



MONTHLY REVIEW

TWELFTH FEDERAL RESERVE DISTRICT

JUNE 1950

FEDERAL RESERVE BANK OF SAN FRANCISCO

REVIEW OF BUSINESS CONDITIONS

DEVELOPMENTS during May and early June continued along the path of economic improvement evident early this year. United States industrial production in May approached the postwar peak of late 1948; unemployment dropped to the lowest level in 13 months. The business situation in the Twelfth District also improved. Unemployment continued to decline and employment gained. In California, for example, May nonagricultural employment approached the peacetime peak for May and manufacturing employment was at a peacetime high for that month. Construction activity in the District appeared to be headed for a record year. Preliminary data placed May building permits in California urban areas above the record March level. Improved demand for copper, lead, and zinc offered the prospect that mining activity in the Intermountain states would continue to strengthen.

Some concern exists that the economy may be running into material bottlenecks which will hamper maintenance of a high level of activity. Some observers fear that shortages of building materials and the attendant price rise may choke off some construction. As yet, little evidence exists that prices for homes have risen materially, but a delicate situation might be created if builders, particularly in the residential field, should raise prices markedly. Prices of goods generally, which have been edging up steadily since late January, have been paced by increases in food, building materials, and more recently nonferrous metals. The higher levels apply to prices for imported as well as domestic goods. The most conspicuous increase since the first of the year was registered by natural rubber; in mid-June, however, its price declined sharply for several successive days.

In this District the increases in lumber, nonferrous metal, and steel scrap prices have attracted the most attention. Though the possibility exists that rising prices could go far enough to restrict demand and cut down physical output, so far they appear to have had a stimulating effect on activity.

California business strong over a wide area

California nonagricultural employment in April 1950 was ahead of the same month a year ago for the first time in fifteen months and continued to gain in May. Higher employment in trade, manufacturing, finance, and service

industries contributed to the improvement over last year. These industries have also improved more than seasonally over the winter low recorded in February. In fact, manufacturing employment in May reached a peacetime peak for that month. In addition, employment in the construction industry has moved ahead very rapidly from its seasonal low point this winter.

The improved business situation in California stems from an unusually high level of construction activity, especially in home building, and an increasing volume of durable goods production. The improvement in durable goods production since January has been steady, and April durable goods output exceeded the volume for the same month last year. The improvement in the durable goods field is worthy of emphasis because of the contrast it offers to the situation in 1949. Sharp gains so far this year in nonferrous metals and lumber, and increases in iron and steel, electrical machinery, and aircraft contrast with considerably more modest gains or declines in 1949. Heavy machinery output, still well below last year, has been increasing from month to month this year. Output and employment in the automobile industry were held down during March and April because of a labor-management dispute involving a major manufacturer, but have again achieved a high level since the settlement of the dispute in the first week of May.

While emphasis has been placed on durable goods output because of the reversal of last year's pattern, employment in the nondurable lines has run ahead of 1949 in every month this year. Seasonal improvement in the California food industry appeared a little stronger than last year, and apparel employment topped the year-ago level by a good margin in every month through May.

Pacific Northwest shows moderate improvement

Considerable increases have been recorded in nonagricultural employment in the Pacific Northwest since the

Also in This Issue

Western Power and Fuel Outlook—IV.

Coal

first of the year, but unfavorable weather this spring retarded the improvement. Labor disputes and reduced aircraft production have also prevented the level of employment and output from expanding more rapidly. In contrast to these factors deterring activity, the demand for lumber and other forest products as well as a high construction volume in the area have given rise to a much stronger position than was evident last year.

In both Oregon and Washington employment has been expanding steadily since the first of the year. In March, April, and May, employment was slightly ahead of 1949 in Oregon, but in Washington employment has lagged behind 1949 since the beginning of the year. Weather has played a principal role in both states. In Oregon particularly, a late spring slowed the resumption of logging operations. Prior to April, lumber employment had been expanding quite rapidly in response to the strong demand for lumber and related products. Severe April weather, however, prevented employment from rising above the March level. A labor dispute in the plants of a principal Northwest producer retarded employment increases in both states during May and June. Food processing was also affected by the late spring and production in this industry failed to expand between March and April. Washington aircraft production lagged behind the level of early 1949 as work on existing contracts terminated. The coal strike cut Washington mining employment in February, and a labor dispute in the metal trades reduced Oregon metal and machinery employment. Neither walk-out, however, was of sufficient size to affect the total level of nonagricultural employment seriously.

The most significant development so far this year in the Pacific Northwest is the marked improvement in the de-

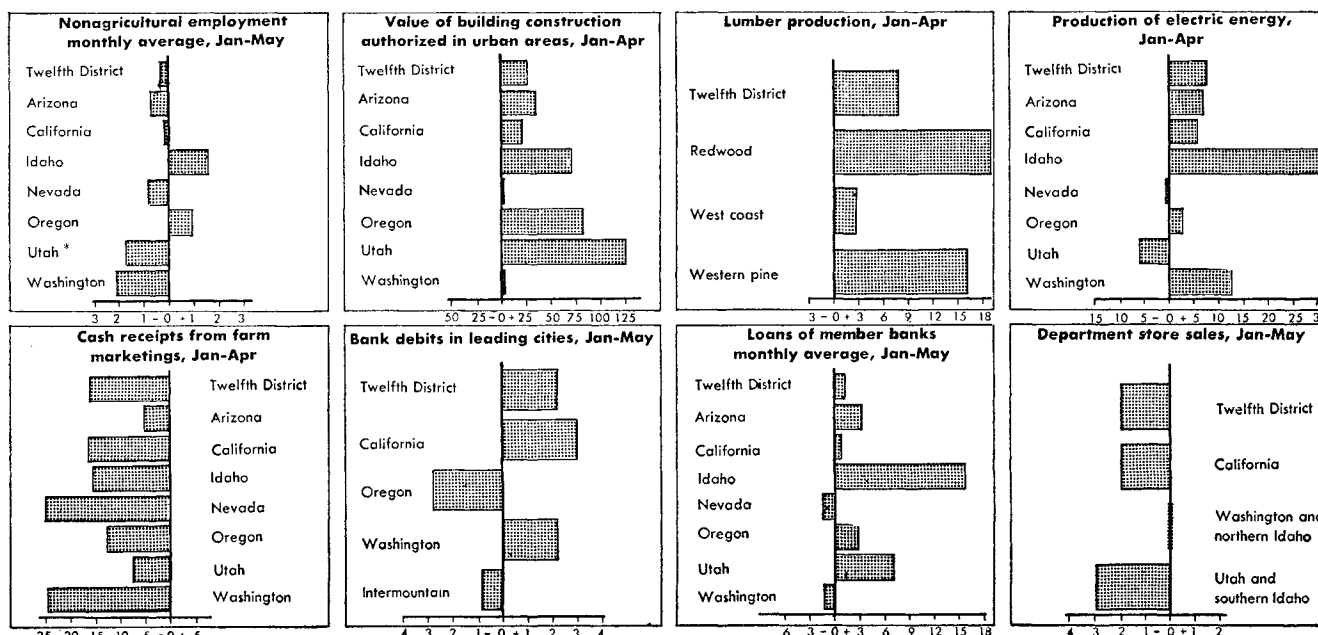
mand for lumber and related products. Early last year, lumber and other forest-product markets were weak. This year, however, the demand for lumber, plywood, millwork, and other products has neared record levels. Despite efforts to expand production, shipments have exceeded output for the first five months this year. The strong demand and reduced mill inventories should provide a stimulus to production for the next several months.

