BUSINESS REVIEW

JUNE 1960
Vol. 45, No. 6

THE GROWTH OF THE SOUTHWESTERN PETROCHEMICAL INDUSTRY

Since World War II, the petrochemical industry, a substantial portion of which is located in the Southwest, has expanded production several times over. The output of petroleum-derived chemicals is currently estimated at an annual rate of 50 billion pounds valued at approximately $6 billion, compared with only 8 billion pounds at slightly less than $1 billion in 1945. Few industries in the United States can claim such a rapid rate of growth in this 15-year period.

A Short History of Petrochemicals

Petrochemicals, conventionally defined as products made wholly or partly from petroleum or natural gas hydrocarbons, were developed in research laboratories before and during World War I. In 1919, this country's first commercial petrochemical plant was constructed in New Jersey; but, except for a few products, such as carbon black, progress was mostly confined to laboratory research before 1940. Residents of the Southwest, now accustomed to chemicals as a basic regional economic foundation, may find it difficult to remember that the Gulf Coast petrochemical industry virtually did not exist prior to World War II. In fact, the word "petrochemical" could not even be found in a dictionary before the end of the war.

The basic incentive to utilize the by-product gases from petroleum refineries and other hydrocarbon resources in the Southwest for petrochemical manufacture was provided by wartime shortages of aviation gasoline, synthetic rubber, and explosives. Production of synthetic rubber, in particular, required construction of large

FEDERAL RESERVE BANK OF DALLAS
DALLAS, TEXAS

intermediate chemical suppliers, principally styrene and butadiene manufacturers. In all, about 20 major synthetic rubber, butadiene, and styrene plants were built during World War II in Texas and Louisiana, and these early plants formed the nucleus for today's vast Gulf Coast petrochemical complex.

Although the Federal Government was instrumental in the development of many of the wartime petrochemical plants along the Gulf Coast, private interests rapidly recognized the opportunity and were responsible for most of the postwar growth. It is estimated that about $400 million was invested in Gulf Coast chemical plants by the end of World War II and that another $500 million in facilities was added by 1950. Nearly all of the Government-owned plants constructed during and after World War II were sold to private owners by 1955 at a cost of more than $250 million.

Petrochemicals have accounted for a steadily increasing proportion of total chemical product values. The estimated 32 billion pounds of petrochemicals produced in 1954 were valued at $3.7 billion, or about one-half of total chemical production. Today, petrochemicals account for about 60 percent of chemical industry sales, although they represent less than one-third of the physical volume of chemical production. It is also estimated that petrochemical facilities are responsible for well over one-half of the entire plant and equipment investment of the chemical industry. Investment in Gulf Coast petrochemicals during the past decade approached $3 billion; the total investment in this area is estimated to be in excess of $4 billion.

A portion of the rapid expansion of petrochemicals has been at the expense of older materials; recently, however, the greatest growth has occurred in plastics, which generally are not profitably obtainable from other hydrocarbon sources. It is estimated that plastics production this year may reach 6 billion pounds, compared with only about 2 billion pounds in 1950. Synthetics made from low-cost petrochemical materials also have frequently displaced products made from coal tars, wood pulp, or vegetable matter. Hydrocarbons derived from petroleum and natural gas are available at a lower cost, partly because such materials are used primarily for fuel and, hence, have a relatively low established market value. In addition, in several cases in which petrochemical materials lack a clear cost advantage, alternative coal- or vegetable-based production capacity is insufficient to meet growing industry requirements. This has been the experience with aromatics (benzene, used principally to make styrene, is the major aromatic intermediate), which are increasingly being derived from petroleum sources but were originally made exclusively from coke and coal tars.

Synthetic rubber and synthetic detergents are perhaps the most obvious examples of petrochemical products which have largely displaced older materials. Synthetic rubber now accounts for about 65 percent of United States rubber consumption; and synthetic detergents, 75 percent of cleaning agent consumption. It is estimated that about 80 percent of all organic chemicals now manufactured in the United States are derived from crude oil, natural gas, or natural gas liquids, contrasted with less than 45 percent at the end of World War II. In addition, several very large-volume inorganic chemicals are produced from petrochemicals. Large quantities of sulfur are extracted from crude oil or natural gas; and synthetic ammonia, the basis of much nitrogen fertilizer, is derived principally from petroleum sources. Carbon black, perhaps the oldest large-volume petrochemical, is still produced extensively in the Southwest.

A Major Southwestern Industry

The petrochemical industry has been centered in the Southwest in recent years and has become a major area employer and income producer. In 1959, there were about 35,000 workers employed by over 100 firms primarily producing or processing petrochemicals in Texas. Moreover, almost one-fifth of the total number of workers at petroleum refineries and gasoline-stripping plants were engaged in producing petrochemical raw materials. The petrochemical industry in Texas thus provided job opportunities for about 45,000 workers whose wages totaled approximately $250 million last year. It is estimated that employment in the industry has increased roughly 16 percent since 1954 and has nearly doubled since 1947. In addition, payrolls have risen fourfold in the past 15 years, with a 41-percent advance recorded in the last 5 years.

In Louisiana during 1959, there were an estimated 17,000 workers employed in the manufacture of chemicals and allied products, the major portion of which is petrochemicals, and wages totaled approximately $100 million. Current employment in the industry is about 1½ times as great as it was in 1947, and payroll earnings have tripled.

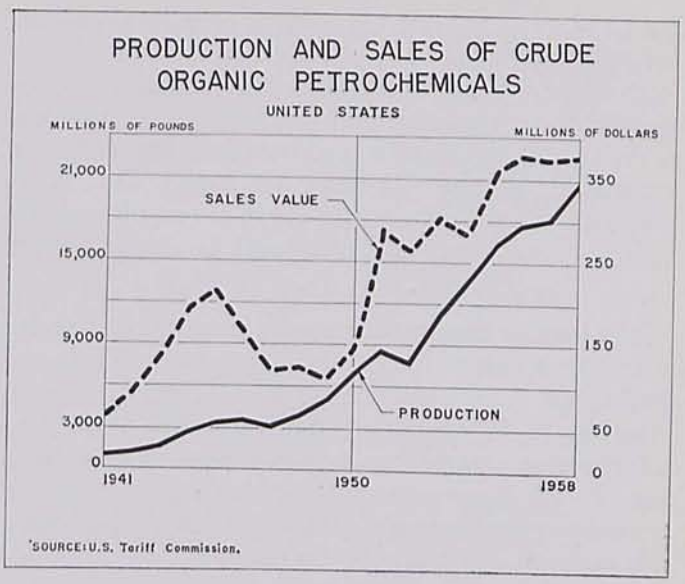
The economic importance of the petrochemical industry cannot be judged in terms of employment alone, however, as investment per employee is rated

among the highest of any industry. Hourly employment has risen only moderately in the last several years, although job opportunities for engineers and scientists have advanced rapidly and average wages are relatively high in the chemical industry. In 1958, Texas hourly chemical workers earned an average of $105 per week; nationally, wages have risen faster in the chemical industry than in most other industries during the past decade. In 1954, wages accounted for only 24 percent of the value added by the chemical industry in the United States, compared with 38 percent for all manufacturing. These ratios have almost certainly declined since then.

