



# MONTHLY REVIEW

TWELFTH FEDERAL RESERVE DISTRICT

NOVEMBER 1949

FEDERAL RESERVE BANK OF SAN FRANCISCO

## REVIEW OF BUSINESS CONDITIONS

**B**USINESS activity in the District remained relatively stable in October and early November. The shut-down in steel, which continued into November, and an early decline in several seasonal industries failed to slow business activity appreciably. The District escaped the full impact of the major strikes since operations of several local steel companies were not interrupted, and the coal and aluminum disputes did not affect firms in this area. Thus major work stoppages had less effect on the Twelfth District economy than on the national economy. October department store sales on a seasonally adjusted basis gained over September. In early November the volume of business loans at commercial banks was larger than at any time since May. New building authorizations increased substantially during October even though weather in some District areas was forcing a reduction in the volume of work being completed. Nonagricultural employment dropped slightly because of work stoppages and early cut-backs in food processing and, to some extent, in lumber operations.

### *Major work stoppages over*

During October and early November a number of work stoppages were ended. Piece-meal settlement of the steel strike starting at the end of October resulted in a return to operation of all District mills by the middle of November. Because several local firms and the steel union concluded agreements which avoided shut-downs, steel operations had been at a higher rate in this District than in the nation all during October.

Other labor disputes affecting the District's economy were also settled in this period. The end of the longshoremen's dispute in Hawaii in mid-October permitted a resumption of shipping and removed a significant obstacle in the path of a number of District industries. Settlement of a dispute involving drivers of sand and gravel trucks in Los Angeles County permitted the resumption of work on a number of large construction projects. A dispute involving a Northern California sugar refinery was settled in mid-November.

The temporary cessation of the coal walkout in the second week of November did not directly affect the District because mines west of the Mississippi had been permitted to resume operations shortly after the dispute started. Indirect benefits may accrue to this area, however, by permitting the economy nationally to operate at

a higher level, though the aluminum strike is still in effect outside this District.

### *Construction volume improving*

In contrast with the latter part of 1948, the construction outlook in the District has improved in recent months. Building permits issued during October in urban areas of the Twelfth District exceed both the September 1949 volume and the year-ago level. The volume of permits issued so far this year is well below that of 1948, but in recent months the gap has been narrowing. New housing has played a strong role in the improved volume of permits issued during the past three months. Nonresidential construction authorized in urban areas has tended to decline. Many heavy construction projects, however, are under way outside urban areas and their volume is not reflected in the data for urban permits.

Construction of new dwellings nationally is proceeding at an even better rate than in the District. On a national basis, housing starts have increased steadily since January. The near-record levels of new houses started in each month since May have brought the total to date above the corresponding 1948 volume. In this District, housing construction has continued to lag behind 1948 even though the gap has been reduced somewhat in the past few months. Though the District's record of new housing starts is not so good as in 1948, the District is still accounting for roughly 20 percent of the new dwelling units nationally, and the increasing volume of recent months gives some indication that the District demand for housing is still fairly strong.

### *Nonagricultural employment declined slightly*

A drop in manufacturing and some reduction in construction employment reduced District nonagricultural employment slightly in October. A seasonal drop in food processing, the effect of the steel strike, some decline in aircraft production, and some cut-back in the lumber industry, were responsible for the decline in manufacturing employment. The combined effect of these factors, based

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on preliminary information, was slight, and after allowing for a moderate increase in trade employment it appears that the drop from September was less than one percent. Local steel producers continued to operate under new agreements with the union, and the importance of steel as an employer is not so great here as in the country generally. Nevertheless, 6,500 iron and steel workers in California were affected by the steel strike.

Insured unemployment continued to drop even though nonagricultural employment was reduced. It appears that many of the cannery workers released either were not eligible for benefits or did not look for new jobs; also, workers on strike were not eligible for benefits. In the latter part of October, however, Oregon and Washington reported increases in their claim loads. In Oregon a drop in lumber and construction employment was responsible for the increase in claims, and in Washington declining aircraft employment appeared to be the principal cause. These increases and very minor additions to the claims load in Utah and Idaho were more than offset by continued declines in Arizona and California. In California an increase in agricultural employment in October probably absorbed some workers who otherwise would have added to the volume of unemployment insurance claims. By mid-November, however, farm employment was down from the October high of 525,000 to about 455,000, according to the State Department of Agriculture.

#### **Sharp seasonal decline in farm employment anticipated**

Agricultural labor has been plentiful and actively employed in the main area of activity—the San Joaquin cotton harvest—where, owing to favorable weather, picking has been uninterrupted. The combination of favorable weather, an increase in the number of picking machines, and an ample labor force in the cotton area has been conducive to record progress in the cotton harvest which by late November was estimated at over 70 percent complete. If favorable weather continues—namely, the absence of wet fogs—the harvest should be completed considerably earlier than usual, perhaps by the first of the year. Consequently, unemployment among the Valley agricultural labor force may be more widespread and may last longer than usual during the late winter months. The next major demand for seasonal labor does not occur until spring; moreover, farm work does not qualify a worker for unemployment insurance.

#### **Department store sales improve**

October department store sales, adjusted for seasonal variation, increased moderately over September, but were still behind the dollar volume of October 1948. They were further behind year-ago levels in the nation than in the District, presumably because of the more marked effects of the major strikes upon other sections of the country. The greater decline in the United States during the first three weeks of October reversed the behavior of the two series during most of 1949. For the four weeks ending November 26, District sales were again a little less fav-

orable than national sales, in terms of year-period comparisons.

Twelfth District department store sales have lagged slightly further behind a year earlier than have sales in the country as a whole in most weeks of 1949. Examination of departmental sales for various Districts indicates that television sales have contributed in part to this difference. Television broadcasting has been more highly developed in many sections of the East and mid-West than in most Twelfth District areas. The larger sales of television are only one factor contributing to this difference, however, and too much importance should not be attached to it, particularly since other departmental differences cannot be similarly explained.

#### **Bank credit and the flow of funds**

At the end of October, loans and investments of Twelfth District member banks reached the highest level since the end of 1945. Loans declined during the first seven months of the year, but turned upward in August. This recent increase presumably has been largely seasonal in nature, and is considerably smaller than occurred in the same period in 1948. Loans are still somewhat below a year ago. Last year, however, banks were forced to sell Government securities in order to obtain loan funds; this year, security holdings have increased steadily since June and are well above those of October 1948. Bank deposits have also increased during the past four months, after declining during the first half of the year.

The ability of District banks to expand both loans and investments in recent months has arisen primarily from the several reductions in reserve requirements made by the Board of Governors of the Federal Reserve System and from the excess of Treasury payments over receipts in this District. During the four months ending with October 1948, in contrast, reserve requirements were raised (in September) and Treasury disbursements and receipts in the Twelfth District were virtually in balance. The use in 1949 of available reserve funds of District banks for security purchases, which are largely made, directly or indirectly, outside the District, is illustrated by the consistent decline of member bank reserves during the first nine months of this year.