Mining employment down in Intermountain states

Except for Idaho, nonagricultural employment in the Intermountain states of this District remained slightly below the 1949 level in each month through April, principally because of reduced employment in mining. The better results, compared with 1949, for Idaho stem from substantially larger construction employment and increased finance and service employment, although adverse weather through April depressed lumber activity in that state. Despite the weakness in mining employment, the number of workers in non-farm jobs has increased steadily since the seasonal low in February in all four states—Arizona, Idaho, Nevada, and Utah.

The fluctuations in the markets for copper, lead, and zinc during 1949 and early 1950 depressed employment at the mines in most Intermountain states during the first four months of this year. After some recovery last summer the price of lead declined late last year, but held steady until mid-February 1950 and then declined again. Even after some recovery in April and May lead quotations in early June were still below the price quoted in February. Copper prices, however, not only held the gains made last summer and fall, but by April were moving up and in June were not far off the postwar high. Zinc prices, too,

SELECTED INDICATORS OF BUSINESS ACTIVITY—TWELFTH DISTRICT
Percent change, 1949-50



*Jan.-April.

were steadier than lead prices early this year and have increased substantially since March.

The price increases for copper, lead, and zinc in recent months reflect a high rate of consumption of these metals. Production has been running ahead of last year's rate in response to this strong current demand. The increased production has been largely concentrated in the efficient, low-cost mines. Many of the marginal high-cost mines, discouraged by the relatively low prices earlier in the year, had not resumed operations by the end of May despite the recent price increases. Since these mines use considerably more labor per ton of metal than the larger operations, mining employment has not responded to the demand for metal in the same manner as output. An additional factor which had depressed mining operations earlier this year was the coal dispute, cutting Utah mining employment sharply in February.

Construction in most District areas is very strong

Paced by a record level of home building, the dollar volume of urban building permits issued in California was the highest for any first quarter on record. April permits dropped off slightly, but in May the dollar volume of permits issued reached an all-time high. The gain in construction activity between April and May was so strong that California construction employment dropped only 1,000 despite a strike of 6,000 painters in the Los Angeles area. Nonresidential building has continued at a fairly steady rate, gaining moderately in most months since January. In comparison with last year, however, nonresidential permits in urban areas have lagged slightly through May.

Building authorized in urban areas of the Pacific Northwest during the first four months this year exceeded the volume of the same months of 1949. Residential permits in Washington ran well ahead of last year, but nonresidential construction lagged behind 1949. Total authorizations from January through March failed to reach the 1949 volume, but the April volume was slightly above last year because of the continued high volume of housing construction. Oregon reported a higher volume of both residential and nonresidential permits for each of the first four months compared with 1949, and it appeared likely that May permits would be equal to or above May last year, the peak month for 1949.

In Utah and Idaho, impressive gains in construction activity have given stimulus to business. For the period January through April, the dollar volume of urban building permits reported by Utah was considerably more than twice the 1949 amount for the same months. A veterans' hospital in Salt Lake City accounted for a large part of the gain. Eliminating this project, however, still leaves Utah urban permits with a 60 percent gain over the first four months of last year. This increase results from a much higher level of housing construction so far this year. The dollar volume of urban permits in Idaho was 70 percent ahead of the first four months of 1949. Residential construction was a major factor in the gain over last year,

but increased nonresidential building also contributed to the greater volume. Expenditures in atomic energy installations dominated the nonresidential picture in Idaho.

Department store trade close to last year's level

After a very shaky start in January, District department store trade has improved rather steadily from month to month, even after allowing for seasonal differences between months. In comparison with the first months of 1949, sales through May this year were off 2 percent. The results in different areas of the District did not vary much. For the first five months of the year, California department store sales dropped 2 percent from the 1949 level. Southern California reported the same experience as the state. Better than average results in that area were reported for San Diego, Riverside and San Bernardino, and Santa Monica. Northern California showed no change from 1949 because a slight increase in San Francisco over last year and good gains in Bakersfield and Fresno offset declines in other cities. In the Pacific Northwest, department store sales declined 1 percent from the 1949 volume during the first five months this year. A large gain in Bellingham, and moderate gains in Tacoma and Seattle, almost offset declines in other Northwest cities. In Utah and southern Idaho, sales dropped 3 percent behind the dollar volume of January through May 1949. Ogden reported the best results in that area and the largest gain of any city in the Twelfth District, but other cities in that area reported lower business than last year.

Decline in farm income

District cash receipts from farm marketings for the first four months of 1950 were about 16 percent below those for the same period last year. This decline is approximately double the drop in cash receipts for the country as a whole. The reduction in cash receipts occurred in all District states, with the greatest declines registered in Nevada and Washington.

The decline was largely the result of lower crop prices, though marketings were also somewhat reduced. Live-stock prices were generally running higher for the first quarter of 1950 than a year ago, but reduced marketings have meant smaller gross returns. In California, where early potatoes were unsupported as a result of growers refusing marketing agreements, potato prices have averaged considerably below 1949. Washington farmers received approximately one-fourth less cash returns than last year, largely as a result of lower fruit and field crop prices. Freezing weather in early 1950 severely damaged fruit crops in the Pacific Northwest and in Utah and Idaho. As a result, crop receipts will probably continue to be below last year in these areas.

Loans and deposits decline less than last year

Loans and deposits at Twelfth District member banks have been sustained at relatively high levels by the rising tempo of business activity so far this year. The volume of total loans outstanding rose slightly during the first five

months of this year compared with a significant decline in the corresponding period a year ago. Total loans reached their low point in February of this year and the general trend has been upward since then, whereas their low point last year came in July.

The decrease in commercial, industrial, and agricultural loans has been largely seasonal in character this year in contrast with the sharp decline that occurred a year ago. A substantial increase in consumer loans through May of this year and continued growth in real estate loans more than offset the decline in business loans. Consumer loans increased considerably more, and real estate loans slightly more, this year than last.