In addition to measuring the Gulf Coast petrochemical industry in terms of employment, some indication of the value added and capital spending accounted for by the industry may be obtained from preliminary reports of the most recent Census of Manufactures. In 1958, the chemical and allied products industry group, which includes petrochemicals, added $1,063 million to the value of chemical products manufactured in Texas, or about 21 percent of the value added by all major industrial production within the State. In contrast, the value added by chemical industries during 1954 was only $722 million. From 1954 to 1958, the value added by chemicals and allied products increased 47 percent, while industry employment rose only 5,000 workers, or 14 percent. Since 1947, the value added by the chemical industry in Texas has risen about four times, or nearly twice as rapidly as employment.

Between 1954 and 1958, the value added by Louisiana's chemical industry rose 26 percent — from $250 million to $316 million — and employment declined 2 percent, or 300 workers. Since 1947, the value added by the industry in Louisiana has nearly tripled, while employment has advanced about one-half. In other District states, petrochemical production is of far lesser importance than in Texas and Louisiana. The combined total value added by chemical industries in Oklahoma, New Mexico, and Arizona is roughly one-third of that in Louisiana and one-eighth of the Texas total.

According to preliminary data based on the Census of Manufactures, Texas chemical producers spent nearly $200 million on capital improvements in 1958, compared with only $141 million in 1954, and their plant and equipment expenditures accounted for 34 percent of total major industry capital spending in the State during the later year. Although moderately smaller than in 1954, the capital expenditures of Louisiana manufacturers of chemicals and allied products amounted to $56 million in 1958, or 34 percent of the total spent by the State's principal industries.



Major Centers of Petrochemical Production

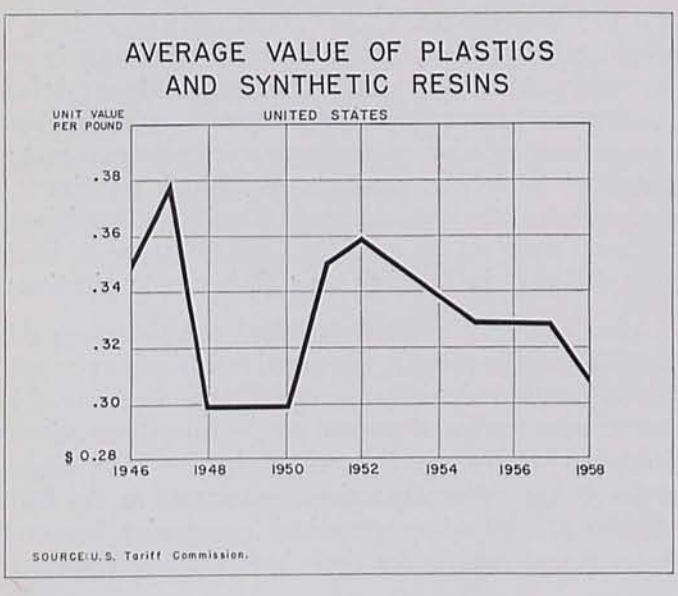
The Texas-Louisiana Gulf Coast chemical complex, which contributes at least 90 percent of the Southwest's chemical production, consists of a 700-mile strip of coastal land, ranging up to 100 miles in width, that stretches from Brownsville, Texas, to New Orleans, Louisiana. More than 100 major petrochemical plants are clustered around the following area complexes, listed in descending order of size: (1) Houston-Freeport, (2) Beaumont-Port Arthur-Orange, (3) Baton Rouge, (4) New Orleans, (5) Lake Charles, (6) Corpus Christi, and (7) Brownsville. These complexes, although geographically separated, are becoming increasingly interdependent. Moreover, new plants frequently are being constructed between existing complexes, with pipeline connections to other plants both to receive raw materials and to deliver products. Feedstock pipelines—especially for ethylene—exceed 100 miles in length, and potential users on much of the Gulf Coast would have little difficulty in locating near such supply pipelines.

Most locations of petrochemical complexes on the Gulf Coast offer roughly comparable attractions to producers because virtually the entire Gulf Coast area is rich in petroleum and natural gas hydrocarbons, either produced locally or delivered by pipeline from inland areas. Other major attractions are access to the Gulf of Mexico, affording chemical companies low-cost water transportation for their high-tonnage products;

the large, readily available supplies of natural gas, sulfur, salt, and lime; and the substantial quantities of fresh water. The larger petrochemical plants, in addition to using heavy quantities of natural gas for fuel and petroleum or natural gas hydrocarbons for feedstock, are major consumers of water, principally for cooling purposes. A single plant may use in excess of 5 million gallons of water per day, or enough to supply a small city.

The greater Houston area has proved to be the most attractive location for chemical producers along the Gulf Coast in the past several years. Today, chemical plants are scattered along virtually all of the Ship Channel. Houston area producers, located near a concentration of very large refineries and major petroleum and natural gas pipeline terminals, enjoy among the lowest raw material and fuel costs on the gulf.

