----	349	1,796	1,604	144	1,460
9.0–11.0	10,601	8,977	2,937	717	79	1,737	1,460	3	353	1,691	1,624	124	1,500
11.0–13.0	10,994	9,485	3,372	785	120	1,634	1,371	3	724	1,476	1,509	77	1,432
13.0–15.0	13,166	11,960	3,704	914	126	3,702	1,514	2	684	1,314	1,206	42	1,164
15.0–17.0	12,328	11,265	3,686	1,001	150	2,921	1,540	2	747	1,218	1,063	66	997
17.0–19.0	11,661	10,844	3,545	1,101	137	2,804	1,497	3	691	1,066	817	58	759
19.0–29.0	54,621	52,996	16,565	6,015	710	15,455	6,401	11	3,828	4,011	1,625	140	1,485
29.0+	73,351	72,918	31,726	5,373	865	17,560	5,636	16	6,848	4,894	433	25	408
Total	203,085	191,867	69,402	16,891	2,267	48,339	21,601	40	14,555	18,772	11,218	814	10,404
Pacific Southwest:													
5.0–7.0	1,170	1,064	344	203	80	1	268	107	1	60	106	29	77
7.0–9.0	1,881	1,750	567	335	131	2	440	176	1	98	131	35	96
9.0–11.0	2,167	2,048	663	392	154	3	515	205	1	115	119	30	89
11.0–13.0	2,589	2,561	829	490	192	3	644	257	2	144	28	3	25
13.0–15.0	2,302	2,260	732	432	169	3	569	227	1	127	42	4	38
15.0–17.0	2,288	2,249	728	430	169	3	566	226	1	126	39	4	35
17.0–19.0	2,353	2,313	749	443	173	3	582	232	1	130	40	4	36
19.0–29.0	12,449	12,340	3,995	2,361	925	16	3,105	1,237	8	693	109	15	94
29.0+	28,319	28,276	9,154	5,410	2,119	37	7,115	2,835	18	1,588	43	7	36
Total	55,518	54,861	17,761	10,496	4,112	71	13,804	5,502	34	3,081	657	131	526
Northern Rocky Mountain:													
5.0–7.0	5,374	5,176	801	381	68	107	904	----	207	2,708	198	----	198
7.0–9.0	8,262	8,020	1,467	870	160	204	1,275	----	355	3,689	242	----	242
9.0–11.0	8,550	8,450	1,945	816	186	284	1,200	----	758	3,261	100	----	100
11.0–13.0	6,653	6,475	1,383	703	256	241	1,070	----	490	2,332	178	----	178
13.0–15.0	5,812	5,755	1,394	669	271	242	784	----	563	1,832	57	----	57
15.0–17.0	5,317	5,278	1,518	543	204	154	843	----	602	1,414	39	----	39
17.0–19.0	4,473	4,434	1,315	394	258	106	683	----	511	1,167	39	----	39
19.0–29.0	12,694	12,667	3,694	1,688	860	143	1,421	----	1,692	3,169	27	----	27
29.0+	4,603	4,600	1,406	1,224	408	11	274	----	504	773	3	----	3
Total	61,738	60,855	14,923	7,288	2,671	1,492	8,454	----	5,682	20,345	883	----	883
Southern Rocky Mountain:													
5.0–7.0	3,187	2,168	194	367	----	----	457	----	381	769	1,019	----	1,019
7.0–9.0	4,279	3,206	396	476	----	----	614	----	685	1,035	1,073	----	1,073
9.0–11.0	4,887	3,971	428	578	1	----	734	----	1,150	1,080	916	----	916
11.0–13.0	3,825	3,280	392	689	----	----	515	----	1,064	620	545	----	545
13.0–15.0	3,907	3,458	447	838	1	----	518	----	1,139	515	449	----	449
15.0–17.0	3,312	3,094	422	981	----	----	407	----	969	315	218	----	218
17.0–19.0	3,063	2,921	356	1,182	----	----	311	----	909	163	142	----	142
19.0–29.0	8,680	8,561	1,120	4,426	----	----	702	----	2,074	239	119	----	119
29.0+	1,846	1,846	232	1,236	----	----	127	----	241	10	----	----	----
Total	36,986	32,505	3,987	10,773	2	----	4,385	----	8,612	4,746	4,481	----	4,481
Total, West:													
5.0–7.0	16,673	14,013	2,853	1,366	176	1,189	2,559	107	920	4,843	2,660	167	2,493
7.0–9.0	23,843	20,793	4,783	2,251	343	1,651	3,581	176	1,390	6,618	3,050	179	2,871
9.0–11.0	26,205	23,446	5,973	2,503	420	2,024	3,909	208	2,262	6,147	2,759	154	2,605
11.0–13.0	24,061	21,801	5,976	2,667	568	1,878	3,600	260	2,280	4,572	2,260	80	2,180
13.0–15.0	25,187	23,433	6,277	2,853	567	3,947	3,385	229	2,387	3,788	1,754	46	1,708
15.0–17.0	23,245	21,886	6,354	2,955	523	3,078	3,356	228	2,319	3,073	1,359	70	1,289
17.0–19.0	21,550	20,512	5,965	3,120	568	2,913	3,073	235	2,112	2,526	1,038	62	976
19.0–29.0	88,444	86,564	25,374	14,490	2,495	15,614	11,629	1,248	7,602	8,112	1,880	155	1,725
29.0+	108,119	107,640	42,518	13,243	3,392	17,608	13,152	2,851	7,611	7,265	479	32	447
Total	357,327	340,088	106,073	45,448	9,052	49,902	48,244	5,542	28,883	46,944	17,239	945	16,294

TABLE 19.—*Net volume of sawtimber on commercial forest land in the North, by species, diameter class, and region, January 1, 1963*

(Million board feet, International ¼-inch log rule)

Region and diameter class (inches)	Total all species	Softwoods						Hardwoods								
		Total	Southern yellow pines	Eastern white and red pines	Spruce and balsam fir	Cypress	Other softwoods	Total	Select white and red oaks	Other white and red oaks	Hickory	Yellow birch	Hard maple	Sweetgum	Ash, walnut, and black cherry	Yellow-poplar	Other hardwoods
New England:																	
9.0–11.0	9,966	9,966	29	1,645	6,344		1,948										
11.0–13.0	14,830	7,673	41	1,773	4,180		1,679	7,157	839	188	76	1,138	1,160		322	9	3,425
13.0–15.0	10,894	5,174	16	1,713	2,271		1,174	5,720	813	123	19	1,014	1,147		194	39	2,371
15.0–17.0	7,392	3,249	11	1,142	1,325		771	4,143	414	142	19	770	1,044		182	20	1,552
17.0–19.0	4,503	1,639	7	767	471		394	2,864	266	65	12	641	1,005		82	27	766
19.0–29.0	6,436	2,425	17	1,517	425		466	4,011	360	34		1,455	1,472		62	35	593
29.0+	407	242		235			7	165	28			87	9		16		25
Total	54,428	30,368	121	8,792	15,016		6,439	24,060	2,720	552	126	5,105	5,837		858	130	8,732
Middle Atlantic:																	
9.0–11.0	3,112	3,112	1,165	563	520		864										
11.0–13.0	23,933	3,164	1,139	668	471		886	20,769	4,310	2,850	1,078	726	1,819	219	2,472	1,190	6,105
13.0–15.0	22,074	2,680	756	585	418		921	19,394	4,474	2,738	917	747	1,678	228	1,928	1,178	5,506
15.0–17.0	17,990	1,893	438	586	271		598	16,097	3,465	2,505	783	636	1,456	233	1,392	1,246	4,381
17.0–19.0	12,703	1,237	172	421	151		493	11,466	2,490	1,812	502	492	1,233	212	697	896	3,132
19.0–29.0	21,722	1,568	185	610	131		642	20,154	4,651	3,151	678	1,502	2,840	259	699	1,271	5,103
29.0+	2,170	90		43			47	2,080	732	332	46	250	269		24	165	262
Total	103,704	13,744	3,855	3,476	1,962		4,451	89,960	20,122	13,388	4,004	4,353	9,295	1,151	7,212	5,946	24,489
Lake States:																	
9.0–11.0	5,397	5,397		1,255	1,729		2,413										
11.0–13.0	18,527	4,133		1,352	894		1,887	14,394	2,696	415	86	487	1,918		1,003		7,789
13.0–15.0	13,026	2,906		1,213	357		1,336	10,120	2,153	331	91	480	1,585		559		4,921
15.0–17.0	8,596	2,013		926	285		802	6,583	1,393	173	28	376	1,286		330		2,997
17.0–19.0	5,722	1,311		658	148		505	4,411	977	131	14	218	925		259		1,887
19.0–29.0	7,848	2,205		1,074	92		1,039	5,643	1,033	110	10	400	1,167		179		2,744
29.0+	589	248		123	7		118	341	46	6		25	60		7		197
Total	59,705	18,213		6,601	3,512		[1] 8,100	41,492	8,298	1,166	229	1,986	6,941		2,337		20,535
Central:																	
9.0–11.0	1,227	1,227	1,031	7		1	188										
11.0–13.0	19,003	1,135	915	7		11	202	17,868	4,587	4,518	2,009	8	549	204	1,218	694	4,081
13.0–15.0	17,811	851	659	4		8	180	16,960	4,164	3,960	1,691	6	585	191	1,350	756	4,257
15.0–17.0	15,372	470	280	12		15	163	14,902	3,419	3,349	1,329	8	469	181	1,162	800	4,185
17.0–19.0	11,325	248	132	10		9	97	11,077	2,583	2,392	764	5	389	154	782	583	3,425
19.0–29.0	23,207	331	93	12		67	159	22,876	5,137	4,600	1,278	11	957	284	1,207	1,007	8,395
29.0+	3,992	40		25		1	14	3,952	1,050	605	137	2	112	26	95	46	1,879
Total	91,937	4,302	3,110	77		112	[2] 1,003	87,635	20,940	19,424	7,208	40	3,061	1,040	5,814	3,886	26,222
Total, North:																	
9.0–11.0	19,702	19,702	2,225	3,470	8,593	1	5,413										
11.0–13.0	76,293	16,105	2,095	3,800	5,545	11	4,654	60,188	12,432	7,971	3,249	2,359	5,446	423	5,015	1,893	21,400
13.0–15.0	63,805	11,611	1,431	3,515	3,046	8	3,611	52,194	11,604	7,152	2,718	2,247	4,995	419	4,031	1,973	17,055
15.0–17.0	49,350	7,625	729	2,666	1,881	15	2,334	41,725	8,691	6,169	2,159	1,790	4,255	414	3,066	2,066	13,115
17.0–19.0	34,253	4,435	311	1,856	770	9	1,489	29,818	6,316	4,400	1,292	1,356	3,552	366	1,820	1,506	9,210
19.0–29.0	59,213	6,529	295	3,213	648	67	2,306	52,684	11,181	7,895	1,966	3,368	6,436	543	2,147	2,313	16,835
29.0+	7,158	620		426	7	1	186	6,538	1,856	943	183	364	450	26	142	211	2,363
Total	309,774	66,627	7,086	18,946	20,490	112	19,993	243,147	52,080	34,530	11,567	11,484	25,134	2,191	16,221	9,962	79,978

[1] Includes 52 million board feet of ponderosa pine.

[2] Includes 416 million board feet of ponderosa pine.

TABLE 20.—*Net volume of sawtimber on commercial forest land in the South, by species, diameter class, and region, January 1, 1963*

(Million board feet, International ¼-inch log rule)

Region and diameter class (inches)	Total all species	Softwoods							Hardwoods								
		Total	Southern yellow pines	Eastern white and red pines	Spruce and balsam fir	Cypress	Other softwoods	Total	Select white and red oaks	Other white and red oaks	Hickory	Yellow birch	Hard maple	Sweetgum	Ash, walnut, and black cherry	Yellow-poplar	Other hardwoods
South Atlantic:																	
9.0–11.0	13,007	13,007	12,217	232	14	382	162										
11.0–13.0	26,980	12,967	12,080	236	14	484	153	14,013	2,439	3,237	1,115	11	52	1,692	411	1,506	3,550
13.0–15.0	24,503	10,405	9,287	269	31	662	156	14,098	2,409	2,987	1,076	16	63	1,738	378	1,561	3,870
15.0–17.0	18,204	7,177	6,380	195	21	476	105	11,027	1,823	2,388	845	13	45	1,391	285	1,225	3,012
17.0–19.0	12,986	4,686	4,164	122	14	320	66	8,300	1,372	1,799	636	9	34	1,048	214	922	2,266
19.0–29.0	19,373	5,892	4,434	408	45	509	496	13,481	2,539	3,445	973	28	47	1,424	224	1,433	3,368
29.0+	2,501	563	172	36		158	197	1,938	498	696	190	3	8	134	20	75	314
Total	117,554	54,697	48,734	1,498	139	2,991	1,335	62,857	11,080	14,552	4,835	80	249	7,427	1,532	6,722	16,380
East Gulf:																	
9.0–11.0	13,120	13,120	11,843	14		1,234	29										
11.0–13.0	18,025	12,205	10,543	44		1,603	15	5,820	535	1,405	366		4	739	237	427	2,107
13.0–15.0	14,138	8,581	7,116	47		1,373	45	5,557	460	1,330	375		3	804	205	358	2,022
15.0–17.0	9,300	4,986	4,121	17		847	1	4,314	315	1,186	368			502	166	232	1,545
17.0–19.0	5,848	2,705	2,253	20		432		3,143	330	908	208		4	353	137	207	996
19.0–29.0	8,476	2,845	1,903	101		824	17	5,631	543	2,195	458	2	3	529	159	316	1,426
29.0+	983	219	86			128	5	764	99	387	27		5	54	18	31	143
Total	69,890	44,661	37,865	243		6,441	112	25,229	2,282	7,411	1,802	2	19	2,981	922	1,571	8,239
Central Gulf:																	
9.0–11.0	10,705	10,705	10,508	42		39	116										
11.0–13.0	22,335	11,601	11,264	52		137	148	10,734	1,581	2,950	1,360	4	70	1,252	382	555	2,580
13.0–15.0	20,321	9,967	9,566	123		125	153	10,354	1,622	2,712	1,155		56	1,155	389	748	2,517
15.0–17.0	14,812	7,203	6,821	103		155	124	7,609	1,138	2,102	787		45	858	242	471	1,966
17.0–19.0	10,014	4,544	4,121	123		244	56	5,470	808	1,357	502	9	64	520	230	432	1,548
19.0–29.0	13,969	5,427	4,685	118		497	127	8,542	1,567	2,290	840	15	99	803	302	546	2,080
29.0+	1,463	299	202	7		88	2	1,164	231	422	40		3	29	20	122	297
Total	93,619	49,746	47,167	568		1,285	726	43,873	6,947	11,833	4,684	28	337	4,617	1,565	2,874	10,988
West Gulf:																	
9.0–11.0	13,566	13,566	13,073			467	26										
11.0–13.0	26,926	15,768	15,076			675	17	11,158	1,160	3,303	962		11	2,052	533	18	3,119
13.0–15.0	26,851	15,271	14,503			761	7	11,580	1,193	3,316	1,014		6	2,134	574	16	3,327
15.0–17.0	22,560	12,423	11,683			736	4	10,137	1,100	2,852	925		4	1,621	525	13	3,097
17.0–19.0	17,114	8,961	8,241			718	2	8,153	752	2,332	833			1,255	436	15	2,530
19.0–29.0	22,654	9,297	8,411			879	7	13,357	1,203	4,859	1,720		4	1,518	596	11	3,446
29.0+	1,336	367	86			281		969	70	399	146			83	19		252
Total	131,007	75,653	71,073			4,517	63	55,354	5,478	17,061	5,600		25	8,663	2,683	73	15,771
Total, South:																	
9.0–11.0	50,398	50,398	47,641	288	14	2,122	333										
11.0–13.0	94,266	52,541	48,963	332	14	2,899	333	41,725	5,715	10,895	3,803	15	137	5,735	1,563	2,506	11,356
13.0–15.0	85,813	44,224	40,472	439	31	2,921	361	41,589	5,684	10,345	3,620	16	128	5,831	1,546	2,683	11,736
15.0–17.0	64,876	31,789	29,005	315	21	2,214	234	33,087	4,376	8,528	2,925	13	94	4,372	1,218	1,941	9,620
17.0–19.0	45,962	20,896	18,779	265	14	1,714	124	25,066	3,262	6,396	2,179	18	102	3,176	1,017	1,576	7,340
19.0–29.0	64,472	23,461	19,433	627	45	2,709	647	41,011	5,852	12,789	3,991	45	153	4,274	1,281	2,306	10,320
29.0+	6,283	1,448	546	43		655	204	4,835	898	1,904	403	3	16	300	77	228	1,006
Total	412,070	224,757	204,839	2,309	139	15,234	2,236	187,313	25,787	50,857	16,921	110	630	23,688	6,702	11,240	51,378

TABLE 21.—*Net volume of sawtimber on commercial forest land in the West, by species, diameter class, and region, January 1, 1963*

(Million board feet, International ¼-inch log rule)

Region and diameter class (inches)	Total all species	Softwoods									Hardwoods		
		Total	Douglas-fir	Ponderosa and Jeffrey pines	Western white and sugar pines	Western hemlock	True firs	Redwood	Spruce	Other soft-woods	Total	Oaks	Other hard-woods
Pacific Northwest:													
9.0–11.0	51,683	45,442	13,293	3,864	441	11,787	5,534	11	3,598	6,914	6,241	340	5,901
11.0–13.0	59,421	53,672	17,291	4,604	593	13,986	7,023	10	3,888	6,277	5,749	230	5,519
13.0–15.0	64,696	59,140	19,060	5,381	789	16,001	7,781	10	4,120	5,998	5,556	361	5,195
15.0–17.0	65,596	60,886	19,971	6,317	760	15,825	7,813	15	4,174	6,011	4,710	343	4,367
17.0–19.0	336,115	325,271	106,102	39,039	4,321	91,325	37,592	77	23,040	23,775	10,844	987	9,857
19.0–29.0	514,418	511,059	236,277	38,899	5,782	114,138	37,334	153	43,644	34,832	3,359	213	3,146
29.0+													
Total	1,091,929	1,055,470	411,994	98,104	12,686	263,062	103,077	276	82,464	83,807	36,459	2,474	33,985
Pacific Southwest:													
9.0–11.0	4,014	3,826	1,253	739	317	5	953	392	2	165	188	38	150
11.0–13.0	7,768	7,484	2,450	1,446	620	10	1,864	767	3	324	284	54	230
13.0–15.0	9,549	9,281	3,039	1,793	769	12	2,312	951	4	401	268	54	214
15.0–17.0	11,117	10,842	3,550	2,094	898	14	2,701	1,111	5	469	275	55	220
17.0–19.0	74,063	73,167	23,955	14,134	6,058	96	18,226	7,499	35	3,164	896	211	685
19.0–29.0	198,123	197,698	64,726	38,192	16,369	260	49,247	20,261	93	8,550	425	112	313
29.0+													
Total	304,634	302,298	98,973	58,398	25,031	397	75,303	30,981	142	13,073	2,336	524	1,812
Northern Rocky Mountain:													
9.0–11.0	39,941	39,941	9,077	3,799	972	1,329	5,812		3,659	15,293			
11.0–13.0	33,928	33,235	7,185	3,038	1,461	1,267	6,549		2,840	10,895	693		693
13.0–15.0	31,516	31,231	7,711	3,327	1,650	1,370	4,918		3,396	8,859	285		285
15.0–17.0	30,178	29,975	8,867	2,806	1,267	900	5,636		3,726	6,773	203		203
17.0–19.0	26,101	25,896	7,899	2,261	1,679	638	4,723		3,233	5,463	205		205
19.0–29.0	78,548	78,401	24,318	10,352	5,875	902	10,326		11,425	15,203	147		147
29.0+	30,980	30,966	8,846	11,098	2,455	70	1,751		3,380	3,366	14		14
Total	271,192	269,645	73,903	36,681	15,359	6,476	39,715		31,659	65,852	1,547		1,547
Southern Rocky Mountain:													
9.0–11.0	18,456	18,456	2,001	2,734	1		3,407		5,346	4,967			
11.0–13.0	19,254	16,343	1,885	2,997	1		2,504		5,625	3,331	2,911		2,911
13.0–15.0	20,261	17,827	2,232	3,892	1		2,635		6,200	2,867	2,434		2,434
15.0–17.0	17,125	15,930	2,167	4,548	1		2,105		5,372	1,737	1,195		1,195
17.0–19.0	15,613	14,837	1,826	5,470	1		1,603		5,043	894	776		776
19.0–29.0	45,510	44,851	6,188	21,674	1		3,698		12,045	1,245	659		659
29.0+	10,981	10,981	1,453	7,224	1		733		1,508	62			
Total	147,200	139,225	17,752	48,539	7		16,685		41,139	15,103	7,975		7,975
Total, West:													
9.0–11.0	58,397	58,397	11,078	6,533	973	1,329	9,219		9,005	20,260			
11.0–13.0	108,879	98,846	23,616	10,638	2,220	13,059	15,540	403	12,065	21,305	10,033	378	9,655
13.0–15.0	118,966	110,214	29,684	13,269	2,864	15,366	16,440	777	13,487	18,327	8,752	284	8,468
15.0–17.0	121,548	114,326	33,133	14,528	2,826	16,913	17,834	961	13,222	14,909	7,222	415	6,807
17.0–19.0	118,427	112,461	33,246	16,142	3,338	16,477	16,840	1,126	12,455	12,837	5,966	398	5,568
19.0–29.0	534,236	521,690	160,563	85,199	16,255	92,323	69,842	7,576	46,545	43,387	12,546	1,198	11,348
29.0+	754,562	750,704	311,302	95,413	24,607	114,468	89,065	20,414	48,625	46,810	3,798	325	3,473
Total	1,814,955	1,766,638	602,622	241,722	53,083	269,935	234,780	31,257	155,404	177,835	48,317	2,998	45,319

TABLE 22.—*Net volume of sawtimber on commercial forest land in the East, by species, quality class, section, and region, January 1, 1963*

(Million board feet, International ¼-inch log rule)

Section and region	Quality classes	Softwoods						Hardwoods								
		All softwoods	Yellow pines	White and red pines	Spruce and balsam fir	Cypress	Other softwoods	All hardwoods	Select white and red oaks	Other white and red oaks	Hickory	Yellow birch	Hard maple	Sweetgum	Ash, walnut, and black cherry	Yellow-poplar	Other hardwoods
New England	1		4	941				3,859	231	22	5	1,428	1,186		161	6	820
	2		14	4,047				6,630	480	99	33	1,474	1,915		287	35	2,307
	3		103	3,804				9,236	1,092	153	50	1,650	1,939		299	50	4,003
	4							4,335	917	278	38	553	797		111	39	1,602
	Total	30,368	121	8,792	15,016		6,439	24,060	2,720	552	126	5,105	5,837		858	130	8,732
Middle Atlantic	1		327	185				16,986	3,796	1,979	672	1,395	2,359	121	1,311	1,352	4,001
	2		862	1,426				18,426	4,001	2,784	866	854	2,316	192	1,238	1,242	4,933
	3		2,631	1,865				34,619	7,267	4,916	1,572	1,643	3,366	422	3,019	2,139	10,275
	4		35					19,929	5,058	3,709	894	461	1,254	416	1,644	1,213	5,280
	Total	13,744	3,855	3,476	1,962		4,451	89,960	20,122	13,388	4,004	4,353	9,295	1,151	7,212	5,946	24,489
Lake States [1]	1			976				4,866	813	99	39	423	1,119		266		2,107
	2			1,733				9,269	1,496	168	30	597	2,077		489		4,412
	3			4,337				19,550	3,882	482	124	836	2,998		1,074		10,154
	4							6,465	2,001	417	36	130	747		350		2,784
	Total	18,161		7,046	3,512		7,603	40,150	8,192	1,166	229	1,986	6,941		2,179		19,457
Central [2]	1		427	8				5,040	1,313	672	400	1	203	91	511	267	1,582
	2		910	17				8,227	2,098	1,587	706	2	252	107	604	498	2,373
	3		2,122	51				61,392	14,059	14,160	5,368	37	2,449	801	3,988	3,114	17,416
	4		67	2				8,706	2,489	2,903	638		157	41	182	7	2,289
	Total	4,292	3,526	78		112	576	83,365	19,959	19,322	7,112	40	3,061	1,040	5,285	3,886	23,660
Total, North	1		758	2,110				30,751	6,153	2,772	1,116	3,247	4,867	212	2,249	1,625	8,510
	2		1,786	7,223				42,552	8,075	4,638	1,635	2,927	6,560	299	2,618	1,775	14,025
	3		4,856	10,057				124,797	26,300	19,711	7,114	4,166	10,752	1,223	8,380	5,303	41,848
	4		102	2				39,435	10,465	7,307	1,606	1,144	2,955	457	2,287	1,259	11,955
	Total	66,565	7,502	19,392	20,490	112	19,069	237,535	50,993	34,428	11,471	11,484	25,134	2,191	15,534	9,962	76,338
South Atlantic	1		2,315	101				6,683	1,237	1,417	498	10	23	781	127	659	1,931
	2		13,018	437				10,737	1,756	2,282	801	15	39	1,400	310	1,094	3,040
	3		23,172	720				16,861	2,902	3,549	1,249	21	64	2,083	462	1,721	4,810
	4		10,229	240				28,576	5,185	7,304	2,287	34	123	3,163	633	3,248	6,599
	Total	54,697	48,734	1,498	139	2,991	1,335	62,857	11,080	14,552	4,835	80	249	7,427	1,532	6,722	16,380
East Gulf	1		881	21				3,248	311	861	293		2	307	140	160	1,174
	2		9,862	37				7,076	598	1,930	534	2	3	823	285	388	2,513
	3		25,966	181				10,710	1,026	3,114	696		11	1,348	407	710	3,398
	4		1,156	4				4,195	347	1,506	279		3	503	90	313	1,154
	Total	44,661	37,865	243		6,441	112	25,229	2,282	7,411	1,802	2	19	2,981	922	1,571	8,239
Central Gulf	1		628					3,267	698	828	272	15	32	269	106	251	796
	2		5,300	13				8,043	1,387	1,795	809	9	43	837	354	486	2,323
	3		20,116	197				22,300	3,585	5,848	2,439	4	180	2,344	902	1,217	5,781
	4		21,123	358				10,263	1,277	3,362	1,164		82	1,167	202	920	2,089
	Total	49,746	47,167	568		1,285	726	43,873	6,947	11,833	4,684	28	337	4,617	1,564	2,874	10,989
West Gulf	1		1,279					3,794	324	1,198	798			537	288	9	640
	2		10,587					9,875	937	2,451	1,019		1	1,280	572	13	3,602
	3		27,398					28,782	2,958	8,444	2,719		18	4,364	1,581	27	8,671
	4		31,809					12,903	1,259	4,968	1,064		6	2,482	242	24	2,858
	Total	75,653	71,073			4,517	63	55,354	5,478	17,061	5,600		25	8,663	2,683	73	15,771
Total, South	1		5,103	122				16,992	2,570	4,304	1,861	25	57	1,894	661	1,079	4,541
	2		38,767	487				35,731	4,678	8,458	3,163	26	86	4,340	1,521	1,981	11,478
	3		96,652	1,098				78,653	10,471	20,955	7,103	25	273	10,139	3,352	3,675	22,660
	4		64,317	602				55,937	8,068	17,140	4,794	34	214	7,315	1,167	4,505	12,700
	Total	224,757	204,839	2,309	139	15,234	2,236	187,313	25,787	50,857	16,921	110	630	23,688	6,701	11,240	51,379
Total, East	1		5,861	2,232				47,743	8,723	7,076	2,977	3,272	4,924	2,106	2,910	2,704	13,051
	2		40,553	7,710				78,283	12,753	13,096	4,798	2,953	6,646	4,639	4,139	3,756	25,503
	3		101,508	11,155				203,450	36,771	40,666	14,217	4,191	11,025	11,362	11,732	8,978	64,508
	4		64,419	604				95,372	18,533	24,447	6,400	1,178	3,169	7,772	3,454	5,764	24,655
	Total	291,322	212,341	21,701	20,629	15,346	21,305	424,848	76,780	85,285	28,392	11,594	25,764	25,879	22,235	21,202	127,717

[1] North Dakota and South Dakota (east) not included.

[2] Kansas not included.

TABLE 23.—*Change in growing stock and sawtimber on commercial forest land in the United States, by softwoods and hardwoods, section, and region, January 1, 1953 to January 1, 1963*

GROWING STOCK—MILLION CUBIC FEET

Region	All species			Softwoods			Hardwoods		
	1953	1963	Change	1953	1963	Change	1953	1963	Change
New England	28,065	30,695	+2,630	13,677	16,003	+2,326	14,388	14,692	+304
Middle Atlantic	34,483	46,611	+12,128	5,390	5,664	+274	29,093	40,947	+11,854
Lake States	25,796	31,896	+6,100	6,552	8,350	+1,798	19,244	23,546	+4,302
Central States	23,707	27,267	+3,560	1,034	1,289	+255	22,673	25,978	+3,305
Total, North	112,051	136,469	+24,418	26,653	31,306	+4,653	85,398	105,163	+19,765
South Atlantic	37,160	40,516	+3,356	16,334	17,053	+719	20,826	23,463	+2,637
East Gulf	22,797	24,663	+1,866	13,295	14,854	+1,559	9,502	9,809	+307
Central Gulf	27,111	30,359	+3,248	9,786	13,379	+3,593	17,325	16,980	−345
West Gulf	32,727	38,548	+5,821	13,149	17,402	+4,253	19,578	21,146	+1,568
Total, South	119,795	134,086	+14,291	52,564	62,688	+10,124	67,231	71,398	+4,167
Total, Pacific Coast	269,092	258,603	−10,489	259,221	246,728	−12,493	9,871	11,875	+2,004
Northern Rocky Mountain	61,310	61,738	+428	60,449	60,855	+406	861	883	+22
Southern Rocky Mountain	33,595	36,986	+3,391	29,543	32,505	+2,962	4,052	4,481	+429
Total, Rocky Mountain	94,905	98,724	+3,819	89,992	93,360	+3,368	4,913	5,364	+451
Total, all regions	595,843	627,882	+32,039	428,430	434,082	+5,652	167,413	193,800	+26,387

SAWTIMBER—MILLION BOARD FEET INT'L ¼-INCH LOG RULE

New England	54,791	54,428	−363	30,435	30,368	−67	24,356	24,060	−296
Middle Atlantic	74,351	103,704	+29,353	13,328	13,744	+416	61,023	89,960	+28,937
Lake States	50,854	59,705	+8,851	14,396	18,213	+3,817	36,458	41,492	+5,034
Central States	84,562	91,937	+7,375	3,437	4,302	+865	81,125	87,635	+6,510
Total, North	264,558	309,774	+45,216	61,596	66,627	+5,031	202,962	243,147	+40,185
South Atlantic	113,104	117,554	+4,450	53,843	54,697	+854	59,261	62,857	+3,596
East Gulf	66,689	69,890	+3,201	40,772	44,661	+3,889	25,917	25,229	−688
Central Gulf	79,350	93,619	+14,269	35,657	49,746	+14,089	43,693	43,873	+180
West Gulf	114,972	131,007	+16,035	57,640	75,653	+18,013	57,332	55,354	−1,978
Total, South	374,115	412,070	+37,955	187,912	224,757	+36,845	186,203	187,313	+1,110
Total, Pacific Coast	1,507,177	1,396,563	−110,614	1,475,992	1,357,768	−118,224	31,185	38,795	+7,610
Northern Rocky Mountain	277,522	271,192	−6,330	276,124	269,645	−6,479	1,398	1,547	+149
Southern Rocky Mountain	137,535	147,200	+9,665	130,805	139,225	+8,420	6,730	7,975	+1,245
Total, Rocky Mountain	415,057	418,392	+3,335	406,929	408,870	+1,941	8,128	9,522	+1,394
Total, all regions	2,560,907	2,536,799	−24,108	2,132,429	2,058,022	−74,407	428,478	478,777	+50,299

TABLE 24.—*Net volume of salvable dead sawtimber-size trees on commercial forest land in the United States, by softwoods and hardwoods, section, and region, January 1, 1963*

(Million board feet, International ¼-inch log rule)

Section, region, and State	All species	Softwoods	Hardwoods	Section, region, and State	All species	Softwoods	Hardwoods
New England				Pacific Northwest	40,020	39,475	545
Middle Atlantic				Pacific Southwest	1,330	1,326	4
Lake States	88	26	62	Northern Rocky Mountain	18,931	18,864	67
Central	1,233	1	1,232	Southern Rocky Mountain	18,349	17,678	671
Total, North	1,321	27	1,294	Total, West	78,630	77,343	1,287
South Atlantic	48	25	23	Total, all regions	81,061	77,895	3,166
East Gulf	26	26					
Central Gulf	338	156	182				
West Gulf	698	318	380				
Total, South	1,110	525	585				

TABLE 25.—*Net annual growth and cut of growing stock on commercial forest land in the United States, by softwoods and hardwoods, section, region, and State, 1962*

(Thousand cubic feet)

Section, region, and State	All species		Softwoods		Hardwoods	
	Growth	Cut	Growth	Cut	Growth	Cut
New England:						
Connecticut	41,400	20,105	4,400	7,190	37,000	12,915
Maine	574,800	260,311	398,200	189,332	176,600	70,979
Massachusetts	52,000	26,579	10,000	9,975	42,000	16,604
New Hampshire	188,300	50,035	88,600	32,373	99,700	17,662
Rhode Island	7,400	2,863	600	680	6,800	2,183
Vermont	137,800	38,407	36,600	26,150	101,200	12,257
Total	1,001,700	398,300	538,400	265,700	463,300	132,600
Middle Atlantic:						
Delaware	18,100	7,491	6,300	5,104	11,800	2,387
Maryland	129,900	47,750	22,000	17,332	107,900	30,418
New Jersey	50,700	21,458	12,800	7,759	37,900	13,699
New York	419,400	126,739	65,200	34,781	354,200	91,958
Pennsylvania	547,300	177,191	25,400	39,715	521,900	137,476
West Virginia	520,200	104,871	18,200	13,909	502,000	90,962
Total	1,685,600	485,500	149,900	118,600	1,535,700	366,900
Lake States:						
Michigan	415,300	166,350	139,400	48,105	275,900	118,245
Minnesota	389,265	135,456	109,649	68,153	279,616	67,303
North Dakota	10,200	963			10,200	963
South Dakota (east)	12,124	1,867	224	165	11,900	1,702
Wisconsin	325,600	164,716	48,800	38,392	276,800	126,324
Total	1,152,489	469,352	298,073	154,815	854,416	314,537
Central:						
Illinois	85,120	29,690	1,313	458	83,807	29,232
Indiana	117,000	33,532	1,991	1,034	115,009	32,498
Iowa	50,000	14,985	151	350	49,849	14,635
Kansas	30,480	7,151	238	189	30,242	6,962
Kentucky	364,800	123,299	28,800	9,324	336,000	113,975
Missouri	182,000	70,003	15,000	6,221	167,000	63,782
Nebraska	11,500	3,752	3,400	542	8,100	3,210
Ohio	155,027	60,747	6,887	3,002	148,140	57,745
Total	995,927	343,159	57,780	21,120	938,147	322,039
Total, North	4,835,716	1,696,311	1,044,153	560,235	3,791,563	1,136,076
South Atlantic:						
North Carolina	905,900	488,699	471,200	317,408	434,700	171,291
South Carolina	492,000	339,651	323,300	233,365	168,700	106,286
Virginia	615,600	368,493	236,800	197,831	378,800	170,662
Total	2,013,500	1,196,843	1,031,300	748,604	982,200	448,239
East Gulf:						
Florida	413,400	254,294	310,400	215,593	103,000	38,701
Georgia	1,105,300	581,408	786,800	426,462	318,500	154,946
Total	1,518,700	835,702	1,097,200	642,055	421,500	193,647
Central Gulf:						
Alabama	856,000	523,784	629,000	308,956	227,000	214,828
Mississippi	611,000	386,873	377,000	145,523	234,000	241,350
Tennessee	319,000	210,695	73,000	44,064	246,000	166,631
Total	1,786,000	1,121,352	1,079,000	498,543	707,000	622,809
West Gulf:						
Arkansas	707,000	423,619	364,000	217,641	343,000	205,978
Louisiana	839,000	390,525	395,000	217,634	444,000	172,891
Oklahoma	77,000	33,614	38,000	16,621	39,000	16,993
Texas	528,000	233,793	358,000	150,744	170,000	83,049
Total	2,151,000	1,081,551	1,155,000	602,640	996,000	478,911
Total, South	7,469,200	4,235,448	4,362,500	2,491,842	3,106,700	1,743,606
Pacific Northwest:						
Alaska	63,800	97,446	63,800	97,446		
Oregon	874,000	1,617,423	780,510	1,598,828	93,490	18,595
Washington	1,441,000	902,567	1,266,539	863,985	174,461	38,582
Total	2,378,800	2,617,436	2,110,849	2,560,259	267,951	57,177
Pacific Southwest:						
California	650,605	946,942	643,702	932,040	6,903	14,902
Hawaii	(1)	500				500
Total	650,605	947,442	643,702	932,040	6,903	15,402

See footnotes at end of table.