The usual seasonal decline in demand deposits in the Twelfth District has been smaller in the first five months of this year than in the corresponding period a year ago. There has been no net reduction in bank loans to contribute to the decline this year, and the veterans' insurance refund has offset some of the usual drain on private deposits caused by income tax payments. Time deposits have increased more rapidly than in the corresponding period a year ago.

Oregon and Utah lead in loan increases

Total loans at member banks increased in only three of the District states through May of this year and remained unchanged in Nevada. Oregon and Utah had the largest relative gains, with increases of 5 to 6 percent, followed by California with an increase of less than 2 percent. This contrasts with a decrease in loans in each of these states

in the corresponding period a year ago, although the decline in Utah was less than 2 percent.

Loan decline in other states less than year ago

Member bank loans in Arizona and Washington declined between 1 and 2 percent in the first five months of this year, while the drop in Idaho was over 6 percent. In each state the decline was substantially less than in the corresponding period a year ago, particularly in the case of Arizona. In both Idaho and Washington the decline this year was concentrated in late April and May, and probably reflects the paying off of Commodity Credit loans from banks as farmers turned their wheat and other price-supported commodities over to the C.C.C. A similar decline in loans occurred in late April and May of last year in Idaho and Washington following the close-out date for C.C.C. loans. Oregon also had a significant decline in total loans in the corresponding period a year ago, but not this year, largely because it had a much smaller volume of C.C.C. loans outstanding.

Total deposits decline in all states but Arizona

Arizona is the only state in the District in which both demand and time deposits increased during the first five months of this year. Likewise in 1949, Arizona had the most favorable deposit experience, with the smallest decline of any District state in the first five months. Despite a significant expansion in loans of Utah member banks, their total deposits declined nearly 5 percent through May, a decline exceeded only by that of Idaho bank deposits.

WESTERN POWER AND FUEL OUTLOOK—IV. COAL

PREVIOUS articles in this series have dealt with electric power, natural gas, and petroleum as sources of industrial energy in the western states.¹ Each of these energy sources has experienced a continuous and relatively rapid expansion in use during the past 30 years, although a shift has occurred in the postwar period from some types of fuel oil in industrial and transport applications to certain other fuels. In contrast, the production and utilization of coal in the western area has been relatively stagnant over the period since the twenties and its importance in the whole energy situation has declined steadily.

Declining importance of coal

This shift away from coal as a basic source of industrial energy has been due essentially to the increasing availability, relative economy, and greater convenience in use of other fuels in most parts of the West. Grades of coal which might be competitive with such other sources of energy are limited in their geographical occurrence in the West to certain districts in Utah, Wyoming, Colorado, Montana, and New Mexico. These coals must incur relatively high transport costs over considerable distances to

reach the industrial centers of the more densely populated areas. A rail haul of a few hundred miles may easily double the mine price of coal, and distances in the West are relatively great. Oil, on the other hand, moves more cheaply, due to the economy of transport by pipe line or tanker, and regional differences in the price of oil are comparatively small. Gasoline and fuel oil may be transported very considerable distances by tank line or tanker at relatively small cost. Hence oil, and natural gas where available, have become the preferred types of fuel over large areas in the West while coal has fallen behind.

Increasing use is also being made of purchased electric energy for general industrial purposes at the expense of fuels consumed within the individual plant. Hydroelectric power has supplied the great bulk of such purchased energy, especially in the Pacific Coast states. The installation of extensive public power projects, such as the Colorado River, Shasta, and Columbia River developments, together with only less spectacular units constructed by privately owned companies, has made available a large pool of public utility power in this area. Purchased electric energy has become relatively more important, and plant-generated power less important, than in most other parts of the country.

¹ See MONTHLY REVIEW, November 1948, May 1949, and March 1950. This is the final article of this series on the western power and fuel outlook. A reprint of the series, with several points brought up to date, will be available on request in October.

Coal not a major industrial fuel

Because of this growing importance of other sources of energy, coal no longer rates as an important industrial fuel over extensive parts of the western region. Its market has tended to become increasingly a local one and its utilization is largely restricted to such uses as the smelting of iron and other ores, chiefly in the form of coke, where for technological reasons no other fuel can be substituted; locomotive fuel—though at a rapidly diminishing rate in recent years; electric power generation in areas adjacent to coal mines; and domestic heating in districts where other types of fuel are not readily available. Its general industrial use in the West is usually limited to applications where large amounts of heat or process steam are necessary, as in cement kilns, brick and tile works, local beet sugar refineries, pulp and paper plants, and similar uses. Aside from utilization in the form of coke for blast furnace operation at a California steel mill constructed during the recent war and at one or two tidewater smelters, there is little or no large scale industrial use of coal anywhere in the Pacific Coast states. Even in areas of formerly considerable production, such as Colorado, coal has been waging an apparently losing battle as oil and natural gas make increasing inroads upon its markets.

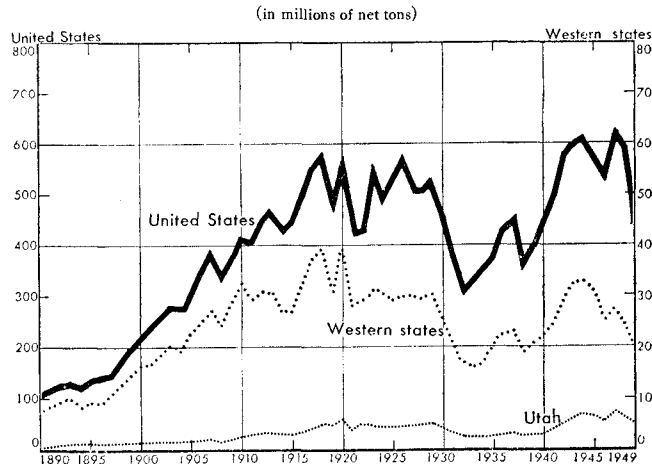
The Trend of Production

Production of coal in the western states is limited to a relatively small number of districts in the Rocky Mountain states, which have accounted for roughly 90 percent of total western production, and to a few localities in the state of Washington. California and Oregon lack significant deposits of coal, although small quantities of lignite were produced from the Mt. Diablo district near San Francisco Bay over the period from 1861 to about 1906. The early industries of California depended upon imported coal and coastal shipments from Washington and the Atlantic seaboard until the discovery and successful utilization of oil toward the end of the last century supplied the basis for a new type of fuel economy. Receipts of coal at San Francisco reached their maximum in 1900 at a volume slightly over 1,600,000 tons, declining by 1916 to about 240,000 tons, and by 1929 to less than 20,000 tons.