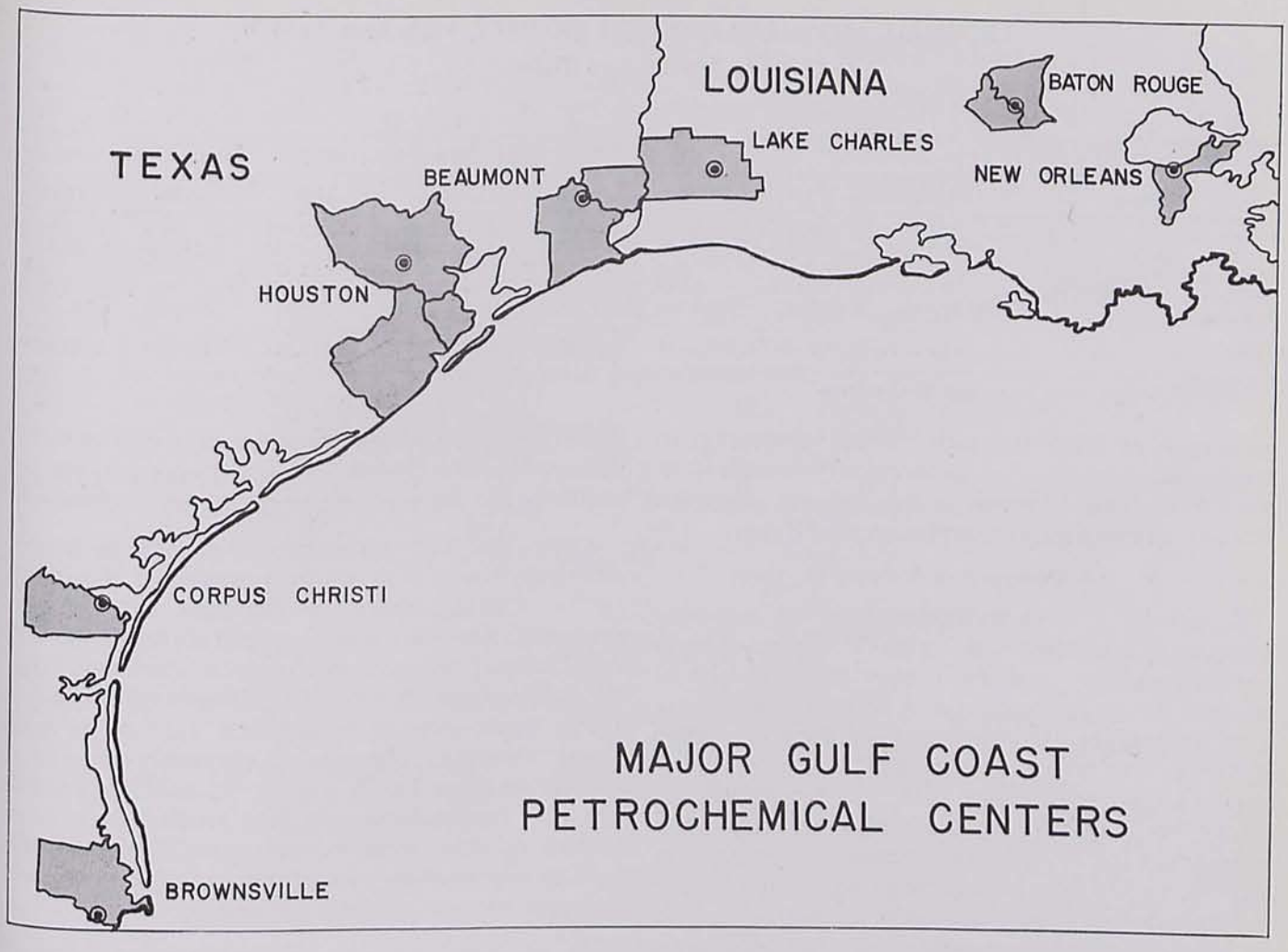
Because of its excellent deepwater transportation, Houston has attracted very large-scale chemical plants which principally produce intermediate petrochemicals for water shipment to northern and eastern final processors. At present, most large-volume shipments of chemical materials from Houston to northeastern markets are made by tanker or barge, with overland railroads generally transporting only relatively small-volume chemical products. It is estimated that Houston area employment in the petrochemical industry has increased one-third since 1952 and payrolls have nearly doubled. Between 1954 and 1958, the value added by chemical and rubber producers in Harris County alone advanced 30 percent to $261 million, and capital spending rose sharply. In the greater Houston area during 1959, an estimated 17,000 workers, earning about $100 million in wages, were directly employed in petrochemical production or the fabrication of finished products from petrochemicals.



Although the Houston area continues to grow rapidly, many new chemical companies are currently locating somewhat away from the now-crowded Ship Channel — frequently in the direction of Corpus Christi, where there are many refineries and large quantities of available natural gas. Victoria and Seadrift already are established chemical centers between the greater Houston area and Corpus Christi. While Corpus Christi, with five refineries as a raw materials base, has developed as a major chemical center, Brownsville, the southernmost terminus of the Texas Gulf Coast petrochemical region, has seen only relatively limited chemical industry development.

The Beaumont-Port Arthur-Orange area has become the second most important Gulf Coast chemical center, offering readily available, low-cost raw materials, deepwater transportation, large water resources, and an established center of chemical industry suppliers. Area employment in the petrochemical industry during 1959 was approximately 5,000 workers, whose earnings were in excess of $35 million. Since 1952, job opportunities in the chemical-manufacturing and -processing industries have expanded 50 percent, and payrolls have doubled.

Small inland locations of District petrochemical development include Longview, the upper Texas Panhandle, and the Midland-Odessa-Big Spring area. Percentage employment increases in the west Texas petrochemical industry have been impressive in recent years, but, in actual numbers, such gains have been small compared with those achieved by Gulf Coast chemical firms. Because of remoteness from major consumption centers, distance from water transportation, and a relative scarcity of fresh water, development of an inland petrochemical industry has been slow in the Southwest. Much of the production of the Odessa styrene and butadiene plants is directed toward supplying a local synthetic rubber plant, although tank-car shipments of styrene, equal to perhaps one-third of area production, are made to out-of-District processors. Recently, plans were announced for the construction of a new plant in Odessa which is expected to produce 200 million pounds per year of ethylene- and propylene-based chemicals.



Although the chemical industry experienced a somewhat later start in Louisiana than in Texas, recent development has been rapid at the three major centers — Lake Charles, New Orleans, and especially Baton Rouge. Louisiana is rich in petrochemical raw materials and water resources and has abundant deepwater and barge channel plant sites. Chemical industry employment in the New Orleans standard metropolitan area alone rose about 1,000 workers from 1954 to 1958, and the value added by chemical manufactures advanced 68 percent to nearly $25 million. At the present time, perhaps the most rapid development of the Louisiana petrochemical industry is centered in the greater Baton Rouge area, where raw materials are readily available from the Nation's largest refinery. Although raw materials (including natural gas) are somewhat more expensive in Louisiana than in Texas, lower transportation costs to most major northern markets have encouraged many large petrochemical producers to locate in the State. A very large portion of the chemicals produced in Louisiana is transported by barge up the Mississippi River, but ocean freighters and tankers make regular shipments from as far up the Mississippi as Baton Rouge.

Currently, most Gulf Coast petrochemical producers are principally making intermediate products which are shipped to northeastern states for final fabrication. The Gulf Coast has been comparatively slow in developing a consumer-oriented chemical industry. Of the estimated 45,000 workers employed by the petrochemical industry in Texas, only about 3,000 are believed to be engaged in final consumer product manufacture. Dallas and Fort Worth presently account for two-thirds of state-wide employment in the fabrication of plastics and miscellaneous rubber products, and production there appears to be increasing. Because the manufacture of consumer or industrial plastics products employs a relatively large

CHEMICALS AND ALLIED PRODUCTS INDUSTRY, 1958 AND 1954

Five Southwestern States

(Dollar amounts in thousands)

Area	Employment		Payroll		Value added, unadjusted		Capital expenditures, new	
	1958	1954	1958	1954	1958	1954	1958	1954
Arizona	1,154	1,333	$ 6,004	$ 5,607	$ 10,348	$ 15,669	$ 673	$ 923
Louisiana	17,133	17,479	100,459	83,752	315,866	250,238	56,137	67,476
New Mexico	7,083	5,967	47,624	31,807	105,055	67,472	1,035	533
Oklahoma	1,479	1,561	7,043	5,547	15,526	10,553	821	13,765
Texas	42,166	36,976	254,518	179,926	1,063,313	722,056	199,033	141,176
Total	69,015	63,316	$415,648	$306,639	$1,510,108	$1,065,988	$257,699	$223,873

SOURCE: United States Department of Commerce.

proportion of labor to machines and production in small-scale plants is often economically feasible, it is possible that some growth in this industry may take place in the current labor surplus areas of Texas.