There has been a substantial outflow of funds as a result of commercial and financial (other than Treasury) transactions of banks and their customers both since June and for the year to date. (Figures are shown in the banking statistics on page 127.) Again, this contrasts with a

SELECTED ASSETS AND LIABILITIES OF ALL MEMBER BANKS—  
TWELFTH DISTRICT  
December 31, 1947—October 26, 1949  
(in millions of dollars)

	Loans	U. S. Gov't obli- gations	Reserves	Demand deposits (excl. interbank)	Time de- posits
Dec. 31, 1947.....	5,358	7,247	2,184	9,894	6,003
Jun. 30, 1948.....	5,592	6,841	2,051	9,404	6,059
Oct. 27, 1948.....	5,910	6,440	2,372	9,532	6,018
Dec. 31, 1948.....	6,032	6,366	2,419	9,705	6,087
Jun. 30, 1949.....	5,737	6,392	2,050	8,835	6,194
Oct. 26, 1949.....	5,860	6,933	1,833	9,276	6,186

substantial inflow in the same periods in 1948. This difference, however, reflects primarily the fact that District banks have been buyers of securities this year, but were sellers last year. (Sales by District banks or dealers to New York buyers, say, give rise to a movement of funds into the District in payment.) Although only the rough-

est sort of estimate is possible, it appears that other private transactions have had a more or less similar effect upon the movement of funds across District lines this year and last—some net outflow for the first ten months as a whole, but with little or no net loss of funds on this account in the last few months.

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### THE PACIFIC COAST LUMBER INDUSTRY, PART I

STARTING in Virginia and Maine during early colonial days, the lumber industry has spread from one part of the nation to another. The first significant center of lumber production was in the North Atlantic states, principally in Maine. It shifted to New York in 1850 and Pennsylvania in 1860. As the most accessible forests in that area were depleted the center of production moved to the Great Lakes region about 1870, then to the southern states in the 1890's, and finally to Oregon and Washington in the early 1900's. California has also been one of the leading lumber producing states since that time. Washington became the leading lumber producing state of the nation in 1905 and, except for 1914, continued in that position until 1937. In 1938 Oregon production exceeded the Washington output, and Oregon has continued to lead the nation since then. California has ranked third in recent years.

The Pacific Coast lumber industry is almost entirely a producer of softwoods. Hardwoods are found in Pacific Coast forests, but production of this type of lumber accounts for less than 1 percent of the total output. In the early period of Pacific Coast lumbering, Douglas fir in the Pacific Northwest and redwood and ponderosa pine in California were the principal species from which lumber was produced. In the last 25 years the output of ponderosa pine and western hemlock has increased in the Pacific Northwest, and Douglas fir, sugar pine, and white fir production in California has also become important.

Ever since the early 1900's, the lumber industry has been a mainstay of the Pacific Coast economy. Even though the war years intensified the diversification of Pacific Coast industry, lumber is still the leading industry in Oregon and Washington. In 1947 Pacific Coast shipments of sawed lumber, not including any other forest products such as plywood, pulp, shingles, cooperage, or split products, amounted to almost \$1 billion. The lumber industry accounted for over 11 percent of the value of products added by manufacture, over 10 percent of the number of persons employed in manufacturing, and over 10 percent of manufacturing payrolls on the Pacific Coast. In Oregon the industry accounted for roughly 40 percent of value of product added by manufacture, employment, and payrolls during 1947. In Washington the industry accounted for about 20 percent of the manufacturing output, employment, and payrolls, and in California for about 4 percent.

Though the Pacific Coast has only 13 percent of the area of commercial timber land in the United States, the

timber volume on these lands represents over half the national saw timber. With less than 6 percent of the active sawmills in the United States and just under 25 percent of the number of employees engaged in lumber production nationally, the Pacific Coast produced 40 percent of the national output of lumber in 1947. While these figures point up the importance of the Pacific Coast as a producer, they also indicate a marked difference in the characteristics of the Pacific Coast lumber industry from those in the country as a whole. The predominance of virgin timber in dense stands of very large trees on the Pacific Coast, the greater average size of saw mills than in the country as a whole, and more modern equipment on the Pacific Coast have contributed to the apparent difference between Pacific Coast lumber operations and those in most other parts of the country.

Not only does the Pacific Coast provide a substantial part of the national timber supply, but Pacific Coast forest industries also produce 95 percent of the softwood plywood, 24 percent of the woodpulp, and significant quantities of other forest products. This study, however, is confined to the lumber industry. Despite a common resource base with other industries and even some common problems, it is sufficiently different in many of its characteristics to merit separate treatment. Lumber is the principal product of American forests and it is used for many purposes.

The problems of this industry cannot be discussed merely in terms of the production mechanisms and the market structure. The industry is dependent upon an adequate supply of timber, a renewable resource which can be grown as a crop despite its long rotation period. Failure to treat the timber resource as a crop results in denuding of forest lands and affects markedly the continuity, prosperity, and structure of the industry as well as the economic well-being of the region. Proper management of this resource base is essential to the economy of the Pacific Coast. In recent years good forestry practices have been adopted by increasing numbers of operators. The first section of this study deals with resource base problems and a description of the forest regions of the Pacific Coast. The saw timber stand is the focal point of the discussion. The second section of the study will deal with production of lumber, the structure of the Pacific Coast industry, and the types of wood produced from Pacific Coast forests. In the final section of the study, the market forces affecting the industry will be analyzed.

### Forest Areas of the Pacific Coast

Approximately half of the 205 million acres of the three Pacific Coast states is considered forest land. A large acreage, principally in California, is unsuitable for commercial growth and some land, 2.5 million acres in the three states combined, has been withdrawn from cutting

#### COMMERCIAL FOREST LAND BY CHARACTER OF GROWTH, 1945

	(millions of acres)				Poorly stocked, non-stocked, or burned over <sup>1</sup>
Total	Saw timber	Pole timber	Seedling and saplings		
Pacific Northwest ..	46.2	26.3	7.5	6.2	6.2
California .....	16.4	10.9	3.4	.1	2.0
Total Pacific Coast..	62.6	37.2	10.9	6.3	8.2
United States .....	461.0	205.2	95.0	85.5	75.3

<sup>1</sup>Includes recently cut-over land which may be found to be restocking at a later date.

Source: United States Department of Agriculture, *A Reappraisal of the Forest Situation: Gauging the Timber Resource of the United States*, Report 1, 1946, p. 48. Figures are as of early 1945.

by Federal and state statutes. Only 60 percent of the forest land is suitable for commercial timber growth. The forest lands in California, Oregon, and Washington comprise only 13 percent of the total commercial forest land in the United States. Yet the Pacific Coast forests contain over half the national saw timber stand including more than 80 percent of the virgin timber in the country.

Almost half the commercial forest area of the Pacific Coast is in the hands of the Federal Government, about 5 percent is owned by states and local subdivisions, and the remainder is in private hands. The private holdings are usually on the most accessible lands, and for that reason these are the lands on which cutting has been the heaviest.

#### FOREST AREAS OF THE PACIFIC COAST AND THEIR SAW TIMBER STAND, 1945

	Commercial forest area (millions of acres)	Total saw timber stand (billions of bdf.) <sup>1</sup>	Virgin timber stand (billions of bdf.) <sup>1</sup>
Pacific Northwest .....	46.2	631	513
Douglas fir region .....	26.0	505	408
Ponderosa pine region .....	20.2	126	105
California .....	16.4	228	180
Total Pacific Coast .....	62.6	859	693
United States .....	461.0	1,601	840

<sup>1</sup>Measurements here are based on mill tally.