Utah, Colorado, and Wyoming major producing states

Commercial coal production in the West got its first big impetus from the coming of the transcontinental railroads, for whom convenient access to supplies of local fuel was an essential. Some of the most productive mines were first developed and are still controlled by the transcontinental carriers. Coal mining on the line of the Union Pacific began at Rock Springs in southern Wyoming in 1869. Output of Wyoming mines reached 105,000 tons in 1870 and exceeded 500,000 tons annually by 1880. Railroad building in Colorado in the seventies spurred the demand for coal in that state; Colorado took the lead in 1881 with an output of 707,000 tons and maintained

PRODUCTION OF BITUMINOUS COAL—UNITED STATES AND ELEVEN WESTERN STATES, 1890-1949



Source: U. S. Bureau of Mines.

its position continuously until 1941, with a maximum output of some 12 million tons in 1917 and 1918. Colorado coal has supplied the fuel base for an important local iron and steel industry and was also distributed in considerable volume to other states. Wyoming again held first place in production from 1942 to 1947, with an average output during those years of close to 9 million tons. The bulk of Wyoming's output has regularly been used as railroad fuel, with most of the remainder being shipped to out-of-state markets.

Development in Utah was more gradual until the decade of the nineties, when extensive coking plants were established in the Castlegate and Sunnyside districts to supply the smelters of the Salt Lake Valley and more distant markets. Coal output expanded rapidly until about 1920 but lagged thereafter until the war years when it received a big stimulus from the establishment of blast furnaces in connection with new integrated steel plants in Utah and California. Utah displaced Colorado as the second largest coal producer among the western states in 1946, and again in 1947 with an output of 7.4 million tons, and took first place in 1948. In that year output dropped, however, to 6.8 million tons, and declined again in 1949 to 5.9 million tons, still the top figure among the western states. Utah coal in recent years has probably been the most widely distributed of all the coals produced in the West.

The above three states have accounted for over seven-tenths of the total reported coal production in the western states. The remainder has come in nearly equal proportions from Montana, Washington, and New Mexico. The record in these states has also been one of fluctuating output, reaching in each instance a record production of about 4 million tons in 1918, followed by steady decline in Washington and New Mexico; Montana, which has some large open strip mines, exceeded its earlier record during the recent war. Postwar output has been relatively low in all three states.

Western states produce 5 to 6 percent of national total

Total reported output of the six leading western states up to the end of 1949 was about 1,453 million tons, or a little under 6 percent of the total United States production of bituminous coal to that time. Production in each of these six states in 1948 and 1949 and their total output to the end of 1949 were as follows:

	1948 output (thousand tons)	1949 output (thousand tons)	Total output to end of 1949 (million tons)
Colorado	5,631	4,540	471.0
Wyoming	6,412	5,572	363.1
Utah	6,813	5,884	197.6
Montana	2,898	2,750	157.3
Washington	1,220	895	142.4
New Mexico	1,364	980	121.4
Total six states	24,338	20,621	1,453.7
Percent of United States total bituminous	4.06	4.74	5.84

Large coal resources in the West

In surveying the coal resources of the West one is impressed by the striking contrast between the enormous potential energy reserve contained in western coal deposits and the relatively small degree of development or current utilization of these resources. This discrepancy arises only in part from the fact that the western coal deposits are predominantly of lower rank and are not suitable for industrial use under present economic conditions and with present technological methods. Huge deposits of good bituminous coal exist in the Rocky Mountain area suitable for most industrial uses. Many of these deposits can be mined by advanced technological methods and lend themselves to a high degree of mechanization. The difficulty lies primarily in the fact that they are relatively distant from centers of population and industry, and hence must overcome a heavy transportation handicap, and in the further fact that competing sources of energy, particularly fuel oil and to some extent natural gas, are available over much of the western region at prices and costs which coal cannot meet.

WESTERN COAL RESERVES, 1947
(in billions of net tons)

	Bituminous	Sub-bituminous	Lignite	Total equivalent bituminous
Wyoming	30.3	590.0	..	462
Colorado	212.6	104.0	..	297
Montana	2.6	62.8	315.5	211
Utah	87.9	5.2	..	95
Washington	11.2	52.4	..	50
New Mexico	18.8	1.9	..	21
Idaho-Oregon .....	.7	1.7	..	2
Total of above	364.1	818.0	315.5	1,138
Total United States ..	1,408	818	939	2,559*

*Including 15 billion tons anthracite.
Source: U. S. Geological Survey.

Types of western coals

Coals are of many different types, which vary greatly in quality from lignite or brown coal at the lower extreme, through the intermediate or bituminous types, to anthracite or "hard" coal at the upper end of the range. Most of the coal output of Colorado and Utah is high grade bituminous, although considerable quantities of sub-bituminous are produced for local use. Over half the production of Wyoming is also of bituminous rank; northern Wyoming produces chiefly sub-bituminous coal. The largest part of Montana's output is sub-bituminous, with some low rank bituminous and a small quantity of lignite. Washington production in recent years has averaged about 75 percent bituminous and 25 percent sub-bituminous coal.

The best coking coals are found in the Appalachian region, although coals suitable for making good grades of metallurgical coke occur in the Trinidad-Raton field of Colorado-New Mexico, in the Castlegate and Sunnyside fields of Utah, and in western Washington. In smelting iron ore for production of pig iron in southern California it is found necessary to supplement the high volatile Sunnyside coals from Utah with special coking coals from Arkansas and Oklahoma, at very high freight costs, to obtain coke strong enough for use in the blast furnace.

Owing to their high moisture content as mined, the western sub-bituminous coal and lignite give off moisture rapidly when exposed to the air and the coal "slacks" into small pieces. This slack coal cannot be stored for any length of time in the open air or shipped safely in open cars because of its tendency to spontaneous ignition. This characteristic, together with the low heating value of these coals, limits their use to local markets within short distances of their point of origin.

Western Coal Consumption

Any satisfactory accounting for the coal consumption of any particular area of the United States is extremely difficult due to lack of detailed information on a regional basis.¹ For the United States as a whole, the estimated distribution of bituminous coal among domestic consumers in 1937 and in the past three years was reported as follows:

	Percent of total			
	1937	1947	1948	1949
Railroads (Class I)	20.4	20.0	18.1	15.3
Coke	17.2	19.2	18.8	20.5
Electric power utilities	9.9	15.8	18.3	18.1
Other industrial	34.0	26.8	27.6	25.8
Retail deliveries	18.5	18.2	17.2	20.3
Total of classes shown.....	100.0	100.0	100.0	100.0

No comparable breakdown is available for the coal consumed in the western states. Reliable data for the region can be had on a regular annual basis only for electric utility use and for exports. These two together amount to a very minor part of the total produced, e.g., about 1.6 million tons in 1947, less than 6 percent of the 27.6 million tons produced in the western states in that year. Data on industrial use can be obtained at irregular intervals from the Census of Manufactures. For 1947, Census reports indicate manufacturing consumption of coal in the western states at about 5.9 million tons, or 21.4 percent of total production. These several items amount to about 7.5 million tons, leaving some 20 million

¹An excellent regional study dealing with one of the western states is "Fuel Trends in Washington," Economic and Business Studies, Bulletin No. 11, The State College of Washington, 1949.

tons to be accounted for by railroad consumption, shipments to outside points, and domestic and miscellaneous use.