TABLE 25.—*Net annual growth and cut of growing stock on commercial forest land in the United States, by softwoods and hardwoods, section, region, and State, 1962*—Continued

(Thousand cubic feet)

Section, region, and State	All species		Softwoods		Hardwoods	
	Growth	Cut	Growth	Cut	Growth	Cut
Northern Rocky Mountain:						
Idaho	283,100	248,520	280,100	248,266	3,000	254
Montana	197,500	206,365	195,700	205,106	1,800	1,259
South Dakota (west)	20,582	11,756	20,483	11,756	99	
Wyoming	85,315	19,953	84,903	19,938	412	15
Total	586,497	486,594	581,186	485,066	5,311	1,528
Southern Rocky Mountain:						
Arizona	69,392	64,645	66,523	64,449	2,869	196
Colorado	161,356	43,573	123,767	41,932	37,589	1,641
Nevada	1,200	538	1,200	479		59
New Mexico	56,173	41,223	59,685	40,185	−3,512	1,038
Utah	56,096	14,744	33,650	14,360	22,446	384
Total	344,217	164,723	284,825	161,405	59,392	3,318
Total, West	3,960,119	4,216,195	3,620,562	4,138,770	339,557	77,425
Total, all regions	16,265,035	10,147,954	9,027,215	7,190,847	7,237,820	2,957,107

TABLE 26.—*Net annual growth and cut of softwood growing stock on commercial forest land in the United States, by species, section, and region, 1962*

(Thousand cubic feet)

EASTERN SOFTWOODS

Section and region	Total		Southern yellow pines		Eastern white and red pines		Spruce and balsam fir		Cypress		Other eastern softwoods	
	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut
New England	538,400	265,700	6,500	4,782	81,100	82,815	369,700	137,260			81,100	40,843
Middle Atlantic	149,900	118,600	48,700	43,937	27,900	25,414	24,100	13,656			49,200	35,593
Lake States	298,073	154,815			51,768	14,895	100,732	58,377			[1] 145,573	[2] 81,543
Central	57,780	21,120	43,231	14,637	513	756			1,257	524	12,779	5,203
Total, North	1,044,153	560,235	98,431	63,356	161,281	123,880	494,532	209,293	1,257	524	288,652	163,182
South Atlantic	1,031,300	748,604	963,600	698,019	13,600	10,396	1,100	831	38,200	28,021	14,800	11,337
East Gulf	1,097,200	642,055	1,032,500	622,404	4,400	260			58,700	19,046	1,600	345
Central Gulf	1,079,000	498,543	1,038,000	485,543	7,000	3,000			20,000	6,000	14,000	4,000
West Gulf	1,155,000	602,640	1,089,000	590,640					64,000	11,000	2,000	1,000
Total, South	4,362,500	2,491,842	4,123,100	2,396,606	25,000	13,656	1,100	831	180,900	64,067	32,400	16,682
Total, East	5,406,653	3,052,077	4,221,531	2,459,962	186,281	137,536	495,632	210,124	182,157	64,591	[1] 321,052	[2] 179,864

WESTERN SOFTWOODS

Section and region	Total		Douglas-fir		Ponderosa and Jeffrey pines		Western white and sugar pines		Western hemlock	
	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut
Pacific Northwest	2,110,849	2,560,259	806,694	1,492,567	160,060	280,764	23,115	25,281	443,000	414,329
Pacific Southwest	643,702	932,040	172,484	378,129	116,666	145,119	38,330	66,641	2,396	652
Northern Rocky Mountain	581,186	485,066	128,091	126,394	79,618	92,432	30,489	42,281	7,322	7,070
Southern Rocky Mountain	284,825	161,405	13,495	14,797	128,941	86,405				
Total, West	3,620,562	4,138,770	1,120,764	2,011,887	485,285	604,720	91,934	134,203	452,718	422,051

See footnotes at end of table.

TABLE 26.—*Net annual growth and cut of softwood growing stock on commercial forest land in the United States, by species, section, and region, 1962*—Continued

(Thousand cubic feet)

WESTERN SOFTWOODS

Section and region	True firs		Redwood		Spruce		Other western softwoods	
	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut
Pacific Northwest	325,778	193,841	318		42,886	19,004	308,998	134,473
Pacific Southwest	180,869	142,695	92,231	171,309	459	1,025	40,267	26,470
Northern Rocky Mountain	78,471	59,424			50,998	42,741	206,197	114,724
Southern Rocky Mountain	−1,462	8,753			81,929	33,656	61,922	17,794
Total, West	583,656	404,713	92,549	171,309	176,272	96,426	617,384	293,461

[1] Includes 3 million cubic feet of ponderosa pine growth. [2] Includes 1 million cubic feet of ponderosa pine cut.

TABLE 27.—*Net annual growth and cut of hardwood growing stock on commercial forest land in the United States, by species, section, and region, 1962*

(Thousand cubic feet)

Section and region	Total		Select white and red oaks		Other white and red oaks		Hickory		Yellow birch	
	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut
New England	463,300	132,600	52,900	24,575	10,800	4,900	2,600	858	65,300	34,032
Middle Atlantic	1,535,700	366,900	320,200	92,992	215,900	50,481	54,600	12,514	65,600	13,596
Lake States	854,416	314,537	94,660	40,038	13,884	9,137	4,833	1,471	8,538	11,086
Central	938,147	322,039	193,681	115,390	184,574	54,930	93,572	18,095	980	
Total, North	3,791,563	1,136,076	661,441	272,995	425,158	119,448	155,605	32,938	140,418	58,714
South Atlantic	982,200	448,239	175,600	75,710	229,100	105,504	71,000	31,959	1,000	482
East Gulf	421,500	193,647	36,700	13,865	107,700	46,421	18,400	5,570	100	103
Central Gulf	707,000	622,809	99,000	88,000	196,000	180,000	76,000	48,000		
West Gulf	996,000	478,911	103,000	76,000	313,000	208,000	99,000	23,000		
Total, South	3,106,700	1,743,606	414,300	253,575	845,800	539,925	264,400	108,529	1,100	585
Pacific Northwest	267,951	57,177			8,140					
Pacific Southwest	6,903	15,402			2,083	12,233				
Northern Rocky Mountain	5,311	1,528								
Southern Rocky Mountain	59,392	3,318								
Total, West	339,557	77,425			10,223	12,233				
Total, all regions	7,237,820	2,957,107	1,075,741	526,570	1,281,181	671,606	420,005	141,467	141,518	59,299

Section and region	Hard maple		Sweetgum		Ash, walnut, and black cherry		Yellow-poplar		Other hardwoods	
	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut
New England	71,200	31,137			18,500	9,452	600	311	241,400	27,335
Middle Atlantic	140,000	40,009	17,700	4,388	136,800	23,387	98,600	18,771	486,300	110,762
Lake States	66,593	40,890			46,656	2,682			619,252	209,233
Central	30,375	13,121	15,514	3,632	77,965	20,504	42,237	18,708	299,249	77,659
Total, North	308,168	125,157	33,214	8,020	279,921	56,025	141,437	37,790	1,646,201	424,989
South Atlantic	4,300	1,865	114,200	57,040	26,800	12,930	101,900	41,950	258,300	120,799
East Gulf	300	160	75,500	36,939	13,200	5,475	38,400	18,141	131,200	66,973
Central Gulf	5,000	3,000	83,000	121,000	25,000	11,000	39,000	34,000	184,000	137,809
West Gulf			159,000	67,000	47,000	10,000	1,000	1,000	274,000	93,911
Total, South	9,600	5,025	431,700	281,979	112,000	39,405	180,300	95,091	847,500	419,492
Pacific Northwest									259,811	57,177
Pacific Southwest									4,820	3,169
Northern Rocky Mountain									5,311	1,528
Southern Rocky Mountain									59,392	3,318
Total, West									329,334	65,192
Total, all regions	317,768	130,182	464,914	289,999	391,921	95,430	321,737	132,881	2,823,035	909,673

TABLE 28.—*Net annual growth and cut of sawtimber on commercial forest land in the United States, by softwoods and hardwoods, section, region, and State, 1962*

(Thousand board feet, International ¼-inch log rule)

Section, region, and State	All species		Softwoods		Hardwoods	
	Growth	Cut	Growth	Cut	Growth	Cut
New England:						
Connecticut	90,000	42,559	8,000	5,825	82,000	36,734
Maine	1,069,000	889,778	784,000	658,109	285,000	231,669
Massachusetts	101,000	85,657	30,000	33,034	71,000	52,623
New Hampshire	395,000	191,053	232,000	128,696	163,000	62,357
Rhode Island	6,000	5,254	400	1,610	5,600	3,644
Vermont	306,000	133,699	105,000	94,726	201,000	38,973
Total	1,967,000	1,348,000	1,159,400	922,000	807,600	426,000
Middle Atlantic:						
Delaware	52,000	30,856	22,000	21,723	30,000	9,133
Maryland	376,000	181,161	65,000	65,203	311,000	115,958
New Jersey	139,000	60,191	31,000	19,559	108,000	40,632
New York	1,128,000	468,678	201,000	137,418	927,000	331,260
Pennsylvania	1,254,000	572,894	74,000	135,321	1,180,000	437,573
West Virginia	1,367,000	445,220	70,000	50,776	1,297,000	394,444
Total	4,316,000	1,759,000	463,000	430,000	3,853,000	1,329,000
Lake States:						
Michigan	1,036,082	495,335	383,011	148,782	653,071	346,553
Minnesota	874,960	328,636	361,860	179,384	513,100	149,252
North Dakota	27,000	3,341			27,000	3,341
South Dakota (east)	33,380	5,945	1,380	315	32,000	5,630
Wisconsin	633,000	467,010	163,000	124,438	470,000	342,572
Total	2,604,422	1,300,267	909,251	452,919	1,695,171	847,348
Central:						
Illinois	208,780	173,583	1,260	2,273	207,520	171,310
Indiana	481,000	187,724	12,944	4,178	468,056	183,546
Iowa	217,000	74,583	258	1,606	216,742	72,977
Kansas	142,000	33,298	331	568	141,669	32,730
Kentucky	1,396,316	631,844	162,400	26,684	1,233,916	605,160
Missouri	482,000	335,236	55,000	27,160	427,000	308,076
Nebraska	57,850	15,758	18,600	1,222	39,250	14,536
Ohio	603,000	266,671	16,607	12,638	586,393	254,033
Total	3,587,946	1,718,697	267,400	76,329	3,320,546	1,642,368
Total, North	12,475,368	6,125,964	2,799,051	1,881,248	9,676,317	4,244,716
South Atlantic:						
North Carolina	3,208,000	2,004,420	1,917,000	1,173,088	1,291,000	831,332
South Carolina	1,555,000	1,299,032	1,127,000	750,075	428,000	548,957
Virginia	1,975,000	1,486,757	872,000	655,206	1,103,000	831,551
Total	6,738,000	4,790,209	3,916,000	2,578,369	2,822,000	2,211,840
East Gulf:						
Florida	1,342,000	825,786	1,067,000	643,087	275,000	182,699
Georgia	3,571,000	1,998,444	2,706,000	1,286,006	865,000	712,438
Total	4,913,000	2,824,230	3,773,000	1,929,093	1,140,000	895,137
Central Gulf:						
Alabama	3,297,000	1,686,826	2,602,000	992,574	695,000	694,252
Mississippi	1,969,000	1,305,043	1,405,000	503,719	564,000	801,324
Tennessee	900,000	819,158	246,000	168,280	654,000	650,878
Total	6,166,000	3,811,027	4,253,000	1,664,573	1,913,000	2,146,454
West Gulf:						
Arkansas	2,369,000	1,607,444	1,596,000	854,689	773,000	752,755
Louisiana	2,985,000	1,368,083	1,737,000	750,782	1,248,000	617,301
Oklahoma	241,000	123,985	150,000	74,542	91,000	49,443
Texas	1,918,000	849,654	1,523,000	554,104	395,000	295,550
Total	7,513,000	3,949,166	5,006,000	2,234,117	2,507,000	1,715,049
Total, South	25,330,000	15,374,632	16,948,000	8,406,152	8,382,000	6,968,480
Pacific Northwest:						
Alaska	379,000	617,433	379,000	617,433		
Oregon	3,655,000	10,795,392	3,318,538	10,667,399	336,462	127,993
Washington	5,917,000	5,725,315	5,456,172	5,474,475	460,828	250,840
Total	9,951,000	17,138,140	9,153,710	16,759,307	797,290	378,833
Pacific Southwest:						
California	3,526,800	5,919,608	3,502,881	5,878,681	23,919	40,927
Hawaii		3,000				3,000
Total	3,526,800	5,922,608	3,502,881	5,878,681	23,919	43,927

TABLE 28.—*Net annual growth and cut of sawtimber on commercial forest land in the United States, by softwoods and hardwoods, section, region, and State, 1962*—Continued

(Thousand board feet, International ¼-inch log rule)

Section, region, and State	All species		Softwoods		Hardwoods	
	Growth	Cut	Growth	Cut	Growth	Cut
Northern Rocky Mountain:						
Idaho	1,212,000	1,435,213	1,210,000	1,433,898	2,000	1,315
Montana	892,000	1,276,834	885,000	1,269,023	7,000	7,811
South Dakota (west)	46,237	52,717	46,148	52,717	89	
Wyoming	278,951	113,578	286,826	113,569	−7,875	9
Total	2,429,188	2,878,342	2,427,974	2,869,207	1,214	9,135
Southern Rocky Mountain:						
Arizona	328,955	396,824	324,010	396,430	4,945	394
Colorado	514,256	229,892	423,742	228,655	90,514	1,237
Nevada	5,000	2,947	5,000	2,671		276
New Mexico	198,454	251,523	206,837	245,019	−8,383	6,504
Utah	94,435	80,145	74,664	80,144	19,771	1
Total	1,141,100	961,331	1,034,253	952,919	106,847	8,412
Total, West	17,048,088	26,900,421	16,118,818	26,460,114	929,270	440,307
Total, all regions	54,853,456	48,401,017	35,865,869	36,747,514	18,987,587	11,653,503

TABLE 29.—*Net annual growth and cut of softwood sawtimber on commercial forest land in the United States, by species, section, and region, 1962*

(Thousand board feet, International ¼-inch log rule)

EASTERN SOFTWOODS

Section and region	Total		Southern yellow pines		Eastern white and red pines		Spruce and balsam fir		Cypress		Other eastern softwoods	
	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut
New England	1,159,400	922,000	3,600	6,585	285,400	321,000	688,400	453,433			182,000	140,982
Middle Atlantic	463,000	430,000	121,700	146,378	93,900	76,027	91,200	47,889			156,200	159,706
Lake States	909,251	452,919			264,626	75,190	222,593	122,290			[1] 422,032	[2] 255,439
Central	267,400	76,329	219,614	54,857	1,775	3,063			1,395	2,393	44,616	16,016
Total, North	2,799,051	1,881,248	344,914	207,820	645,701	475,280	1,002,193	623,612	1,395	2,393	804,848	572,143
South Atlantic	3,916,000	2,578,369	3,628,900	2,357,200	60,500	50,012	4,900	4,133	168,400	122,418	53,300	44,606
East Gulf	3,773,000	1,929,093	3,544,800	1,860,120	15,900	877			208,600	67,302	3,700	794
Central Gulf	4,253,000	1,664,573	4,073,000	1,612,573	32,000	13,000			103,000	24,000	45,000	15,000
West Gulf	5,006,000	2,234,117	4,699,000	2,182,117					304,000	49,000	3,000	3,000
Total, South	16,948,000	8,406,152	15,945,700	8,012,010	108,400	63,889	4,900	4,133	784,000	262,720	105,000	63,400
Total, East	19,747,051	10,287,400	16,290,614	8,219,830	754,101	539,169	1,007,093	627,745	785,395	265,113	[1] 909,848	[2] 635,543

WESTERN SOFTWOODS

Section and region	Total		Douglas-fir		Ponderosa and Jeffrey pines		Western white and sugar pines		Western hemlock	
	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut
Pacific Northwest	9,153,710	16,759,307	3,627,752	9,950,276	661,120	1,679,989	98,807	166,880	2,060,877	2,728,905
Pacific Southwest	3,502,881	5,878,681	954,560	2,417,902	663,947	906,493	251,070	415,622	10,916	4,115
Northern Rocky Mountain	2,427,974	2,869,207	669,526	758,380	432,292	531,887	167,570	246,481	43,634	41,088
Southern Rocky Mountain	1,034,253	952,919	304	88,592	598,628	525,039				
Total, West	16,118,818	26,460,114	5,252,142	13,215,150	2,355,987	3,643,408	517,447	828,983	2,115,427	2,774,108

Section and region	True firs		Redwood		Spruce		Other western softwoods	
	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut
Pacific Northwest	1,265,204	1,252,587	1,670		167,107	123,816	1,271,173	856,854
Pacific Southwest	945,221	896,499	480,313	1,068,156	2,168	6,467	194,686	163,427
Northern Rocky Mountain	318,315	344,946			265,639	258,176	530,998	688,249
Southern Rocky Mountain	−59,282	51,388			365,686	190,294	128,917	97,606
Total, West	2,469,458	2,545,420	481,983	1,068,156	800,600	578,753	2,125,774	1,806,136

[1] Includes 19 million board feet of ponderosa pine growth. [2] Includes 2 million board feet of ponderosa pine cut.

TABLE 30.—*Net annual growth and cut of hardwood sawtimber on commercial forest land in the United States, by species, section, and region, 1962*

(Thousand board feet, International ¼-inch log rule)

Section and region	Total		Select white and red oaks		Other white and red oaks		Hickory		Yellow birch	
	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut
New England	807,600	426,000	103,500	71,208	23,400	14,821	4,100	1,889	159,000	115,004
Middle Atlantic	3,853,000	1,329,000	822,500	362,057	540,800	176,060	129,100	33,344	190,300	53,487
Lake States	1,695,171	847,348	284,458	116,253	35,788	25,386	10,693	2,988	20,478	48,021
Central	3,320,546	1,642,368	737,043	593,177	725,948	261,069	284,885	67,099	3,370	
Total, North	9,676,317	4,244,716	1,947,501	1,142,695	1,325,936	477,336	428,778	105,320	373,148	216,512
South Atlantic	2,822,000	2,211,840	504,100	384,799	641,500	503,406	215,700	163,530	3,600	2,575
East Gulf	1,140,000	895,137	100,000	60,717	316,300	205,314	52,400	22,877		733
Central Gulf	1,913,000	2,146,454	295,000	334,000	513,000	594,000	197,000	137,000	1,000	1,000
West Gulf	2,507,000	1,715,049	249,000	278,000	766,000	755,000	254,000	77,000		
Total, South	8,382,000	6,968,480	1,148,100	1,057,516	2,236,800	2,057,720	719,100	400,407	4,600	4,308
Pacific Northwest	797,290	378,833			24,740					
Pacific Southwest	23,919	43,927			7,763	33,605				
Northern Rocky Mountain	1,214	9,135								
Southern Rocky Mountain	106,847	8,412								
Total, West	929,270	440,307			32,503	33,605				
Total, all regions	18,987,587	11,653,503	3,095,601	2,200,211	3,595,239	2,568,661	1,147,878	505,727	377,748	220,820

Section and region	Hard maple		Sweetgum		Ash, walnut, and black cherry		Yellow-poplar		Other hardwoods	
	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut
New England	173,500	115,567			25,000	17,641	4,600	2,498	314,500	87,372
Middle Atlantic	373,100	156,595	47,200	17,102	336,200	72,506	320,800	68,034	1,093,000	389,815
Lake States	111,281	152,533			90,808	12,850			1,141,665	489,317
Central	96,145	61,047	51,543	23,134	254,284	105,834	200,973	114,902	966,355	416,106
Total, North	754,026	485,742	98,743	40,236	706,292	208,831	526,373	185,434	3,515,520	1,382,610
South Atlantic	11,300	8,343	337,100	292,439	66,300	53,744	329,000	232,619	713,400	570,385
East Gulf	600	768	158,500	178,081	36,100	24,304	106,400	103,398	369,700	298,945
Central Gulf	12,000	10,000	214,000	405,000	66,000	48,000	119,000	130,000	496,000	487,454
West Gulf			391,000	240,000	122,000	32,000	4,000	2,000	721,000	331,049
Total, South	23,900	19,111	1,100,600	1,115,520	290,400	158,048	558,400	468,017	2,300,100	1,687,833
Pacific Northwest									772,550	378,833
Pacific Southwest									16,156	10,322
Northern Rocky Mountain									1,214	9,135
Southern Rocky Mountain									106,847	8,412
Total, West									896,767	406,702
Total, all regions	777,926	504,853	1,199,343	1,155,756	996,692	366,879	1,084,773	653,451	6,712,387	3,477,145

TABLE 31.—*Net annual growth and cut of growing stock on commercial forest land in the United States, by ownership, softwoods and hardwoods, section, and region, 1962*

(Thousand cubic feet)

Section and region	All ownerships						National Forest					
	All species		Softwoods		Hardwoods		All species		Softwoods		Hardwoods	
	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut
New England	1,001,700	398,300	538,400	265,700	463,300	132,600	48,500	12,616	13,500	5,795	35,000	6,821
Middle Atlantic	1,685,600	485,500	149,900	118,600	1,535,700	366,900	75,000	11,786	4,300	3,172	70,700	8,614
Lake States	1,152,489	469,352	298,073	154,815	854,416	314,537	137,273	51,198	51,969	27,442	85,304	23,756
Central	995,927	343,159	57,780	21,120	938,147	322,039	60,981	9,387	16,091	2,737	44,890	6,650
Total, North	4,835,716	1,696,311	1,044,153	560,235	3,791,563	1,136,076	321,754	84,987	85,860	39,146	235,894	45,841
South Atlantic	2,013,500	1,196,843	1,031,300	748,604	982,200	448,239	116,300	56,645	47,700	29,172	68,600	27,473
East Gulf	1,518,700	835,702	1,097,200	642,055	421,500	193,647	56,900	25,345	41,900	22,285	15,000	3,060
Central Gulf	1,786,000	1,121,352	1,079,000	498,543	707,000	622,809	156,000	48,000	122,000	34,000	34,000	14,000
West Gulf	2,151,000	1,081,551	1,155,000	602,640	996,000	478,911	232,000	66,000	177,000	50,000	55,000	16,000
Total, South	7,469,200	4,235,448	4,362,500	2,491,842	3,106,700	1,743,606	561,200	195,990	388,600	135,457	172,600	60,533
Pacific Northwest	2,378,800	2,617,436	2,110,849	2,560,259	267,951	57,177	449,696	921,576	445,881	919,726	3,815	1,850
Pacific Southwest	650,605	947,442	643,702	932,040	6,903	15,402	336,292	241,970	332,151	238,975	4,141	2,995
Northern Rocky Mtn	586,497	486,594	581,186	485,066	5,311	1,528	419,358	262,433	413,037	261,596	6,321	837
Southern Rocky Mtn	344,217	164,723	284,825	161,405	59,392	3,318	255,830	110,366	209,394	108,120	46,436	2,246
Total, West	3,960,119	4,216,195	3,620,562	4,138,770	339,557	77,425	1,461,176	1,536,345	1,400,463	1,528,417	60,713	7,928
Total, all regions	16,265,035	10,147,954	9,027,215	7,190,847	7,237,820	2,957,107	2,344,130	1,817,322	1,874,923	1,703,020	469,207	114,302

Section and region	Other public						Forest industry					
	All species		Softwoods		Hardwoods		All species		Softwoods		Hardwoods	
	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut
New England	25,300	14,730	9,000	3,861	16,300	10,869	291,500	124,140	186,900	89,189	104,600	34,951
Middle Atlantic	194,100	56,990	16,100	12,581	178,000	44,409	89,000	21,743	14,900	6,685	74,100	15,058
Lake States	300,860	69,250	100,040	35,564	200,820	33,686	87,942	64,962	33,813	27,285	54,129	37,677
Central	27,145	3,550	2,836	402	24,309	3,148	19,396	6,166	1,980	336	17,416	5,830
Total, North	547,405	144,520	127,976	52,408	419,429	92,112	487,838	217,011	237,593	123,495	250,245	93,516
South Atlantic	53,600	28,937	35,200	22,509	18,400	6,428	287,400	182,665	173,700	117,295	113,700	65,370
East Gulf	55,000	21,814	44,400	17,845	10,600	3,969	318,800	163,876	248,800	130,155	70,000	33,721
Central Gulf	57,000	27,000	33,000	14,000	24,000	13,000	382,000	193,000	289,000	85,000	93,000	108,000
West Gulf	46,000	23,000	15,000	14,000	31,000	9,000	801,000	356,000	581,000	221,000	220,000	135,000
Total, South	211,600	100,751	127,600	68,354	84,000	32,397	1,789,200	895,541	1,292,500	553,450	496,700	342,091
Pacific Northwest	477,466	380,978	433,910	368,777	43,556	12,201	764,538	1,000,517	704,881	984,080	59,657	16,437
Pacific Southwest	25,768	20,082	25,509	19,666	259	416	107,797	415,871	106,847	409,725	950	6,146
Northern Rocky Mtn	49,922	45,311	49,973	45,211	−51	100	35,527	108,867	35,229	108,533	298	334
Southern Rocky Mtn	36,626	26,623	32,153	26,222	4,473	401	3,562	4,347	3,699	4,269	−137	78
Total, West	589,782	472,994	541,545	459,876	48,237	13,118	911,424	1,529,602	850,656	1,506,607	60,768	22,995
Total, all regions	1,348,787	718,265	797,121	580,638	551,666	137,627	3,188,462	2,642,154	2,380,749	2,183,552	807,713	458,602

Section and region	Farmer and miscellaneous private					
	All species		Softwoods		Hardwoods	
	Growth	Cut	Growth	Cut	Growth	Cut
New England	636,400	246,814	329,000	166,855	307,400	79,959
Middle Atlantic	1,327,500	394,981	114,600	96,162	1,212,900	298,819
Lake States	626,414	283,942	112,251	64,524	514,163	219,418
Central	888,405	324,056	36,873	17,645	851,532	306,411
Total, North	3,478,719	1,249,793	592,724	345,186	2,885,995	904,607
South Atlantic	1,556,200	928,596	774,700	579,628	781,500	348,968
East Gulf	1,088,000	624,667	762,100	471,770	325,900	152,897
Central Gulf	1,191,000	853,352	635,000	365,543	556,000	487,809
West Gulf	1,072,000	636,551	382,000	317,640	690,000	318,911
Total, South	4,907,200	3,043,166	2,553,800	1,734,581	2,353,400	1,308,585
Pacific Northwest	687,100	314,365	526,177	287,676	160,923	26,689
Pacific Southwest	180,748	269,519	179,195	263,674	1,553	5,845
Northern Rocky Mountain	81,690	69,983	82,947	69,726	−1,257	257
Southern Rocky Mountain	48,199	23,387	39,579	22,794	8,620	593
Total, West	997,737	677,254	827,898	643,870	169,839	33,384
Total, all regions	9,383,656	4,970,213	3,974,422	2,723,637	5,409,234	2,246,576

TABLE 32.—*Net annual growth and cut of sawtimber on commercial forest land in the United States, by ownership, softwoods and hardwoods, section, and region, 1962*

(Thousand board feet, International ¼-inch log rule)

Section and region	All ownerships						National Forests					
	All species		Softwoods		Hardwoods		All species		Softwoods		Hardwoods	
	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut
New England	1,967,000	1,348,000	1,159,400	922,000	807,600	426,000	95,300	42,897	35,600	21,726	59,700	21,171
Middle Atlantic	4,316,000	1,759,000	463,000	430,000	3,853,000	1,329,000	183,200	47,686	19,200	12,790	164,000	34,896
Lake States	2,604,422	1,300,267	909,251	452,919	1,695,171	847,348	308,612	121,686	161,891	69,150	146,721	52,536
Central	3,587,946	1,718,697	267,400	76,329	3,320,546	1,642,368	205,382	52,078	71,147	11,978	134,235	40,100
Total, North	12,475,368	6,125,964	2,799,051	1,881,248	9,676,317	4,244,716	792,494	264,347	287,838	115,644	504,656	148,703
South Atlantic	6,738,000	4,790,209	3,916,000	2,578,369	2,822,000	2,211,840	404,600	239,882	212,400	112,308	192,200	127,574
East Gulf	4,913,000	2,824,230	3,773,000	1,929,093	1,140,000	895,137	176,600	79,267	151,700	64,062	24,900	15,205
Central Gulf	6,166,000	3,811,027	4,253,000	1,664,573	1,913,000	2,146,454	639,000	207,000	553,000	153,000	86,000	54,000
West Gulf	7,513,000	3,949,166	5,006,000	2,234,117	2,507,000	1,715,049	937,000	281,000	804,000	231,000	133,000	50,000
Total, South	25,330,000	15,374,632	16,948,000	8,406,152	8,382,000	6,968,480	2,157,200	807,149	1,721,100	560,370	436,100	246,779
Pacific Northwest	9,951,000	17,138,140	9,153,710	16,759,307	797,290	378,833	1,871,680	5,978,852	1,858,546	5,970,356	13,134	8,496
Pacific Southwest	3,526,800	5,922,608	3,502,881	5,878,681	23,919	43,927	1,657,603	1,520,622	1,645,678	1,514,348	11,925	6,274
No. Rocky Mtn	2,429,188	2,878,342	2,427,974	2,869,207	1,214	9,135	1,613,760	1,548,737	1,607,304	1,543,745	6,456	4,992
So. Rocky Mtn	1,141,100	961,331	1,034,253	952,919	106,847	8,412	821,808	637,599	751,337	633,496	70,471	4,103
Total, West	17,048,088	26,900,421	16,118,818	26,460,114	929,270	440,307	5,964,851	9,685,810	5,862,865	9,661,945	101,986	23,865
Total, all regions	54,853,456	48,401,017	35,865,869	36,747,514	18,987,587	11,653,503	8,914,545	10,757,306	7,871,803	10,337,959	1,042,742	419,347

Section and region	Other public						Forest industry					
	All species		Softwoods		Hardwoods		All species		Softwoods		Hardwoods	
	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut	Growth	Cut
New England	45,100	28,334	20,100	15,897	25,000	12,437	567,100	431,216	385,300	314,022	181,800	117,194
Middle Atlantic	473,800	191,452	39,300	42,536	434,500	148,916	226,200	72,548	63,400	24,288	162,800	48,260
Lake States	649,054	156,161	299,969	85,364	349,085	70,797	229,430	189,257	103,222	80,396	126,208	108,861
Central	96,996	17,540	15,566	768	81,430	16,772	68,433	30,172	6,537	1,046	61,896	29,126
Total, North	1,264,950	393,487	374,935	144,565	890,015	248,922	1,091,163	723,193	558,459	419,752	532,704	303,441
South Atlantic	198,200	110,016	148,000	79,369	50,200	30,647	990,200	1,502,617	640,900	899,710	349,300	602,907
East Gulf	168,600	65,966	144,200	55,777	24,400	10,189	1,044,800	585,508	880,600	424,265	164,200	161,243
Central Gulf	186,000	83,000	118,000	42,000	68,000	41,000	1,413,000	650,000	1,184,000	311,000	229,000	339,000
West Gulf	156,000	94,000	60,000	60,000	96,000	34,000	3,141,000	1,356,000	2,604,000	909,000	537,000	447,000
Total, South	708,800	352,982	470,200	237,146	238,600	115,836	6,589,000	4,094,125	5,309,500	2,543,975	1,279,500	1,550,150
Pacific Northwest	2,113,530	2,506,161	1,999,860	2,431,192	113,670	74,969	3,431,310	6,636,185	3,265,251	6,524,545	166,059	111,640
Pacific Southwest	153,274	123,236	152,076	121,688	1,198	1,548	641,135	2,599,857	637,110	2,583,093	4,025	16,764
No. Rocky Mtn	252,292	265,838	253,362	265,260	−1,070	578	179,008	646,391	179,056	644,382	−48	2,009
So. Rocky Mtn	146,054	159,636	136,175	158,102	9,879	1,534	17,291	25,978	17,651	25,722	−360	256
Total, West	2,665,150	3,054,871	2,541,473	2,976,242	123,677	78,629	4,268,744	9,908,411	4,099,068	9,777,742	169,676	130,669
Total, all regions	4,638,900	3,801,340	3,386,608	3,357,953	1,252,292	443,387	11,948,907	14,725,729	9,967,027	12,741,469	1,981,880	1,984,260

Section and region	Farmer and miscellaneous private					
	All species		Softwoods		Hardwoods	
	Growth	Cut	Growth	Cut	Growth	Cut
New England	1,259,500	845,553	718,400	570,355	541,100	275,198
Middle Atlantic	3,432,800	1,447,314	341,100	350,386	3,091,700	1,096,928
Lake States	1,417,326	833,163	344,169	218,009	1,073,157	615,154
Central	3,217,135	1,618,907	174,150	62,537	3,042,985	1,556,370
Total, North	9,326,761	4,744,937	1,577,819	1,201,287	7,748,942	3,543,650
South Atlantic	5,145,000	2,937,694	2,914,700	1,486,982	2,230,300	1,450,712
East Gulf	3,523,000	2,093,489	2,596,500	1,384,989	926,500	708,500
Central Gulf	3,928,000	2,871,027	2,398,000	1,158,573	1,530,000	1,712,454
West Gulf	3,279,000	2,218,166	1,538,000	1,034,117	1,741,000	1,184,049
Total, South	15,875,000	10,120,376	9,447,200	5,064,661	6,427,800	5,055,715
Pacific Northwest	2,534,480	2,016,942	2,030,053	1,833,214	504,427	183,728
Pacific Southwest	1,074,788	1,678,893	1,068,017	1,659,552	6,771	19,341
Northern Rocky Mountain	384,128	417,376	388,252	415,820	−4,124	1,556
Southern Rocky Mountain	155,947	138,118	129,090	135,599	26,857	2,519
Total, West	4,149,343	4,251,329	3,615,412	4,044,185	533,931	207,144
Total, all regions	29,351,104	19,116,642	14,640,431	10,310,133	14,710,673	8,806,509

TABLE 33.—*Annual mortality of growing stock on commercial forest land in the United States, by softwoods and hardwoods, section, region, and State, 1962*

(Thousand cubic feet)

Section, region, and State	All species	Softwoods	Hardwoods
New England:			
Connecticut	12,000	5,000	7,000
Maine	288,700	201,200	87,500
Massachusetts	18,700	8,900	9,800
New Hampshire	37,600	22,500	15,100
Rhode Island	2,200	1,000	1,200
Vermont	23,600	7,900	15,700
Total	382,800	246,500	136,300
Middle Atlantic:			
Delaware	3,900	2,300	1,600
Maryland	18,800	9,000	9,800
New Jersey	14,700	3,100	11,600
New York	133,100	38,500	94,600
Pennsylvania	112,900	14,700	98,200
West Virginia	47,100	10,100	37,000
Total	330,500	77,700	252,800
Lake States:			
Michigan	254,600	48,500	206,100
Minnesota	153,000	52,000	101,000
North Dakota	7,200		7,200
South Dakota (east)	8,629	29	8,600
Wisconsin	190,900	31,100	159,800
Total	614,329	131,629	482,700
Central:			
Illinois	20,310	20	20,290
Indiana	26,000	421	25,579
Iowa	13,700	52	13,648
Kansas	19,220	22	19,198
Kentucky	32,000	2,700	29,300
Missouri	70,000	1,000	69,000
Nebraska	5,480	280	5,200
Ohio	18,500	771	17,729
Total	205,210	5,266	199,944
Total, North	1,532,839	461,095	1,071,744
South Atlantic:			
North Carolina	199,300	80,000	119,300
South Carolina	89,200	42,800	46,400
Virginia	151,600	49,300	102,300
Total	440,100	172,100	268,000
East Gulf:			
Florida	74,000	48,600	25,400
Georgia	195,400	106,300	89,100
Total	269,400	154,900	114,500
Central Gulf:			
Alabama	133,000	31,000	102,000
Mississippi	64,000	20,000	44,000
Tennessee	75,000	6,000	69,000
Total	272,000	57,000	215,000
West Gulf:			
Arkansas	106,000	27,000	79,000
Louisiana	134,000	26,000	108,000
Oklahoma	14,000	3,000	11,000
Texas	67,000	24,000	43,000
Total	321,000	80,000	241,000
Total, South	1,302,500	464,000	838,500
Pacific Northwest:			
Alaska	16,768	16,768	
Oregon	772,000	748,425	23,575
Washington	597,000	575,096	21,904
Total	1,385,768	1,340,289	45,479
Pacific Southwest:			
California	415,108	410,874	4,234
Hawaii [1]			
Total	415,108	410,874	4,234
Northern Rocky Mountain:			
Idaho	308,900	304,700	4,200
Montana	347,000	344,000	3,000
South Dakota (west)	7,138	7,127	11
Wyoming	48,855	38,365	10,496
Total	711,893	694,192	17,701
Southern Rocky Mountain:			
Arizona	20,201	20,190	11
Colorado	140,271	107,080	33,191
Nevada	2,000	2,000	
New Mexico	52,167	32,215	19,952
Utah	66,387	50,861	15,526
Total	281,026	212,346	68,680
Total, West	2,793,795	2,657,701	136,094
Total, all regions	5,629,134	3,582,796	2,046,338

[1] Unavailable.