Source: United States Department of Agriculture, *A Reappraisal of the Forest Situation: Gauging the Timber Resource of the United States*, Report 1, 1946, pp. 48-49. Figures are as of early 1945. In working with inventory figures for timber stands, it must be remembered that the data presented represent the best estimates the issuing agency can make. Experience has proven estimates in particular cases to be markedly conservative. As a consequence, it is held by some authorities that the over-all estimates may be too low as well.

The timber resources of the Pacific Coast may be conveniently divided into three areas. Western Oregon and Western Washington may be considered as a unit because of the preponderance of Douglas fir, and the area is usually referred to as the Douglas fir region. This area lies west of the summit of the Cascade Mountains and includes 26 million acres of commercial timberland. The ponderosa pine region of Eastern Oregon and Washington lies east of the summit of the Cascade range and includes 20 million acres of commercial timberland. California comprises the third area with several important species, principally pine, Douglas fir, true firs, and redwood. Commercial forest lands in California total over 16.4 million acres.

### The Douglas Fir Region

The Douglas fir region in Western Oregon and Western Washington covers an area of 26 million acres of commercial forest land. About 40 percent of these lands are owned by the Federal Government and 10 percent by state or local governments. The area supports, according to the most recent statistics, a stand of 426 billion board feet of saw timber based on log scale measurements.<sup>1</sup>

#### COMMERCIAL FOREST LAND IN THE DOUGLAS FIR REGION BY STATUS OF OWNERSHIP AS OF JANUARY 1, 1945

	(millions of acres)			
	All ownerships	Federally owned or managed	State and local	Private
Saw timber .....	13.2	7.3	.9	5.0
Poles .....	4.4	1.2	.5	2.7
Seedlings and saplings .....	3.0	.8	.5	1.7
Poorly stocked, denuded, and burned over .....	5.4 <sup>1</sup>	.9	.7	3.8
Total .....	26.0	10.2	2.6	13.2

<sup>1</sup>Includes 2.1 million acres of recent cut-overs which may be found to be satisfactorily restocked at a later date.

Source of basic data: Tables supplied by Pacific Northwest Forest and Range Experiment Station, U. S. Forest Service.

In addition to Douglas fir, the dominant species in the region, the forest contains western hemlock, Sitka spruce, balsam firs, cedars, and a minor quantity of hardwoods. Douglas fir constitutes more than 60 percent of the total stand. It is also the most favored species for lumber. Western hemlock and Sitka spruce are favored for pulp production. The stand of hemlock is just under 20 percent of all species. The expansion of the pulp industry and the decline of available Sitka spruce has increased the emphasis on western hemlock as the raw material for pulp. In recent years 74 percent of the logs used for pulp have been western hemlock. Balsam firs are also used for pulp. Western red cedar is used principally for shingles. Port Orford white cedar is used extensively for battery separators.

#### RESOURCES OF THE DOUGLAS FIR REGION BY SPECIES—SAW TIMBER VOLUME

	January 1946 <sup>1</sup>	January 1947 <sup>2</sup>
Douglas fir .....	270	261
Balsam firs .....	41	40
Western hemlock .....	82	80
Sitka spruce .....	7	7
Cedars .....	22	21
Other softwoods .....	14	14
Hardwoods .....	3	3
Total .....	439	426

<sup>1</sup>Corps of Engineers, Department of the Army, North Pacific Division, *Review Report on Columbia River and Tributaries*, Appendix N, Part 3, October 1948, Appendix table A. Figures are based on log scale, Scribner rule.

<sup>2</sup>Saw Timber Volume Estimates, Pacific Northwest Forest and Range Experiment Station, May 1948.

Federal agencies own or manage 53 percent of the timber stand in the Douglas fir region measured in board feet. Though private owners own considerably more acreage than the Federal Government, their volume of timber is less than that in Federal ownership because of the heavier cut on private lands in the past. Somewhat more

<sup>1</sup>This figure varies from the mill tally figure of 505 billion board feet cited earlier because of technical differences in the methods of calculation. The introduction of the log scale measurement is necessary in order to take advantage of detailed statistics not prepared on a mill tally basis.

than half of the old growth timber is in Federal ownership. The second growth volume, however, on private lands is considerably greater than on Federal lands.

OWNERSHIP OF SAW TIMBER BY SPECIES—DOUGLAS FIR REGION  
JANUARY 1, 1946  
(billions of board feet)

	Federally owned or managed	Other <sup>1</sup>	Total
Douglas fir .....	147.2	122.8	270.0
Pulp species .....	60.6	68.9	129.5
Cedars .....	9.8	12.0	21.8
Other softwoods .....	12.1	2.3	14.4
Hardwoods .....	1.3	2.1	3.4
Total .....	231.0	208.1	439.1

<sup>1</sup> Includes state, county, and private ownership.

Source: Pacific Northwest Loggers Association and West Coast Lumbermen's Association, *More Timber*, January 1947, p. 31. Figures are log scale, Scribner rule. Data by ownership as of January 1, 1947 not available.

### Distribution of timber and cutting

The present pattern of timber stand reflects to a significant extent the cut taken from the Douglas fir forests in the past. Until 1938 most of the timber cut came from the Douglas fir forests of Washington. Particularly heavy cutting occurred in the Puget Sound area and to a somewhat smaller extent along the Washington Coast. The present geographic distribution of timber stand shows a much greater predominance of virgin timber and large and small second growth in Oregon than in Washington.

During the past 25 years the cut taken from various subareas of the region has been disproportionate to the stand. The Puget Sound area, the Washington Coast area, the Columbia River areas of Oregon and Washington, and the North Oregon coast have in the past been cut more intensively than the areas of Southern and Southwestern Oregon. For the most part these areas are still yielding a higher percentage of the saw logs than the percentage of their saw timber stand to the region's total. At the same time, however, because the most accessible timber in these areas has been reduced, the industry in the past decade has been migrating into Southern and Southwestern Oregon where virgin timber stands are still very heavy. The areas around the Willamette, Rogue, and Umpqua Rivers and along the Southern Oregon Coast produced 53 percent of the sawlogs of the entire region in 1946.

The species cut have also tended to be out of proportion to the stand. This is apparent if one compares the ratio of Douglas fir logs to total log production with the ratio of the Douglas fir stand to the total timber stand. In recent years Douglas fir has accounted for over 60 percent of the saw logs produced in Western Washington. Yet, in early 1945 the Douglas fir saw timber stand was little more than 35 percent of the total saw timber stand in Western Washington. The lack of balance between cut and stand for Douglas fir has been much less noticeable in Oregon. The drain of Sitka spruce has been greater than its proportion to the stand in both Oregon and Washington. Western hemlock, on the other hand, has not been cut as intensively as its ratio to the total saw timber stand. The reduction in other species has caused somewhat greater use of hemlock in recent years. Ad-

justment of cutting budgets both geographically and by species is essential to the development of a desirable geographic and species distribution.

A high proportion of virgin timber is on public lands; little cutting has taken place in these stands. Yet, they account for a substantial part of the total stand and forested acreage. Greater cutting of these stands would serve several purposes.<sup>1</sup> Mature and over-ripe trees would be removed and acreage would be released for new growth. The large volume of government timber could be used to encourage private owners to follow better practices on their own land. Cooperative sustained yield agreements, described on page 125 are one method of approaching this problem. There is, however, one difficulty with reference to Federally owned and managed lands that is frequently overlooked. National forests and other Federally controlled lands are frequently on remote sites or on rough terrain. Timber on such lands is more costly to harvest than that on readily accessible lands. This situation tempers to some extent the reliance that can be placed on Federally owned timber.