A Competitive Industry

Economies of large-scale production are becoming increasingly important in the production of petrochemical intermediates, and the average economic size of plants is showing a steady rise. A comparatively recent development—now a clear trend—is the construction of single large plants to produce "merchant" petrochemical intermediates, or basic chemical building blocks. For example, several ethylene makers produce in excess of their captive requirements to supply area users, and a few firms have constructed plants to manufacture ethylene solely for sale as petrochemical feedstock. In effect, the security and other advantages of complete vertical integration are sacrificed for the impressive economies of plant specialization. The first merchant ethylene plant in Texas was completed in 1953, and most new ethylene users are basing their plans on the purchase of ethylene, instead of accepting the high capital costs of captive production. It is estimated that already as much as one-third of the ethylene produced on the Gulf Coast is sold rather than captively used.

Even though the average capital costs of individual petrochemical plants are relatively large, high investment outlays do not appear to be effective barriers to new firms. Recently, petroleum refiners have been noticeably active in the petrochemical field, although not infrequently as partners with established organic or inorganic chemical producers. The large investment costs of entering into petrochemicals and the advantage of pooling petroleum and chemical experiences have encouraged such joint ventures. Several chemical companies have also sought the advantages of association with a petroleum company by actually merging with or acquiring the assets of smaller petroleum producers.

Entry into the petrochemical industry is limited mainly by the need for large quantities of investment capital. Patent licenses are obtainable, but extensive research facilities are needed to keep abreast of the very rapid rate of technological progress characteristic of the industry from its beginning. Despite these requirements, there seem to be sufficient numbers of well-financed entrants to maintain a vigorously competitive industry environment. As a result, prices of major petrochemical intermediates and final products have been steadily declining in recent years, enabling the industry to win new markets away from established products and promote new products successfully.

In addition to aggressive conventional interfirm competition between producers of the same product, there is a great deal of interproduct and interprocess competition in the petrochemical industry. Interproduct competition is particularly intense in the field of synthetic fibers, while interprocess competition most frequently results from the ability of producers to make similar products out of a variety of alternative raw materials. Currently, an intensively competitive situation is developing among acetylene, propylene, and ethylene as basic petrochemical building blocks. Interprocess competition, however, exists at all levels of petrochemical manufacture. For instance, there are five major commercial methods to produce ethylene presently in competition. Such intensely competitive conditions foreshadow a continued rapid rate of growth in the petrochemical industry. An article to appear in a subsequent issue of the *Business Review* will discuss growth prospects for the petrochemical industry, with particular reference to the outlook in the Southwest.

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BUSINESS REVIEW

BUSINESS, AGRICULTURAL, AND FINANCIAL CONDITIONS

Record Easter-season sales boosted the Eleventh District department store sales index to an all-time high in April. Wearing apparel and accessories scored the most outstanding year-to-year gains. Department store inventories remained above the comparable 1959 level but were down more than seasonally from March. New car registrations in the four most populous areas, although lower than in the preceding 2 months, were higher than in April 1959.

Industrial production in Texas remained unchanged from March to April, as the weakness in mining activity was about offset by the continued strength in manufacturing. Nonagricultural employment in the District states increased seasonally during the month. Unemployment declined seasonally in Texas to 168,000, which is 4.6 percent of the labor force.

District crude oil output declined 5 percent during the first half of May, with Texas production limited to 8 days. Crude runs to refinery stills decreased seasonally but continued to be larger than a year earlier. Although demand for the major petroleum products averaged 4 percent greater than a year ago during April and early May, large stocks of gasoline prevented normal seasonal price adjustments. Drilling activity remains depressed in the District at a level well below that of a year ago.

Construction contracts awarded in the District states during March showed a sizable increase over February but still remained slightly below a year earlier.

Weekly reporting member banks in the District experienced fairly substantial deposit drains during the 4 weeks ended May 18, and both loan and investment accounts were reduced. Pressures on the reserve positions of member banks in the District moderated in April and early May.

Agricultural conditions in the District remain favorable, although cool weather and dry soils have reduced prospects in some areas. Production of winter wheat in the District states is estimated, as of May 1, to be 16 percent greater than last year. Spring vegetables in Texas are making good development, but output is expected to be smaller than in 1959. General rains would benefit ranges and pastures in western sections of the District.

The arrival of warm spring weather during April furnished an additional impetus to the normally heavy pre-Easter sales at Eleventh District department stores; as a result, April sales rose 9 percent over a year ago. The seasonally adjusted sales index reached a record level for any month of 181 percent of the 1947-49 average — up from 164 in March and 175 a year earlier. The previous high was 179, recorded in both August and November of 1959. At the end of April, cumulative sales for 1960 were 2 percent higher than in the first 4 months of 1959.

The effect of the shift in the Easter date on April department store sales in the District can be seen clearly in the reports on sales by types of merchandise. Compared with a year ago, soft goods sales were generally strong, with increases of 15 percent or more in men's and women's wearing apparel. Particularly outstanding was a 29-percent gain in sales of women's and misses'

DEPARTMENT STORE SALES

(Percentage change in retail value)

Area	April 1960 from March 1960	April 1960 from April 1959	4 months, 1960 from 1959
Total Eleventh District	16	9	2
Corpus Christi	13	10	—2
Dallas	17	12	5
El Paso	3	—6	—10
Fort Worth	29	10	—2
Houston	13	7	7
San Antonio	1	9	—2
Shreveport, La.	29	11	—1
Waco	22	7	—3
Other cities	23	12	4

INDEXES OF DEPARTMENT STORE SALES AND STOCKS

Eleventh Federal Reserve District

(1947-49 = 100)

Date	SALES (Daily average)		STOCKS (End of month)	
	Unadjusted	Seasonally adjusted	Unadjusted	Seasonally adjusted
1959: April	158r	175r	180r	174
1960: February	122	157	175	180
March	143	164r	191	182r
April	172	181	188p	180p

r — Revised.
p — Preliminary.