TABLE 34.—*Annual mortality of sawtimber on commercial forest land in the United States, by softwoods and hardwoods, section, region, and State, 1962*

(Thousand board feet, International ¼-inch log rule)

Section, region, and State	All species	Softwoods	Hardwoods
New England:			
Connecticut	5,000	1,000	4,000
Maine	511,000	359,000	152,000
Massachusetts	13,000	8,000	5,000
New Hampshire	70,000	51,000	19,000
Rhode Island	----	----	----
Vermont	72,000	27,000	45,000
Total	671,000	446,000	225,000
Middle Atlantic:			
Delaware	3,000	2,000	1,000
Maryland	25,000	10,000	15,000
New Jersey	21,000	3,000	18,000
New York	177,700	66,000	111,700
Pennsylvania	132,000	30,000	102,000
West Virginia	97,000	21,000	76,000
Total	455,700	132,000	323,700
Lake States:			
Michigan	311,000	69,000	242,000
Minnesota	241,000	82,000	159,000
North Dakota	9,000	----	9,000
South Dakota (east)	10,110	110	10,000
Wisconsin	338,000	54,000	284,000
Total	909,110	205,110	704,000
Central:			
Illinois	96,680	----	96,680
Indiana	121,000	----	121,000
Iowa	53,000	200	52,800
Kansas	73,500	30	73,470
Kentucky	93,760	7,000	86,760
Missouri	226,000	2,000	224,000
Nebraska	20,900	900	20,000
Ohio	82,000	3,280	78,720
Total	766,840	13,410	753,430
Total, North	2,802,650	796,520	2,006,130
South Atlantic:			
North Carolina	542,000	219,000	323,000
South Carolina	256,000	123,000	133,000
Virginia	360,000	109,000	251,000
Total	1,158,000	451,000	707,000
East Gulf:			
Florida	218,000	147,000	71,000
Georgia	449,000	228,000	221,000
Total	667,000	375,000	292,000
Central Gulf:			
Alabama	441,000	130,000	311,000
Mississippi	192,000	76,000	116,000
Tennessee	226,000	20,000	206,000
Total	859,000	226,000	633,000
West Gulf:			
Arkansas	332,000	116,000	216,000
Louisiana	457,000	112,000	345,000
Oklahoma	39,000	11,000	28,000
Texas	220,000	94,000	126,000
Total	1,048,000	333,000	715,000
Total, South	3,732,000	1,385,000	2,347,000
Pacific Northwest:			
Alaska	98,571	98,571	----
Oregon	4,110,000	4,025,407	84,593
Washington	2,763,000	2,700,514	62,486
Total	6,971,571	6,824,492	147,079
Pacific Southwest:			
California	2,250,218	2,235,142	15,076
Hawaii [1]	----	----	----
Total	2,250,218	2,235,142	15,076
Northern Rocky Mountain:			
Idaho	1,289,000	1,289,000	----
Montana	1,275,000	1,269,000	6,000
South Dakota (west)	33,156	33,101	55
Wyoming	192,720	177,836	14,884
Total	2,789,876	2,768,937	20,939
Southern Rocky Mountain:			
Arizona	106,706	106,706	----
Colorado	625,596	550,545	75,051
Nevada	5,200	5,200	----
New Mexico	205,491	156,719	48,772
Utah	245,739	210,200	35,539
Total	1,188,732	1,029,370	159,362
Total, West	13,200,397	12,857,941	342,456
Total, all regions	19,735,047	15,039,461	4,695,586

[1] Not available.

TABLE 35.—*Annual mortality of growing stock on commercial forest land in the United States, by cause, section, and region, 1962*

(Thousand cubic feet)

Section and region	Mortality cause								
	Fire			Insects			Disease		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
New England	7,800	4,200	3,600	39,200	28,300	10,900	223,600	120,500	103,100
Middle Atlantic	14,900	3,200	11,700	9,500	2,200	7,300	74,400	31,200	43,200
Lake States	2,464	1,230	1,234	46,041	6,328	39,713	212,954	19,706	193,248
Central	22,710	548	22,162	4,423	306	4,117	64,137	826	63,311
Total, North	47,874	9,178	38,696	99,164	37,134	62,030	575,091	172,232	402,859
South Atlantic	32,300	16,900	15,400	28,400	20,600	7,800	28,000	20,400	7,600
East Gulf	28,900	25,000	3,900	27,500	20,600	6,900	12,700	9,100	3,600
Central Gulf	23,000	4,000	19,000	12,000	11,000	1,000	6,000	2,000	4,000
West Gulf	17,000	5,000	12,000	27,000	26,000	1,000	11,000	1,000	10,000
Total, South	101,200	50,900	50,300	94,900	78,200	16,700	57,700	32,500	25,200
Pacific Northwest	46,467	46,467	----------	602,683	602,683	----------	152,504	143,298	9,206
Pacific Southwest	92,821	91,173	1,648	53,865	53,865	----------	84,766	84,640	126
Northern Rocky Mountain	19,473	19,473	----------	255,040	254,796	244	220,902	210,660	10,242
Southern Rocky Mountain	32,377	29,836	2,541	78,455	69,810	8,645	114,571	69,905	44,666
Total, West	191,138	186,949	4,189	990,043	981,154	8,889	572,743	508,503	64,240
Total, all regions	340,212	247,027	93,185	1,184,107	1,096,488	87,619	1,205,534	713,235	492,299

Section and region	Mortality cause					
	Other [1]			Unknown		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
New England	112,200	93,500	18,700	----------	----------	----------
Middle Atlantic	227,900	39,600	188,300	3,800	1,500	2,300
Lake States	352,870	104,365	248,505	----------	----------	----------
Central	91,373	3,566	87,807	22,567	20	22,547
Total, North	784,343	241,031	543,312	26,367	1,520	24,847
South Atlantic	118,600	50,000	68,600	232,800	64,200	168,600
East Gulf	65,000	41,600	23,400	135,300	58,600	76,700
Central Gulf	86,000	18,000	68,000	145,000	22,000	123,000
West Gulf	80,000	22,000	58,000	186,000	26,000	160,000
Total, South	349,600	131,600	218,000	699,100	170,800	528,300
Pacific Northwest	347,465	338,252	9,213	236,649	209,589	27,060
Pacific Southwest	183,656	181,196	2,460	----------	----------	----------
Northern Rocky Mountain	152,825	149,920	2,905	63,653	59,343	4,310
Southern Rocky Mountain	28,391	24,522	3,869	27,232	18,273	8,959
Total, West	712,337	693,890	18,447	327,534	287,205	40,329
Total, all regions	1,846,280	1,066,521	779,759	1,053,001	459,525	593,476

[1] Weather, animals, suppression, etc.

TABLE 36.—*Annual mortality of sawtimber on commercial forest land in the United States, by cause, section, and region, 1962*

(Thousand board feet, International ¼-inch log rule)

Section and region	Mortality cause								
	Fire			Insects			Disease		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
New England	6,900	2,800	4,100	93,600	85,500	8,100	409,400	233,300	176,100
Middle Atlantic	29,000	5,600	23,400	24,600	7,300	17,300	167,500	86,100	81,400
Lake States	4,100	2,352	1,748	27,603	7,072	20,531	271,110	32,617	238,493
Central	67,745	1,038	66,707	21,700	946	20,754	280,781	2,160	278,621
Total, North	107,745	11,790	95,955	167,503	100,818	66,685	1,128,791	354,177	774,614
South Atlantic	58,600	44,300	14,300	84,200	63,600	20,600	39,300	21,500	17,800
East Gulf	56,400	50,600	5,800	85,300	60,600	24,700	28,500	20,400	8,100
Central Gulf	59,000	11,000	48,000	51,000	48,000	3,000	16,000	5,000	11,000
West Gulf	54,000	21,000	33,000	117,000	114,000	3,000	29,000	3,000	26,000
Total, South	228,000	126,900	101,100	337,500	286,200	51,300	112,800	49,900	62,900
Pacific Northwest	230,584	230,584		3,082,371	3,082,371		806,500	772,157	34,343
Pacific Southwest	516,111	510,283	5,828	355,164	355,164		453,061	452,616	445
Northern Rocky Mountain	75,129	75,129		1,111,777	1,111,500	277	835,300	821,256	14,044
Southern Rocky Mountain	130,319	128,534	1,785	361,871	353,748	8,123	470,431	354,606	115,825
Total, West	952,143	944,530	7,613	4,911,183	4,902,783	8,400	2,565,292	2,400,635	164,657
Total, all regions	1,287,888	1,083,220	204,668	5,416,186	5,289,801	126,385	3,806,883	2,804,712	1,002,171

Section and region	Mortality cause					
	Other [1]			Unknown		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
New England	161,100	124,400	36,700			
Middle Atlantic	230,400	29,600	200,800	4,200	3,400	800
Lake States	606,297	163,069	443,228			
Central	303,264	9,266	293,998	93,350		93,350
Total, North	1,301,061	326,335	974,726	97,550	3,400	94,150
South Atlantic	388,600	163,600	225,000	587,300	158,000	429,300
East Gulf	164,600	94,200	70,400	332,200	149,200	183,000
Central Gulf	283,000	69,000	214,000	450,000	93,000	357,000
West Gulf	259,000	89,000	170,000	589,000	106,000	483,000
Total, South	1,095,200	415,800	679,400	1,958,500	506,200	1,452,300
Pacific Northwest	1,660,410	1,626,067	34,343	1,191,706	1,113,313	78,393
Pacific Southwest	925,882	917,079	8,803			
Northern Rocky Mountain	543,970	537,642	6,328	223,700	223,410	290
Southern Rocky Mountain	137,549	128,534	9,015	88,562	63,948	24,614
Total, West	3,267,811	3,209,322	58,489	1,503,968	1,400,671	103,297
Total, all regions	5,664,072	3,951,457	1,712,615	3,560,018	1,910,271	1,649,747

[1] Weather, animals, suppression, etc.

TABLE 37.—*Output of roundwood in the United States, by product, softwoods and hardwoods, section, region, and State, 1962*
(Thousand cubic feet)

Region and State	Total roundwood			Saw logs			Veneer		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
New England:									
Connecticut	22,519	8,379	14,140	5,276	561	4,715			
Maine	251,103	185,284	65,819	57,975	54,660	3,315	9,904	217	9,687
Massachusetts	28,511	10,528	17,983	14,282	6,952	7,330			
New Hampshire	50,540	33,164	17,376	29,802	26,487	3,315	1,843		1,843
Rhode Island	3,118	701	2,417	175		175			
Vermont	38,955	26,253	12,702	17,060	14,090	2,970	1,154		1,154
Total	394,746	264,309	130,437	124,570	102,750	21,820	12,901	217	12,684
Middle Atlantic:									
Delaware	8,439	5,343	3,096	3,415	2,800	615	649		649
Maryland	58,955	18,643	40,312	19,680	6,910	12,770	1,548	3	1,545
New Jersey	29,949	8,156	21,793	2,790	330	2,460	800		800
New York	152,525	35,717	116,808	45,430	12,510	32,920	4,400		4,400
Pennsylvania	192,028	42,777	149,251	65,780	13,165	52,615	958		958
West Virginia	117,249	14,244	103,005	51,615	3,620	47,995	485		485
Total:	559,145	124,880	434,265	188,710	39,335	149,375	8,840	3	8,837
Lake States:									
Michigan	193,819	49,823	143,996	52,707	11,957	40,750	3,219	24	3,195
Minnesota	164,456	72,815	91,641	27,026	14,248	12,778	1,376		1,376
North Dakota	1,744		1,744	181		181	4		4
South Dakota (east)	3,420	214	3,206	211	6	205	41		41
Wisconsin	199,196	39,999	159,197	46,400	10,982	35,418	3,697		3,697
Total	562,635	162,851	399,784	126,525	37,193	89,332	8,337	24	8,313
Central States:									
Illinois	39,658	609	39,049	19,898	75	19,823	1,667		1,667
Indiana	47,232	1,077	46,155	22,806	765	22,041	2,002		2,002
Iowa	26,112	345	25,767	8,362	306	8,056	1,271		1,271
Kansas	10,468	193	10,275	2,591	160	2,431	815		815
Kentucky	120,663	9,197	111,466	68,023	4,368	63,655	1,604		1,604
Missouri	119,634	6,802	112,832	45,629	4,589	41,040	745	1	744
Nebraska	5,928	928	5,000	1,357	70	1,287	59		59
Ohio	65,841	2,980	62,861	29,654	2,296	27,358	1,565		1,565
Total	435,536	22,131	413,405	198,320	12,629	185,691	9,728	1	9,727
Total, North	1,952,062	574,171	1,377,891	638,125	191,907	446,218	39,806	245	39,561
South Atlantic:									
North Carolina	524,186	338,190	185,996	268,359	192,138	76,221	23,529	1,656	21,873
South Carolina	357,230	246,525	110,705	134,004	93,329	40,675	12,236	134	12,102
Virginia	394,111	213,400	180,711	182,079	94,492	87,587	5,411	109	5,302
Total	1,275,527	798,115	477,412	584,442	379,959	204,483	41,176	1,899	39,277
East Gulf:									
Florida	257,476	226,655	30,821	57,542	54,941	2,601	12,996	581	12,415
Georgia	576,025	451,363	124,662	188,496	138,607	49,889	18,280	65	18,215
Total	833,501	678,018	155,483	246,038	193,548	52,490	31,276	646	30,630
Central Gulf:									
Alabama	477,189	310,208	166,981	173,704	122,948	50,756	14,123	70	14,053
Mississippi	363,877	144,983	218,894	121,608	64,894	56,714	8,673		8,673
Tennessee	180,314	43,342	136,972	91,893	25,250	66,643	1,558	58	1,500
Total	1,021,380	498,533	522,847	387,205	213,092	174,113	24,354	128	24,226
West Gulf:									
Arkansas	387,498	212,986	174,512	190,572	125,863	64,709	4,840		4,840
Louisiana	370,406	215,676	154,730	155,375	97,930	57,445	4,982		4,982
Oklahoma	48,263	16,183	32,080	14,381	12,046	2,335	410		410
Texas	240,744	150,173	90,571	98,345	74,580	23,765	4,873	51	4,822
Total	1,046,911	595,018	451,893	458,673	310,419	148,254	15,105	51	15,054
Total, South	4,177,319	2,569,684	1,607,635	1,676,358	1,097,018	579,340	111,911	2,724	109,187
Pacific Northwest:									
Alaska	75,119	75,119		14,834	14,834				
Oregon	1,773,542	1,755,297	18,245	1,154,742	1,146,742	8,000	503,000	503,000	
Washington	898,672	862,564	36,108	521,769	512,769	9,000	98,000	98,000	
Total	2,747,333	2,692,980	54,353	1,691,345	1,674,345	17,000	601,000	601,000	
Pacific Southwest:									
California	821,558	812,739	8,819	721,128	719,387	1,741	85,611	85,588	23
Hawaii	525		525	250		250	5		5
Total	822,083	812,739	9,344	721,378	719,387	1,991	85,616	85,588	28

TABLE 37.—*Output of roundwood in the United States, by product, softwoods and hardwoods, section, region, and State, 1962*—Continued

(Thousand cubic feet)

Region and State	Total roundwood			Saw logs			Veneer		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwood
Northern Rocky Mountain:									
Idaho	229,445	229,219	226	215,406	215,240	166	2,797	2,756	41
Montana	192,079	190,926	1,153	167,072	165,920	1,152	15,965	15,965	
South Dakota (west)	11,235	11,235		6,493	6,493				
Wyoming	19,075	19,060	15	17,928	17,928				
Total	451,834	450,440	1,394	406,899	405,581	1,318	18,762	18,721	41
Southern Rocky Mountain:									
Arizona	64,369	62,821	1,548	48,395	48,395				
Colorado	42,134	40,467	1,667	37,264	37,093	171			
Nevada	846	723	123	407	407				
New Mexico	47,808	46,541	1,267	37,454	36,453	1,001			
Utah	14,096	13,693	403	12,940	12,940				
Total	169,253	164,245	5,008	136,460	135,288	1,172			
Total, West	4,190,503	4,120,404	70,099	2,956,082	2,934,601	21,481	705,378	705,309	69
Total, all regions	10,319,884	7,264,259	3,055,625	5,270,565	4,223,526	1,047,039	857,095	708,278	148,817

Region and State	Pulpwood			Miscellaneous industrial			Fuelwood		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
New England:									
Connecticut	2,125	990	1,135	575	495	80	14,543	6,333	8,210
Maine	166,810	128,990	37,820	1,320	1,132	188	15,094	285	14,809
Massachusetts	1,900	1,370	530	479	407	72	11,850	1,799	10,051
New Hampshire	11,470	5,870	5,600	1,034	697	337	6,391	110	6,281
Rhode Island	1,215	455	760	50	19	31	1,678	227	1,451
Vermont	13,250	11,205	2,045	1,082	588	494	6,409	370	6,039
Total	196,770	148,880	47,890	4,540	3,338	1,202	55,965	9,124	46,841
Middle Atlantic:									
Delaware	1,970	1,970		686	419	267	1,719	154	1,565
Maryland	11,055	7,165	3,890	3,034	1,418	1,616	23,638	3,147	20,491
New Jersey	4,140	3,150	990	5,892	3,242	2,650	16,327	1,434	14,893
New York	28,945	10,945	18,000	15,540	6,618	8,922	58,210	5,644	52,566
Pennsylvania	55,010	19,925	35,085	33,753	5,678	28,075	36,527	4,009	32,518
West Virginia	16,220	4,095	12,125	14,249	3,172	11,077	34,680	3,357	31,323
Total	117,340	47,250	70,090	73,154	20,547	52,607	171,101	17,745	153,356
Lake States:									
Michigan	81,647	33,467	48,180	20,632	4,375	16,257	35,614		35,614
Minnesota	80,649	50,850	29,799	9,486	4,046	5,440	45,919	3,671	42,248
North Dakota				259		259	1,300		1,300
South Dakota (east)				499	142	357	2,669	66	2,603
Wisconsin	78,221	25,646	52,575	15,088	2,813	12,275	55,790	558	55,232
Total	240,517	109,963	130,554	45,964	11,376	34,588	141,292	4,295	136,997
Central States:									
Illinois	7,399	516	6,883	5,491	18	5,473	5,203		5,203
Indiana	6,527	21	6,506	2,897	291	2,606	13,000		13,000
Iowa	2,137		2,137	1,334	39	1,295	13,008		13,008
Kansas				887	33	854	6,175		6,175
Kentucky	5,723	2,594	3,129	15,174	2,235	12,939	30,139		30,139
Missouri	1,546	122	1,424	23,614	1,440	22,174	48,100	650	47,450
Nebraska	150	150		462	58	404	3,900	650	3,250
Ohio	18,067	349	17,718	4,655	335	4,320	11,900		11,900
Total	41,549	3,752	37,797	54,514	4,449	50,065	131,425	1,300	130,125
Total, North	596,176	309,845	286,331	178,172	39,710	138,462	499,783	32,464	467,319
South Atlantic:									
North Carolina	140,120	102,860	37,260	5,244	3,706	1,538	86,934	37,830	49,104
South Carolina	158,147	119,510	38,637	14,038	13,545	493	38,805	20,007	18,798
Virginia	128,446	85,840	42,606	13,180	7,024	6,156	64,995	25,935	39,060
Total	426,713	308,210	118,503	32,462	24,275	8,187	190,734	83,772	106,962
East Gulf:									
Florida	160,638	149,916	10,722	21,464	18,721	2,743	4,836	2,496	2,340
Georgia	325,990	288,082	37,908	12,163	10,361	1,802	31,096	14,248	16,848
Total	486,628	437,998	48,630	33,627	29,082	4,545	35,932	16,744	19,188

TABLE 37.—*Output of roundwood in the United States, by product, softwoods and hardwoods, section, region, and State, 1962*—Continued

(Thousand cubic feet)

Region and State	Pulpwood			Miscellaneous industrial			Fuelwood		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
Central Gulf:									
Alabama	215,530	163,940	51,590	22,835	16,321	6,514	50,997	6,929	44,068
Mississippi	140,657	64,742	75,915	22,370	9,883	12,487	70,569	5,464	65,105
Tennessee	31,442	15,190	16,252	24,089	2,565	21,524	31,332	279	31,053
Total	387,629	243,872	143,757	69,294	28,769	40,525	152,898	12,672	140,226
West Gulf:									
Arkansas	99,649	73,442	26,207	24,853	11,690	13,163	67,584	1,991	65,593
Louisiana	135,485	103,747	31,738	18,020	11,900	6,120	56,544	2,099	54,445
Oklahoma	2,442	806	1,636	8,259	2,453	5,806	22,771	878	21,893
Texas	82,951	63,200	19,751	19,804	12,244	7,560	34,771	98	34,673
Total	320,527	241,195	79,332	70,936	38,287	32,649	181,670	5,066	176,604
Total, South	1,621,497	1,231,275	390,222	206,319	120,413	85,906	561,234	118,254	442,980
Pacific Northwest:									
Alaska	60,284	60,284		1	1				
Oregon	72,000	62,000	10,000	21,978	21,916	62	21,822	21,639	183
Washington	228,690	201,690	27,000	32,087	32,087		18,126	18,018	108
Total	360,974	323,974	37,000	54,066	54,004	62	39,948	39,657	291
Pacific Southwest:									
California	4,048	464	3,584	6,241	6,209	32	4,530	1,091	3,439
Hawaii				124		124	146		146
Total	4,048	464	3,584	6,365	6,209	156	4,676	1,091	3,585
Northern Rocky Mountain:									
Idaho	4,897	4,897		5,977	5,961	16	368	365	3
Montana	3,781	3,781		4,933	4,932	1	328	328	
South Dakota (west)	3,060	3,060		1,651	1,651		31	31	
Wyoming	464	464		574	559	15	109	109	
Total	12,202	12,202		13,135	13,103	32	836	833	3
Southern Rocky Mountain:									
Arizona	7,947	7,947		1,306	929	377	6,721	5,550	1,171
Colorado	257	122	135	3,911	2,703	1,208	702	549	153
Nevada				93	50	43	346	266	80
New Mexico				988	950	38	9,366	9,138	228
Utah				1,048	646	402	108	107	1
Total	8,204	8,069	135	7,346	5,278	2,068	17,243	15,610	1,633
Total, West	385,428	344,709	40,719	80,912	78,594	2,318	62,703	57,191	5,512
Total, all regions	2,603,101	1,885,829	717,272	465,403	238,717	226,686	1,123,720	207,909	915,811

TABLE 38.—*Total output of timber products in the United States, by product, softwoods and hardwoods, section, region, and State, 1962* [1]

Section, region, and State	Saw logs			Veneer logs			Pulpwood		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand bd. ft.[2]	*Thousand bd. ft.*[2]	*Thousand bd. ft.*[2]	*Thousand bd. ft.*[2]	*Thousand bd. ft.*[2]	*Thousand bd. ft.*[2]	*Thousand cords*	*Thousand cords*	*Thousand cords*
New England:									
Connecticut	30,000	3,000	27,000				28	13	15
Maine	310,000	291,000	19,000	57,284	871	56,413	2,192	1,692	500
Massachusetts	79,000	37,000	42,000				25	18	7
New Hampshire	160,000	141,000	19,000	9,456		9,456	151	77	74
Rhode Island	1,000		1,000				16	5	11
Vermont	92,000	75,000	17,000	6,555		6,555	173	147	26
Total	672,000	547,000	125,000	73,295	871	72,424	2,585	1,952	633
Middle Atlantic:									
Delaware	21,000	17,000	4,000	3,479		3,479	24	24	
Maryland	125,000	42,000	83,000	8,280	16	8,264	142	91	51
New Jersey	18,000	2,000	16,000	4,279		4,279	54	41	13
New York	290,000	76,000	214,000	23,502		23,502	375	139	236
Pennsylvania	422,000	80,000	342,000	5,123		5,123	713	253	460
West Virginia	334,000	22,000	312,000	2,596		2,596	211	52	159
Total	1,210,000	239,000	971,000	47,259	16	47,243	1,519	600	919

See footnotes at end of table.

TABLE 38.—*Total output of timber products in the United States, by product, softwoods and hardwoods, section, region, and State, 1962* [1]—Continued

Section, region, and State	Saw logs			Veneer logs			Pulpwood		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand bd. ft.[2]	*Thousand bd. ft.*[2]	*Thousand bd. ft.*[2]	*Thousand bd. ft.*[2]	*Thousand bd. ft.*[2]	*Thousand bd. ft.*[2]	*Thousand cords*	*Thousand cords*	*Thousand cords*
Lake States:									
Michigan	319,000	73,000	246,000	21,760	162	21,598	1,090	430	660
Minnesota	161,000	85,000	76,000	9,288		9,288	1,030	650	380
North Dakota	1,300		1,300	25		25			
South Dakota (east)	1,500	35	1,465	300		300			
Wisconsin	277,000	67,000	210,000	24,975		24,975	1,060	340	720
Total	759,800	225,035	534,765	56,348	162	56,186	3,180	1,420	1,760
Central:									
Illinois	130,908	495	130,413	11,759		11,759	99	7	92
Indiana	150,000	5,000	145,000	14,077		14,077	88		88
Iowa	55,000	2,000	53,000	8,950		8,950	36	2	34
Kansas	17,000	1,000	16,000	5,500		5,500			
Kentucky	460,380	24,440	435,940	12,455		12,455	82	34	48
Missouri	300,000	30,000	270,000	5,237	7	5,230	21	2	19
Nebraska	9,600	435	9,165	400		400	2	2	
Ohio	205,000	15,000	190,000	10,652		10,652	263	5	258
Total	1,327,888	78,370	1,249,518	69,030	7	69,023	591	52	539
Total, North	3,969,688	1,089,404	2,880,283	245,932	1,056	244,876	7,875	4,024	3,851
South Atlantic:									
North Carolina	1,600,000	1,123,617	476,383	154,159	9,304	144,855	2,324	1,773	551
South Carolina	800,000	545,781	254,219	80,895	750	80,145	2,482	1,923	559
Virginia	1,100,000	552,582	547,418	35,729	611	35,118	1,894	1,325	569
Total	3,500,000	2,221,980	1,278,020	270,783	10,665	260,118	6,700	5,021	1,679
East Gulf:									
Florida	330,000	313,946	16,054	84,464	3,849	80,615	2,464	2,286	178
Georgia	1,100,000	792,043	307,957	118,711	430	118,281	5,217	4,617	600
Total	1,430,000	1,105,989	324,011	203,175	4,279	198,896	7,681	6,903	778
Central Gulf:									
Alabama	1,092,102	749,790	342,312	101,425	426	100,999	3,448	2,631	817
Mississippi	776,503	393,296	383,207	61,951		61,951	2,100	1,065	1,035
Tennessee	581,532	145,953	435,579	11,064	351	10,713	432	211	221
Total	2,450,137	1,289,039	1,161,098	174,440	777	173,663	5,980	3,907	2,073
West Gulf:									
Arkansas	1,205,695	760,041	445,654	34,576		34,576	1,730	1,382	348
Louisiana	981,426	592,772	388,654	35,572		35,572	2,006	1,580	426
Oklahoma	86,583	71,945	14,638	2,930		2,930	59	38	21
Texas	605,514	444,721	160,793	34,811	366	34,445	1,430	1,163	267
Total	2,879,218	1,869,479	1,009,739	107,889	366	107,523	5,225	4,163	1,062
Total, South	10,259,355	6,486,487	3,772,868	756,287	16,087	740,200	25,586	19,994	5,592
Pacific Northwest:									
Alaska	93,994	93,994					670	670	
Oregon	7,712,000	7,656,000	56,000	3,436,000	3,436,000		2,128	2,013	115
Washington	3,473,000	3,415,000	58,000	689,000	689,000		5,117	4,813	304
Total	11,278,994	11,164,994	114,000	4,125,000	4,125,000		7,915	7,496	419
Pacific Southwest:									
California	5,002,000	4,990,000	12,000	659,200	659,027	173	643	593	50
Hawaii	1,500		1,500	35		35			
Total	5,003,500	4,990,000	13,500	659,235	659,027	208	643	593	50
Northern Rocky Mountain:									
Idaho	1,417,052	1,416,052	1,000	19,030	18,750	280	592	592	
Montana	1,168,278	1,160,278	8,000	111,642	111,642		367	367	
South Dakota (west)	38,958	38,958					41	41	
Wyoming	106,712	106,712					16	16	
Total	2,731,000	2,722,000	9,000	130,672	130,392	280	1,016	1,016	
Southern Rocky Mountain:									
Arizona	333,757	333,757					88	88	
Colorado	217,918	216,918	1,000				3	1	2
Nevada	2,437	2,437							
New Mexico	258,403	251,403	7,000						
Utah	77,485	77,485							
Total	890,000	882,000	8,000				91	89	2
Total, West	19,903,494	19,758,994	144,500	4,914,907	4,914,419	488	9,665	9,194	471
Total, all regions	34,132,537	27,334,886	6,797,651	5,917,126	4,931,562	985,564	43,126	33,212	9,914

See footnotes at end of table.

TABLE 38.—*Total output of timber products in the United States, by product, softwoods and hardwoods, section, region, and State, 1962* [1]—Continued

Section, region, and State	Miscellaneous industrial wood					
	Total miscellaneous			Cooperage		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand cu. ft.	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand bd. ft.*[2]	*Thousand bd. ft.*[2]	*Thousand bd. ft.*[2]
New England:						
Connecticut	611	514	97			
Maine	2,026	1,731	295	1,353	1,353	
Massachusetts	519	437	82	457	435	22
New Hampshire	1,214	771	443	2,901	2,365	536
Rhode Island	54	22	32			
Vermont	1,268	612	656			
Total	5,692	4,087	1,605	4,711	4,153	558
Middle Atlantic:						
Delaware	721	454	267			
Maryland	3,125	1,418	1,707	1,750		1,750
New Jersey	7,259	3,242	4,017			
New York	18,562	6,618	11,944			
Pennsylvania	34,937	5,678	29,259	1,967		1,967
West Virginia	15,954	3,172	12,782	1,566		1,566
Total	80,558	20,582	59,976	5,283		5,283
Lake States:						
Michigan	23,473	4,454	19,019			
Minnesota	9,736	4,146	5,590	2,200		2,200
North Dakota	259		259			
South Dakota (east)	499	142	357			
Wisconsin	16,730	2,813	13,917	5,500		5,500
Total	50,697	11,555	39,142	7,700		7,700
Central:						
Illinois	6,030	18	6,012	27,419		27,419
Indiana	2,897	291	2,606	6,244		6,244
Iowa	1,334	39	1,295	3,900		3,900
Kansas	887	33	854	2,250		2,250
Kentucky	15,524	2,235	13,289	21,017		21,017
Missouri	23,824	1,440	22,384	27,341		27,341
Nebraska	462	58	404	150		150
Ohio	5,705	335	5,370	12,459		12,459
Total	56,663	4,449	52,214	100,780		100,780
Total, North	193,610	40,673	152,937	118,474	4,153	114,321
South Atlantic:						
North Carolina	5,244	3,706	1,538	12,998	4,140	8,858
South Carolina	14,038	13,545	493	2,460		2,460
Virginia	13,180	7,024	6,156	4,649	4,017	632
Total	32,462	24,275	8,187	20,107	8,157	11,950
East Gulf:						
Florida	21,916	18,749	3,167			
Georgia	12,404	10,365	2,039	2,825		2,825
Total	34,320	29,114	5,206	2,825		2,825
Central Gulf:						
Alabama	26,391	18,414	7,977	11,526	8,331	3,195
Mississippi	24,056	10,306	13,750	12,834		12,834
Tennessee	30,456	3,202	27,254	25,644	115	25,529
Total	80,903	31,922	48,981	50,004	8,446	41,558
West Gulf:						
Arkansas	27,671	12,947	14,724	18,578		18,578
Louisiana	19,021	12,236	6,785	5,000		5,000
Oklahoma	8,479	2,596	5,883	82		82
Texas	20,863	12,731	8,132	906		906
Total	76,034	40,510	35,524	24,566		24,566
Total, South	223,719	125,821	97,898	97,502	16,603	80,899
Pacific Northwest:						
Alaska	1	1				
Oregon	21,978	21,916	62			
Washington	32,087	32,087				
Total	54,066	54,004	62			
Pacific Southwest:						
California	13,443	13,411	32			
Hawaii	124		124			
Total	13,567	13,411	156			

See footnotes at end of table.

TABLE 38.—*Total output of timber products in the United States, by product, softwoods and hardwoods, section, region, and State, 1962* [1]—Continued

Section, region, and State	Miscellaneous industrial wood					
	Total miscellaneous			Cooperage		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand cu. ft.	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand bd. ft.* [2]	*Thousand bd. ft.* [2]	*Thousand bd. ft.* [2]
Northern Rocky Mountain:						
Idaho	5,977	5,961	16			
Montana	4,933	4,932	1			
South Dakota (west)	1,651	1,651				
Wyoming	574	559	15			
Total	13,135	13,103	32			
Southern Rocky Mountain:						
Arizona	1,306	929	377			
Colorado	3,911	2,703	1,208			
Nevada	93	50	43			
New Mexico	988	950	38			
Utah	1,048	646	402			
Total	7,346	5,278	2,068			
Total, West	88,114	85,796	2,318			
Total, all regions	505,443	252,290	253,153	215,976	20,756	195,220

Section, region, and State	Miscellaneous industrial wood (continued)								
	Piling			Poles			Posts		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand lin. ft.	*Thousand lin. ft.*	*Thousand lin. ft.*	*Thousand pieces*	*Thousand pieces*	*Thousand pieces*	*Thousand pieces*	*Thousand pieces*	*Thousand pieces*
New England:									
Connecticut	58	13	45				543	514	29
Maine				22	22		128	128	
Massachusetts	35	7	28				191	151	40
New Hampshire	7	7		10	10		65	13	52
Rhode Island	37		37				26	18	8
Vermont	9	7	2	1	1		859	603	256
Total	146	34	112	33	33		1,812	1,427	385
Middle Atlantic:									
Delaware	675	394	281				255	104	151
Maryland	1,071	875	196	1	1		2,060	843	1,217
New Jersey	400	160	240				1,744	1,684	60
New York	433	95	338	2	2		10,759	4,935	5,824
Pennsylvania	382		382				13,256	6,034	7,222
West Virginia	57		57	8	2	6	1,366	554	812
Total	3,018	1,524	1,494	11	5	6	29,440	14,154	15,286
Lake States:									
Michigan	260	10	250	20	20		3,500	3,100	400
Minnesota	190	190		200	200		4,500	1,700	2,800
North Dakota				5		5	200		200
South Dakota (east)				15	5	10	350	110	240
Wisconsin	70	15	55	35	35		6,000	2,500	3,500
Total	520	215	305	275	260	15	14,550	7,410	7,140
Central:									
Illinois	1,570		1,570	1		1	450		450
Indiana							1,300	300	1,000
Iowa							800	50	750
Kansas				5		5	520	50	470
Kentucky	30		30	5	5		3,600	1,600	2,000
Missouri	5		5	60	60		11,000	1,500	9,500
Nebraska				7	1	6	445	75	370
Ohio	85		85	10	10		1,500	200	1,300
Total	1,690		1,690	88	76	12	19,615	3,775	15,840
Total, North	5,374	1,773	3,601	407	374	33	65,417	26,766	38,651
South Atlantic:									
North Carolina	36	36		153	153		1,590	1,415	175
South Carolina				1,071	1,071		342	238	104
Virginia	7,310	5,820	1,490	68	61	7	1,761	1,000	761
Total	7,346	5,856	1,490	1,292	1,285	7	3,693	2,653	1,040

See footnotes at end of table.