Manufacturing use of fuels and electric energy

The figures in the accompanying table confirm the fact that coal and coke play a much smaller part in western industry than in American manufacturing as a whole while each of the other sources of energy and power is of relatively greater importance in the West than in the remainder of the country. Some wide differences mark the various states, however, as well as the two major groups of states within the western region. Thus the relatively high proportion of total fuel costs represented by coal and coke in the mountain states is accounted for by the large quantities of coke used in blast furnace operations by the iron and steel industries of Colorado and Utah, whose fuel requirements overshadow those of the other industries of those states.

Among individual states, purchased electric energy represented over half the total fuel and power bill in manufacturing plants in Montana and reached nearly as high a ratio in Oregon and Washington. In these states the unit cost of electric energy used in manufacturing in 1947 was well below half the average cost for the United States as a whole. Over two-fifths of the aggregate cost of purchased electric energy used by Oregon and Washington industries in 1947 was accounted for by the primary metal producers, meaning substantially the aluminum reduction plants which use a large fraction of the Bonneville energy supply obtained at very favorable rates. Use of purchased electricity was also significantly above the national average in 1947 in California and Arizona in spite of the power shortage in that year.

Because of the extensive use of natural gas by California industries, outlays on gas fuel accounted for over one-third of the total fuel and energy costs of all manufacturing establishments in that state in 1947. The ratio for use of gas was even higher for Wyoming and New Mexico, where gas reserves are relatively abundant, and was topped only by Texas and the adjoining gas-produc-

ing states. Although Washington produces coal and imports even more, at high cost, from the Rocky Mountain area, coal and coke represented only one-tenth of the total fuel and energy bill of its manufacturing industries in 1947. Both Washington and Oregon rated high in outlays on fuel oil, proportionately higher than California, their major source of supply. The high figure for "other fuels" in Washington and Oregon (14-17 percent of the total) is probably accounted for largely by purchased wood and "hogged" fuel.

Use of coal for coke

The quantity of coal consumed directly as fuel in manufacturing establishments in the 11 western states in 1947 was reported by the Census as 2,350,000 tons, at a cost of \$14.5 million. An additional 3,556,000 tons were used for the production of coke in Utah, Colorado, and California, chiefly for use in iron blast furnace operations. The quantity of coke used in manufacturing in the 11 states was reported at 2,560,000 tons, with a cost of \$32.4 million. In total, then, an aggregate quantity of about 5,900,000 tons of coal was used either directly or in the form of coke, at a cost of approximately \$47 million. This usage was equivalent to about 21 percent of the reported mine production of coal in the western states in 1947. A relatively small part of the coal and coke consumed came from states outside the West.

Almost nine-tenths of the total manufacturing consumption of coal and coke in 1947 was accounted for by the four states, Utah, Colorado, California, and Washington. The quantities reported for each of the 11 western states were as follows:

	Used as fuel	Used for coke (thousands of tons)	Total
Utah	369	1,741	2,110
Colorado	722	1,279	2,001
California	19	537	556
Washington	459	...	459
Idaho	285	...	285
Montana	231	...	231
Oregon	108	...	108
Wyoming	90	...	90
Nevada	43	...	43
Arizona	17	...	17
New Mexico	7	...	7

As compared with the situation in 1929, manufacturing plants in the West apparently increased their total consumption of coal by about 700,000 tons, or some 14 percent. This gain was more than accounted for, however, by considerably larger use in coke making, chiefly in the new integrated steel plants erected during the war in Utah and California. Coke for iron and steel operations in the western states absorbed roughly 2 million more tons of coal in 1947 than in 1929, while other manufacturing operations used about 1.3 million tons less. Use of coal as fuel in these other industries declined in all the states except Utah, Idaho, and Oregon; substantial decreases occurred in Colorado, Washington, Arizona, and Montana.

Railroads major users of coal

Demand for coal as locomotive fuel was the original base on which much early western coal mining develop-

COST OF FUELS AND ELECTRIC ENERGY CONSUMED IN MANUFACTURING, 1947

	Total cost of fuels and purchased electric energy (millions)	Percent of total fuel and energy cost represented by				
		Coal and coke	Fuel oil	Gas	Other fuels	Electric power
United States	\$3,331.5	42.7	14.3	11.5	2.9	28.6
11 Western States ...	243.5	19.1	17.4	21.0	6.6	35.6
3 Pacific States	175.4	8.2	20.6	23.0	7.4	40.8
California	117.4	7.4	17.9	33.7	3.8	37.2
Washington	39.0	10.8	26.9	.8	13.7	47.8
Oregon	19.0	7.3	24.7	2.1	17.1	48.8
8 Mountain States...	68.1	47.9	9.3	16.0	4.6	22.2
Utah	20.0	68.0	2.5	15.3	5.6	8.5
Idaho	6.4	42.3	21.3	..	9.3	27.1
Arizona	5.7	4.2	22.5	32.9	5.5	34.8
Nevada	2.5	18.6	30.1	.4	1.5	48.3
Colorado	21.3	61.6	8.4	14.3	1.6	14.1
Montana	8.7	24.0	3.4	16.3	5.1	51.2
Wyoming	2.1	18.0	8.6	38.0	3.4	32.0
New Mexico	1.5	2.7	8.4	44.9	13.0	31.0

Source: United States Department of Commerce, Census of Manufactures, 1947, "Fuels and Electric Energy Consumed," MC 203, 1949.

ment was founded. In many cases the railroads were themselves among the first to engage in coal mining on any considerable scale and their operations have played a large part in the total activity of the industry. The proportion of "captive" mines is considerably higher in the West than in the country at large; this is particularly the case in Wyoming, Montana, and Washington, where the railroads are the principal owners of such captive mines. Due to the relatively slight industrial development of much of the western region, and the peculiar operating conditions of western railroads—involving long distances and heavy grades, railroad fuel requirements have represented a considerably larger fraction of the total market for coal in the West than in most other parts of the country.