WINTER WHEAT PRODUCTION

(In thousands of bushels)

Area	1960, indicated May 1	1959	Average 1949–58
Arizona	1,152	3,672	1,229
Louisiana	1,080	1,200	1772
New Mexico	4,063	3,791	1,678
Oklahoma	99,876	89,174	66,759
Texas	76,600	59,850	36,751
Total	182,771	157,687	107,189

[1] Short-time average.
SOURCE: United States Department of Agriculture.

accessories. On the other hand, sales of durable goods were generally below those of a year earlier. Major household appliance sales were down 18 percent, and sales in departments featuring furniture and bedding and radios, television sets, and musical equipment were each 2 percent lower.

District department store inventories declined a little more than seasonally in April but at the end of the month were still 4 percent higher than at the same time last year. New orders placed during April and orders outstanding at the end of the month were also more than a year ago. In relation to sales, however, both inventories and orders outstanding were slightly lower than in April 1959.

ANNOUNCEMENT

The Federal Reserve Bank of Dallas has reviewed the seasonal adjustment factors relating to the Eleventh Federal Reserve District department store sales index series from 1950 to date and has revised these factors where shifts in the seasonal buying pattern were indicated. Simultaneous reviews of district and national seasonal factors have been made by each of the 12 Federal Reserve banks and the Board of Governors of the Federal Reserve System. Revised Eleventh District index numbers from 1955 to date are available, upon request, from the Federal Reserve Bank of Dallas.

Cool temperatures, high winds, and widely scattered thundershowers characterized District weather conditions during the past month. The unseasonably cool temperatures have prevented optimum germination of seeds and delayed growth of crops in many areas, and high winds have sapped surface soil moisture supplies. General rains are needed in the western half of the District, particularly in the Southern High Plains, and plantings have been delayed because of dry soils.

The bulk of the District wheat crop is headed. In some sections, wheat prospects were reduced slightly because of inadequate moisture during the time when the kernels were filling. Early fields of grain are being combined. Production of 1960-crop winter wheat in the District states, as of May 1, is placed at almost 183 million bushels, or 4 percent above the month-earlier forecast and 16 percent greater than output in 1959. The gain over a month ago is virtually all accounted for by a 9.3 million-bushel increase in Oklahoma; Louisiana showed only a 90,000-bushel rise. Declines were noted for the other District states. Production in Texas is now indicated at 76.6 million bushels, which is 3 percent below the month-earlier forecast but is 28 percent larger than in 1959.

Cotton in the Coastal Bend and south Texas is making rapid growth; in the Lower Valley, the crop is forming bolls. Heavy rain in upper coastal, south-central, and Blackland counties of Texas packed soils in some areas so that replanting was necessary. Replanting also has been heavy in the Plains area of the District as a result of poor germination from cool weather. Drilling of grain sorghums is virtually complete as far north as the Texas Blacklands, although planting is just getting under way in the High Plains of Texas and New Mexico. In eastern sections, corn is growing well, and mid-May rains maintained favorable prospects.

Spring vegetable harvest continues active in the Lower Valley and the Winter Garden areas. In more northerly sections of the District, cool temperatures delayed development of crops. Tomato harvest is under way in the Lower Valley, and plants in south-central and eastern Texas are setting fruit. In the Panhandle, planting of the crop is nearing completion. Blowing sand damaged cantaloupes and watermelons in south Texas, while these crops in south-central and eastern Texas are making slow development because of low temperatures. High winds also sapped topsoil moisture in north Texas onion areas, and potatoes and onions

in the Panhandle suffered light damage as a result of blowing sand.

Production of spring vegetables in Texas, excluding potatoes, is estimated, as of May 1, to be 11 percent below output last year. Outturns of cantaloupes, sweet corn, honeydew melons, and late-spring onions and tomatoes are expected to be below a year ago. A reduction in the number of acres for harvest is primarily responsible for the decline in output.

Fruit prospects are favorable in central and east Texas. Thinning of peaches is under way in the Fredericksburg area. Pecan trees have set a good crop of nuts in most areas, and spraying for nut case-bearer has begun.

Range conditions show considerable variability in the District. Ranges and pastures in the Blackland, south-central, and coastal counties of Texas and in Arizona are providing excellent grazing. Pasturage in southeastern and northeastern Texas is fair, and additional rain is needed. Range conditions in northeastern parts of Texas and Oklahoma, in the Trans-Pecos of Texas, and in Arizona and New Mexico are deteriorating because of inadequate moisture. Supplemental feeding has been stepped up in some of these areas.

Deposits at weekly reporting member banks in the District moved almost $85 million lower during the 4 weeks ended May 18, and banks met the deposit drain by liquidating both loans and investments. Most of the contraction in deposit balances centered in the demand categories, where accounts of individuals and businesses declined $114 million and interbank accounts decreased $24 million. Other types of demand balances moved slightly higher. Time accounts also decreased during the 4 weeks, influenced primarily by net withdrawals from the accounts of individuals and businesses. The 4-week deposit drain was slightly smaller than the decline recorded for the comparable period of 1959, but total deposits on May 18 were about 4 percent below the year-earlier level.

Net liquidation of loans at weekly reporting banks during the 4 weeks ended May 18 totaled $9.0 million, contrasted with an expansion of $27.7 million in the same period last year. Except for loans to nonbank financial institutions and loans to dealers in Government securities, each of the major loan categories showed a decline. Investment accounts at the reporting banks were reduced $34.8 million, reflecting a moderate decrease in holdings of Government securities and a somewhat larger reduction in non-Government investments. Proceeds from the net liquidation of loans and investments failed to match the volume of deposit drains during the 4-week period, and reporting banks increased their borrowings while also reducing cash accounts.

CONDITION STATISTICS OF WEEKLY REPORTING MEMBER BANKS IN LEADING CITIES

Eleventh Federal Reserve District

(In thousands of dollars)