TABLE 38.—*Total output of timber products in the United States, by product, softwoods and hardwoods, section, region, and State, 1962* [1]—Continued

Section, region, and State	Miscellaneous industrial wood (continued)								
	Piling			Poles			Posts		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand lin. ft.	*Thousand lin. ft.*	*Thousand lin. ft.*	*Thousand pieces*	*Thousand pieces*	*Thousand pieces*	*Thousand pieces*	*Thousand pieces*	*Thousand pieces*
East Gulf:									
Florida	8,976	8,976		581	581		1,669	1,669	
Georgia	648	648		558	558		3,569	3,429	140
Total	9,624	9,624		1,139	1,139		5,238	5,098	140
Central Gulf:									
Alabama	1,201	1,201		820	820		7,645	2,790	4,855
Mississippi	4,043	4,043		446	446		16,443	2,589	13,854
Tennessee	580	580		22	22		10,049	2,310	7,739
Total	5,824	5,824		1,288	1,288		34,137	7,689	26,448
West Gulf:									
Arkansas	2,175	1,972	203	544	544		16,242	8,064	8,178
Louisiana	4,783	4,783		400	400		5,837	3,034	2,803
Oklahoma	42	42		51	51		13,222	3,053	10,169
Texas	2,769	2,769		652	652		16,465	5,608	10,857
Total	9,769	9,566	203	1,647	1,647		51,766	19,759	32,007
Total, South	32,563	30,870	1,693	5,366	5,359	7	94,834	35,199	59,635
Pacific Northwest:									
Alaska									
Oregon	2,196	2,196		241	241		2,607	2,551	56
Washington	619	619		132	132		2,068	2,068	
Total	2,815	2,815		373	373		4,675	4,619	56
Pacific Southwest:									
California	766	702	64	84	84		413	413	
Hawaii							40		40
Total	766	702	64	84	84		453	413	40
Northern Rocky Mountain:									
Idaho				149	149		818	818	
Montana				122	122		1,047	1,047	
South Dakota (west)	12	12		90	90		596	596	
Wyoming							79	79	
Total	12	12		361	361		2,540	2,540	
Southern Rocky Mountain:									
Arizona				9	9		173	171	2
Colorado				53	53		368	368	
Nevada							38	38	
New Mexico				3	3		235	230	5
Utah							16	16	
Total				65	65		830	823	7
Total, West	3,593	3,529	64	883	883		8,498	8,395	103
Total, all regions	41,530	36,172	5,358	6,656	6,616	40	168,749	70,360	98,389

Section, region, and State	Miscellaneous industrial wood (continued)						Fuelwood		
	Mine timbers			Other industrial [3]					
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand cu. ft.	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cords*	*Thousand cords*	*Thousand cords*
New England:									
Connecticut				83	37	46	271	136	135
Maine				1,467	1,172	295	274	30	244
Massachusetts				86	58	28	350	184	166
New Hampshire				437	145	292	114	11	103
Rhode Island				9	6	3	47	23	24
Vermont				494	47	447	137	37	100
Total				2,576	1,465	1,111	1,193	421	772

See footnotes at end of table.

TABLE 38.—*Total output of timber products in the United States, by products, softwoods and hardwoods, section, region, and State, 1962* [1]—Continued

Section, region, and State	Miscellaneous industrial wood (continued)						Fuelwood		
	Mine timbers			Other industrial [3]					
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand cu. ft.	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cords*	*Thousand cords*	*Thousand cords*
Middle Atlantic:									
Delaware	7	7		119	119		28	2	26
Maryland	233	3	230	451	212	239	433	91	342
New Jersey	234		234	5,460	1,860	3,600	268	20	248
New York	22		22	10,740	2,782	7,958	978	100	878
Pennsylvania	20,909		20,909	4,208	1,090	3,118	633	90	543
West Virginia	8,596	1,164	7,432	6,059	1,569	4,490	584	59	525
Total	30,001	1,174	28,827	27,037	7,632	19,405	2,924	362	2,562
Lake States:									
Michigan	2,505	1,353	1,152	17,920	558	17,362	600	25	575
Minnesota	721	657	64	3,163	450	2,713	675	75	600
North Dakota	3		3	75		75	20		20
South Dakota (east)				175	50	125	42	1	41
Wisconsin	480	290	190	10,200	233	9,967	900	30	870
Total	3,709	2,300	1,409	31,533	1,291	30,242	2,237	131	2,106
Central:									
Illinois	165	18	147	1,011		1,011	156		156
Indiana	255	50	205	925	12	913	283	2	281
Iowa	40		40	255		255	225	1	224
Kansas	5		5	155		155	105		105
Kentucky	4,337	282	4,055	3,365	70	3,295	679	9	670
Missouri	415	15	400	12,607	90	12,517	900	20	880
Nebraska				70	5	65	65	11	54
Ohio	750	151	599	2,157		2,157	261	7	254
Total	5,967	516	5,451	20,545	177	20,368	2,674	50	2,624
Total, North	39,677	3,990	35,687	81,691	10,565	71,126	9,028	964	8,064
South Atlantic:									
North Carolina				149	133	16	1,374	582	792
South Carolina				33		33	610	309	301
Virginia	3,140	208	2,932	1,547	230	1,317	1,029	399	630
Total	3,140	208	2,932	1,729	363	1,366	3,013	1,290	1,723
East Gulf:									
Florida				4,774	1,607	3,167	101	48	53
Georgia				1,750	224	1,526	654	274	380
Total				6,524	1,831	4,693	755	322	433
Central Gulf:									
Alabama	204	30	174	6,330	2,255	4,075	1,068	342	726
Mississippi				6,670	981	5,689	1,434	273	1,161
Tennessee	1,455	169	1,286	17,550	949	16,601	690	41	649
Total	1,659	199	1,460	30,550	4,185	26,365	3,192	656	2,536
West Gulf:									
Arkansas	146	24	122	11,556	2,243	9,313	1,529	446	1,083
Louisiana				4,800	484	4,316	1,169	267	902
Oklahoma	130	22	108	824	143	681	344	42	302
Texas				3,214	630	2,584	777	223	554
Total	276	46	230	20,394	3,500	16,894	3,819	978	2,841
Total, South	5,075	453	4,622	59,197	9,879	49,318	10,779	3,246	7,533
Pacific Northwest:									
Alaska							6	6	
Oregon				11,391	11,391		3,102	3,100	2
Washington	169	169		26,206	26,206		1,419	1,418	1
Total	169	169		37,597	37,597		4,527	4,524	3
Pacific Southwest:									
California	310	310		10,044	10,044		2,245	2,196	49
Hawaii				84		84	2		2
Total	310	310		10,128	10,044	84	2,247	2,196	51
Northern Rocky Mountain:									
Idaho	223	223		2,426	2,410	16	18	18	
Montana	271	270	1	2,389	2,389		16	16	
South Dakota (west)				447	447		2	2	
Wyoming	54	54		441	426	15	3	3	
Total	548	547	1	5,703	5,672	31	39	39	

See footnotes at end of table.

TABLE 38.—*Total output of timber products in the United States, by product, softwood and hardwoods, section, region, and State, 1962*[1]—Continued

Section, region, and State	Miscellaneous industrial wood (continued)						Fuelwood		
	Mine timbers			Other industrial[3]					
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand cu. ft.	*Thousand cu. ft.*	*Thousand cu. ft*	*Thousand cu. ft.*	*Thousand cu ft.*	*Thousand cu. ft.*	*Thousand cords*	*Thousand cords*	*Thousand cords*
Southern Rocky Mountain:									
Arizona	556	556		486	111	375	111	94	17
Colorado	1,411	1,409	2	1,689	483	1,206	28	26	2
Nevada				55	12	43	5	4	1
New Mexico	410	410		274	250	24	157	154	3
Utah	245	245		787	385	402	1	1	
Total	2,622	2,620	2	3,291	1,241	2,050	302	279	23
Total, West	3,649	3,646	3	56,719	54,554	2,165	7,115	7,038	77
Total, all regions	48,401	8,089	40,312	197,607	74,998	122,609	26,922	11,248	15,674

[1] These estimates of total output include both roundwood and plant by-products.
[2] International ¼-inch log rule. Saw logs assumed to equal lumber tally.
[3] Includes hewn ties, excelsior bolts, shingle bolts, turnery and handle stock, shuttle blocks, chemical wood, farm timbers, and plant byproducts used for mulch, livestock bedding, etc.

TABLE 39.—*Total roundwood production in the United States, by source of material, softwoods and hardwoods, section, region, and State, 1962*

(Thousand cubic feet)

Section, region, and State	All sources			Growing stock trees			Cull trees		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
New England:									
Connecticut	22,519	8,379	14,140	17,033	6,561	10,472	4,057	1,312	2,745
Maine	251,103	185,284	65,819	230,313	172,763	57,550	17,561	10,491	7,070
Massachusetts	28,511	10,528	17,983	22,565	9,102	13,463	4,723	1,358	3,365
New Hampshire	50,540	33,164	17,376	43,861	29,540	14,321	3,425	2,688	737
Rhode Island	3,118	701	2,417	2,390	620	1,770	526	46	480
Vermont	38,955	26,253	12,702	33,800	23,862	9,938	4,191	1,910	2,281
Total	394,746	264,309	130,437	349,962	242,448	107,514	34,483	17,805	16,678
Middle Atlantic:									
Delaware	8,439	5,343	3,096	6,639	4,613	2,026	1,138	662	476
Maryland	58,955	18,643	40,312	41,476	15,664	25,812	14,875	1,529	13,346
New Jersey	29,949	8,156	21,793	18,637	7,012	11,625	7,036	1,003	6,033
New York	152,525	35,717	116,808	109,469	31,434	78,035	21,782	2,226	19,556
Pennsylvania	192,028	42,777	149,251	152,556	35,894	116,662	28,765	5,908	22,857
West Virginia	117,249	14,244	103,005	89,761	12,571	77,190	10,557		10,557
Total	559,145	124,880	434,265	418,538	107,188	311,350	84,153	11,328	72,825
Lake States:									
Michigan	193,819	49,823	143,996	154,449	45,409	109,040	10,381	3,102	7,279
Minnesota	164,456	72,815	91,641	128,777	65,494	63,283	8,457	3,523	4,934
North Dakota	1,744		1,744	930		930	282		282
South Dakota (east)	3,420	214	3,206	1,810	159	1,651	587	25	562
Wisconsin	199,196	39,999	159,197	153,536	36,388	117,148	10,932	2,585	8,347
Total	562,635	162,851	399,784	439,502	147,450	292,052	30,639	9,235	21,404
Central:									
Illinois	39,658	609	39,049	27,489	432	27,057	2,945	57	2,888
Indiana	47,232	1,077	46,155	31,250	982	30,268	5,221	10	5,211
Iowa	26,112	345	25,767	14,192	332	13,860	2,597	1	2,596
Kansas	10,468	193	10,275	6,702	185	6,517	1,409		1,409
Kentucky	120,663	9,197	111,466	104,269	8,856	95,413	816	83	733
Missouri	119,634	6,802	112,832	66,003	5,937	60,066	15,424	118	15,306
Nebraska	5,928	928	5,000	3,533	530	3,003	965	250	715
Ohio	65,841	2,980	62,861	53,871	2,840	51,031	3,883	37	3,846
Total	435,536	22,131	413,405	307,309	20,094	287,215	33,260	556	32,704
Total, North	1,952,062	574,171	1,377,891	1,515,311	517,180	998,131	182,535	38,924	143,611
South Atlantic:									
North Carolina	524,186	338,190	185,996	435,242	292,543	142,699	43,814	8,159	35,655
South Carolina	357,230	246,525	110,705	303,629	215,084	88,545	23,868	5,619	18,249
Virginia	394,111	213,400	180,711	324,508	182,333	142,175	37,288	5,553	31,735
Total	1,275,527	798,115	477,412	1,063,379	689,960	373,419	104,970	19,331	85,639

See footnotes at end of table.

TABLE 39.—*Total roundwood production in the United States, by source of material, softwoods and hardwoods, section, region, and State, 1962*—Continued

(Thousand cubic feet)

Section, region, and State	All sources			Growing stock trees			Cull trees		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
East Gulf:									
Florida	257,476	226,655	30,821	233,506	206,625	26,881	7,566	4,224	3,342
Georgia	576,025	451,363	124,662	516,347	408,723	107,624	23,448	8,994	14,454
Total	833,501	678,018	155,483	749,853	615,348	134,505	31,014	13,218	17,796
Central Gulf:									
Alabama	477,189	310,208	166,981	438,326	293,321	145,005	4,404	368	4,036
Mississippi	363,877	144,983	218,894	322,651	137,709	184,942	10,990	647	10,343
Tennessee	180,314	43,342	136,972	163,648	41,727	121,921	4,659	152	4,507
Total	1,021,380	498,533	522,847	924,625	472,757	451,868	20,053	1,167	18,886
West Gulf:									
Arkansas	387,498	212,986	174,512	351,441	205,405	146,036	9,711	734	8,977
Louisiana	370,406	215,676	154,730	336,407	205,960	130,447	8,566	1,037	7,529
Oklahoma	48,263	16,183	32,080	29,104	15,646	13,458	1,484	8	1,476
Texas	240,744	150,173	90,571	197,688	142,176	55,512	2,557	632	1,925
Total	1,046,911	595,018	451,893	914,640	569,187	345,453	22,318	2,411	19,907
Total, South	4,177,319	2,569,684	1,607,635	3,652,497	2,347,252	1,305,245	178,355	36,127	142,228
Pacific Northwest:									
Alaska	75,119	75,119		73,767	73,767		676	676	
Oregon	1,773,542	1,755,297	18,245	1,488,383	1,471,156	17,227	15,285	14,849	436
Washington	898,672	862,564	36,108	821,977	786,869	35,108	12,991	12,847	144
Total	2,747,333	2,692,980	54,353	2,384,127	2,331,792	52,335	28,952	28,372	580
Pacific Southwest:									
California	821,558	812,739	8,819	783,151	779,037	4,114	1,172	1,068	104
Hawaii	525		525	299		299	14		14
Total	822,083	812,739	9,344	783,450	779,037	4,413	1,186	1,068	118
Northern Rocky Mountain:									
Idaho	229,445	229,219	226	219,480	219,257	223	230	230	
Montana	192,079	190,926	1,153	182,290	181,173	1,117	5	5	
South Dakota (west)	11,235	11,235		11,062	11,062				
Wyoming	19,075	19,060	15	18,333	18,318	15	80	80	
Total	451,834	450,440	1,394	431,165	429,810	1,355	315	315	
Southern Rocky Mountain:									
Arizona	64,369	62,821	1,548	56,002	55,806	196			
Colorado	42,134	40,467	1,667	39,873	38,375	1,498			
Nevada	846	723	123	489	430	59			
New Mexico	47,808	46,541	1,267	34,966	34,086	880			
Utah	14,096	13,693	403	13,230	12,846	384			
Total	169,253	164,245	5,008	144,560	141,543	3,017			
Total, West	4,190,503	4,120,404	70,099	3,743,302	3,682,182	61,120	30,453	29,755	698
Total, all regions	10,319,884	7,264,259	3,055,625	8,911,110	6,546,614	2,364,496	391,343	104,806	286,537

Section, region, and State	Dead trees			Other sources [1]		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
New England:						
Connecticut	391	81	310	1,038	425	613
Maine	1,635	676	959	1,594	1,354	240
Massachusetts	406	47	359	817	21	796
New Hampshire	1,164	610	554	2,090	326	1,764
Rhode Island	54	2	52	148	33	115
Vermont	791	433	358	173	48	125
Total	4,441	1,849	2,592	5,860	2,207	3,653
Middle Atlantic:						
Delaware	261		261	401	68	333
Maryland	612	341	271	1,992	1,109	883
New Jersey	2,561	13	2,548	1,715	128	1,587
New York	11,865	406	11,459	9,409	1,651	7,758
Pennsylvania	6,323	645	5,678	4,384	330	4,054
West Virginia	8,202		8,202	8,729	1,673	7,056
Total	29,824	1,405	28,419	26,630	4,959	21,671

See footnotes at end of table.

TABLE 39.—*Total roundwood production in the United States, by source of material, softwoods and hardwoods, section, region, and State, 1962*—Continued

(Thousand cubic feet)

Section, region, and State	Dead trees			Other sources [1]		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
Lake States:						
Michigan	3,647	782	2,865	25,342	530	24,812
Minnesota	3,917	1,479	2,438	23,305	2,319	20,986
North Dakota	20		20	512		512
South Dakota (east)	41	1	40	982	29	953
Wisconsin	3,938	512	3,426	30,790	514	30,276
Total	11,563	2,774	8,789	80,931	3,392	77,539
Central:						
Illinois	1,104		1,104	8,120	120	8,000
Indiana	2,394	12	2,382	8,367	73	8,294
Iowa	2,195	2	2,193	7,128	10	7,118
Kansas	106		106	2,251	8	2,243
Kentucky	1,786	214	1,572	13,792	44	13,748
Missouri	8,665	166	8,499	29,542	581	28,961
Nebraska	61	10	51	1,369	138	1,231
Ohio	1,736	8	1,728	6,351	95	6,256
Total	18,047	412	17,635	76,920	1,069	75,851
Total, North	63,875	6,440	57,435	190,341	11,627	178,714
South Atlantic:						
North Carolina	14,012	8,271	5,741	31,118	29,217	1,901
South Carolina	8,636	5,698	2,938	21,097	20,124	973
Virginia	10,738	5,629	5,109	21,577	19,885	1,692
Total	33,386	19,598	13,788	73,792	69,226	4,566
East Gulf:						
Florida	1,097	677	420	15,307	15,129	178
Georgia	3,255	1,441	1,814	32,975	32,205	770
Total	4,352	2,118	2,234	48,282	47,334	948
Central Gulf:						
Alabama	4,636	1,161	3,475	29,823	15,358	14,465
Mississippi	8,882	1,019	7,863	21,354	5,608	15,746
Tennessee	3,894	122	3,772	8,113	1,341	6,772
Total	17,412	2,302	15,110	59,290	22,307	36,983
West Gulf:						
Arkansas	8,684	653	8,031	17,662	6,194	11,468
Louisiana	7,255	708	6,547	18,178	7,971	10,207
Oklahoma	1,583	150	1,433	16,092	379	15,713
Texas	1,514	289	1,225	38,985	7,076	31,909
Total	19,036	1,800	17,236	90,917	21,620	69,297
Total, South	74,186	25,818	48,368	272,281	160,487	111,794
Pacific Northwest:						
Alaska	676	676				
Oregon	266,733	266,733		3,141	2,559	582
Washington	62,694	61,838	856	1,010	1,010	
Total	330,103	329,247	856	4,151	3,569	582
Pacific Southwest:						
California	33,098	32,273	825	4,137	361	3,776
Hawaii	1		1	211		211
Total	33,099	32,273	826	4,348	361	3,987
Northern Rocky Mountain:						
Idaho	9,731	9,728	3	4	4	
Montana	9,784	9,748	36			
South Dakota (west)	173	173				
Wyoming	662	662				
Total	20,350	20,311	39	4	4	
Southern Rocky Mountain:						
Arizona	7,415	6,497	918	952	518	434
Colorado	2,261	2,092	169			
Nevada	291	227	64	66	66	
New Mexico	11,771	11,427	344	1,071	1,028	43
Utah	836	832	4	30	15	15
Total	22,574	21,075	1,499	2,119	1,627	492
Total, West	406,126	402,906	3,220	10,622	5,561	5,061
Total, all regions	544,187	435,164	109,023	473,244	177,675	295,569

[1] Trees less than 5.0 inches in diameter on commercial forest land and trees on noncommercial and nonforest lands.

TABLE 40.—*Timber cut from growing stock in the United States, by roundwood product and logging residues, softwoods and hardwoods, section, region, and State, 1962*

(Thousand cubic feet)

Section, region, and State	Total timber cut			Roundwood products								
				Total			Saw logs			Veneer		
	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods
New England:												
Connecticut	20,105	7,190	12,915	17,033	6,561	10,472	4,975	495	4,480			
Maine	260,311	189,332	70,979	230,313	172,763	57,550	50,970	47,815	3,155	9,886	217	9,669
Massachusetts	26,579	9,975	16,604	22,565	9,102	13,463	13,050	6,080	6,970			
New Hampshire	50,035	32,373	17,662	43,861	29,540	14,321	26,320	23,170	3,150	1,839		1,839
Rhode Island	2,863	680	2,183	2,390	620	1,770	165		165			
Vermont	38,407	26,150	12,257	33,800	23,862	9,938	15,145	12,320	2,825	1,152		1,152
Total	398,300	265,700	132,600	349,962	242,448	107,514	110,625	89,880	20,745	12,877	217	12,660
Middle Atlantic:												
Delaware	7,491	5,104	2,387	6,639	4,613	2,026	3,185	2,605	580	644		K 644
Maryland	47,750	17,332	30,418	41,476	15,664	25,812	18,475	6,435	12,040	1,535	3	1,532
New Jersey	21,458	7,759	13,699	18,637	7,012	11,625	2,625	305	2,320	793		793
New York	126,739	34,781	91,958	109,469	31,434	78,035	42,690	11,645	31,045	4,363		4,363
Pennsylvania	177,191	39,715	137,476	152,556	35,894	116,662	61,870	12,260	49,610	950		950
West Virginia	104,871	13,909	90,962	89,761	12,571	77,190	48,630	3,370	45,260	481		481
Total	485,500	118,600	366,900	418,538	107,188	311,350	177,475	36,620	140,855	8,766	3	8,763
Lake States:												
Michigan	166,350	48,105	118,245	154,449	45,409	109,040	47,875	11,151	36,724	3,219	24	3,195
Minnesota	135,456	68,153	67,303	128,777	65,494	63,283	25,194	13,521	11,673	1,376		1,376
North Dakota	963		963	930		930	179		179	4		4
South Dakota (east)	1,867	165	1,702	1,810	159	1,651	207	6	201	41		41
Wisconsin	164,716	38,392	126,324	153,536	36,388	117,148	42,208	10,204	32,004	3,697		3,697
Total	469,352	154,815	314,537	439,502	147,450	292,052	115,663	34,882	80,781	8,337	24	8,313
Central:												
Illinois	29,690	458	29,232	27,489	432	27,057	15,203	75	15,128	1,541		1,541
Indiana	33,532	1,034	32,498	31,250	982	30,268	19,326	765	18,561	1,747		1,747
Iowa	14,985	350	14,635	14,192	332	13,860	6,451	306	6,145	1,172		1,172
Kansas	7,151	189	6,962	6,702	185	6,517	2,522	160	2,362	776		776
Kentucky	123,299	9,324	113,975	104,269	8,856	95,413	67,017	4,154	62,863	1,604		1,604
Missouri	70,003	6,221	63,782	66,003	5,937	60,066	32,939	4,589	28,350	650	1	649
Nebraska	3,752	542	3,210	3,533	530	3,003	1,333	70	1,263	56		56
Ohio	60,747	3,002	57,745	53,871	2,840	51,031	27,754	2,296	25,458	1,501		1,501
Total	343,159	21,120	322,039	307,309	20,094	287,215	172,545	12,415	160,130	9,047	1	9,046
Total, North	1,696,311	560,235	1,136,076	1,515,311	517,180	998,131	576,308	173,797	402,511	39,027	245	38,782
South Atlantic:												
North Carolina	488,699	317,408	171,291	435,242	292,543	142,699	254,741	180,902	73,839	22,941	1,647	21,294
South Carolina	339,651	233,365	106,286	303,629	215,084	88,545	127,275	87,871	39,404	11,914	133	11,781
Virginia	368,493	197,831	170,662	324,508	182,333	142,175	173,816	88,966	84,850	5,270	108	5,162
Total	1,196,843	748,604	448,239	1,063,379	689,960	373,419	555,832	357,739	198,093	40,125	1,888	38,237
East Gulf:												
Florida	254,294	215,593	38,701	233,506	206,625	26,881	56,898	54,313	2,585	12,735	562	12,173
Georgia	581,408	426,462	154,946	516,347	408,723	107,624	186,604	137,023	49,581	17,923	63	17,860
Total	835,702	642,055	193,647	749,853	615,348	134,505	243,502	191,336	52,166	30,658	625	30,033
Central Gulf:												
Alabama	523,784	308,956	214,828	438,326	293,321	145,005	172,666	122,642	50,024	14,112	70	14,042
Mississippi	386,873	145,523	241,350	322,651	137,709	184,942	120,279	64,699	55,580	8,638		8,638
Tennessee	210,695	44,064	166,631	163,648	41,727	121,921	90,485	25,175	65,310	1,552	58	1,494
Total	1,121,352	498,543	622,809	924,625	472,757	451,868	383,430	212,516	170,914	24,302	128	24,174
West Gulf:												
Arkansas	423,619	217,641	205,978	351,441	205,405	146,036	188,900	125,485	63,415	4,821		4,821
Louisiana	390,525	217,634	172,891	336,407	205,960	130,447	153,932	97,636	56,296	4,962		4,962
Oklahoma	33,614	16,621	16,993	29,104	15,646	13,458	14,298	12,010	2,288	408		408
Texas	233,793	150,744	83,049	197,688	142,176	55,512	97,645	74,356	23,289	4,854	51	4,803
Total	1,081,551	602,640	478,911	914,640	569,187	345,453	454,775	309,487	145,288	15,045	51	14,994
Total, South	4,235,448	2,491,842	1,743,606	3,652,497	2,347,252	1,305,245	1,637,539	1,071,078	566,461	110,130	2,692	107,438
Pacific Northwest:												
Alaska	97,446	97,446		73,767	73,767		14,834	14,834				
Oregon	1,617,423	1,598,828	18,595	1,488,383	1,471,156	17,227	1,013,000	1,006,000	7,000	382,000	382,000	
Washington	902,567	863,985	38,582	821,977	786,869	35,108	480,000	472,000	8,000	90,000	90,000	
Total	2,617,436	2,560,259	57,177	2,384,127	2,331,792	52,335	1,507,834	1,492,834	15,000	472,000	472,000	

TABLE 40.—*Timber cut from growing stock in the United States, by roundwood product and logging residues, softwoods and hardwoods, section, region, and State, 1962*—Continued

(Thousand cubic feet)

Section, region, and State	Total timber cut			Roundwood products								
				Total			Saw logs			Veneer		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
Pacific Southwest:												
California	946,942	932,040	14,902	783,151	779,037	4,114	690,283	688,542	1,741	84,804	84,781	23
Hawaii	500		500	299		299	250		250	5		5
Total	947,442	932,040	15,402	783,450	779,037	4,413	690,533	688,542	1,991	84,809	84,781	28
Northern Rocky Mountain:												
Idaho	248,520	248,266	254	219,480	219,257	223	209,164	208,998	166	2,797	2,756	41
Montana	206,365	205,106	1,259	182,290	181,173	1,117	160,731	159,615	1,116	15,965	15,965	
South Dakota (west)	11,756	11,756		11,062	11,062		6,428	6,428				
Wyoming	19,953	19,938	15	18,333	18,318	15	17,569	17,569				
Total	486,594	485,066	1,528	431,165	429,810	1,355	393,892	392,610	1,282	18,762	18,721	41
Southern Rocky Mountain:												
Arizona	64,645	64,449	196	56,002	55,806	196	46,750	46,750				
Colorado	43,573	41,932	1,641	39,873	38,375	1,498	35,997	35,832	165			
Nevada	538	479	59	489	430	59	403	403				
New Mexico	41,223	40,185	1,038	34,966	34,086	880	34,012	33,136	876			
Utah	14,744	14,360	384	13,230	12,846	384	12,358	12,358				
Total	164,723	161,405	3,318	144,560	141,543	3,017	129,520	128,479	1,041			
Total, West	4,216,195	4,138,770	77,425	3,743,302	3,682,182	61,120	2,721,779	2,702,465	19,314	575,571	575,502	69
Total, all regions	10,147,954	7,190,847	2,957,107	8,911,110	6,546,614	2,364,496	4,935,626	3,947,340	988,286	724,728	578,439	146,289

Section, region, and State	Roundwood products (Continued)									Logging residues		
	Pulpwood			Miscellaneous industrial			Fuelwood					
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
New England:												
Connecticut	2,020	945	1,075	540	463	77	9,498	4,658	4,840	3,072	629	2,443
Maine	159,250	123,435	35,815	1,267	1,086	181	8,940	210	8,730	29,998	16,569	13,429
Massachusetts	1,810	1,310	500	457	389	68	7,248	1,323	5,925	4,014	873	3,141
New Hampshire	10,920	5,615	5,305	998	674	324	3,784	81	3,703	6,174	2,833	3,341
Rhode Island	1,155	435	720	48	18	30	1,022	167	855	473	60	413
Vermont	12,655	10,720	1,935	1,016	550	466	3,832	272	3,560	4,607	2,288	2,319
Total	187,810	142,460	45,350	4,326	3,180	1,146	34,324	6,711	27,613	48,338	23,252	25,086
Middle Atlantic:												
Delaware	1,440	1,440		661	417	244	709	151	558	852	491	361
Maryland	8,805	5,235	3,570	2,776	1,412	1,364	9,885	2,579	7,306	6,274	1,668	4,606
New Jersey	3,215	2,305	910	5,273	2,983	2,292	6,729	1,419	5,310	2,821	747	2,074
New York	24,520	8,000	16,520	13,835	6,470	7,365	24,061	5,319	18,742	17,270	3,347	13,923
Pennsylvania	46,760	14,560	32,200	27,815	5,508	22,307	15,161	3,566	11,595	24,635	3,821	20,814
West Virginia	14,120	2,990	11,130	12,196	3,045	9,151	14,334	3,166	11,168	15,110	1,338	13,772
Total	98,860	34,530	64,330	62,558	19,835	42,723	70,879	16,200	54,679	66,962	11,412	55,550
Lakes States:												
Michigan	74,930	30,505	44,425	12,654	3,729	8,925	15,771		15,771	11,901	2,696	9,205
Minnesota	74,220	46,743	27,477	7,651	3,604	4,047	20,336	1,626	18,710	6,679	2,659	4,020
North Dakota				167		167	580		580	33		33
South Dakota (east)				373	124	249	1,189	29	1,160	57	6	51
Wisconsin	72,039	23,561	48,478	10,886	2,376	8,510	24,706	247	24,459	11,180	2,004	9,176
Total	221,189	100,809	120,380	31,731	9,833	21,898	62,582	1,902	60,680	29,850	7,365	22,485
Central:												
Illinois	4,932	344	4,588	4,163	13	4,150	1,650		1,650	2,201	26	2,175
Indiana	3,916	13	3,903	2,141	204	1,937	4,120		4,120	2,282	52	2,230
Iowa	1,425		1,425	1,022	26	996	4,122		4,122	793	18	775
Kansas				649	25	624	2,755		2,755	449	4	445
Kentucky	5,673	2,544	3,129	13,019	2,158	10,861	16,956		16,956	19,030	468	18,562
Missouri	928	74	854	16,243	1,067	15,176	15,243	206	15,037	4,000	284	3,716
Nebraska	124	124		280	46	234	1,740	290	1,450	219	12	207
Ohio	15,488	299	15,189	4,028	245	3,783	5,100		5,100	6,876	162	6,714
Total	32,486	3,398	29,088	41,545	3,784	37,761	51,686	496	51,190	35,850	1,026	34,824
Total, North	540,345	281,197	259,148	140,160	36,632	103,528	219,471	25,309	194,162	181,000	43,055	137,945

TABLE 40.—*Timber cut from growing stock in the United States, by roundwood product and logging residues, softwoods and hardwoods, section, region, and State, 1962*—Continued

(Thousand cubic feet)

Section, region, and State	Roundwood products (Continued)									Logging residues		
	Pulpwood			Miscellaneous industrial			Fuelwood					
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
South Atlantic:												
North Carolina	119,790	90,350	29,440	4,842	3,348	1,494	32,928	16,296	16,632	53,457	24,865	28,592
South Carolina	135,503	104,975	30,528	13,951	13,486	465	14,986	8,619	6,367	36,022	18,281	17,741
Virginia	109,064	75,400	33,664	11,956	6,687	5,269	24,402	11,172	13,230	43,985	15,498	28,487
Total	364,357	270,725	93,632	30,749	23,521	7,228	72,316	36,087	36,229	133,464	58,644	74,820
East Gulf:												
Florida	142,335	133,024	9,311	19,624	17,622	2,002	1,914	1,104	810	20,788	8,968	11,820
Georgia	288,542	255,622	32,920	11,144	9,713	1,431	12,134	6,302	5,832	65,061	17,739	47,322
Total	430,877	388,646	42,231	30,768	27,335	3,433	14,048	7,406	6,642	85,849	26,707	59,142
Central Gulf:												
Alabama	195,431	150,031	45,400	22,220	16,072	6,148	33,897	4,506	29,391	85,458	15,635	69,823
Mississippi	126,034	59,304	66,730	21,307	9,696	11,611	46,393	4,010	42,383	64,222	7,814	56,408
Tennessee	28,200	13,914	14,286	22,990	2,375	20,615	20,421	205	20,216	47,047	2,337	44,710
Total	349,665	223,249	126,416	66,517	28,143	38,374	100,711	8,721	91,990	196,727	25,786	170,941
West Gulf:												
Arkansas	90,310	67,274	23,036	23,248	11,185	12,063	44,162	1,461	42,701	72,178	12,236	59,942
Louisiana	122,930	95,033	27,897	17,599	11,751	5,848	36,984	1,540	35,444	54,118	11,674	42,444
Oklahoma	2,177	739	1,438	3,870	2,252	1,618	8,351	645	7,706	4,510	975	3,535
Texas	75,252	57,891	17,361	13,311	9,806	3,505	6,626	72	6,554	36,105	8,568	27,537
Total	290,669	220,937	69,732	58,028	34,994	23,034	96,123	3,718	92,405	166,911	33,453	133,458
Total, South	1,435,568	1,103,557	332,011	186,062	113,993	72,069	283,198	55,932	227,266	582,951	144,590	438,361
Pacific Northwest:												
Alaska	58,932	58,932		1	1					23,679	23,679	
Oregon	72,000	62,000	10,000	15,257	15,213	44	6,126	5,943	183	129,040	127,672	1,368
Washington	228,690	201,690	27,000	18,127	18,127		5,160	5,052	108	80,590	77,116	3,474
Total	359,622	322,622	37,000	33,385	33,341	44	11,286	10,995	291	233,309	228,467	4,842
Pacific Southwest:												
California	517	464	53	5,037	5,037		2,510	213	2,297	163,791	153,003	10,788
Hawaii				25		25	19		19	201		201
Total	517	464	53	5,062	5,037	25	2,529	213	2,316	163,992	153,003	10,989
Northern Rocky Mountain:												
Idaho	3,080	3,080		4,421	4,405	16	18	18		29,040	29,009	31
Montana	2,701	2,701		2,893	2,892	1				24,075	23,933	142
South Dakota (west)	3,060	3,060		1,574	1,574					694	694	
Wyoming	334	334		419	404	15	11	11		1,620	1,620	
Total	9,175	9,175		9,307	9,275	32	29	29		55,429	55,256	173
Southern Rocky Mountain:												
Arizona	7,947	7,947		952	756	196	353	353		8,643	8,643	
Colorado	203	68	135	3,673	2,475	1,198				3,700	3,557	143
Nevada				54	12	42	32	15	17	49	49	
New Mexico				593	589	4	361	361		6,257	6,099	158
Utah				859	475	384	13	13		1,514	1,514	
Total	8,150	8,015	135	6,131	4,307	1,824	759	742	17	20,163	19,862	301
Total, West	377,464	340,276	37,188	53,885	51,960	1,925	14,603	11,979	2,624	472,893	456,588	16,305
Total, all regions	2,353,377	1,725,030	628,347	380,107	202,585	177,522	517,272	93,220	424,052	1,236,844	644,233	592,611

TABLE 41.—*Roundwood production from growing stock in the United States, by product, softwoods and hardwoods, section, region, and State, 1962*

Section, region, and State	Saw logs [1]			Veneer logs			Pulpwood		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand bd. ft.[2]	*Thousand bd. ft.*[2]	*Thousand bd. ft.*[2]	*Thousand bd. ft.*[2]	*Thousand bd. ft.*[2]	*Thousand bd. ft.*[2]	*Thousand cords*	*Thousand cords*	*Thousand cords*
New England:									
Connecticut	27,905	2,230	25,675				25	12	13
Maine	233,519	215,454	18,065	57,176	871	56,305	1,991	1,543	448
Massachusetts	67,331	27,396	39,935				22	16	6
New Hampshire	122,464	104,404	18,060	9,438		9,438	136	70	66
Rhode Island	950		950				14	5	9
Vermont	71,679	55,514	16,165	6,543		6,543	158	134	24
Total	523,848	404,998	118,850	73,157	871	72,286	2,346	1,780	566
Middle Atlantic:									
Delaware	19,600	15,830	3,770	3,443		3,443	18	18	
Maryland	117,365	39,100	78,265	8,205	16	8,189	110	65	45
New Jersey	16,945	1,855	15,090	4,239		4,239	40	29	11
New York	272,560	70,760	201,800	23,324		23,324	307	100	207
Pennsylvania	396,985	74,485	322,500	5,079		5,079	585	182	403
West Virginia	314,695	20,485	294,210	2,571		2,571	177	37	140
Total	1,138,150	222,515	915,635	46,861	16	46,845	1,237	431	806
Lake States:									
Michigan	289,500	68,000	221,500	21,760	162	21,598	990	391	599
Minnesota	150,100	80,700	69,400	9,288		9,288	955	600	355
North Dakota	1,287		1,287	25		25			
South Dakota (east)	1,470	35	1,435	300		300			
Wisconsin	251,300	62,300	189,000	24,975		24,975	935	305	630
Total	693,657	211,035	482,622	56,348	162	56,186	2,880	1,296	1,584
Central:									
Illinois	100,000	495	99,505	10,863		10,863	66	5	61
Indiana	127,100	5,000	122,100	12,388		12,388	52		52
Iowa	42,450	2,000	40,450	8,267		8,267	19		19
Kansas	16,500	1,000	15,500	5,276		5,276			
Kentucky	454,823	23,242	431,581	12,455		12,455	76	33	43
Missouri	216,600	30,000	186,600	4,608	6	4,602	12	1	11
Nebraska	9,435	435	9,000	386		386	2	2	
Ohio	191,700	15,000	176,700	10,223		10,223	221	4	217
Total	1,158,608	77,172	1,081,436	64,466	6	64,460	448	45	403
Total, North	3,514,263	915,720	2,598,543	240,832	1,055	239,777	6,911	3,552	3,359
South Atlantic:									
North Carolina	1,519,404	1,057,908	461,496	150,274	9,253	141,021	1,584	1,221	363
South Carolina	760,140	513,864	246,276	78,764	744	78,020	1,796	1,419	377
Virginia	1,050,576	520,264	530,312	34,796	605	34,191	1,435	1,019	416
Total	3,330,120	2,092,036	1,238,084	263,834	10,602	253,232	4,815	3,659	1,156
East Gulf:									
Florida	326,313	310,359	15,954	82,766	3,723	79,043	1,996	1,874	122
Georgia	1,089,047	782,991	306,056	116,393	417	115,976	4,033	3,600	433
Total	1,415,360	1,093,350	322,010	199,159	4,140	195,019	6,029	5,474	555
Central Gulf:									
Alabama	1,085,300	747,925	337,375	101,346	426	100,920	2,578	1,990	588
Mississippi	767,659	392,116	375,543	61,703		61,703	1,642	787	855
Tennessee	572,382	145,515	426,867	11,021	351	10,670	368	185	183
Total	2,425,341	1,285,556	1,139,785	174,070	777	173,293	4,588	2,962	1,626
West Gulf:									
Arkansas	1,194,502	757,761	436,741	34,438		34,438	1,187	892	295
Louisiana	971,875	590,994	380,881	35,430		35,430	1,618	1,260	358
Oklahoma	86,074	71,729	14,345	2,918		2,918	27	9	18
Texas	600,964	443,387	157,577	34,673	366	34,307	991	768	223
Total	2,853,415	1,863,871	989,544	107,459	366	107,093	3,823	2,929	894
Total, South	10,024,236	6,334,813	3,689,423	744,522	15,885	728,637	19,255	15,024	4,231
Pacific Northwest:									
Alaska	93,994	93,994					655	655	
Oregon	6,749,000	6,700,000	49,000	2,611,000	2,611,000		809	694	115
Washington	3,184,000	3,133,000	51,000	634,000	634,000		2,545	2,241	304
Total	10,026,994	9,926,994	100,000	3,245,000	3,245,000		4,009	3,590	419
Pacific Southwest:									
California	4,761,949	4,749,949	12,000	652,989	652,816	173	7	6	1
Hawaii	1,500		1,500	35		35			
Total	4,763,449	4,749,949	13,500	653,024	652,816	208	7	6	1

See footnotes at end of table.