DISTRIBUTION OF OLD GROWTH AND SECOND GROWTH STANDS—  
DOUGLAS FIR REGION  
(thousands of acres)

	1933		1945	
	Western Oregon	Western Washington	Western Oregon	Western Washington
Old growth .....	6,628	5,057	5,778	3,570 <sup>1</sup>
Large second growth .....	1,908	729	1,657	554
Small second growth .....	3,179	2,303	3,426	2,567
Seedlings and saplings .....	927	1,556	1,203	1,836

<sup>1</sup> During the period being compared, the Federal Government withdrew approximately 500,000 acres from cutting.

Source: Burt P. Kirkland, Joint committee on Forest Conservation; *Forest Resources of the Douglas Fir Region*, Portland, Oregon, Tables A-5 and A-15.

### Cutting practices in the Douglas fir region

While there are mixed stands of Douglas fir and other species, many Douglas fir forests tend to be homogeneous. Selective cutting—that is, removal of mature trees or high quality trees only—is not the desirable practice in such stands. Douglas fir tends to grow in uniform age stands and requires a considerable amount of sunlight. Regeneration requires clear-cutting the land in such a manner as to permit adequate reseeding and adequate sunlight for the young stand. This practice is now followed on most well-managed operations by clear-cutting in blocks from 40 to 100 acres and leaving seed trees in fairly substantial blocks about the cut-over area. Some controversy exists as to the size of the area that should be cut over, but in general the principle of clear-cutting is accepted. Leaving seed trees dispersed over the area, which might suffice in other stands, will not do for Douglas fir. Trees not protected from the wind tend to blow over, except on gravelly soils, because of the root structure of Douglas fir. The practice of leaving the seed trees adjacent to the area has proved to be the most satisfactory method. In both Oregon and Washington state laws require that at least 5 percent of each quarter section (160 acres) harvested be well stocked with seed trees.

<sup>1</sup> See *Forest Resources of the Douglas Fir Region*, Burt P. Kirkland, Joint Committee on Forest Conservation, Portland, Oregon, July 1946, pp. 24-26, and "Forests and National Prosperity," USDA, Miscellaneous Publication No. 668, August 1948, p. 4.

### Ponderosa Pine Region

The ponderosa pine region is generally described as those counties in Oregon and Washington east of the Cascade summit. As so defined, it covers an area of 20.2 million acres of commercial forest land supporting a growth of approximately 114 billion board feet of saw timber. The dominant species is ponderosa pine, which tends to grow in pure stands with only minor quantities of other species. About one-fourth to one-third of the ponderosa pine stands are interspersed with other species. Douglas fir is second in importance in this region, but does not have the high quality characteristics of the region west of the Cascade summit.<sup>1</sup> The miscellaneous softwoods in the region include quantities of western hemlock, the balsam firs, Englemann spruce, and mountain hemlock. These species are suitable for pulp production.

#### RESOURCES OF THE PONDEROSA PINE REGION BY SPECIES

	SAW TIMBER VOLUME	
	(billions of board feet)	
	January 1946	
Ponderosa pine .....	68.3	
Douglas fir .....	18.6	
Sugar pine .....	.6	
Western white pine .....	1.1	
Lodgepole pine .....	2.0	
Western larch .....	9.6	
Cedars .....	.8	
Other softwoods .....	15.8	
Total .....	113.8	

Source: Corps of Engineers, Department of the Army, North Pacific Division, *Review Report on Columbia River and Tributaries*, Appendix N, Part 3, October 1948, Appendix table A. Figures are based on log scale, Scribner rule.

Less than one-fourth of the timber stand is in private hands. A little over 55 percent of the timber, based on board foot volume, is in national forest and slightly more than 20 percent is in other public ownership. Comparison of figures for 1946 with those for 1936 reveals that the drain on private lands has been much greater than on public lands. In 1936 private holdings of ponderosa pine totaled 27.2 billion board feet, but 10 years later the volume had declined to 16.6 billion board feet. Even after allowing for some transfer of private holdings to public agencies, the drain has been considerable. In the same period national forest stands declined only slightly.

#### OWNERSHIP OF SAW TIMBER BY SPECIES—PONDEROSA PINE REGION, JANUARY 1946

	(billions of board feet)		
	National forests	Other public	Private
Ponderosa pine .....	35.0	16.7	16.6
Douglas fir .....	10.7	3.4	4.5
Sugar pine .....	.1	.2	.3
Western white pine .....	.9	.1	.1
Lodgepole pine .....	.8	.1	.2
Western larch .....	4.8	1.3	1.5
Cedars .....	.4	.1	.2
Other softwoods .....	10.8	1.9	3.0
Total .....	63.5	23.8	26.4

Source: Corps of Engineers, Department of the Army, North Pacific Division, *Review Report on Columbia River and Tributaries*, Appendix N, Part 3, October 1948, Appendix table A. Figures are based on log scale, Scribner rule.

Though Federal agencies have been actively engaged in selling public timber, the cut in part of this area, where the stands are chiefly virgin timber, is much lighter than can be sustained. Opening up these stands, many of which

are reasonably accessible now, to cutting in accordance with good practices would stimulate growth. With a larger stumpage supply, private operators could probably be induced to engage in longer-range planning.

#### Distribution of timber and cutting

About 65 percent of the remaining saw timber of the ponderosa pine region is in Oregon. Because of climatic conditions the more dense and more extensive forest areas are concentrated in Oregon in the area around the Deschutes River, the Klamath Plateau, and the southern Blue Mountains. The plateau characteristics of the east slope of the Cascades in Oregon provide excellent forest land. By contrast the area of north central Washington, north and east of the Okanogan River, while having large stands of virgin timber, is rugged and inaccessible and the timber quality is relatively poor. As a result cutting in this area has been limited.

The major areas of timber stand in eastern Oregon have a very high proportion of ponderosa pine. The Deschutes River area has approximately 12 billion board feet, the Klamath Plateau 19 billion board feet, and the south Blue Mountain unit 15 billion board feet. Douglas fir is less important here than in Washington where it is almost as plentiful as ponderosa pine. The volume of ponderosa pine in all of eastern Washington is only 15 billion board feet. A favorable factor for the whole area is that only a small portion—about 4 percent—of the commercial forest land area is poorly stocked or denuded.

Most of the cut of saw timber in the ponderosa pine region has come from the Klamath Plateau and Deschutes River areas. Not only the density of stands, but also their accessibility both from the point of view of cutting and transportation facilities have been responsible for the large drain. At present the proportion of the regional timber cut produced by these areas exceeds their share of the timber stand. In the Deschutes River unit and the Klamath Plateau cutting has tended to draw down considerably the amount of merchantable timber in private ownership. It appears likely that the cut in these areas will decline further since the second growth trees will probably not be suitable for saw timber for some years.

#### Cutting practices

Partial or selective cutting has been a common practice in most areas of the ponderosa pine region for a considerable time. The employment of partial cutting does not always assure that the best cutting practices are being observed. For example, if all trees of positive value are removed, some trees may be taken which would have a considerable growth if permitted to stand for a longer period.