Item	May 18, 1960	Apr. 20, 1960	May 20, 1959
ASSETS			
Commercial and industrial loans	1,468,643	1,474,297	—
Agricultural loans	32,031	32,051	35,416
Loans to brokers and dealers for purchasing or carrying:			
U. S. Government securities	286	291	16,390
Other securities	18,691	25,350	
Other loans for purchasing or carrying:			
U. S. Government securities	9,405	6,113	182,834
Other securities	180,694	181,232	
Loans to nonbank financial institutions:			
Sales finance, personal finance, etc.	127,503	111,897	—
Savings banks, mtge. cos., ins. cos., etc.	122,855	120,271	—
Loans to foreign banks	453	730	12,410
Loans to domestic commercial banks	11,674	15,215	
Real-estate loans	208,616	215,211	223,925
All other loans	754,657	761,859	—
Gross loans	2,935,508	2,944,517	2,865,658
Less reserves and unallocated charge-offs	54,427	54,265	48,999
Net loans	2,881,081	2,890,252	2,816,659
Treasury bills	36,043	38,085	88,830
Treasury certificates of indebtedness	21,590	18,604	97,784
Treasury notes and U. S. Government bonds, including guaranteed obligations, maturing:			
Within 1 year	70,251	73,499	1,176,771
After 1 but within 5 years	819,433	809,108	
After 5 years	295,503	315,641	
Other securities	346,017	368,737	355,006
Total investments	1,588,837	1,623,674	1,718,391
Cash items in process of collection	467,826	488,141	504,180
Balances with banks in the United States	481,896	464,268	477,091
Balances with banks in foreign countries	2,016	1,827	2,048
Currency and coin	49,952	50,544	48,603
Reserves with Federal Reserve Bank	536,726	555,469	555,881
Other assets	184,728	194,862	164,208
TOTAL ASSETS	6,193,062	6,269,037	6,287,061
LIABILITIES AND CAPITAL ACCOUNTS			
Demand deposits			
Individuals, partnerships, and corporations	2,799,817	2,913,943	2,920,367
United States Government	160,058	118,466	156,119
States and political subdivisions	252,101	231,768	265,432
Banks in the United States	824,507	848,503	888,466
Banks in foreign countries	19,224	16,954	15,845
Certified and officers' checks, etc.	44,762	43,998	64,590
Total demand deposits	4,100,469	4,173,632	4,310,819
Time deposits			
Individuals, partnerships, and corporations	1,025,558	1,032,945	1,095,196
United States Government	12,255	12,255	7,055
Postal savings	394	394	421
States and political subdivisions	242,340	247,236	178,826
Banks in the U. S. and foreign countries	3,893	3,397	1,643
Total time deposits	1,284,440	1,296,227	1,283,141
Total deposits	5,384,909	5,469,859	5,593,960
Bills payable, rediscounts, etc.	147,197	128,731	94,565
All other liabilities	109,293	122,233	69,262
Capital accounts	551,663	548,214	529,274
TOTAL LIABILITIES AND CAPITAL ACCOUNTS	6,193,062	6,269,037	6,287,061

NOTE. — Effective July 1, 1959, this series was revised The revised form includes several new items, the most important of which is loans to financial institutions, previously reported against other loan categories. Comparable year-earlier figures for the new items will be shown when they become available.

NEW PAR BANKS

The Merchants Marine State Bank, Port Isabel, Texas, an insured nonmember bank located in the territory served by the San Antonio Branch of the Federal Reserve Bank of Dallas, was added to the Par List on its opening date, May 2, 1960. The officers are: Noel E. Ryall, Chairman of the Board; Richard A. Roloff, President; Eugene Geyer, Vice President and Cashier; and Ura J. Breedlove, Vice President.

The Iraan State Bank, Iraan, Texas, an insured nonmember bank located in the territory served by the El Paso Branch of the Federal Reserve Bank of Dallas, was added to the Par List on its opening date, May 9, 1960. The officers are: Elmo B. Hail, Chairman of the Board; Travis B. Curtis, President; Homer C. Smith, Vice President (Inactive); and Mary Lu Webb, Cashier.

The Mid Valley State Bank, Weslaco, Texas, an insured nonmember bank located in the territory served by the San Antonio Branch of the Federal Reserve Bank of Dallas, was added to the Par List on its opening date, May 10, 1960. The officers are: Garland F. Smith, Chairman of the Board (Inactive); V. C. Thompson, President (Inactive); George S. Potts, Executive Vice President and Cashier; C. C. Stokes, Vice President (Inactive); W. H. Drawe, Second Vice President (Inactive); Bob L. Davis, Assistant Cashier; and Mrs. Rosalee Lacey, Assistant Cashier.

The Tarrant State Bank, Fort Worth, Texas, an insured nonmember bank located in the territory served by the Head Office of the Federal Reserve Bank of Dallas, was added to the Par List on its opening date, May 20, 1960. The officers are: L. N. Wilemon, Chairman of the Board; D. J. Singletary, President and Director; L. E. Ballengee, Vice President and Cashier; and Darrell Wilemon, Vice President.

Reserve positions of member banks in the District were under less pressure in April than in March. Average reserve balances maintained by member banks during the 4 weeks ended May 4 were roughly unchanged from the preceding 5-week average, but the level of reserves was sustained with a considerably lower volume of borrowings from the Federal Reserve Bank. As bank deposits moved lower, the average level of required reserves declined $11 million, inducing a comparable expansion in average excess reserves. Reflecting both the improvement in excess reserves and the reduction in borrowings from the Reserve Bank, the net reserve position of member banks in the District shifted from average net borrowed reserves of $9.2 million in the 5 weeks ended April 6 to net free reserves of $23.9 million in the 4 weeks ended May 4. Both country banks and reserve city banks experienced the moderation of reserve pressures.

RESERVE POSITIONS OF MEMBER BANKS

Eleventh Federal Reserve District

(Averages of daily figures. In thousands of dollars)

Item	4 weeks ended May 4, 1960	5 weeks ended April 6, 1960	Month of April 1959
RESERVE CITY BANKS			
Total reserves held	524,678	520,202	550,359
With Federal Reserve Bank	522,423	518,272	—
Cash allowed as reserves	2,255	1,930	—
Required reserves	519,809	514,769	547,068
Excess reserves	4,869	5,433	3,291
Borrowings	14,389	37,183	20,198
Free reserves	—9,520	—31,750	—16,907
COUNTRY BANKS			
Total reserves held	448,779	453,451	457,045
With Federal Reserve Bank	441,759	447,394	—
Cash allowed as reserves	7,020	6,057	—
Required reserves	406,938	423,135	412,765
Excess reserves	41,841	30,316	44,280
Borrowings	8,469	7,797	1,187
Free reserves	33,372	22,519	43,093
ALL MEMBER BANKS			
Total reserves held	973,457	973,653	1,007,404
With Federal Reserve Bank	964,182	965,666	—
Cash allowed as reserves	9,275	7,987	—
Required reserves	926,747	937,904	959,833
Excess reserves	46,710	35,749	47,571
Borrowings	22,858	44,980	21,385
Free reserves	23,852	—9,231	26,186

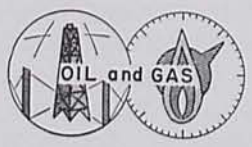
NOTE. — Regulations permitting member banks to count part of their vault cash in meeting reserve requirements became effective in December 1959, and on January 1, 1960, the reserve computation period for country member banks was changed to a biweekly basis. Therefore, monthly data comparable to year-earlier material are not available.

Earning assets of the Federal Reserve Bank of Dallas increased $31.8 million in the 4 weeks ended May 18, reflecting expansion in both Government security holdings and discounts for member banks. In contrast, the Bank's gold certificate reserves declined $38.9 million. With the decline in post-Easter currency needs in the District, the Bank's Federal Reserve notes in actual circulation decreased $5.8 million but on May 18 were 1.4 percent above a year earlier.