TABLE 41.—*Roundwood production from growing stock in the United States, by product, softwoods and hardwoods, section, region, and State, 1962*—Continued

Section, region, and State	Saw logs [1]			Veneer logs			Pulpwood		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand bd. ft.[2]	*Thousand bd. ft.*[2]	*Thousand bd. ft.*[2]	*Thousand bd. ft.*[2]	*Thousand bd. ft.*[2]	*Thousand bd. ft.*[2]	*Thousand cords*	*Thousand cords*	*Thousand cords*
Northern Rocky Mountain:									
Idaho	1,375,986	1,374,986	1,000	19,030	18,750	280	41	41	
Montana	1,123,883	1,116,187	7,696	111,642	111,642		34	34	
South Dakota (west)	38,568	38,568					34	34	
Wyoming	104,578	104,578					3	3	
Total	2,643,015	2,634,319	8,696	130,672	130,392	280	112	112	
Southern Rocky Mountain:									
Arizona	322,409	322,409					88	88	
Colorado	210,509	209,543	966				3	1	2
Nevada	2,376	2,376							
New Mexico	234,650	228,525	6,125						
Utah	73,998	73,998							
Total	843,942	836,851	7,091				91	89	2
Total, West	18,277,400	18,148,113	129,287	4,028,696	4,028,208	488	4,219	3,797	422
Total, all regions	31,815,899	25,398,646	6,417,253	5,014,050	4,045,148	968,902	30,385	22,373	8,012

Section, region, and State	Cooperage			Piling		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand bd. ft.[2]	*Thousand bd. ft.*[2]	*Thousand bd. ft.*[2]	*Thousand lin. ft.*	*Thousand lin. ft.*	*Thousand lin. ft.*
New England:						
Connecticut				58	13	45
Maine	1,306	1,306				
Massachusetts	441	420	21	35	7	28
New Hampshire	2,802	2,282	520	7	7	
Rhode Island				37		37
Vermont				9	7	2
Total	4,549	4,008	541	146	34	112
Middle Atlantic:						
Delaware				675	394	281
Maryland	1,727		1,727	1,067	872	195
New Jersey				400	160	240
New York				433	95	338
Pennsylvania	1,941		1,941	380		380
West Virginia	1,545		1,545	57		57
Total	5,213		5,213	3,012	1,521	1,491
Lake States:						
Michigan				260	10	250
Minnesota	2,050		2,050	190	190	
North Dakota						
South Dakota (east)						
Wisconsin	5,150		5,150	70	15	55
Total	7,200		7,200	520	215	305
Central:						
Illinois	20,098		20,098	1,570		1,570
Indiana	4,100		4,100			
Iowa	2,850		2,850			
Kansas	2,150		2,150			
Kentucky	21,017		21,017	30		30
Missouri	18,525		18,525	5		5
Nebraska	140		140			
Ohio	12,034		12,034	85		85
Total	80,914		80,914	1,690		1,690
Total, North	97,876	4,008	93,868	5,368	1,770	3,598
South Atlantic:						
North Carolina	12,998	4,140	8,858	36	36	
South Carolina	2,460		2,460			
Virginia	4,649	4,017	632	7,198	5,732	1,466
Total	20,107	8,157	11,950	7,234	5,768	1,466

See footnotes at end of table.

TABLE 41.—*Roundwood production from growing stock in the United States, by product, softwoods and hardwoods, section, region, and State, 1962*—Continued

Section, region, and State	Cooperage			Piling		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand bd. ft.[2]	*Thousand bd. ft.*[2]	*Thousand bd. ft.*[2]	*Thousand lin. ft.*	*Thousand lin. ft.*	*Thousand lin. ft.*
East Gulf:						
Florida				8,976	8,976	
Georgia	2,825		2,825	648	648	
Total	2,825		2,825	9,624	9,624	
Central Gulf:						
Alabama	11,426	8,245	3,181	1,201	1,201	
Mississippi	12,706		12,706	4,043	4,043	
Tennessee	25,389	115	25,274	580	580	
Total	49,521	8,360	41,161	5,824	5,824	
West Gulf:						
Arkansas	18,392		18,392	2,175	1,972	203
Louisiana	4,950		4,950	4,783	4,783	
Oklahoma	82		82	42	42	
Texas	897		897	2,769	2,769	
Total	24,321		24,321	9,769	9,566	203
Total, South	96,774	16,517	80,257	32,451	30,782	1,669
Pacific Northwest:						
Alaska						
Oregon				2,196	2,196	
Washington				619	619	
Total				2,815	2,815	
Pacific Southwest:						
California				702	702	
Hawaii						
Total				702	702	
Northern Rocky Mountain:						
Idaho						
Montana						
South Dakota (west)				12	12	
Wyoming						
Total				12	12	
Southern Rocky Mountain:						
Arizona						
Colorado						
Nevada						
New Mexico						
Utah						
Total						
Total, West				3,529	3,529	
Total, all regions	194,650	20,525	174,125	41,348	36,081	5,267

Section, region, and State	Poles			Posts			Mine timbers		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand pieces	*Thousand pieces*	*Thousand pieces*	*Thousand pieces*	*Thousand pieces*	*Thousand pieces*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*
New England:									
Connecticut				507	480	27			
Maine	22	22		119	119				
Massachusetts				177	141	36			
New Hampshire	10	10		60	12	48			
Rhode Island				24	17	7			
Vermont	1	1		798	563	235			
Total	33	33		1,685	1,332	353			
Middle Atlantic:									
Delaware				220	104	116	6	6	
Maryland	1	1		1,772	840	932	190	3	187
New Jersey				1,399	1,353	46	189		189
New York	2	2		9,198	4,740	4,458	18		18
Pennsylvania				11,339	5,810	5,529	16,503		16,503
West Virginia	8	2	6	1,176	554	622	7,048	1,037	6,011
Total	11	5	6	25,104	13,401	11,703	23,954	1,046	22,908

See footnotes at end of table.

TABLE 41.—*Roundwood production from growing stock in the United States, by product, softwoods and hardwoods, section, region, and State, 1962*—Continued

Section, region, and State	Poles			Posts			Mine timbers		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand pieces	*Thousand pieces*	*Thousand pieces*	*Thousand pieces*	*Thousand pieces*	*Thousand pieces*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*
Lake States:									
Michigan	17	17		2,725	2,500	225	2,185	1,180	1,005
Minnesota	187	187		3,000	1,400	1,600	628	572	56
North Dakota	5		5	87		87	2		2
South Dakota (east)	15	5	10	188	83	105			
Wisconsin	32	32		4,100	2,100	2,000	417	250	167
Total	256	241	15	10,100	6,083	4,017	3,232	2,002	1,230
Central:									
Illinois	1		1	306		306	119	13	106
Indiana				889	204	685	184	36	148
Iowa				549	33	516	28		28
Kansas	5		5	237	37	200	5		5
Kentucky	5	5		2,508	1,544	964	4,177	272	3,905
Missouri	60	60		7,485	1,020	6,465	299	11	288
Nebraska	7	1	6	213	55	158			
Ohio	10	10		1,025	138	887	541	109	432
Total	88	76	12	13,212	3,031	10,181	5,353	441	4,912
Total, North	388	355	33	50,101	23,847	26,254	32,539	3,489	29,050
South Atlantic:									
North Carolina	153	153		996	886	110			
South Carolina	1,071	1,071		213	148	65			
Virginia	67	60	7	1,099	624	475	2,612	208	2,404
Total	1,291	1,284	7	2,308	1,658	650	2,612	208	2,404
East Gulf:									
Florida	564	564		775	775				
Georgia	553	553		2,227	2,140	87			
Total	1,117	1,117		3,002	2,915	87			
Central Gulf:									
Alabama	820	820		7,080	2,451	4,629	204	30	174
Mississippi	446	446		14,355	2,330	12,025			
Tennessee	22	22		8,796	2,079	6,717	1,417	165	1,252
Total	1,288	1,288		30,231	6,860	23,371	1,621	195	1,426
West Gulf:									
Arkansas	544	544		14,357	7,258	7,099	146	24	122
Louisiana	400	400		5,164	2,731	2,433			
Oklahoma	51	51		4,548	2,748	1,800	130	22	108
Texas	652	652		4,715	1,946	2,769			
Total	1,647	1,647		28,784	14,683	14,101	276	46	230
Total, South	5,343	5,336	7	64,325	26,116	38,209	4,509	449	4,060
Pacific Northwest:									
Alaska									
Oregon	241	241		1,677	1,637	40			
Washington	132	132		1,291	1,291		169	169	
Total	373	373		2,968	2,928	40	169	169	
Pacific Southwest:									
California	84	84		302	302		246	246	
Hawaii				8		8			
Total	84	84		310	302	8	246	246	
Northern Rocky Mountain:									
Idaho	149	149		704	704		177	177	
Montana	122	122		972	972		67	66	1
South Dakota (west)	85	85		596	596				
Wyoming				48	48		21	21	
Total	356	356		2,320	2,320		265	264	1
Southern Rocky Mountain:									
Arizona	9	9		31	31		524	524	
Colorado	53	53		361	361		1,331	1,329	2
Nevada									
New Mexico	2	2		11	11		387	387	
Utah							147	147	
Total	64	64		403	403		2,389	2,387	2
Total, West	877	877		6,001	5,953	48	3,069	3,066	3
Total, all regions	6,608	6,568	40	120,427	55,916	64,511	40,117	7,004	33,113

See footnotes at end of table.

TABLE 41.—*Roundwood production from growing stock in the United States, by product, softwoods and hardwoods, section, region, and State, 1962*—Continued

Section, region, and State	Other industrial [3]			Fuelwood		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand cu. ft.	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cords*	*Thousand cords*	*Thousand cords*
New England:						
Connecticut	45	17	28	118	58	60
Maine	724	543	181	112	3	109
Massachusetts	44	27	17	91	17	74
New Hampshire	246	67	179	47	1	46
Rhode Island	5	3	2	13	2	11
Vermont	296	22	274	48	3	45
Total	1,360	679	681	429	84	345
Middle Atlantic:						
Delaware	83	83		9	2	7
Maryland	338	210	128	123	32	91
New Jersey	3,782	1,853	1,929	84	18	66
New York	7,047	2,782	4,265	300	66	234
Pennsylvania	2,761	1,090	1,671	189	44	145
West Virginia	3,975	1,569	2,406	180	40	140
Total	17,986	7,587	10,399	885	202	683
Lake States:						
Michigan	8,027	467	7,560	220		220
Minnesota	2,638	338	2,300	280	20	260
North Dakota	75		75	9		9
South Dakota (east)	175	50	125	18		18
Wisconsin	6,179	231	5,948	355	5	350
Total	17,094	1,086	16,008	882	25	857
Central:						
Illinois	342		342	25		25
Indiana	807	12	795	63		63
Iowa	255		255	63		63
Kansas	155		155	42		42
Kentucky	2,446	68	2,378	253		253
Missouri	8,626	90	8,536	234	3	231
Nebraska	70	5	65	26	4	22
Ohio	1,037		1,037	73		73
Total	13,738	175	13,563	779	7	772
Total, North	50,178	9,527	40,651	2,975	318	2,657
South Atlantic:						
North Carolina	139	124	15	416	201	215
South Carolina	31		31	188	106	82
Virginia	1,465	214	1,251	308	137	171
Total	1,635	338	1,297	912	444	468
East Gulf:						
Florida	3,549	1,547	2,002	29	14	15
Georgia	1,157	216	941	193	81	112
Total	4,706	1,763	2,943	222	95	127
Central Gulf:						
Alabama	2,537	137	2,400	452	60	392
Mississippi	4,903	512	4,391	619	54	565
Tennessee	11,070	286	10,784	273	3	270
Total	18,510	935	17,575	1,344	117	1,227
West Gulf:						
Arkansas	7,911	904	7,007	567	19	548
Louisiana	3,758	136	3,622	493	20	473
Oklahoma	599		599	111	8	103
Texas	2,128	132	1,996	88	1	87
Total	14,396	1,172	13,224	1,259	48	1,211
Total, South	39,247	4,208	35,039	3,737	704	3,033
Pacific Northwest:						
Alaska						
Oregon	5,696	5,696		68	66	2
Washington	13,103	13,103		57	56	1
Total	18,799	18,799		125	122	3
Pacific Southwest:						
California	1,912	1,912		35	2	33
Hawaii	17		17			
Total	1,929	1,912	17	35	2	33

See footnotes at end of table.

TABLE 41.—*Roundwood production from growing stock in the United States, by product, softwoods and hardwoods, section, region, and State, 1962*—Continued

Section, region, and State	Other industrial [3]			Fuelwood		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand cu. ft.	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cords*	*Thousand cords*	*Thousand cords*
Northern Rocky Mountain:						
Idaho	1,007	991	16			
Montana	647	647				
South Dakota (west)	402	402				
Wyoming	350	335	15			
Total	2,406	2,375	31			
Southern Rocky Mountain:						
Arizona	278	82	196	5	5	
Colorado	1,537	341	1,196			
Nevada	54	12	42			
New Mexico	176	175	1	5	5	
Utah	712	328	384			
Total	2,757	938	1,819	10	10	
Total, West	25,891	24,024	1,867	170	134	36
Total, all regions	115,316	37,759	77,557	6,882	1,156	5,726

[1] Includes "saw logs" from poletimber-size trees and upper stem portions of sawtimber-size trees.
[2] International ¼-inch log rule.
[3] Includes hewn ties, box bolts, shingle logs, excelsior bolts, turnery bolts chemical wood, and bolts for other miscellaneous products.

TABLE 42.—*Output of timber products from nongrowing stock sources in the United States, by type of material, softwoods and hardwoods, section, region, and State, 1962*

Section, region, and State	Roundwood products [1]											
	Total roundwood			Saw logs			Veneer logs			Pulpwood		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand cu. ft.	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*
New England:												
Connecticut	5,486	1,818	3,668	301	66	235				105	45	60
Maine	20,790	12,521	8,269	7,005	6,845	160	18		18	7,560	5,555	2,005
Massachusetts	5,946	1,426	4,520	1,232	872	360				90	60	30
New Hampshire	6,679	3,624	3,055	3,482	3,317	165	4		4	550	255	295
Rhode Island	728	81	647	10		10				60	20	40
Vermont	5,155	2,391	2,764	1,915	1,770	145	2		2	595	485	110
Total	44,784	21,861	22,923	13,945	12,870	1,075	24		24	8,960	6,420	2,540
Middle Atlantic:												
Delaware	1,800	730	1,070	230	195	35	5		5	530	530	
Maryland	17,479	2,979	14,500	1,205	475	730	13		13	2,250	1,930	320
New Jersey	11,312	1,144	10,168	165	25	140	7		7	925	845	80
New York	43,056	4,283	38,773	2,740	865	1,875	37		37	4,425	2,945	1,480
Pennsylvania	39,472	6,883	32,589	3,910	905	3,005	8		8	8,250	5,365	2,885
West Virginia	27,488	1,673	25,815	2,985	250	2,735	4		4	2,100	1,105	995
Total	140,607	17,692	122,915	11,235	2,715	8,520	74		74	18,480	12,720	5,760
Lake States:												
Michigan	39,370	4,414	34,956	4,832	806	4,026				6,717	2,962	3,755
Minnesota	35,679	7,321	28,358	1,832	727	1,105				6,429	4,107	2,322
North Dakota	814		814	2		2						
South Dakota (east)	1,610	55	1,555	4		4						
Wisconsin	45,660	3,611	42,049	4,192	778	3,414				6,182	2,085	4,097
Total	123,133	15,401	107,732	10,862	2,311	8,551				19,328	9,154	10,174

See footnotes at end of table.

TABLE 42.—*Output of timber products from nongrowing stock sources in the United States, by type of material, softwoods and hardwoods, section, region, and State, 1962*—Continued

Section, region, and State	Roundwood products [1]											
	Total roundwood			Saw logs			Veneer logs			Pulpwood		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand cu. ft.	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*
Central:												
Illinois	12,169	177	11,992	4,695		4,695	126		126	2,467	172	2,295
Indiana	15,982	95	15,887	3,480		3,480	255		255	2,611	8	2,603
Iowa	11,920	13	11,907	1,911		1,911	99		99	712		712
Kansas	3,766	8	3,758	69		69	39		39			
Kentucky	16,394	341	16,053	1,006	214	792				50	50	
Missouri	53,631	865	52,766	12,690		12,690	95		95	618	48	570
Nebraska	2,395	398	1,997	24		24	3		3	26	26	
Ohio	11,970	140	11,830	1,900		1,900	64		64	2,579	50	2,529
Total	128,227	2,037	126,190	25,775	214	25,561	681		681	9,063	354	8,709
Total, North	436,751	56,991	379,760	61,817	18,110	43,707	779		779	55,831	28,648	27,183
South Atlantic:												
North Carolina	88,944	45,647	43,297	13,618	11,236	2,382	588	9	579	20,330	12,510	7,820
South Carolina	53,601	31,441	22,160	6,729	5,458	1,271	322	1	321	22,644	14,535	8,109
Virginia	69,603	31,067	38,536	8,263	5,526	2,737	141	1	140	19,382	10,440	8,942
Total	212,148	108,155	103,993	28,610	22,220	6,390	1,051	11	1,040	62,356	37,485	24,871
East Gulf:												
Florida	23,970	20,030	3,940	644	628	16	261	19	242	18,303	16,892	1,411
Georgia	59,678	42,640	17,038	1,892	1,584	308	357	2	355	37,448	32,460	4,988
Total	83,648	62,670	20,978	2,536	2,212	324	618	21	597	55,751	49,352	6,399
Central Gulf:												
Alabama	38,863	16,887	21,976	1,038	306	732	11		11	20,099	13,909	6,190
Mississippi	41,226	7,274	33,952	1,329	195	1,134	35		35	14,623	5,438	9,185
Tennessee	16,666	1,615	15,051	1,408	75	1,333	6		6	3,242	1,276	1,966
Total	96,755	25,776	70,979	3,775	576	3,199	52		52	37,964	20,623	17,341
West Gulf:												
Arkansas	36,057	7,581	28,476	1,672	378	1,294	19		19	9,339	6,168	3,171
Louisiana	33,999	9,716	24,283	1,443	294	1,149	20		20	12,555	8,714	3,841
Oklahoma	19,159	537	18,622	83	36	47	2		2	265	67	198
Texas	43,056	7,997	35,059	700	224	476	19		19	7,699	5,309	2,390
Total	132,271	25,831	106,440	3,898	932	2,966	60		60	29,858	20,258	9,600
Total, South	524,822	222,432	302,390	38,819	25,940	12,879	1,781	32	1,749	185,929	127,718	58,211
Pacific Northwest:												
Alaska	1,352	1,352								1,352	1,352	
Oregon	285,159	284,141	1,018	141,742	140,742	1,000	121,000	121,000				
Washington	76,695	75,695	1,000	41,769	40,769	1,000	8,000	8,000				
Total	363,206	361,188	2,018	183,511	181,511	2,000	129,000	129,000		1,352	1,352	
Pacific Southwest:												
California	38,407	33,702	4,705	30,845	30,845		807	807		3,531		3,531
Hawaii	226		226									
Total	38,633	33,702	4,931	30,845	30,845		807	807		3,531		3,531
Northern Rocky Mountain:												
Idaho	9,965	9,962	3	6,242	6,242					1,817	1,817	
Montana	9,789	9,753	36	6,341	6,305	36				1,080	1,080	
South Dakota (west)	173	173		65	65							
Wyoming	742	742		359	359					130	130	
Total	20,669	20,630	39	13,007	12,971	36				3,027	3,027	
Southern Rocky Mountain:												
Arizona	8,367	7,015	1,352	1,645	1,645							
Colorado	2,261	2,092	169	1,261	1,261	6				54	54	
Nevada	357	293	64	4	4							
New Mexico	12,842	12,455	387	3,442	3,317	125						
Utah	866	847	19	582	582							
Total	24,693	22,702	1,991	6,940	6,809	131				54	54	
Total, West	447,201	438,222	8,979	234,303	232,136	2,167	129,807	129,807		7,964	4,433	3,531
Total, all regions	1,408,774	717,645	691,129	334,939	276,186	58,753	132,367	129,839	2,528	249,724	160,799	88,925

See footnotes at end of table.

TABLE 42.—*Output of timber products from nongrowing stock sources in the United States, by type of material, softwoods and hardwoods, section, region, and State, 1962*—Continued

Section, region, and State	Roundwood products [1]						Plant byproducts [2 3]		
	Miscellaneous industrial			Fuelwood			Pulpwood		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand cu. ft.	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cords*	*Thousand cords*	*Thousand cords*
New England:									
Connecticut	35	32	3	5,045	1,675	3,370	2	1	1
Maine	53	46	7	6,154	75	6,079	107	80	27
Massachusetts	22	18	4	4,602	476	4,126	2	1	1
New Hampshire	36	23	13	2,607	29	2,578	8	4	4
Rhode Island	2	1	1	656	60	596	1		1
Vermont	66	38	28	2,577	98	2,479	8	7	1
Total	214	158	56	21,641	2,413	19,228	128	93	35
Middle Atlantic:									
Delaware	25	2	23	1,010	3	1,007			
Maryland	258	6	252	13,753	568	13,185	4	2	2
New Jersey	617	259	358	9,598	15	9,583	2	1	1
New York	1,705	148	1,557	34,149	325	33,824	13	2	11
Pennsylvania	5,938	170	5,768	21,366	443	20,923	25	4	21
West Virginia	2,053	127	1,926	20,346	191	20,155	8	1	7
Total	10,596	712	9,884	100,222	1,545	98,677	52	10	42
Lake States:									
Michigan	7,978	646	7,332	19,843		19,843	12	1	11
Minnesota	1,835	442	1,393	25,583	2,045	23,538			
North Dakota	92		92	720		720			
South Dakota (east)	126	18	108	1,480	37	1,443			
Wisconsin	4,202	437	3,765	31,084	311	30,773	35	5	30
Total	14,233	1,543	12,690	78,710	2,393	76,317	47	6	41
Central:									
Illinois	1,328	5	1,323	3,553		3,553	1		1
Indiana	756	87	669	8,880		8,880	1		1
Iowa	312	13	299	8,886		8,886	7	2	5
Kansas	238	8	230	3,420		3,420			
Kentucky	2,155	77	2,078	13,183		13,183	5		5
Missouri	7,371	373	6,998	32,857	444	32,413			
Nebraska	182	12	170	2,160	360	1,800			
Ohio	627	90	537	6,800		6,800	5		5
Total	12,969	665	12,304	79,739	804	78,935	19	2	17
Total, North	38,012	3,078	34,934	280,312	7,155	273,157	246	111	135
South Atlantic:									
North Carolina	402	358	44	54,006	21,534	32,472	474	383	91
South Carolina	87	59	28	23,819	11,388	12,431	390	308	82
Virginia	1,224	337	887	40,593	14,763	25,830	208	165	43
Total	1,713	754	959	118,418	47,685	70,733	1,072	856	216
East Gulf:									
Florida	1,840	1,099	741	2,922	1,392	1,530	211	174	37
Georgia	1,019	648	371	18,962	7,946	11,016	661	560	101
Total	2,859	1,747	1,112	21,884	9,338	12,546	872	734	138
Central Gulf:									
Alabama	615	249	366	17,100	2,423	14,677	606	457	149
Mississippi	1,063	187	876	24,176	1,454	22,722	268	206	62
Tennessee	1,099	190	909	10,911	74	10,837	22	9	13
Total	2,777	626	2,151	52,187	3,951	48,236	896	672	224
West Gulf:									
Arkansas	1,605	505	1,100	23,422	530	22,892	420	408	12
Louisiana	421	149	272	19,560	559	19,001	223	204	19
Oklahoma	4,389	201	4,188	14,420	233	14,187	28	28	
Texas	6,493	2,438	4,055	28,145	26	28,119	338	325	13
Total	12,908	3,293	9,615	85,547	1,348	84,199	1,009	965	44
Total, South	20,257	6,420	13,837	278,036	62,322	215,714	3,849	3,227	622
Pacific Northwest:									
Alaska									
Oregon	6,721	6,703	18	15,696	15,696		1,319	1,319	
Washington	13,960	13,960		12,966	12,966		2,572	2,572	
Total	20,681	20,663	18	28,662	28,662		3,891	3,891	

See footnotes at end of table.

TABLE 42.—*Output of timber products from nongrowing stock sources in the United States, by type of material, softwoods and hardwoods, section, region, and State, 1962*—Continued

Section, region, and State	Roundwood products [1]						Plant byproducts [2 3]		
	Miscellaneous industrial			Fuelwood			Pulpwood		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand cu. ft.	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cords*	*Thousand cords*	*Thousand cords*
Pacific Southwest:									
California	1,204	1,172	32	2,020	878	1,142	587	587	
Hawaii	99		99	127		127			
Total	1,303	1,172	131	2,147	878	1,269	587	587	
Northern Rocky Mountain:									
Idaho	1,556	1,556		350	347	3	526	526	
Montana	2,040	2,040		328	328		320	320	
South Dakota (west)	77	77		31	31		7	7	
Wyoming	155	155		98	98		12	12	
Total	3,828	3,828		807	804	3	865	865	
Southern Rocky Mountain:									
Arizona	354	173	181	6,368	5,197	1,171			
Colorado	238	228	10	702	549	153			
Nevada	39	38	1	314	251	63			
New Mexico	395	361	34	9,005	8,777	228			
Utah	189	171	18	95	94	1			
Total	1,215	971	244	16,484	14,868	1,616			
Total, West	27,027	26,634	393	48,100	45,212	2,888	5,343	5,343	
Total, all regions	85,296	36,132	49,164	606,448	114,689	491,759	9,438	8,681	757

Section, region, and State	Plant byproducts [2 3]—Continued					
	Miscellaneous industrial			Fuelwood		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand cu. ft.	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cords*	*Thousand cords*	*Thousand cords*
New England:						
Connecticut	36	19	17	90	57	33
Maine	706	599	107	85	26	59
Massachusetts	40	30	10	201	161	40
New Hampshire	180	74	106	35	10	25
Rhode Island	4	3	1	26	20	6
Vermont	186	24	162	57	33	24
Total	1,152	749	403	494	307	187
Middle Atlantic:						
Delaware	35	35		6		6
Maryland	91		91	138	52	86
New Jersey	1,367		1,367	64	2	62
New York	3,022		3,022	251	30	221
Pennsylvania	1,184		1,184	177	40	137
West Virginia	1,705		1,705	149	17	132
Total	7,404	35	7,369	785	141	644
Lake States:						
Michigan	2,841	79	2,762	100	25	75
Minnesota	250	100	150	65	25	40
North Dakota						
South Dakota (east)				1		1
Wisconsin	1,642		1,642	105	20	85
Total	4,733	179	4,554	271	70	201
Central:						
Illinois	539		539	76		76
Indiana				83	2	81
Iowa				25	1	24
Kansas				10		10
Kentucky	350		350	229	9	220
Missouri	210		210	160	10	150
Nebraska				5	1	4
Ohio	1,050		1,050	91	7	84
Total	2,149		2,149	679	30	649
Total, North	15,438	963	14,475	2,229	548	1,681

See footnotes at end of table.

TABLE 42.—*Output of timber products from nongrowing stock sources in the United States, by type of material, softwoods and hardwoods, section, region, and State, 1962*—Continued

Section, region, and State	Plant byproducts [2] [3]—Continued					
	Miscellaneous industrial			Fuelwood		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand cu. ft.	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cords*	*Thousand cords*	*Thousand cords*
South Atlantic:						
North Carolina				274	116	158
South Carolina				122	62	60
Virginia				206	80	126
Total				602	258	344
East Gulf:						
Florida	452	28	424	24	16	8
Georgia	241	4	237	147	91	56
Total	693	32	661	171	107	64
Central Gulf:						
Alabama	3,556	2,093	1,463	389	250	139
Mississippi	1,686	423	1,263	493	200	293
Tennessee	6,367	637	5,730	272	37	235
Total	11,609	3,153	8,456	1,154	487	667
West Gulf:						
Arkansas	2,818	1,257	1,561	662	420	242
Louisiana	1,001	336	665	416	240	176
Oklahoma	220	143	77	41	31	10
Texas	1,059	487	572	314	222	92
Total	5,098	2,223	2,875	1,433	913	520
Total, South	17,400	5,408	11,992	3,360	1,765	1,595
Pacific Northwest:						
Alaska				6	6	
Oregon				2,859	2,859	
Washington				1,218	1,218	
Total				4,083	4,083	
Pacific Southwest:						
California	7,202	7,202		2,183	2,183	
Hawaii						
Total	7,202	7,202		2,183	2,183	
Northern Rocky Mountain:						
Idaho				13	13	
Montana				12	12	
South Dakota (west)				1	1	
Wyoming				2	2	
Total				28	28	
Southern Rocky Mountain:						
Arizona				14	14	
Colorado				18	18	
Nevada				1	1	
New Mexico				23	23	
Utah						
Total				56	56	
Total, West	7,202	7,202		6,350	6,350	
Total, all regions	40,040	13,573	26,467	11,939	8,663	3,276

[1] From cull trees, dead trees, and other sources including noncommercial forest land, nonforest land, and material less than 5.0 inches in diameter.
[2] Includes pulp chips from slabs and edgings, mill waste used for fuel etc.
[3] Additional volumes of plant byproducts used for saw logs (lumber) in the West included 27 million board feet.

TABLE 43.—*Roundwood production from nongrowing stock sources in the United States, by product, softwoods and hardwoods, section, region, and State, 1962*

Section, region, and State	Saw logs			Veneer logs			Pulpwood		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand bd. ft.[1]	*Thousand bd. ft.*[1]	*Thousand bd. ft.*[1]	*Thousand bd. ft.*[1]	*Thousand bd. ft.*[1]	*Thousand bd. ft.*[1]	*Thousand cords*	*Thousand cords*	*Thousand cords*
New England:									
Connecticut	2,095	770	1,325				1		1
Maine	76,481	75,546	935	108		108	94	69	25
Massachusetts	11,669	9,604	2,065				1	1	
New Hampshire	37,536	36,596	940	18		18	7	3	4
Rhode Island	50		50				1		1
Vermont	20,321	19,486	835	12		12	7	6	1
Total	148,152	142,002	6,150	138		138	111	79	32
Middle Atlantic:									
Delaware	1,400	1,170	230	36		36	6	6	
Maryland	7,635	2,900	4,735	75		75	28	24	4
New Jersey	1,055	145	910	40		40	12	11	1
New York	17,440	5,240	12,200	178		178	55	37	18
Pennsylvania	25,015	5,515	19,500	44		44	103	67	36
West Virginia	19,305	1,515	17,790	25		25	26	14	12
Total	71,850	16,485	55,365	398		398	230	159	71
Lake States:									
Michigan	29,500	5,000	24,500				88	38	50
Minnesota	10,900	4,300	6,600				75	50	25
North Dakota	13		13						
South Dakota (east)	30		30						
Wisconsin	25,700	4,700	21,000				90	30	60
Total	66,143	14,000	52,143				253	118	135
Central:									
Illinois	30,908		30,908	896		896	32	2	30
Indiana	22,900		22,900	1,689		1,689	35		35
Iowa	12,550		12,550	683		683	10		10
Kansas	500		500	224		224			
Kentucky	5,557	1,198	4,359				1	1	
Missouri	83,400		83,400	629	1	628	9	1	8
Nebraska	165		165	14		14			
Ohio	13,300		13,300	429		429	37	1	36
Total	169,280	1,198	168,082	4,564	1	4,563	124	5	119
Total, North	455,425	173,685	281,740	5,100	1	5,099	718	361	357
South Atlantic:									
North Carolina	80,596	65,709	14,887	3,885	51	3,834	266	169	97
South Carolina	39,860	31,917	7,943	2,131	6	2,125	296	196	100
Virginia	49,424	32,318	17,106	933	6	927	251	141	110
Total	169,880	129,944	39,936	6,949	63	6,886	813	506	307
East Gulf:									
Florida	3,687	3,587	100	1,698	126	1,572	257	238	19
Georgia	10,953	9,052	1,901	2,318	13	2,305	523	457	66
Total	14,640	12,639	2,001	4,016	139	3,877	780	695	85
Central Gulf:									
Alabama	6,802	1,865	4,937	79		79	264	184	80
Mississippi	8,844	1,180	7,664	248		248	190	72	118
Tennessee	9,150	438	8,712	43		43	42	17	25
Total	24,796	3,483	21,313	370		370	496	273	223
West Gulf:									
Arkansas	11,193	2,280	8,913	138		138	123	82	41
Louisiana	9,551	1,778	7,773	142		142	165	116	49
Oklahoma	509	216	293	12		12	4	1	3
Texas	4,550	1,334	3,216	138		138	101	70	31
Total	25,803	5,608	20,195	430		430	393	269	124
Total, South	235,119	151,674	83,445	11,765	202	11,563	2,482	1,743	739
Pacific Northwest:									
Alaska							15	15	
Oregon	963,000	956,000	7,000	825,000	825,000				
Washington	289,000	282,000	7,000	55,000	55,000				
Total	1,252,000	1,238,000	14,000	880,000	880,000		15	15	
Pacific Southwest:									
California	212,834	212,834		6,211	6,211		49		49
Hawaii									
Total	212,834	212,834		6,211	6,211		49		49

See footnotes at end of table.