Since the ponderosa pine forests are largely mixed age stands, selective cutting is favored by the circumstances. The goal should be to remove all mature trees (not only for their timber value, but also to reduce possible insect loss), stimulate growth of thrifty trees, and hasten reproduction. Trees having a potential high value growth increment should be permitted to stand for cutting in the

<sup>1</sup> *Forest Resources of the Ponderosa Pine Region*, USDA, 1942, p. 27.

future. It appears that these aims might make for a lighter cut than has heretofore been the practice on a substantial portion of the operating lands. On a number of operations light cutting is already the practice. Policies in exchanging Federal stumpage for private lands may make the extension of the practice more feasible.

### California

California's 16.4 million acres of unreserved commercial timber land support a variety of lumber species. Prominent among the several types are Douglas fir, ponderosa pine, redwood, sugar pine, and white and red firs. The commercial forest area (including land withdrawn from cutting) totals 17.1 million acres.

FOREST RESOURCES OF CALIFORNIA AS OF JANUARY 1945  
(in millions of acres)

	Public	Private	Total
Pine .....	2.3	2.1	4.4
Redwood .....	.1	1.8	1.9
Douglas fir .....	1.3	1.3	2.6
Fir .....	.9	.3	1.2
Pine, Douglas fir, fir .....	4.2	2.8	7.0
Total .....	8.8	8.3	17.1

Source: *Forest Areas, Timber Volumes and Vegetation Types in California*, Table 2, California Forest and Range Experiment Station, Berkeley, California, March 1946.

Based on species and geographic characteristics, the state is conveniently divided into five forest subregions. These areas supported a stand in 1945 of almost 228 billion board feet<sup>1</sup> of timber. In the Eastside Sierra pine region, totaling 3.8 million acres, there are approximately 34 billion board feet of timber consisting chiefly of ponderosa pine and white and red firs. The Westside Sierra pine area, comprising 5.5 million acres, supports a growth of 78 billion board feet of timber consisting chiefly of ponderosa pine, sugar pine, and true firs. It is the principal sugar pine area. A considerable amount of Douglas fir is interspersed among the other species. Like much of the Coast Range pine subregion, the Westside subregion stands are largely mixed, including all the species mentioned and some incense cedar. On the extreme western edge of the region there are relatively pure pine stands, and in the north there are several pure stands of true firs. The Coast Range subregion covers approximately 2.7 million acres supporting a stand of 29 billion board feet. Though the species are intermingled, Douglas fir is much more prominent than in the Westside Sierra pine region. The Douglas fir subregion covers 2.6 million acres supporting a stand of 29 billion board feet of timber. The stands are almost pure Douglas fir with small quantities of ponderosa pine, sugar pine, true firs, and redwood also present. The redwood region covers 1.9 million acres supporting 38 billion board feet of redwood and 18 billion feet of Douglas fir with minor quantities of other species. Of the total volume of 228 billion board feet about 16 billion are considered to be in areas more valuable for purposes of recreation than for commercial timber cutting.

The forest areas of California, like those in the Pacific Northwest, include a large volume owned by public agencies. Of the 8.8 million acres of publicly owned commer-

Mill tally. See note page 120.

### CALIFORNIA FOREST RESOURCES BY SUB-REGIONS—SAW TIMBER VOLUME AS OF JANUARY 1, 1945

(billions of board feet)

	Recreation areas	Total volume
Eastside Sierra pine .....	2.2	33.7
Westside Sierra pine .....	3.4	78.2
Coast Range pine .....	2.7	29.5
Douglas fir .....	.9	29.3
Redwood .....	6.7	56.9
All subregions .....	15.9	227.6

Source: *Forest Areas, Timber Volumes and Vegetation Types in California*, California Forest and Range Experiment Station, Berkeley, California, March 1946, table 26.

cial forest land, 8.1 million is in Federal ownership. Approximately 104 billion board feet of saw timber is under Federal control, about 0.2 billion board feet in state and local hands, and 123 billion board feet is privately owned.

### Age and geographic distribution

The California forests include 180 billion board feet of virgin saw timber, 30 billion board feet of large second growth, and 2 billion board feet of small second growth. The Coast Range, Douglas fir, and redwood subregions all have virgin timber well in excess of 80 percent of the total stand. The Westside subregion has about 66 percent in virgin timber, and the Eastside subregion just under 80 percent.

Most of the timber cropland is in the northern part of the state. Heavy concentrations occur along the north coast, in the counties along the Oregon border, and on the west slope of the Sierras with the volume declining as one moves south. On the east side of the Sierras, only the counties north of Lake Tahoe have major forest stands. One of the main problems with reference to California forests is the rough terrain on which a good many are located. Access roads are badly needed to open up these areas. In fact, California is the only Pacific Coast area that the Forest Service believes can increase its cut substantially in the next 20 years. This attitude is predicated on the large blocks of timber which have not yet been tapped, but for which extensive road systems are necessary. Cutting in California has been at a lower rate in comparison with the total timber stand than is true for the Pacific Northwest. This apparently reflects the more limited accessibility of stands in California in the past.

### Problems of the Resource Base

The foregoing figures show a large volume of timber in the Pacific Coast states. It must be remembered, however, that timber is a crop—though the production cycle is very long—and that failure to encourage new growth will result in exhaustion of the resource base. Estimates made by the Forest Service of the United States Department of Agriculture indicate that the utilization and loss has been and still is faster than the growth.<sup>1</sup> In 1944, timber cut for all purposes was estimated by the Forest Service at an annual rate of 2.9 billion cubic feet, losses from fire and insects at .2 billion cubic feet and growth at an annual

<sup>1</sup> Growth estimates are those of the United States Forest Service. Differences of opinion exist concerning the applicable growth tables, especially in the Douglas fir region. For a detailed discussion of method see *Forest Resources of the Douglas Fir Region*, Burt P. Kirkland, Joint Committee on Forest Conservation, Portland, Oregon, pp. 14-15, July 1946.

rate of 1.6 billion cubic feet. The cut of saw timber trees was estimated to be at a rate of 3 times the annual saw timber growth.

#### *Withdrawal and loss vs. growth*

Several factors may mitigate the excess of drain over growth. Young forests not yet classed as saw timber will increase the volume of saw timber and the growth credited to saw timber on reaching merchantable size. The increased interest in forest management during recent years will help convert existing mature stands into growing stands as old timber is withdrawn. In addition, some areas which have not been included in recent inventories as growing timber may be restocked naturally or by artificial reforestation in the course of time. The program of the state of Oregon for the Tillamook burn is a good example of the latter. These several factors could produce sufficient additional growth to offset the current, or perhaps even a somewhat larger, drain. Some foresters maintain that a larger cut could be taken currently under a sustained yield program.<sup>1</sup>

The current lack of balance between drain and growth is due in large part to the fact that most of the timber (80 percent) in the Pacific Coast states is still in virgin stands. These stands usually contain mature and over-ripe trees. Growth for such stands may be nil and according to some authorities negative because rot and mortality affecting some trees may offset growth in others. The present timber stand in this area is estimated as being 1½ times the necessary growing stock for sustained yield management. Only 20 percent, however, is second growth timber which is adding a significant annual increment. Most of the current annual growth is occurring on privately-held lands. Data for the Pacific Northwest show that annual growth on private lands is 2½ times the rate of growth on public lands where most of the stands are still in virgin timber.