CONDITION OF THE FEDERAL RESERVE BANK OF DALLAS

(In thousands of dollars)

Item	May 18, 1960	April 20, 1960	May 20, 1959
Total gold certificate reserves	679,235	718,126	714,766
Discounts for member banks	30,533	8,860	12,200
Other discounts and advances	0	0	884
U. S. Government securities	1,033,886	1,023,738	1,033,955
Total earning assets	1,064,419	1,032,598	1,047,039
Member bank reserve deposits	922,798	949,299	954,771
Federal Reserve notes in actual circulation	775,262	781,030	764,468

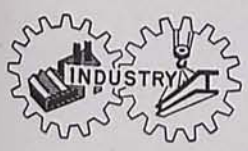


Crude oil production declined 5 percent in the District during the first half of May, following reductions in scheduled output in Texas, Louisiana, Oklahoma, and southeastern New Mexico. With Texas production limited to 8 days for the first time since June 1958,

District crude oil output averaged only 2,795,000 barrels daily, or nearly 14 percent lower than a year ago. Outside the District, crude oil production declined moderately in May and was about equal to the year-earlier level. Crude runs to District refinery stills declined seasonally during the first half of May, averaging 2,339,000 barrels daily, or 3 percent greater than a year earlier.

Total imports of crude oil and refined products during April and the first part of May held about steady but averaged 15 percent lower than in the comparable period in 1959. Stocks of crude oil on May 6, totaling 260,525,000 barrels, were 2 percent greater than a year earlier. Although crude oil demand and supplies were in somewhat better balance in May than in April, several major purchasers continued prorationing, and fears of additional reductions in postings persisted.

Drilling activity in the Southwest during April was lower than in the late winter and continues well below the level anticipated for this time of the year. An estimated 1,434 wells were completed in the District in April, compared with 1,961 a year earlier, and footage drilled declined about 21 percent. During the month, an average of 773 rotary rigs was in operation within the District, or 133 fewer than a year earlier. Outside the District, drilling activity generally is only moderately lower than a year ago, possibly indicating that continued depressed rates of crude oil production are reducing the drilling incentive in the Southwest.



The total value of construction contracts awarded in the five southwestern states during March increased 22 percent over the preceding month but was 15 percent less than a year ago. Both residential and "all other" awards rose sharply over the February levels, though remaining 12 percent and 17 percent, respectively, below the March 1959 figures. The cumulative value of contract awards in the five states in the first 3 months of this year was 13 percent lower than in the similar period in 1959; most of the decline centered in residential awards, which were down 19 percent.

Outlays for commercial buildings, churches, schools, hospitals, and highways are sources of continuing support to District construction activities. Among the major business expansions and other construction projects recently announced were the building of a $14 million addition to an existing power-generating plant in Amarillo and the construction of a $7 million shopping center in El Paso, a $10 million apartment hotel in Dallas, a $9.3 million hospital in Houston, a $1 million naval aviation facility in Dallas, a $1.2 million hospital in Dallas, and a $1.4 million hospital in Weslaco.

The seasonally adjusted index of Texas industrial production in April remained at the revised March figure of 173, compared with 170 for the same month in 1959. A continuing reduction in mining activity was offset by an increase in durables and nondurables manufacturing, with special strength apparent in the latter sector.

Total nonfarm employment in the five District states increased seasonally during April to reach 4,413,900, or 55,600 above the March level and 132,700 (over 3 percent) above a year ago. Employment in the construction, government, and trade sectors accounted for the largest month-to-month gains. On the other hand, mining was steady, while transportation employment in April was only slightly lower than a month earlier.

INDUSTRIAL PRODUCTION

(Seasonally adjusted indexes, 1947-49 = 100)

Area and type of index	April 1960p	March 1960	February 1960	April 1959
TEXAS				
Total industrial production	173	173	173	170
Total manufactures	219	215	210	206
Durable manufactures	249	249	246	239
Nondurable manufactures	205	200	192r	191
Mining	129	132	137	136
UNITED STATES				
Total industrial production	165	165	166	162r
Total manufactures	164	164	166	161r
Durable manufactures	173	175	177r	171r
Nondurable manufactures	159	157	157	155r
Mining	128	125	126r	129r
Utilities	278	282	281	262

p — Preliminary.
r — Revised.
SOURCES: Board of Governors of the Federal Reserve System.
Federal Reserve Bank of Dallas.

NONAGRICULTURAL EMPLOYMENT

Five Southwestern States[1]

Type of employment	Number of persons			Percent change April 1960 from	
	April 1960e	March 1960	April 1959r	March 1960	April 1959
Total nonagricultural wage and salary workers	4,413,900	4,358,300	4,281,200	1.3	3.1
Manufacturing	785,700	780,400	770,900	.7	1.9
Nonmanufacturing	3,628,200	3,577,900	3,510,300	1.4	3.4
Mining	247,800	247,600	251,600	.1	—1.5
Construction	302,800	288,900	318,100	4.8	—4.8
Transportation and public utilities	404,000	405,600	394,000	—.4	2.5
Trade	1,088,500	1,073,800	1,037,100	1.4	5.0
Finance	198,400	196,000	190,300	1.2	4.3
Service	538,500	531,600	507,700	1.3	6.1
Government	848,200	834,400	811,500	1.7	4.5

[1] Arizona, Louisiana, New Mexico, Oklahoma, and Texas.
e — Estimated.
r — Revised.
SOURCES: State employment agencies.
Federal Reserve Bank of Dallas.

BANK DEBITS, END-OF-MONTH DEPOSITS AND ANNUAL RATE OF TURNOVER OF DEPOSITS

(Dollar amounts in thousands)

Area	Debits to demand deposit accounts[1]			Demand deposits[1]			
		Percent change from			Annual rate of turnover		
	April 1960	Mar. 1960	Apr. 1959	April 30, 1960	Apr. 1960	Mar. 1960	Apr. 1959
ARIZONA							
Tucson	$ 230,080	—7	5	$ 135,329	20.5	21.5	20.4
LOUISIANA							
Monroe	81,589	—8	10	51,109	18.8	20.0	17.9
Shreveport	351,507	3	16	184,791	22.3	21.1	18.6
NEW MEXICO							
Roswell	40,984	0	10	29,192	16.6	15.8	14.6
TEXAS							
Abilene	91,565	—7	—5	59,218	18.5	19.3	18.2
Amarillo	215,187	—5	—2	112,912	22.9	24.0	22.9
Austin	231,118	9	8	146,686	19.2	17.9	16.1
Beaumont	158,985	—4	3	99,140	19.4	20.3	17.8
Corpus Christi	193,418	4	1	107,777	21.6	20.6	20.0
Corsicana	17,333	14	14	19,156	10.7	9.4	8.9
Dallas	2,675,392	—11	9	1,116,624	28.9	32.4	25.8
El Paso	333,304	—12	—1	167,961	24.1	26.6	24.2
Fort Worth	736,743	—10	—3	360,351	24.5	27.0	23.8
Galveston	88,802	—3	—5	64,343	16.6	16.9	17.8
Houston	2,496,104	—8	0	1,261,446	24.1	26.0	23.9
Laredo	30,002	1	3	22,225	16.2	15.6	15.8
Lubbock	196,810	—7	7	114,382	20.4	21.5	18.4
Port Arthur	65,335	0	2	41,588	18.8	18.4	16.9
San Angelo	52,656	1	—6	42,240	14.5	13.8	14.5
San Antonio	611,636	0	—1	370,449	20.0	20.2	18.7
Texarkana[2]	24,206	15	12	16,946	17.4	15.5	15.6
Tyler	83,930	—3	—4	58,300	17.3	17.5	16.8
Waco	105,258	—9	—4	67,196	18.8	20.8	18.8
Wichita Falls	114,100	—5	—3	97,693	13.9	14.5	13.6
Total—24 cities	$9,226,044	—7	3	$4,747,054	23.5	25.1	22.1