TABLE 43.—*Roundwood production from nongrowing stock sources in the United States, by product, softwoods and hardwoods, section, region, and State, 1962*—Continued

Section, region, and State	Saw logs			Veneer logs			Pulpwood		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand bd. ft.[1]	*Thousand bd. ft.*[1]	*Thousand bd. ft.*[1]	*Thousand bd. ft.*[1]	*Thousand bd. ft.*[1]	*Thousand bd. ft.*[1]	*Thousand cords*	*Thousand cords*	*Thousand cords*
Northern Rocky Mountain:									
Idaho	41,066	41,066					25	25	
Montana	44,395	44,091	304				13	13	
South Dakota (west)	390	390							
Wyoming	2,134	2,134					1	1	
Total	87,985	87,681	304				39	39	
Southern Rocky Mountain:									
Arizona	11,348	11,348							
Colorado	7,409	7,375	34						
Nevada	61	61							
New Mexico	23,753	22,878	875						
Utah	3,487	3,487							
Total	46,058	45,149	909						
Total, West	1,598,877	1,583,664	15,213	886,211	886,211		103	54	49
Total, all regions	2,289,421	1,909,023	380,398	903,076	886,414	16,662	3,303	2,158	1,145

Section, region, and State	Cooperage			Piling		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand bd. ft.[1]	*Thousand bd. ft.*[1]	*Thousand bd. ft.*[1]	*Thousand lin. ft.*	*Thousand lin. ft.*	*Thousand lin. ft.*
New England:						
Connecticut						
Maine	47	47				
Massachusetts	16	15	1			
New Hampshire	99	83	16			
Rhode Island						
Vermont						
Total	162	145	17			
Middle Atlantic:						
Delaware						
Maryland	23		23	4	3	1
New Jersey						
New York						
Pennsylvania	26		26	2		2
West Virginia	21		21			
Total	70		70	6	3	3
Lake States:						
Michigan						
Minnesota	150		150			
North Dakota						
South Dakota (east)						
Wisconsin	350		350			
Total	500		500			
Central:						
Illinois	7,321		7,321			
Indiana	2,144		2,144			
Iowa	1,050		1,050			
Kansas	100		100			
Kentucky						
Missouri	8,816		8,816			
Nebraska	10		10			
Ohio	425		425			
Total	19,866		19,866			
Total, North	20,598	145	20,453	6	3	3
South Atlantic:						
North Carolina						
South Carolina						
Virginia				112	88	24
Total				112	88	24
East Gulf:						
Florida						
Georgia						
Total						

See footnotes at end of table.

TABLE 43.—*Roundwood production from nongrowing stock sources in the United States, by product, softwoods and hardwoods, section, region, and State, 1962*—Continued

Section, region, and State	Cooperage			Piling		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand bd. ft.[1]	*Thousand bd. ft.*[1]	*Thousand bd. ft.*[1]	*Thousand lin. ft.*	*Thousand lin. ft.*	*Thousand lin. ft.*
Central Gulf:						
Alabama	100	86	14			
Mississippi	128		128			
Tennessee	255		255			
Total	483	86	397			
West Gulf:						
Arkansas	186		186			
Louisiana	50		50			
Oklahoma						
Texas	9		9			
Total	245		245			
Total, South	728	86	642	112	88	24
Pacific Northwest:						
Alaska						
Oregon						
Washington						
Total						
Pacific Southwest:						
California				64		64
Hawaii						
Total				64		64
Northern Rocky Mountain:						
Idaho						
Montana						
South Dakota (west)						
Wyoming						
Total						
Southern Rocky Mountain:						
Arizona						
Colorado						
Nevada						
New Mexico						
Utah						
Total						
Total, West				64		64
Total, all regions	21,326	231	21,095	182	91	91

Section, region, and State	Poles			Posts			Mine timbers		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand pieces	*Thousand pieces*	*Thousand pieces*	*Thousand pieces*	*Thousand pieces*	*Thousand pieces*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*
New England:									
Connecticut				36	34	2			
Maine				9	9				
Massachusetts				14	10	4			
New Hampshire				5	1	4			
Rhode Island				2	1	1			
Vermont				61	40	21			
Total				127	95	32			
Middle Atlantic:									
Delaware				35		35	1	1	
Maryland				288	3	285	43		43
New Jersey				345	331	14	45		45
New York				1,561	195	1,366	4		4
Pennsylvania				1,917	224	1,693	4,406		4,406
West Virginia				190		190	1,548	127	1,421
Total				4,336	753	3,583	6,047	128	5,919
Lake States:									
Michigan	3	3		775	600	175	320	173	147
Minnesota	13	13		1,500	300	1,200	93	85	8
North Dakota				113		113	1		1
South Dakota (east)				162	27	135			
Wisconsin	3	3		1,900	400	1,500	63	40	23
Total	19	19		4,450	1,327	3,123	477	298	179

See footnotes at end of table.

TABLE 43.—*Roundwood production from nongrowing stock sources in the United States, by product, softwoods and hardwoods, section, region, and State, 1962*—Continued

Section, region, and State	Poles			Posts			Mine timbers		
	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods
	Thousand pieces	*Thousand pieces*	*Thousand pieces*	*Thousand pieces*	*Thousand pieces*	*Thousand pieces*	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cu. ft.*
Central:									
Illinois				144		144	46	5	41
Indiana				411	96	315	71	14	57
Iowa				251	17	234	12		12
Kansas				283	13	270			
Kentucky				1,092	56	1,036	160	10	150
Missouri				3,515	480	3,035	116	4	112
Nebraska				232	20	212			
Ohio				475	62	413	209	42	167
Total				6,403	744	5,659	614	75	539
Total, North	19	19		15,316	2,919	12,397	7,138	501	6,637
South Atlantic:									
North Carolina				594	529	65			
South Carolina				129	90	39			
Virginia	1	1		662	376	286	528		528
Total	1	1		1,385	995	390	528		528
East Gulf:									
Florida	17	17		894	894				
Georgia	5	5		1,342	1,289	53			
Total	22	22		2,236	2,183	53			
Central Gulf:									
Alabama				565	339	226			
Mississippi				2,088	259	1,829			
Tennessee				1,253	231	1,022	38	4	34
Total				3,906	829	3,077	38	4	34
West Gulf:									
Arkansas				1,885	806	1,079			
Louisiana				673	303	370			
Oklahoma				8,674	305	8,369			
Texas				11,750	3,662	8,088			
Total				22,982	5,076	17,906			
Total, South	23	23		30,509	9,083	21,426	566	4	562
Pacific Northwest:									
Alaska									
Oregon				930	914	16			
Washington				777	777				
Total				1,707	1,691	16			
Pacific Southwest:									
California				111	111		37	37	
Hawaii				32		32			
Total				143	111	32	37	37	
Northern Rocky Mountain:									
Idaho				114	114		46	46	
Montana				75	75		204	204	
South Dakota (west)	5	5							
Wyoming				31	31		33	33	
Total	5	5		220	220		283	283	
Southern Rocky Mountain:									
Arizona				142	140	2	32	32	
Colorado				7	7		80	80	
Nevada				38	38				
New Mexico	1	1		224	219	5	23	23	
Utah				16	16		98	98	
Total	1	1		427	420	7	233	233	
Total, West	6	6		2,497	2,442	55	553	553	
Total, all regions	48	48		48,322	14,444	33,878	8,257	1,058	7,199

See footnotes at end of table.

TABLE 43.—*Roundwood production from nongrowing stock sources in the United States, by product, softwoods and hardwoods, section, region, and State, 1962*—Continued

Section, region, and State	Other industrial[2]			Fuelwood		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand cu. ft.	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cords*	*Thousand cords*	*Thousand cords*
New England:						
Connecticut	2	1	1	63	21	42
Maine	37	30	7	77	1	76
Massachusetts	2	1	1	58	6	52
New Hampshire	11	4	7	32		32
Rhode Island				8	1	7
Vermont	12	1	11	32	1	31
Total	64	37	27	270	30	240
Middle Atlantic:						
Delaware	1	1		13		13
Maryland	22	2	20	172	7	165
New Jersey	311	7	304	120		120
New York	671		671	427	4	423
Pennsylvania	263		263	267	6	261
West Virginia	379		379	255	2	253
Total	1,647	10	1,637	1,254	19	1,235
Lake States:						
Michigan	7,052	12	7,040	280		280
Minnesota	275	12	263	330	30	300
North Dakota				11		11
South Dakota (east)				23	1	22
Wisconsin	2,379	2	2,377	440	5	435
Total	9,706	26	9,680	1,084	36	1,048
Central:						
Illinois	130		130	55		55
Indiana	118		118	137		137
Iowa				137		137
Kansas				53		53
Kentucky	569	2	567	197		197
Missouri	3,771		3,771	506	7	499
Nebraska				34	6	28
Ohio	70		70	97		97
Total	4,658	2	4,656	1,216	13	1,203
Total, North	16,075	75	16,000	3,824	98	3,726
South Atlantic:						
North Carolina	10	9	1	684	265	419
South Carolina	2		2	300	141	159
Virginia	82	16	66	515	182	333
Total	94	25	69	1,499	588	911
East Gulf:						
Florida	773	32	741	48	18	30
Georgia	352	4	348	314	102	212
Total	1,125	36	1,089	362	120	242
Central Gulf:						
Alabama	237	25	212	227	32	195
Mississippi	81	46	35	322	19	303
Tennessee	113	26	87	145	1	144
Total	431	97	334	694	52	642
West Gulf:						
Arkansas	827	82	745	300	7	293
Louisiana	41	12	29	260	7	253
Oklahoma	5		5	192	3	189
Texas	27	11	16	375		375
Total	900	105	795	1,127	17	1,110
Total, South	2,550	263	2,287	3,682	777	2,905
Pacific Northwest:						
Alaska						
Oregon	5,695	5,695		175	175	
Washington	13,103	13,103		144	144	
Total	18,798	18,798		319	319	
Pacific Southwest:						
California	957	957		27	11	16
Hawaii	67		67	2		2
Total	1,024	957	67	29	11	18

See footnotes at end of table.

TABLE 43.—*Roundwood production from nongrowing stock sources in the United States, by product, softwoods and hardwoods, section, region, and State, 1962*—Continued

Section, region, and State	Other industrial[2]			Fuelwood		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand cu. ft.	*Thousand cu. ft.*	*Thousand cu. ft.*	*Thousand cords*	*Thousand cords*	*Thousand cords*
Northern Rocky Mountain:						
Idaho	1,419	1,419		5	5	
Montana	1,742	1,742		4	4	
South Dakota (west)	45	45		1	1	
Wyoming	91	91		1	1	
Total	3,297	3,297		11	11	
Southern Rocky Mountain:						
Arizona	208	29	179	92	75	17
Colorado	152	142	10	10	8	2
Nevada	1		1	4	3	1
New Mexico	98	75	23	129	126	3
Utah	75	57	18	1	1	
Total	534	303	231	236	213	23
Total, West	23,653	23,355	298	595	554	41
Total, all regions	42,278	23,693	18,585	8,101	1,429	6,672

[1] International ¼-inch log rule.

[2] Includes hewn ties, box bolts, shingle logs, excelsior bolts, turnery bolts, chemical wood, and bolts for other miscellaneous products.

TABLE 44.—*Timber cut from sawtimber in the United States, by roundwood product and logging residues, softwoods and hardwoods, section, region, and State, 1962*

(Thousand board feet, International ¼-inch log rule)

Section, region, and State	Total timber cut			Roundwood products								
				Total			Saw logs			Veneer		
	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods
New England:												
Connecticut	42,559	5,825	36,734	34,937	5,734	29,203	27,905	2,230	25,675			
Maine	889,778	658,109	231,669	831,971	647,797	184,174	233,519	215,454	18,065	57,176	871	56,305
Massachusetts	85,657	33,034	52,623	74,351	32,516	41,835	67,331	27,396	39,935			
New Hampshire	191,053	128,696	62,357	176,253	126,680	49,573	122,464	104,404	18,060	9,438		9,438
Rhode Island	5,254	1,610	3,644	4,482	1,585	2,897	950		950			
Vermont	133,699	94,726	38,973	124,225	93,242	30,983	71,679	55,514	16,165	6,543		6,543
Total	1,348,000	922,000	426,000	1,246,219	907,554	338,665	523,848	404,998	118,850	73,157	871	72,286
Middle Atlantic:												
Delaware	30,856	21,723	9,133	29,465	20,854	8,611	19,600	15,830	3,770	3,443		3,443
Maryland	181,161	65,203	115,958	171,925	62,595	109,330	117,365	39,100	78,265	8,205	16	8,189
New Jersey	60,191	19,559	40,632	57,087	18,777	38,310	16,945	1,855	15,090	4,239		4,239
New York	468,678	137,418	331,260	444,247	131,921	312,326	272,560	70,760	201,800	23,324		23,324
Pennsylvania	572,894	135,321	437,573	542,471	129,908	412,563	396,985	74,485	322,500	5,079		5,079
West Virginia	445,220	50,776	394,444	420,644	48,745	371,899	314,695	20,485	294,210	2,571		2,571
Total	1,759,000	430,000	1,329,000	1,665,839	412,800	1,253,039	1,138,150	222,515	915,635	46,861	16	46,845
Lake States:												
Michigan	495,335	148,782	346,553	474,473	145,708	328,765	255,549	61,955	193,594	21,631	161	21,470
Minnesota	328,636	179,384	149,252	320,400	176,702	143,698	123,734	68,490	55,244	9,232		9,232
North Dakota	3,341		3,341	3,206		3,206	1,266		1,266	24		24
South Dakota (east)	5,945	315	5,630	5,733	295	5,438	1,445	20	1,425	298		298
Wisconsin	467,010	124,438	342,572	448,476	122,137	326,339	221,665	56,455	165,210	24,825		24,825
Total	1,300,267	452,919	847,348	1,252,288	444,842	807,446	603,659	186,920	416,739	56,010	161	55,849
Central:												
Illinois	173,583	2,273	171,310	163,478	2,184	161,294	96,894	388	96,506	10,863		10,863
Indiana	187,724	4,178	183,546	177,815	4,122	173,693	126,887	3,926	122,961	12,388		12,388
Iowa	74,583	1,606	72,977	71,033	1,586	69,447	40,792	1,570	39,222	8,267		8,267
Kansas	33,298	568	32,730	31,250	560	30,690	15,597	560	15,037	5,276		5,276
Kentucky	631,844	26,684	605,160	547,293	26,068	521,225	452,151	20,921	431,230	12,455		12,455
Missouri	335,236	27,160	308,076	317,995	26,805	291,190	205,260	23,550	181,710	4,608	6	4,602
Nebraska	15,758	1,222	14,536	14,939	1,209	13,730	9,150	243	8,907	386		386
Ohio	266,671	12,638	254,033	244,404	12,477	231,927	181,066	11,775	169,291	10,223		10,223
Total	1,718,697	76,329	1,642,368	1,568,207	75,011	1,493,196	1,127,797	62,933	1,064,864	64,466	6	64,460
Total, North	6,125,964	1,881,248	4,244,716	5,732,553	1,840,207	3,892,346	3,393,454	877,366	2,516,088	240,494	1,054	239,440

TABLE 44.—*Timber cut from sawtimber in the United States, by roundwood product and logging residues, softwoods and hardwoods, section, region, and State, 1962*—Continued

(Thousand board feet, International ¼-inch log rule)

Section, region, and State	Total timber cut			Roundwood products								
				Total			Saw logs			Veneer		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
South Atlantic:												
North Carolina	2,004,420	1,173,088	831,332	1,958,492	1,161,128	797,364	1,404,550	964,027	440,523	151,474	10,934	140,540
South Carolina	1,299,032	750,075	548,957	1,268,959	742,428	526,531	703,349	468,265	235,084	78,638	883	77,755
Virginia	1,486,757	655,206	831,551	1,446,100	648,526	797,574	980,315	474,100	506,215	35,503	717	34,786
Total	4,790,209	2,578,369	2,211,840	4,673,551	2,552,082	2,121,469	3,088,214	1,906,392	1,181,822	265,615	12,534	253,081
East Gulf:												
Florida	825,786	643,087	182,699	796,790	630,941	165,849	304,856	289,434	15,422	84,140	3,798	80,342
Georgia	1,998,444	1,286,006	712,438	1,908,448	1,261,718	646,730	1,025,996	730,196	295,800	118,294	418	117,876
Total	2,824,230	1,929,093	895,137	2,705,238	1,892,659	812,579	1,330,852	1,019,630	311,222	202,434	4,216	198,218
Central Gulf:												
Alabama	1,686,826	992,574	694,252	1,555,008	975,615	579,393	1,019,013	695,730	323,283	101,340	402	100,938
Mississippi	1,305,043	503,719	801,324	1,215,653	494,125	721,528	720,755	366,312	354,443	62,107		62,107
Tennessee	819,158	168,280	650,878	765,554	165,220	600,334	559,027	142,537	416,490	11,076	334	10,742
Total	3,811,027	1,664,573	2,146,454	3,536,215	1,634,960	1,901,255	2,298,795	1,204,579	1,094,216	174,523	736	173,787
West Gulf:												
Arkansas	1,607,444	854,689	752,755	1,475,496	838,496	637,000	1,114,877	710,469	404,408	34,663		34,663
Louisiana	1,368,083	750,782	617,301	1,303,841	736,729	567,112	911,803	552,796	359,007	35,677		35,677
Oklahoma	123,985	74,542	49,443	115,687	73,046	42,641	82,585	67,996	14,589	2,934		2,934
Texas	849,654	554,104	295,550	798,664	543,265	255,399	569,509	420,990	148,519	34,826	292	34,534
Total	3,949,166	2,234,117	1,715,049	3,693,688	2,191,536	1,502,152	2,678,774	1,752,251	926,523	108,100	292	107,808
Total, South	15,374,632	8,406,152	6,968,480	14,608,692	8,271,237	6,337,455	9,396,635	5,882,852	3,513,783	750,672	17,778	732,894
Pacific Northwest:												
Alaska	617,433	617,433		467,398	467,398		93,994	93,994				
Oregon	10,795,392	10,667,399	127,993	9,997,055	9,877,684	119,371	6,749,000	6,700,000	49,000	2,611,000	2,611,000	
Washington	5,725,315	5,474,475	250,840	5,596,686	5,351,686	245,000	3,184,000	3,133,000	51,000	634,000	634,000	
Total	17,138,140	16,759,307	378,833	16,061,139	15,696,768	364,371	10,026,994	9,926,994	100,000	3,245,000	3,245,000	
Pacific Southwest:												
California	5,919,608	5,878,681	40,927	5,458,880	5,437,899	20,981	4,761,949	4,749,949	12,000	652,989	652,816	173
Hawaii	3,000		3,000	1,726		1,726	1,500		1,500	35		35
Total	5,922,608	5,878,681	43,927	5,460,606	5,437,899	22,707	4,763,449	4,749,949	13,500	653,024	652,816	208
Northern Rocky Mountain:												
Idaho	1,435,213	1,433,898	1,315	1,392,845	1,391,574	1,271	1,334,796	1,333,825	971	19,030	18,750	280
Montana	1,276,834	1,269,023	7,811	1,253,884	1,246,215	7,669	1,116,035	1,108,367	7,668	111,642	111,642	
South Dakota (west)	52,717	52,717		49,803	49,803		38,568	38,568				
Wyoming	113,578	113,569	9	106,478	106,469	9	104,360	104,360				
Total	2,878,342	2,869,207	9,135	2,803,010	2,794,061	8,949	2,593,759	2,585,120	8,639	130,672	130,392	280
Southern Rocky Mountain:												
Arizona	396,824	396,430	394	380,947	380,553	394	322,435	322,435				
Colorado	229,892	228,655	1,237	215,435	214,253	1,182	210,586	209,617	969			
Nevada	2,947	2,671	276	2,746	2,470	276	2,376	2,376				
New Mexico	251,523	245,019	6,504	237,345	231,199	6,146	234,638	228,506	6,132			
Utah	80,145	80,144	1	74,098	74,097	1	74,000	74,000				
Total	961,331	952,919	8,412	910,571	902,572	7,999	844,035	836,934	7,101			
Total, West	26,900,421	26,460,114	440,307	25,235,326	24,831,300	404,026	18,228,237	18,098,997	129,240	4,028,696	4,028,208	488
Total, all regions	48,401,017	36,747,514	11,653,503	45,576,571	34,942,794	10,633,827	31,018,326	24,859,215	6,159,111	5,019,862	4,047,040	972,822

TABLE 44.—*Timber cut from sawtimber in the United States, by roundwood product and logging residues, softwoods and hardwoods, section, region, and State, 1962*—Continued

(Thousand board feet, International ¼-inch log rule)

Section, region, and State	Roundwood products (continued)									Logging residues		
	Pulpwood			Miscellaneous industrial			Fuelwood					
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
New England:												
Connecticut	5,912	3,272	2,640	312	96	216	808	136	672	7,622	91	7,531
Maine	515,282	427,332	87,950	4,105	3,919	186	21,889	221	21,668	57,807	10,312	47,495
Massachusetts	5,765	4,535	1,230	719	542	177	536	43	493	11,306	518	10,788
New Hampshire	32,464	19,439	13,025	3,651	2,837	814	8,236		8,236	14,800	2,016	12,784
Rhode Island	3,271	1,506	1,765	123	17	106	138	62	76	772	25	747
Vermont	41,863	37,113	4,750	1,822	419	1,403	2,318	196	2,122	9,474	1,484	7,990
Total	604,557	493,197	111,360	10,732	7,830	2,902	33,925	658	33,267	101,781	14,446	87,335
Middle Atlantic:												
Delaware	3,720	3,720		1,868	1,080	788	834	224	610	1,391	869	522
Maryland	20,085	13,530	6,555	7,968	4,121	3,847	18,302	5,828	12,474	9,236	2,608	6,628
New Jersey	7,630	5,960	1,670	15,262	7,444	7,818	13,011	3,518	9,493	3,104	782	2,322
New York	51,020	20,680	30,340	52,007	27,766	24,241	45,336	12,715	32,621	24,431	5,497	18,934
Pennsylvania	96,770	37,635	59,135	30,361	14,216	16,145	13,276	3,572	9,704	30,423	5,413	25,010
West Virginia	28,170	7,730	20,440	38,370	10,087	28,283	36,838	10,443	26,395	24,576	2,031	22,545
Total	207,395	89,255	118,140	145,836	64,714	81,122	127,597	36,300	91,297	93,161	17,200	75,961
Lake States:												
Michigan	150,007	75,548	74,459	32,023	8,044	23,979	15,263		15,263	20,862	3,074	17,788
Minnesota	142,772	96,720	46,052	24,983	9,918	15,065	19,679	1,574	18,105	8,236	2,682	5,554
North Dakota				316		316	1,600		1,600	135		135
South Dakota (east)				710	195	515	3,280	80	3,200	212	20	192
Wisconsin	142,672	61,419	81,253	35,404	4,024	31,380	23,910	239	23,671	18,534	2,301	16,233
Total	435,451	233,687	201,764	93,436	22,181	71,255	63,732	1,893	61,839	47,979	8,077	39,902
Central:												
Illinois	25,548	1,782	23,766	26,253	14	26,239	3,920		3,920	10,105	89	10,016
Indiana	19,753	61	19,692	8,977	135	8,842	9,810		9,810	9,909	56	9,853
Iowa	7,380		7,380	4,794	16	4,778	9,800		9,800	3,550	20	3,530
Kansas				2,777		2,777	7,600		7,600	2,048	8	2,040
Kentucky	5,720	3,505	2,215	43,223	1,642	41,581	33,744		33,744	84,551	616	83,935
Missouri	4,679	371	4,308	67,188	2,388	64,800	36,260	490	35,770	17,241	355	16,886
Nebraska	146	146		456	20	436	4,801	800	4,001	819	13	806
Ohio	24,522	474	24,048	18,903	228	18,675	9,690		9,690	22,267	161	22,106
Total	87,748	6,339	81,409	172,571	4,443	168,128	115,625	1,290	114,335	150,490	1,318	149,172
Total, North	1,335,151	822,478	512,673	422,575	99,168	323,407	340,879	40,141	300,738	393,411	41,041	352,370
South Atlantic:												
North Carolina	371,680	170,310	201,370	24,834	15,857	8,977	5,954		5,954	45,928	11,960	33,968
South Carolina	406,501	197,689	208,812	78,192	75,591	2,601	2,279		2,279	30,073	7,647	22,426
Virginia	372,391	142,129	230,262	53,155	31,580	21,575	4,736		4,736	40,657	6,680	33,977
Total	1,150,572	510,128	640,444	156,181	123,028	33,153	12,969		12,969	116,658	26,287	90,371
East Gulf:												
Florida	314,437	250,750	63,687	93,067	86,959	6,108	290		290	28,996	12,146	16,850
Georgia	707,020	481,847	225,173	55,014	49,257	5,757	2,124		2,124	89,996	24,288	65,708
Total	1,021,457	732,597	288,860	148,081	136,216	11,865	2,414		2,414	118,992	36,434	82,558
Central Gulf:												
Alabama	309,920	195,700	114,220	95,216	80,109	15,107	29,519	3,674	25,845	131,818	16,959	114,859
Mississippi	245,223	77,183	168,040	92,571	44,455	48,116	94,997	6,175	88,822	89,390	9,594	79,796
Tennessee	54,083	18,109	35,974	98,686	3,925	94,761	42,682	315	42,367	53,604	3,060	50,544
Total	609,226	290,992	318,234	286,473	128,489	157,984	167,198	10,164	157,034	274,812	29,613	245,199
West Gulf:												
Arkansas	145,562	87,552	58,010	88,657	38,225	50,432	91,737	2,250	89,487	131,948	16,193	115,755
Louisiana	193,933	123,680	70,253	85,279	57,383	27,896	77,149	2,870	74,279	64,242	14,053	50,189
Oklahoma	4,583	962	3,621	8,429	3,098	5,331	17,156	990	16,166	8,298	1,496	6,802
Texas	119,063	75,345	43,718	61,420	46,528	14,892	13,846	110	13,736	50,990	10,839	40,151
Total	463,141	287,539	175,602	243,785	145,234	98,551	199,888	6,220	193,668	255,478	42,581	212,897
Total, South	3,244,396	1,821,256	1,423,140	834,520	532,967	301,553	382,469	16,384	366,085	765,940	134,915	631,025
Pacific Northwest:												
Alaska	373,400	373,400		4	4					150,035	150,035	
Oregon	496,000	426,000	70,000	99,055	98,684	371	42,000	42,000		798,337	789,715	8,622
Washington	1,619,000	1,425,000	194,000	126,686	126,686		33,000	33,000		128,629	122,789	5,840
Total	2,488,400	2,224,400	264,000	225,745	225,374	371	75,000	75,000		1,077,001	1,062,539	14,462

TABLE 44.—*Timber cut from sawtimber in the United States, by roundwood product and logging residues, softwoods and hardwoods, section, region, and State, 1962*—Continued

(Thousand board feet, International ¼-inch log rule)

Section, region, and State	Roundwood products (continued)									Logging residues		
	Pulpwood			Miscellaneous industrial			Fuelwood					
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
Pacific Southwest:												
California	2,956	2,738	218	31,341	31,341		9,645	1,055	8,590	460,728	440,782	19,946
Hawaii				128		128	63		63	1,274		1,274
Total	2,956	2,738	218	31,469	31,341	128	9,708	1,055	8,653	462,002	440,782	21,220
Northern Rocky Mountain:												
Idaho	20,265	20,265		18,742	18,722	20	12	12		42,368	42,324	44
Montana	13,360	13,360		12,847	12,846	1				22,950	22,808	142
South Dakota (west)	5,508	5,508		5,727	5,727					2,914	2,914	
Wyoming	1,739	1,739		375	366	9	4	4		7,100	7,100	
Total	40,872	40,872		37,691	37,661	30	16	16		75,332	75,146	186
Southern Rocky Mountain:												
Arizona	54,834	54,834		3,288	2,894	394	390	390		15,877	15,877	
Colorado	311	104	207	4,538	4,532	6				14,457	14,402	55
Nevada				324	72	252	46	22	24	201	201	
New Mexico				2,395	2,381	14	312	312		14,178	13,820	358
Utah				98	97	1				6,047	6,047	
Total	55,145	54,938	207	10,643	9,976	667	748	724	24	50,760	50,347	413
Total, West	2,587,373	2,322,948	264,425	305,548	304,352	1,196	85,472	76,795	8,677	1,665,095	1,628,814	36,281
Total, all regions	7,166,920	4,966,682	2,200,238	1,562,643	936,487	626,156	808,820	133,320	675,500	2,824,446	1,804,770	1,019,676

TABLE 45.—*Volume of plant residues in the United States, by type of material, softwoods and hardwoods, section, region, and State, 1962* [1]

(Thousand cubic feet)

Section, region, and State	Total			Coarse [2]			Fine [3]		
	All species	Softwoods	Hardwoods	Total	Softwoods	Hardwoods	Total	Softwoods	Hardwoods
New England:									
Connecticut	973	106	867	564	61	503	409	45	364
Maine	10,903	10,063	840	6,229	5,838	391	4,674	4,225	449
Massachusetts	2,619	1,273	1,346	1,522	740	782	1,097	533	564
New Hampshire	5,498	4,846	652	3,180	2,819	361	2,318	2,027	291
Rhode Island	33		33	19		19	14		14
Vermont	3,155	2,583	572	1,823	1,502	321	1,332	1,081	251
Total	23,181	18,871	4,310	13,337	10,960	2,377	9,844	7,911	1,933
Middle Atlantic:									
Delaware	694	550	144	338	269	69	356	281	75
Maryland	3,939	1,363	2,576	1,916	665	1,251	2,023	698	1,325
New Jersey	601	74	527	287	35	252	314	39	275
New York	9,140	2,471	6,669	4,441	1,205	3,236	4,699	1,266	3,433
Pennsylvania	13,027	2,606	10,421	6,351	1,270	5,081	6,676	1,336	5,340
West Virginia	10,175	719	9,456	4,967	350	4,617	5,208	369	4,839
Total	37,576	7,783	29,793	18,300	3,794	14,506	19,276	3,989	15,287
Lake States:									
Michigan	9,925	3,250	6,675	3,960	1,325	2,635	5,965	1,925	4,040
Minnesota	5,640	3,220	2,420	2,250	1,290	960	3,390	1,930	1,460
North Dakota	55		55	34		34	21		21
South Dakota (east)	58		58	24		24	34		34
Wisconsin	13,500	3,500	10,000	4,950	1,500	3,450	8,550	2,000	6,550
Total	29,178	9,970	19,208	11,218	4,115	7,103	17,960	5,855	12,105
Central:									
Illinois	4,872	16	4,856	1,957	6	1,951	2,915	10	2,905
Indiana	7,040	210	6,830	3,560	110	3,450	3,480	100	3,380
Iowa	1,170	30	1,140	430		430	740	30	710
Kansas	627	30	597	314	17	297	313	13	300
Kentucky	12,747	725	12,022	5,609	339	5,270	7,138	386	6,752
Missouri	8,895	845	8,050	4,555	395	4,160	4,340	450	3,890
Nebraska	268	55	213	120	25	95	148	30	118
Ohio	6,824	497	6,327	1,626	181	1,445	5,198	316	4,882
Total	42,443	2,408	40,035	18,171	1,073	17,098	24,272	1,335	22,937
Total, North	132,378	39,032	93,346	61,026	19,942	41,084	71,352	19,090	52,262

TABLE 45.—*Volume of plant residues in the United States, by type of material, softwoods and hardwoods, section, region, and State, 1962* [1]—Continued

(Thousand cubic feet)

Section, region, and State	Total			Coarse [2]			Fine [3]		
	All species	Softwoods	Hardwoods	Total	Softwoods	Hardwoods	Total	Softwoods	Hardwoods
South Atlantic:									
North Carolina	128,096	80,811	47,285	38,415	18,575	19,840	89,681	62,236	27,445
South Carolina	56,892	33,542	23,350	11,975	2,740	9,235	44,917	30,802	14,115
Virginia	88,322	41,516	46,806	27,480	9,653	17,827	60,842	31,863	28,979
Total	273,310	155,869	117,441	77,870	30,968	46,902	195,440	124,901	70,539
East Gulf:									
Florida	27,177	21,827	5,350	7,307	3,055	4,252	19,870	18,772	1,098
Georiga	78,437	46,519	31,918	17,674	2,885	14,789	60,763	43,634	17,129
Total	105,614	68,346	37,268	24,981	5,940	19,041	80,633	62,406	18,227
Central Gulf:									
Alabama	23,282	13,631	9,651	8,340	3,802	4,538	14,942	9,829	5,113
Mississippi	17,250	6,366	10,884	4,875	988	3,887	12,375	5,378	6,997
Tennessee	25,650	8,801	16,849	9,495	4,553	4,942	16,155	4,248	11,907
Total	66,182	28,798	37,384	22,710	9,343	13,367	43,472	19,455	24,017
West Gulf:									
Arkansas	25,353	12,532	12,821	7,001	1,319	5,682	18,352	11,213	7,139
Louisiana	24,426	9,990	14,436	10,585	3,666	6,919	13,841	6,324	7,517
Oklahoma	2,132	1,492	640	744	427	317	1,388	1,065	323
Texas	12,894	7,293	5,601	3,993	1,193	2,800	8,901	6,100	2,801
Total	64,805	31,307	33,498	22,323	6,605	15,718	42,482	24,702	17,780
Total, South	509,911	284,320	225,591	147,884	52,856	95,028	362,027	231,464	130,563
Pacific Northwest:									
Alaska	4,163	4,163		2,290	2,290		1,873	1,873	
Oregon	196,828	189,436	7,392	102,985	100,445	2,540	93,843	88,991	4,852
Washington	34,056	33,147	909	19,006	18,651	355	15,050	14,496	554
Total	235,047	226,746	8,301	124,281	121,386	2,895	110,766	105,360	5,406
Pacific Southwest:									
California	199,451	198,557	894	105,800	105,324	476	93,651	93,233	418
Hawaii	177		177	97		97	80		80
Total	199,628	198,557	1,071	105,897	105,324	573	93,731	93,233	498
Northern Rocky Mountain:									
Idaho	73,741	73,716	25	36,912	36,900	12	36,829	36,816	13
Montana	57,821	57,803	18	24,341	24,335	6	33,480	33,468	12
South Dakota (west)	2,747	2,747		1,144	1,144		1,603	1,603	
Wyoming	7,846	7,846		3,301	3,301		4,545	4,545	
Total	142,155	142,112	43	65,698	65,680	18	76,457	76,432	25
Southern Rocky Mountain:									
Arizona	10,134	10,052	82	3,909	3,827	82	6,225	6,225	
Colorado	18,594	17,932	662	9,638	9,029	609	8,956	8,903	53
Nevada	252	252		150	150		102	102	
New Mexico	18,608	18,604	4	8,791	8,787	4	9,817	9,817	
Utah	5,546	5,374	172	3,146	3,048	98	2,400	2,326	74
Total	53,134	52,214	920	25,634	24,841	793	27,500	27,373	127
Total, West	629,964	619,629	10,335	321,510	317,231	4,279	308,454	302,398	6,056
Total, all regions	1,272,253	942,981	329,272	530,420	390,029	140,391	741,833	552,952	188,881

[1] These estimates are for unused plant residues at primary manufacturing plants and are in addition to the byproducts used for pulpwood etc. shown in other tables.