In addition to the distribution of stands between mature and growing timber, there is the problem associated with lands suitable for growth of commercial forests which are denuded, burned over, or very poorly stocked. These areas cover over 8 million acres or about one-eighth of the land area suitable for commercial forests. Some of these lands are fairly recent cut-overs, and may be found to be satisfactorily restocked in future surveys. In California there are an additional 3 million acres of very open stands on which a much denser growth could be maintained. Restocking the denuded lands or developing conditions which will permit more dense growth in open stands would add an area equivalent to the present second growth stand in the three Pacific Coast states.

While fires usually account for a small percentage of the annual drain on the resource base, they have more serious indirect consequences. Forest fires impede forest regeneration through the destruction of seed trees and young growing stands. There have been forest fires which were major catastrophies. For example, in the Oregon fire of 1933, called the Tillamook burn,<sup>2</sup> over 10.5 billion

<sup>1</sup>Forest Resources of the Douglas Fir Region, Burt P. Kirkland, pp. 21-28.

#### MAJOR ITEMS OF FOREST WITHDRAWAL AND LOSS BY REGION, 1944 (in millions of cubic feet)

Region	Lumber	Fuel wood	Palp wood	Other commodities <sup>1</sup>	Fire	Insects	Total
Pacific Northwest . . .	1,934	36	309	232	44	63	2,618
California . . . . .	372	2	..	22	29	65	490
Total Pacific Coast..	2,306	38	309	254	73	128	3,108

<sup>1</sup>Includes veneer logs, hewn ties, mine timbers, shingles, split products, and other small items.

Source: *Forests and National Prosperity*, United States Department of Agriculture, Miscellaneous Publication 668, 1948, p. 30.

board feet of saw timber trees were killed. A surprising amount of this timber has been salvaged. Though fires are more spectacular, insects and disease do more damage to standing timber in most years. In each of these cases, however, the combined efforts of public and private agencies have resulted in increasingly effective control of these losses. More cooperation from the general public while in forest areas, improvement of fire prevention techniques on logging operations, and better methods of slash disposal would help to reduce further the fire damage.

The major drain on the resource base is from cutting. Improvements in logging techniques can reduce destruction of uncut trees to a minimum. More significant for long-range purposes, however, is the use of cutting methods which not only provide desirable logs, but at the same time improve the stand or create conditions making for prompt natural forest regeneration.

#### *Cutting practices and sustained yield*

Cutting practices are of prime importance in creating and preserving a growing stock. If sound cutting practices are followed, it is quite possible to log a forest and at the same time lay the ground work for an adequate growth. Operating a forest on a sustained yield basis implies that the logging operation will be so scheduled through time that when the first rotation of cutting the entire area is completed, there will be adequate second growth standing to permit the starting of a second cycle of cutting. One type of sustained yield plan is one in which 1 percent of a forest is cut annually so that at the end of 100 years the acreage cut first will have 100-year old trees standing. In these circumstances, cutting practices must be such that adequate seed stock is left and the cutover area is tolerant to a natural reseeding process. Furthermore, where practicable, the removal of suppressed or deformed trees will permit more vigorous or, as the industry calls them, thrifty trees to add their maximum growth. Good cutting practices independent of any sustained yield program will serve a much better purpose than haphazard practices aimed at liquidating existing stands.

An example of the benefits of good cutting practice has been noted in California. In the early days of the California lumber industry, trees were cut on a very selective basis. Only the most mature and highest quality trees were removed. The equipment was quite light, and even if a fairly thorough cut was made young trees were not destroyed. As a result, some areas logged more than 50 years ago have good second growth stands. As the indus-

<sup>2</sup>The state of Oregon is now taking measures to reforest this area. An issue of \$10,000,000 in general obligation bonds was authorized in 1948 to reforest this area.



ry progressed, the steam donkey and cable system of logging came into use. The cost of the equipment and its size dictated intensive cutting and deterred selective or partial cutting. This method of operation proved quite destructive of young growth; many trees which were not logged were pulled down in the logging operation. In recent years, tractors have been used to an increasing extent. Tractor logging does considerably less damage to incut trees and permits a greater degree of flexibility in tree selection.

Good cutting practice implies the logging of trees in such a manner that the remaining stand will produce a vigorous growth of desirable species. Just what constitutes satisfactory cutting, however, varies with the type of stand, its condition, and age distribution.

#### **The growth period and rotation of cutting**

In managing forests to obtain a continuous crop, the growth rate of trees and the rotation period of cutting the crop are basic economic considerations. In the Douglas fir region about 70 to 100 years are required to grow a tree which is of desirable saw log size. Even after this period, second growth trees do not have the same fine grained characteristics as virgin timber several centuries old. The tree, however, would yield a lumber product with a reasonable percent of the cut high grade. In the redwood area of California, 100 years would also be required to raise a tree of saw log size. The characteristics of redwood second growth compared with virgin timber are even less favorable than for Douglas fir. The redwood forest, however, will support a mixed age stand whereas the Douglas fir stand tends to be of uniform age. It is possible to arrange redwood cutting to obtain somewhat older trees because the stand may have a sufficiently wide age distribution to permit economic cutting by age and size group. Similar considerations concerning age and size distribution apply to the pine areas. Selective cutting can be arranged to take only those trees of a desirable age and size category. In any case, in this area, trees under 120 years old are not likely to produce desirable saw log material.

So far the discussion of cutting rotation has emphasized saw logs. In any young second growth stand and even in older stands there is a possibility of obtaining trees which yield needed forest products other than saw logs while at the same time improving the growth process of saw log trees. Thinning of growing immature stands for suppressed or dormant trees or trees in danger of mortality will yield considerable pulpwood, posts, poles, piling, or wood fibre products. This type of harvesting will permit the more thrifty trees to attain their most rapid rate of growth and will also produce income for the forest manager, private or public, which will substantially defray management and other tree growing costs.

#### **Land ownership and its relationship to forest management**

The problems presented so far indicate that to sustain a particular annual cut of timber and provide for sustained

yield, a relatively large block of timber is required. Many foresters maintain that a small block of timber might be managed successfully on a profitable sustained yield basis. This position is correct if the scale of operations is commensurate with the timber volume available. In general, however, an industrial operation of any size uses logs in sufficiently large quantities to require substantial timber holdings if a continuous operation on a sustained yield basis is to be achieved. The small timber block may not provide a sufficient basis for a full-scale industrial operation under a sustained yield program, but it can produce saw logs and other forest products which could be sold to sawmills, pulp mills, and other wood-using industries and at the same time provide for continuous operation. Pacific Coast foresters, whether in universities, government, or industry, are striving to develop forestry techniques suitable to small land holdings. If small land holders can be taught to operate their timber holdings at a profit, the certainty of a continuing adequate timber supply will be enhanced. Some success along these lines has been recorded in recent years.

Of the 28 million acres of commercial forest land in private ownership in the three Pacific Coast states, 56 percent was in the hands of some 90 thousand small owners early in 1945. The average holdings for this group were only 174 acres. Over 4.5 million acres were in farm woodlands having active timber management on only 15 percent of the acreage. Very small owners may not have sufficient capital to permit them to engage in practices conducive to growing trees on a long-term basis. Frequently in small holdings, other than farm woodlots, each acre must return a sufficient yield to satisfy the pressure that the owner is under to develop adequate current income. In addition, the danger of capital loss will lead to rapid liquidation in periods of rising prices. The problem of finding a technique which will encourage good management on small holdings as well as large blocks of land offers a real challenge.