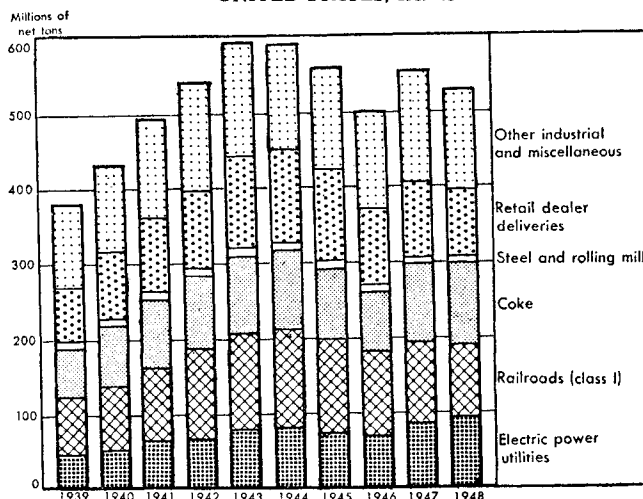
In the country as a whole, railroad use of coal has until quite recent years been the largest single constituent of the total demand, ranging between 20 and 25 percent of the entire domestic consumption of bituminous coal. Following a peak of about 135 million tons in 1920, consumption by Class I railroads tended generally downward until the extraordinary requirements of the war period carried it up to 132 million tons in 1944. Since then railroad demand has declined continuously. By 1948 purchases of Class I railroads had fallen below 95 million tons, representing about 18 percent of total bituminous consumption in that year. Preliminary reports for 1949 indicate a further precipitous shrinkage to 68 million tons, scarcely half the 1944 volume, and only about 15 percent of total bituminous consumption.

Reasons for decline in railroad use of coal

Several factors have combined to reduce consumption of coal by the railroads. One of these is the steadily improving efficiency in utilization of coal in railroad operations. The number of pounds of coal required, on the average, to perform a given unit of output in railroad freight service was reduced nearly 35 percent between 1920 and 1948; in passenger train service the reduction was about 15 percent. This improved fuel efficiency has been a persistent and long continued influence affecting railroad demand for coal. More recently it has been powerfully reinforced by two new factors—the sharp reduction in total railroad freight tonnage and passenger volume since the war, and the constantly accelerating rate of replacement of steam locomotives by Diesel-electric motive power.

The first of these forces will undoubtedly prove to be temporary, at least with respect to freight traffic. The downward trend in freight tonnage was relatively moderate until 1949 when it dropped to a level 23 percent under that of 1944. Some recovery in total freight volume is to be expected, although it may be a number of years until the war records are surpassed. But rising traffic volume will benefit the coal producers little if the railroads continue to replace their coal burning locomotives with Diesel power. The superior economy of the Diesel engine in railway operations is now so well established,

CONSUMPTION OF BITUMINOUS COAL AND LIGNITE
UNITED STATES, 1939-48



Source: U. S. Bureau of Mines.

however, that still further reductions in all types of steam motive power may confidently be expected.

Railroads use larger share of western than of national output

Adequate data are not available to permit a satisfactory regional analysis of railroad coal consumption comparable with the national trends discussed above. Scattered information on the distribution of coal produced in individual states has been published from time to time by the Bureau of Mines which permits some approximate estimates of railroad demand in the more important coal producing states of the West. The best of these are for the years 1944-46, when fairly complete data were released on shipments of bituminous coal to selected classes of users in all the states.¹ These data show that reported shipments of railroad fuel from mines in the six leading western states accounted for approximately 42 to 46 percent of the aggregate bituminous output in those states for the years in question. Fully comparable data are not available for any other year, but reports on individual states centering around the year 1929 permit a rough estimate for that year which yields a ratio of railroad fuel to total production in the six states of about 37 percent. It is probably safe to say that in the prewar years consumption of coal by the railroads represented somewhere between 35 and 40 percent of the total output of the western states, a ratio roughly double that for the country as a whole. In the postwar period the railroad market for coal in the West has probably been shrinking as rapidly as in most other parts of the country.

Use of coal by electric utilities

As compared with most other regions of the United States, coal plays a relatively minor part in the production of electric power for public use in the western states. Only in the southwestern region, where cheap natural

¹ Bureau of Mines, Bituminous Coal Distribution, M.M.S. 1289, 1444, 1592.

gas is available, is less use made of coal in electric power generation. In only two years during the past decade has the consumption of coal by electric public utilities in all the western states exceeded a million tons. Most of this was concentrated in Colorado and Utah; these two states together with Wyoming and New Mexico have accounted for practically the entire consumption in recent years.

The availability of hydro-electric energy over much of the region and of oil or natural gas at lower costs explains, of course, the relatively small use made of coal for electric power generation in the West. Small quantities of coal are used in the manufacture of artificial gas by the public utilities in some of the cities of the Pacific Northwest, but even here by far the greater part of the raw material is oil.

Coal and California electric utilities

Most of the larger steam power plants installed by the leading California electric public utilities since the war have been designed so as to permit the use of coal as fuel alternatively with oil or gas. In part this policy was adopted as a precautionary measure against the possibility of a shortage of oil in case of war. In part it was motivated by economic considerations. During the early postwar years natural gas was in relatively short supply in California and the petroleum industry was also having difficulty in keeping up with the rapidly growing demand for its products, including heavy fuel oil. The price of residual fuel oil had been held by OPA regulations at about \$1.15 per barrel f.o.b. Richmond over the three years from April 1, 1943 to March 20, 1946. From that date successive advances carried this grade of oil to \$2.30 per barrel by the end of 1948. Comparison of the relative costs of Utah coal and California fuel oil as sources of energy at that time indicated that in spite of these advances, oil still had a net advantage over coal—taking into account the special costs incident to each—of roughly 18 percent, even if domestic freight rates on coal could be secured equally as low as prevailing export rates.

Prices of coal and of oil followed sharply divergent trends after 1948. While the mine price of coal has continued to rise, the price of fuel oil in California was reduced nearly 50 percent between January and September of 1949, and the previous substantial cost advantage possessed by oil has been considerably widened. This divergence in the price movements of the two fuels seems likely to persist for an appreciable time; all indications point to a continuing surplus of residual fuel oil in California with relatively low prices, while recurrent strikes and sharp wage increases for coal miners have pushed up the mine price of coal to a point where much of the demand has been choked off and coal mines are being forced out of business.

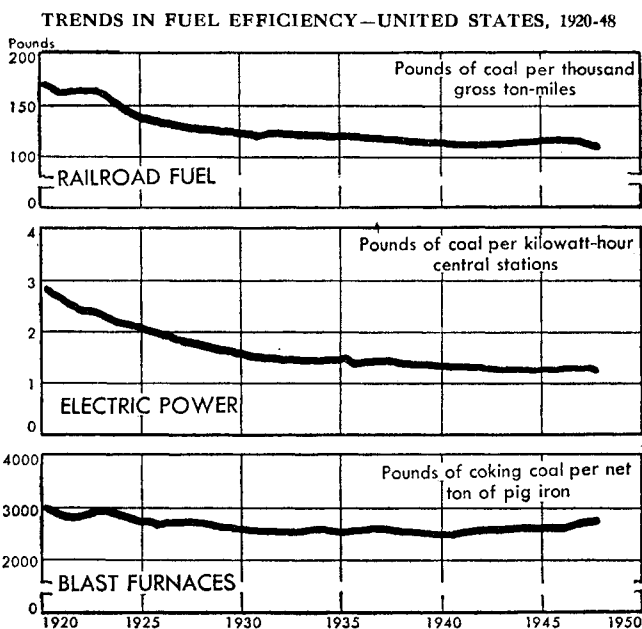
With the rapid extension of pipe line facilities for long distance transmission of natural gas, chiefly from Texas and the adjacent states, this source of energy is being made increasingly available to many areas for industrial

use. The California electric utilities and those in a few other western states are in position to benefit from this relatively cheap fuel and are using more of it. The greater availability and relatively assured supply of oil and natural gas, compared with the uncertainties attending coal production, as evidenced by the recent history of work stoppages in that industry, seem definitely to exclude coal from consideration as a probable source of energy to such large scale consumers as the electric utilities of the Pacific Coast for many years to come.