[2] Unused material suitable for chipping, such as slabs, edgings, veneer cores, and trimmings.

[3] Material such as sawdust and shavings.

TABLE 46.—*Volume of plant residues in the United States, by industrial source, type of material, section, region, and State, 1962*

(Thousand cubic feet)

Section, region, and State	All industries			Lumber industry			Veneer and plywood industry			Other primary industries [1]		
	Total	Coarse	Fine	Total	Coarse	Fine	Total	Coarse	Fine	Total	Coarse	Fine
New England:												
Connecticut	973	564	409	966	562	404				7	2	5
Maine	10,903	6,229	4,674	10,604	6,171	4,433	214	31	183	85	27	58
Massachusetts	2,619	1,522	1,097	2,613	1,520	1,093				6	2	4
New Hampshire	5,498	3,180	2,318	5,449	3,171	2,278	40	6	34	9	3	6
Rhode Island	33	19	14	32	19	13				1		1
Vermont	3,155	1,823	1,332	3,120	1,816	1,304	25	4	21	10	3	7
Total	23,181	13,337	9,844	22,784	13,259	9,525	279	41	238	118	37	81
Middle Atlantic:												
Delaware	694	338	356	667	327	340	22	9	13	5	2	3
Maryland	3,939	1,916	2,023	3,846	1,883	1,963	51	20	31	42	13	29
New Jersey	601	287	314	545	267	278	27	11	16	29	9	20
New York	9,140	4,441	4,699	8,879	4,347	4,532	146	58	88	115	36	79
Pennsylvania	13,027	6,351	6,676	12,855	6,294	6,561	32	13	19	140	44	96
West Virginia	10,175	4,967	5,208	10,086	4,938	5,148	16	6	10	73	23	50
Total	37,576	18,300	19,276	36,878	18,056	18,822	294	117	177	404	127	277
Lake States:												
Michigan	9,925	3,960	5,965	9,750	3,900	5,850	50	10	40	125	50	75
Minnesota	5,640	2,250	3,390	5,440	2,180	3,260	30	10	20	170	60	110
North Dakota	55	34	21	36	20	16				19	14	5
South Dakota (east)	58	24	34	43	24	19	15		15			
Wisconsin	13,500	4,950	8,550	13,300	4,900	8,400	50		50	150	50	100
Total	29,178	11,218	17,960	28,569	11,024	17,545	145	20	125	464	174	290
Central:												
Illinois	4,872	1,957	2,915	4,351	1,819	2,532	267	7	260	254	131	123
Indiana	7,040	3,560	3,480	6,410	3,310	3,100	440	170	270	190	80	110
Iowa	1,170	430	740	1,120	390	730				50	40	10
Kansas	627	314	313	511	296	215	16	6	10	100	12	88
Kentucky	12,747	5,609	7,138	12,165	5,230	6,935	30		30	552	379	173
Missouri	8,895	4,555	4,340	8,415	4,395	4,020	210	10	200	270	150	120
Nebraska	268	120	148	265	120	145				3		3
Ohio	6,824	1,626	5,198	6,198	1,552	4,646	481	3	478	145	71	74
Total	42,443	18,171	24,272	39,435	17,112	22,323	1,444	196	1,248	1,564	863	701
Total, North	132,378	61,026	71,352	127,666	59,451	68,215	2,162	374	1,788	2,550	1,201	1,349
South Atlantic:												
North Carolina	128,096	38,415	89,681	113,823	28,672	85,151	7,869	7,376	493	6,404	2,367	4,037
South Carolina	56,892	11,975	44,917	49,824	7,272	42,552	3,596	3,336	260	3,472	1,367	2,105
Virginia	88,322	27,480	60,842	82,649	24,433	58,216	2,073	1,958	115	3,600	1,089	2,511
Total	273,310	77,870	195,440	246,296	60,377	185,919	13,538	12,670	868	13,476	4,823	8,653
East Gulf:												
Florida	27,177	7,307	19,870	19,670	1,986	17,684	4,417	4,146	271	3,090	1,175	1,915
Georgia	78,437	17,674	60,763	69,014	10,444	58,570	6,413	6,031	382	3,010	1,199	1,811
Total	105,614	24,981	80,633	88,684	12,430	76,254	10,830	10,177	653	6,100	2,374	3,726
Central Gulf:												
Alabama	23,282	8,340	14,942	21,488	7,991	13,497	234	165	69	1,560	184	1,376
Mississippi	17,250	4,875	12,375	12,803	2,279	10,524	1,748	1,657	91	2,699	939	1,760
Tennessee	25,650	9,495	16,155	23,178	8,579	14,599	534	505	29	1,938	411	1,527
Total	66,182	22,710	43,472	57,469	18,849	38,620	2,516	2,327	189	6,197	1,534	4,663
West Gulf:												
Arkansas	25,353	7,001	18,352	21,893	5,420	16,473	797	771	26	2,663	810	1,853
Louisiana	24,426	10,585	13,841	20,901	8,821	12,080	659	583	76	2,866	1,181	1,685
Oklahoma	2,132	744	1,388	1,644	554	1,090	62	58	4	426	132	294
Texas	12,894	3,993	8,901	9,885	2,154	7,731	1,371	1,321	50	1,638	518	1,120
Total	64,805	22,323	42,482	54,323	16,949	37,374	2,889	2,733	156	7,593	2,641	4,952
Total, South	509,911	147,884	362,027	446,772	108,605	338,167	29,773	27,907	1,866	33,366	11,372	21,994
Pacific Northwest:												
Alaska	4,163	2,290	1,873	4,163	2,290	1,873						
Oregon	196,828	102,985	93,843	156,901	63,219	93,682	38,678	38,678		1,249	1,088	161
Washington	34,056	19,006	15,050	25,661	12,940	12,721	4,901	4,901		3,494	1,165	2,329
Total	235,047	124,281	110,766	186,725	78,449	108,276	43,579	43,579		4,743	2,253	2,490
Pacific Southwest:												
California	199,451	105,800	93,651	189,271	98,372	90,899	10,180	7,428	2,752			
Hawaii	177	97	80	133	73	60				44	24	20
Total	199,628	105,897	93,731	189,404	98,445	90,959	10,180	7,428	2,752	44	24	20

See footnote at end of table.

TABLE 46.—*Volume of plant residues in the United States, by industrial source, type of material, section, region, and State, 1962*—Continued

(Thousand cubic feet)

Section, region, and State	All industries			Lumber industry			Veneer and plywood industry			Other primary industries [1]		
	Total	Coarse	Fine	Total	Coarse	Fine	Total	Coarse	Fine	Total	Coarse	Fine
Northern Rocky Mountain:												
Idaho	73,741	36,912	36,829	71,859	35,030	36,829	941	941	----	941	941	----
Montana	57,821	24,341	33,480	52,388	18,908	33,480	5,033	5,033	----	400	400	----
South Dakota (west)	2,747	1,144	1,603	2,534	931	1,603	----	----	----	213	213	----
Wyoming	7,846	3,301	4,545	7,829	3,284	4,545	----	----	----	17	17	----
Total	142,155	65,698	76,457	134,610	58,153	76,457	5,974	5,974	----	1,571	1,571	----
Southern Rocky Mountain:												
Arizona	10,134	3,909	6,225	10,031	3,806	6,225	----	----	----	103	103	----
Colorado	18,594	9,638	8,956	17,738	8,782	8,956	----	----	----	856	856	----
Nevada	252	150	102	223	121	102	----	----	----	29	29	----
New Mexico	18,608	8,791	9,817	18,555	8,738	9,817	----	----	----	53	53	----
Utah	5,546	3,146	2,400	5,264	2,864	2,400	----	----	----	282	282	----
Total	53,134	25,634	27,500	51,811	24,311	27,500	----	----	----	1,323	1,323	----
Total, West	629,964	321,510	308,454	562,550	259,358	303,192	59,733	56,981	2,752	7,681	5,171	2,510
Total, all regions	1,272,253	530,420	741,833	1,136,988	427,414	709,574	91,668	85,262	6,406	43,597	17,744	25,853

[1] Including cooperage, small dimension, excelsior, and other primary manufacturing plants.

TABLE 47.—*Production, net imports, and apparent consumption of timber products in the United States, by major product, 1920–62*

[Million cubic feet, roundwood equivalent]

Year	Total domestic production	Apparent consumption	Industrial roundwood [1]												Fuelwood [2]
			Total			Saw logs			Veneer logs			Pulpwood			Other products [3]	
			Domestic production	Net imports	Apparent consumption [4]	Domestic production	Net imports [5]	Apparent consumption [4 6]	Domestic production	Net imports [7]	Apparent consumption [4]	Domestic production	Net imports [8]	Apparent consumption [4 9]	Apparent consumption	Apparent consumption
1920	11,835	12,040	7,770	205	7,975	5,440	*55	5,380	80	----	80	360	260	625	1,890	4,065
1921	10,830	11,000	6,560	165	6,730	4,505	*80	4,430	75	----	75	260	245	505	1,720	4,270
1922	11,365	11,655	7,605	290	7,895	5,480	*60	5,420	90	----	90	340	350	690	1,695	3,760
1923	11,910	12,255	8,535	345	8,880	6,375	*75	6,295	115	----	115	340	420	765	1,705	3,375
1924	11,630	11,910	8,250	285	8,530	6,140	*155	5,980	115	----	115	340	440	780	1,655	3,380
1925	11,575	11,935	8,350	360	8,710	6,375	*120	6,255	135	----	135	345	480	825	1,495	3,225
1926	11,280	11,660	8,215	375	8,595	6,180	*145	6,035	145	----	145	400	520	925	1,490	3,065
1927	10,980	11,315	7,780	340	8,115	5,790	*205	5,585	175	(10) (*)	170	380	545	925	1,435	3,200
1928	10,895	11,185	7,670	290	7,960	5,710	*275	5,435	175	*5	175	400	570	965	1,385	3,225
1929	11,215	11,545	8,045	330	8,375	6,020	*255	5,765	200	*5	195	445	590	1,035	1,380	3,170
1930	10,095	10,495	6,305	400	6,705	4,560	*175	4,385	155	*5	150	395	580	975	1,195	3,790
1931	8,990	9,335	4,600	335	4,945	3,105	*150	2,960	125	*5	120	400	490	895	970	4,390
1932	8,380	8,685	3,400	305	3,705	2,100	*120	1,980	120	(10) (*)	115	350	425	780	830	4,980
1933	9,045	9,390	4,040	345	4,385	2,665	*145	2,520	125	*5	120	415	495	910	835	5,005
1934	9,165	9,520	4,340	355	4,695	2,925	*165	2,760	130	*5	125	430	525	955	855	4,825
1935	9,600	10,225	5,090	420	5,715	3,565	*135	3,630	145	*5	140	485	560	1,050	895	4,510
1936	10,255	10,605	5,990	560	6,340	4,295	*95	3,995	165	*5	160	555	660	1,210	975	4,265
1937	10,435	10,680	6,360	610	6,605	4,505	*115	4,015	195	*5	195	640	730	1,375	1,020	4,075
1938	9,895	10,255	5,570	470	5,930	3,860	*70	3,680	195	(10) (*)	195	595	540	1,135	920	4,325
1939	10,560	11,095	6,370	535	6,905	4,470	*60	4,410	210	(10) (*)	210	725	595	1,320	965	4,190
1940	10,865	11,795	6,975	400	7,905	4,845	*35	5,340	235	*5	230	930	440	1,370	965	3,890
1941	11,645	12,105	8,050	600	8,510	5,680	105	5,630	265	*5	260	1,075	500	1,590	1,030	3,595
1942	10,945	12,660	8,080	680	9,795	5,645	170	6,830	305	*5	300	1,130	515	1,665	1,000	2,865
1943	10,340	11,530	7,555	550	8,745	5,325	85	6,020	280	*15	265	1,030	480	1,540	920	2,785
1944	10,365	11,055	7,450	535	8,140	5,115	100	5,385	270	*10	260	1,160	445	1,590	905	2,915
1945	9,575	10,520	6,600	665	7,545	4,365	100	4,745	250	*10	240	1,140	575	1,715	845	2,975
1946	10,375	10,890	7,700	785	8,215	5,295	90	5,200	255	*5	250	1,260	700	1,875	890	2,675
1947	10,770	11,265	8,085	795	8,580	5,500	*5	5,260	275	*5	265	1,370	805	2,115	940	2,685
1948	11,025	11,705	8,360	1,055	9,040	5,750	190	5,645	290	(10)	295	1,470	865	2,250	850	2,665
1949	10,160	11,330	7,340	915	8,510	5,000	140	5,345	320	(10)	320	1,275	775	2,100	745	2,820

See footnotes at end of table.

TABLE 47.—*Production, net imports, and apparent consumption of timber products in the United States, by major product, 1920–62*—Continued

[Million cubic feet, roundwood equivalent]

Year	Total domestic production	Apparent consumption	Industrial roundwood [1]													Fuelwood [2]
			Total			Saw logs			Veneer logs			Pulpwood			Other products [3]	
			Domestic production	Net imports [5]	Apparent consumption [4 6]	Domestic production	Net imports [5]	Apparent consumption [4 6]	Domestic production	Net imports [7]	Apparent consumption [4]	Domestic production	Net imports [8]	Apparent consumption [4 9]	Apparent consumption	Apparent consumption
1950	10,790	12,230	8,520	1,355	9,960	5,905	455	6,360	345	10	355	1,500	890	2,475	770	2,270
1951	10,955	12,055	8,725	1,190	9,825	5,780	235	6,020	390	10	400	1,825	945	2,675	730	2,230
1952	11,100	12,270	9,090	1,170	10,260	6,145	270	6,415	420	30	450	1,825	870	2,695	700	2,010
1953	10,675	11,920	8,755	1,225	10,000	5,710	330	6,040	475	25	500	1,895	870	2,785	675	1,920
1954	10,510	11,770	8,675	1,195	9,935	5,650	365	6,015	480	40	520	1,890	790	2,745	655	1,835
1955	10,890	12,220	9,145	1,290	10,475	5,785	430	6,215	575	60	635	2,155	800	2,995	630	1,745
1956	11,190	12,460	9,535	1,375	10,805	5,920	420	6,335	590	65	655	2,420	890	3,210	605	1,655
1957	10,110	11,270	8,545	1,195	9,705	5,100	335	5,435	560	70	630	2,305	790	3,060	580	1,565
1958	9,905	11,200	8,425	1,240	9,720	5,160	415	5,575	615	80	695	2,090	745	2,890	560	1,480
1959	10,670	12,150	9,280	1,425	10,760	5,745	515	6,255	720	115	835	2,280	795	3,135	535	1,390
1960	10,085	11,335	8,785	1,300	10,035	5,080	480	5,560	705	90	800	2,490	730	3,165	510	1,300
1961	9,865	11,285	8,650	1,365	10,070	4,945	545	5,485	765	100	860	2,450	720	3,235	490	1,215
1962	10,320	11,800	9,195	1,480	10,675	5,270	650	5,920	855	110	965	2,605	720	3,325	465	1,125

[1] Includes all products, except fuelwood, commonly cut from round sections of trees.

[2] Includes small quantities of imported fuelwood.

[3] Includes cooperage logs, poles and piling, fence posts, hewn ties, round mine timbers, box bolts, excelsior bolts, chemical wood, shingle bolts, and a miscellaneous assortment of similar items.

[4] Columns may not add to total because of rounding.

[5] Net imports of lumber converted to cubic feet roundwood. Small quantities of imported saw logs (roundwood form) are included in domestic production.

[6] Includes changes in stocks 1935–49.

[7] Net imports of veneer logs represent the equivalent net imports of veneer and plywood converted to board feet log scale, and then to cubic feet roundwood. The small volume of veneer logs imported (roundwood form) is included in domestic production.

[8] Includes net pulpwood imports and the pulpwood equivalent of the net wood pulp and paper and paperboard imports.

[9] Includes changes in stocks beginning in 1941.

[10] Less than 2.5 million cubic feet.

*Net exports.

Sources: Based on data published by the U.S. Departments of Commerce and Agriculture.

TABLE 48.—*Lumber production, imports, exports, and consumption in the United States, 1920–62*

Year	Domestic production [1]	Imports	Exports	Apparent consumption	Per capita consumption	Year	Domestic production	Imports	Exports	Apparent consumption	Per capita consumption
	Billion board feet	*Billion board feet*	*Billion board feet*	*Billion board feet*	*Board feet*		*Billion board feet*	*Billion board feet*	*Billion board feet*	*Billion board feet*	*Board feet*
1920	35.0	1.4	1.7	34.7	326	1945	28.1	1.1	.4	28.7	205
1925	41.0	1.8	2.6	40.2	347	1946	34.1	1.2	.6	34.7	245
						1947	35.4	1.3	1.4	35.4	246
1930	29.4	1.2	2.4	28.2	229	1948	37.0	1.9	.6	38.2	261
1931	20.0	.7	1.7	19.0	153	1949	32.2	1.6	.7	33.1	222
1932	13.5	.4	1.2	12.7	102						
1933	17.2	.4	1.3	16.3	130	1950	38.0	3.4	.5	40.9	269
1934	18.8	.3	1.3	17.8	141	1951	37.2	2.5	1.0	38.7	250
						1952	37.5	2.5	.7	39.2	249
1935	22.9	.4	1.3	22.1	174	1953	36.7	2.8	.6	38.9	243
1936	27.6	.7	1.3	27.0	211	1954	36.4	3.1	.7	38.7	237
1937	29.0	.7	1.4	28.2	219						
1938	24.8	.5	1.0	24.4	188	1955	37.4	3.6	.8	40.1	242
1939	28.8	.7	1.1	28.4	217	1956	38.2	3.4	.8	40.9	242
						1957	32.9	3.0	.8	35.0	203
1940	31.2	.7	1.0	30.9	234	1958	33.4	3.4	.7	36.1	206
1941	36.5	1.4	.7	37.2	279	1959	37.2	4.1	.8	40.5	228
1942	36.3	1.5	.5	37.4	277						
1943	34.3	.9	.3	34.8	255	1960	32.9	3.9	.9	36.0	199
1944	32.9	1.0	.4	33.6	243	1961	31.9	4.3	.8	35.5	193
						1962	33.2	4.9	.8	37.3	200

[1] 1920–41 inclusive. Census Bureau estimates of lumber production adjusted by the Forest Service to include the production of sawmills not covered in the Census Survey.

Sources: U.S. Department of Commerce, Bureau of the Census; U.S. Department of Agriculture, Forest Service.

TABLE 49.—*Paper and board production, imports, exports, and consumption in the United States, 1920–62*

Year	Domestic production	Imports	Exports	Apparent consumption [1]	Per capita consumption	Year	Domestic production	Imports	Exports	Apparent consumption [1]	Per capita consumption
	Thousand tons	*Thousand tons*	*Thousand tons*	*Thousand tons*	*Pounds*		*Thousand tons*	*Thousand tons*	*Thousand tons*	*Thousand tons*	*Pounds*
1920	7,185	778	219	7,771	146	1942	17,084	3,036	264	19,729	294
1921	5,333	819	91	6,061	112	1943	17,036	2,717	255	19,644	287
1922	6,875	1,099	96	7,878	143	1944	17,183	2,574	254	19,540	282
1923	7,871	1,423	86	9,208	165						
1924	7,930	1,459	91	9,298	163	1945	17,371	2,751	396	19,827	282
						1946	19,264	3,622	305	22,536	320
1925	9,002	1,528	92	10,438	180	1947	21,114	4,116	352	24,774	345
1926	9,794	1,930	117	11,607	198	1948	21,897	4,575	295	26,070	357
1927	10,002	2,065	113	11,954	201	1949	20,315	4,746	295	24,780	332
1928	10,403	2,222	136	12,493	207						
1929	11,140	2,485	179	13,421	221	1950	24,375	4,998	297	29,105	382
						1951	26,047	5,137	528	30,527	396
1930	10,169	2,326	160	12,341	200	1952	24,418	5,173	499	28,970	369
1931	9,382	2,105	124	11,400	183	1953	26,605	5,213	383	31,516	392
1932	7,998	1,827	85	9,804	156	1954	26,876	5,169	591	31,505	386
1933	9,190	1,828	98	10,862	174						
1934	9,187	2,250	127	11,211	177	1955	30,178	5,360	736	34,875	420
						1956	31,441	5,799	669	36,341	430
1935	10,479	2,438	139	12,818	202	1957	30,666	5,423	751	35,252	411
1936	11,976	2,832	137	14,655	229	1958	30,823	5,100	728	35,215	403
1937	12,837	3,401	177	15,650	243	1959	34,034	5,559	793	38,770	437
1938	11,381	2,336	156	13,949	215						
1939	13,510	2,683	198	15,982	244	1960	34,444	5,665	902	39,242	434
						1961	35,698	5,682	1,042	40,387	441
1940	14,484	2,812	490	16,769	254	1962	37,552	5,806	1,003	42,337	453
1941	17,762	3,056	399	20,387	306						

[1] Includes changes in newsprint stocks beginning in 1929.

Sources: 1920–49, American Paper and Pulp Association, *The Statistics of Paper*, 1960, reporting statistics published by the U.S. Department of Commerce. 1950–62, U.S. Department of Commerce, Bureau of the Census, Current Industrial Reports, *Pulp, Paper and Board*, Annual, and Business and Defense Services Administration, *Pulp, Paper and Board*, Quarterly

TABLE 50.—*Wood pulp production, imports, exports, and consumption in the United States, 1920–62* [1]

Year	Domestic production	Imports	Exports	Apparent consumption	Per capita consumption	Year	Domestic production	Imports	Exports	Apparent consumption	Per capita consumption
	Thousand tons	*Thousand tons*	*Thousand tons*	*Thousand tons*	*Pounds*		*Thousand tons*	*Thousand tons*	*Thousand tons*	*Thousand tons*	*Pounds*
1920	3,822	906	32	4,696	88	1942	10,783	1,237	378	11,642	173
1921	2,876	697	28	3,544	65	1943	9,680	1,306	301	10,685	156
1922	3,522	1,259	25	4,756	86	1944	10,108	1,072	218	10,962	158
1923	3,789	1,383	23	5,149	92						
1924	3,723	1,523	32	5,214	91	1945	10,167	1,754	135	11,786	168
						1946	10,607	1,805	39	12,373	175
1925	3,962	1,664	38	5,588	97	1947	11,946	2,322	130	14,138	196
1926	4,395	1,731	34	6,092	104	1948	12,872	2,176	94	14,955	204
1927	4,313	1,676	32	5,957	100	1949	12,207	1,763	122	13,848	186
1928	4,511	1,755	33	6,232	103						
1929	4,863	1,881	54	6,690	110	1950	14,849	2,385	96	17,138	225
						1951	16,524	2,361	202	18,683	241
1930	4,630	1,830	48	6,412	104	1952	16,473	1,937	212	18,198	231
1931	4,409	1,596	53	5,952	96	1953	17,537	2,158	162	19,533	244
1932	3,760	1,482	48	5,194	83	1954	18,256	2,051	442	19,865	244
1933	4,276	1,942	79	6,139	98						
1934	4,436	1,806	143	6,099	97	1955	20,740	2,214	631	22,323	269
						1956	22,131	2,332	525	23,938	283
1935	4,926	1,933	172	6,687	105	1957	21,800	2,101	622	23,278	271
1936	5,695	2,278	193	7,779	121	1958	21,796	2,105	515	23,385	267
1937	6,573	2,395	323	8,645	134	1959	24,383	2,431	653	26,162	294
1938	5,934	1,710	140	7,503	116						
1939	6,993	2,026	140	8,880	136	1960	25,316	2,389	1,142	26,563	294
						1961	26,523	2,467	1,178	27,812	303
1940	8,960	1,225	481	9,703	147	1962	27,908	2,789	1,186	29,511	316
1941	10,375	1,158	329	11,205	168						

[1] Data may not add to total because of rounding.

Sources: 1920–49, United States Pulp Producers Association, Inc., *Wood Pulp Statistics*, 1963, reporting statistics published by the U.S. Department of Commerce. 1950–62, U.S. Department of Commerce, Bureau of the Census, Current Industrial Reports, *Pulp, Paper and Board*, Annual, and Business and Defense Services Administration, *Pulp, Paper and Board*, Quarterly.

TABLE 51.—*Pulpwood consumption, production, net imports in the United States, and the equivalent wood volumes of the net imports of paper, board, and wood pulp, 1920–62* [1]

[Thousand cords]

Year	Total consumption	Consumption of pulpwood in U.S. mills	Domestic production of pulpwood				Net pulpwood imports	Net imports of paper, board, and wood pulp in terms of pulpwood equivalents
			Total	Roundwood		Chipped residues		
				Total	Softwood	Hardwood		
1920	8,240	6,114	4,873	4,703	4,157	546	170	1,241	2,126
1921	6,621	4,557	3,476	3,409	3,068	341	67	1,082	2,064
1922	9,022	5,549	4,537	4,449	3,955	494	88	1,012	3,473
1923	9,957	5,873	4,539	4,435	3,947	488	104	1,334	4,084
1924	10,194	5,768	4,517	4,398	3,875	523	119	1,251	4,426
1925	10,778	6,094	4,624	4,468	3,963	505	156	1,470	4,684
1926	12,106	6,766	5,403	5,222	4,679	543	181	1,363	5,340
1927	12,206	6,751	5,213	4,927	4,351	576	286	1,538	5,455
1928	12,928	7,160	5,641	5,185	4,620	565	456	1,519	5,768
1929	13,898	7,645	6,347	5,786	5,080	706	561	1,298	6,253
1930	13,188	7,196	5,744	5,148	4,479	669	596	1,452	5,992
1931	12,075	6,723	5,782	5,224	4,702	522	558	941	5,352
1932	10,487	5,633	5,013	4,572	4,129	443	441	620	4,854
1933	12,241	6,582	5,869	5,389	4,726	663	480	712	5,659
1934	12,549	6,797	5,838	5,602	4,947	655	236	959	5,752
1935	13,810	7,628	6,620	6,327	5,561	766	293	1,008	6,182
1936	15,966	8,716	7,527	7,197	6,189	1,008	330	1,189	7,250
1937	18,286	10,394	8,895	8,330	7,330	1,000	565	1,499	7,892
1938	14,902	9,194	7,953	7,722	6,927	795	231	1,241	5,708
1939	17,387	10,816	9,736	9,417	8,504	913	319	1,081	6,571
1940	18,026	13,743	12,369	12,094	10,776	1,318	275	1,374	4,283
1941	21,451	16,580	14,176	13,951	12,392	1,559	225	1,560	4,871
1942	22,259	17,275	14,907	14,707	12,993	1,714	200	1,660	4,984
1943	20,455	15,645	13,580	13,391	11,761	1,630	189	1,355	4,810
1944	21,150	16,758	15,349	15,062	13,067	1,995	287	1,351	4,392
1945	22,795	16,912	15,254	14,804	12,668	2,136	450	1,523	5,883
1946	25,127	17,818	16,966	16,366	13,923	2,443	600	1,675	7,309
1947	28,318	19,714	18,543	17,793	15,253	2,540	750	1,750	8,604
1948	30,297	21,189	20,026	19,101	16,618	2,483	925	1,982	9,108
1949	28,464	19,945	17,619	16,544	14,236	2,308	1,075	1,411	8,519
1950	33,659	23,627	20,716	19,466	16,545	2,921	1,250	1,385	10,032
1951	36,158	26,522	25,128	23,728	19,909	3,819	1,400	2,497	9,636
1952	35,404	26,461	25,045	23,477	19,846	3,631	1,568	2,108	8,943
1953	37,774	28,141	26,322	24,597	20,438	4,159	1,725	1,541	9,633
1954	38,056	29,436	26,972	25,072	20,541	4,531	1,900	1,562	8,620
1955	41,989	33,356	30,948	28,273	23,038	5,235	2,675	1,704	8,633
1956	45,448	35,749	35,196	31,696	25,762	5,934	3,500	1,762	9,699
1957	44,241	35,746	34,422	30,145	24,070	6,075	4,277	1,666	8,495
1958	43,592	35,248	33,239	27,818	22,244	5,574	5,421	1,269	8,344
1959	47,895	38,691	36,716	30,076	22,869	7,207	6,640	1,055	9,204
1960	48,730	40,485	40,012	32,622	24,527	8,095	7,390	1,158	8,245
1961	50,271	42,191	40,272	32,117	23,996	8,121	8,155	1,162	8,080
1962	52,855	44,070	42,772	33,811	24,866	8,945	8,962	1,292	8,785

[1] Data may not add to totals because of changes in inventories, rounding, and statistical discrepancies in imports.

Sources: U.S. Department of Commerce, Bureau of the Census; U.S. Department of Agriculture, Forest Service; American Paper and Pulp Association; and American Pulpwood Association.

APPENDIX II

Definitions

Allowable Cut. The volume of timber that may be cut during a given period under specified management plans for sustained production.

Area Condition Classes. A classification of commercial forest land based upon stocking by desirable trees and other conditions affecting current and prospective timber growth.

Basal Area. The area in square feet of the cross section at breast height of a single tree or of all the trees in a stand usually expressed as square feet of basal area per acre.

Commercial Forest Land. Forest land which is producing or is capable of producing crops of industrial wood and not withdrawn from timber utilization by statute or administrative regulation. Includes areas suitable for management to grow crops of industrial wood generally capable of producing in excess of 25 cubic feet per acre of annual growth. Includes both accessible and inaccessible areas.

Commercial Species. Tree species presently or prospectively suitable for industrial wood products; excludes so-called weed species, such as black-jack oak and hawthorn.

Cropland. Land under cultivation within the past 24 months, including cropland harvested, crop failures, cultivated summer fallow, idle cropland, cropland used only for pasture, orchards and land in soil improving crops, but excluding land cultivated in developing improved pasture.

Cull Trees. Live trees of sawtimber and poletimber size that are unmerchantable for saw logs now or prospectively because of roughness, rot, or species (also see rotten cull trees and rough trees).

Desirable Trees. Growing-stock trees having no serious defects in quality limiting present or prospective use, of relatively high vigor, and containing no pathogens that may result in death or serious deterioration before rotation age.

Diameter Classes. A classification of trees based on diameter outside bark measured at breast height (4½ feet above the ground). D.b.h. is the common abbreviation for "diameter at breast height." When using 2-inch diameter classes the 6-inch class, for example, includes trees 5.0 through 6.9 inches d.b.h. inclusive.

Disposable Personal Income. All monetary income received during a specified period by individual persons after payment of direct personal taxes.

Dwelling Unit. One or more rooms occupied or intended for occupancy as separate living quarters and having either separate cooking equipment or a separate entrance.

Farm. A place of 10 or more acres from which the sale of agricultural products totaled $50 or more annually, or a place of less than 10 acres from which the sale of agricultural products totaled $250 or more during the previous year.

Forest Industry Lands. Lands owned by companies or individuals operating wood-using plants.

Lumber Producer. A forest owner who manufactures lumber and uses a greater cubic volume of timber from his land for this purpose than for any other primary wood product that he may produce.

Pulp and Paper Producer. A forest owner who manufactures wood pulp and who uses a greater cubic volume of timber from his land for this purpose than for any other primary wood product that he may produce.

Other Wood Products Producer. A forest owner who manufactures one or more wood products other than lumber and/or pulp and who uses a greater cubic volume of timber from his land for such products than for lumber or pulp.

Forest Land. Land at least 10 percent stocked by forest trees of any size, or formerly having had such tree cover and not currently developed for nonforest use. (Also see Commercial Forest Land, Noncommercial Forest Land, Productive-reserved Forest Land, and Unproductive Forest Land). Includes chaparral areas in the West and afforested areas. The minimum area for classification of forest land is 1 acre. Roadside, streamside, and shelterbelt strips of timber must have a crown width at least 120 feet wide to qualify as forest land. Unimproved roads and trails, streams, and clearings in forest areas are classed as forest if less than 120 feet in width.

Forest Trees. Woody plants having a well-developed stem and usually more than 12 feet in height, including both growing stock and cull trees.

Forest Types. A classification of forest land based upon the tree species presently forming a plurality of stocking. For pole-timber size trees and larger, stocking is determined from basal area occurrence and for trees less than 5.0 inches d.b.h. from numbers of trees.

Major Eastern Forest Type Groups:

White-Red-Jack Pine. Forests in which eastern white, red pine, or jack pine, singly or in combination, comprise a plurality of the stocking. (Common associates include hemlock, aspen, birch, and maple.)

Spruce-Fir. Forests in which spruce or true firs, singly or in combination, comprise a plurality of the stocking. (Common associates include white cedar, tamarack, maple, birch, and hemlock.)

Longleaf-Slash Pine. Forests in which longleaf or slash pine, singly or in combination, comprise a plurality of the stocking. (Common associates include other southern pines, oak, and gum.)

Loblolly-Shortleaf Pine. Forests in which loblolly pine, shortleaf pine, or other southern yellow pines except longleaf or slash pine, singly or in combination, comprise a plurality of the stocking. (Common associates include oak, hickory, and gum.)

Oak-Pine. Forests in which hardwoods (usually upland oaks) comprise a plurality of the stocking but in which southern pines comprise 25–50 percent of the stocking. (Common associates include gum, hickory, and yellow-poplar.)

Oak-Hickory. Forests in which upland oaks, or hickory, singly or in combination, comprise a plurality of the stocking except where pines comprise 25–50 percent, in which case the stand would be classified oak-pine. (Common associates include yellow-poplar, elm, maple, and black walnut.)

Oak-Gum-Cypress. Bottom-land forests in which tupelo, blackgum, sweetgum, oaks, or southern cypress, singly or in combination, comprise a plurality of the stocking except where pines comprise 25–50 percent, in which case the stand would be classified oak-pine. (Common associates include cottonwood, willow, ash, elm, hackberry, and maple.)

Elm-Ash-Cottonwood. Forests in which elm, ash, or cottonwood, singly or in combination, comprise a plurality of the stocking. (Common associates include willow, sycamore, beech, and maple.)

Maple-Beech-Birch. Forests in which maple, beech, or yellow birch, singly or in combination, comprise a plurality of the stocking. (Common associates include hemlock, elm, basswood, and white pine.)

Aspen-Birch. Forests in which aspen, balsam poplar, paper birch, or gray birch, singly or in combination, comprise a plurality of the stocking. (Common associates include maple and balsam fir.)

Major Western Forest Type Groups:

Douglas-fir. Forests in which Douglas-fir comprise a plurality of the stocking. (Common associates include western hemlock, western redcedar, the true firs, redwood, ponderosa pine, and larch.)

Hemlock-Sitka Spruce. Forests in which western hemlock and/or Sitka spruce comprise a plurality of the stocking. (Common associates include Douglas-fir, silver fir, and western redcedar.)

Redwood. Forests in which redwood comprises a plurality of the stocking. (Common associates include Douglas-fir, grand fir, and tanoak.)

Ponderosa Pine. Forests in which ponderosa pine comprises a plurality of the stocking. (Common associates include Jeffrey pine, sugar pine, limber pine, Arizona pine, Apache pine, Chihuahua pine, Douglas-fir, incense cedar, and white fir.)

Western White Pine. Forests in which western white pine comprises a plurality of the stocking. (Common associates are western redcedar, larch, white fir, Douglas-fir, lodgepole pine, and Engelmann spruce.)

Lodgepole Pine. Forests in which lodgepole pine comprises a plurality of the stocking. (Common associates are alpine fir, western white pine, Engelmann spruce, aspen, and larch.)

Larch. Forests in which western larch comprises a plurality of the stocking. (Common associates are Douglas-fir, grand fir, western redcedar, and western white pine.)

Fir-Spruce. Forests in which true firs (*Abies* spp.), Engelmann spruce, or Colorado blue spruce, singly or in combination, comprise a plurality of the stocking. (Common associates are mountain hemlock and lodgepole pine.)

Hardwoods. Forests in which aspen, red alder, or other western hardwoods, singly or in combination, comprise a plurality of the stocking.