[1] Deposits of individuals, partnerships, and corporations and of states and political subdivisions.

[2] These figures include only two banks in Texarkana, Texas. Total debits for all banks in Texarkana, Texas-Arkansas, including one bank located in the Eighth District, amounted to $52,389,000 for the month of April 1960.

DAILY AVERAGE PRODUCTION OF CRUDE OIL

(In thousands of barrels)

Area	April 1960[1]	March 1960[1]	April 1959[2]	Change from March 1960	Change from April 1959
ELEVENTH DISTRICT	2,934.4	3,064.0	3,211.7	—4.2	—8.6
Texas	2,549.7	2,680.6	2,837.2	—4.8	—10.1
Gulf Coast	467.5	488.1	535.4	—4.2	—12.7
West Texas	1,145.0	1,207.6	1,263.4	—5.2	—9.4
East Texas (proper)	131.8	139.4	154.2	—5.5	—14.5
Panhandle	108.2	109.3	109.6	—1.0	—1.3
Rest of State	697.2	736.2	774.6	—5.3	—10.0
Southeastern New Mexico	270.3	268.7	251.8	.6	7.3
Northern Louisiana	114.4	114.6	122.7	—.2	—6.8
OUTSIDE ELEVENTH DISTRICT	4,076.3	4,039.7	4,044.5	1.0	.8
UNITED STATES	7,010.7	7,103.7	7,256.2	—1.3	—3.4

SOURCES: [1] Estimated from American Petroleum Institute weekly reports.
[2] United States Bureau of Mines.

VALUE OF CONSTRUCTION CONTRACTS AWARDED

(In thousands of dollars)

Area and type	March 1960	February 1960	March 1959	January—March 1960	January—March 1959
FIVE SOUTHWESTERN STATES[1]	331,612	272,423	389,188	863,147	994,182
Residential	157,783	125,573	178,617	395,135	488,301
All other	173,829	146,850	210,571	468,012	505,881
UNITED STATES	3,046,345	2,221,631	3,339,934	7,457,691	7,949,605
Residential	1,293,607	980,209	1,540,722	3,199,669	3,627,761
All other	1,752,738	1,241,422	1,799,212	4,258,022	4,321,844

[1] Arizona, Louisiana, New Mexico, Oklahoma, and Texas.
SOURCE: F. W. Dodge Corporation.

CONDITION STATISTICS OF ALL MEMBER BANKS

Eleventh Federal Reserve District

(In millions of dollars)

Item	April 27, 1960	March 30, 1960	April 29, 1959
ASSETS			
Loans and discounts	4,816	4,718	4,593
United States Government obligations	2,472	2,457	2,665
Other securities	850	856	831
Reserves with Federal Reserve Bank	925	933	953
Cash in vault[e]	149	143	142
Balances with banks in the United States	893	945	954
Balances with banks in foreign countries[e]	2	2	3
Cash items in process of collection	566	475	507
Other assets[e]	273	281	241
TOTAL ASSETS[e]	10,946	10,810	10,889
LIABILITIES AND CAPITAL ACCOUNTS			
Demand deposits of banks	971	1,014	1,029
Other demand deposits	6,511	6,385	6,654
Time deposits	2,180	2,186	2,153
Total deposits	9,662	9,585	9,836
Borrowings[e]	177	138	67
Other liabilities[e]	182	165	91
Total capital accounts[e]	925	922	895
TOTAL LIABILITIES AND CAPITAL ACCOUNTS[e]	10,946	10,810	10,889

e—Estimated.

GROSS DEMAND AND TIME DEPOSITS OF MEMBER BANKS

Eleventh Federal Reserve District

(Averages of daily figures. In millions of dollars)

Date	GROSS DEMAND DEPOSITS			TIME DEPOSITS		
	Total	Reserve city banks	Country banks	Total	Reserve city banks	Country banks
1958: April	7,502	3,677	3,825	1,916	1,033	883
1959: April	7,800	3,797	4,003	2,151	1,133	1,018
December	8,052	3,904	4,148	2,099	1,077	1,022
1960: January	8,084	3,912	4,172	2,111	1,081	1,030
February	7,620	3,640	3,980	2,145	1,089	1,056
March	7,539	3,661	3,878	2,171	1,097	1,074
April	7,503	3,640	3,863	2,190	1,105	1,085

BUILDING PERMITS

Area	NUMBER		VALUATION (Dollar amounts in thousands)		Percent change: April 1960 from		Percent change: 4 months, 1960 from 1959
	April 1960	4 mos. 1960	April 1960	4 mos. 1960	Mar. 1960	Apr. 1959	
ARIZONA							
Tucson	895	3,337	$ 2,510	$ 12,743	—12	—17	87
LOUISIANA							
Shreveport	496	1,943	2,001	8,414	—24	—13	—12
TEXAS							
Abilene	136	626	2,045	6,685	34	—7	—31
Amarillo	369	1,260	2,889	12,831	—34	—12	—2
Austin	318	1,100	4,640	15,257	0	—8	—21
Beaumont	286	969	1,390	4,404	—18	—23	—23
Corpus Christi	55	250	1,029	4,319	—25	—58	—41
Dallas	2,620	7,847	12,844	47,601	10	—27	—27
El Paso	665	2,331	4,243	15,458	—24	—26	—27
Fort Worth	901	2,658	5,400	17,275	5	14	7
Galveston	132	405	283	806	16	0	—22
Houston	1,308	4,752	14,053	70,964	—40	—27	—2
Lubbock	306	1,080	4,421	16,412	—4	—16	—14
Port Arthur	222	658	542	4,122	—25	—28	57
San Antonio	1,197	4,362	5,389	19,157	—3	—23	—14
Waco	270	966	821	7,226	—78	—42	44
Wichita Falls	482	1,108	3,125	7,820	46	357	66
Total—17 cities	10,658	35,652	$67,625	$271,494	—17	—18	—10