#### **Action taken to improve forest practices**

Federal, state, and private groups have taken action to improve management practices on forest land. The Pacific Coast states have adopted forest practice laws requiring that adequate numbers of seed trees be left in cut-over areas and in California the law also provides for setting up of rules by local groups to prevent undue cutting of immature trees. The Federal Government, owning substantial quantities of virgin timber, sells mature stumpage to private operators who harvest it in accordance with Federal forestry regulations.

The Government also joins with private owners to provide for cooperative sustained yield operations. The authorization for the latter program was given by Congress in 1937 for revested land grants and in 1944 for all Federally owned or managed lands.<sup>1</sup> The 1944 law states

<sup>1</sup> Public Law 405—75th Congress; Public Law 273—78th Congress.

it is aimed "to promote the stability of forest industries, of employment, of communities, and of taxable forest wealth, through continuous supplies of timber; . . ." The law permits the Secretaries of Agriculture and Interior to enter into cooperative agreements with private owners to set up sustained yield units. Only one such agreement has been completed, however, involving 158,760 acres of private land and 111,466 acres of public land in Western Washington to be managed on the basis of a 100-year rotation. Because of the duration of the contract and the capital necessary to carry it out, some small operators have opposed the expansion of these agreements because it threatens their ability to acquire stumpage from Federal lands.

The forest industries initiated a movement some years ago to set up "tree farms." The program has since been widely adopted. Sponsors of the program on the Pacific Coast are the West Coast Lumbermen's Association, Pacific Northwest Loggers Association, and the Western Pine Association. The tree farm program was started to promote and encourage high order forestry practices. The several associations inspect the tree farms which they have certified to determine whether the lands are being managed for continuous production. By the end of August 1949, 4.8 million acres of Pacific Coast private timber land were in tree farm management.

The foregoing programs have been oriented mostly toward the large or medium-sized timber operations, though a substantial number of small land owners have joined the tree farm program. Programs are also being developed for the small operation and the farm wood lot. The "More Trees Program" is devised to instruct farmers how to get a cash return from their woodland while growing trees for future harvests. Because some of the woodlots are exceedingly small, some farmers have formed cooperatives in order to spread the costs of management and to obtain forest products in marketable quantities. The three Pacific Coast states in cooperation with the Federal Government have initiated farm forestry programs based on the Norris-Doxey Act. Technical assistance is offered by state foresters to farm and other small timber owners.

#### **Geographic and species distribution**

It is not enough to say, for example, that the present stand of saw timber in the Pacific Coast states is 859 billion board feet and that at the current rate of net drain (cut and loss from fire and insects less growth) there is sufficient timber to last 100 years. The accessibility of various stands, their relationship to existing saw mill locations and industrial communities, and the species and quality of timber available alter significantly the prospect for industrial continuity. If industry must shift to new locations for its timber supply, entire communities may be left without their basic industry. In addition, movement into less accessible areas increases the cost of operation. Furthermore, cutting has been concentrated on the most marketable species, and in many cases species left

behind do not offer so satisfactory a product. The problem, therefore, goes far beyond dividing the present stand by the net drain. The problem, at least in part, is to regenerate desirable species on accessible forest land near present communities.

#### **Competition for stumpage**

One of the major problems confronting the lumber industry is the competition for stumpage. Even though figures show a large stand in the Pacific Coast area, the most accessible timber has been drawn on heavily. At the same time, the plywood and pulp industries have increased their use of timber supplies. Plywood production requires large high-grade logs, though the pulp industry can use smaller, lower-grade logs and salvage material from saw mills. Nevertheless the several demands for logs create a situation, especially between plywood and lumber, in which logs will tend toward the use bringing the highest return. Since plywood plants, pulp plants, and saw mills all require varying amounts of investment, the activity with the largest capital outlay will tend to exercise the most effective competitive efforts for obtaining a long-run supply of stumpage. Its influence will be felt throughout the area from which it can economically draw timber supplies. In the short run non-integrated owners will sell stumpage or logs to the highest bidder. Bids for these supplies will be affected by the short-run outlook for profit, as well as the desire for integrated producers to acquire a long-run supply of timber. There has been, in recent years, a tendency toward blocking up of holdings on the part of large timber operators, pulp mills, and plywood plants. It has been suggested by some individuals in both industry and government that there is sufficient relationship between lumber and pulp operations (because pulp mills can use very small logs and mill waste) to integrate the operations. Several successfully integrated operations now exist.

#### **Waste**

There are no satisfactory figures on waste of forest products destroyed or not used which are economically and technically usable. The Forest Service estimates, based on its definition of waste as any wood product not used regardless of its economic value, that 35 percent of the timber cut or damaged in cutting is not used at all and 22 percent is used for fuel (other than cord wood cut for fuel) in a relatively uneconomical manner. Much of this waste may not prove to be usable at any time in the near future. It appears likely, however, that substantial quantities could be used for pulp or other fibre products. In fact, some of the larger operators have invested considerable sums in equipment to produce by-products and obtain as near complete utilization of forest products as present day techniques will permit. More work remains to be done in this area. The Forest Products Laboratory of the United States Forest Service, the laboratories or forestry schools at the state universities in California, Oregon, and Washington, and private industry may be able to make even greater progress than heretofore.

**BUSINESS INDEXES—TWELFTH DISTRICT<sup>1</sup>**  
(1935-39 average = 100)

Year and Month	Industrial production (physical volume) <sup>2</sup>								Total mfg employment <sup>4</sup>	California factory payrolls <sup>4</sup>	Car-loadings (number) <sup>2</sup>	Dep't store sales (value) <sup>2</sup>	Dep't store stocks (value) <sup>2</sup>	Retail food prices <sup>2</sup>
	Lumber	Petroleum <sup>1</sup>		Cement	Lead <sup>1</sup>	Copper <sup>1</sup>	Wheat flour <sup>3</sup>	Electric power						
		Crude	Refined											
1929	148	129	127	110	171	160	106	83	....	111	135	112	134	132.0
1930	112	101	107	96	146	106	100	84	....	93	116	104	127	124.8
1931	77	83	90	74	104	75	101	82	....	73	91	92	110	104.0
1932	46	78	84	48	75	33	89	73	....	54	70	69	86	89.8
1933	62	76	81	54	75	26	88	73	....	53	70	66	78	86.8
1934	67	77	81	70	79	36	95	79	....	64	81	74	83	93.2
1935	83	92	91	68	89	57	94	85	88	78	88	86	88	99.6
1936	106	94	98	117	100	98	96	96	100	96	103	99	96	100.3
1937	113	105	105	112	118	135	99	105	112	115	109	106	108	104.5
1938	88	110	103	92	96	88	96	102	96	101	96	101	101	99.0
1939	110	99	103	114	97	122	107	112	104	110	104	109	107	96.9
1940	120	98	103	124	112	144	103	122	118	134	110	119	114	97.6
1941	142	102	110	164	113	163	103	136	155	224	128	139	137	107.9
1942	141	110	116	194	118	188	104	167	230	460	137	171	190	130.9
1943	137	125	135	160	104	192	115	214	306	705	133	203	174	143.4
1944	136	137	151	128	93	171	119	231	295	694	141	223	179	142.1
1945	109	144	160	131	81	137	132	219	229	497	134	247	183	146.3
1946	130	139	148	165	73	109	128	219	175	344	136	305	238	167.4
1947	141	147	159	193	98	163	133	256	184	401	142	330	300	200.3
1948	144	149	162	211	107	153	116	284	189	430	134	354	348	216.1
1948														
August	159	153	171	214	108	166	124	289	192	456 <sup>r</sup>	141	361	332	218.0
September	155	123	110	219	106	161	123	294	192	454	146	349 <sup>r</sup>	351	217.6
October	149	151	155	229	107	152	114	291	192	452	131	345	346	217.1
November	145	153	173	217	115	109	126	295	191	449	132	342	340	215.6
December	141	153	171	196	111	104	122	298	189	444	131	358	320	216.5
1949														
January	104	151	174	176	112	108	128	300	185	430	105	343	321	217.9
February	111	152	170	173	107	129	118	297	185	423	103	309	327	214.1
March	131	153	176	195	120	169	102	295	185	412	118	325	342	213.3
April	142	152	169	212	124	167	82	303	186	412	126	339	331	215.6
May	138	149	170	215	126	159	100	304	186	415	134	340	320	211.0
June	137	148	174	219	118	138	104	315	185	419	139	336	313	209.9
July	133	146	162	217	98	131	108	299	182	423	120	323	302	206.3
August	138	144	165	209	93 <sup>r</sup>	121 <sup>r</sup>	109	310	185	420	138	334 <sup>r</sup>	309	205.7
September	152	144	166	208	82	136	108	308	183 <sup>p</sup>	437	138	325	333	207.3