Chaparral. Forests of heavily branched dwarfed trees or shrubs, usually evergreen, the crown canopy of which at maturity covers more than 50 percent of the ground and whose primary value is watershed protection. The more common chaparral constituents are species of *Quercus, Cercocarpus, Garrya, Ceanothus, Arctostaphylos,* and *Adenostoma.* (Types dominated by such shrubs as *Artemisia, Opuntia, Purshia, Gutierrezia,* or semidesert species are not commonly considered chaparral.)

Pinyon-Juniper. Forests in which pinyon pine and/or juniper comprise a plurality of the stocking.

Gross National Product (GNP). The total value of all goods and services produced in the Nation during a specified period.

Growing Stock Volume. Net volume in cubic feet of live sawtimber and poletimber trees from stump to a minimum 4-inch top (of central stem) outside bark or to the point where the central stem breaks into limbs.

Growing-Stock Trees. Live sawtimber trees, poletimber trees, saplings, and seedlings meeting specified standards of quality or vigor; excludes cull trees.

Growth. See definitions for "Net annual growth" and "Ingrowth."

Hardwoods. Dicotyledonous trees, usually broad-leaved and deciduous.

Household. A household consists of all the persons occupying a dwelling unit.

Indian Lands. Tribal lands held in fee by the Federal Government but administered for Indian tribal groups, and Indian trust allotments.

Industrial Wood. All commercial roundwood products except fuelwood.

Industrial Raw Materials. Includes a variety of (a) agricultural nonfoods and wildlife products, such as cotton and other fibers, vegetable oils, hides, rubber and furs, (b) minerals except gold, such as iron and other metallic ore, clay, sand limestone, and sulfur, and (c) timber products such as saw logs, veneer logs, and pulpwood.

Ingrowth. The number or net volume of trees that grew into the 6-inch diameter class or into sawtimber size classes during a specified period.

Labor Force. That section of the population 14 years of age and older that is or could be expected to be: (a) productively engaged in civilian economic activity, (b) serving in the Nation's armed forces, and (c) out of employment but available for and willing to accept employment.

Land Area. Census definition: The area of dry land and land temporarily or partially covered by water such as marshes, swamps, and river flood plains (omitting tidal flats below mean high tide); streams, sloughs, estuaries, and canals less than ⅛ of a statute mile in width; and lakes, reservoirs, and ponds less than 40 acres in area. Forest Survey definition: Same as above except minimum width of streams, etc. is 120 feet and minimum size of lakes, etc. is 1 acre.

Log Grades. A classification of logs based on external characteristics as indicators of quality or value.

Logging Residues. The unused portions of poletimber and sawtimber trees killed by land clearing, cultural operations, or timber harvesting.

Miscellaneous Federal Land. Federal land other than national forests, lands administered by Bureau of Land Management, and Indian lands.

Miscellaneous Private Land. Privately owned lands other than forest industry or farmer-owned lands.

Mortality. The volume of sound wood in live sawtimber and poletimber trees dying from natural causes during a specified period.

National Forest Land. Federal lands which have been designated by Executive order or statute as national forests or purchase units, and other lands under the administration of the Forest Service, including experimental areas and Bankhead-Jones title III lands.

Net Annual Growth. The annual change in volume of sound wood in live sawtimber and poletimber trees resulting from natural causes.

Net Volume in Board Feet. The gross board-foot volume of trees less deductions for rot or other defect affecting use for lumber.

Net Volume in Cubic Feet. Gross volume in cubic feet less deductions for rot.

Noncommercial Forest Land. Unproductive forest land incapable of yielding crops of industrial wood because of adverse site conditions, and productive forest land withdrawn from commercial timber use through statute or administrative regulation.

Nonforest Land. Land that has never supported forests and lands formerly forested but now developed for nonforest uses such as crops, improved pasture, residential areas, city parks, improved roads, and adjoining rights-of-way, power-line clearings, and certain areas of water classified by the Bureau of the Census as land. (See definition for land area.) In forest areas unimproved roads, streams,

canals, and nonforest strips must be more than 120 feet wide, and clearings in forest areas must be more than 1 acre in size, to qualify as nonforest land.

Nonstocked Areas. Commercial forest land less than 10 percent stocked with growing-stock trees.

Old-Growth Sawtimber Stands. Sawtimber stands in which 50 percent or more of the net board-foot volume is in old-growth sawtimber trees.

Old-Growth Sawtimber Trees. Trees that have reached or passed rotation age.

Ownership. The property owned by one owner, including all parcels of land in the United States.

Pasture and Rangeland. Land which is currently improved for grazing by cultivation, seeding, or irrigation, and natural grasslands that never supported tree growth.

Plant Byproducts. Wood material from primary manufacturing plants (such as slabs, edgings, trimmings, miscuts, sawdust shavings, veneer cores and clippings, and pulp screenings) that are used for some product.

Plant Residues. Wood materials from primary manufacturing plants that are not used for any product.

Poletimber Stands. Stands at least 10 percent stocked with growing-stock trees, of which half or more of the stocking is sawtimber and/or poletimber trees with poletimber stocking exceeding that of sawtimber. (See definition of stocking.)

Poletimber Trees. Live trees of commercial species at least 5.0 inches in diameter breast height but smaller than sawtimber size, and of good form and vigor.

Productive-Reserved Forest Land. Productive public forest land withdrawn from timber utilization through statute or administrative regulation.

Realizable Growth. The net annual growth of timber that would be attained if the better present-day forestry practice in the various regions were extended to all commercial forest land.

Rotten Cull Trees. Live trees of commercial species that do not contain a saw log now or prospectively, primarily because of rot (e.g., when rot accounts for more than 50 percent of the total cull volume).

Roundwood Products. Logs, bolts, or other round sections cut from trees.

Salvable Dead Trees. Standing or down dead trees that are considered currently or potentially merchantable by regional standards.

Sampling Error. The probable maximum error of an estimated total or average that arises from taking a sample rather than making a complete inventory or measurement. Sampling errors do not include technique errors such as could occur in photo classification of areas, measurement of volume, or compilation of data.

Saplings. Live trees of commercial species 1.0 inch to 5.0 inches in diameter at breast height and of good form and vigor.

Sapling-Seedling Stands. Stands at least 10 percent stocked with growing stock trees of which more than half are saplings and/or seedlings.

Saw Log. A log meeting minimum approved log-grade specifications, or, for species for which approved log grades are lacking; at least 8 feet long, with a minimum d.i.b. of 6 inches, and with deduction for defect no greater than two-thirds the gross volume.

Saw-Log Portion. That part of the bole of sawtimber trees between the stump and the saw-log top, that is, the point on the bole above which any regionally specified grade of saw log cannot be obtained.

Sawtimber Stands. Stands at least 10 percent stocked with growing-stock trees, with half or more of the total stocking in sawtimber or poletimber trees and with sawtimber stocking at least equal to poletimber stocking.

Sawtimber Trees. Live trees of commerical species containing at least one saw log. Softwoods must be at least 9.0 inches in diameter breast height, except in California, Oregon, Washington, and coastal Alaska where the minimum diameter is 11.0 inches. Hardwoods must be at least 11.0 inches in diameter in all States.

Sawtimber Volume. Net volume of the saw log portion of live sawtimber trees in board feet.

Seedlings. Established live trees of commercial species less than 1.0 inch in diameter at breast height and of good form and vigor.

Site Classes. A classification of forest land in terms of inherent capacity to grow crops of industrial wood.

Softwoods. Coniferous trees, usually evergreen, having needle or scalelike leaves.

Sound Cull Trees. (Rough Trees.) Live trees that do not contain a saw log now or prospectively, primarily because of roughness, poor form, or noncommercial species.

Stand Improvement. Measures such as thinning, release cutting, girdling, weeding, poisoning of cull trees or pruning aimed at improving growing conditions.

Stand-Size Classes. A classification of forest land based on the predominant size of timber present, that is, sawtimber, poletimber, or seedlings and saplings.

State, County, and Municipal Land. Land owned by States, counties, and local public agencies, or lands leased by these governmental units for more than 50 years.

Stocking. A measure of the degree to which forest land is occupied by trees of specified classes in relation to a specified basal area standard for trees 5.0 inches d.b.h. and larger, or numbers of trees per acre for trees less than 5.0 inches; tree classes include (1) all live trees, (2) growing-stock trees, and (3) desirable trees. Classifications of forest land and forest types are based on stocking of all live trees. Classification of condition classes is based on stocking of desirable trees.

Stocking Percentage. Current area occupancy or stocking in relation to specified stocking standards.

Stocking Standard. The minimum number or basal area per acre of well spaced trees required to fully utilize a forest site.

Timber Cut from Growing Stock. The volume of sound wood in live sawtimber and poletimber trees cut for forest products during a specified period, including both roundwood products and logging residues.

Timber Cut from Sawtimber. The net board-foot volume of live sawtimber trees cut for forest products during a specified period, including both roundwood products and logging residues.

Timber Products. Includes (a) roundwood products such as saw logs, veneer logs and bolts, cooperage logs and bolts, pulpwood, fuelwood, piling, poles, posts, hewn ties, mine timbers, and other round, split, or hewn products, and (b) byproducts of primary wood manufacturing plants.

Tree Size Classes. A classification of growing stock trees according to diameter at breast height outside bark, including sawtimber trees, poletimber trees, saplings, and seedlings.

Unproductive Forest Land. Forest land incapable of yielding crops of industrial wood because of adverse site conditions. Includes sterile or poorly drained forest land, subalpine forests and steep rocky areas where topographic conditions are likely to prevent management for timber production.

Upper Stem Portion. That part of the bole of sawtimber trees above the saw log top to a minimum top diameter of 4.0 inches outside bark, or to the point where the central stem breaks into limbs.

Urban and Other Areas. Includes areas developed for residential, industrial, or related purposes and all nonforest land not included in any other specified land use class.

Volume of Salvable Dead Timber. Net volume of dead trees, standing or down, that are considered merchantable by regional standards.

Young-Growth Sawtimber Stands. Sawtimber stands in which 50 percent or more of the net board-foot volume is in young-growth sawtimber trees.

Young-Growth Sawtimber Trees. Trees that have not passed rotation age.

APPENDIX III

Procedures

Commercial Forest Area

Estimates of forest land and commercial forest land areas obtained in the most recent forest survey were adopted as the best available estimates as of January 1, 1963. In practically all States figures were based on classification of a large number of points on aerial photographs, followed by field verification of a sample of the photo points.

Timber Volume

Estimates of timber volumes obtained in surveys completed within the three years prior to 1963 were adopted without change. In other cases data for the most recent forest survey were updated to January 1, 1963, in most instances by using the growth-projection procedure described below. Volume estimates for part of California were based upon remeasurements of a sample of locations established in the initial forest survey.

Where necessary to insure comparability between estimates for 1953 and 1963, information from surveys completed subsequent to 1953 were "backdated" to January 1, 1953 to obtain revised estimates for 1953, using the growth-projection procedure described below. In the East inventories were updated an average of 5 years; in the West the average updating period was somewhat longer.

Net Annual Growth and Mortality

Estimates of annual growth in 1962 were based mainly upon remeasurements of radial growth as indicated by increment cores, using a 5- or 10-year period preceding the field survey, applied to the updated 1963 inventory. Estimates of mortality were based largely upon measurements of trees determined to have died on inventory plots during the 3- or 5-year period just prior to field surveys. Additional allowances were made for sporadic or catastrophic mortality, where appropriate, when no evidence of such mortality was found on survey plots, based on fire records or other local evidence.

Consistency Checks

Upon completion of the updating and backdating of inventory and growth estimates, a check was made for each State to make sure that changes in inventory volumes between 1952 and 1962 were consistent with differences between net growth and timber cut in 1952 and 1962. Inconsistencies may arise for one or more of the following reasons:

1. Sampling errors in estimates of inventory, growth, cut and mortality.
2. Estimating and reporting errors, particularly in mortality estimates and in timber cut figures derived from industrial surveys.
3. Differences between the annual cut in 1952 and 1962 and the average of the 10-year period.

In most instances inconsistencies could be attributed to sampling errors and annual fluctuations in timber cut. In some cases inconsistencies could not be explained or eliminated since estimates for inventories, growth and cut in the past have necessarily been derived more or less independently. This problem should be greatly reduced in the future for surveys are now based on remeasurements of permanent plots.

Since estimates of inventory volumes generally are most reliable, most of the inconsistencies are attributed to discrepancies in estimates of timber cut and net growth, notably the mortality component of net growth. Inconsistencies thus point to an underestimation of timber cut and mortality, and an over-optimistic growth/cut relationship for 1962. This did not appreciably influence the long-term timber supply projections, however, for by the mid-seventies, the constraining influence of rapidly increasing stand densities became much more of a controlling factor than discrepancies between growth and cut in 1962.

A consistency check for the entire United States showed a discrepancy of 17.9 billion cubic feet of growing stock, or 2.8 percent of the 1963 inventory. The discrepancy for sawtimber was about 54 billion board feet or 2.1 percent of the 1963 inventory. It is estimated that not more than 0.8 percent of the 2.8 percent inconsistency for growing stock could reasonably be attributed to sampling errors in the inventory.

Growth Projections

Estimates of inventory volumes, net growth, and mortality of growing stock for the period 1963–2000 were based upon a stand-projection method programmed for use on the Honeywell 800 and IBM 709 computers. This procedure started with the updated 1963 inventory of number of trees by 2-inch d.b.h. classes, derived by using radial growth rates, mortality rates, cutting rates, ingrowth rates, and volumes per tree based on the most recently completed forest surveys.

The "potential" increase in number of trees in each 2-inch diameter class in the absence of cutting and mortality was then calculated using those same growth factors, as described in more detail below. From these estimates, deductions were made by diameter class for number of trees cut, number of trees lost by mortality, and the growth on trees cut and lost to mortality. These computations in terms of total number of trees or trees per acre, were made annually for the specified period. Number of trees were then converted to volume and basal area in specified years.

All projections were made for the area of commercial forest land as estimated for January 1, 1963. Timber cut in each section and region was based upon an allocation of the total timber cut developed in the section on The Outlook for Timber Demands. Projections were made assuming no increase in the level of forest management above that prevailing in 1962.

Input factors for the computer program were developed as follows:

Number of trees per acre.—Total number of trees in the inventory as of January 1, 1963, by 2-inch diameter classes, and by softwoods and hardwoods, were pooled for the region for which the growth projection was made, and

divided by the area of commercial forest land to determine numbers of trees per acre. Only trees qualifying as growing stock were included in computing stand table projections, but projections of basal area included cull trees as well as growing stock trees.

Annual average radial growth.—Average annual growth rates by 2-inch diameter classes were obtained from measurements taken on forest survey plots, either on remeasured permanent plots or by measurement of growth of increment cores during the 5- or 10-year period prior to the survey measurements.

In the updating to January 1, 1963, no modifications of radial growth rates were made in response to changes in density and stand structure. In the long-term projections to the year 2000, however, radial growth rates were changed in response to increasing stand densities. Data from remeasured plots indicated that both radial growth and mortality rates are directly related to basal area density per acre, with average growth rates dropping and mortality rates increasing as stand basal area rises. In the East, for example, radial growth and mortality rates were therefore modified as follows:

$$MR2 = MR1 \frac{P2}{P1} (a - bD \div cD^2)$$

where: MR2 (or RG) = mortality rate (or radial growth) after one year's growth.

MR1 = mortality rate at the beginning of the year

D = two-inch d.b.h. class

$$P = 1.000 - \frac{b}{2} (BA) - \frac{c}{2} (BA)^2$$

where: BA = basal area density of all live trees 1.0 inches and larger in square feet

b and c are regression coefficients

Dividing the b and c coefficients by 2 divides the constraining influence equally between radial growth and mortality. As a matter of computational expediency all of the constraining influence was assigned to mortality, which eliminated the need to divide by 2 or some other allocating proportion between radial growth and mortality.

Constraining equations used in the East were as follows:

Northern softwoods:

$$P = 1.0000 - .0003028BA - .0000282BA^2$$

Northern hardwoods:

$$P = 1.0000 - .0004541BA - .0000424BA^2$$

South—all species:

$$P = 1.0000 - .0003531BA - .0000329BA^2$$

Theoretically the use of pooled radial growth data without converting the weights to logarithms constitutes a potential source of bias. However, several checks indicated that from a practical standpoint the bias was negligible.

Mortality rates.—For trees over 5.0 inches d.b.h., mortality rates, i.e., the ratio between the number of live trees that die annually and the inventory number of trees at the beginning of the year, were developed from tallies of dead trees at the time of inventories or from reconstruction of remeasured plots. Mortality rates usually were curved to remove irregularities by diameter classes.

Sapling mortality.—For trees under 5.0 inches, mortality rates were not available in many cases and existing measurements were often irregular. Growth and mortality rates for 2- and 4-inch trees were therefore computed using extrapolated radial growth rates and stand-structure quotients extrapolated from trees above 5.0 inches. Since cutting of 2- and 4-inch trees is negligible it was assumed that the difference between growth and average annual change was mortality. Thus the "potential" increase in numbers of 2- or 4-inch trees plus or minus the average annual change in number of such trees between surveys was taken as the best estimate of mortality rates for 2- and 4-inch trees. Where two or more surveys were not available to obtain the average annual change in numbers of 2- and 4-inch trees over time, average annual change was assumed to be zero. This procedure for computing mortality of 2- and 4-inch trees was as follows:

(1) $MR = M/INV$
MR = mortality rate
M = mortality in number of trees
INV = inventory in number of trees

(2) $M = PI - AC$
PI = potential increase
AC = average annual change in number of trees between surveys

(3) $PI = ING1 - ING2$
ING1 = number of trees growing *into* the 2- or 4-inch d.b.h. class (ingrowth)
ING2 = number of trees growing *out of* the 2- or 4-inch d.b.h. class (outgrowth)

(4) $ING = INGR \times AINV$
ING = ingrowth
INGR = ingrowth rate
AINV = accumulative stand, i.e., number of trees 1.0 inches and larger, 3.0 inches and larger, and 5.0 inches and larger

(5) $INGR = \text{antilog of } (\text{Log } Q \times RG) - 1$
Q = stand-structure quotient
RG = average annual radial growth

(6) $Q_n = \frac{AINV_{n-2}}{AINV_n}$
n = 2, 4, 6, etc., d.b.h. classes

Example: (East Gulf Softwoods)

DBH	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	AINV	Q	LOG Q	RG	INGR	ING	PI	AC
	M trees			*Inches*		*M trees*	*M trees*	*M trees*
2	8,522,248	2.213	[1] 0.34498	[1] 0.095	0.078	664,735	340,744	162,705
4	4,153,734	2.052	.31218	.104	.078	323,991	159,276	56,829
6	2,196,199	1.891	.27669	.113	.075	164,715	----------	----------

[1] Extrapolated from 4- and 6-inch classes.
MR2 = (340,744 − 162,705) ÷ (8,522,248 − 4,153,734) = .0408
MR4 = (159,276 − 56,829) ÷ (4,153,734 − 2,196,199) = .0523

Cutting rates.—Cutting rates were used to distribute the total allocated sawtimber cut (as described in the section on The Outlook for Timber Supply) by 2-inch diameter class. Cutting rates, by 2-inch diameter classes, were determined in the West by the ratio between the number of trees cut during a year and the inventory of trees at the beginning of the year. In the East where the cut is from young-growth timber, cutting rates were set as the ratios between numbers of trees cut during a year and the net growth in numbers of trees in each 2-inch d.b.h. class. These cutting rates were determined from utilization studies, from stump counts on initial surveys, and from tallies of trees cut during the period between remeasurement of permanent plots. Cutting rates by diameter class were usually curved to remove irregularities.

In the East cutting rates for 1962 were varied annually by a constant rate to approximate the following rates by 2000.

D.b.h.	*Softwoods*	*Hardwoods*
6	0.75	0.50
8	.90	.80
10	1.00	.90
12+	1.00	1.00

For example, in 1962 the cutting rate for 6-inch softwoods in the South was 34.8 percent of the net growth. The AC factor is:

$$AC=\frac{.750-.348}{37}=+.0109$$

Cutting rates used to distribute the softwood in the South cut by size of timber expressed as a proportion of net growth were as follows:

D.b.h. class	*1962*	*1980*	*2000*
6	0.348	0.538	0.750
8	.484	.681	.900
10	.574	.776	1.000
12	.687	.835	1.000
14	.662	.822	1.000
16	.667	.825	1.000
18	.701	.842	1.000
20	.714	.849	1.000
22+	.899	.947	1.000

The higher cutting rate for 12-inch trees than for 14-inch trees reflects an overlap of heavy cutting for both pulpwood and saw logs.

Sapling ingrowth. Ingrowth of saplings was defined as the number of trees that grew to be 1.0 inch or larger during the year of estimate. This was computed as shown in equation 3 under sapling mortality. In the illustration for East Gulf Softwoods, ingrowth was 664,735,000 trees per year (column 6).

For planted ingrowth it was assumed that for each 1,000 seedlings distributed to landowners 600 would survive to enter the 1.0 inch and larger stands in 5 years in the South, and in 7 years elsewhere. During the period 1958–62, for example, the average annual area planted in the South was 1,262,029 acres. It was assumed that if this rate of planting continued, plantations would contribute 757 million trees to the annual ingrowth.

Net volume per tree. Average volumes per tree in board feet and cubic feet, by 2-inch diameter class, were based on data from the most recently completed forest survey. It was assumed that volumes per tree would remain constant throughout the updating and projecting computations.

Forest areas. Inventory and input factors were entered in terms of numbers of trees per acre of commercial forest land in the West and per acre of softwood and hardwood types in the East. All computations were first made on a per-acre basis for the output years, and then multiplied by the forest areas in each section to obtain estimates of total growth and inventory. It was assumed that areas would remain constant throughout the projection period except in the South where it was assumed that the shift from softwood to hardwood types would continue at the rate prevailing over the past 10 years. These projected areas in acres were as follows:

Year	*Softwood type*	*Hardwood type*	*Commercial forest area*
1953	81,591	112,765	194,356
1963	80,609	120,460	201,069
1970	79,933	121,136	201,069
1980	78,965	122,104	201,069
1990	77,993	123,076	201,069
2000	77,017	124,052	201,069

Computations

The following programed computations were used with the above input data to obtain estimates of growth and inventory in each of the output years, as follows:

1. Number of trees at the end of the year	= Number of trees at the beginning of the year	± The change in number of trees during the year		
2. Change in number of trees during the year	= Net growth	− Timber cut		
3. Net growth	= Potential increase	− Mortality	− Growth on mortality	− Growth on timber cut
4. Potential increase	= Ingrowth	− Outgrowth		
5. Ingrowth	= Ingrowth rate	× Accumulative inventory		
6. Ingrowth rate	= Antilog of	Logarithm of the stand structure quotient	× Average annual radial growth	− 1
7. Stand-structure quotient	= Accumulative inventory in the next smaller stand size	÷ Accumulative inventory		
8. Accumulative inventory	= Sum of all trees x .0 inches and larger, for example, number of trees 1.0 inch and larger, 3.0 inches and larger, 5.0 inches and larger, etc.			
9. Outgrowth	= Ingrowth into the next larger stand size			
10. Mortality	= Number of trees at the beginning of the year	× Mortality rate		
11. Mortality rate	= Number of trees that die during the year	÷ Number of trees at the beginning of the year		

12. Growth on mortality	=Potential increase rate	×Mortality	
13. Potential increase rate	=Potential increase	÷Number of trees at the beginning of the year	
14. Timber cut	=Unadjusted timber cut	×Adjustment factor	
15. Unadjusted timber cut	=Number of trees at beginning of the year	×Cutting rate	
16. Cutting rate	=Number of trees cut during the year	÷Number of trees at the beginning of the year	
17. Adjustment factor	=Assumed total volume of timber cut	÷Total volume of unadjusted timber cut	
18. Total volume of unadjusted timber cut	=Summation of number of trees (by d.b.h. class)	×Net volume per tree	
19. Net cubic-foot volume	=Number of trees	×Net cubic-foot volume per tree	
20. Net board-foot volume	=Net cubic-foot volume	×Number of board feet per cubic foot	
21. Ingrowth into 2-inch d.b.h. class	=Planted ingrowth	+Natural ingrowth	
22. Planted ingrowth	=Acres planted	×Number of trees planted per acre	×Survival rate
23. Survival rate	=Number of trees surviving at 1.0 d.b.h.	÷Number of trees planted	
24. Natural ingrowth	=Computed from equation #4, using extrapolated stand-structure quotient and radial growth (See procedures under "sapling mortality")		
25. Timber removed in stand improvement or rehabilitation.	=Number of acres treated	×Number of trees per acre removed	

Input modification: In addition to the above computations, annual modifications were programed for each input variable. This required computing "B" and "C" modifiers. The "B" modifier reduced or increased the input factors by the same amount each year, resulting in a constant annual change. The "C" modifier reduced or increased the AC factor the same amount each year resulting in a varying rate of annual change. The use of both "B" and "C" modifiers results in a second degree polynomial of the form:

$$(1)\quad XN=a+bN+cN^2$$

where XN=input value after N annual cycles

a=initial value

b and c are regression coefficients

$$(2)\quad b=AC+\frac{RAC}{2}$$

$$(3)\quad c=\frac{RAC}{2}$$

$$(4)\quad AC=AC1-\frac{(N1+1)}{2}\ RAC$$

$$(5)\quad RAC=\frac{AC2-AC1}{0.5\ (N1+N2)}$$

$$(6)\quad AC1=\frac{X2-X1}{N1}$$

$$(7)\quad AC2=\frac{X3-X2}{N2}$$

where

X1, X2, X3 are three points on a curve and N1 and N2 are number of years between points.

This program provided output data, by 2-inch diameter classes, for inventory and net growth, timber cut, and mortality, in terms of numbers of trees, square feet of basal area, cubic feet, and board feet International ¼-inch rule. Statistics by species and ownerships were based upon proportions shown in the most recently completed forest survey.

Sampling Errors: Surveys were designed to provide sampling errors no greater than 3 percent per million acres of commercial forest land, 5 percent per billion cubic feet of growing stock in the East and 10 percent per billion cubic feet in the West. However, because of cooperative assistance contributed by forest industries, State forestry divisions and other public agencies, sampling errors actually achieved were often much lower than the maximum allowable as shown in the following table:

Sampling errors[1] *of estimates of commercial forest area and inventory volume in the United States, by region and State*

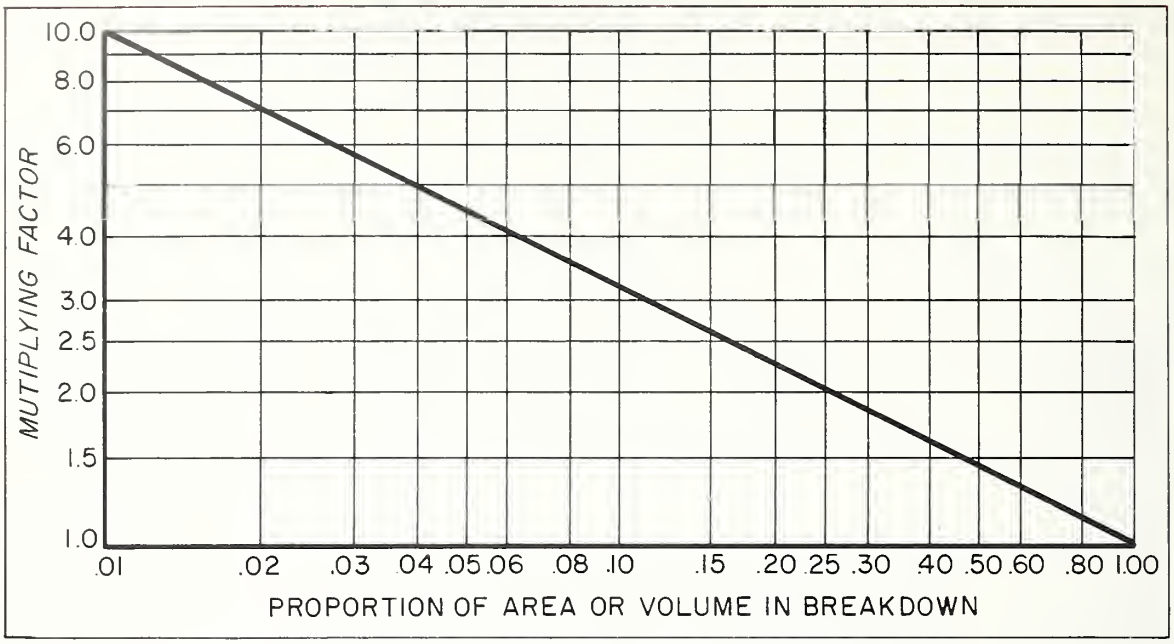
Region and State	Commercial forest area			Inventory volume			Date of field work
	Million acres	Percent sampling error		Billion cubic feet	Percent sampling error		
		Total	Per million acres		Total	Per billion cu. ft.	
New England:							
Connecticut	2.0	2.2	3.1	1.5	4.9	5.6	1953
Maine	17.2	.4	1.6	17.9	1.4	5.9	1954–1958
Massachusetts	3.3	1.7	3.1	2.0	3.7	5.1	1953–1954
New Hampshire	4.9	1.6	3.4	4.7	3.4	7.0	1959–1960
Rhode Island	.4	4.2	2.7	.2	8.4	3.4	1953
Vermont	3.7	1.4	2.8	4.4	2.2	4.8	1947–1948
Total	31.5	.5	2.5	30.7	1.1	6.0	
Middle Atlantic:							
Delaware	.4	4.9	3.1	.5	6.5	4.5	1957
Maryland	2.9	1.7	2.9	3.7	2.6	4.1	1950–1952
New Jersey	2.1	1.7	2.5	1.5	4.1	6.1	1955–1956
New York	12.0	1.3	4.4	14.1	1.4	4.6	1947–1952
Pennsylvania	15.1	.8	3.2	14.9	1.6	5.3	1949–1954
West Virginia	11.4	.7	2.4	11.9	1.6	5.3	1959–1961
Total	43.9	.5	3.4	46.6	.8	5.6	
Lake States:							
Michigan	19.1	.3	1.4	12.5	.6	2.1	1946–1957
Minnesota	17.1	.5	2.1	9.8	1.0	3.1	1960–1962
North Dakota	.4	3.0	1.9	.3	3.5	1.6	1954
South Dakota (E.)	.4	1.5	3.0	.4	7.9	5.0	1935–1947
Wisconsin	15.4	.3	1.3	8.9	.4	1.8	1950–1958
Total	52.4	.2	1.6	31.9	.4	2.3	
Central States:							
Illinois	3.8	2.8	5.4	2.3	3.2	4.9	1961–1962
Indiana	3.9	1.2	2.4	3.4	1.6	2.9	1949–1950
Iowa	2.6	1.1	1.8	1.7	3.3	4.2	1953–1954
Kansas	1.7	2.3	3.0	1.2	4.6	5.0	1954 [2]
Kentucky	10.8	.9	3.0	8.7	1.3	3.9	1948–1951
Missouri	15.0	1.6	6.2	5.0	1.8	4.0	1958–1960
Nebraska	1.1	3.5	3.7	.4	7.6	5.0	1953–1955
Ohio	5.1	1.0	2.3	4.6	1.5	3.2	1951–1953
Total	44.0	.7	4.4	27.3	.7	3.9	
Total, North	171.8	.2	3.1	136.5	.4	4.8	
South Atlantic:							
North Carolina	20.2	.4	1.8	18.7	1.2	5.2	1954–1962 [3]
South Carolina	11.6	.5	1.7	8.1	1.7	4.8	1957–1958
Virginia	15.8	.4	1.6	13.7	1.5	5.6	1956–1957
Total	47.6	.2	1.7	40.5	.8	5.2	
East Gulf:							
Florida	18.5	.5	2.2	7.2	2.0	5.3	1958–1959
Georgia	26.3	.3	1.5	17.5	1.1	4.6	1959–1961
Total	44.8	.3	1.8	24.7	1.0	4.8	

See footnotes at end of table.

Sampling errors[1] *of estimates of commercial forest area and inventory volume in the United States by region and State*—Continued

Region and State	Commercial forest area			Inventory volume			Date of field work
	Million acres	Percent sampling error		Billion cubic feet	Percent sampling error		
		Total	Per million acres		Total	Per billion cu. ft.	
Central Gulf:							
Alabama	21.7	.3	1.4	14.5	1.5	5.7	1961–1963
Mississippi	18.0	.3	1.3	8.4	1.4	4.1	1956–1957
Tennessee	13.7	.3	1.1	7.5	2.4	6.6	1960–1961
Total	53.4	.2	1.3	30.4	1.0	5.5	
West Gulf:							
Arkansas	21.5	.3	1.4	12.7	1.2	4.3	1957–1960
Louisiana	16.5	.3	1.2	15.2	1.6	6.2	1953–1954
Oklahoma	5.3	.7	1.6	1.6	4.2	5.3	1955–1956
Texas	12.0	.4	1.4	9.0	2.6	7.8	1953–1955
Total	55.3	.2	1.4	38.5	1.0	6.1	
Total, South	201.1	.1	1.5	134.1	.5	5.5	
Pacific Northwest:							
Alaska	5.8	1.2	3.0	35.1	1.7	10.0	1954–1962
Oregon	26.6	.3	1.6	95.1	1.2	11.7	1947–1962[4]
Washington	19.5	.5	2.2	72.9	1.0	8.5	1948–1960[5]
Total	51.9	.3	2.0	203.1	.7	10.4	
Pacific Southwest:							
California	17.4	.6	2.5	55.3	1.7	12.6	1962[6]
Hawaii	1.1	4.3	4.5	.2	13.7	6.4	1957–1961
Total	18.5	.6	2.7	55.5	1.7	12.6	
Northern Rocky Mountain:							
Idaho	15.8	.9	3.6	26.5	1.3	6.7	1947–1954[7]
Montana	17.3	.7	3.0	26.8	1.9	10.0	1948–1958[8]
South Dakota (W.)	1.3	2.6	3.0	1.0	10.0	10.0	1960
Wyoming	4.9	.7	1.5	7.4	2.7	7.4	1957–1960
Total	39.3	.5	3.1	61.7	1.1	8.3	
Southern Rocky Mountain:							
Arizona	3.8	1.5	3.0	6.2	4.0	10.0	1951–1962[9]
Colorado	12.3	.9	3.0	17.3	2.4	10.0	1956–1959
Nevada	.1	9.1	3.0	.2	25.7	10.0	1952[9]
New Mexico	6.1	1.2	3.0	7.5	3.7	10.0	1951–1962[9]
Utah	4.0	1.5	3.0	5.8	4.1	10.0	1958–1961
Total	26.3	.6	3.0	37.0	1.6	10.0	
Total, West	136.0	.2	2.7	357.3	.6	10.7	
Total, United States	508.9	.1	2.5	627.9	.3	8.5	

[1] Sampling error in percent in terms of one standard error based on the most recently completed forest survey.
[2] Subsample in 1954 used to update 1937 data.
[3] 1961 data used for one quarter of State.
[4] Western Oregon completed 1961–62. Eastern Oregon completed 1947–58. NFA inventories of a later date used when available for national forest.
[5] Western Washington completed 1948–60. Eastern Washington completed 1953–60. NFA inventories of a later date used when available for national forest.
[6] Subsample of plots established in original inventory remeasured in 1962 and regression techniques used to update entire original sample. Recently completed NFA inventories used for national forest.
[7] Northern Idaho completed 1947–51. Southern Idaho completed 1950–54.
[8] Western Montana completed 1958. Eastern Montana completed 1948.
[9] Latest NFA inventory used for national forest. Remainder by inventory and extrapolation.



The sampling error (in terms of one standard deviation) for the total area of commercial forest land in the United States at the time of field surveys was 0.1 percent (2.5 percent per million acres). Sampling errors for inventory volume at the time of field surveys was calculated at 0.3 percent for the United States as a whole (8.5 percent per billion cubic feet). Sampling errors for breakdowns of forest area, as by stocking classes of forest types, for example, may be approximated from relationships shown in the following figure which includes the ratio of the standard error of an area or volume breakdown to the percentage error of the estimate of total area or volume:

In using this chart (1) determine the total area and the sampling error for a given State (e.g., 26.3 million acres in Georgia with an error plus or minus 0.3 percent), (2) determine the percent of the total made up by the item in question (e.g., 10 percent in sawtimber stands), (3) determine the multiplying factor from the above figure (e.g., a factor of 3 for 10 percent of area), and (4) multiply the sampling error by the multiplying factor (e.g., 3×0.3 percent $= 0.9$ percent).

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