The prudent course, however, is to be prepared for any emergency that may arise in the supply of other fuels and also to be in position to turn to the regular use of coal if the time arrives, as it may within a few decades, when the price of coal and the conditions as to its regular supply relative to other fuels make this procedure advisable. It was with this possibility in mind that the new steam power plants in California were designed to permit the use of coal. Even some recent Texas electric utility plants have been designed with a view to ultimate conversion to coal should natural gas no longer be available for use as boiler fuel.

High transport costs limit use of coal in western region

The significance of high transport costs as a limiting factor in the more widespread utilization of coal in the western region has already been pointed out. While the West is not unique in this respect, its position, because of the distances involved, is probably an extreme example of the handicap imposed by transportation costs. For the country as a whole, the average freight charge per ton on all bituminous coal hauled by Class I steam railroads during the period 1928 to 1936 was considerably greater in each year than the average sale price of coal at the



Source: U. S. Bureau of Mines.

mine.¹ In the more heavily industrialized parts of the country, where the average haul from mine to factory is relatively short, this transport cost is not so serious a burden, although it has in many cases probably reinforced the tendency to shift from coal to other fuels. In the West, however, where the distance from the coal fields of the Rocky Mountain states to the industrial centers of the Pacific Coast approximates 1000 miles, the freight cost imposes a substantial extra burden on fuel costs.

Costs of transporting coal and fuel oil to Pacific Northwest

An illustration of the adverse effect of high transport cost for coal, relative to oil fuel, is found in the freight rate on coal from Utah to Puget Sound points compared with the cost of shipping oil to the same destinations from California. In 1947 the rail rate of \$5.70 per ton on lump coal from Hiawatha, Utah to Seattle, when added to the cost of coal at the mine, more than doubled the Seattle cost over the mine price. At the same time the cost of shipping heavy fuel oil from Los Angeles to Seattle by tanker, a roughly comparable distance, was only 25 cents per barrel, which increased the delivered price at Seattle over California prices by less than one-seventh. This difference in relative transport costs changed a 25 percent unit cost advantage on a B.T.U. basis held by coal at point of origin over oil at point of origin to a net disadvantage at destination of over 40 percent.

Fuel Problems of the Pacific Northwest

Among the several geographical sub-regions in the western states, the Pacific Northwest is probably at the greatest relative disadvantage from a fuel standpoint. Local production of oil and natural gas is non-existent and surplus wood fuel is rapidly disappearing in the districts adjacent to the urban centers. Located at the end of long supply lines for both coal and oil, the region is exposed to the risk of having its supplies curtailed in the event of shortage or emergency. The shrinking demand for coal because of the rapid dieselization of railroad motive power makes the existence of many coal mining enterprises in the Rocky Mountain area increasingly precarious and creates uncertainty as to the continuity of supply for regions like the Pacific Northwest.

High costs of coal production

Although possessing a great variety of coals, ranging from lignite to anthracite, Washington's coal production has long been on the downgrade and the area has become increasingly dependent on supplies from outside sources, chiefly Utah and Wyoming. The best of the accessible and most easily mined coal in Washington, the bituminous deposits in the Roslyn field east of the Cascades, has been removed and further production in this area will be increasingly difficult and costly. Large reserves of low rank sub-bituminous coal occur in southwestern Washington, but this coal is little better than lignite, having a high

moisture content and slacking badly on mining. The remaining coal deposits of the state, in the area between Puget Sound and the Cascades, are handicapped by excessively high costs of mining and preparation for market. The coal bearing rocks in this region were badly faulted and broken in the process of mountain building and in many places are deeply covered with glacial drift. The result is that mining is exceedingly difficult and expensive and the coal is often mixed with shale and sandstone which necessitates additional costs for removal and washing. These conditions have made extensive mechanization impossible in most mines in this region and result in low output per man and high costs of production. The average daily output in Washington coal mines in 1948, for example, was 4.13 tons per man, as compared with 6.72 tons in Utah, 7.83 tons in Wyoming, and 6.26 tons for the bituminous mines of the country as a whole. The average cost at the mine of all bituminous coal produced in Washington runs considerably higher than in any other western state and until 1946 regularly exceeded the average for the country as a whole by over 60 percent.

Increasing importance of oil and electric power

The cumulative effect of these several influences affecting the fuel and energy supply in the Pacific Northwest has been to reduce the relative importance of coal in the total situation, while that of oil and hydro-electric energy has greatly increased. Studies made by the State College of Washington show that oil supplied about 50 percent of that state's total estimated energy consumption in 1939 and 59 percent in 1948; the share of coal dropped during the same period from 41 percent of the total to 23 percent; the remainder was supplied chiefly by hydro-electric power.¹ The use of oil nearly trebled and electric energy output gained almost five-fold during these nine years. While there was a net increase of about 25 percent in total coal consumption, a sharp falling off occurred in production and use of Washington coal. These estimates are for over-all fuel consumption and include domestic as well as industrial use; domestic use of coal probably represents at least one-third of the total consumption. It is notable that even during the war years, but to a greater degree since, more out-of-state coal has been shipped to retail yards than to industrial consumers. Outside coal has largely supplanted local coal in domestic usage.

What evidence is available indicates that the same general tendencies are at work in the other northwestern states—large increases in consumption of oil and hydro-electric energy, with little change in over-all consumption of coal. Oil is a competitive fuel, while electric energy is largely an additional factor in the situation, finding its chief industrial use in the electro-metallurgical industries which have developed in the Columbia River Basin. Even at the high prices for oil prevailing in 1947 and 1948, the

¹ "Fuel Trends in Washington," previously cited, pp. 15, 40. These data exclude use of wood, because of the difficulty of obtaining accurate information. However, all observers agree that the use of wood as industrial fuel has also declined in Washington and probably in the northwest generally.

¹ See *Minerals Yearbook*, 1937, pp. 790 and 803.

delivered cost in the Pacific Northwest of fuel oil of the type required by large industrial users was below that of Utah coal on a comparable calorific basis. Sharply reduced prices resulting from glutted fuel oil markets in 1949 widened the margin.