**BANKING AND CREDIT STATISTICS—TWELFTH DISTRICT**  
(amounts in millions of dollars)

Year and month	Condition items of all member banks <sup>7</sup>				Bank rates on short-term business loans <sup>8</sup>	Member bank reserves and related items <sup>10</sup>					Bank debits index 31 cities <sup>9,11</sup> (1935-39 = 100) <sup>2</sup>
	Loans and discounts	U.S. Gov't securities	Demand deposits adjusted <sup>4</sup>	Total time deposits		Reserve bank credit <sup>11</sup>	Commercial operations <sup>12</sup>	Treasury operations <sup>13</sup>	Coin and currency in circulation <sup>14</sup>	Reserves	
1929	2,239	495	1,234	1,790	.....	- 34	0	+ 23	- 6	175	146
1930	2,218	467	1,158	1,933	.....	- 16	- 53	+ 89	+ 16	183	126
1931	1,898	547	984	1,727	.....	+ 21	- 154	+ 154	+ 48	147	97
1932	1,570	601	840	1,618	.....	- 42	- 175	+ 234	+ 30	142	68
1933	1,486	720	951	1,609	.....	- 2	- 110	+ 150	- 18	185	63
1934	1,469	1,064	1,201	1,875	.....	- 7	- 198	+ 257	+ 4	242	72
1935	1,537	1,275	1,389	2,064	.....	+ 2	- 163	+ 219	+ 14	287	87
1936	1,682	1,334	1,791	2,101	.....	+ 6	- 227	+ 454	+ 38	479	102
1937	1,871	1,270	1,740	2,187	.....	- 1	- 90	+ 157	- 3	549	111
1938	1,869	1,323	1,781	2,221	.....	- 3	- 240	+ 276	+ 20	565	98
1939	1,967	1,450	1,983	2,267	.....	+ 2	- 192	+ 245	+ 31	584	102
1940	2,130	1,482	2,390	2,360	.....	+ 2	- 148	+ 420	+ 96	754	110
1941	2,451	1,738	2,893	2,425	.....	+ 4	- 596	+1,000	+ 227	930	134
1942	2,170	3,640	4,356	2,609	.....	+ 107	-1,980	+2,826	+ 643	1,232	165
1943	2,106	6,235	5,998	3,226	.....	+ 214	-3,751	+4,486	+ 708	1,462	211
1944	2,254	8,263	6,950	4,144	.....	+ 98	-3,534	+4,483	+ 789	1,706	237
1945	2,663	10,450	8,203	5,211	.....	- 76	-3,743	+4,682	+ 545	2,033	260
1946	4,068	8,426	8,821	5,797	.....	+ 9	-1,607	+1,329	- 326	2,094	298
1947	5,358	7,247	8,922	6,006	.....	- 302	- 443	+ 630	- 206	2,202	326
1948	6,032	6,366	8,655	6,087	.....	+ 17	+ 472	- 482	- 209	2,420	355
1948											
September	5,848	6,394	8,661	6,003	3.20	+ 17	+ 427	- 98	+ 2	2,409	359
October	5,910	6,440	8,647	6,018	.....	+ 12	- 8	- 35	+ 8	2,351	363
November	5,984	6,358	8,658	5,998	.....	- 25	- 40	+ 7	- 8	2,323	355
December	6,032	6,366	8,655	6,087	3.16	+ 11	- 2	+ 45	- 61	2,420	376
1949											
January	6,009	6,382	8,664	6,082	.....	+ 2	- 101	- 58	- 54	2,329	356
February	5,910	6,306	8,330	6,097	.....	- 4	- 7	- 19	- 4	2,308	344
March	5,899	6,208	8,147	6,102	3.27	- 15	- 34	+ 6	- 31	2,299	364
April	5,811	6,230	8,157	6,109	.....	+ 6	- 127	+ 109	+ 11	2,264	354
May	5,738	6,357	8,154	6,112	.....	- 8	- 202	+ 94	+ 37	2,128	345
June	5,762	6,330	8,006	6,179	3.24	0	- 53	- 5	0	2,063	351
July	5,707	6,548	8,139	6,179	.....	+ 20	- 213	+ 130	- 16	1,997	344
August	5,729	6,846	8,221	6,170	.....	- 30	- 194	+ 40	+ 1	1,832	332
September	5,853	6,863	8,273	6,186	3.14	+ 13	+ 41	- 37	+ 9	1,837	336
October	5,860	6,933	8,353	6,186	.....	+ 2	- 95	+ 92	+ 7	1,831	351

<sup>1</sup> All monthly indexes but wheat flour, petroleum, copper, lead, and retail food prices are adjusted for seasonal variation. Excepting for department store statistics, all indexes are based upon data from outside sources, as follows: Lumber, various lumber trade associations; Petroleum, Cement, Copper, and Lead, U.S. Bureau of Mines; Wheat flour, U.S. Bureau of the Census; Electric power, Federal Power Commission; Manufacturing employment, U.S. Bureau of Labor Statistics and cooperating state agencies; Factory payrolls, California State Division of Labor Statistics and Research; Retail food prices, U.S. Bureau of Labor Statistics; and Carloadings, various railroads and railroad associations. <sup>2</sup> Daily average. <sup>3</sup> At retail, end of month or year. <sup>4</sup> Los Angeles, San Francisco, and Seattle indexes combined. <sup>5</sup> Annual figures are as of end of year; monthly figures as of last Wednesday in month or, where applicable, as of call report date. <sup>6</sup> Demand deposits, excluding interbank and U.S. Gov't deposits, less cash items in process of collection. Monthly data partly estimated. <sup>7</sup> New quarterly series beginning June 1948. Average rates on loans made in five major cities during the first 15 days of the month. <sup>8</sup> End of year and end of month figures. <sup>9</sup> Changes from end of previous month or year. <sup>10</sup> Minus sign indicates flow of funds out of the District in the case of commercial operations, and excess of receipts over disbursements in the case of Treasury operations. <sup>11</sup> Debits to total deposit accounts, excluding interbank deposits. <sup>12</sup> Preliminary. <sup>13</sup> Revised.