Proposed gasification of coal in Washington

Because of the high cost of mining the better coals in Washington and the high delivered cost of coal from Utah and Wyoming, efforts are currently being made to find a satisfactory way to utilize the extensive sub-bituminous deposits of southwestern Washington. These coals are relatively easy to mine but have a low calorific value and poor storing characteristics. To offset these disadvantages, it is proposed to gasify these coals in large plants near the mines and to pipe the gas to consuming centers. An appropriation was made by the Washington Legislature in 1949 to establish a pilot plant to investigate the feasibility of such a gasification project, but it is too early to speculate on the probable outcome, or to make any predictions as to costs relative to other fuels.

Possible importation of Canadian natural gas

Rapid exploration and development of Canadian oil resources during the past two years, particularly in Alberta, give fairly reasonable assurance that an adequate and dependable supply of natural gas from this region may become available to the Pacific Northwest in the not distant future. As to how soon this new fuel resource can be developed and at what cost, it is still too early to pre-

dict, since legal and political questions as well as economic considerations are involved. Several different groups are currently reported to be actively promoting plans for the financing and construction of pipe lines to connect the Canadian gas reserves with north Pacific Coast markets. Should these plans be carried to early fruition, it seems likely that the competitive position of coal in this area will be still further impaired.

Outlook for the Future

So long as petroleum and natural gas remain in relatively abundant supply, there appears to be little prospect of any significant increase in the use of coal as an industrial fuel in the West. If and when these other sources of energy become scarce and high priced, coal may supply a larger part of industry's fuel requirements, either directly or in the form of gas or liquids derived by synthetic methods. It seems most probable, however, that before this latter stage is reached the oil industry will be utilizing the extensive shale deposits of the Rocky Mountain area for the synthetic production of fuel oil. The total estimated volume of recoverable oil from shale exceeds the currently proved petroleum reserves of the United States in the ratio of about 8 to 1. In comparison with all these, the nation's coal and lignite reserves, nearly half of which are in the 11 western states, are enormously greater. The ultimate destiny of the West's coal resources will probably be, therefore, to serve as the major source of mineral energy in the remote future when petroleum, gas, and shale resources have been exhausted.



BUSINESS INDEXES—TWELFTH DISTRICT¹

(1935-39 average = 100)

Year and month	Industrial production (physical volume) ²								Total mfg employment ⁴	California factory payrolls ⁴	Car-loadings (number) ⁵	Dep't store sales (value) ⁵	Dep't store stocks (value) ⁵	Retail food prices ⁶
	Lumber	Petroleum ³		Cement	Lead ³	Copper ³	Wheat flour ³	Electric power						
		Crude	Refined											
1929	148	129	127	110	171	160	106	83	....	111	135	112	134	132.0
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	138	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	353	346	218.1
1949	136	147	167	202	103	140	104	303	186	423	126	331	323	209.6
1949														
March	131	153	176	195	120	169	102	295	187	412	118	328	342	213.3
April	141	152	169	212	124	167	82	303	189	412	126	335	331	215.6
May	143	149	170	215	126	159	100	304	189	415	134	340	330	211.0
June	146	148	174	219	118	138	104	315	188	419	139	335	313	209.9
July	136	146	162	217	98	131	108	299	186	423	120	329	302	206.3
August	135	144	165	209	93	121	109	310	186	429	138	333	309	205.7
September	140	144	166	208	84	136	108	308	185	437	138	326	333	207.3
October	139	141	158	200	77	136	104	306	185	435	124	337	330	205.5
November	147	140	161	200	89	145	101	299	183	421	129	319	331	205.7
December	149	140	156	196	105	140	189	306	182	424	128	339	315	202.5
1950														
January	121	140	161	178	123	168	104	322	179	417	96	316	323	206.4
February	131	139	157	179	118	164	91	313	182	421	108	323	338	204.1
March	148	138	151	201	122 _r	169 _r	91	299	186 _r	427	125	321	349	203.4
April	156	138	159	217	124	173	87	325	189	432	135	333	342	205.4

BANKING AND CREDIT STATISTICS—TWELFTH DISTRICT

(amounts in millions of dollars)

Year and month	Condition items of all member banks ⁷				Bank rates on short-term business loans ⁸	Member bank reserves and related items ¹⁰					Bank debits index 31 cities ^{11,12} (1935-39 = 100) ³
	Loans and discounts	U.S. Gov't securities	Demand deposits adjusted ⁴	Total time deposits		Reserve bank bank ¹¹	Commercial operations ¹²	Treasury operations ¹²	Coin and currency in circulation ¹¹	Reserves	
1929	2,239	495	1,234	1,790	.....	- 34	0	+ 23	- 6	175	146
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	3,630	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	6,866	8,655	6,037	.....	+ 17	+ 472	- 482	- 209	2,420	355
1949	5,925	7,016	8,536	6,255	3.20	+ 13	- 931	+ 378	- 65	1,924	350
1949											
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	5,873	6,909	8,317	6,196	.....	+ 2	- 95	+ 92	+ 7	1,831	351
November	5,919	6,944	8,511	6,157	.....	- 12	+ 21	- 2	- 16	1,854	349
December	5,925	7,016	8,536	6,255	3.16	+ 40	+ 32	+ 30	- 8	1,924	376
1950											
January	5,901	7,123	8,620	6,244	.....	- 48	- 92	+ 5	- 62	1,892	354
February	5,893	6,999	8,311	6,262	.....	+ 5	- 34	- 7	+ 10	1,848	360
March	5,946	6,923	8,167	6,303	3.36	- 2	- 223	+ 204	- 16	1,842	373
April	5,937	6,881	8,289	6,285	.....	+ 28	- 126	+ 106	+ 4	1,821	360
May	6,005	6,932	8,354	6,275	.....	- 14	- 199	+ 170	+ 8	1,802	371

¹ 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. ² Daily average. ³ Not adjusted for seasonal variation. ⁴ Excludes fish, fruit, and vegetable canning. Factory payrolls index covers wage earners only. ⁵ At retail, end of month or year. ⁶ Los Angeles, San Francisco, and Seattle indexes combined. ⁷ Annual figures are as of end of year; monthly figures as of last Wednesday in month or, where applicable, as of call report date. ⁸ Demand deposits, excluding interbank and U.S. Gov't deposits, less cash items in process of collection. Monthly data partly estimated. ⁹ New quarterly series beginning June 1948. Average rates on loans made in five major cities during the first 15 days of the month. ¹⁰ End of year and end of month figures. ¹¹ Changes from end of previous month or year. ¹² 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. ¹³ Debits to total deposit accounts, excluding interbank deposits. p—preliminary. r—revised.